

Caladenia nothofageti

from its Type locality, the Puffer track at Kaitoke, Rimutakas

Contents

Cover

Caladenia nothofageti



From the editor

2. British genera II: *Ophrys*. 3. Typos and apologies. Is this an early season?
4. A list of species with notes.



Original papers

8. The New Zealand genera II: *Thelymitra*. ED Hatch.
9. Research proposal. Angela Abernethy.
12. The development of auricles in *Corybas*. Bruce Irwin.
14. *Petalochilus* again? Bruce Irwin.
15. Return to Te Pahi for *Thelymitra matthewsii*. Eric Scanlen.
20. A checklist of orchids seen. EA Fraser.



Notes

21. *Corybas cheesemanii*. Dan Hatch on *Thelymitra cyanea* and *T. venosa*.
David MacConachie on Farewell Spit and a native orchid interest group in the Manawatu.
22. Morley West on modern biotechnologies and orchids.
Corybas "Waiouru" in the southern Wairarapa. Hikurangi Mountain.
23. *Corybas* "Trotters" at Putangirua Pinnacles. Eric, Bruce, and the Bridal Veil.
MC Gudex on the orchids of Bridal Veil Falls Reserve. Congratulations to Brian Molloy OM.
New names for five NZ orchids. 24. Eric Scanlen on albino *Corybas oblongus*.



Close relations: orchids like ours

25. *Drymoanthus minutus* drawn by Alick Dockrill.



From the internet

22. Natural hybrids. Orchid conservation funds. 23. Transplanting *Cypripedium acaule*.



Historical reprints

24. *Thelymitra nervosa* by William Colenso. 25. *Petalochilus* by R S Rogers.



Iwitahi

29. Crunchtime. Trevor Nicholls.



Australian notes

33. The Australian Orchid Foundation invites applications for grants. *Rhizanthella slateri*.
4th ANOS Conference. Photography tip. *Corybas neocaledonicus* not in Australia.
Seeking the spiral sun orchid — *Thelymitra matthewsii*. By "Eastern chronicler".
34. *Thelymitra spiralis* in the York Shire. Fred Hort. 35. *Pterostylis nutans*. Warren Simpson.



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From the editor: British orchid genera II. *Ophrys*

Once upon a time, O dearly beloved, there was a plain orchid taxon that looked quite ordinary. The little orchids were sad and lonely because their labellum was not at all modified as a landing platform or decorated to attract insects. In fact, insects seemed to ignore them completely. And how they yearned for insects to visit them. They yearned especially for a handsome taxon of male bumble bees they saw buzzing busily by on their way to visit lady bees. How the plain little orchids wished they could be even half as beautiful as the lady bees were!

But they weren't, and generation after generation they were obliged to self-pollinate, thus making further generations of quite ordinary identical babies who grew up to be clones of their quite ordinary selves.

And then suddenly a random evolutionary mutation occurred, possibly as a result of divine visitation or solar radiation, possibly from the fallout of a radioactive meteorite, and lo! the labellum of one of their number began to look rather like the female bees they had all envied. She was the Chosen One, and her wish had been granted.

The little orchid was so proud she provocatively stuck out her labellum and wiggled it at a passing bee. The bee swerved, and, O frabjous day! zoomed onto her labellum and hastily made love to her. The little orchid was ecstatic, the more so because the bee was carrying pollen from another orchid (yes, well OK; I suppose the other orchid must have received a dose of irradiation too. Stop interrupting. Picky, picky). Then the bee buzzed busily off to visit a lady bee.

The little orchid did not mind, for she glowed in the secure knowledge that she was the first of her kind to experience the delights of cross-pollination. Primitive taxonomists pondered whether she was an undescribed taxon, but she didn't care. Her babies, enriched by a double gene pool, were all a little different from one another,

and one, her favorite, grew up to develop a labellum even more like a lady bee than her own. This beautiful thing was of course even more attractive to bees, and one of her offspring even more so, and so on.

And so on, and so on, and so on.

Eventually the by now obviously taxonomically distinct orchid looked even more lovely than the lady bees themselves, so much so that the primitive taxonomist Tharg called her the Bee Orchid ("Uggh! him like bee," said Tharg in those heady days when him was an inclusive pronoun), and the man bees liked making love with the orchids even more than they did with the lady bees. For several long and lusty summers all was bliss, and the orchids thrived.

But little by little the besotted man bees began to neglect the lady bees till eventually they stopped visiting them altogether, and then, one bleak season, there were no young bees to take their place. That species of bees had utterly died out.

Sad and lonely, the little Bee Orchids had to revert to self-pollination, thus making generations of quite beautiful identical babies who grew up to be clones of their quite beautiful selves. Although they had labella marvellously modified and decorated to attract their special insect, there was no insect to be attracted.

Their lonesome beauty is a warning to all of us that vanity and deceit are always punished in the end.

*European Ophrys species have labella that bear striking resemblances to various insects — flies (*O. insectifera*), wasps, spiders (*O. sphegodes*) and others. Each orchid attracts a particular insect species which pollinates it during pseudo-copulation. *Ophrys apifera*, the Bee Orchid, has a remarkably bumble-bee-like labellum but, surprisingly, is self-pollinating. Some have speculated that its specific pollinator must have become extinct.*



Clockwise from top left: *Ophrys apifera*, *O. insectifera*,
O. insectifera, *O. sphegodes*, *O. sphegodes*

Aarrgghh! These wretched typos! My Apologies to Eric Scanlen and to other readers for mislabelling *Prasophyllum aff. patens* as "*Pterostylis aff. patens*" on page 8 of the last issue. By the way, did you remember to paste the photo in with its labellum uppermost?

Early season? *Corybas cheesemanii* was in fruit in Rimutaka Forest Park by 10 August. *Pterostylis graminea* was flowering a week before that. England had the same dry winter: the early orchids were stunted, even earlier than usual. Then summer rain brought a flourish of late species.

A list of species with notes

The following should not be regarded as a definitive list of the New Zealand species. It is rather, a subjective and composite view, gleaned by the editor from reading, conversation and observation. The last "official" taxonomic treatment of the NZ orchids was by Lucy Moore in Moore & Edgar's *Flora of New Zealand Volume II* in 1970; the notes in brackets refer to changes since then. Where there are no notes, there have been no changes.

- Acianthus sinclairii*** (*Flora II* called it *Acianthus formicatus* var. *sinclairii*)
- Acianthus viridis*** (has also been known as *Townsonia viridis*, *T. deflexa*)
- Adenochilus gracilis***
- Aporostylis bifolia***
- Bulbophyllum pygmaeum***
- Bulbophyllum tuberculatum***
- Caladenia* aff. *carnea*** (the common pink form found throughout New Zealand, once mistaken for *C. catenata* which is now regarded as an Australian endemic)
- Caladenia alata*** (*Flora II* included it in *C. carnea* as var. *exigua*. See Hatch E.D. and McCrae D. *NZNOG Newsletter* 1989. 32:5-6)
- Caladenia alpina*** (plants resembling this Australian species have been found in Otago. It is superficially similar to *C. lyallii*. See St George IM. *NZNOG Journal* 1997; 63: 4-6).
- Caladenia atradenia*** (*Flora II* called it *C. carnea* var. *minor* forma *calliniger*. Has been confused with the Australian *C. iridescens*, so is also called *C. aff. iridescens*. See Jones DL, Molloy BPJ, Clements MA. Three new species and a new combination in *Caladenia* R.Br. (Orchidaceae) from New Zealand. *The Orchadian* 1997; 12 (5): 221-228).
- Caladenia bartlettii*** (*Flora II* called it *C. carnea* var. *bartlettii*. It has been confused with *Caladenia carnea*. See Jones DL, Molloy BPJ, Clements MA. Three new species and a new combination in *Caladenia* R.Br. (Orchidaceae) from New Zealand. *The Orchadian* 1997; 12 (5): 221-228).
- Caladenia chlorostyla*** (was *C.* "green column". See Jones DL, Molloy BPJ, Clements MA. Three new species and a new combination in *Caladenia* R.Br. (Orchidaceae) from New Zealand. *The Orchadian* 1997; 12 (5): 221-228).
- Caladenia lyallii*** (there may be two species — see Gibbs M. *NZNOG Journal* 1990; 35: 19, and *The NZ orchids: natural history and cultivation* t20)
- Caladenia* aff. *lyallii*** (see above)
- Caladenia minor*** (*Flora II* called it *C. carnea* var. *minor*)
- Caladenia nothofageti*** (was tagged *C.* "white form". See Jones DL, Molloy BPJ, Clements MA. Three new species and a new combination in *Caladenia* R.Br. (Orchidaceae) from New Zealand. *The Orchadian* 1997; 12 (5): 221-228).
- Caladenia "viridis"*** (an unnamed small green early-flowering *Caladenia* from the Far North, described in HB Matthews's unpublished manuscript)
- Caleana minor*** (occasional Australian vagrant, not a *Paracaleana*)
- Calochilus herbaceus*** (Australian vagrant, in *Flora II* as *C. campestris*. See McCrae D. *NZNOG Newsletter* 1987. 24: 9)
- Calochilus paludosus***
- Calochilus robertsonii***
- Chiloglottis cornuta***
- Chiloglottis formicifera*** (occasional Australian vagrant, not seen in NZ for fifty years)
- Chiloglottis valida*** (Australian vagrant, not in *Flora II*; has been included by mistake in *C. gunnii*, but described as a new species by Jones D.L. *Aust. Orch. Res.* 2. 1991. 43-4, 154)
- Corybas acuminatus*** (called *C. rivularis* in *Flora II*. See Clements M. and Hatch E.D. *NZ Journal of Botany* 1985. 23 (3): 491)

Corybas carsei (*Flora II* included it in *C. unguiculatus*. See Irwin J.B. *NZNOG Newsletter* 1987. 23: 8. May be identical with the Australian *C. fordhamii*)

Corybas cheesemanii (*Flora II* included it in *C. aconitiflorus*. See Clarkson B.D. *Vegetation of Egmont National Park* 1986. p87)

Corybas cryptanthus

Corybas dienemus (appears to be similar to *Corybas orbiculatus*, though has a distinct petiole; reported only from Macquarie Island; see Jones D. *Flora of Australia* 1993; 50: 572)

Corybas iridescens (new name; was included by Irwin in the *C. aff. rivularis* group as *C. "A"*; see Molloy BPJ & Irwin JB. *NZJ Bot* 1996; 34: 1-10).

Corybas macranthus

Corybas oblongus (are there two forms? see Goodger R. *NZNOG Journal* 1996: 61).

Corybas orbiculatus (this is not the species named *C. orbiculatus* in *Flora II*, but is the species that has been known as *C. "short tepals"*; see Molloy B, *NZNOG Journal* 1994. 51: 12-14).

