AUSTRALIAN SYSTEMATIC BOTANY SOCIETY

N E W S L E T T E R

Newsletter No. 20 September 1979

This publication, the official newsletter of the Society, is produced four times each year and deadlines for copy are the last day of February, May August and November.

Please send contributions, preferably typed in duplicate and double-spaced to the Editor, at the address below. Items from any source and of interest to members are acceptable. Items incorporated in the newsletter will be duly acknowledged.

Please note: Next deadline is 30th November, 1979

Subscriptions for 1979 were due 1st January.
(Members in Australia $4.00 if paid by 31st March
$6.00 thereafter
Overseas Members US$8.00 or equivalent).

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Western Australian Herbarium
George Street,
South Perth
WESTERN AUSTRALIA 6151

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AUSTRALIAN ACADEMY OF SCIENCE

A.S.B.S. has been invited by the Council of the Australian Academy of Science to nominate a representative for the new Flora Committee. This Committee has been established to advise Council on matters related to the study of the flora of Australia generally.

The Committee is to consist of:

Dr. W. T. Williams, FAA (Chairman)
Dr. Hj. Eichler
Professor R. C. Carolin
Professor H. B. Womersley, FAA
Representative of the Committee of Heads of Australian Herbaria.
Representative of the Australian Systematic Botany Society.

If you have any suggestions concerning our nomination please let me know as soon as possible.

Judy West

A. S. B. S. COUNCIL

The next A.S.B.S. Council meeting is to be held in Canberra on Monday, November 5, 1979.

A Review of the Rare and Endangered Species Rutidosis leptorrhynchoides

F. Muell

M. Gray, July 1979

The main populations of Rutidosis leptorrhynchoides appear to have been originally located on or adjacent to the Basalt Plains of western Victoria, with most of the collections having been made in one of the drier areas immediately to the west and north-west of Melbourne known as the Keilor Plains. Apart from the Keilor Plains, a few outlying collections are known from Nangeela (near Casterton) in the west, from Ararat and from Craigie (near Maryborough) to the north-west, and from Newry (near Maffra) in the east.

Outside of Victoria, the only other known occurrences of the species are from the Canberra area A.C.T., since the N.S.W. specimen quoted by Bentham from 'Kingston near Newcastle' has been subsequently described as a distinct species, namely R. heterogama, by W. R. Philipson (1937)

A most useful account of the vegetation of the Basalt Plains has been given by J. H. Willis (1964) in a paper published as part of a Symposium on The Basalt Plains of Western Victoria, and data on the geology, prehistory, soils, climate, physiography etc. of the Basalt Plains are to be found in this and other papers of the Symposium.

Since most of the tract has been farmed from the 1840's and 1850's, the natural vegetation, which was always relatively poor in number of species, was rapidly replaced by alien pasture and weed plants, and was soon reduced to remants in areas such as railway enclosures, roadside reserves, stony paddocks which escaped cultivation and heavy grazing and other relictual areas (Stuwe and Parsons 1977; Sutton 1916).

C. S. Sutton (1916) recorded R. leptorrhynchoides as being rare on the Keilor Plains that is, 'only in outskirts or very restricted in range'. R. T. Patton (1935), in his ecological study of the Basalt Plains, recorded the species as being common; however, it can be reasonably assumed I think, that like all subsequent authors, his studies of the native vegetation were undertaken mainly in the relictual areas mentioned above, and that his scoring was a reflection of frequency at these sites rather than of the Plains as a whole. R. H. Groves (1965) records the species from his study area beside the railway line at St. Albans without indication of frequency.

J. H. Willis, who has an unrivalled knowledge of the Victorian flora, has for many years drawn attention to the serious threat facing R. leptorrhynchoides in that State, for example:

> (1964) on page 399 he refers to "the showy but now rare R. leptorrhynchoides ...." and gives the localities St. Albans, Sydenham and Craigie in the census on page 418.
>
> (1971) in J. Frankenberg "Nature Conservation in Victoria" Table 12, he lists the species as threatened with extinction, with the note: "Keilor basaltic plains where now reduced to a few individuals in railway enclosures e.g. near Sydneham".
>
> (1973) "apparently a local rarity and in danger of extinction - on Keilor basalt plains near Melbourne, also at Craigie near Maryborough".

