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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THE WEST AUSTRALIAN NATIVE ORCHID STUDY AND 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 organisations.

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.

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YOUR COMMITTEE - 1984

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	Noel Hoffman
BULLETIN	Fay Gordon Alison Harrington

POSTAL ADDRESS: P.O. BOX 323,
VICTORIA PARK W.A. 6100

GENERAL MEETING

Wednesday July 18th at 8pm at the Theatrette, Kings Park Administration Building, Fraser Road, Kings Park.

Topic: "Pollination Strategies:. Greg Keighery will speak on mechanisisms assisting pollination and fertilization with relevant examples from the Western Australian flora.

Plant Display, Raffle and Supper as usual.

COMMITTEE MEETING

Wednesday, August 1st at 8pm at Peter Watson's [redacted]

JUNE MEETING REPORT

General Information

Pine Plantation, Hayman Road, Bentley is being cleared - many Pterostylis species available for collection.

Please notify Committee of Last Summer Burns for Field Trip Surveys.

All Pots from ANOS tubers distributed last meeting are requested to have records kept of their progress so that ANOS can be informed.

The swamp area which had Thelymitra mucida at the corner of Anstey Road and Nicholson Road is now cleared and fenced for horses.

The swamp area off Nicholson Road which has Diuris purdei has been bulldozed for roads and is to be cleared.

The Atlas of W.A. Orchids being collated by the Department of Fisheries and Wildlife will close off entries after this season so a concerted effort is required to get as many record sheets in as possible.

Caladenia deformis is flowering in Medina and Thornlie but is showing no signs of flowering in the Darling Range.

Fungal extraction report from Robert Ramsay told us that Caladenia species are difficult to extract fungal specimens from and growth on agar is difficult and small. Prasophyllums and Pterostylus species are easily extracted and produce rampant growth. All fungal extract so far have been Rhizoctonias.

PLANT DISPLAY

All Pterostylis on display. A good number and variety were present.

P. scabra var robusta.

P. scabra var scabra.

P. angust.

P. vittatta (wheat belt variety 1 flower 3" high).

P. Curta.

P. Concina.

P. sargentia.

RAFFLE

Raffle was won by a lucky visitor from Wanneroo Orchid Society. A beautiful photographic enlargement of Diuris emarginata by Andrew Brown.

JUNE TOPIC

The Group wishes to thank Rodney Peakall for presenting this excellent paper on his research results to date on the fertilization of Leporella fimbriata. It is very exciting to be presented with such new material especially as it appears to break new ground internationally on orchid pollination.

Rodney is researching the pollination and genetic systems of W.A. Orchids for an Honours project. He is preparing a paper which will hopefully be published in the "Orchadian" and another for publication in the "Aust. Journal of Botany". The following are notes taken by myself from Rodney's talk and are not for republication.

Alison Harrington.

FERTILIZATION OF LEPORELLA FIMBRIATA - Speaker: Rodney Peakall.

Introduction

Life revolves around reproduction. Pollination is the most important part of reproduction and fundamental to survival.

Slides showed the round pollen of Caladeniadeformis and the tetrad (4 cells) shape of Eriochilus dilatatis pollen. Post pollination the pollen germinates at the stigma and translucent tubes grow out of the pollen, journey down the column, to the ovule. These tubes are exceptionally long in Orchid columns. They are visible under Ultra Violet fluorescence (Slide showed masses of pollen tubes). When the tube grows into the ovule genetic material is then trnasferred and fertilization occurs. The zygote formed grows into new seed.

Terrestrial Orchids of W.A.

These have interesting pollinating agents and mechanisms and adaptatious to the pollinator.

Most pollinators are insects, bees most common but moths, butterflies, wasps, flies, beetles and gnats also active pollinators.

A literature review of Pollination of Australian Terrestrial Orchids gave Rodney 3 classifications of Pollination styles.

Category One

Attract due to bright colours, fragrance or advertising food eg Caledenias.

Attract bees, flies, beetles, wasps. Labellum in Orchids is highly modified. It acts as a landing platform for pollinator. Stripes act as a guide. The calli project and act as footholds, secretious for food and guide insect down the labellum. It shifts weight because it is hinged and means the insect has to back out past the anther and the bunches of pollinia. (There are 1000's of grains of pollen in each pollinia).

The pollination of Caladenia deformis was discussed early by Rogers. A small bee fits snugly in the tunnel.

The size of the labellum and column structure selects a particular size or type of pollinator. There are very few internal barriers to hybridization between Orchid species and genera and therefore selection of a specific pollinator reduces the chance of hybridization.

C. flava - specific bee - (see "Erickson").

C. aphylla - the pollinator is predicted by Rodney to be a native bee because the labellum is brightly coloured and sweet scented and the calli yellow tips may mimic food.

