AUSTRALIAN SYSTEMATIC BOTANY SOCIETY

N E W S L E T T E R

Newsletter No. 21 December 1979

ASBS Council

President	Dr. John Jessop, State Herbarium of South Australia North Terrace, Adelaide, S.A. 5000
Vice-President	Professor Roger Carolin, School of Biological Sciences, University of Sydney, Sydney. N.S.W. 2006
Secretary	Mrs. Judy West, Dept. of Botany, University of Adelaide, Adelaide, S.A. 5001
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Councillors	Mr. Andrew Mitchell, Alice Springs Herbarium, Division of Primary Industry, P.O. Box 2134, Alice Springs, N.T. 5750
	Mrs. Karen Wilson, National Herbarium of New South Wales, Royal Botanic Gardens, Sydney, N.S.W. 2000

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 28th February, 1980

Subscriptions for 1980 are due 1st January.
(Members in Australia $ 8.00 if paid by 31st March
$10.00 thereafter
Overseas Members US$12.00 or equivalent).

Editor: Mr. A. S. George
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George Street,
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WESTERN AUSTRALIA 6151

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ASBS COUNCIL ELECTIONS: 1980-81 TERM

In accordance with the Constitution of the Society, nominations are called for all positions on the Council for 1980-81: President, Vice-President, Secretary, Treasurer, 2 Councillors.

Each nominee must be proposed by two members and his/her acceptance of nomination must accompany the nomination itself. Nominations must be on the form at the back of this Newsletter or on a facsimile of that form.

All nominations must be in the hands of the Secretary, Ms J. G. West, Botany Department, University of Adelaide, G.P.O. Box 498, ADELAIDE, 5001, by Friday, 22nd February, 1980.

Ballot papers will be sent out with the February Newsletter and results of the election will be announced at the Society's General Meeting on Tuesday, 13th May, 1980, in Adelaide.

J. G. WEST
27th November, 1979

NOTES FROM THE AUSTRALIAN SYSTEMATIC BOTANY SOCIETY COUNCIL MEETING

CANBERRA, 5th NOVEMBER, 1979

Present: R. Carolin, A. George (Newsletter Editor, Flora of Central Australia Committee), J. Jessop, M. Lazarides, A. Mitchell, L. Pedley (representing D. Boyland, Flora of Central Australia Committee), K. Wilson and J. West.

Central Australian Flora

Mr. Mitchell reported that illustrations for a Central Australian Flora Poster were being painted by an artist in Perth, Philippa Nikulinsky, and that NT National Parks would have it printed and would also provide an overprinted version to publicize the publication of the Flora.

A report on the Flora is provided elsewhere in this newsletter.

Newsletter report

Mr. George reported that the Newsletter production arrangements established in Perth are most satisfactory. The costs associated with typing, duplicating and postage have decreased considerably. The Editor requested more articles for the newsletter.

Dr. Jessop reported that he had only 12 requests from members for copies of the index to newsletter numbers 1 to 20, which he has produced. As there does not appear to be the demand for the Society to produce the index it was decided that Dr. Jessop would supply copies to the 12 members himself.

Treasurer's Report

Mr. Lazarides presented the financial statement for the period 31.xii.1978 to 1.xi.1979. The decrease in costs associated with the newsletter production has resulted in a healthier credit ($1,021.13) than had been expected.

ANZAAS

(i) Adelaide 1980

Dr. Jessop reported on Australian Systematic Botany Society's plans for 1980 ANZAAS in Adelaide. The major activity for which ASBS is responsible is a symposium entitled "The Evolution of the Flora and Fauna of Arid Australia", which is now to be held prior to ANZAAS. Dr. Jessop outlined the reasons, relating mainly to restrictions imposed by the ANZAAS Programme, for this obligatory departure from the main ANZAAS week. A contributed paper session of at least one morning's duration (with Dr. Jessop as convener), will be held during ANZAAS, and the Society's general meeting is planned for the Tuesday (May 13th) evening. Field trips have not been planned yet due to uncertainty of support, and it was decided to canvass member's interest via the newsletter.

