THE W.A. NATIVE ORCHID STUDY & CONSERVATION GROUP

MEETINGS... 3rd WEDNESDAY each month at..

KINGS PARK BOARD ADMINISTRATION CENTRE
Theatrette, KINGS PARK, WEST PERTH.

Official Bulletin

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NOTE:

Opinions expressed by contributors to this Bulletin are not specifically endorsed by the Group.

THE WEST AUSTRALIAN NATIVE ORCHID STUDY & CONSERVATION GROUP

OBJECTS OF THE GROUP:

a. To promote interest in and preserve Western Australian indigenous orchids.

b. To learn the best means of cultivation and do all things possible for the conservation of native orchids in their natural environment.

c. To learn their habitats and keep records.

d. To have field days and learn to recognise the different genera and species.

e. To hold meetings for the exchanging of knowledge and furthering of interest in Western Australian orchids.

f. To affiliate with kindred organizations.

g. To make rules for the governing of the Group's domestic affairs.

h. To do all such other lawful things as are incidental to or conducive to the attainment of the above objects or any of them.

NEXT COMMITTEE MEETING

19th June, 7.00pm

NEXT GENERAL MEETING

19th June, 8.00pm

The main topic will be a presentation by Terry Wilson and family on long-term preservation of orchid flowers.

He will discuss with examples various techniques he has used to preserve the three dimensional form of blooms.

Terry will also briefly discuss and display his collection of rare and early texts on Australian orchids.

The evening will conclude with a description and demonstration of orchid brush painting by the distinguished chinese botanist Professor Sun of the Beijing Botanical Gardens.

He is visiting WAIT as part of an international exchange. This is a rare opportunity to see and hear one of China's foremost brush painters.

Correction:

In my article ' Observations on Western Aust. Conybas (April issue) I noted the description of Corybas as being southern coast from 'near Bunbury' to Cape Arid. This should have been from 'North of Perth' to Cape Arid.

Wasp Baiting with Western Australian Orchids:

Some Observations on the Pollination of *Caladenia plicata*

Introduction:

On his visits to Western Australia during the post fifteen years Professor Warren Stoutamire of Akron Ohio developed a method of attracting and capturing male wasps which were sexually attracted to the native orchids. The various reports on his work (Stoutamire 1974, 75, 83, 84) make fascinating reading. My attempts to use Warren's method of "baiting" wasps in South Australia had been unsuccessful but during the Spring of 1984 while visiting W A I was shown the finer points of 'wasp baiting' (with Drakaea) by Rod Peakall of the University of Western Australia. I used the Stoutamire method a number of times during my stay in the West observing and capturing wasps on *Caladenia, Drakaea & Spiculaea*. In this report I deal with *Caladenia plicata*.

Methods:

'Wasp baiting' involves removal of orchids to a new location where the resident male wasps have not learned that the blooms are floral decoys and accept them as wasps of their species.

To increase the success rate there are a number of factors to consider.

I Wasps are active mainly during warm, sunny weather so there is little point 'baiting' in cool or cloudy weather.

II Heat stimulates the orchid flowers to produce more of the chemicals which are a copy of the sex lure chemicals emitted by the female wasps to attract the males (these chemicals are termed phero-hormones or pheromones). Placing the flowers in your car in a sunny position with the windows up will concentrate the pheromone. I have also found that squeezing the clubbed sepals of *Caladenia* will further increase the amount of volatile chemicals produced.

III The orchid bait should then be placed in an open sunny spot. I found that small bare patches of white sand were suitable and always gave a higher frequency of wasp visits. Stoutamire (1983) suggested that the male wasps soon learn that the orchid flowers are not really female wasps so it it necessary to shift them to new locations if wasp activity falls off or is not occurring after 2-3 minutes.

IV The best time to work is around midday ie. when the sun is overhead. However, on very hot days wasp activity may begin about 9am and ceases by noon.

V As the gaseous pheromones are carried by the breeze it is more satisfactory to work on windy days, making sure there is a large area of suitable bush on the down-wind side of the bait. On windless days the pheromone is not dispersed so far or so fast and you may have to wait longer for action ! Shifts of 100 metres or so after 15 minutes may improve success rates.