Corybas papa (new name; was included by Irwin in the *C. aff. rivularis* group as *C. "Mt Messenger"* — see Molloy BPJ & Irwin JB. *NZJ Bot* 1996; 34: 1-10)

Corybas rivularis (this was Cunningham's original name and it is now applied to the plant previously tagged as *C. "Kerikeri"* — see Molloy BPJ & Irwin JB. *NZJ Bot* 1996; 34: 1-10)

Corybas aff. rivularis (as Irwin pointed out in 1989, a range of species 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"*; others in the *C. rivularis* complex include *C. "Kaimai"*, *C. "rest area"* and *C. "whiskers"*, [Irwin J.B. *NZNOG Newsletter* 1989. 32: 1-4. *NZNOG Journal* 1993. 47: 7-9. *NZNOG Journal* 1995. 55: 22-24]. See also *C. rivularis*, *C. orbiculatus*, *C. papa* and

C. iridescens)

Corybas rotundifolius (was included in *C. unguiculatus* and later tagged *C. aff. unguiculatus* — see Hatch E.D. *NZNOG Journal* 1991. 38: 4-5)

Corybas trilobus (there is clearly more than one species currently included in this name — e.g. below)

Corybas aff. trilobus (a number of *Corybas* with trilobate leaves show differences in flowering time, size, and sometimes structure [Gibbs M. *NZNOG Newsl.* 1989; 29: 2-7]. Variants in the *Corybas trilobus* complex include *C. "Trotters"* [St George IM. *NZNOG Newsl.* 1988; 28: 10-13], *C. "Rimutaka"* [*NZNOG Journal* 1996; 58: 8-9], some possible *C. trilobus* hybrids with species having long dorsal sepals [*ibid.* *NZNOGJ* 1996; 58: 4-7], *C. "round leaf"* and others)

Corybas "Kaimai" (undescribed — see *C. aff. rivularis*)

Corybas "quadriplex" (undescribed: a large, double-flowered, possibly 4n mutant of *Corybas oblongus*)

Corybas "rest area" (undescribed — see *C. aff. rivularis*)

Corybas "Rimutaka" (undescribed — see *C. aff. trilobus*)

Corybas "round leaf" (undescribed — see *C. aff. trilobus*)

Corybas "Trotters" (undescribed — see *C. aff. trilobus*)

Corybas "Waiouru" (described under *C. macranthus* as var. *longipetalus* — see *C. aff. rivularis*)

Corybas "whiskers" (undescribed — see *C. aff. rivularis*)

Cryptostylis subulata (Australian vagrant, now well established in Northland; not listed in *Flora II*. See Graham D.K.F. *NZ Journal of Botany* 1976. 14: 275)

Cyrtostylis oblonga (*Flora II* called it *Acianthus reniformis* var. *oblonga*. See Jones D. and Clements M. *Lindleyana* 1987. 2 [3]: 156)

Cyrtostylis reniformis (*Flora II* called it *Acianthus reniformis* var. *reniformis*. See Jones and Clements *ibid*)

Danhatchia australis (was *Yoania australis*. See Garay and Christenson. *Orchadian* 1995; 11[10]: 469-471)

Drymoanthus adversus

Drymoanthus flavus (see Molloy & St George. *NZJBOT* 1994; 32: 415-421)

Earina autumnalis

Earina mucronata (includes the robust, late-flowering coastal form, "*E. aestivalis*")

Gastrodia cunninghamii

Gastrodia minor

Gastrodia aff. sesamoides (now regarded as different from the Australian species *Gastrodia sesamoides* — see Ogle C. *NZNOG Journal* 1994. 51: 9. There seems to be variation in the tuberculate-ness of the flowers even among NZ plants)

Gastrodia "long column" (*Flora II* included it in *G. sesamoides*. See Wilson H. *Field Guide* — *Stewart Island plants* 1982. p294)

Genoplesium nudum (was *Prasophyllum nudum* — see Hatch E.D. *NZNOG Newsl.* 1991. 37: 18).

Genoplesium pumilum (was *Prasophyllum pumilum* — see Hatch E.D. *NZNOG Newsl.* 1991. 37: 18)

Lyperanthus antarcticus (probably not a *Lyperanthus*)

Microtis arenaria (was included in *Microtis unifolia* — see St George IM. *NZNOGJ* 1996. 58: 16-18)

Microtis oligantha

Microtis parviflora (true *M. parviflora* may occur in NZ — see St George IM. *NZNOGJ* 1996. 62. 5-6)

Microtis aff. parviflora (see St George IM. *NZNOGJ* 1996. 62. 5-6)

Microtis rara (was included in *Microtis unifolia* — see St George IM. *NZNOGJ* 1996. 58: 16-18)

Microtis unifolia

Microtis aff. unifolia (see St George IM. *NZNOGJ* 1996. 62. 5-6 — there may be more than one *Microtis* similar to true *M. unifolia*)

Orthoceras novae-zeelandiae (was re-

garded as identical with *O. strictum*, but see Clements M.A. *Australian orchid res.* 1989; 1: 100. But are both species in NZ? — see Goodger R. *NZNOG Journal* 1996; 60).

Prasophyllum colensoi

Prasophyllum aff. patens (was regarded as identical with the Australian *P. patens*, but now thought to be an undescribed New Zealand species)

Pterostylis alobula

Pterostylis areolata

Pterostylis australis

Pterostylis banksii

Pterostylis brumalis

Pterostylis cardiostigma (not listed in *Flora II*. See Cooper D. *NZ Journal of Botany* 1983. 21 (1): 97)

Pterostylis aff. cycnocephala (was regarded as identical with the Australian *P. cycnocephala*, but now thought to be an undescribed New Zealand species)

Pterostylis foliata

Pterostylis graminea

Pterostylis aff. graminea (undescribed)

Pterostylis humilis

Pterostylis irsoniana

Pterostylis "linearis" (treated by Hatch in 1949 as a variety of *P. furcata*, and in *Flora II* under *P. montana*— now considered by many to be a valid species)

Pterostylis micromega (has been confused with *P. furcata*, but now regarded as distinct)

Pterostylis montana

Pterostylis aff. montana (includes several undescribed species; for details of one of the species currently tagged "*aff. montana*", see St George I.M. *NZNOG Newsletter* 1988. 25: 12-14)

Pterostylis nutans (occasional Australian vagrant, recently rediscovered near Taupo — see St George IM. *NZNOGJ* 1995. 57: 38-39)

Pterostylis oliveri

Pterostylis patens (was included in *P. banksii*, now regarded as distinct)

Pterostylis puberula (was called *P. nana*, and has been referred to as *P. aff. nana*)

- Pterostylis rubricaulis*** (treated as a variety of *P. montana* by Hatch and as a variety of *P. graminea* in *Flora II*, now considered a valid species)
- Pterostylis tasmanica*** (in *Flora II* as *P. barbata*; has also been confused with *P. plumosa*. See Molloy B. *NZNOG Journal* 51: 14-16)
- Pterostylis tristis*** (*Flora II* called it *P. mutica*. See Molloy B. *Proc. 2nd Int. Orch. Conf.* 1985. p2)
- Pterostylis trullifolia***
- Pterostylis venosa***
- Pterostylis* "Catlins"** (undescribed; illustrated in St George IM. *Wild orchids in the far south of NZ*)
- Pterostylis* "Erua"** (undescribed; see Irwin JB. *NZNOG Journal* 1993; 45: 15-17)
- Spiranthes sinensis***
- Thelymitra aemula*** (see Molloy B.P.J. and Hatch E.D. *NZNOG Journal* 1990. 35: 20-24)
- Thelymitra carnea***
- Thelymitra circumsepta*** (has been named *T. formosa*)
- Thelymitra cyanea*** (was confused in *Flora II* with the Australian *T. venosa*. There appear to be two forms — see Beard C. *NZNOG Journal* 1996; 59: 29).
- Thelymitra hatchii***
- Thelymitra intermedia*** (regarded as identical with *Thelymitra pauciflora*, a name which however contains many forms - see below. Irwin and St George [*NZNOG Journal* 1996; 58: 25] regard the plant tagged *T. "pseudopauciflora"* as the rightful inheritor of this name)
- Thelymitra aff. ixiooides*** (differs from the Australian *T. ixiooides*; the NZ species is self-pollinating, and the Australian insect-pollinated)
- Thelymitra longifolia***
- Thelymitra aff. longifolia*** (name given to probably several undescribed species that appear to be insect-pollinated, including *T. "Ahipara"*)
- Thelymitra malvina*** (not listed in *Flora II*. See Clements M.A. *Australian orchid research* 1991. 1: 141)
- Thelymitra matthewsii*** (occasional Australian vagrant — rediscovered in the Far North)
- Thelymitra nervosa*** (has been named *T. decora*)
- Thelymitra aff. nuda***: several plants bearing flowers with a striking resemblance to those of this Australian species were found in the Far North in 1996 (see St George IM. *NZNOG Journal* 1996. 62)
- Thelymitra pauciflora***
- Thelymitra aff. pauciflora*** (perhaps several species including *T. intermedia* [*T. "pseudopauciflora"*] and those tagged as *T. "darkie"*, *T. "rough leaf"*).
- Thelymitra pulchella*** (there may be other plants with affinities to *T. pulchella*)
- Thelymitra sanscilia*** (Moore regarded this as an aberrant form of *T. pauciflora* — see *Flora II* p130 — others now regard it as a distinct species)
- Thelymitra tholiformis*** (wrongly considered to be *T. intermedia* by Moore, and included in *T. aemula* by Hatch: but see Molloy B.P.J. and Hatch E.D. *NZNOG Journal* 1990. 35: 20-24)
- Thelymitra "Ahipara"*** (undescribed bright pink *T. aff. longifolia*)
- Thelymitra "comet"*** is the tagname for a large, late-flowering *Thelymitra* from the Kaweka range.
- Thelymitra "Whakapapa"*** (undescribed — see *NZNOG Journal* 1995; 54: 7-8)
- Thelymitra "darkie"*** (undescribed — see *T. aff. pauciflora*)
- Thelymitra "rough leaf"*** (undescribed — see *T. aff. pauciflora*)
- Thelymitra x dentata*** (a sterile hybrid *T. pauciflora x pulchella*)
- Winika cunninghamii*** (was *Dendrobium cunninghamii*. See Clements MA, Jones DL, Molloy BPJ. *Winika*, a new monotypic genus for the New Zealand orchid previously known as *Dendrobium cunninghamii* Lindl. *The Orchadian* 1997; 12 (5): 214-219).

Original papers

The New Zealand genera - II: *Thelymitra*

by E.D. Hatch, Laingholm. [It is 53 years since Dan Hatch wrote his first orchid paper — Ed.]

Thelymitra J.R. & G. Forster *Char-act. Gen. Plant.* p98 t49 (1776)

Name = woman's headband, the elaborate column-wings.

Genotype — *Th. longifolia* J.R. & G. Forster *ibid.*

As in *Pterostylis*, the number of species is uncertain as new taxa are still being described. The genus is mainly Australian, extending to Tasmania, New Caledonia, Java, Timor, the Philippines and New Zealand, where 16 species are here accepted, as well as several 'tag named' forms. The New Zealand species are all either Australian, or derived from Australian species, and were probably wind-borne originally across the Tasman. They have a greater latitudinal range than *Pterostylis*, ranging down into the sub-antarctic.

This genus was first found in New Zealand. In the Solander Ms *Th. longifolia* is listed as *Serapias regularis* with the following note -

'in flat grassy areas and besides rotten tree trunks in the vicinity of Tolaga Bay (23-29 October 1769) and Opuragi [Whitianga] (3-15 November 1769): and in Australia beside the Endeavour River.'

(The Australian plant was possibly *Th. aristata* — *Th. longifolia* is almost certainly a New Zealand endemic).

M.E. Hoare - *Resolution Journal of J.R. Forster* 3: p422 (1982) — Queen Charlotte's Sound November 13 1773

'We returned to dinner, having found a

new Orch [Microtis unifolia], and another new plant nearly related to the class of Orches, but of a very singular structure and making absolutely a new genus'.

George Forster, *Prodr.* n311 p59 (1786), in spite of having already described (with his father) *Th. longifolia*, used the name *Serapias regularis* with the note —

'I was persuaded by the late Dr Solander to reinstate this'

Deciduous herbs with a single linear leaf, ± erect and channelled; more rarely terete; or expanded; or broad and flat. Stem bracts varying with species, from small to foliose. The flowers may be few, or many in a terminal raceme and are unusual among orchids in that the sepals and petals are ± alike, the labellum being petaloid. Classification therefore depends on the minor variations of the column and its appendages.

The flowers are adapted for insect pollination, but in New Zealand are more often self-fertile and seldom open. This is due to the fact the expanded flower provides no protection for the anther in our normally wet climate. In the far north however, there occur a group of plants allied to *Th. longifolia*, which show signs of insect pollination. The flowers are scented, all in the raceme open together, and remain open until they wilt or are pollinated.

Species occurring in Australia

- 1: *carnea*
- 2: *circumsepta*
- 3: *cyanea*

- 4: *ixioides* (New Zealand form self-fertile - Australian form insect-pollinated)
 5: *malvina*
 6: *matthewsii*
 7: *nervosa*
 8: *pauciflora* s.l. (catch-all !)
 9: *pulchella*

Endemic species derived from Australian forms

- 10: *aemula*

- 11: *x dentata*
 12: *hatchii*
 13: *longifolia* (self-fertile)
 14: *longifolia* (insect pollinated)
 15: 'rough leaf' (de Lange 1997)
 16: *sanscilia*
 17: *tholiformis*

Reference

de Lange P.J. Orchids... of the Three Kings Islands... *Tane* 36: p1 (1997)

Research proposal

Angela Abernethy writes from Christchurch —

I would like to thank the people who sent me orchid seeds; this has been very helpful in trial testing of seed viability. I just wish the seed would take up the stains. My research topic has changed to ecology. Below is the outline of my proposal.