Ms West explained the details of the three day symposium "The Evolution of the Flora and Fauna of Arid Australia" to be held in Adelaide prior to ANZAAS (May 7-9). The symposium is cosponsored by the Australian Entomological Society, the Australian Society of Herpetologists and the Ecological Society of Australia. It consists of several invited background review papers and contributed papers of previously unpublished work on aspects of both flora and fauna. Some suggestions were made on possible publishers of the proceedings. Social activities are being arranged and the ASBS dinner will be held at a winery on Thursday, 8th.

(ii) Brisbane 1981

Given that the International Botanical Congress is to be held in Sydney August 1981, Council felt that ASBS participation would probably not be warranted in ANZAAS in Brisbane, May 1981. A final decision must be made at the General Meeting in May, 1980. Professor Carolin and Mrs. Wilson will investigate possible times during the International Botanical Congress.

Academy Flora Committee representative

The Society had been requested to nominate a representative for the new Academy Flora Committee. Ms West reported only two members had sent in suggestions following notice in newsletter no. 20. After consideration of the members of the Australian Biological Resources Study Advisory Council and the Editorial Committee, it was agreed to nominate Mr. Jim Armstrong. He was contacted during the meeting and accepted nomination.

Australian Biological Resources Study and the Flora of Australia

Dr. Jessop outlined the present state of public knowledge concerning the flora project. It was agreed that there was very little that the Society could do at this stage.

Australian Botanical Liaison Officer Reference Library

Ms West reported that she had written to CSIRO requesting funding for the library. No result had eventuated when the ABLO administration was transferred to ABRS, so a letter was sent to Dr. Ride urging an early consideration of the matter. Ms West also wrote to Mr. J. Maconochie, the Chairman of the Committee of Heads of Australian Herbaria, requesting their help. At the October CHAH meeting it was decided that each herbarium would contribute towards the purchase of the books. The estimated cost of the initial suggested booklist of $550 should be covered by this. Mr. Maconochie is to arrange the purchases.

N. T. Burbridge Memorial Lecture

Dr. Jessop reported that Dr. Trevor Clifford had been invited to deliver the Burbidge Memorial Lecture at the General Meeting in May, 1980. Dr. Clifford has accepted. It was agreed that the Society would subsidise his travel to Adelaide.

International Botanical Congress

Professor Carolin has arranged for the ASBS Dinner to be held in conjunction with the Systematic and Evolutionary Botany Section on the Thursday night of the Congress. Further arrangements will be made by Mrs. Wilson and Professor Carolin when a reasonably accurate estimate of numbers is known.

Dr. Jessop had invited Professor Takhtajan to speak at the Dinner, but has received no reply. A further letter will be sent.

Index of Current Taxonomic Research on the Australian Flora (ICTRAF)

Ms West reported that the Index was distributed in June. The publication costs of paper, covers and postage amounted to $121.57. A small number of copies are still available, and a note will be included in the next newsletter to aid distribution of these. The Council expressed thanks to Dr. Whiffin for compiling the Index. Future issues will be prepared by the Committee of Heads of Australian Herbaria with assistance from ASBS, if required.

Thesis List

Ms West reported that she has received most of the 1977-78 additions to the list and these will be published as a supplement in the newsletter. Since there is a good deal of overlap in the ecological and taxonomic thesis topics it was decided to make enquiries of the Ecological Society of Australia and the Society of Applied Biologists as to publication of a joint list.

Council elections

Mr. Lazarides and Mrs. Wilson are not available for re-election to the next Council. Nominations will be called in the next newsletter.

Self-teach botanical Latin

It was decided to further consider publishing a series of articles covering this topic in the newsletter. Mr. George offered to write the articles with help from other botanists and Latin scholars.

Taxonomic workshops

It was agreed that there was no demand for such workshops (see 1978 President's report) at this time, and that the matter would be kept in abeyance.

Next Council Meeting

The next Council Meeting will be held in Adelaide in May, 1980.

J. G. WEST

ASBS SECRETARY

14th November, 1979

FLORA OF CENTRAL AUSTRALIA

The 'Flora' looks like being a reality late next year. Contributors have been most co-operative, and there are only four or five whom final contributions have not been received. Even these are well in hand and will probably have been submitted by the time this newsletter appears. The other members of the Editorial Committee (Alex George, John Maconochie, Des Boyland and Roger Carolin) have put in a lot of work on the manuscripts, almost all the treatments have already been checked through by several members of the Committee and there seems to be little reason why the final manuscript should not go to the publishers (Reeds) early in January.

