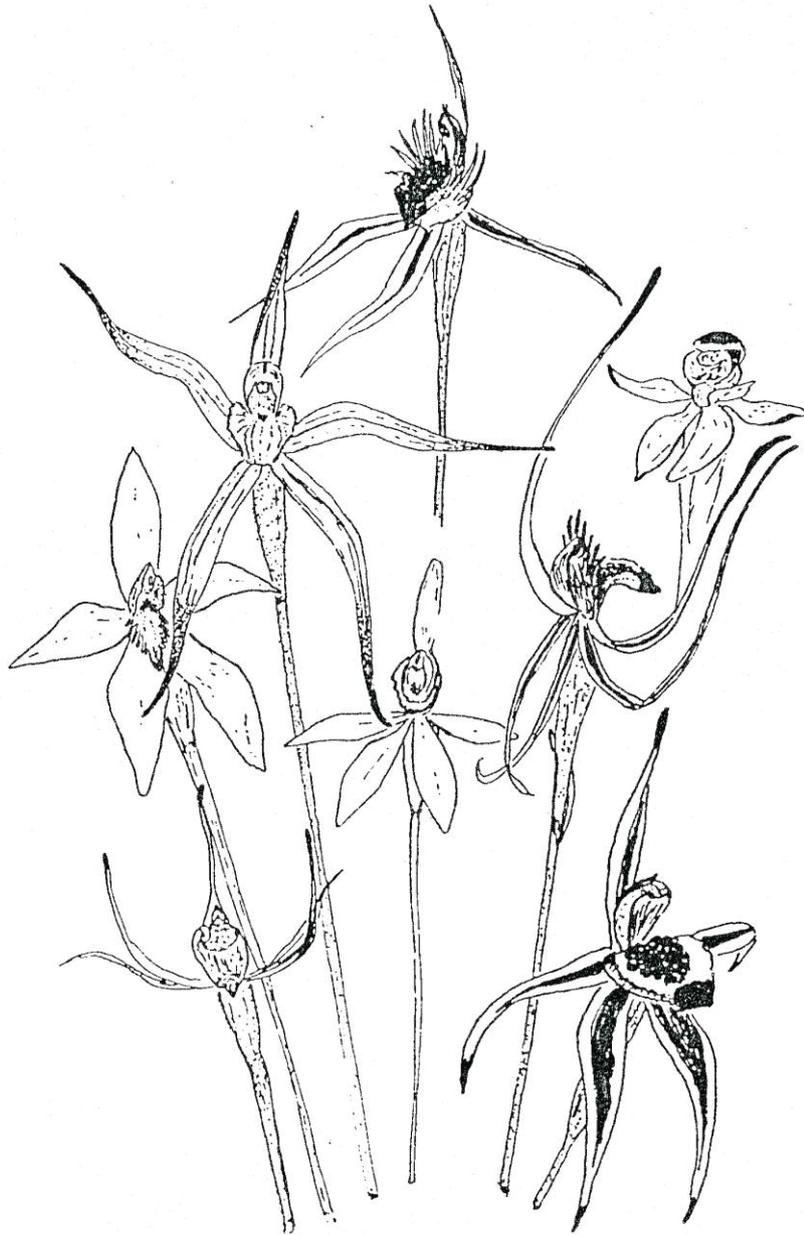




Journal
of the
Native Orchid Society
of
South Australia Inc



NATIVE ORCHID SOCIETY OF SOUTH AUSTRALIA

POST OFFICE BOX 565 UNLEY SOUTH AUSTRALIA 5061

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PRESIDENT:

Bill Dear
Telephone: 82962111

SECRETARY:

Cathy Houston
Telephone: 8356 7356

VICE-PRESIDENT (and New members Coordinator)

David Pettifor Tel. 014095457

COMMITTEE

David Hirst
Bob Bates

Thelma Bridle
Malcolm Guy

EDITOR:

Gerry Carne
118 Hewitt Avenue
Toorak Gardens SA 5061
Telephone/Fax 8332 7730
E-mail gjcarne@cobweb.com.au

TREASURER

Iris Freeman

LIFE MEMBERS

Mr R. Hargreaves
Mr L. Nesbitt
Mr R. Robjohns
Mr D. Wells

Mr G. Carne
Mr R. Bates
Mr R Shooter

Registrar of Judges:

Reg Shooter

Trading Table:

Judy Penney

Field Trips & Conservation:

Thelma Bridle Tel. 83844174

Tuber Bank Coordinator:

Malcolm Guy Tel. 82767350

New Members Coordinator

David Pettifor Tel. 0416 095 095

PATRON: Mr T.R.N. Lothian

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JOURNAL OF THE NATIVE ORCHID SOCIETY OF SOUTH AUSTRALIA INC.



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NEXT MEETING 27 FEBRUARY 2001

Tuesday, 27 February, St Matthew's Hall, Bridge Street, Kensington. Meeting starts at 8:00 p.m. Doors to the hall will be open from 7:15 p.m. to allow Members access to the Library and Trading Table. Cathy Houston and Thelma Bridle will review N.O.S.S.A.'s year 2000 Field Trip and Conservation experiences and highs. An excellent chance to see a year's worth of orchids in one sitting. Members will be asked to make comment on what activities and talks they would like to see over 2001.

