Newsletter No,2
NATIVE ORCHID GROUP June 1982

Dear Member,

What a wonderful response to what I thought might have been a useless idea! I am pleased to report that we have over 80 members, from the far north to the far south, giving us great opportunities, and subs are still coming in. Many thanks for all your encouraging letters, and special thanks to the Thames Valley Orchid Society who kindly donated $20 towards the cost of setting up this group.

A few snippets; 'If your group will emphasise the 'study' of our orchids plus the need to conserve, with information on seed collecting and sowing for those who 'must have' then I will be pleased to join.'

'The very worst that could happen would be competitive display... until we have learnt to efficiently propagate them.'

'Too many species of plants have been lost, and no way can we reverse our wrongdoings, yes, perhaps when we can grow them from seed then we can all have our own little collections but at the moment I am happy to view them in their own environment and know that they will grow on there for longer.'

'I am pleased to find the N.Z. orchids relatively common after several years of searching out British examples, and would hope that the Native Orchid Group would actively discourage collecting.'

'I have wished that my own recording could have some meaningful objective and now can add to the collective pool of information that this group could provide.'

Letters were overwhelmingly in favour of leaving plants where they are until ve can successfully grow them from seed; thank you again for your responses - I only wish that there was room to publish them all.

Could I please thank those who have already contributed to the newsletter, and remember, there can't be a newsletter without news! We would like to hear from you all.

Dorothy Cooper,
114 Avalon Crescent,
Lower Hutt.

==========

RECORD SHEET

It has been suggested that for a national group it might be as well to have a standard form of record sheet so that any data received can be easily collated and compared. I have worked out a guide, with relevant information required and if anyone can think of anything else which should be added, please let me know and we can then publish a standard list of requirements for everyone to follow.

e.g.

Genus:	Habitat:
Species:	Grid reference: (needed for plotting
Locality:	on a map)
Date:	Altitude: (both these can be obtained
Stage of development: (in flower, bud or leaf?)	from a topographical map of the area) Density: (rare, common etc.)

Remarks:
Recorder's name:

Can anyone add to or streamline this?

==========

TO THE EDITOR

Congratulations on an excellent idea and a fine first issue. You have mentioned the need to learn how to grow New Zealand native orchids from seed, and it is an important high priority programme in my opinion. I am familiar with the work of M.A.Clements in Australia on invitro symbiotic germination of Australian native orchids and wonder if this approach has been used in New Zealand? Has anyone developed a culture collection of mycorrhizal fungi associated with any of the New Zealand native orchids - especially terrestrials? I intend to try using the symbiotic method with N.Z. terrestrials, but do not want to re-invent the wheel. At the same time I would be interested in hearing from others interested in the project and would welcome seed for experimentation. (Cultures of fungi have been requested from Clements).

W.James.Harper,
28 Rata Street,
Palmerston North.

(As far as I know, the only work on isolating the fungi in N.Z. native orchids, is by Dr Ella O. Campbell, Massey University, who found that the fungus associated with such species as Gastrodia sesamoides in New Zealand, was different from that which occurred with the same orchid species in Australia. - Dorothy Cooper)

GENERAL CHIT - CHAT

Jean Jenks
Upper Moutere

Firstly I found the inaugural 'Native Orchid Group' newsletter most pleasing and hope the continued publication draws together people with this common interest. I take this opportunity to welcome any visitors, also offer a field trip, as our area is rich in native orchids, including a few of the rarer species.

Studying native orchids or any subject, the same problem arises, 'the more you know, the more you find you don't know'. I'm having trouble with two, either new species or hybrids. By far the most interesting is a plant with growth habit, leaves and stem almost identical to Aporostylis bifolia, but with entirely different petals, lateral sepals and column variation. Problem, yes, but this coming January my plans include a visit south to the remote area for further study and hopefully answers.

I've also noticed wide variation within some species and attributed this in some instances to local conditions. One such example is Orthoceras strictum. Locally abundant growing in appalling conditions, searing full sun, rock-hard clay, no rain often during growing and flowering period and showered with choking dust from a nearby metal road. These plants establish exceptionally large tubers and I've deduced that this is their survival unit. Plant size often reaches 50cm or more with large flowers of varying colour, yellow, green or reddish-brown. Specimens observed in areas less harsh appear smaller and paler, lacking brilliance. Obviously a species which doesn't like damp feet or shade, requiring bright conditions to produce the depth of colour.