Title

The role of light availability on terrestrial native orchids in exotic plantations

Introduction

The study will examine the light environment and its effects on orchid populations, with the aim of establishing a relationship between the understorey light quality and quantity, and the distribution of different orchid genera under exotic timber plantations. These timber plantations offer a suitable habitat for New Zealand native terrestrial orchids, due to the lack of understorey competitors and rich diversity of mycorrhizal fungi populations in the soil. Forestry development in New Zealand has increased the potential habitat area of these plants. However, the long-term stability of orchid populations in such ecosystems cannot be maintained with current forestry practices. Areas such as Iwitahi, a native orchid re-

serve under a *Pinus nigra* stand, require management plans to maintain the orchid diversity. Understorey planting of canopy trees is now necessary as the original stand is prone to wind throw. Canopy gaps such as these allow other understorey plants to become established and out-compete the orchids. It is necessary to know what future canopy trees should be planted and at what densities to keep a similar light environment in the understorey.

Hypotheses

- 1) The distributions of orchid species are influenced by light availability within a plantation ecosystem.
- 2) The spacial distribution and abundance of orchid populations within plantations are affected by changes in light availability.
- 3) The morphology of orchid plants are affected when light conditions are manipulated.
- 4) The light requirements of orchids are determined by their metabolism, C3 versus C4.

This work aims to examine the effects of light conditions on orchid populations and individuals, as well as metabolism. I intend

to relate plant responses and identified light requirements to the natural orchid populations in plantations. I intend to examine whether the physical response of an individual can be scaled up to the response of a natural population.

Methods

- 1) Observation of existing populations will be carried under a range of light conditions and plantation types.
- 2) Light availability on forest floor will be manipulated by altering canopy density.
- 3) Plants will be subjected to a range of light densities under controlled conditions.
- 4) Plant metabolism will be analysed and determined by microscopy and chemical analysis.

Native orchids have the ability to occupy a range of habitats. They can quickly colonise disturbed sites as well as become established and compete with other plants in more stable situations (Johns and Molloy 1983). Events such as canopy loss or walking track development provide opportunities for the orchid populations to spread and multiply (Johns and Molloy 1983). Terrestrial orchids can be found in most natural forest communities except for the darkest and densest stands of understorey (Moore and Edgar 1970). Orchid populations are now also found in exotic timber plantations. The main reason for this shift in habitat may be the understorey structure of plantations, which offers favourable light conditions and/or a diverse range of mycorrhizal fungi within the soil (Molloy 1992b).

Following the discovery of diverse orchid populations under exotic timber plantations in the Kaingaroa State Forest by Ken Scott in 1985, the Iwitahi Native Orchid Reserve was established. The plantation consists of *Pinus nigra* which was planted in the 1930s,

which has been affected by the fungus *Dothistroma pini* resulting in extensive needle loss (Gibbs 1988). The high open canopy and thick needle mulch provides an ideal environment for terrestrial orchids. The distributions of orchids in the reserve suggests that Iwitahi is a natural trap for orchid seeds. Surveys of the area show that some species are abundant with *Chiloglottis cornuta* and *Adenochilus gracilis* having an average density of 50-100 plants per square metre (Gibbs 1988). Another orchid population is known to occur at Hanmer State Forest (Molloy 1992b). There are mature blocks of European Larch (*Larix decidua*), *Pinus nigra*, *Pinus ponderosa* and Norway Spruce (*Picea abies*) in this region (pers. comm. Kwant 1997). Molloy (1992b) suggests that the light conditions within these forestry blocks plays the major role in determining the local distributions of orchids. Molloy also suggests that the thinning of these stands is making the habitat less suitable for orchid populations.

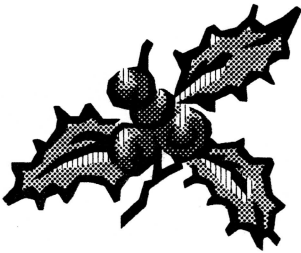
The quality and quantity of light which reaches the forest floor is determined by the canopy structure. Modifications to the canopy can increase available light, having a major effect on the understorey plants (Denslow 1985). The effect of canopy structure on the light environment within exotic plantations has been studied overseas (Johansson, 1988; Vales and Bunnell, 1987; Zavitkovski, 1981; Gay *et al.*, 1970). However, only a few studies involving New Zealand forests, usually podocarp, have been carried out with respect to understorey light environments. McDonald and Norton (1992) examined the light environments within a New Zealand podocarp rainforest. Sunflecks were found to have a profound effect on ecological processes in the forest understorey; flecks contribute more than 50% of the total daily photosynthetically

active photon flux density (PPFD). They also suggest that the occurrence of light on the forest floor was a contributing factor in the species distribution within the forest ecosystem.

The area in which a plant can survive under a forest canopy is determined by the available light and their metabolic pathways. Plants with C4 pathways are usually found in open, high-light environments and possess high photosynthetic capacities which make efficient use of high PPFDs (Pearcy 1983). C3 plants, are more suited to temperate climates, such as New Zealand and are often found in shaded environments. Yet all recorded orchid metabolism has been either C4 or CAM (Arditti 1992). There is a lack of published studies examining the relationship between plant metabolism and the light conditions under which orchid populations exists.

To date most experimental work undertaken involving New Zealand orchids has looked at mycorrhizal associations (Campbell 1962) and in vitro seed germination (Cohen 1984). The majority of studies involving orchids are taxonomy-based, with most of the input coming from E.D. Hatch, B.J.P. Molloy, I. St George and D. Cooper. There have only been two studies involving the monitoring of a population over time, *Thelymitra* "Ahipara" which was relocated by DoC (de Lange 1981) and the effect of fire on *Corybas carsei*, for future management plans of the Whangamarino wetland (Clarkson et al. 1993).

Information gathered will provide an understanding of the importance of light regimes on terrestrial orchid populations. This will aid in the conservation of orchid populations in exotic timber plantations, such as the Iwitahi orchid reserve.



Merry Christmas

The editor takes this opportunity to wish all members and their families a relaxed, happy and loving festive season.

He suggests that the *Field guide to the NZ orchids*, or *The NZ orchids: natural history and cultivation*, at \$8 each, would make ideal and affordable presents for family and friends and would help spread the Christmas message of conservation.

The development of auricles in *Corybas*

by Bruce Irwin, Tauranga

Have you ever wondered, as I have, just what is the purpose of the two ear-like openings (auricles) at the base of the labellum of most *Corybas* species? Recently I gained more understanding of the way these auricles are formed but the reason for their existence is still a mystery to me.

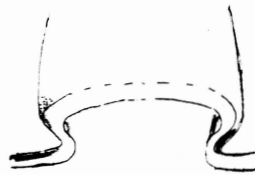
Why doesn't somebody ask the purpose of the swollen petal bases, which are so intimately associated with the auricles? I think I could answer that question. The petal bases prevent access by tiny insects through the auricles to the column cavity until the bud begins to open. Why is it important to seal off the anther and stigma during the bud stage? That question I cannot answer.

It is possible that the auricles once played an important part in pollination of ancestral *Corybas* species. Perhaps that important function has gradually diminished, leaving the auricles as useless to *Corybas* species as our obsolete appendix is to us. For reasons best known to itself, each *Corybas* bud still follows a precisely orchestrated routine culminating in perfect, exquisitely shaped flowers. I'll try to explain that routine.

In late August I received several buds of *Corybas papa* which gave me the opportunity to study the sequence from bud to mature flower. As you will see in the accompanying illustration (opposite page), the unopened buds resemble insect pupae rather than flowers. The rather wide dorsal sepal clamps over the infolded margins of the labellum, sealing off access to the repro-

ductive structures. At this stage the auricles are only partly formed, mere shallow bulges, pressing down into the cupped petal bases below them. Premature access to the column cavity via the aperture of the auricle is thus prevented.

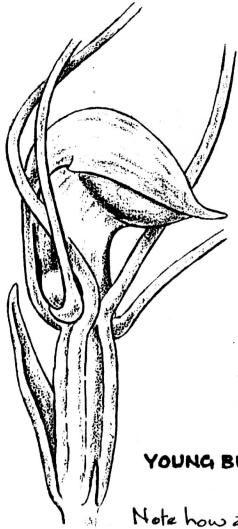
Further expansion of the fast-growing area of tissue from which the auricles are formed forces the labellum margins to fold over on themselves. ↓



Eventually the swelling auricles spill out, over the cupped, too small petal bases, at the same time tipping them sideways and pinning them against the top of the ovary. Simultaneously tiny openings of the auricles come into view, swell and rapidly assume their characteristic tubular shape. At the same time the lateral margins of the labellum break free from the dorsal sepal, then flare outward to allow access to the column via the "front door".

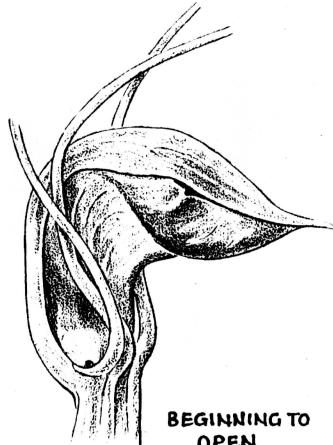
What internal computer ensures that these sequences do not get out of step and result in malformed flowers? DNA you say? I guess you are right, but *how* does it work its magic?

YOUNG BUD TO MATURE FLOWER - Corybas papa



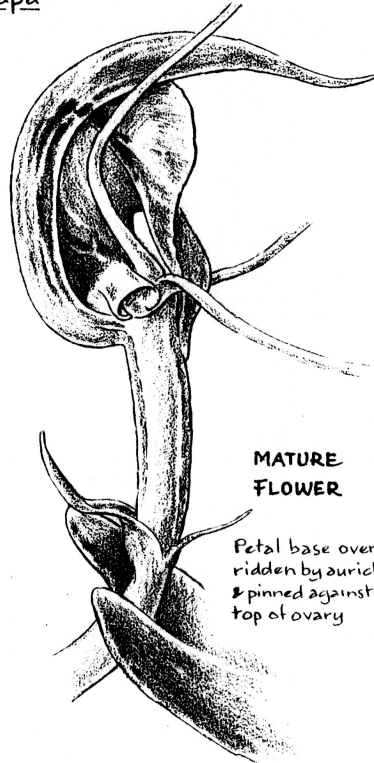
YOUNG BUD

Note how auricle is snugly cupped by expanded petal base effectively blocking access to column



BEGINNING TO OPEN

Labellum starting to gape prior to folding downward & flaring. Auricle beginning to burst from enfolding petal base. Aperture just visible.



MATURE FLOWER

Petal base overridden by auricle & pinned against top of ovary

Petalochilus again?

by Bruce Irwin, Tauranga

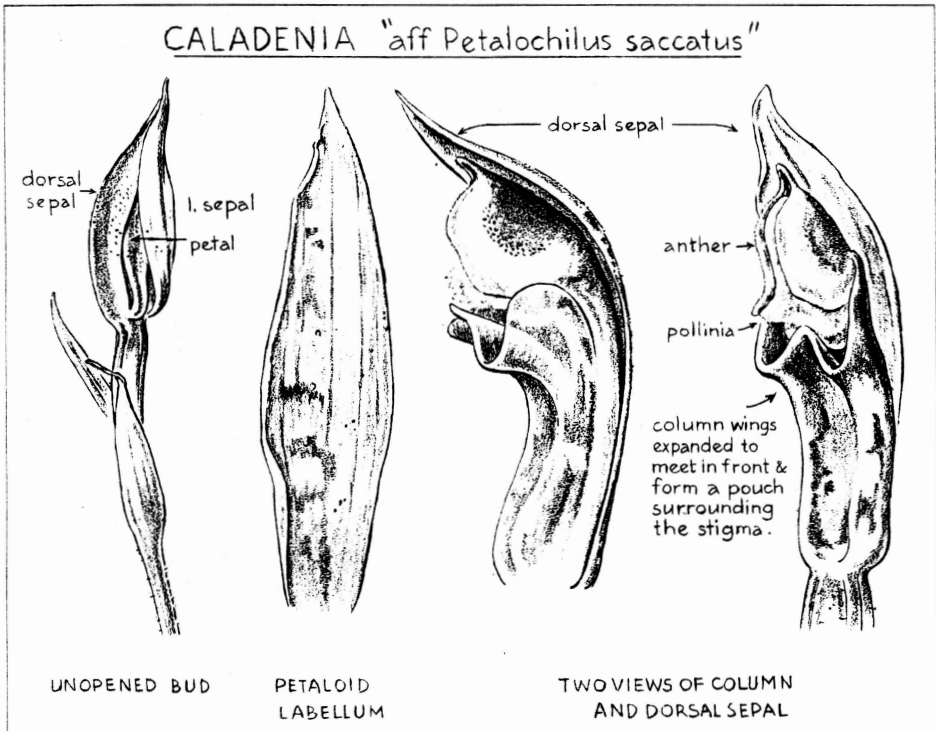
In 1924 Dr R Rogers described the genus *Petalochilus* and the species *P. caliciformis* and *P. saccatus* from specimens that were flowering in October and were sent from Kaitaia by HB Matthews (see *Historical series* in this issue).