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DIARY DATES

6 January (Saturday)	Dipodium Special Naracoorte (see page 109)
21 January (Sunday)	Terrestrial Study and Barbeque
27 February 2001	first NOSSA General Meeting for 2001
27 March 2001	Annual General Meeting
24-28 September 2001	First International Orchid Conservation Congress, Perth, WA

NEXT COMMITTEE MEETING

To be held at the home of Reg Shooter, Wednesday 31 January at 7:30 pm

The Committee of the Native Orchid Society of South Australia wish you and your family a happy, healthy, inspirational and safe time over the Christmas festive season and throughout the coming new year.

To most people the European wasp is little more than a nuisance at BBQ's or at worst a possible threat if one accidentally disturbs a nest. However this introduced pest poses a threat to our wildlife on an equivalent scale to the cat or the rabbit. Consider the following from an unpublished report prepared by P.J. Gullan for the ACT Flora and Fauna Committee and two other recently published reports on the English wasp in the New Zealand Entomologist and in the Australian Journal of Entomology.

Until recently only the German, or European wasp, *Vespula germanica*, was considered a serious pest for Australia as it was able to overwinter, though with reduced activity. The English wasp, *V. vulgaris* was known from Melbourne and Gippsland but colonies rarely survived the winter. Colonies of German wasps in Australia have been reported up to 100 times the size of those found in Europe.

Wasps are attracted to sweet foods, soft drinks and meat but the bulk of their food is of live insects and spiders which are fed to the larvae. Adult wasps apparently subsist mainly on nectar and insect honeydew. The latter is also an important source of food for some insects. Surveys in Tasmania have shown that in areas of high nest density near Hobart, no other insects were found and the wasps were cannibalising each other. Wasps have been reported preying on an endangered Tasmanian butterfly and the butterfly larvae. Wasps also attack bees and steal honey and in the USA grape growers may lose half of their crop to the wasps.

Wasps in forested areas often use rabbit or wombat burrows as nesting sites. Dogs, goats, ferrets and even a horse that stood on a nest have been reported being killed by the wasps. Obviously they are capable of killing any native vertebrate that disturbs them. Near Heritage Landing on the Gordon River, Tasmania, passengers on cruise boats have sometimes refused to leave the safety of toilets on the boat because of the numbers of wasps. Several popular camping sites in southern Tasmania are uninhabitable due to the number of wasps.

The English wasp is now known to have established in Tasmania. It is considered to prefer cooler areas than the German wasp. In native NZ beech forests the English wasp nests density average 12 per hectare but with up to 31 nests per hectare at some sites. Nest size is up to 6 times greater and queen production up to 23 times greater than in England. The biomass of the wasps in insect capture by Malaise traps in NZ was shown to often exceed that of all other insects combined. Prey biomass of the wasps in some areas was similar to that of the entire insectivorous bird fauna.

In Adelaide areas the spread of the wasps immediately altered the arachnid fauna with leaf curling spiders and harvestmen disappearing altogether and many other species were greatly reduced in numbers. Very small spiders tend to escape the wasps as do larger spiders, however the young of the larger species are taken and fewer remain to reach maturity.

Obviously the European and English wasp pose an enormous threat to our wildlife including insect eating birds and insect pollinated plants. Unfortunately the preferred climate of the wasps is also that of most of our terrestrial orchids.

FOURTH AUSTRALASIAN NATIVE ORCHID SOCIETY CONFERENCE AND SHOW

Doug Bickerton

Notes taken from talks attended (Part 2 of 2)

Saturday 7th October

Malcolm Thomas: *Caladenia* Cultivation

(20 years ANOS member; amateur orchid grower specialising in *Caladenia*)

- All *Caladenia* produce new tubers each year. The large Spider *Caladenia* form the new tuber deeper into the pot each year.
- A fibrous sheath extends from the tuber to the soil surface. The new shoot travels up through the same sheath each year to the surface.

- When re-potting (from November to January), can remove the top portion of sheath but leave bottom portion intact.
- When re-potting, use 50% of the old mix to ensure transfer of the mycorrhiza.
- Clump the tubers close together to "concentrate" the mycorrhiza.
- Pests in cultivation conditions include snails, slugs, aphids, red spider mites and caterpillars.
- Germinated seed forms a leaf in the first year, but will not produce flowers for at least two more years.
- Flashed *Caladenia* rarely deflask successfully into pots, unless placed at the base of parent plants.

Greg Steenbeeke: Orchids of NE New South Wales

(Senior Nature Conservation Officer, Caloundra City Council)

Steenbeeke talked about an orchid survey he conducted in NE NSW for NSW Dept Land and Water Conservation. This region is one of diverse contrasts in landscape and geology, but is also subject to considerable pressures for economic development, thus the need for the survey.

Colin Bower: Specific Pollinators and Taxonomic Relationships of Australian Sexually Deceptive Orchids

(Has PhD in entomology; interest in orchids since early 1980's; has studied pollinators of sexually deceptive orchids since the late 1980's.