The pollinator has not been isolated and in hundreds of C.aphylla only 4 capsules had set this season. This shows the difficulty of observing pollinators.

Eriochilis dilatata Native bees pollinated (see Erickson) It is successfully pollinatored eg 13 flowers on one stem all set with seed seen this season!

Diuris species Pollinator not documented well in W.A. Edith Coleman documented Eastern States Diuris. Warren Stoutamire has done some initial work on Diuris pollination.

Prasophyllum species seem to not be specific and five or six pollinator species have been seen.

Category Two

Pollination involves smaller insects. Microdipherans eg Fungal gnats.

Pterostylis 2 types of systems:

1) Sepal structure forms ascending and descending sections. An irritable labellum (mobile) rests against the sepals. A visiting insect alights and the labellum, triggers it shut and traps the insect inside the galea. The only means of escape is through the column wings.

2) Sepals ascend and enclose galea. The insect goes into the opening. The labellum allows deep penetration and then is triggered and traps the insect eg Pt scabra.

Category three

Pollination involves secual attraction. Edith Coleman described Cryptostylis species in Eastern States. Warren Stoutamire has done extensive work in W.A. on sexual attraction. eg Drakea sp. and Thynnid wasps. Pheromones released by the plant attract male wasps. 12-14 species are known to use sexual attraction.

They are typified by their red, green and yellow colourings and the labellum has deep red/maroon tips and calli. Club ends of sepals and petals give off pheromones.

Calochilis species in the Eastern States use Scollid wasps and are also self pollinating.

Leporella fimbriata The pollinator has previously been unknown. It was hypothesized that it used sexual attraction but the puzzle was how was an insect eg wasp going to fly past stalk of another flower to get to the labellum?

On May 3rd on a fine day, 20°c, off Canning Mills Road, Rodney watched seven events of pollination of L. fimbriata which were documented on film (the first time ever).

The pollination method is by sexual attraction. It uses the male ant of the Bulldog and the Jumper ant.

The Male ant (winged) circles several times, the flower of choice at a radious of 30-40cm. It then zigzags up wind and alights on the stem, and crawls up the stem till it gets to the first fresh flower. It then alights sideways on the Labellum and orientates itself along the width of the labellum. The tail makes probing, copullating movements for the entire 3-5 minutes the ant is positioned on the labellum. The ant's thorax is positioned directly below the anther and pollina on the ants thorax is being rubbed and pushed into the stigma while the curved tail probes inside the fringing of the labellum. The ant removes itself by twisting itself off and rotates back against the anther structure which action removes pollina. The pollina is only removed from one side of the anther which therefore allows multiple pollination. This was observed. This is different from other orchids where the pollination is a single event. The ant leaves the labellum and spends 4 - 10 minutes actually on the flower on the glandia and petal tips. This poses the question, are there pheromones on the tips? To test, petal tips were removed and stuck on a tree trunk by a pin. These then attracted ants. The prediction is that the red hairs are the scource of Pheromones.

European and South American Orchids who use sexual attraction use bees mostly. Ant pollination is unknown.

Of these ants, little is known. The Queen ant is larger than the male (note that the ant is shorter than the width of the labellum). The ants swarm in autumn for a very limited time period. The male life is 2-3 days and there are 10-15 times more males than females. Therefore the orchid is not stopping ant reproduction.

Similar species of ants, mating habits are that the female ant rests about the same distance above the ground as the Leporella flowers. She is winged and brown. The Leporella flowers are brown, not maroon. After mating she looses her wings and forms a colony and the male looses his wings and dies.

Note that Leporella is a monotypic species ie only one of its type in Australia. Also note that pollination had finished across the state in 1984 in a couple of weeks.

The theory presented is that when Pollination occurs it is 90% effective.

If Leporella flowers late it misses out on pollination completely. The ants swarming is finely tuned to the weather. Leporella flowers look healthy for a long time but there may be only a short time in growth when the flower is actively attracting pollinators.

As I said in my introduction, an exciting talk. Thank you again Rodney. Please note readers, this is only a sample of some of the exciting findings Rodney is coming up with in this research year.

Alison Harrington Ed.

FIELD TRIPS

The Committee have resolved that for use of a bus to be viable that the following rules apply:

If a bus is being proposed for a Field Trip, nominations for a seat must be with the Field Trip Officer one week prior to the Field Trip and accompanies by a $5.00 deposit per person. This will be refunded if the bus is cancelled and deducted off the shared cost if the bus is used. The bus is only viable if 8-10 members utilize it and it is senseless to use a bus if it costs more than personal car use.

The following are the arrangements for August Field Days:

LUDLOW 12 August, Sunday. The bus departs Sid Gibbings at 7.30am and Carousel Car Park near Kentucky Fried at 8.00am.