Caladenia plicata

All these factors were considered when in early October I set out to observe and capture the pollen vectors of *Caladenia plicata*, the rather rare 'crab-lip spider orchid' which is endemic to the near coastal south-west from about Albany to near Busselton. My flowers of *C. plicata* came from near Manjimup and were transported overnight to Stewart Road near Alexander Bridge. The site chosen was on an area of Allocasuarina woodland on white sands, the favoured habitat of the orchid. The flowers were placed on a sandy north facing bank by the roadside with several *Drakaea* species and other *Caladenia* flowers. A light north-westerly breeze was blowing, the temperature 22°c, the sky beginning to cloud ahead of an approaching change. Time 11:10 am.

Observations:

Within two minutes the first male thynnid wasp arrived, zig-zagging upwind. It circled once and landed on the clubs of a *C. plicata* flower. (Fig 1) It flew off. Almost at once two wasps began circling the flowers and one landed on the labellum (Fig. 2) was immobile for 3-4 seconds before beating its wings rapidly, apparently trying to remove the "female" (the calli on the *C. plicata* labellum which in size and colour approximate a wingless female thynnid wasp). This small wasp was unable to shift the labellum and flew off but several wasps visited in the next ten minutes. Some investigated the glandular clubs , others the labellum, which they clasped and "attempted to remove ?" One wasp larger than others but probably the same species, lifted the labellum and was carried forward into the column. It instantly released the decoy and flew off; half the pollinia attached to its thorax. It did not return. None of the visiting wasps had pollinia attached and no *C. plicata* were located in the vicinity.

C. plicata has maroon, yellow-green & brown flowers which as noted by Stoutamire (1983) are the colour of *Caladenia* species so far known to be pollinated by sexually attracted wasps. As can be seen from the photo (Fig. 2) the male actually clasps the labellum 'decoy' with its genitalia exposed; pseudocopulation is not attempted, rather the wasp tries to fly off with the decoy and it is this action which results in removal and transfer of pollinia, as the forward motion of the wasp throws it against the column. The glandular sepals of one *C. plicata* flower were removed and they alone were enough to attract several wasps indicating that the glands are a source of the attractant odour. Declubbed flowers also attracted two wasps indicating a pheromone source on the labellum or column, although it is also possible some pheromone had rubbed onto it in transit. The wasps seen on the *C. plicata* showed no interest in the *Drakaea* or other *Caladenia* flowers available nor did other wasps species visit. When moved from *Allocasuarina* forest to *Eucalyptus* forest nearly the *C. plicata* flowers failed to attract further wasps.

Conclusion:

Caladenia plicata is shown to be a wasp pollinated species, the pheromone attractant being produced by glands on the sepals and possibly the labellum. The labellum calli may represent a female thynnid decoy.

Notes:

C. plicata has no human detected perfume although other Caladenia in the area tested were quite fragrant. One of these was the recently named *C. uliginosa* A.George (suprisingly George (1984) stated that it has no perfume) *C. uliginosa* has two forms one of which has wholly cream coloured flowers the other creamy-green with red labellum tip.

On several occasions native bees of at least 2 species were seen to visit flowers and transfer pollinia (Fig. 3) *C. uliginosa* is then something of a paradox, having flowers of both bee and wasp pollinator colours. It would be interesting to discover if the green and maroon colour form was also visited by wasps.

All pollinating insects were captured and have been left at the University of Western Australia for identification.

References:

George, A. S. (1984) "Seven New Orchids From Western Australia" *Nuytsia* 5: 53-62.

Stoutamire, W. P. (1974) "Australian Terrestrial Orchids, Thynnid Wasps and Pseudocapulation". Am. Orch. Soc. Bull. 43: 13-18.

Stoutamire, W. P. (1975) "Pseudocopulation in Australian Terrestrial Orchids." Am. Orch. Soc. Bull. 44: 226-233.

Stoutamire, W. P. (1983) "Wasp Pollinated Species of Caladenia in South-Western Australia". Aust. J. Bot. 383-394.

Stoutamire, W. P (1984) "Orchids and Wasps" S.W.A.N.S. 13(3): 8-9.

Bob Bates.

FIELD TRIP DATES (AMENDED) FOR 1985

Date	Venue	Accommodation
August 24/25	Dongara/Eneabba	Apex Club Jurien Bay
	Guest Speaker: - LESUEUR Wildflower Society Cost approx $25 including evening meal.	
September 7	Gingin/Bindoon	
September 14/15	Brookton/Pingelly enroute to Goomalling	Accommodation to be advised.
September 28/29/30	Windy Harbour D'entrecasteaux	Lions Club of Manjimup Chudalup Chalet
	Guest Speaker: - Saturday night, George Gardner	
October 5/6	Goodale Reserve	
October 12/13	Beverley/York	

Fig. 1

Caladenia plicata with thynnid wasp grasping labellum decoy.