- About 300 terrestrial orchid species from at least 8 genera employ sexual deception as a pollination technique, either by visual mimicry or the use of a scent. Many species are thought to be pollinator-specific.

Bower has discovered that morphologically similar flowers attract wasps of different species or even genera. Subsequent work by David Jones has shown the flowers to belong to different species.

- When Bower wants to compare the pollinators of 2 similar taxa, he picks a flower and transports it to a population of the other taxon, places it in a jar of water and records pollinator visitations.

- He conducts trials using a) a single taxon, b) four sympatric taxa, c) two sympatric (co-existing) taxa and two allopatric (non co-existing) taxa and d) sequential tests using different combinations of taxa for short periods of time.

- Wasps were considered major responders if they underwent a full pollination sequence and minor responders if they merely displayed some attraction to the flower.

- Bower has formulated 4 principles from his studies:

1. Sympatric sexually deceptive orchid species have different pollinators.

2. Allopatric sexually deceptive orchid species have different pollinators, but may share similar attractant odours.

3. Pollinator specificity allows the detection of new cryptic orchid species.

4. Pollinator specificity can detect cases where morphologically different taxa belong to the same biological species.

Unfortunately Bower was forced to finish his talk before explaining and justifying the two latter principles.

David Jones: Natural Groups in *Diuris* Sm.

(Orchid taxonomist and research scientist, Centre for Plant Biodiversity Research, Canberra)

David Jones's paper covered recent revisionary research on the genus *Diuris*. He has divided the genus into seven complexes largely based on electron microscope views of similarities and differences in the columns and labella.

SOUTH-EAST TO MELBOURNE FIELD TRIP

Thelma Bridle

Part 3: Grampians and Little Desert 10-12/10/00 Continued from November Journal

I thought perhaps members might like to know which orchids we found on our return journey to Adelaide. The area situated behind the horribly graffiti-covered Sisters Rocks contains a number of spring-flowering orchids and is particularly notable for the number of *Calochilus robertsonii*.

At Deep Lead, near Stawell, there are many spring-flowering shrubs, particularly in pinks and mauves, and orchids which extend from the roadside into the ironbark woodland. *Caladenia fulva* has formed many hybrids with *C. reticulata*, such that it is very difficult to locate any of the parent species. The flowers are very attractive, ranging from white to dark pink with a selection of beautiful labellums and long dark osmophores on the sepals. It was a cool, cloudy day on our visit, so the many sun orchids were not in flower. *Thelymitra luteocilium* was out and *T. nuda* close to opening, but the many *T. x chasmogama* were in bud, with very grey backs to the sepals. *Prasophyllum pyriforme*, which flowers in mid Nov. had buds forming. At 3-Jacks Reserve there were a number of orchids, with the 2 *Prasophyllum* species the most interesting. *P. fitzgeraldii* and in a different area a group of *P. lindleyana*, a green-flowered orchid with a yellow, flattened s-bend labellum and a sweet perfume.

Behind Lake Fyans an area of bushland has many orchids, including *Caladenia versicolor*. As the name suggests, these flowers tend to be an array of shades in creams and pinks. The type flower has a brilliant pink labellum and dark sepal osmophores. *Caladenia venusta* was flowering as a small group in a damp area together with a number of *C. parva* and several hybrids were found, with flowers the size of *C. venusta* and fringing on the wide, flat green, white and red labellums.

The forecast was for a fine, sunny day, so a visit to the Stawell Racecourse seemed a good idea. Early in the morning there are always horses out for a gallop, but we were more interested in the orchids, which grow in the middle of the racecourse. *Thelymitra megacalyptra* flowers were keen to open, despite the cool breeze, and some had already finished flowering. There was a range of flowering stages, including some very tight buds, obviously a later-flowering race. There were a number of *Thelymitra* species present *T. rubra* was finished, *T. x chasmogama* in bud, *T. antennifera* in flower, and some very deep pink *T. x macmillanii* with yellow 'ears', just like J. Jeannes photo. *Diuris orientis* had finished flowering but *D. behrii* were flowering plentifully in damper areas. We spoke to a racecourse official, who admitted knowing nothing about orchids, but knew of their presence and was keen that they be conserved. He asked advice on slashing and the appropriate time of year for doing same. However, they were not proposing to slash the middle of the racecourse.

Bunjil's Shelter, a collection of granite boulders, is set on a ridge affording a panoramic view over the plains surrounding the Grampians, and originally used by Aborigines as a lookout. Orchids were found near and around the base of the rise. Amongst the rocks a large (over 100) colony of *Cyrtostylis reniformis* had probably every plant in full flower. In a warm, humid and protected spot *Diuris sulphurea* was in flower.

Caleana major were numerous and in bud on Mount Sturgeon. They were a little hard to see with their red leaves and stems growing in sandy bushland and in places right on the track *Pterostylis* sp. were still flowering here, with *Thelymitra* sp. only in bud. A little further along the road at the Dunkeld Rifle Range we found many orchid species. *Caladenia gracilis* were numerous and under the trees *C. iridescens* was in bud, *C. cucullata* in flower and many *Caleana major* in bud. *Calochilus campestris* were located out on the range, but still in tight bud. *Caladenia venusta* was flowering both on the range and in surrounding bushland. Hybrids too - this time possibly with *E. phaeoclavia*, or at least a green-comb spider with a taller stem than *C. parva*, shorter and fewer combs than *C. tentaculata* and brown osmophores on the forward-pointing lateral sepals.

