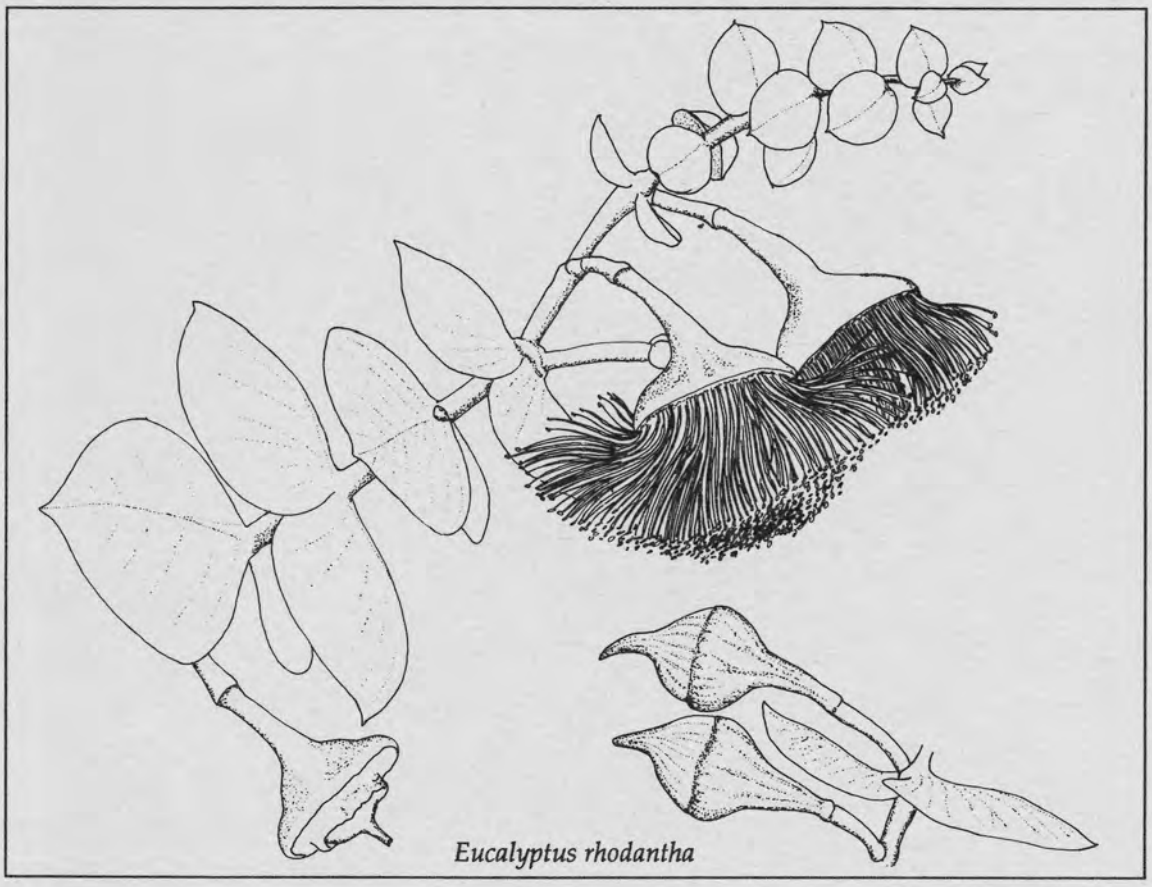
DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