The latest and most alarming information from Victoria is contained in a personal communication from Dr. R. F. Parsons of Latrobe University in which he writes"... the last census was about 1976 when there were only 100 plants left, all at a single site. It is believed to be now greatly reduced from this by spoil dumping from pipe-laying excavations more recently".

Both L. D. Pryor (1939) and A. B. Costin (1954) have drawn attention to the close relationships between the natural grasslands of the A.C.T. and Monaro Regions of N.S.W., and those of the Basalt Plains of western Victoria. R. leptorrhynchoides is a component of both the Basalt Plains and Canberra grasslands, but it is replaced by Rutidosis leiolepis F. Muell. in the higher altitude grasslands of the Monaro e.g. those of the Cooma and Kiandra districts. R. leptorrhynchoides would therefore appear to be a "marker" species of considerable importance in any attempt to understand the relationships between the grasslands of these widely separated and ecologically divergent areas. Although the extent of the distribution of the species in the A.C.T. has never

been fully investigated, the only collections available are from the Canberra City area, i.e. from Anzac Park, from near the YMCA building and the nearby old Mulwala House (now removed), from the Embassy area around the Malaysian and Sth. African Embassies, from Yarralumla and other generalised localities such as 'Canberra City' and 'Canberra grasslands'.

Most of the original populations have undoubtedly succumbed either to increased urbanisation or the filling of Lake Burley Griffin, and the only extant populations known to me are those from Attunga Point and the small area of adjacent woodland known as Stirling Park, and a very small population on the western slopes of Capital Hill. Both of these sites have undergone considerable disturbance, and both are under threat, the former has been reserved for the proposed new Prime Minister's Lodge, and the latter would undoubtedly be affected by landscaping and other works associated with the proposed new Parliament House. Because of its rapid decline in Victoria, the species is undoubtedly extremely susceptible to grazing and to competition or disturbance of any kind, so it is unlikely to have survived to any great extent, even if it had previously occurred elsewhere in the Canberra district.

For the above reasons, R. leptorrhynchoides has been designated as "Restricted Plant Wildlife" in Schedule 3 of the A.C.T. Nature Conservation Ordinance of 1979, and is also coded as 3E (rare and endangered) in "Australian Plants at Risk" ed. W. Hartley and J. Leigh (1979).

The species in the Canberra area appears to have been, like Eryngium rostratum, mainly associated with the temperature inversion grasslands, but with some extensions into adjacent steeper rocky slopes with an ecotonal situation between woodland and dry sclerophyll forest.

There is no doubt that the best way to preserve endangered species is to set aside and maintain extensive tracts of the formations, alliances and associations of which they are a part, and this should indeed be done for example, with tracts of woodland and temperature inversion grasslands in the A.C.T. However, the situation with regard to R. leptorrhynchoides both in Victoria and in the A.C.T. appears to be so critical that we must, I submit:

1. Preserve by enclosure, as much of the existing populations as we possibly can.
2. Immediately institute searches for any other remaining occurrences, and
3. Undertake autecological studies so that management strategies for the preservation of the species can be formulated.

In the latter regard, the studies by Stuwe and Parsons (1977) on the effects of management practices on the remnants of Themeda grassland on the Victorian Basalt Plains would appear to be relevant not only in Victoria but also to the Canberra situation, even though Rutidosis was not present in any of their sites. These studies indicate that the railway enclosure sites which are protected from grazing and other disturbance, but are subjected to more or less regular burning, are richer in native species than those in grazed paddocks or in roadside reserves.

Rutidosis certainly seems to have persisted on some of the railway reserves near Melbourne for considerably longer than in surrounding parts of the Keilor Plains. Moreover, the growth habit of the plant, with its tough branched woody rootstock covered with persistent leaf bases which are separated from the stems by a loose woolly indumentum, may indicate that the plant has some resistance to low intensity grass fires.

The populations in the Attunga Point-Stirling Park area appear, in the short term, to be maintaining themselves, at least in the very small areas where they have not been too severely disturbed. However if available populations are not sufficiently large, or have suffered from too much disturbance to be self-regenerating, then some form of management perhaps including a fire regime, might be indicated. The initial and urgent requirement is that manageable populations must be identified and conserved both in Victoria and the A.C.T. before it is too late.