We drove along picturesque backroads to the Little Desert Conservation Park. I suppose this sandy region always looks dry. On the Stringybark Walk we found a single colony of about 20 *Caladenia cardiochila*, but everywhere was *C. cucullata*. They had flowers smaller than *C. carnea*, a greeny-cream colour, mainly 2 but up to 10 flowers per stem. It was the same story at the Billy-Ho Bushwalk, near Kaniva, many small-flowered *C. cucullata* again with sometimes large numbers of flowers per stem. The *C. cucullata* we had seen earlier on the trip had all been larger and fewer flowered. *Glossodia major* was largely finished, but sun orchids were on their way open, with a later flowering population of *Thelymitra megacalyptra* still in tight bud. *Caladenia tensa* was flowering in a small area under eucalypts.

	Sisters Rocks	Deep Lead	3 Jacks Reserve	Lake Fyans	Stawell Racecourse	Bunji's Shelter	ML Sturgeon/ Rifle Range	Little Desert/ Billy Ho
<i>Caladenia cardiochila</i>								
<i>C. carnea</i>	f	f	f	f		f	f	f
<i>C. clavigera</i>							f	
<i>C. cucullata</i>	f	f		f			f	f
<i>C. deformis</i>				f				
<i>C. fulva hybrida</i>		f						
<i>C. gracilis</i>				f			f	
<i>C. lutescens</i>							b	
<i>C. parva</i>				f				
<i>C. phaeoclaivia</i>							f	
<i>C. pusilla</i>							f	
<i>C. reticulata</i>		f						
<i>C. tensa</i>								f
<i>C. tentaculata</i>	f	f	f	f		f	f	
<i>C. venusta</i>				f				
<i>C. venusta hybrida</i>				f				
<i>C. versicolor</i>				f				
<i>Calceana major</i>							b	
<i>Calochilus campestris</i>							b	
<i>C. robertsonii</i>	f							
<i>Cyrtostylis reiformis</i>	f					f	l	
<i>Duris behrii</i>					f			
<i>D. orientis</i>			f		s		f	
<i>D. pardina</i>	f	f	f		f		f	
<i>D. sulphurea</i>						f		
<i>Glossodia major</i>	f	f	f			f	f	
<i>Leptoceras menziesii</i>							l	
<i>Microtis arenaria</i>						b		
<i>M. sp.</i>	l	b		b		l		
<i>Prasophyllum fitzgeraldii</i>			f					
<i>P. lindleyana</i>			f					
<i>P. pyriforme</i>		b						
<i>Pterostylis melegramma</i>			f				f	fo
<i>P. nana</i>	s	s					f	
<i>P. nutans</i>							f	
<i>Pyrorchis nigricans</i>						l	f	l
<i>Thelymitra antoninifera</i>		f	f	f	f	f	f	f
<i>T. benthamiana</i>							l	
<i>T. x chasmogama</i>		b		f	b			
<i>T. bicolor</i>	b			b			f	b
<i>T. luteociliatum</i>		f		f				
<i>T. x macmillanii</i>					f			
<i>T. megacalyptra</i>					b			b
<i>T. nuda</i>	b	b		b				
<i>T. rubra</i>		b			s	f	f	
<i>T. sp.</i>	b	b	b	b	b	b	b	b



"Give a man an orchid and you please him for a month; teach him how to grow them and you will thrill him for a lifetime." From Orchidwise by Roger Rankin

NECROPHYLLY and DROUGHT RESISTANCE IN SOUTH AUSTRALIAN ORCHIDS

Bob Bates

South Australia is the driest state in the driest continent. Many of its native orchids have evolved strategies for beating or avoiding drought ie growing only in damper microclimates, having a short growing season or developing strategies for avoiding water loss.

To avoid water loss many species have tough leaves with a waxy surface, some store water in special tissues and some simply get rid of their leaves once dry conditions develop. Getting rid of their leaves is not a matter of dropping them. Our native orchids simply remove all moisture and food reserves from the leaves and place these reserves in the new tuber (or fleshy flowering scape.) The leaves are then effectively dead or necrotic... hence the term necrophyllly.

At least 20% of South Australian orchids use the technique. The best known ones are the so called Rufa group' *Pterostylis*. South Australia probably has about 30 species of these, most of them undescribed. They are able to grow in areas too dry for other orchids by: 1: choosing moister microhabitats.... 2: actively growing only in damp periods and storing reserves in large tubers.... 3: utilising early morning dew.... 4: having a waxy surface to the whole plant.... 5: practising necrophyllly.