Lucy Moore wrote (*Flora II* p110, 1970) "... an occasional labellum is not wholly petal-like, having a partly formed callus or a wrinkled margin reminiscent of the mid-lobe. Moreover in Herb. Carse specimens of *Caladenia carnea* and *Petalochilus* have been found on one sheet, as if gathered together, and differing only in structures which occur in several genera as sporadic abnormalities. Although in general the

flowers of *Petalochilus* were stated to be remarkably uniform, the temporary local abundance of these peculiarities scarcely seems an adequate basis for a genus of two species."

She was suggesting that *Petalochilus* was a temporary local freak form of *Caladenia bartlettii* with a petaloid labellum.

In October 1997 "road" conditions prevented us from reaching the Surville Cliffs, so we trundled down Te Paki stream and then north to Scott Point. On the steep climb up from the beach we were buffeted by violent winds, and on the plateau above we saw tremendous numbers of *Cyrtostylis* — both *oblongus* and *reniformis* (for what



that is worth) and many *Acianthus sinclairii*. Small numbers of *Thelymitra carnea* plus many *Thelymitra aff. longifolia* on which many leaves were twisted almost as in *Thelymitra matthewsii* but without basal widening, and small numbers of *Caladenia* sp. not flowering.

Some of us stopped at a point where the track dropped several hundred feet and veered left toward the cliff tops. There we found a *Caladenia* just past flowering; this flower though unusual had a more or less normal labellum. There was something sufficiently strange about it to be photographed despite being noticeably faded. I picked up a *Caladenia* bud which had been chewed off by insects. I thought it might give some clue as to the flower pho-

tographed so kept it immersed in water until I had a chance to examine it properly.

I was amazed to find that it seemed to match Rogers' description of *P. saccatus*. His drawing shows a rather more inflated pouch whereas the Scott Point bud had a pouch which was partially folded inward along the centre-line (see drawing). Quite possibly mature flowers would resemble Rogers' drawing very closely. The labellum closely resembled other tepals but did have three or four tiny calli on what would be the midlobe.

It seems strange that a freak *Caladenia* could travel 100km north from Kaitaia/Ahipara and persist for about 80 years. Perhaps it is strictly self-pollinating so virtually clones itself.

Return to Te Paki for *Thelymitra matthewsii*

by Eric Scanlen, Papakura

Fourteen resolute souls descended on Te Paki shearers' quarters on 26 September intent on seeing the highly elusive *T. matthewsii* after teasing late encounters last year with dried up flowers. A side trip to the "Great Falls" (now Rainbow Falls) at Keri Keri had failed to deliver Doug McCrae's find of *Corybas rivularis* sensu stricto, 200m downstream. Increasingly high flooding from land clearance upstream may be the explanation for its demise, going by the high water mark at head height. Send-her-down Hughie and Murphy had conspired to deliver rain and gales but that Friday evening they relented long enough to let a deputation make a quick foray before dark into the handy Shenstone Block. The large leafed *Corybas oblongus* found in seed last year with some double flowers were in full flower, reminiscent of the Taranaki form with purplish veined, overlapping leaves and a rounded trumpet opening to the labellum. (Northern specimens

generally have vertical elliptic openings.) Four closely grouped colonies and a few stragglers thrived under the tea-tree, umbrella fern and *Hakea* on the stream bank. *Caladenia bartlettii* were already in flower by the track so the prospects looked good.

John Dodunski, Ian Rutherford and Bill Liddy donned their wet weather gear and braved Saturday's storm to beard *Pterostylis tasmanica* in its lair at Rubbish Dump Hill (RDH) guided by a year-old mental map which the column transcribed to the back and front of an envelope for them. The rain stopped as the bedraggled pair returned triumphant, meeting the main party heading out for the same purpose and to check out the lone *T. matthewsii* spotted at the same site last year. One shiny dark green seedling appearing to corkscrew out of the infertile weathered volcanics and two like 10mm fish-hooks were all that could be found at the marked site. But the *P. tasmanica* were a delight (after blow drying

with a lens puffer to fluff out their hairy yellow labella) and there were enough to save the photographers from queuing. This *Pterostylis* does not flick its labellum back to force pollinators past the pollinia, as do most of the others. Instead, the wings of the dorsal sepal closing in front may perform this duty (*Journal* 62 p19). The cerise *Caladenia bartlettii* had some open flowers and *Thelymitra carnea* were everywhere in bud — as at all the sites we subsequently visited — but none were ever seen open in six cloudy wet days. Seven *Calochilus herbaceus* were in bud.

Allan Ducker couldn't make it this year so guess who had to rouse the ladies with a 6:30am cuppa tea? But Sunday stayed dry and soon found the whole party in the 4WDs off to the Kauri Grove alias Radar Bush. Bruce Irwin spotted *Pterostylis tasmanica* which was a surprise for this area. Chris Ecroyd took us unerringly to the heavily protected *Metrosideros bartlettii*, the white flowered northern rata. In its shade were *Corybas cheesemanii* with seed capsules still sitting firmly on the tiny leaves. Flowering *Pterostylis rubricaulis* had cameras clicking and a few *P. alobula* with brumalis-like cobra hoods had the expert bamboozled for a bit but the Veed sinus between the lateral sepals clinched their IDs. *P. brumalis* could not be found nor could the *Corybas rivularis* reported by Gardner, Bartlett and Mitchell. *T. matthewsii* reported last year by A. Putnam was sought intensively with guidance from her generously given map but nary a trace could be found. Had more of us seen the seedlings

at RDH, the story may have been different because those 10mm green fish hook seedlings could easily have been missed in the lichen. Bruce Irwin hypothesised that *T. matthewsii* may use so much nutrient in flowering that the plant expires and relies wholly on seedlings for the following season's plants. A 4WD trip to Te Paki trig. was appreciated by all for the view of Spirits Bay, but orchids were sparse at this old radar station site.

Caladenia alata beckoned that afternoon from the 3km long Sod Wall Track and were found aplenty near the sod wall itself. Put a mark on the wall for a target species achieved for once. White ones abounded with not uncommon pink ones between (Fig. 1). Aphids were having a meal but the definitive orange tip to the curled-under midlobe and the "large" (0.5mm), orange, marginal callus at each side of the base of the midlobe, positively identified them.



↑Fig.1: *Caladenia alata*, Sod Wall

Several tall *Genoplesium pumilum* with spikes of just-finished flowers perched atop 300 to 400mm peduncles, were seen in low lying areas at track side, trying to look like rushes in flower. These are quite distinct from the 120mm specimens flowering in March in the Auckland zone.

Target area for Monday was the Surville Cliffs for *Thelymitra matthewsii*, the field party's prime objective. John, Sue Bergerson and Graham Marshall had to leave and it looked as though they wouldn't miss much. Heavy rain had been promised for the afternoon but an early start, complete with DoC and Ngati Kuri permits, was made to no avail. The impossibly narrow track over the peaty uplands meant unavoidable deep wheel ruts and Barry Spring-Rice's 4WD was the first to stop, bellied. Tony McCluggage's winch provided the life-line before the dampened party made a strategic retreat for lunch and regrouping. Joan Fitzgerald's split second reactions and agility belied her white hair as she took a dive in the tea-tree to escape a reversing 4WD skidding off the turning spot. DoC's policy of allowing this access to remain virtually impassable would seem to be self defeating for a Scientific Reserve.

Scott Point at the north end of Ninety Mile Beach was a breeze for the 4WDs via Te Paki Stream. But a half gale greeted us at the top of this exposed, sand-covered headland. *Cyrtostylis reniformis* leaves abounded in the lee of mingimingi (*Leucopogon fasciculata*, was *Cyathodes*) reduced in places to 120mm high cushion plants by the wind. Under the mingi cushions were more robust plants, some few in seed capsule. Less common *Cyrtostylis oblonga*, truly, occurred in similar habitats but were easily confused with the variable leaf forms of *Acianthus sinclairii*. Bruce strayed from the path — as he is wont to do — and located some rare, for this area, *Caladenia* (see p14 of this issue). The column could have wept. Who said that we were headed for Ninety Mile Beach so the

camera gear got left behind? Bruce consulted his archives back at home and suspects that *Petalochilus saccatus*, not reported for 73 years, may be the orchid's identity. This demands attention next year.

Dinner by the whole party at Waitiki Landing's excellent restaurant gave a convivial respite to a chequered field trip.

Five of the group left on Tuesday morning (30 October) but four determined stayers remained to extend the hard-won successes of the last four days. The Shenstone Block succumbed to further scrutiny. Anne Fraser and the column excavated crumb by crumb at the edge of one of the *Corybas oblongus* colonies as permitted by DoC, and excised four root tips with knobs on the ends and one without, for chromosome count by Catherine Beard. The tight knit colony appeared to be all connected by the roots and it is likely that the knobs were next year's flowering parts. Leaf mould and loam was carefully replaced around the exposed roots prior to continuing the scrutiny. A new, north-branching track last year had been quite barren of orchids. This year a robust clump of *Thelymitra intermedia* was there ready to burst into plain blue flower. A new Flail-master track into the *Hakea* once a year would work wonders for the orchids. Two like types of cerise *Caladenia bartlettii* also abounded there, one about 10mm across; the other 16mm (Fig. 2)↓.

The first huge floret (35mm across) of a white *Thelymitra* aff. *longifolia* had its portrait made in 3-D. A 500mm tall *Genoplesium pumilum* with a spike of say 20 spent flowers perching ridiculously on top, was in grass by the top of the waterfall. Three *Gastrodia* aff. *sesamoides* shoots, only 25mm tall, sprouted from a semi-exposed orange "kumara" and *Corybas rotundifolius* was extending its scape, appearing to be only 3 or 4 weeks past flowering. Margaret Menzies turned back a handful of leaf mould on the edge of an old pig routing in *Kunzia ericoides* where *Corybas cryptanthus* scapes had been seen last year and

uncovered a spent, but unmistakable, pink flecked pallid flower. Margaret has a touch with this secretive species.

A meticulous search in likely habitat (north facing bare areas just beginning to stabilise with lichen etc.) at RDH that



evening found lots of footprints but only the previously noted three seedlings of *Thelymitra matthewsii*. These were scrutinised for recognition purposes and just as well.