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NOTE: This article is also being published in the Bulletin of the Ecological Society of Australia.

WHY DOES TREE SHAPE VARY WITH LOCALITY?

In "The Garden" (Journ. Roy. Hort. Soc.) 102: 504 (1977) there was an article "How does climate affect tree shape" by Alan Mitchell. Mitchell has observed that some conifer species, in Cupressaceae, vary in their habit according to the locality in which they grow. He has not been able to link this variation with any variable.

We at NSW have known of this phenomenon for years, e.g. seed from spreading trees of "White Cypress Pine" from western New South Wales when planted in Sydney produce columnar trees.

This difference must be of tremendous importance in landscape design and horticulture as at present we would seem to be dealing with pigs in pokes when we plant Callitris.

I wrote to Mr. Mitchell who now tells me he has had a reply to his article, suggesting that atmospheric moisture was significant, with open spreading crowns in humid places. He likes this theory though his recent observations of Cupressus glabra from Arizona and "Leyland Cypress" from Los Angeles seem to reverse it. Well it is certainly reversed by our Sydney observations of Callitris. If anyone has any ideas, Mr. Mitchell, I and several others here would like to hear them. A.F. Mitchell's address is Forest Research Station, Alice Holt Lodge, Wrecclesham, Farnham, Surrey GU10 4 LH, U.K. and mine is National Herbarium of N.S.W., Sydney. 2000.

Joy Thompson.

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NOTES ON NEW HERBARIUM IN NORTH QUEENSLAND

Involvement by the Australian Institute of Marine Science in plant taxonomy may at first seem slightly incongruous. However, as a direct result of studies of estuarine plant productivity in NE Queensland it was necessary to define the species entities to be found. On commencement of those studies in late 1974, the available literature inadequately described the tidal forests, or mangrove communities of northern Australia. Also, the systematic keys delineating the 30 or so species were found wanting at the species level.

Confronted with this gap of knowledge, and our requirement for precise species information, it was decided to establish a mangrove reference collection at AIMS. This collection was later registered (August, 1978) as a Herbarium with the intention of furthering the use of the specimens collected.

Collection size at this stage is not great, especially as the tidal forest group is not large. However, along with a Cleveland Bay sea grass collection there are some 2000 specimens of both dry mounted and wet bottled material. The material collected has reproductive parts well represented for both the sea grasses and the mangroves. The collected mangrove material, to date, has been taken mainly from the Hinchinbrook and Cardwell shires. However, extensive observations and sampling have been carried out north to Cape York, and the Torres Strait Islands.

Herbarium contributions to date have included the description of: (1) a new Australian Lumnitzera, L. rosea. This entity is suspected to be a recent hybrid form of L. racemosa and L. littorea; (2) the genus Rhizophora in NE Australia; (3) the pollens of the Queensland mangrove flora; and, (4) floral morphology and reproductive mechanism of several groups including the Rhizophoraceae.

Studies presently in progress include :

(1) the genus Sonneratia in Australia.
(2) general observations of the NQ mangrove communities.
(3) compilation of a more extensive Australian mangrove chekclist in the light of recent collections at around sixty bays, estuaries and islands on Cape York Peninsula and south to Port Clinton.

and,

(4) a general flora of the Great Barrier Reef Islands from Lizard I.to Cape York. So far, the number of islands visited is around eighty-seven.

In conjunction with the Herbarium collection a photographic library of the tidal forest representatives has been maintained and depicts specific floral aspects plus habit and general tree form information.

The mangrove habitat, though restricted, presents the convergence of a surprising number of families (often with similar characteristics to the untrained eye) and the herbarium at AIMS arose as a direct response to the demands of qualitative analysis. From purely an identification station, the accent has gradually changed so that now the herbarium itself is engaged in an attempt to define the finer relations of at least the North Eastern Australian mangroves. The mangroves of this region being the most structurally diverse in Australia, with exceptional examples of luxuriant growth.

N. C. Duke, AIMS Herbarium, P.M.B. No. 3,
Townsville, M.S.O., Qld. 4810.

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CANBERRA CHAPTER NEWS

So far this year our seminar programme has been

February 28: the General Meeting, at which the following committee was elected:

(Convener) Dr. Michael Crisp
(Secretary) Miss Estelle Canning
Mr. George Chippendale

After the formal business of the evening had concluded, Dr. Hansjeorg Eichler, of Herbarium Australiense, gave an interesting talk:

"On Phytochorology".