Each September when the temperature rises and daylight lengthens, the leaves of 'Rufa group' *Pterostylis* simply shrivel up. For those of us who have grown the species it can be observed that this often happens even if the soil is kept damp. For some species it can be quite a rapid process, the leaves looking fresh and green in the morning but 'gone' by nightfall but for most species it happens gradually over a week or so. Flowering may already have begun before the leaves die but the late flowering species may not even have developed scapes before leaf senescence. The most noticeable of these is *Pterostylis* aff. *despectans* from Eyre Peninsula. The leaves of this species shrivel in September but flowering does not start until November... up to 8 weeks later and flowers may continue to develop up to 3 months after necrophyllly. I have actually dug up some of these species in bud, pulled off the new tuber and watched as the plant, simply sitting on a bench with no soil or water provided, goes through with its flowering, produces a new tuber and will even develop seed to maturity.

Many other genera have some species which flower after the leaves are gone, *Caladenia* for example has the aptly named *C. necrophylla* but most of the dryland species will flower after the leaf has shrivelled... ie *C. cardiochila*, *C. toxochila* and *C. clavula*. With this latter species I have actually picked and pressed a flower and several days later removed it from between the pages of a book, placed the cut stem in a glass of water and watched as the flower plumped out again. This flower was then pollinated and set good seed. Now that's tough..

I have seen *Prasophyllum odoratum* complex species in the desert pushing out a juicy flower spike from a totally desiccated leaf. Even *Microtis arenaria* will flower after most of the leaf is dried out. Some of the late flowered *Thelymitra* like *T. aff. nuda* 'November' and *T. benthamiana* can be seen in good flower after leaf senescence. Of course not only does flowering proceed after leaf loss but seed capsule development must continue for weeks after that!

Then there are our autumn flowered species.- *Eriochilus* and *Leporella*... these must initiate all growth from the tuber without a leaf at all... but they do have the advantage of quickly forming a leaf to help out as soon as flowering begins. In all some fifty leafy species of SA orchid are able at a pinch to flower without leaves being present, all because leaves lose too much moisture. Lets hope South Australians themselves learn to manage our water resources as effectively.

PTEROSTYLIS FALCATA IN THE MT LOFTY RANGES

Bob Bates

The distribution in South Australia of this late flowering green-hood from swampy areas has been much discussed over the years. There are very few collections and few people in SA today could confess to having seen it here. There are old collections from the South East and Kangaroo Island at the herbarium. I admit to having seen it in flower in SA only 3 times, once in the SE, once on Kangaroo Island and once at Scott Creek, three times in thirty years.

Consequently I was delighted when Mal and Kathy Houston recently brought me a specimen that Mal had collected near Myponga. This plant was from a small colony on the edge of an inundated area. Plants were growing in the open and were stunted, being only 10-15cm high. In the eastern states they tend to be 20-30cm tall. The collection has been deposited at the State Herbarium and it appears to be the only collection from the Fleurieu Peninsula. Interesting finds just keep on coming.

CONSERVATION NEWS

Bob Bates

Two new Parks were dedicated recently. Mokota Conservation Park, SA's only sub-alpine grassland reserve is near Mt Cone north of Burra. Despite 100 years of grazing five species of orchid have already returned.

Gawler Ranges National Park is a large area comprising the old Paney and Mt Ive Stations between Eyre Peninsula and Lake Gairdner. This semi arid region of granite outcrops is rich in rare plant species and includes a wonderful range of dryland orchids. Part of the adjacent Scrubby Peak station is likely to be added. Because it is adjacent to the vast sandhill scrublands of Pinkawillinie Conservation Park it is a most exciting and scenic addition to our reserve system.

SCOTT CREEK FIELD TRIP REPORT (refer October Journal pg 86) Doug Bickerton
 We thought we had 44 *Caladenia gladiolata* leaves and 43 buds, but I returned to the site on 25th Sept and could only verify 13 flowering *C. gladiolata* (& that's only if you include the 4 eaten on the first visit). The other buds turned out to be *Caladenia leptochila* and *Caladenia reticulata*. So in fact the population is much the same size as it has been for the last few years. You wouldn't have thought we'd get so many wrong, but it appears we did. (Scott Creek Field Trip 10/9/00)
 Doug Bickerton, Project Officer, Lofty Block Threatened Orchid Recovery Project
 Biodiversity Division, Department for Environment and Heritage

DISCOVERIES OF "NEW" THREATENED ORCHID POPULATIONS Doug Bickerton
 Those among us who came along to field trips this year know it was an exceptional year in South Australia for many orchid species. With good soaking rains from February through to October in many parts of the State, many of those tubers lying in waiting decided that this was the year to flower. It made searching for endangered species easier as well, because they were appearing in larger numbers and in new locations. Here is a list of some of the new sightings recorded of taxa related to the Lofty Block Threatened Orchid Project.

Caladenia woolcockiorum

- Until recently only recorded in low numbers from almost inaccessible mossy ledges in Mt Remarkable National Park.
- In 1999 it was found by Bob Bates and myself in or near fertile gullies in one section of the park, only accessible by 4WD (or very adventurous bushwalking). By the end of the season I had counted 500 mature plants at four sites.
- In 2000, mostly in the same section of the park, plants were found at seven new locations. 1500 flowering plants sighted and more than 2000 plants estimated to exist, mostly in a restricted range measuring 15 km x 1 km, but the sites are close enough together such that gene flow between sites is probably happening. This area is mostly weed-free and fortunately out of reach of most humans.