The 'Flora' will contain introductory chapters on the vegetation and history of botanical exploration, treatments of a few over 2,000 species, a few colour plates of major vegetation types, and perhaps as many as 1,000 line drawings of plants or parts thereof. The volume will be of about 800 pages of 8 pt type bound in a hard-cover on pages the same size as those of Cogger's work on reptiles and amphibians (about 250 x 180 mm) and cost, I hope, about $30. The price depends on our finding a subsidy and printing costs behaving themselves but, if the hoped for price is achieved, it will be a bargain!

One important issue is that of unpublished names. It now seems likely that publication will be towards the end of 1980 so that anyone with manuscript names will have a serious problem in getting them published in time. I would like to hear from such people of progress in having these names published.

Even at this stage new species are being reported with horrifying frequency and many authors have agreed to work the additions into their treatments. It is my hope that users will report all the changes needed and that as soon as possible a new addition can be planned; I certainly do not see the publication of this volume as the end of the matter,but rather as a way of encouraging work on the flora of Central Australia so that we can produce a much better account in the future.

I regret that the correspondence has got the better of me and I must apologize for material not acknowledged. Time has been critical, especially in the past few months with the deadline set for the end of the year. Nevertheless, if anyone still has any contributions or changes they want to make they are asked to send them in immediately and we shall see what can be done.

John Jessop

INDEX OF CURRENT TAXONOMIC RESEARCH ON THE AUSTRALIAN FLORA

Copies of the Index are still available. Please let me know if you have not received a copy or if you want one for somebody else who will make use of it.

J. G. West

N. T. BURBIDGE MEMORIAL LECTURE

The 1979 Burbidge Memorial Lecture, which was delivered by Dr. Selwyn Everist, was published in Search 10: 308-311(1979). The Society has purchased reprints of this article and they have been sent to Chapter conveners for distribution to all Society members.

J. G. West

ANZAAS & ASBS MEETINGS, ADELAIDE, MAY, 1980

Summaries of Present State of Organization Developments since last Newsletter

(pp. 16-18)

- **Symposium:** "The Evolution of the Flora and Fauna of Arid Australia"

Duration: Three days - Wednesday - Friday, 7-9 May.

Venue: Australian Mineral Foundation Centre, Glen Osmond, 3 km from city centre near major accommodation area.

Sponsors: ASBS, Australian Entomological Society, Australian Society of Herpetologists, Ecological Society of Australia.

Speakers: Over 40 papers are being presented. Background, general biota and botany reviewers are J. M. Bowler (Geomorphology), K. H. Northcote & M. J. Wright (soils), O. B. Williams (vegetation), E. M. Kemp & W. K. Harris (palaeobotany), J. Hope (palaeozoology); H. A. Nix (biogeographical patterns); R. C. Carolin (past phyto-evolutionary theories), B. A. Barlow (genetic systems), D. J. Anderson (plant adaptations).

Registration fees: $35 by April 22nd (10% discount if paid by February 28th; students $25). Cheques payable to "Arid Evolution Symposium". Fees cover abstracts, morning and afternoon tea, and lunch during the 3 days.

Enrolment: 8.30 - 9.30 a.m. Wednesday

Social: The ASBS Dinner (see page 7) on the Thursday night will double as the Symposium Dinner. Post-session drinks on the Wednesday and Friday. A pre-symposium "mixer" will be arranged for Tuesday evening, 6 May.

Information and payment: A supply of a pamphlet setting out further details will be sent to chapter conveners. It not yet available, they will arrive shortly. For additional copies, registration payment, numbers attending the dinner, other information, contact: Bill Barker, State Herbarium of South Australia, Botanic Gardens, North Terrace, Adelaide. 5000.

Reminder to contributors: Abstracts to be in by end of December.

W. R. Barker

FIELD TRIPS - ANZAAS 1980

We have been considering organizing a reasonably leisurely field trip on the weekend between the symposium and ANZAAS (i.e. May 10 & 11). At this stage two possibilities are being considered. Either we leave Adelaide mid morning Saturday and return Sunday afternoon, or we go out for a whole day on Saturday or Sunday. Please let me know if you are interested in participating and any preference so that suitable arrangements can be made.