DECLARED RARE FLORA MANAGEMENT WORKSHOP

ABSTRACTS OF PAPERS PRESENTED



Eucalyptus rhodantha

August 7-8, 1989
Training Centre, State Operations Headquarters, Como

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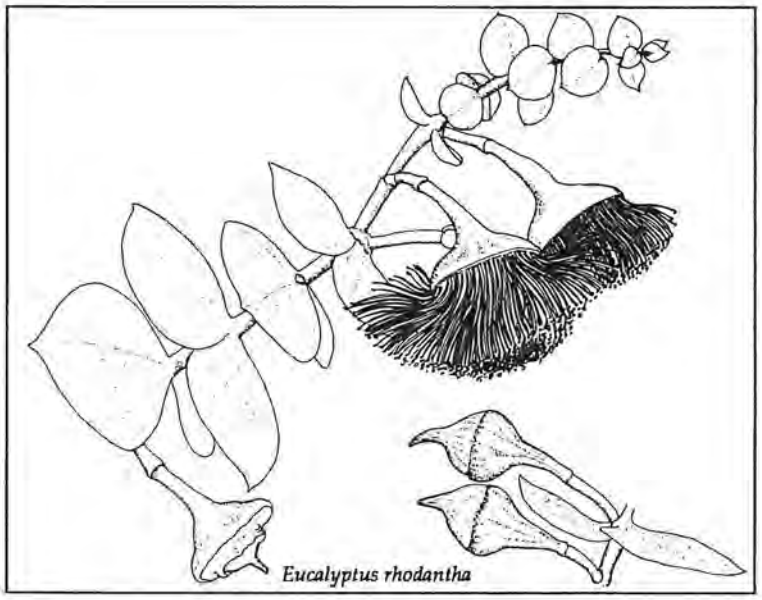

August 7-8, 1989
Training Centre, State Operations Headquarters, Como

Department of Conservation and Land Management
50 Hayman Road, Como, W.A. 6152

PREFACE

This Workshop, organized by Flora Conservation Research Program, Woodvale Research Centre, is convened as part of the Department's strategies for conservation of Declared Rare Flora in the wild as outlined in Policy Statement No. 9. Strategy 4.1 of that document states that staff will "undertake training in Departmental obligations to conserve and manage endangered flora".

An attempt has been made to address a number of the suggestions and/or recommendations put forward by participants in the 1988 workshop. It has not been possible to include all requests due to time constraints. However, I hope the format of the 1989 Workshop will prove both interesting and informative.

I would like to thank all participants and particularly those presenting individual papers. My special thanks to those authorities external to CALM who have agreed to give us the benefit of their own expertise and contribute to this Workshop both by their presence and/or presentation/s.

A very warm welcome is extended to The Hon. Minister for CALM - Mr Ian Taylor, MLA - who has kindly agreed to address this Workshop.

R Sokolowski

R.E.S. Sokolowski
WORKSHOP ORGANISER

DECLARED RARE FLORA MANAGEMENT WORKSHOP

PROGRAM - DAY 1

August 7, 1989

0800-0830	Registration	
0830-0900	Dr S.D. Hopper, SPRS/ Woodvale	The Department's Rare Flora Policy and Research Division's Role in its Implementation
0900-0930	Mr M. O'Donoghue S/C Flora Como	Legislation and Permits to take DRF and the Rare Flora Field Report Form
0930-1000	The Hon. Minister for CALM Mr I. Taylor MLA	Address to Workshop Delegates
1000-1015	**MORNING TEA**	
1015-1045	Dr D. Coates, SRS/Woodvale	Flora Conservation Research Program
1045-1115	Mr S. Van Leeuwen Consultant Botanist	Rare Flora Data Base
1115-1145	Dr K.W. Dixon, SRS/, Kings Park and Botanic Garden	The Role of Botanic Gardens in the Conservation of DRF
1145-1215	Mrs S. Patrick, Botanist W.A. Herbarium	CALM's Field Herbaria - Are They Working?
1215-1245	Dr J. Sampson, Consultant	Survey of Endangered Poison Plants in W.A.
	M/s A. Kelly & A. Napier Consultants	Survey of Rare and Poorly Known Eucalypts
1245	**LUNCH**	
1315-1345	Mr A. Hopkins, SRS/Woodvale	Management of Rare Flora in Respect to Fire
1345-1415	Mr R. Harris, Manager/Ops. Bush Fires Board of W.A.	The Bush Fire Organization and the Preservation of Rare and Endangered Flora
1415-1445	Dr B. Shearer, SRS and Mr T. Hill, Research Assist.	Diseases Threatening DRF
1445-1515	Mr G. Keighery, SRS and Ms J. Alford, TO	Weeds in Conservation Reserves, Information Flow on DRF Management.
1515-1530	**AFTERNOON TEA**	
1530-1600	Mr B. Loney, M.R.D., Road-side Environmental Officer	The Management of DRF in the Construction & Maintenance of Roads