March 27: Dr. Michael Crisp, National Botanic Gardens, Canberra:

"Some Thorny Taxonomic Problems - the genus Daviesia (Fabaceae)."

April 24: Ian Telfor, National Botanic Gardens, Canberra:

"The genus Rupicola (Epacridaceae)."

This talk was preceded by discussion about a letter from Max Gray, asking for support for his submission to the National Capital Development Commission re: future plans for Attunga Point, an important habitat for the rare and endangered species Rutidosis leptorrhynchoides F. Muell. The meeting voted its support, and letters to this effect, suggesting an immediate study of the ecology and distribution of R. leptorrhynchoides in this area, were sent to the N.C.D.C., the Chairman of the Joint Parliamentary Committee on the Australian Capital Territory, and other bodies which had received Max's submission.

May 22: Dr. R.D.B. Whalley, Botany Department, University of New England, N.S.W.

"Sorting out species of Danthonia - is it worth the hassle? The hairs of wallaby-grasses of the Northern Tablelands, New South Wales."

June 26: David Coates, Botany Department, School of General Studies, Australian National University.

"Biosystematics and cytoevolutionary studies in the scale-leaved trigger plants (Stylidium Section Squamosae)."

July 25: Peter Latz, Alice Springs Herbarium, Botany Section, Primary Industry Division, Department of Industrial Development, N.T.

"Ethnobotany in Central Australia : with reference to aboriginal taxonomy".

August 28: i) Roy Pullen, CSIRO Plant Introduction Service, introduced a discussion on the future of wood sample collections in Australia.

ii) Ian Telford, National Botanic Gardens, Canberra, introduced a discussion on

Smith, A.C. (1978) : A precursor to a new flora of Fiji.
Allertonia 1(6): 331-374

with particular reference to the allocation of status to taxa (ref. pp.368-9, 370-1, 375, 409, 411) i.e. species v infraspecific taxa.

BOOK REVIEW

THE SEX LIFE OF PLANTS by ALEC BRISTOW

To be quite honest, it was the intriguing title of this book which prompted me to buy it sight unseen. Apart from its title, the book has an immediate impact on the prospective reader with the brilliantly executed frontispiece (I leave it undescribed to titillate prospective readers). The contents read like extracts from 'Playboy' or 'Forum', with 13 chapters covering Discovery of Sex, Flowers and Bees, Why Sex?, Sexual Organs, Sexual Taboos, Techniques, Exhibitionism, Bondage and Sadism, Pregnancy, Virgin Birth, Plant and Human Sex, Future Sex, and finally Sex Problems.

In his introduction, the author describes biologists as basically voyeurs who get their kicks from watching the sexual carrying-ons of living creatures. (Some of my colleagues in Alice Springs have commented on my furtive manner as I sit peering down the microscope nervously fiddling with my surrogate lab coat). Further on in the introduction he launches into a critical tirade on the 'fundamentalist' view of the creation of life (and of sex); however, he does point out the need for and progress of enlightenment about sex with, for example, the discovery of sexuality in infants. This argument can easily be expanded to include sexuality in the disabled, the elderly, and other areas of contemporary research. In other parts of the book he instigates strong attacks against the Church and its beliefs and teachings on sex, and the vehemence of these attacks jars sharply with the pleasant style of the rest of the text.

We start our foray into the sexual jungles with a look at mythological figures such as Narcissus, Daphne and Hyacinthus - the latter appearing to be a somewhat spunky lad who was being pursued by an ambivalent Apollo and also Zephyrus (watch the gender here, readers). In a fit of jealousy Zephyrus decides that if he can't have him, no one will, and causes Apollo to accidentally kill the lad. Although slain, Hyacinthus does escape 'the fate worse than death'.

Our journey up the garden path (which is anything but straight and narrow) covers the entire gamut of sexuality. Incestuous hermaphrodites,

pseudocopulators, false genitalia, promiscuity, exhibitionism and masturbation (where some of the less inhibited let it all hang out), transvestism, bisexuality, and a veritable range of couplings unthought of (at least, by this reader) are discussed in intriguing detail. There are also a few side-swipes at women's lib, von Daniken and the 'moralists'. Even Linnaeus, father of taxonomy, emerges in tatters from the pages of this book, slated as one of the original M.C.P's.