Fig. 2

C. plicata with thynnid attracted to sepal tips by pseudopherome emitted by trichomes.

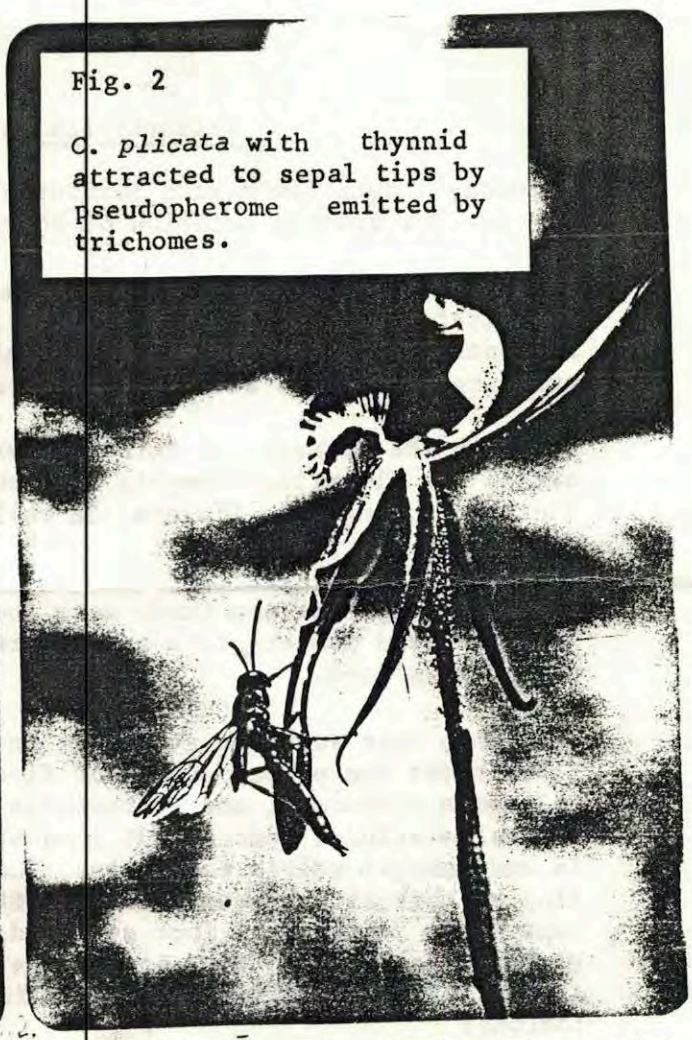


Fig. 3

Undetermined bee pollen vector on *Caladenia uliginosa*.