J. G. West

ASBS DINNER - ANZAAS 1980

The Society Dinner has been arranged in conjunction with the Symposium on Thursday, May 8th at Stonyfell Winery. Tickets, which include a 3-course meal, drinks and transport will be $13.50 each (at present costs). Please let Bill Barker or myself know who expects to attend (including spouses).

J. G. West

COMMITTEE OF HEADS OF AUSTRALIAN HERBARIA

7th MEETING

Alice Springs, 26-27th September, 1979

The 7th Annual meeting of the committee was attended by the following representatives of State and Federal herbaria:

Mr. J. R. Maconochie	(NT)	Chairman
Dr. B. G. Briggs	(NSW)	
Mr. G. M. Chippendale	(FRI)	
Dr. D. Churchill	(MEL)	
Mr. A. B. Court	(CBG)	
Dr. J. W. Green	(PERTH)	
Dr. J. P. Jessop	(AD)	
Dr. R. W. Johnson	(BRI)	
Dr. A. E. Orchard	(HO)	

Apologies - Dr. Hj. Eichler (CANB) overseas, and Mr. M. Galore (LAE).

Present as observers were Mr. C. R. Dunlop (DNA) and Mr. G. Gower, N.T. Art Galleries & Museums Board, representing Dr. C. Jack-Hinton of (CAMD).

Australian Botanical Liaison Officer

The committee was informed that from July 1980 the administration and funding for the A.B.L.O. had been taken over by ABRS.

Discussions were held on the role and priorities of the A.B.L.O. and the executive was to draft a submission to the Minister of Science informing him of CHAH's concern for the effective role of the A.B.L.O.

CHAH decided that a set of reference works for the use of the A.B.L.O. would be supplied as a combined donation from all the herbaria and a suitably inscribed book plate placed in each volume.

Bureau of Flora & Fauna (ABRS)

Dr. Briggs reported on the ABRS Advisory Committee, stating that

1. production of a Flora of Australia will go ahead
2. the Flora will probably proceed as a series of bound volumes.

As a result of discussion on the Concise Flora, CHAH approved, in principle, the Hewson Brassicaceae draft as an acceptable standard for the flora series.

Current Plant Taxonomic Research in Australia

Dr. Johnson (BRI) undertook to compile an updated C.P.T.R.A. on behalf of CHAH to be made available for the Int. Bot. Cong. in 1981. The update will also include overseas work on the Australian flora as was done by the recent A.S.B.S. Index of Current Taxonomic Research.

Council of Australian Museum Directors

Dr. John Green had represented CHAH as an observer at the recent CAMD meeting in PERTH. The interchange of ideas and problems between both organizations has proved very fruitful.

National Herbarium of N.S.W.

CHAH warmly welcomed the announcement by the Premier of N.S.W., Mr. N. Wran, that a new herbarium building would be built.

Role of CHAH in the Direction of Plant Taxonomic Research

CHAH has decided to examine and develop priorities for taxonomic research (s.l.) in Australia and further supports activities in the following areas: revisionary studies, regional floras, Flora of Australia project, curation and maintenance of collections, computerization of herbarium records and floristic mapping.

Australian Weeds Committee - Mapping System

Dr. Churchill reported on a meeting of the A.W.C. relating to a weed mapping system, and proposed to obtain and present information on an approved mapping system from the various herbaria to the A.W.C.

Manuscript Names on Herbarium Specimens

The committee unanimously agreed that manuscript names should not be used in any publication.

Flora Committee of the Australian Academy of Science

Dr. John Green was nominated as the CHAH representative on the Australian Academy of Science's Flora Committee.

The next Meeting will be held in Hobart in 1980 under the Chairmanship of Dr. A. E. Orchard.

J. R. Maconochie - Chairman

SERIES OF AUSTRALIAN PLANT MONOGRAPHS

The response to the notice in the June Newsletter was insufficient for the ABRS Advisory Committee to support the proposal. In view of this and the decision to proceed with a Flora of Australia the proposal has been dropped.

Alison McCusker
Bureau of Flora and Fauna

CHAPTER NEWS

ADELAIDE

Hellmut Tölken was elected the new SA chapter convenor at the November meeting.