Pterostylis bryophila

- Previously known from less than five sites in or near Mt Billy CP, 650 flowering plants were recorded in the only viable population in 1999.
- Following the Orchid Conservation Forum in May 2000, the Friends of Mt Billy alerted us to two new sites in and near the park. Both sites are infested with bridal creeper, but the orchid is in good numbers and both populations are potentially viable. The biological control "Bridal Creeper Rust" was released at one site in September. Total range for the species remains less than 10 km².

Pterostylis despectans

- Bob Bates discovered a population of this unusual species on a grazing property near Hallett more than 10 years ago. Previously only recorded in small numbers at a handful of sites in Victoria. In 1999 we counted 133 plants, 79 mature.
- In July 2000, NOSSA members explored a nearby property and discovered about 500 rosettes of similar appearance. It was later verified that most of these are *P. despectans*.
- In October 2000, Barb Bayley was informed of another potential location 60 km further west, near Redhill. This has since been verified as a population of more than 85 mature *P. despectans*. Fortunately this site is under Heritage Agreement.

Caladenia macroclavia

- Only ever found in small numbers, mostly on Yorke Peninsula.
- In September 2000 Cathy and Malcolm Houston discovered some *C. macroclavia* near Moonta. It is another stroke of good fortune that the property is managed by National Trust.

Caladenia behrii

- Endemic to the Kersbrook/Williamstown area and the Belair/Scott Ck area.

- After extensive searches in 1998, the total known population included 1960 flowering plants at about 20 locations.
- After the 1999 season the count was revised to almost double that of 1998, with about 10 new sites discovered.
- This year the search was less extensive, but concentrated in and near Forestry SA land and Para Wirra Recreation Park. Another 500 flowering plants were sighted at 7 new locations.

Pterostylis "Halbury"

- Previously recorded from a number of sites, mainly north of Adelaide, but thought to have disappeared from almost all sites except one large viable population at Halbury.
- Bob Bates reports having sighted this species at a handful of locations in 2000. It is encouraging to hear that the species may not be restricted to one population, however most of the Adelaide Plains has been cleared of sizeable blocks of native vegetation, and the Halbury population is likely to remain the largest.

As can be seen, many of the new discoveries have been due to the alert observations of members of NOSSA and other community groups. I'd like to thank those individuals for their assistance so far; they have made the work much easier and much more rewarding. Many of these people are also involved in other conservation work, such as revegetation, bushcare, growing native plants and the activities of bird or butterfly conservation groups. We can look forward to 2001 with the assurance that such people will continue to assist in the conservation of our threatened orchids and our biodiversity in general.

USING GENETICS TO ANSWER TAXONOMIC QUESTIONS OR TO SPLIT OR NOT TO SPLIT

Doug Bickerton

Many readers are aware of the Lofty Block Threatened Orchid Project, a partnership between Threatened Plant Action Group and Dept. Environment & Heritage. The focus of this project is the conservation of a number of nationally endangered or vulnerable orchid taxa found in South Australia. You will notice I used the word "taxa", and not "species". In some circumstances it has been difficult to distinguish whether plants within a population are sufficiently different from other populations to be labelled a distinct species. Sometimes there are minor morphological differences such as labellum shape or veins on the leaf, and perhaps the population is found in a different type of habitat, or many kilometres from a similar population. But perhaps there is some other difference that cannot be distinguished by sight, feel, smell or intuition.

Exactly what is meant by a species varies, according to which taxonomist you talk to. When I was at high school I was told that different species had a different number of chromosomes, and therefore a cross between species (ie a hybrid) would not produce viable offspring. Nobody told me about the Orchidaceae family, which seems to produce more viable hybrids than non-viable ones! Therefore the best way to determine the relationship between two populations is to examine their genetic material.

Earlier this year it was decided to use a process called Allozyme Electrophoresis to answer some questions about three taxa. I will discuss the results of one of these in this article, and the other two in a second article.

Pterostylis aff. *nana*

Bob Bates and some other NOSSA members have known of a patch of '*P. nana*' at Hale CP for over a decade. The population covers a mere 0.25m² and monitoring in recent years has found 70 - 170 plants. They are smaller than the typical *P. nana*, with a brown-orange hood and a "dolichochoila"-type pointy tip. The population is found in micaceous soil with long-leaf box / native pine woodland (*Eucalyptus goniocalyx* / *Callitris rhomboidea*). In 1999, NOSSA members on a field trip 80km away in Ferries McDonald Conservation Park, discovered a similar patch of orchids in sandy soil with mallee woodland. Since the two populations are apparently rare, but growing in different habitats, there was some doubt that they were of the same taxon.

In August 2000, with the assistance of David Pettifor, the Bridles, the Houstons and other NOSSA members, I located the two *Pterostylis* aff. *nana* populations and collected a leaf from 20 plants at each site. I also took 14 or 15 leaf samples from the Adelaide Hills form and mallee form of *P. nana*. These were immediately stored cryogenically (in liquid nitrogen) to prevent deterioration, and taken to Mark Adams at the Adelaide Museum within a few days.