.../2

1600-1630	Mr J. North, Country Shire Councils Assoc. Rep. Morawa	Local Government and its Responsibilities in the Protection & Management of DRF
1630-1700	Ms P. Hussey, Exec. Officer Roadside Conser. Comm/CALM	CALM Responsibilities in the Protection and Management of DRF on Roadside Verges

PROGRAM - DAY 2 August 8, 1989

0830-0900	Mr C. Haynes, Director National Parks	The Role of National Parks
0900-0930	Mr G. McCutcheon, Env. Officer/CALM	A Review of the DRF Register used in the Forest Regions and the Proposed New Developments by Computer Analyses
0930-1000	Mr P. Lambert) DWO's Mr L. Anderson)	Declared Rare/Geographically Restricted Flora and Associated Problems in the Districts
1000-1015	Mr M. Graham, Nature Reserve Officer/CALM	DRF & RF Management Problems "What do I do and when"?
1015-1030	**MORNING TEA**	
1030-1230	General Open Discussion on Matters Relevant to the Management of DRF.	
1230	**CLOSE**	

Key

DRF	Declared Rare Flora
RF	Rare Flora
SPRS	Senior Principal Research Scientist
SRS	Senior Research Scientist
RS	Research Scientist
S/C	Senior Clerk
DWO	District Wildlife Officer
T.O.	Technical Officer
Ops	Operations

Departmental Rare Flora Policy, and Research Division's Role in its Implementation

Stephen D. Hopper

A brief overview of Policy Statement No. 9 "Conservation of Endangered Flora in the Wild" will be given (copy included in proceedings). Research Division has played a major role in the early development and implementation of this Policy. However, it is pleasing to note that Regional staff and Specialist Branches have increasingly become involved in recent years. This has been timely from Research Division's point of view, as staff allocated to Flora Conservation Research have declined to half their 1985 strength due to recent structural changes.

To a small extent, this has been offset by staff in the Herbarium and the Biogeography, Plant Diseases and Fire Research Programs who have recently turned their attention to rare flora conservation research. Consequently, Research Division will be in a strong position to continue providing advice on the naming, classification, biogeography and ecology of selected Declared Rare Flora. We look forward to ongoing collaborative work with specialist Branches and Regional staff in achieving effective planning, management and conservation of the State's Declared Rare Flora.

LEGISLATION AND PERMITS TO TAKE DRF AND RARE FLORA FIELD REPORT FORMS

Mike O'Donoghue
Senior Clerk, FLORA

- A summary of the relevant provisions of the Wildlife Conservation Act relating to the protection of Declared Rare Flora (DRF).
- Procedure for applying for Ministerial approval to take DRF. Guidelines involved in the preparation of submissions to take DRF.
- Rare Flora Field Report Forms.

WESTERN AUSTRALIA

WILDLIFE CONSERVATION ACT, 1950-1980~~85~~

EXTRACT

"to take" in relation to any flora includes to gather, pluck, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means;

9. (1) The provisions of this Act relating to flora bind the Crown.

23F. (1) In this section "rare flora" means flora for the time being declared to be rare flora for the purposes of this section.

(2) Where the Minister is of the opinion that any class or description of protected flora is likely to become extinct or is rare or otherwise in need of special protection, he may, by notice published in the *Government Gazette* declare that class or description of flora to be rare flora for the purposes of this section throughout the State.

(3) The Minister may vary or revoke a notice published under subsection (2) of this section by subsequent notice or notices published in the *Government Gazette*.

(4) A person shall not, whether or not he is -

(a) the holder of a license issued under this Act to take protected flora;

(b) the owner or occupier of private land on which rare flora exists; or

(c) authorised by the owner or occupier of land on which rare flora exists,

take any rare flora unless -

(d) where he is not the holder of a license issued under this Act, he first obtains the consent thereto in writing of the Minister;

(e) where he is the holder of a license issued under this Act, he first obtains the further consent thereto in writing of the Minister.

(6) A person who takes any rare flora contrary to the provisions of this section is liable on conviction to a penalty not exceeding ten thousand dollars.