Tuesday: Spirits Bay found Val Smith and the column photographing two sturdy *Microtis* species (Fig. 3→) standing 300 and 500mm tall out of the buffalo grass and exposed to the northerly gales. Florets were widely spaced at the base of the spikes, lateral sepals were outstretched and canoe shaped, lateral petals were clasping mid-air horizontally but the labellum looked decid-

edly like *M. unifolia*. Bruce commented, re the photo' that it has features from *M. oligantha*, *parviflora* and *unifolia*; perhaps we should call it *Microtis* "oliparlia" (?) The Nikon cable release chose this moment

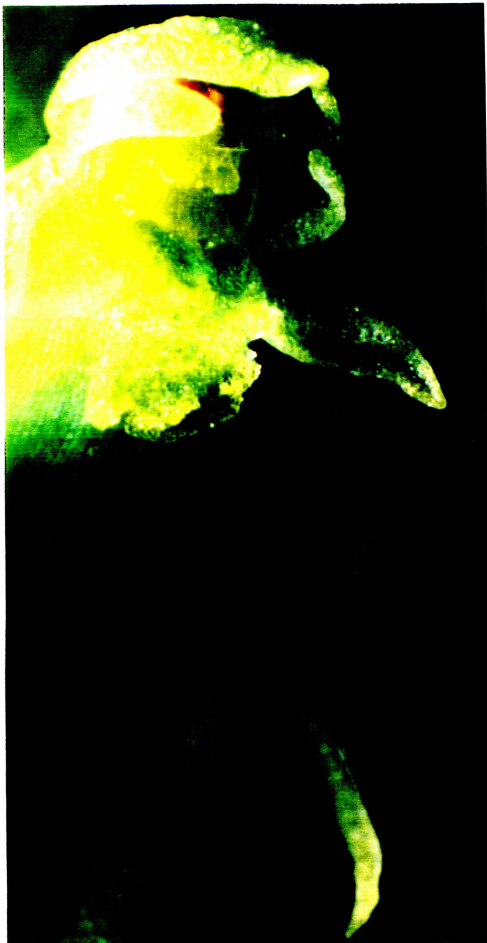
to fail but with Anne stopping the lens down and the column triggering the shutter, some respectable 4.5 x enlargements were taken in a committee effort. This concentration on tiresome *Microtis* was due mainly to the paucity of other orchids in this area. Some *Pterostylis alobula* leaf whorls were found in the tea-tree and firmly closed *Thelymitra carnea* abounded on clay batters of road-fill but there was little else in this reverted pasture.

Some tame common copper butterflies (*Lycaena salustius*) posed statue-like for their portraits. One of us had to put up with a good deal of ribbing when she said she saw one sipping nectar by thrusting its thrombosis in and out of a flower. Back along the

road, the four wasted precious time surveying a reverting bare topped spur of hard white silty clay with only one closed *Thelymitra* species to be seen so they retired for a well earned cuppa at the shearers' quarters.

Anne spoilt the column's plans to peel the mud off its car by proposing a last fling at the Shenstone Block — for *Thelymitra matthewsii*, that is — what were you thinking? Margaret and the column finally agreed just to keep Anne happy. So off we set and found about ten plants, in fruit though, with

two to three times as many seedlings! This was in a previously unstudied area off the main track. When a peduncle was located, one had to stand still, look all around to locate any seedlings then step clear to see



how many one had trodden on. Shenstone reveals her secrets sparingly and painfully; as Margaret found when she prodded her

eye on a stick on the way out after sunset. Val had been on the verge of mobilising Search and Rescue when we returned after dark, faces wreathed with indelible grins. No one could face the spaghetti, poached eggs and cabbage leftovers again but some of the storied fish-n-chips from Waitiki Landing filled the spot nicely.

Homeward bound on Thursday, 2 October. Fellow NOG member Barbara Hoggard of Kaimaumau was her usual unquenchable self at 84. Lake Ohia had actually been a lake quite recently going by the watermark. The just-emerged and rapidly deteriorating kauri stumps from 30,000 years ago held very few *Thelymitra carnea* or *T. malvina* this year and all flowers were closed. Bitter fantasies had them all opening as we turned away saying "thank goodness they've gone."

A "quick look" at Bream Tail Reserve gave a better selection with *Caladenia atradenia* galore. Some plump *Pterostylis graminea* were surrounded by a few fallen reeds like booby traps which ensured the flowers got wriggled, triggering the labellum to flick out of sight in the cavernous galeas. One exasperated photographer, fingers pricked with gorse from pulling seedlings and with muddy knees on his natty trousers, got ticked off by Anne, quite rightly, for airing his frustration. This great little orchid spot has had some 32 species located to date but gorse and *Hakea sericea* are creeping in and could easily overwhelm it if allowed to continue. Callers are asked to take a grubber (and a witness) for the few bigger gorse bushes and leather gloves for the seedlings. The area could be cleared of these vexatious weeds with very little effort. Alas, the grubber holes we did see looked suspiciously as though the native plants had been targeted rather than the weeds.

At least three of us have resolved, contrary to earlier thoughts, to return to Te Paki three weeks earlier next year. The plan is to flag

the Shenstone's *Thelymitra matthewsii* before the main party in order to preserve the fragile habitat as much as possible. Any starters please contact the editor or the writer for inclusion in the main party.

Barry Spring-Rice died suddenly on 17 October. NOG members who met him at Te Paki send sympathy to his family. His contribution with the 4WD was appreciated immensely by the field party and he shared his extensive botanical knowledge with anyone that asked.

A checklist of orchids seen

by EA Fraser, Taumararui

Shenstone Block

Acianthus sinclairii
Caladenia bartlettii (?)
Caladenia chlorostyla
Caladenia sp.
Chiloglottis cornuta
Corybas cheesemanii
Corybas cryptanthus
Corybas oblongus
Corybas rotundifolius (?)
Corybas trilobus
Cyrtostylis oblonga
Cyrtostylis reniformis
Gastrodia aff. *sesamoides*
Genoplesium pumilum
Microtis unifolia
Microtis sp.
Orthoceras novae-zeelandiae
Thelymitra aemula
Thelymitra carnea
Thelymitra aff. *ixioides*
Thelymitra matthewsii
Thelymitra intermedia

Scott Point

Acianthus sinclairii
Caladenia bartlettii
Caladenia sp.
Corybas cheesemanii
Cyrtostylis oblonga
Cyrtostylis reniformis
Microtis aff. *parviflora*
Orthoceras novae-zeelandiae
Thelymitra aemula
Thelymitra carnea
Thelymitra aff. *longifolia*

Rubbish Dump Hill

Acianthus sinclairii
Caladenia bartlettii
Caladenia sp.
Calochilus herbaceus
Corybas cheesemanii
Genoplesium pumilum
Microtis sp.
Orthoceras novae-zeelandiae
Pterostylis tasmanica
Thelymitra aemula
Thelymitra carnea
Thelymitra aff. *longifolia*
Thelymitra longifolia
Thelymitra matthewsii
Thelymitra aff. *nuda*

Sod-wall track

Caladenia alata
Calochilus herbaceus
Genoplesium pumilum
Microtis sp.
Orthoceras novae-zeelandiae
Pterostylis trullifolia
Thelymitra aemula (?)
Thelymitra carnea
Thelymitra sp.

Spirits Bay

Microtis sp. (? *rara*)
Microtis parviflora (?)
Orthoceras novae-zeelandiae
Pterostylis alobula
Thelymitra carnea
Thelymitra aff. *longifolia*
Thelymitra sp.

Kauri Bush

Acianthus sinclairii
Bulbophyllum pygmaeum
Caladenia bartlettii
Corybas acuminatus
Corybas cheesemanii
Corybas oblongus

Cyrtostylis oblonga
Drymoanthus adversus
Pterostylis alobula
Pterostylis banksii
Pterostylis brumalis
Pterostylis rubricaulis
Pterostylis tasmanica
Pterostylis trullifolia
Thelymitra aemula
Thelymitra carnea
Winika cunninghamii

Te Paki trig.

Acianthus sinclairii
Microtis unifolia (?)
Pterostylis alobula
Pterostylis banksii
Pterostylis trullifolia
Pterostylis sp.
Thelymitra longifolia

Money tree

Pterostylis trullifolia
Thelymitra aff. *longifolia*

Lake Ohia

Microtis sp.
Thelymitra carnea
Thelymitra malvina
Thelymitra sp.

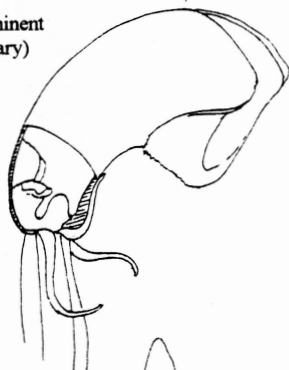
Bream Tail Reserve

Acianthus sinclairii
Bulbophyllum pygmaeum
Caladenia atradenia
Caladenia chlorostyla
Corybas trilobus
Earina mucronata
Pterostylis alobula
Pterostylis graminea
Pterostylis trullifolia
Thelymitra pauciflora (?)
Thelymitra aff. *longifolia*
Thelymitra sp. x 2

Notes

The petals of *Corybas cheesemanii*, dealt with in the last issue by Eric Scanlen and Bruce Irwin, have troubled me. I remembered them differently, but was too late to find flowers in the Rimutakas in mid July, so resolved to look again next year. The I found some old drawings of Rimutaka plants I had done on 18 July 1992. The upper sketch shows the column through a window cut from the labellum. The lower sketch shows the column, petals and lateral sepals with the labellum entirely removed.

Note the prominent "boss" (?nectary) in front of the vertical column with its upward-facing stigma.



The stigma is nicely placed to catch pollen falling from above. This species is self-pollinating. What's the point of having a nectary then?



Corybas cheesemanii

Dan Hatch reminded us (w.r.t. the column-arms of *Thelymitra cyanea* and *T. venosa*) that he had written in 1952 (*TRSNZ* 79: 391), "In *cyanea* the (column-arm) tips are distinctly bifid in bud, but one point grows faster than the other, causing the mature lobes to be irregularly bifid, or if the flower is not immediately pollinated, almost entirely acuminate. In *venosa* the tips are only very slightly bifid in bud, and by the same process of lopsided development, almost invariably acuminate at maturity." Dan says, "This character cannot therefore be used to distinguish species".

David McConachie wrote (19 August), "I found a clump of *Drymoanthus flavus* at Farewell Spit growing in a copse of kanuka. It was the only one I found in the area.... The best area for orchids was the track to Appletree Bay in Abel Tasman National Park. There I found at least three different *Thelymitras* in leaf (possibly *carnea*, *longifolia* and others). There was a lot of *Microtis* in leaf and two *Orthoceras* plants on a bank. *Cyrtostylis reniformis* was in bud, and *Acianthus sinclairii* in flower and seedpod. A most impressive colony of *Pterostylis alobula* was growing around and on a rotting branch beside the track.

"On 2 August Don Isles and I organised the first outing of a native orchid interest group. This group arose from interest expressed by members of the Manawatu Orchid Society. We intend to visit Kahutarewa Rd and Wharite Peak regularly to track the development of plants, as well as visits to other reserves to see what's there. Eventually we hope to organise trips to other areas like Taranaki."

Morley West wrote, "I was concerned about an article published in the September issue .

"I realise that you as editor of the NZNOG Journal do not necessarily reflect the opinion of an American article retrieved from the Internet (p21 "Future trends in hybridising"). However I do consider that through this journal one has the opportunity to be more pro-active.

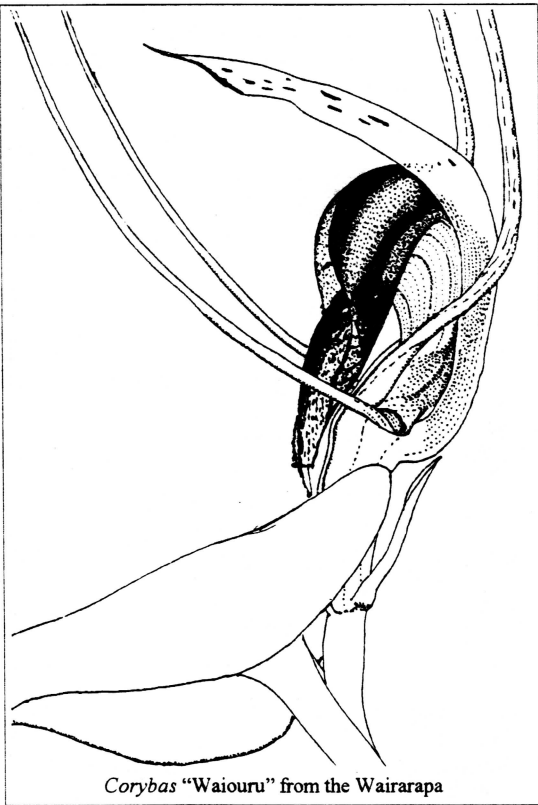
"The orchid industry has historically gained much from the publication of Mendelian genetic principles and practice. In more recent times **modern biotechnologies** such as tissue culture techniques have continued to offer much. Now there are technologies such as DNA enzymatic splicing, DNA fingerprinting and nucleic acid bombardment that enable an acceleration in the rate of production of new orchid varieties as well as the understanding of the phylogenetic relationships, species colonisation and biogeography and taxonomy of our native orchid species.