The material was then brought out of storage, crushed and subjected to a number of electrophoretic gels that highlight certain loci (or positions of genes on the chromosomes). The reading from each gel indicates whether the highlighted gene is identical to other samples or similar. It also shows if the gene is heterozygous (a mix of dominant and recessive characteristics) or homozygous. This process indicates whether there are genetic differences between samples without showing what the differences are. That is, if a gel gives an identical reading for two samples of material then we know that gene is identical in both plants, but we don't know the purpose or importance of the gene.

The tests indicated that the Hale CP and Ferries McDonald CP populations are of the same taxon, distinct from the Adelaide Hills and mallee forms. Also the samples within each population were identical, although the populations are not identical to each other. This means that both populations are clonal, i.e. only reproducing vegetatively (by tuber). The tests on the Adelaide Hills form and the mallee form indicated that these latter forms are of the one species. Furthermore, there was little variation within samples of the latter forms, indicating that most reproduction is by tuber division, but some spread also happens from seed.

These results answer some questions for us, but in the process other questions are raised. Perhaps it should not be surprising that the Hale/Ferries-McDonald form is spreading vegetatively because there are numerous plants in a very small area, but why are they clonal when Bob Bates has been hand-pollinating the Hale population for more than a decade? And why are they found in such different habitats? One suggestion put to me is that each population began from a hybrid from two common species (eg *P. nana* with *P. robusta* or *P. dolichochila*), which produces sterile seed. Another is that the seed is not sterile, but simply no recruitment has resulted from seed at these two populations. Bob Bates believes that a *P. aff nana* common to Eyre Peninsula is the same taxon, and these populations near Adelaide may be outliers.

Needless to say, further research needs to be conducted to answer these questions.

JUDGING CLASSES 2001 Reg Shooter

Judging classes will continue again during 2001. Any Member wishing to join the group will be made very welcome.

The classes are not technical or difficult and participants are not required to sit tests or exams. In addition to judging matters general discussions on all aspects of Australian Native Orchids, both terrestrials and epiphytes are examined. The meetings are held at various judge's homes usually once a month on Saturdays from 9.30am to noon.

If you are interested in joining the group feel free to talk to me either at a meeting or by phoning me on 82352323

COMING FIELD TRIPS

4 *Dipodium* Special

Meet at the Naracoorte Post Office at 9am on Saturday Jan 6th, 2001.

FIELD TRIP PLANNING AND TERRESTRIAL STUDY GROUP

Field Trip planning for 2001 and Terrestrial Study Group: Sunday January 21st at 4pm

17 Carnarvon Ave Redwood Park, Bring *Pterostylis nana* and *Pterostylis alata* complex slides and prints for discussion. Barbecue tea provided... bring drinks salad and dessert.

FOR YOUR ATTENTION - N.O.S.S.A. NEWS

Journal Articles are sought (from you the reader). In particular, we need more articles about epiphytes and more 'scientific' articles. As you can see, there are no epiphyte related articles in this Journal!! Many thanks to those who have already contributed, but don't stop now. I am now looking for articles for the February and March Journals.

Tuber Bank: Many thanks to those who donated tubers to the 2000 Tuber Bank. Special thanks also to Malcolm Guy who is co-ordinating the receipt and distribution of the tubers again this year, a task he performs very well.

Annual General Meeting Tuesday 27 March. Committee Members for 2001 are sought. We would like to have you (yes you!) on the Committee. If you haven't been on NOSSA Committee before, talk to a current Committee Member to see what is involved. Positions don't impose significantly on your time, and the only requirement is your interest in seeing NOSSA progress and flourish in the right direction.

VALE NEIL CHRISTOPH

Reg Shooter

It is with sadness and a sense of loss that we note the death of our long time member Neil Christoph who passed away on 3rd November 2000 aged 77.

Neil had a love of orchids from a very early age. He joined the Orchid Club of SA as a young man in 1950 serving in many positions on that clubs committee right up until a few years before his death.

Neil was not a foundation member of NOSSA but joined the club soon after its formation. He was on the sub-committee of the successful 3rd Australian Native Orchid Conference in Adelaide in 1996 co-organising the social side of the conference, a task he was very familiar with and accorded to his sociable nature. He was the clubs auditor for many years carrying out these duties efficiently and professionally without a charge to the club and was a regular visitor at monthly meetings until he became too ill to attend.

Neil's main interest in the orchid field was with the Australian Native Epiphytes, many of which he grew at his home at Myrtle Bank along with other more exotic species.

Neil led a very varied and interesting life. During the 2nd world war he served with the RAAF as a cryptographer decoding and coding messages intercepted from the Japanese sending the results to the Australian and American intelligence services. After the war Neil worked at the Kelvinator factory and later for Western Mining p/l. Neil's other great love was horses and in the '50s became involved with the trotting industry where through hard work and talent became a top trainer and = driver. Many will remember his flair and daring on the track at Wayville.

Over and above all this Neil was a kind and thoughtful gentleman in the true sense of the word always ready to pass on his experience or tell one of his many anecdotes about his interesting life.