On Wednesday 30 May, Dave Christophel (ADU) gave the second of the two lectures on early Tertiary plant geography, presenting the macrofossil evidence. A wide range of fossil material was displayed. The well-presented talk included important new finds by his group in Myrtaceae, Casuarina s.l. and Compositae from south-east Australia.

On Wednesday 27 June, Barry Conn (ADU) spoke on taxonomic problems in several groups which he had experienced in New Guinea, including Geniostoma (Loganiaceae) which comprises widespread complexes of closely related taxa, and the Drosera Peltata-D. auriculata group whose differences break down outside Australia.

On Wednesday 25 July, Peter Lang (ADU) clearly elucidated his progress in sorting out the complex of species constituting Series Dumosae of Eucalyptus. Numerical analysis of a wide range of characters in the sessile-fruited E. anceps-E. conglobata group shows the oversimplification of past classifications and the tendency of previous workers to stress fruit characters in preference to other diagnostically more or as useful characters of other organs.

On Wednesday 29 August, Hellmut Tölken (AD) spoke on South African Crassulaceae, showing the remarkable diversity in habitat, habit and the flowers. The intricate pollination mechanisms, adaptations to obtaining water through the leaves in arid sites, interesting distribution patterns, and problems of interrupted clines, convergence and hybridization were beautifully presented.

Several members meandered on a luxurious 10-berth houseboat at the all-inclusive expense of $80 per head collecting the flora of the Murray Valley between Renmark and the Vic/NSW border between September 10-17. The most comfortable field trip I've ever had, yet providing efficient access to the area. Over 600 collections were made. Several interesting finds at this preliminary stage have come to light. Large aquatics were unfortunately poorly developed.

Mt. Kaiserstuhl (Barossa Range) was invaded on Saturday September 22 by a dozen botanists followed by lunch at a winery.

On Wednesday 26 September, Dr. R. Praeger and E. Dimitriadis, Organic Chemistry Dept., University of Adelaide, discussed the usefulness of thin layer and gas-liquid chromatography as an aid to plant taxonomy through identification of secondary metabolites in small samples of plant material. The talk was held in their department, and the two techniques were demonstrated using Eremophila species.

On Wednesday 31 October, Philip Short (Flinders Univ.) spoke on breeding systems and distribution patterns in the small compound-headed Inuleae (Compositae). Pollen-ovule ratios verified predictions based on morphological characters of autogamy (low counts) and facultative out-crossing (high counts) in species. Several genera have examples of species pairs, with an outcrosser of restricted distribution in WA and a selfer widespread across Australia.

On Wednesday 28 November, Judy West (ADU) spoke on the biogeography and evolution of Dodonaea. Arguments were presented for considering Dodonaea to be among the primitive Sapindaceae. Alternative hypotheses were discussed on the origin of the wide distribution of the genus outside Australia, due almost entirely to the D. viscosa complex. Fossils strongly resembling this species existed 25-35 million years ago in western USA.

On Thursday 29 November, Peter Taylor (K) gave a beautifully presented tslk on the vast and remarkable diversity in ecology, growth form, vegetative parts, flowers, insect traps, etc. in Utricularia (Lentibulariaceae) both outside and within Australia. He hopes to finish a world monograph at the end of 1981.

Bill Barker - Outgoing Convener

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CANBERRA

Our programme for the final part of the year was as follows:

September 25: Dr. Owen Williams, of the CSIRO Division of Land Use Research, Woodland Ecology Unit

"Plant demography in Australia's research laboratory - the arid lands".

Owen discussed the rise and fall in numbers of individual of a dominant species in tree and shrub communities and the difficulty of communicating this to agriculturalists.

October 23: Dr. Alison McCusker, of the Bureau of Flora and Fauna (ABRS), Department of Science and the Environment.

"The Flora of Australia - how to proceed?"

The wide diversity of opinions from botanists was noted; and problems of content, format and publication were discussed.

October 28: Roy Pullen, of the CSIRO Division of Plant Industry, Plant Introduction Service, led an excursion to Currawan Creek, a cool temperate rain forest gully in the Budawang Range. The

day was cool and the pace not too brisk. The assorted collection of botanists, birdwatchers and friends enjoyed themselves thoroughly pausing only to tally leech bites.