"Let us through our NZNOG Journal educate members and other readers in an informative, objective and rational manner rather than (perhaps unintentionally in the case of the Internet article referred to) portray that genetic engineering, and maybe other modern biotechnologies, are all bad in producing "man-made monsters". Such a message as this is far from reality and the truth.

"I challenge you as editor to gather and print in coming issues of the NZNOG Journal articles on the place of modern biotechnologies applicable for those interested in orchids."

Love to. Trouble is, only the zealous and paranoid tend to write with such feeling as the author of the Internet article, so it's hard for an amateur such as myself to find a balancing view - Ed.

Flowering specimens of *Corybas* "Waiouru" were sent by Garry Foster of DoC in Masterton on 8 September. They were from a point near High Maunganui south of Lake Wairarapa; this is the southernmost record for the taxon. ↓



Corybas "Waiouru" from the Wairarapa

A hundred years ago James Adams BA read his "On the botany of **Hikurangi Mountain**" before the Auckland Institute. He noted (*Trans. & Proc. N.Z.I.* 1897; 30: 419), that on "The east side of the hill, looking towards Tologa (*sic*) and Gisborne... the one abundant orchid was *Prasophyllum nudum*. I also saw *Pterostylis banksii* and *P. puberula*."

Hmmm. Could be worth a look - Ed.

I was interested to find *Corybas* "Trotters" on the Putangirua Pinnacles track near Cape Palliser on 13 October. This large (the galea is at least 1cm across and as high), dark maroon variant of *Corybas trilobus* has upright lateral sepals about 8cm long and horizontal petals about 1.5cm. The flower is always below the petiolate leaf, the long lateral sepals overtopping the leaf and betraying the presence of the flower beneath. It was in full flower in mid-October (it flowers in October at Trotters Gorge in Otago too). It differs from typical *C. trilobus* which is much smaller, paler, flowers in July-August, and has lateral sepals less than twice as long as its petals.

Corybas macranthus nearby was in bud, but what must have been a hybrid between the two taxa was fully open: it had a *C. macranthus* leaf and general flower shape, except that the margins of the labelum were inturned, and the dorsal sepal lacked the sharp point of *C. macranthus*, having instead the rounded, notched tip of *C. "Trotters"*.

Bruce Irwin wrote (27 August), "Eric Scanlen talked me into a day at **Bridal Veil Falls** near Raglan on 18 August. That seemed a good idea so I asked when. Eric's reply was 'right now'. I scribbled down a Cambridge address where I was to meet him. It was then that the foreign matter hit the fan. A series of circumstances caused me to leave

home already half an hour behind time. Half way to Cambridge I realised that Eric's very involved directions as to where to find him were still sitting alongside the phone. Amazingly I spotted Eric's car only about twenty minutes after reaching Cambridge. By the time Eric had me pressing a tripod horizontally against a vigorously dripping vertical bank, my temperature had probably dropped back to about 104°F. So the water streaming over my face and down the back of my neck didn't actually turn to steam. As Eric kept saying, 'You can't hurry the creation of a work of art'. Those few *Corybas* 'Waiouru' received Eric's full attention for what must have been close to 10 minutes.

He reproached me for trying to hurry his artistic endeavours. A slightly sore throat that night must have meant a cold had been brewing for a day or two; I spent the next week nursing the dirtiest head cold I've had in many years." *The image of Eric in attendance while the Bridal Veil tricked over Bruce's head and shoulders will live with me always* - Ed.



C. "Trotters" from southern Wairarapa

M.C. Gudex listed twelve orchids in his paper "The native flora of the **Bridal Veil Falls Scenic Reserve**"

(*Trans.R.S.N.Z.* 1962; *Botany* 1 (28): 323-6): they were *Dendrobium cunninghamii*, *Bulbophyllum pygmaeum*, *Earina mucronata*, *E. autumnalis*, *Drymoanthus ad-*

versus, *Thelymitra longifolia*, *Acianthus sinclairii*, *Microtis unifolia*, *Pterostylis banksii*, *Chiloglottis cornuta*, *Corybas macranthus*, *C. trilobus*, *C. rivularis*.

Congratulations again to **Brian Molloy**, recipient of many awards, this time for having been made an Officer of the New Zealand Order of Merit in the Queens Birthday Honours for his work in conservation. Brian received the Loder Cup in 1990 and the Sir Charles Fleming Award in 1995.

Two important papers appeared in the latest issue of *The Orchadian*, giving new names for five NZ orchids [1, 2]. More are promised.

The first establishes a new monotypic genus *Winika*, so that

- *Dendrobium cunninghamii* becomes *Winika cunninghamii*;

Grounds are given for the change. The authors explain the new name:

"Winika is the accepted old Maori name for this orchid. The name Te Winika was given to the sacred war canoe of the Tainui people because this orchid grew on the totara tree (*Podocarpus totara*) which was hollowed out to form the hull (Moore & Irwin, 1978). We assign the feminine gender to it — *Winika cunninghamii*. The Maori Queen, Te Arikiniui Darne Te Atairangikaahu, has granted consent for us to use the name Winika, because of its particular cultural significance to her Tainui people."

The second paper gives new names for four of the small NZ *Caladenias*, and supplies descriptions for three of them. Thus

- *Caladenia aff. iridescens* becomes *C. atradenia*;
- *Caladenia* "green column" becomes *C. chlorostyla*;
- the "white form" becomes *C. nothofageti*;

- the plant we have known as *Caladenia carnea* or *C. carnea* var. *bartlettii* becomes *C. bartlettii*.

References

1. Clements MA, Jones DL, Molloy BPJ. *Winika*, a new monotypic genus for the New Zealand orchid previously known as *Dendrobium cunninghamii* Lindl. *The Orchadian* 1997; 12 (5): 214-219.
2. Jones DL, Molloy BPJ, Clements MA. Three new species and a new combination in *Caladenia* R.Br. (Orchidaceae) from New Zealand. *The Orchadian* 1997; 12 (5): 221-228.

Eric Scanlen wrote, "The albino *Corybas oblongus* reported on p20 of *Journal* 62 has had a boom season. It grows just out of Clevedon. The writer made a reconnaissance on 9 October and (after a four hour search!) found 23 healthy flowers in a 1m diameter patch right under the flag that he and Allan Ducker had tied two years back!! Moral: when looking for a ground orchid, look up now and then for the marker. Regular maroon flowers were now open among the palest green ones and the camera got clicking. Three keen Bell Blockers turned up to see for themselves on Sunday 12 October. While Bob Talbot was at work with his macro lens, Ernie Corbett spotted a new albino, 3m south of the original colony. Kerry then spotted five more another 6m south. Ernie, not a bit keen on being topped, redoubled his scrutiny and came up with a double headed regular maroon *C. oblongus* with a branched peduncle and two flowers, all in the same strip of bush on an easterly slope. This plant had a large, strongly red veined leaf reminiscent of the Shenstone specimens but the flowers were regular northern type with oval labellum openings. Contact the writer if you would like to see this unique colony next year and a field trip can surely be arranged."

Close relations: orchids like ours

Drymoanthus minutus drawn by Alick Dockrill. From his *Australian indigenous orchids*. Society for Growing Australian plants, Sydney, 1969. p799.

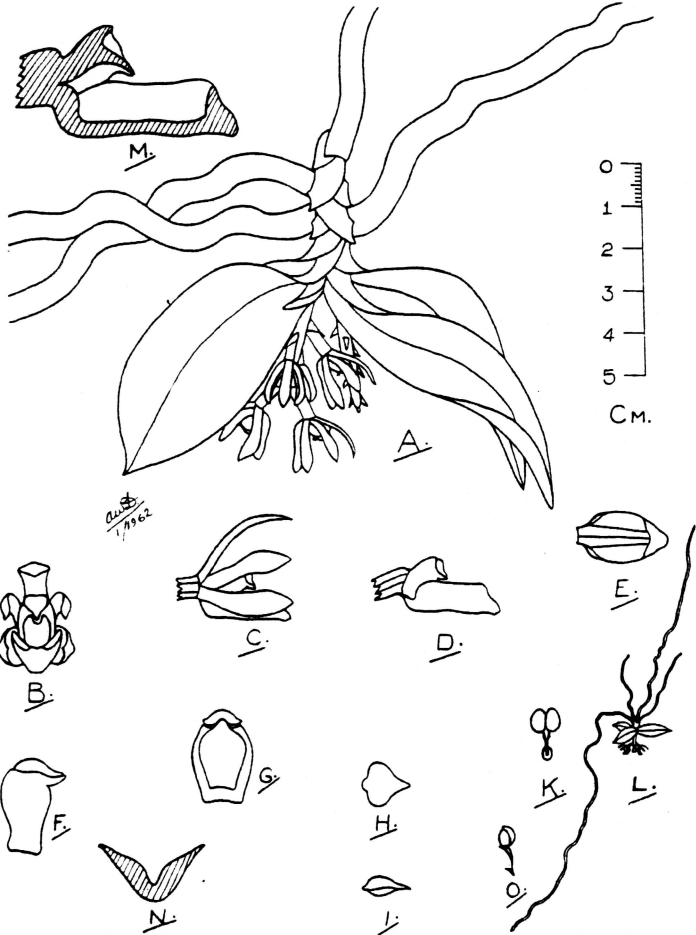


Plate 4

DRYMOANTHUS MINUTUS W. H. Nich.

- | | | | |
|--------------------------------------|----------------------------------|---|--------------------------|
| A. Plant | five times indicated scale | I. Anther from the side | to scale x 20 |
| B. Flower from the front | to scale x 10 | K. Pollinia | to scale x 20 |
| C. Flower from the side | to scale x 10 | L. Plant at first flowering | to indicated scale |
| D. Column and labellum from the side | to scale x 10 | M. Median longitudinal section of column and labellum | to scale x 20 |
| E. Labellum from above | to scale x 10 | N. Median cross section of labellum | to scale x 20 |
| F. Column from the front | to scale x 20 | O. Pollinia from the side | to scale x 20 |
| G. Column from the front | to scale x 20 | | |
| H. Anther from above | to scale x 20 | | |

From the internet

These pieces are quoted from international orchid bulletin boards; they may not reflect your or your editor's views.

“I have a problem with the status of **natural hybrids**,” Jon Woodward of Tasmania wrote recently to *Orchid List Digest*. “To make some sense, I will illustrate my query with reference to Australian natives, with which I have a little familiarity.

“There are a number of natural hybrids within Australian *Dendrobiums*. I'll confine the discussion to one, *Den. x delicatum* which has *Den. kingianum* and *Den. speciosum* as its parents.

“Now, is there a reason why this natural hybrid does not breed again in nature with its parent *Den. kingianum* to produce the hybrid *Den. Gillian Leaney* or with the other parent *Den. speciosum* to make *Den. Jane Leaney*, both registered 'artificial' hybrids. Lost you yet?

“*Den. Gillian Leaney* could then backcross to *kingianum* for a remake of *Den. Bicentennial Rose* or to *x delicatum* to remake *Den. Castle* and all of these at various stages with other natural hybrids — the mind boggles as they say in the classics; well the Tasmanian classics anyway!

“Does this in fact happen? Are some of the so-called "superior forms" (either color, form or vigor) of species collected in the wild, in fact complex natural hybrids that closely resemble such species. Is our bush (your jungle/forest/swamp) full of a whole range of hybrids and if so, why aren't they widely reported?

“Are natural hybrids an intermediate step in the evolution of a species and, if so, when does such a plant become a species. Is its size or uniformity of populations?”

“The Conservation Committee of the San Diego County Orchid Society asks for proposals from people and organizations actively involved in orchid conservation. We are deeply concerned about the ongoing loss of orchids and orchid habitats worldwide. We want to support efforts to:

1. Protect orchids in the wild.
2. Establish and maintain organizations to protect orchids and orchid habitat.
3. Conduct studies relating to orchid conservation.
4. Establish and maintain programs encouraging orchid conservation.
5. Educate the public about conservation in general and orchid conservation in particular.