Anticipated sample viewing: Acianthus sp. Corybus sp. Caladema filamentosa and C. herta.

ENEABBA 18th and 19th August. Make own way to the Arrowsmith Caravan Park. Saturday meet 1pm at the Caravan Park, Sunday at 9am. Accommodation contact Sid. Many summer burns indicate a brilliant orchid display.

BOYAGIN ROCK Sunday, 26th August. Own cars. Meet at Karagullen Service Station, Brookton Highway at 8.30am. Excellent orchid site.

MT JACKSON 1st and 2nd September. Provide own transport and bring everything for camping.

Meet at Bullfinch Hotel at 10am Saturday. This will be an exhausting, exciting orchid weekend.

OCTOBER LONG WEEKEND Accommodation is being arranged at Gracetown. Sleeping equipment, crockery and cutlery will need to be brought along.

September's Field Trip arrangements will be detailed in the next Bulletin.

FIELD TRIP 17 JUNE 1984

The Field Trip to find Thelymitra var on Sunday, 17th June in the Regan's Ford area was supported by 10 club members and 1 local, 3 interstate and 2 overseas visitors. Syd unerringly led us to the spot.

The first few found were not fully open but thanks to a beautiful sunny day several good specimens were found by most of the party. The photographers had their usual session while the rest looked for more.

Why did Marie stop photographying when I approached her with my camera held unsuspiciously?

Unfortunately the site is close to a gravel pit and one specimen was found within 6 ft of the current pit edge.

After some discussion on the next port of call it was decided to retrace our steps and investigate another spot during lunch. This location was on private property so it was decided to have lunch on the road verge and not venture into the property.

Located on the road verge and found during lunch were Pterostylis vittata and Leporella fimbriata in flower, Caladenia menziesii in bud, Caladenia flava, Caladenia longiclavata and Eriochilus dilatata leaves.

The party then broke up and 3 car loads investigated a small part of the Moore River National Park. Syd found a very good specimen of L. fimbriata. Also found were Pterostylis scabra in flower or leaves only.

THAT BOOK (a final word!)

What a magnificent response we have had to Noel and Andy's book. I had orders for 120 copies (which took up about 10% of the printing). I could have sold more, but late orders were passed on to U.W.A Press (about 20 to date).

Judging by the comments from those who have collected their copies from me, and from letters and phone calls from all over, Noel and Andy have a huge success on their hands. The general comment seems to be..."What a magnificent book!" Take a bow, men.

NEW ZEALAND NATIVE ORCHID GROUP

Did you know there was one? Neither did I. However, if you are interested in N.Z. orchids or are planning a visit, the person to contact is: Mrs Dorothy Cooper, 14 Avalon Crescent, Lower Hutt N.Z.

I believe that Mrs Cooper has also written a book - "A Field Guide to N.Z. Orchids", published around 1982. The group prints a quarterly bulletin and field trips are mostly held in December and January. (New Zealand, anyone?)

GENERAL MEETING NOTES

Those who do not subscribe to the publication of "The Orchadian", the quarterly periodical produced by the controlling body of Native Orchid groups in Australia "The Australian Native Orchid Society"(ANOS) should do so in their own interest.

Membership is $12.50 due 1st July

Write to: "ANOS"
C/O B & C Mailing Service Pty Ltd
Box 4142, GPO
Sydney NSW 2001

Comments coming in so far regarding Noel and Andrew's book have been extremely complimentary. Apparently the formal launching by University of W.A. Press was one of the biggest they had ever held.

REMINDER: Please get your monies into Fay.

The Ninth Australian Orchid Conference is in Victoria from September 12th-16th, 1984. Raymond Smith from ANOS (Victorian Branch) has written extending hospitality to West Australians attending. Fay has his address.

"Environment W.A." Vol 6, No. 1, Autumn 1984, the publication of the Environment W.A. Collective, has an excellent article by Kingsley Dixon on the Mitchell Plateau.

The Department of Fisheries and Wildlife in conjunction with the Australian Biological Resources Study, has initiated an Atlas project on the Banksia species, Australia wide. This follows the success of the pilot Atlas projects on kangaroo paws and orchids.

HELP SAVE TWO RARE ORCHIDS

An ecological study is underway on two of Western Australia's rare orchids, Diuris purdiei and Caladenia gemmata forma lutea. The aim is to locate all populations of these two orchids and study their ecology and determine their conservation status. The research is being funded by Department of Fisheries and Wildlife.

How can you help! If you have met these orchids in the wild and can supply fairly accurate details on locations, so that populations can be surveyed, you could be helping save a species at risk. It is important that such information be supplied as soon as possible to enable more thorough field work to be undertaken. Any assistance rendered will be much appreciated.

Please mail all details to: Mr T. Maddocks [redacted]

[redacted]