He will be missed.

N.O.S.S.A. TUBER BANK FOR 2000-2001
M. GUY

Available to Financial Members only! See Over for listing. Cloisin date for orders is the last mail on the 12th January, 2001; Tubers will be posted on the 22nd January.

I thank all growers who have generously promised tubers which need to reach me by the 16th January. NOTE: 72 lots in all see reverse side of page.

Circle each lot number that you wish to order and mark 'Sub' by any that you would like if your first choice is not available. Lots will have from 1 - 10 tubers, depending on supply and demand. Tubers in short supply will be issued on a first come - first served basis. Please record the provenance of tubers you receive if known.

Price per lot is \$1.00. Please note that a postage and handling cost of \$2.00 now applies.

POST ORDER TO M. Guy
15 Naomi Terrace
PASADENA SOUTH AUSTRALIA. 5042

Price per lot \$1

lots = \$ Name

Plus \$2.00 packing and postage Address

.....
Total for order is
Post Code

Cheque/Money Order to be made payable to N.O.S.S.A.

LOT GENERA SPECIES LOCALITY DATA

- 1 *Acianthus reniformis*
- 2 *Chiloglottis* aff. *formicifera*
- 3 *Chiloglottis formicifera*
- 4 *Chiloglottis* x *prescottiana* Coral Bay
- 5 *Chiloglottis sylvestris*
- 6 *Chiloglottis trapeziformis*
- 7 *Chiloglottis trapeziformis* Penola South Australia
- 8 *Chiloglottis platyptera* Barrington Tops N.S.W.
- 9 *Chiloglottis diphylla* - green Kempsey N.S.W.
- 10 *Chiloglottis truncata*
- 11 *Corybas hispidus* N.S.W.
- 12 *Corybas hispidus* Queensland
- 13 *Corybas fimbriatus* Thornleigh N.S.W.
- 14 *Cyrtostylis reniformis* Guntawang N.S.W.
- 15 *Cyrtostylis reniformis* Lucindale S.A.
- 16 *Cyrtostylis huegelii*
- 17 *Diuris sulphurea*

- 18 *Diuris orientis*
- 19 *Eriochilus cucullatus* Sandy Creek S.A.
- 20 *Thelymitra pauciflora* Currum Downs Victoria
- 21 *Microtis unifolia*
- 22 *Pterostylis alveata*
- 23 *Pterostylis* aff. *alveata*
- 24 *Pterostylis biseta* Sandy Creek S.A.
- 25 *Pterostylis collina* - green Copeland
- 26 *Pterostylis collina* - brown Copeland
- 27 *Pterostylis collina*
- 28 *Pterostylis curta* Mount Gambier S.A.
- 29 *Pterostylis curta* Adelaide Plains
- 30 *Pterostylis curia*
- 31 *Pterostylis* x *Bantam*
- 32 *Pterostylis baptistii* Gosford N.S.W.
- 33 *Pterostylis baptistii*
- 34 *Pterostylis coccinea*
- 35 *Pterostylis concinna*
- 36 *Pterostylis* x *conoglossa*
- 37 *Pterostylis* x *Dusky Duke*
- 38 *Pterostylis Dusky Duke* Wynyard Tasmania
- 39 *Pterostylis erythroconcha* Marion Bay S.A.
- 40 *Pterostylis erects*
- 41 *Pterostylis* x *furcillata*
- 42 *Pterostylis* x *furcillata* Weston N.S.W.
- 43 *Pterostylis* x *ingens*
- 44 *Pterostylis* x *Hildae*
- 45 *Pterostylis* x *Hoodwink*
- 46 *Pterostylis* x *Jack Warcup*
- 47 *Pterostylis* x *Joseph Arthur*
- 48 *Pterostylis laxa* Bungonia N.S.W.
- 49 *Pterostylis laxa*
- 50 *Pterostylis nutans*
- 51 *Pterostylis nutans* variegated
- 52 *Pterostylis nutans* Briagalong Victoria
- 53 *Pterostylis nutans* Park Orchids Victoria
- 54 *Pterostylis* x *Nodding Grace*
- 55 *Pterostylis longicurva* Stanthorpe Queensland
- 56 *Pterostylis* aff *longicurva*
- 57 *Pterostylis longipetala* , Kearsley N.S.W.
- 58 *Pterostylis* x *Mary Eleanor*
- 59 *Pterostylis ophioglossa* Red Bank Plains Qld
- 60 *Pterostylis ophioglossa*
- 61 *Pterostylis obtusa* true Mt Gibraltar
- 62 *Pterostylis obtusa*
- 63 *Pterostylis pedunculata*
- 64 *Pterostylis procera* Davies Creek Qld
- 65 *Pterostylis reflexa*
- 66 *Pterostylis reflexa* Fern Bay
- 67 *Pterostylis revoluta* Biragambil Hill N.S.W.
- 68 *Pterostylis robusta* Belair South Australia
- 69 *Pterostylis stricta*
- 70 *Pterostylis* x *Trunkfish*
- 71 *Pterostylis truncata*
- 72 *Pterostylis truncata* Gulfstream N.S.W.