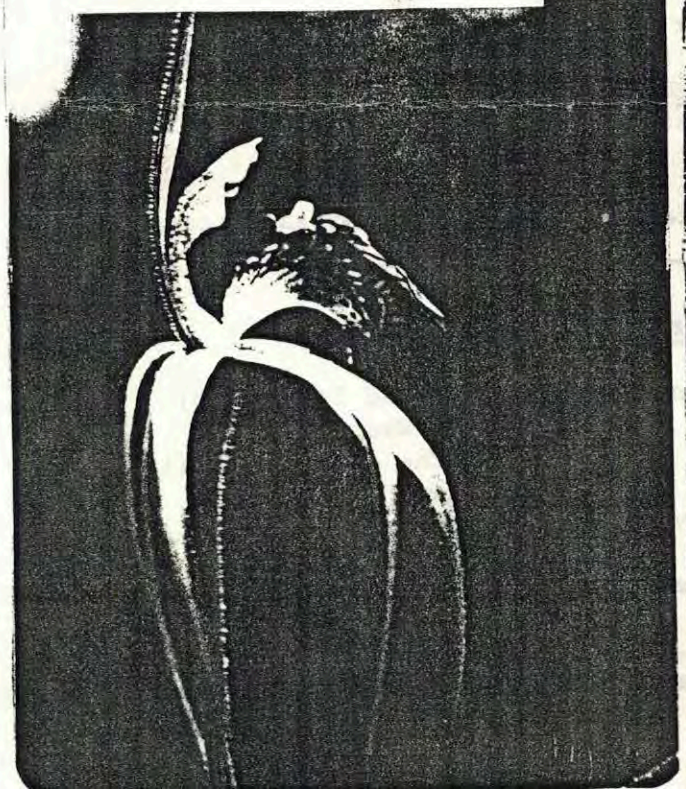
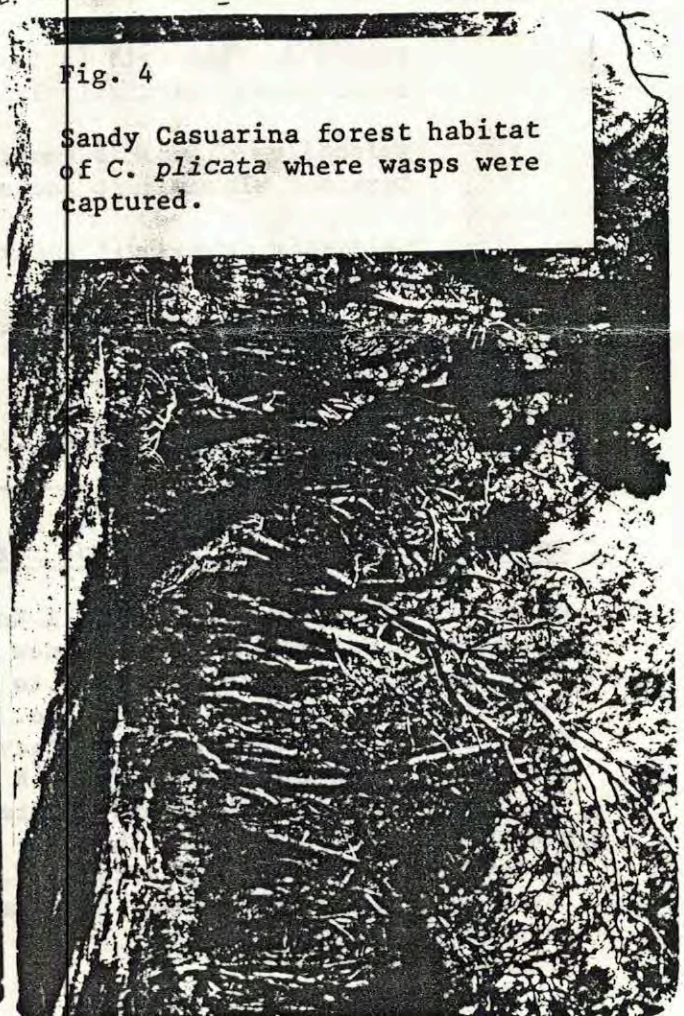


Fig. 4

Sandy Casuarina forest habitat of *C. plicata* where wasps were captured.



FIELD TRIP REPORT

Rhizanthella Revisited

Saturday 1 June saw a good turnout of members and friends heading off for the Babakin location of *Rhizanthella*.

In glorious weather the bus and cars arrived and within a few minutes the first plant was found providing an excellent example of how *Rhizanthella* is capable of occasionally splitting the soil thereby exposing the spiral arrays of small orchid flowers.

Although the emphasis of this trip was minimal disturbance the orchid was flowering superbly and abundantly - attested to by the fact that using only fingers, 22 well formed flowering heads were discovered.

Bob Brand and his son Grady were the most successful at the Babakin site and lead members to a spot where eleven specimens were flowering within a $4m^2$ area.

The group then focussed attention on another area some distance from Babakin for the prime purpose of finding the Autumn Spider Orchid *Caladenia drummondii* and *Pterostylis scabra* var *scabra*. Unfortunately *P. scabra* elluded members but good stands of *C. drummondii* were found in and amongst mallee eucalypts. The highlight of the day was the find at this site by our secretary Stephen van Leeuwin of a most remarkable "clutch" of four splendid flowering heads of *Rhizanthella*. Members again queued for photographs of this unique flowering event. A total of four orchids were found in bloom at the second site and include:

> *Leporella fimbriata* (a large form with peloric petals i.e. upper petals partially fringed and resembling the lip.)
>
> *Eriochilus dilatatus* (most in advanced seed - some with terminal blooms just fading.)
>
> *Caladenia drummondii* (peak flowering with some rather tall specimens) and, of course Stephen's insurpassable *Rhizanthella*.