November 20: Arthur Chapman, of the Bureau of Flora and Fauna (ABRS), Department of Science and the Environment.

"Domin's Impact in Australia".

An interesting account of Domin's collections in the Townsville area during the wet season c. 1909-10, and the species especially of the Pentland region.

George Chippendale rounded off the meeting by showing his slides of botanists and co-workers.

A sizable group then met at a local Chinese restaurant for a very good dinner, amply rounding out the evening - and the year.

Estelle Canning

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PERTH

A half-day symposium on the Phytogeography of Western Australian plants was held on 12 November. The following are abstracts of the papers presented:

Small area plant geography - a local case study -
P. Bridgewater - School of Environmental & Life Sciences, Murdoch University.

Small area plant geography is here defined as the geographical relationships of plant species within a small area of land. In this case study of the area concerned (the City of Melville, W.A.) is approximately 100 km square.

For most of the state of Western Australia, or indeed Australia, the distribution of plants is well known in general, but poorly known in detail. A data base for small area studies is not therefore usually available. For this case study a recent survey by members of Murdoch University and others has succeeded in mapping the distribution of 186 species in each of the 1 km grid squares of the Australian Map Grid which cover the City of Melville.

These distribution data were stored on computer disc as they were gathered, and maps produced from the final data set. Besides mapping, however, these data may also be used for a detailed analysis of distribution patterns. A simple clustering technique produced six groups of grid squares, which range in zones from north-west to south-east of the study area. This suggests that some form of geographical disjunction must be occurring among the component species.

To clarify this a table of species against grid squares was prepared from the computer records. This table was then subjected to sorting by hand, in an analagous fashion to the sorting of a phytosociological table. From this sorted table it is possible to extract groups of species with similar geographical ranges. These may be considered as geographical elements, in

the sense of Matthews (1937). Because of the small area under study, however, it is preferable to use the term relative geographical element.

All the elements are recognisably tied to edaphic variation in the study area. Some are related to particular factors, such as limestone outcrops, lacustrine deposits etc. The majority of elements, however, appear to be related to the boundary between the Bassendean and Spearwood Dune systems, which occurs across the south western portion of the City. The distribution patterns of these elements reveal a complex interaction of plant species across this boundary, and pose some questions regarding the dynamics of species through time and space in this boundary region.

A final product of the small area study concerns the conservation potential of particular locations. For example, in the present study it is possible to assess grid squares with the largest numbers of relative geographical elements. Such grid squares could provide ideal locations for reserves designed for native flora conservation. Additionally, the grid squares which contain existing reserves can be assessed for their suitability.

Reference

Matthews, J. R. (1937). Geographical relationships of the British flora. J. Ecol., 25, 1-90.

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Plant geography : an ecological approach

J. S. Beard, Applecross

H. Doing (1970) in "Botanical Geography and Chorology in Australia" distinguished between phytogeography in a strict sense of geographical aspects of taxonomy and "vegetation geography" which is based on the distribution of plant communities. Doing attempted to combine both aspects in a treatment of Australia. This approach is illustrated and discussed. Like other previous phytogeographic maps such as those of Diels (1906), Gardner (1956) and Burbidge (1960), Doing's is found to suffer from small scale and lack of availability of basic "ground truth" from detailed knowledge of the country. Detailed vegetation mapping in more recent years (Beard 1969 et seq.) has begun to provide more of this basic data so that in Western Australia at least it has become possible to define fairly accurately phytogeographic regions (Beard 1979). These are based purely on vegetation geography and we may ask to what extent such regions relate meaningfully to the distribution of species. This question will be examined and discussed.

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Phytogeography of Western Australian Restionaceae

G. J. Keighery - Kings Park & Botanic Garden

The Restionaceae of Western Australia comprise 64 species distributed in 16 genera. All are perennial rhizomatose herbs, mostly fire resistant. They are nearly all dioecious, wind pollinated and sexual. Vegetative reproduction may form a major means of population maintenance.

Unlike other families of monocotyledons studied, the Centrolepidaceae, Juncaginaceae and Liliaceae the family is almost entirely confined to Southern

Western Australia, chiefly in moister sandy soils. As such it closely parallels the distribution of the family Haemodoraceae. These two families (Haemodoraceae, Restionaceae) define the South-West better than any other monocotyledon group.