Please send us

1. A description of the project to be funded. Cover the goals of the project, the methods to be used, the relevance of the project to our objectives, and how the money will fulfill your particular needs.
 2. A detailed budget, specifying a definite amount of money and the use of the funds.
- We expect to distribute up to US\$5000 per year. To benefit as many programs as possible, we encourage requests for up to \$2000. However, larger requests will be considered. There is no minimum request. Although we will consider applications related to multi-year projects, at this time we cannot make commitments for more than one year.

The deadline for submissions is November 1, 1997. Applicants will be notified by January 1, 1998. Applications should be sent to Peter S. Tobias, SDCOS Conservation Committee, 5040 Milton Street, San Diego CA 92110 USA. Inquiries can also be sent by email to tobias@scripps.edu."

“I thought I would tell you about my efforts (in **transplanting *Cypripedium acaule*** from a property planned for development),” wrote David Mellard, of Georgia. “I was probably able to rescue around a hundred. I read an article on how to remove them without **damaging** the roots. This is very laborious and requires 5 to 10 minutes for a full grown *C. acaule* and a great deal of sweat. First, I removed the top layer of pine straw until I saw the roots, which radiate from the plant like the spokes on a wheel. Once I’d found the root tips on side of the plant, a shovel was gently inserted beneath the roots and pushed underneath the plant and gently lifted slightly to loosen the soil. Now the hard part. I removed the shovel, inserted one hand beneath the roots, and worked my fingers to dislodge the decayed pine straw and live roots of other plants. This had to be done very carefully and oh so slowly so I didn’t damage the *C. acaule* roots. No easy task. After two or three hours of this in the hot Georgia days, I had to stop because I started getting sloppy. And then several times it rained. Are you feeling sorry for me yet? I got a wonderful case of conjunctivitis from the dust.

“The *C. acaule* are now living under a couple of very old and very shady dogwood trees. I removed grass and other plants leaving as much of the topsoil as possible, added a 1-inch layer of decayed pine straw collected from the pine forest, placed the *acaules* on this layer, added another 1-inch layer of decayed pine straw, and added 2 to 3 inches of composted bark mulch.

“I didn’t have composted bark mulch so I collected decaying logs from the forest, ran them through a shredder, and mixed in leaf compost and shredded, fresh tree limbs. I plan to add some lime. I will also fertilize with a diluted solution soon and again in the Spring when the *acaules* come back. I will also add a layer of pine straw just before the first frost.”

Cypripedium acaule, the moccasin flower., illustration by Norman Arlott from Williams & Williams. *Field guide to orchids of North America*. Universe Books, New York, 1983. →



Historical reprints

Colenso's description of *Thelymitra nervosa*, from *Trans. & Proc. NZI* 1887, 20: 207-208.

3. *T. nervosa*, sp. nov.

Rather slender, straight, erect, 9-10 inches high; a white glossy sheath at base, 1 inch long, transparent, veined, truncate, margin entire with a long narrow linear mucro; 2 distant sheathing cauline bracts each $1\frac{1}{2}$ inches long, acute, adpressed. Leaf single, 6 inches long, 3 lines wide, linear-acuminate, sub-membranaceous. Scape very slender almost wiry at top, bearing 3 distant flowers; floral bracts coloured, very broad, $\frac{1}{2}$ inch long, acuminate with a long mucro, veined, minutely papillose on tips at outside, the upper flower having 2 bracts opposite, the inner one much smaller; pedicels slender, $\frac{1}{4}$ inch long. Perianth purple, 1 inch diameter, spreading, all segments much veined, veins branching; dorsal sepal oblong apiculate; lateral sepals ovate-acuminate apiculate; lateral petals sub-ovovate apiculate; labellum broadly oblong-lanceolate, obtuse; column black-purple above, largely bifid, each lobe 1-notched, incurved; the two appendages each on a long slender arm arising from below as high as the column; largely plumose at top in a globular ball; hairs very flexuous, sub-moniliform, twisted, their tips obtuse and rounded; anther broadly ovate, obtuse, apex below top of column. Ovary lanceolate, $\frac{1}{2}$ inch long, coarsely ribbed.

Hab. High lands base of Mount Ruapehu (Tongariro Range), County of East Taupo; whence specimens were brought by a visitor in 1879, and given to me with some other plants (*sps. nov. supra*).

Obs. This is another small neat-looking species, with large dark-coloured flowers, their segments much veined (as also are their coloured bracts), the lower lobe or labellum being larger than the others. The number of the flowers on a plant vary, usually 3, but in one of my specimens 2, and in another only 1; each of these two plants being also smaller. A striking character is the low branching of its slender staminodiæ or lateral lobes of its column which are also elongated, and their peculiar wavy moniliform hairs. There may be more basal sheaths belonging to the plant, as my specimens do not include their roots or tubers.

Richard Sanders Rogers's description of *Petalochilus*, first published in *J. Bot., London* 1924; 62: 65 t571, and reprinted in *Trans. NZI* 1926; 56: 16-18 t4.

Herbae terrestres, hirsutae, tuberibus globulosis parvis, caule simplici 1-foliato. Folium ad basin, lineare. Flores pedicellati, 1 vel 2. Segmenta perianthii subaequilonga, fere similia, angustiuscula; posticum erectum vel leviter incurvum, cetera plana et patentia. *Labellum ceteris segmentis simile* sed breviusculum. Columna elongata, leviter incurva; in parte superiore late alata; inferiore anguste alata. Anthera suberecta, bilocularis, mucronata; pollinia pulverea; caudiculae nullae. Stigma sub antheram, concavum.

Species nobis notae 2, Novae Zelandiae incolae.

Leaf basal, linear. Flowers pedicellated, 1 or 2. Segments of perianth subequal, similar, rather narrow; the dorsal one erect or slightly incurved over the column, the others flat and spreading; labellum similar to the other segments but slightly shorter. Column elongated, slightly incurved, widely winged above, narrowly below. Anther suberect, 2-celled, mucronate; pollinia powdery; caudicles absent. Stigma concave, just below the anther.

Terrestrial hairy herbs, with small globular tubers.

The outstanding feature of the new genus is, of course, the ancestral form of the labellum.

The excellent vernacular names, *cup* and *pouch orchid*, originally applied by the discoverer, Mr. H. B. Matthews, have been latinized and retained as specific designations for its two representatives.

The plants are endemic to New Zealand, and, so far as is known, are restricted to the neighbourhood of the little town of Kaitaia, situated in the extreme north-east of the Dominion.

The peculiar appendage in the first species is probably staminodial in origin, and occupies the position of stamen a_3 of the inner whorl. In *P. saccatus* the size and shape of the capacious pouch suggest that the wings of the column are not its sole constituents, but that the staminode is also a component part.

Superficially both species bear a striking resemblance to the diminutive orchid *Caladenia minor* Hook. f., which is likewise endemic to the same islands.

The affinities of the new genus are certainly with *Caladenia* rather than with *Thelymitra*, with which it has few features in common beyond the hitherto unique distinction of an undifferentiated labellum. The Apostasiae, in which, of course, the labellum is also undifferentiated, must be regarded only as doubtful members of the Orchidaceae. It also approaches very closely to *Glossodia*, especially if it be admitted that the pouch in *P. saccatus* represents a fusion between the wings of the column and the staminode. In the living state, however, there is little that is reminiscent of that genus in which the labellum, although almost quite plain, is nevertheless very dissimilar in appearance to the petals, and the basal appendage is either bifid or distinctly dual in character.

Mr. Matthews has had these orchids under observation since the year 1912. He says that both species were plentiful, that they seeded freely, and showed practically no variations. On one occasion he collected about a hundred specimens of *P. calyciformis* and seventy of *P. saccatus*. In January, 1919, he wrote stating that he had recently visited Kaitaia, and found that in all three places where previously he had been accustomed to collect the *cup-orchid*, the tea-tree (*Leptospermum scoparium*), among which it grew, had been cleared for agricultural purposes. Thus, unless a fresh locality should be discovered, this interesting plant will be no longer available to students of botany.

Column-wings open anteriorly, not connate; a linear sigmoid appendage, with a cup-shaped summit, erect against the column	1. <i>P. calyciformis</i> .
Column-wings connate anteriorly throughout their entire length, forming a pouch	2. <i>P. saccatus</i> .

1. *P. calyciformis* n. sp.

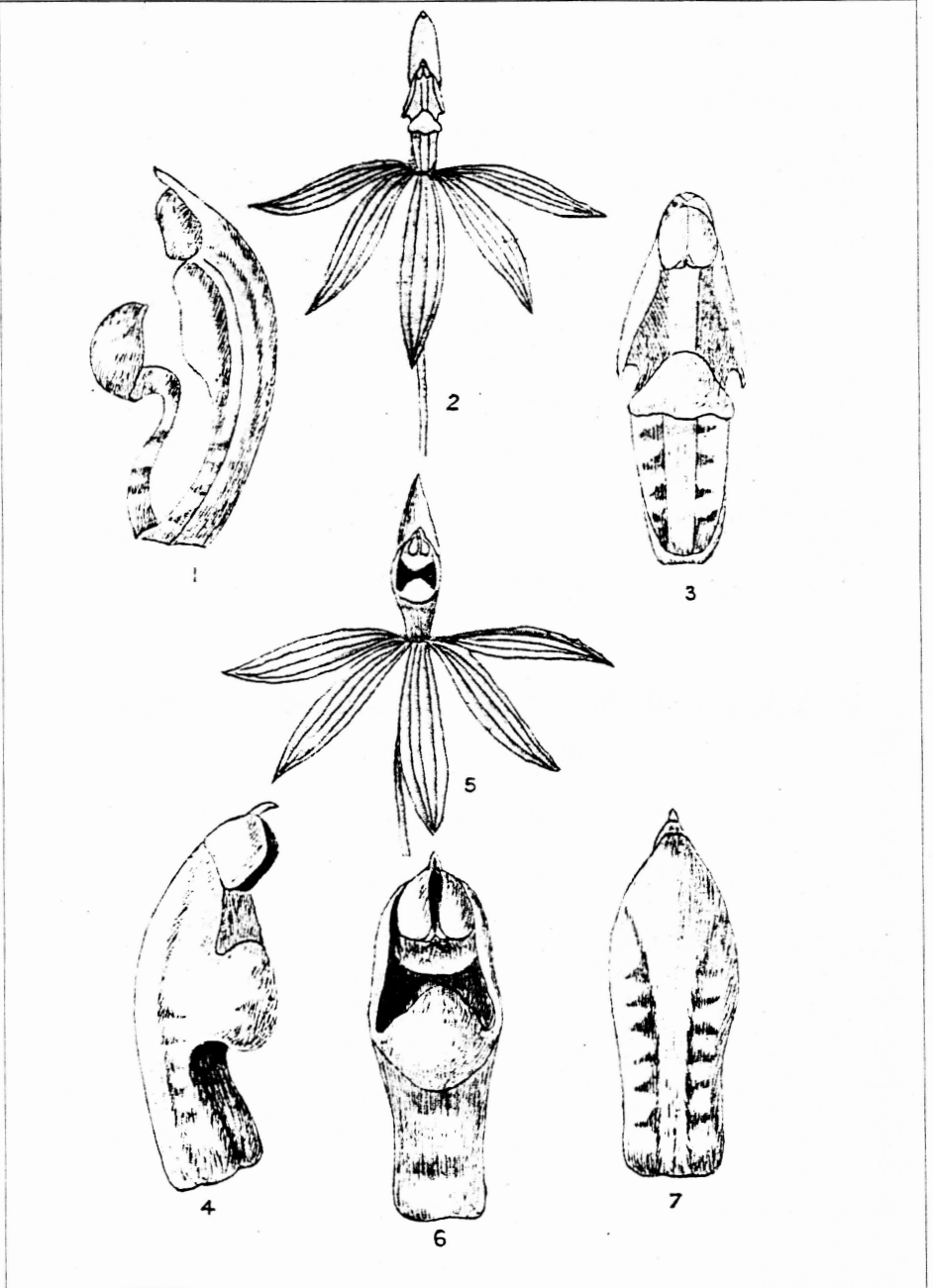
Gracillima, circiter 7-22 cm. alta. Folium anguste lineare, fere glabrum, circiter 4-15 cm. longum. Caulis gracillimus, hirsutus, infra vel ad medium bractea lineari-lanceolata instructus. Flores 1 vel 2, subvirides, circiter 12-13 mm. in diametro. Ovarium elongatum subvillosum. Segmenta perianthii subacuta, 5-nervosa, circiter 6 mm. longa; labellum ceteris segmentis breviusculum et aliquando latiusculum. Columna circiter 5 mm. longa, in parte superiore late alata. Appendix longiuscula linearis sigmoidea, apice calyculo instructa, ante columnam erecta.