(7) Where an owner or occupier of private land who has been refused consent to take rare flora on that land satisfies the Minister that he will suffer loss or use or enjoyment of the land by reason of that refusal, the Minister shall inform the Treasurer in writing accordingly and the owner or occupier shall be paid compensation for that loss at such rate or rates per annum as -

(a) is agreed between the owner or occupier and the Treasurer;

(b) in default of agreement, is determined by a valuer appointed by agreement between the Treasurer and the owner or occupier or in default of agreement on such an appointment, by a valuer appointed by the Minister,

for such period, not exceeding five years, as the loss continues.

(8) Where compensation has been paid under subsection (7) of this section for a period of five years in respect of any particular land, the Minister shall not refuse an application by the owner or occupier of that land to take rare flora on that part of the land for the loss of use or enjoyment of which compensation has been so paid.

(9) Notwithstanding that compensation has been paid under subsection (7) of this section, whether for a period of five years or for a lesser period, for the loss of use or enjoyment of any land, that land may at any time be taken by the Governor under and subject to the Public Works Act, 1902 for any of the purposes of this Act.

CLM 142
Revised May 1989

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
RARE FLORA FIELD REPORT FORM

TAXON: _____ POPULATION NO.: _____
File No. Head Office: _____ File No. District: _____
DRF [ ] Proposed DRF [ ] Priority Species No. [ ]
New Population [ ] Routine Inspection [ ] Re-survey [ ] Opportunistic Survey [ ]
FROM: _____ TITLE: _____ SURVEY DATE: _____
REGION: _____ DISTRICT : _____ SHIRE: _____
District Site Ref: _____ **MAP REF:** _____

LAND STATUS: Nature Res. [ ] Water Res. [ ] Gravel Res. MRD [ ] Gravel Res. Shire [ ]
National Park [ ] Railwy Res. [ ] Rd. Verge MRD [ ] Rd. Verge Shire [ ]
State forest [ ] Private [ ] VCL [ ] Shire Reserve [ ]
Other [ ] State: _____
LOCALITY: _____

LATITUDE: _____ LONGITUDE: _____ ASPECT: _____
LANDFORM: Hilltop [ ] Flat [ ] Drainageline [ ] Swamp [ ] Ridge [ ]
Outcrop [ ] Breakaway [ ] Slope [ ] Gully [ ] Valley [ ]
Riverbank [ ] Lake Edge [ ] Low Plain [ ] Sand Dune [ ] Cliff [ ]
Firebreak [ ] Other : _____

ROCK TYPE: Laterite [ ] Granite [ ] Dolerite [ ] Limestone [ ] Other: _____
SOIL TYPE: Sand [ ] Loam [ ] Clay [ ] Peat [ ] Gravel [ ]
SOIL COLOUR: Red [ ] Brown [ ] Yellow [ ] White [ ] Grey [ ] Black [ ]
SOIL CONDITION: Perm. wet [ ] Moist [ ] Dry [ ] Saline [ ] Other: _____

VEGETATION CLASSIFICATION (Muir's): _____

ASSOCIATED SPECIES: _____

NO. OF PLANTS:
Estimated [ ] Actual [ ] Mature: _____ Seedlings: _____ Dead: _____ Area Occupied: _____
REPRODUCTIVE STATE: in bud [ ] flower [ ] immature fruit [ ] dehisced [ ] vegetative [ ]
POLLINATORS: Native bees [ ] honey bees [ ] mammals [ ] birds [ ] insects [ ]
Other observations: _____
CONDITION OF POPULATION: Recently burnt [ ] diseased [ ] disturbed [ ] undisturbed [ ]
Other [ ] State: _____

POTENTIAL THREATS: Firebreaks [ ] mining [ ] recreational activities [ ] disease [ ]
Weeds [ ] grazing [ ] clearing [ ] prescribed burning [ ] Other [ ] State _____

FIRE HISTORY: Not known [ ] Burnt in 19[ ] Summer [ ] Autumn [ ] Winter [ ] Spring [ ]
Next control burn: Year [ ] Month : _____
VOUCHER SPECIMEN: Retained [ ] W.A. Herb. [ ] Other [ ] State: _____
ATTACHED: Map [ ] Mudmap [ ]Illustration [ ] Photo [ ] Field Notes [ ]
ACTION: Taken : _____
Required: by District [ ] S.O.H.Q. [ ]

FENCING REQUIREMENT: _____

OTHER COMMENTS: _____

COPY SENT TO: Regional Office [ ] District Office [ ] Other [ ] State: _____
SOHQ TO SEND COPY TO: Regional Office [ ] District Office [ ] Other [ ] State: _____

Signed: _____ Date : _____
NOTE: More than one box, in any section, may be ticked.