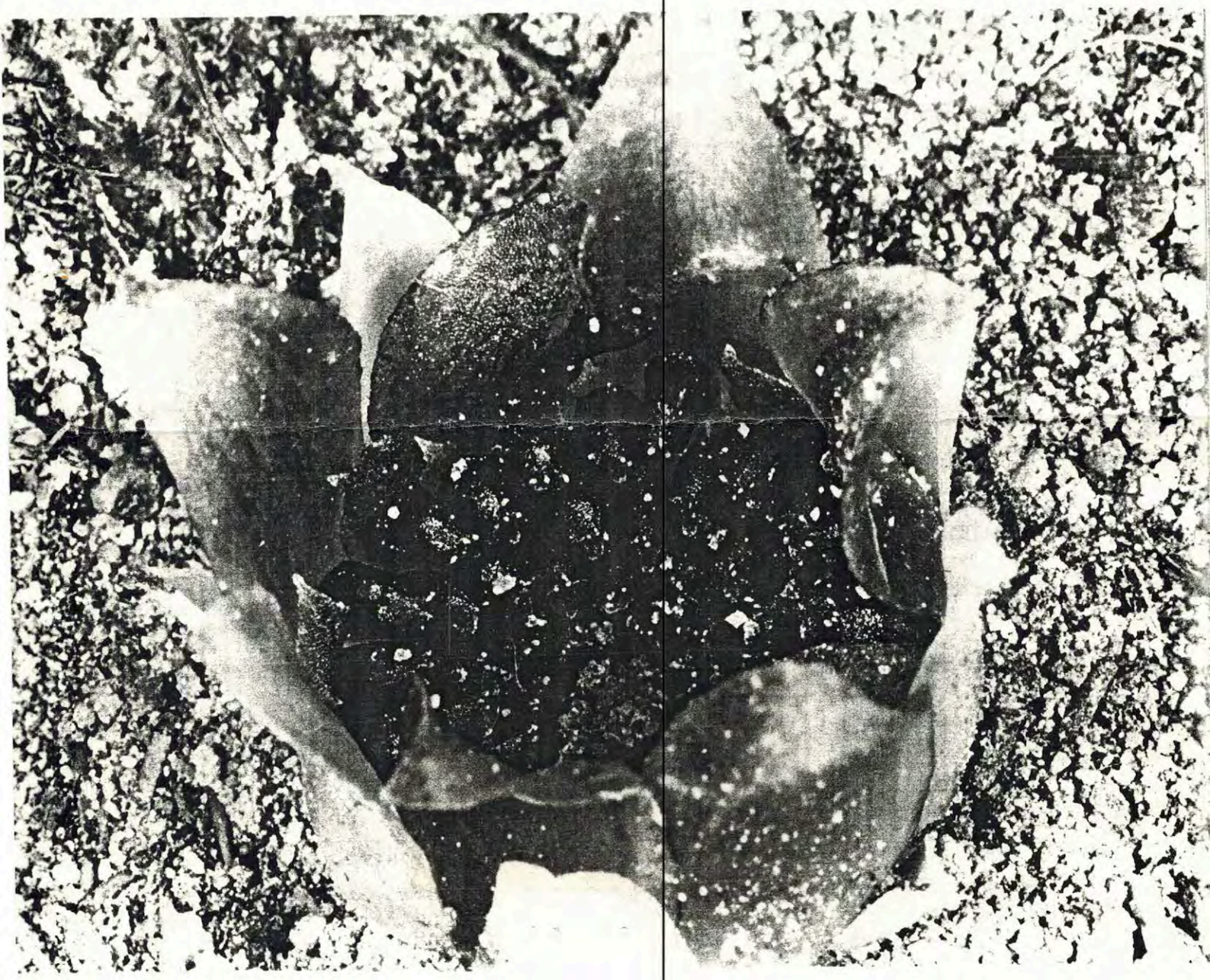
The day concluded with a very late afternoon tea and consensus that an excellent day was had by all.

Many thanks to those members who attended and made the day so successful.

An Early Collection of *Caladenia corynephora* A.S. George

On the 29 of December 1918 Miss I. Knox-Peden of Diamond Tree School collected a *Caladenia* which was new to her from the Warren River near Jarnadup. She sent plants to Dr R S Rogers the chief authority on Australian orchids at that time. Rogers a surgeon at the Royal Adelaide Hospital realised that they were a species new to science and placed them in his herbarium (R S Rogers 562) with the label "Caladenia Knox-pedensis" and a brief description. Apparently however he never published the name and Miss Knox-Peden missed out on having an orchid named after her. It was not until fifty years later that Alex George named the species *C. corynephora* which is certainly more descriptive.

Bob Bates



Rhizanthella gardneri

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Mr A Brown

SUPPER ROSTER

June	Mrs V J Eaton
July	Fay Gordon

Many thanks to Nancy Clark for last months supper.

RAFFLE ROSTER

June	Andrew Brown
July	V J Eaton

BANK BALANCE

31 May 1985 $1364