N.Z.: Kaitaia, County Mongonui. H. B. Matthews, 27 Oct.-15 Nov., 1916.

A very slender plant, about 7-22 cm. high. Leaf very narrow linear, nearly glabrous, basal, from 4-15 cm. long. Stem very slender, hairy, a loose linear-lanceolate bract at, or a little below, the middle. Flowers greenish, about 12-13 mm. in diameter, usually single, but occasionally 2, the very slender pedicel subtended by a narrow acute bract. Ovary elongated, rather hairy. Segments of the perianth not very acute, pubescent-glandular on the outside, 5-nerved; the dorsal one erect or slightly incurved, the others spreading; about 6 mm. long; the labellar segment a little shorter than the rest and sometimes a little wider. Column about 5 mm. high; winged throughout, rather widely in the upper half, narrowly below. A linear appendage with sigmoid flexure, furnished with a little cup at the apex, erect in front of the column.

FIGS. 1-3.—*P. calyciformis*. FIGS. 4-7.—*P. saccatus*.

- 1, Column from the side, showing appendage; 2, front view of the flower (the artist has represented the labellar segment too long); 3, column from the front, showing appendage; 4, column from side, showing anterior union of the columnar wings; 5, front view of flower (the artist has shown the labellar segment too long); 6, column from the front, showing the union of the wings to form a pouch; 7, column from the back. All details much enlarged.



2. *P. saccatus* n. sp.

Gracillima, circiter 7-14 cm. alta. Folium anguste lineare, fere glabrum, cauli subaequilongum. Caulis hirsutus, supra medium bractea acuta instructus. Flos solitarius, carneus, circiter 2 cm. in diametro. Ovarium elongatum, villosum. Segmenta perianthii subacuta, 5-nervosa, circiter 10 mm. longa; labellum breviusculum et aliquando latiusculum. Columna circiter 4-75 mm. longa; alae antice connatae, saccum membranaceum formantes.

A very slender species, about 7-14 cm. high. Leaf almost glabrous, narrowly linear, usually about as long as the stem. Stem very slender, hairy, with an acute bract above the middle. Flower pink, solitary, about 2 cm. in diameter, its pedicel subtended by a narrow acute bract. Ovary elongated, rather hairy. Segments of perianth not very acute, the sepals glandular-pubescent on the outside, 5-nerved, a pink stripe down the middle; the dorsal one erect or slightly incurved, the others spreading; about 10 mm. long; the labellar segment a little shorter than the rest and sometimes a little wider. Column about 4-75 mm. high with transverse pink bars; the wings uniting behind the anther, coalescing throughout anteriorly, so as to form a well-marked membranous pouch below the stigma.

N.Z.: Kaitaia, Mr. H. B. Matthews, 10-31 Oct., 1917.



Iwitahi crunchtime

We have always known it, from when the initial offer of the new reserve was made. Now it is for real. The work has begun and in the new year it will intensify. The compartments of *P. nigra* adjoining the reserve are going to be felled.

This will leave the orchid reserve in a naked state along its long boundary. So between now and March we will have to put as much effort as possible into more planting of a "hedge" along it. We have done quite a bit but this needs to be at least doubled. Within the same time frame it is important that we get as many of the native orchid variants transplanted as possible.

We need you, your spade and your tray. Make up a party and come to the Iwitahi Native Orchid Field Days on 12-14 December, or the Work Camp on 9-11 January.

Barbara and Trevor Nicholls 33 Hinekura Ave, Taupo 2730, New Zealand Phone: 64-7-378 4813 Fax: 64-7-378 3222 email: nicholls@reap.org.nz

Australian notes

The Australian Orchid Foundation invites applications for grants from any person or group with a desire to do specialised work on any subject that relates to orchids, endemic to Australia or otherwise. The work must be performed in Australia, and/or must relate to the orchids of Australasia.

Rhizanthella slateri, the eastern underground orchid, was found at a new NSW site in April this year - by a man clearing scrub while tidying up his yard.

The ANOS Victorian Group reports that planning has enthusiastically begun for the **4th ANOS Conference and Show**. The dates will probably be 5-8 October 2000. The Australian Orchid Conference for 2000 will be in Tasmania in the second weekend of October, so visitors may wish to attend both events.

Need more light to get the aperture down for adequate depth of field? Photographer Bob Markwick (NOSSA *Journal* June 97) suggests a **reflector of aluminium foil**. He says the best light is an overcast day, and as the colour of sunlight varies, blues, greens and purple are best photographed in the morning, and reds, oranges and yellows in the afternoon. His best invention? a spike with an articulated sliding arm and clamp: stick the spike in the ground and clamp the stem to stop wind movement.

Corybas neocaledonicus is now recognised as a New Caledonian endemic. It had been confused with an undescribed north-eastern Queensland species (Jones DL. *Muelleria* 1997; 10: 69-73).

Seeking the spiral sun orchid —

Thelymitra matthewsii

by “Eastern chronicler” – from the *Bulletin* of the WA Native Orchid Study and Conservation Group, October 1997. This and the following papers are reprinted here to demonstrate that NZNOG members who travel great distances to find *Thelymitra matthewsii* are not alone!

Melbourne — September 5th dawned sunny with a cool breeze. At 9 a.m. the telephone rang; it was a friend from Moggs Creek to tell me that two spiral sun orchids had opened yesterday and it was possible they would do so again today. As I have never seen it open despite many visits I immediately left for Aireys Inlet. This is the closest known colony to Melbourne. On arrival I walked to the site, but was not optimistic as the cool breeze off Bass Strait was persisting; not *Thelymitra* weather. True to form they were closed but showing tantalizing glimpses of their deep purple colouring. It was time to try the old plastic trick to encourage them to cooperate. After three hours it was obvious they were not going to open, should have had a hair drier and a coat (and a long power cord) like someone over in the West. This year nine buds appeared but only two survived, the remainder falling victim to herbivores perhaps attributable to a controlled burn around the site coupled with severe drought conditions prevailing which probably made their tender leaves and buds a tasty morsel for kangaroos, wallabies and rabbits. The three colonies here grow on a ridge unlike *Thelymitra spiralis*'s habitat of winter wet sites.

Thelymitra matthewsii is similar to *T. variegata* & *spiralis* as regards the golden

column. It is an endangered and infuriating species because it is self-pollinating and often does not open at all; if it does and is pollinated naturally it will not open again. Its flowering time adds to the frustration as it is extremely rare to get a warmish day in late August - early September in southern Victoria. The flower is rich deep purple with fine longitudinal stripes not like the bold stripes seen in *T. campanulata*, and has a spiral leaf like *T. variegata* and *spiralis*. The flower is almost always solitary, much smaller (up to 20mm across) than its two western cousins which can be up to 50mm across, and never with the dazzling range of colours. It also occurs in New Zealand and surprisingly there is a single record (September 1950) from near Armadale, W.A.

Despite the disappointment with the spiral sun orchids it is always a delight to travel along the Great Ocean Road, one of the finest coastal routes in the world.

Thelymitra spiralis in the York Shire

by Fred Hort. This paper first appeared in the *Bulletin* of the West Australian Native Orchid Study and Conservation Group, September 1997.

Most of us spend a lot of time and travel to find *T. spiralis* because they seem so hard to locate.

During the past ten years I had known of only one population of 20 or so alongside the York Road in the York Shire. Early this year another population in the State forest further south was brought to my attention. Here what started out as a population of 10 or so plants, was soon found to be a much

larger population of approximately 50 flowering plants.

I wondered then whether *T. spiralis* was really "rare" in the York Shire.

I decided to do a deliberate search and the results proved fruitful. Getting a "feel" for the typical location seemed to help... look for winter damp areas in sunny locations with a hilltop aspect. Look out for low scrub including *Borya*, *Andersonia lehmanniana* and round or strapped leafed sedges.

This knowledge has helped in finding four more populations averaging about 30+ flowering plants. Locations have been from 5 to 15 kilometres apart.

In the York Shire *T. spiralis* started flowering at the end of July. When the sun shines there just seems to be more and more of them. As at the 20th August they are in full flower with just a few buds and just a few gone over. On sunny days the flowers are easily seen in the open *Borya* or in the low scrub.

Flower colours have been interesting:

- a few the palest of pale - almost white
- lots light pink
- others bright pink to pink/mauve with bright pink/red edging
- some lightly striped - pink/white
- a few pink/mauve and spotted
- many spotted on the rear of the sepals
- a couple almost red
- one light orange with stripes

To quote Pat Dundas, "The colours are unbelievable!"

- flower size varies from 20-35mm.
- flower shape varies from star shaped to more rounded, cupped petals/sepals.
- plant height varies from 15-30 cm.
- the leaf is generally well spiraled but some are straighter with just the touch of a twist.

I still have the urge to find more of these beautiful orchids!

Pterostylis nutans

by Warren Simpson (reprinted from the ANOS Victorian Group *Bulletin* 1997; Sept: p8).

Pterostylis nutans, the Nodding Greenhood, would have to be one of the most widespread orchids in Australia. It is distributed from Eungella, near Mackay in north Queensland, through New South Wales, Victoza, Tasmania and into Southern South Australia. It has also been reported from New Zealand on several occasions, the latest report being in 1995 (New Zealand Native Orchid Group Journal No. 57). The species is widely distributed in moist, open forest, wet sclerophyll forest and coastal scrub.

You may wonder why I chose this species as our Plant of the Month, for it is not only one of our most widespread orchids, but also one of the most common. As a result of its commonness, this species has tended to be taken for granted, its presence noted on field trips without any real observation of the plants taking place, meaning that some people have missed observing rare double-headed flower spikes.

The non-cauline plants have a basal rosette of three to six leaves, from the centre of which the flowering spike rises. Leaves are up to 9cm long by 3cm wide, are ovate to oblong in shape, stalked, dark green with wavy or crisped edges. Flowering stems bearing one, rarely two, 25mm flowers, are up to 30cm long. The flower is unusual in that it is nodding rather than upright.

The only other *Pterostylis* species to share this feature is *P. hispidula* which was once regarded as a subspecies of *P. nutans*. The galea, which is curved forward, is translucent with green stripes, with the lateral sepals loosely embracing the galea. The labellum is about 16mm long by 4mm wide.

Pterostylis nutans is a moderately variable species. Variations include the extent to which the flowers nod and the degree of hairiness of the

labellum. There is also a difference in flowering times as, for example, Queensland clones often flower earlier than Victorian clones. Indeed, it could be possible to have this species in flower for at least six months of the year if one grew a selection of plants from its entire range.

Cultivation

Pterostylis nutans is one of the easiest terrestrial species to grow in cultivation, for plants readily multiply in the Society's basic mix. Multiplication occurs through the formation of "daughter" tubers on the ends of stolons, in conjunction with the replacement of the original tuber. It is possible to achieve a multiplication of five, although in most situations a rate of two to three would be considered normal.

The potting mix for *Pterostylis nutans* needs to be reasonably open, drain well, yet retain some moisture. Water only as the mix dries out, but be careful not to over water or rotting of the tubers will occur. If unsure as to when to water, check the bottom of the plant label and, if it is wet or damp, do not water. *Allocasuarina* needles on the potting mix will help prevent leaf rot.

As well as water the plants need light, and they will actually tell you if light levels are incorrect. If the plants are not getting sufficient light, the leaves will stand up off the top of the mix. If they are getting too much light, the leaves will lie flat on top of the mix, but they will be yellowish in colour and may have burnt looking edges. When the plants are receiving the correct amount of light their leaves will be lying flat on top of the mix and will be dark green in colour.

Pterostylis nutans is an easy yet rewarding species to grow.... It is an ideal species for the beginner terrestrial grower.