With reference to Corybas orbiculatus (Newsletter no.1), I agree in part with Hatch, but there's an exception to every rule. A clump was located on a road cutting bank growing in dry grass. Granted not a massive colony with huge leaves, but again, different conditions.

(I have also found Aporostylis bifolia to be variable; labellum occurs in different shapes, and can be with or without calli and with or without spots and coloured patches. Variation applies to many of our species e.g. Caladenia catenata, C.lyallii, Chiloglottis cornuta, Orthoceras strictum, and column structures of some Thelymitra species. - Dorothy Cooper)

==========

IN REPLY:

On page 3 of your newsletter, Phil Tomlinson comments on the labellum of Thelymitra. In Trans.R.S.N.Z. 77:1949, p.398, I wrote of Petalochilus (now accepted as an aberrant offshoot of Caladenia catenata) in words which could apply as well to Thelymitra, or for that matter to the Australian Calochilus imberbis.

the undifferentiated labellum is not of itself important. The specialised labellum of the average orchid is a petal adapted to the requirements of pollination. When that function is taken over by another organ, the labellum falls into disuse and thence into decline, reverting in these instances to its original petaloid condition. The labellum in these genera would then appear to be retrograde rather than primitive.

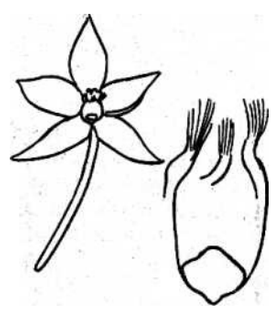
E.D.Hatch

THE ODD ONES

Dorothy Cooper

Oddities and deformities amongst our native orchids seem to be quite common; (see article mentioning Petalochilus elsewhere, - now thought to be a deformed Caladenia catenata).

I have found Thelymitra flowers in the 'Wellington region with weird floral structures. In November 1981, in the Eastbourne hills, I found a 6-flowered Thelymitra pauciflora, not all the flowers were open, but in each of the 6 there was a horizontal stigma in the base of an empty column cavity; no pollinia or anther cap; instead, a 3rd clump of cilia on a 3rd column arm protruded from the back of the cavity - at the same level as the 2 lateral column arms and where the anther cap would normally appear. There were only 5 perianth segments on each flower; usually the labellum was missing and one flower had a narrow 'tube' instead, of the same tissue and colour as the labellum should have been. One flower had a lateral petal missing. Leaf and general growth was otherwise normal for the species. The plant was not in an area where it could have been affected by sprays, and presumably was just an 'oddity'.



Another example of deformed specimens of T.pauciflora was sent to me in December 1981, by Kevin Luff of Wanganui. In the flowers on these plants, the anther and the stigma were often absent, and in 2 flowers the column consisted of a flat structure with a clump of white cilia at the top on a short 'column arm'. The leaf was a simple v-shape, but black watery marks on it suggested that it may have been sprayed with something like a weed-killer.

How about some more reports on 'The Odd Ones'?

==========

The following report was sent in Mr M.L.Young from Mosgiel, and I hope it is the first in a series of reports from all over New Zealand!

Acianthus viridis - according to 'Flora of N.Z.', this species is probably not uncommon in the South Island; I have found records of only 3 plants in this region, over 35 years. One collected from Mt. Anglem, Stewart Island in 1947, one from Cascade Creek 1963 (no information on which Cascade Creek, I know of 3), and Beggs brothers in their history of Preservation Inlet mention seeing it there. Anyone know of any others?

Adenochilus gracilis - quite readily found in damp moss in Fiordland area; along the Waiau River from Rainbow Reach to Dock Bay on Lake Te Anau; at Lake Gunn on the Routeburn Walk, and at the Wisp in the Catlins area.

Caladenia lyallii - readily found in many areas, Swampy and Pineapple Track, Danseys Pass, Horse Range, and Pigeon Flat, on Mt Cargill. Specimens on Pineapple Track (last season) only half the size of the ones from Swampy. These areas are both on the same range of hills, only about 2km apart, but Swampy is about 400-600ft higher. Swampy Summit 2400ft.