From there straight into modern science, with discussions on birth control, A.I., and electric bees (!).

The author has many amusing anecdotes such as the 'personal column' ad: "attractive, willing flower, newly opened, seeks suitable pollinator for sincere relationship" and the 'deeper' relationships between insects and flowers with long corollas. There is quite a serious side too, with, for example, a discussion of the effects of insecticides on insect pollinators.

Etymology of plant names is examined with such examples as Phallus indicus, Mutinus caninus, Arum conophalloides and Amorphophallus titanum.

As the author says, 'there is no form of sexual expression which even the most fevered human imagination can dream up that plants have not already experienced and developed'.

The book is, by its very nature, somewhat anthropomorphic, and the author's attacks on the Church are somewhat wearing. However, Bristow introduces botanic terms in an easily understood way and has some excellent descriptions of sexual mechanisms in plants. The whole book is easily understood by the layman, and should be of more than passing interest to the practising voyeur - I mean, biologist. It also uses many examples from Australia, which I found a pleasant surprise. An amusing, instructive and educational look at sex in plants.

I bought the American edition for $A12.75 (jacket price $US10), but it should be available through Cassells for $A10.95.

Andrew Mitchell

"THE DISTRIBUTION AND CONSERVATION OF NATIVE VASCULAR PLANTS IN THE VICTORIAN MALLEE"

Cliff Beauglehole has advised that the first printing of 500 copies has sold out. A further 500 have been printed but due to increased costs the price is $5 per copy, posted. They are available from Cliff at 3 Beverley Street, Portland, Vic. 3305.

REQUEST

Revision of the genus Melaleuca

A revision of the genus Melaleuca has been started by Roger Hnatiuk, Western Australian Herbarium. Well-documented, flowering and fruiting specimens will be appreciated in due course. If you can make good collections, please do so and forward them to Roger.

GUIDE TO BOTANISTS' PERFORMANCE APPRAISAL

	AREA OF PERFORMANCE				
Degree of performance	Quality of work	Promptness	Initiative	Adaptability	Communications
Far exceeds job requirements	Can produce major revision a year	As fast as greased lightning	Can determine plants to species by feel	Walks on water	Talks to other botanists
Exceeds job requirements	Can produce a revision	As fast as lightning	Can determine plants to species by key	Keeps head above water	Talks to boss
Meets job requirements	Can describe plants if prodded	Needs greasing	Can determine plants to family	Washes with water	Answers only by letter after six months
Needs job improvement	Needs a year to begin a revision	Needs bolt of lightning to start him	Cannot tell leaves from flowers	Drinks water	Loses arguments with new graduates
Does not meet job requirements	Needs revision	Slips in grease	Cannot tell plants from animals	Passes water in emergencies	Cannot understand question

Adapted from "Tarmac Topics", Journal of the Royal Aero Club of Western Australia, no. 223, October 1978. - Ed.

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY COUNCIL ELECTIONS

An election is necessary to fill the two (2) Councillor positions on Council. The positions of President, Vice-President, Secretary and Treasurer have been filled unopposed.

INSTRUCTIONS FOR VOTING

Please fill in the ballot paper at the bottom of the page, detach it and either -

(i) place it in an unmarked envelope and put that envelope inside another which is addressed to the Returning Officer with the sender's name and address on the back,

or (ii) sign the back of the ballot paper and send it to the Returning Officer along with other signed ballot papers from your institution or chapter.

In either case, write "Ballot paper" on the outside of the envelope and send it to the Returning Officer, Dr. J. P. Jessop, State Herbarium, Botanic Gardens, North Terrace, Adelaide, S.A. 5000, by WEDNESDAY, 30th APRIL 1980.

The new Council will be announced at the General Meeting to be held during ANZAAS in Adelaide in May.

Breif details of the nominees for the Councillor positions are, as follows :

Roger HNATIUK is a botanist at the Western Australian Herbarium.

Andrew MITCHELL is a botanist at the Arid Zone Research Institute, Alice Springs.

Andrew KANIS is a botanist at Herbarium Australiense, Canberra.