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Phytogeography of the Myrtaceae in Western Australia

B. L. Rye - Department of Botany, University of Western Australia

Western Australian distribution maps have been prepared for 36 myrtaceous genera comprising a total of 660 species. The Myrtaceae are primarily concentrated in the sandplain areas of the temperate south-west and have a secondary concentration in the far north of Western Australia. Areas of particularly high species density for individual genera usually contain arrays of morphologically similar species suggesting that they are sites of recent speciation. Species with nuts show a significant tendency to occupy more arid environments than capsulate species whereas the occurrence of polyploid and dysploid variants appears to show little correlation with rainfall.

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Phytogeographic patterns in Casuarina and Stylidium in Western Australia

A. H. Burbidge - Department of Botany, University of Western Australia

Of the 23 species of Casuarina occurring in Western Australia, most are endemic to the South-West Province and South-Western Interzone. Major species concentrations are in the sandheaths of the transitional rainfall zone; few species occur in the extreme south-west. Some 70% of Stylidium species are endemic to south-western Australia, but in contrast to Casuarina, major species concentrations are in the high rainfall zone near Perth and Albany, with high numbers of species in the extreme south-west. The pattern observed in Casuarina is similar to that in most other woody groups studied, while Stylidium shows a pattern similar to several other perennial herbaceous groups. It seems likely that a casual relationship exists between the occurrence of a genetic system containing recessive lethals in south-western Australia, and the extensive radiative speciation in Stylidium in this region.

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Phytogeographical aspects of speciation in the South-Western Australian flora

S. D. Hopper - Western Australian Wildlife Research Centre, Department of Fisheries and Wildlife.

Although the species richness of the south-western angiosperm flora became world renowned soon after European settlement, the evolutionary questions posed by this richness have been neglected until recently. Following L. Diels and C. A. Gardner, most phytogeographers have limited their evolutionary analyses to explanations of the uniqueness of the flora in terms of long-standing climatic and edaphic barriers that have isolated south-western Australia from south-eastern and northern Australia. Such explanations account for the origins of only those few taxa that have vicarious close relatives outside of the south-west. It is clear that the majority of south-western taxa have their closest relatives in the south-west.

Satisfactory explanations of high species richness therefore must focus on those environmental and biological factors that have favoured prolific speciation within the region itself.

A consideration of available data from the fields of systematics, phytogeography, palaeoclimatology and geomorphology suggests that erosional dynamism and recurrent climatic stresses during the Quaternary and late Tertiary in the transitional rainfall zone (300-800 mm p.a.) may have been primary environmental factors promoting speciation in the south-west. It is proposed that these factors produced a mosaic of landforms and soils together with labile population structures in the transitional zone flora throughout the Quaternary. Populations on the older plateau surfaces were fragmented; rates of migration, isolation, extinction, confluence, and hybridization were increased among species adapted to younger soils; and accelerated rates of speciation resulted. On the other hand, it appears that habitat and climatic stability were greater in the high rainfall forested zone (800-1400 mm) during these periods and hence favoured the persistence of a more conservative relict flora. This hypothesis, which is essentially a refinement of one outlined by N. T. Burbidge, will be examined particularly in relation to the origin of species in Anigozanthos and Conostylis.

RECENT BOOKS

Lichens of South Australia, by R. B. Filson and R. W. Rogers

Handbooks Committee, available from the Government Printer, 282 West Beach Road, Netley, S.A. 5037 ..... $10.50

Kosciusko Alpine Flora, by A. B. Costin, M. Gray, C. J. Totterdell and D. J. Wimbush

C.S.I.R.O. and Collins $25.00

Australian Orchids, Volume 2, by R. D. Fitzgerald (facsimile).

Lansdowne Editions $350.00
(Volume I in facsimile was published in 1978)

Gregory of Rainworth, by Wendy Birman.

University of Western Australian Press $21.95
(A biography of Augustus Gregory, explorer and surveyor).

REVIEW

"Vegetation and Floristics of the Burrup Peninsula"

by M. Blackwell, M. Trudgen and A. S. Weston

This Environmental Report attempts to analyse the flora of the Dampier Region, and in particular the Burrup Peninsula where the on-shore complex for the North West Gas Project is to be located.