(Specimens of this species in the Wellington area are also much smaller at lower altitudes -· D.Cooper)

Caladenia catenata - Lake Wilkie in the Catlins and at Supply Bay on Lake Manapouri. Again the plants found at L. Wilkie seem much more robust than those from L.Manapouri.

Aporostylis bifolia - fairly common; Old Man Ra. Central Otago; Swampy, Te Anau, Wakatipu, Boreland Saddle (Manapouri) and Catlins. On Swampy there are two distinct forms. In the sphagnum swamp, excessively wet, the plants are long and decidedly hairy, 8 cm light green leaves; a few metres away in a much drier environment, the longer leaf may only be about 3cm long by 2cm wide, shiny and dark green much blotched with red, brown.

Chiloglottis cornuta - Swampy, Three Mile Hill (Western exit from Dunedin), Maungatua, Mt Cargill, Lake Gunn. Often found on rotten logs at Mt Cargill and very common on Three Mile Hill growing in pine needles. Many keen Rhododendron growers have extensive colonies in the pine needles used to mulch their Rhodos.

Lyperanthus antarcticus - Maungatua, Catlins and Swampy. On Swampy in very boggy places, usually under Dracophyllum scrub. Only a few inches of saturated bog above the water- table and the tubers almost on the.watertable. Flowers about late Jan, early Feb.

Corybas oblongus - not common, Swampy and Tautuku in Catlins.

C. rivularis - again rare, reported from Hollyford Valley.

C. orbiculatus - rare, Trotters Gorge.

C. macranthus - Swampy, Te Anau, not common.

C. trilobus - common, Swampy, Maungatua, Manapouri, Te Anau.

Thelymitra venosa, pulchella, hatchii, and longifolia - found in similar situations, often together and I found three of them growing in the lawn of the crib I rent at Te Anau. It still has natural grasses and although it has been mown at irregular intervals over the last 40 years, the Thelymitras still persist. Also Prasophyllum colensoi and Microtis amongst them.

Pterostylis mutica - reported in past from Sandymount, Mihiwaka, and Evansdale. All about 15km N of Dunedin. Not reported recently.

P. cycnocephala - reported from Old Man Ra. Danseys Pass, and The Knobbles. I have no personal knowledge of these two plants.

P. foliata and P. australis - have also been reported from our area but we have not found them recently.

P.banksii, P.montana and P.graminea can be found, although not readily; Swampy, Taieri foothills, L. Te Anau, and S. Otago Coastal regions.

Prasophyllum colensoi and Microtis unifolia - in almost all the situations in which you can find Thelymitras.

Gastrodia cunninghamii - Dart Valley, Routeburn Track, Lake Gunn; - even within the City of Dunedin! - the latter in association with Rhododendrons, also in similar conditions at Port Chalmers.

Earina mucronata, E.autumnalis and Dendrobium cunninghamii - often growing together or near each other, though D. cunninghamii appears to favour much more light. In a disused railway cutting in the Catlins area, C. Otago, the length of the cutting was festooned with Earinas on the shady side only, not a solitary plant on the lighter side and the Dendrobes were only found at either end of the cutting where the light was much brighter and some sun penetrated. All plants were growing on rock. These species are also found on rock faces near Port Chalmers and on trees on Mt Cargill.

Bulbophyllum and Drymoanthus - none of our contacts have ever seen either of these plants. We have searched some areas in which they have been recorded in the past without success.

Flowering times of all species appear to be the same as in 'Flora of N.Z.', but is restricted to a short period at about the centre of the indicated times.

Caladenia lyallii was in full flower on Dec.21st, withering by Jan.10th; density along track, a plant every foot for 100m on ascending track, none above or below this belt at about 1600ft a s.l.

M.L.Young,
Mosgiel.

NOTES ON THE STRUCTURE AND DEVELOPMENT OF THETERRESTRIAL ORCHIDS

E.D.Hatch.

In New Zealand the terrestrial orchid is a typical monocotyledon. It consist a creeping, branching rhizome with alternating nodes and internodes. Each node hears buds for lead, leaf and branch, and the relative development of these buds depends on their position on the plant. Below the surface leaf-buds form scale- bracts and branches develop freely. Above the surface green leaves are usual and branches less frequent. In those species which lack chlorophyll, the leaves, not being required for food production, retain their underground scale-bract dimensions. The buds are borne only on the nodes and it follows that any bud-bearing structure must be, or include, a node. The round tuber in Pterostylis, Corybas, Acianthus etc., is therefore an enlarged terminal node, adapted for food storage, dormancy and regrowth, while the so-called 'root' which precedes it is single elongated internode. Not all these branch internodes bear tubers. Some remain slender, have numerous root hairs and appear to function only as feeders. In Pterostylis those species which have a bracteate-leaved mature form (I have experimented with alobula, alveata, brumalis and coccinea) will throw rosettes of juvenile leaves from the nodes of the flower stem in the event of damage to the plant. Usually the lower nodes but sometimes halfway up the stem, and these branch rosettes will in turn produce their own descending, tuber-forming internodes. Working with P. oliveri I discovered that if a flower stem comes into contact with the soil it will throw tuber-bearing branches from the nodes (i.e. from the axils of the leaves).

The elongated tuber in Thelymitra, Orthoceras and Calochilus and in Spiranthes also, is an initial node combined with a partly enlarged, following internode. In Gastrodia the whole rhizome is enlarged, nodes and internodes together. Scale leaves and scars of scale leaves point the position of the nodes. The function of the tuber is to tide the plant over the dry season and in those species which form several tubers, to provide a means of vegetable increase. In mountain species the dormant period is extended to cover the cold season as well. In species which live under relatively damp conditions throughout the year (Adenochilus, Yoania) there is a tendency for the rhizome to be perennial and no tubers are formed. Corybas cryptanthus which is normally rhizomatous, will form tubers under adverse conditions, while Acianthus viridis and Corybas aconitiflorus sport both semi-perennial rhizomes and regularly formed tubers. Some swamp species are also perennial.

Thelymitra pulchella, which sometimes grows in water, will often throw a new leaf alongside the still-green old one and the same occurs with Spiranthes. In Spiranthes also, if the plant is too small to flower, it will go on growing and not die back until it has flowered at the end of the second season. Until, that is, it has built up sufficiently large tubers with enough store of food to flower on. Spiranthes can do this because of the swamp environment; 'dry' species are often forced to spend several seasons building up the tubers to flowering size. Spiranthes sometimes dies down at the end of the second season without flowering.

In species which have different leaf-forms at different stages in their growth, for example the trullifolia complex in Pterostylis, the growth stage depends entirely on the size of the tuber, that is on the amount of nourishment available. In P. alobula tubers up to 3mm diameter will produce only rosettes, 4-5mm the intermediate flowering form with both types of leaves, while anything above 7mm will produce the mature flowering form with bracteate leaves only. Similarly in P. coccinea the rubicon is 12mm. Anything below that will produce a rosette, anything above it a flowering plant. The rosette form which the small plants assume, provides a maximum area of green leaf for photosynthesis and results in the rapid formation of flowering-sized tubers. This variation in form does not affect species with basal rosettes (P. nutans, curta etc.) since maximum leaf development is always present. If the mycorrhizome of P. brumalis chances to develop in a congenial spot it will throw some tubers large enough to flower the following season, 2 years from seed to seed. But this is rare - the tubers are normally smaller and develop rosettes. I have done this experimentally and have also grown Spiranthes from seed and produced flowering plants in 3 years.

The form the plant takes depends upon the development of the leaves and the length of the internodes. Large leaves and short internodes produce conspicuous rosettes like those of P. curta or nutans; large leaves and long internodes forms like P. banksii. Scale leave's and long internodes give plants like Gastrodia and Yoania, while tubular leaves and long internodes give Prasophyllum and Microtis. The tall seeding peduncle of Corybas and Chiloglottis is a single internode. The structure is simple but the possibilities are endless, and so the Orchidaceae has proved.

Recommended: Journal of the Native Orchid Society of South Australia;
Single membership Aust. $4.00
Family membership Aust. $6.00
Secretary: Mr E.R.Hargreaves,
1 Halmond Avenue,
Everard Park,
South Australia, 5035.

Both this and the AN0S Journal 'The Orchadian' (see 1st newsletter) make very interesting reading as many of the species mentioned also occur in New Zealand.