While not a complete study, because of the limited time available, it does contain observations of considerable importance for conservation of this region. The report has had very limited circulation, hence this review.

Several major points are made in the report, and are summarised below:

(1) Two species of flowering plant; Terminalia supranitifolia F. Muell and Boerhavia sp. nov. are probably endemic to the Peninsula.

(2) Two communities: a Paspalidium sp. community and a Terminalia supranitifolia/Brachychiton australe community are restricted to the Peninsula.

(3) The Peninsula contains a rich and diverse flora of at least 279 species of flowering plants, which must increase as exploration continues. A number of these (29 in total) are species whose major ranges are found in the Northern Botanical Province. Many of these are near or at the ends of their ranges and are, therefore, of considerable scientific interest.

(4) There are no adequate nature reserves on the Peninsula (the closely adjacent Dolphin Island is a class B reserve).

Most of the interesting flora and endemics are found on the northern end of the Peninsula which is under consideration for development (Sea Ripple Passage Site). I feel all biologists will hope that the Government concurs with the consultants and selects a southern site (in the Withnell Bay - to No Name Creek area). Creation of an A Class Reserve covering the north of the Peninsula is recommended in the report and should be endorsed by conservationists.

Greg Keighery - Kings Park

REQUESTS FOR MATERIAL

(i) Dr. H. W. Lack (B: Botanischer Garten und Botanisches Museum Berlin-Dahlem, Konigin-Luise-Str. 6-8, D-1000 Berlin 33, Germany) needs urgently viable seeds (cypselae, achenes) of Picris from as many places as possible. Picris (Asteraceae) is easily recognizable by its anker-hairs.
Voucher herbarium specimens would be welcome but are not vitally needed at this stage where Dr. Lack is growing the plants for chromosome counts. The origin is, of course, needed and the fruits of individuals should be kept separate if collected from a population. Dr. Lack is monographing the genus (he recently published a new species from Queensland : P.carolorum-henricorum Lack, Phytologia 42(3):209.Apr 1979); therefore loans and duplicate herbarium specimens are also welcome. Any help anyone may be able to give will be greatly appreciated by Dr. Lack.

(ii) Dr. Hj. Eichler (CANB : Herbarium Australiense, CSIRO, P.O. Box 1600, Canberra City, A.C.T. 2601) hopes to clarify the variability in Nitraria in Australia in a cooperative effort. He desires to obtain good herbarium and alcohol material and encourages field observations. Special attention should be given to

(1) habit (habit photographs of the plants from which herbarium material is collected would be ideal);

(2) distribution of sexes on individual plants and in populations (the plants in Australia seem to be dioecious, and romonoecious, polygamous or some may have only bisexual flowers, and this may differ from population to population and, perhaps, over geographical ranges). The possible existence of sexual dimorphism should be examined.

(3) ripe fruits (not the colour, shape and size from individual plants). Collections of fruits of individual plants will allow the study of variation of shape, size and pattern of pits of the putamen which may be of diagnostic importance. J. Noble (Aust.J.Ecol.3:141-177, (1978) suggested the possible existence of two taxa (species?) in Australia. It is uncertain and needs a thorough comparison whether N.billardierei DC. ('Billardierii'; 1828) and Zygophyllum australasicum Miq. (1845), both described from Australia, and N.schoberi L.(1759), from European Russia to Central Asia, are conspecific.

(iii) Prof. Dr. M. N. El Hadidi, visiting scientist of CSIRO at the Herbarium Australiense (CANB), will be working from September 1980 to February 1981 with Dr. Hj. Eichler on Tribulus and Tribulopis in Australia. Duplicates of Herbarium specimens from any area will be greatly appreciated at CANB. Loans will be requested at a later stage.

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY

NOMINATION PAPER

(A separate nomination paper or a copy of same is required for each candidate.)

We, the undersigned members of the Society, desire to nominate

.....

as

President
Vice-President
Secretary
Treasurer
Councillor

(Please cross out words that do not apply)

on the A.S.B.S. Council for 1979 - 1980.

Member's Signature | Institution or affiliation

.....

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.....

I hereby consent to my nomination for the position of

.....

Signed .....

Date .....

* NOMINATIONS TO BE WITH THE SECRETARY BY 22nd FEBRUARY, 1980.