RECORDS: PLEASE FORWARD TO SENIOR CLERK FLORA, WILDLIFE AND LAND ADMINISTRATION

ADDRESS TO WORKSHOP DELEGATES

Hon Ian Taylor M.L.A., Minister for Conservation
and Land Management

THE FLORA CONSERVATION RESEARCH PROGRAM AND POPULATION BIOLOGY OF RARE AND ENDANGERED SPECIES

David J. Coates
Senior Research Scientist

The greatest area of species richness and local endemism within the State occurs in the cereal growing and nearby adjacent areas. Consequently, the Flora Conservation Research Program has given highest priority to research on endangered and poorly known flora of the wheatbelt and Swan Coastal Plain. Although field surveys of these areas and the annual review of Declared Rare Flora remain high priority, the past two years have also seen an increase in research on the population biology and management of selected endangered flora of varying life histories. The aim has been to develop Declared Rare Flora management programs for individual species or related species groups (i.e. *Banksias, Grevilleas*). In addition to these species based programs the production of regional or district based management programs is also underway.

Detailed population biology studies on rare and endangered flora have been achieved by establishing permanent monitoring quadrats and undertaking population genetic and ecological investigations. The techniques utilised in these studies will be reviewed together with the findings from research on a number of species of Declared Rare Flora.

FLORA CONSERVATION PROGRAM

PROGRAM LEADER

DJ Coates

CURRENT RESOURCES

This program comprises 5.7 persons (3.55 Professional (including 2.0 Contract) + 2.15 Technical).

RESOURCES IN PREVIOUS YEAR

6.0 persons (4.1 Professional (2.7 contract) + 1.9 Technical).

BACKGROUND

Western Australia has a vascular flora world-renowned for its richness (about 10 000 species) and high endemism (75%-80% for the south-west). About 2 000 species have been considered rare, endangered, vulnerable or extinct by various authorities. Some 1 500 species are used commercially in the cut wildflower, seed nursery, bee-keeping and timber industries. While there has been considerable progress in knowledge during the past few years, in most cases the taxonomy, geographical distribution, reproductive biology and conservation status of these species is inadequately documented for appropriate management to be implemented.

Due to the coincidence of greatest areas of species richness and local endemism for the State with cereal-growing areas, highest priority has been given to research on endangered and poorly known flora of the wheatbelt and Swan Coastal Plain. Although field surveys of these areas and the annual review of declared rare flora remain high priority, it is also intended to increase research on the population biology and management of selected endangered flora with various life histories. This will be achieved by establishing permanent monitoring quadrats, undertaking population ecology/genetic studies and developing a computer data base on endangered flora. The expected end product will be the preparation of declared rare flora management programs. In addition to these species' based programs, the development of regional and district based programs is also underway. Limited research will continue on more common flora where conservation problems are likely. These include effects of *Phytophthora* fungi and wildflower picking on banksias; fragmentation of the range of widespread eucalypts by clearing; impact of beekeeping; competition by weeds with keystone species, and impacts on granite outcrop species.

AIM

To provide scientific information that maximizes effective conservation and management of the flora of Western Australia.

PRIMARY OBJECTIVES

Rare and Endangered Flora

To undertake research on rare and endangered flora systematics, geographical distribution, genetics, population ecology and management techniques (e.g. fire, mechanical disturbance, weed competition, grazing regimes, pest and disease control, propagation and re-establishment in the wild). To recommend on land acquisition, management techniques, future research and conditions for Ministerial permits to take with a view to producing rare flora wildlife management plans. To prepare wildlife management programs for species that require management.

Flora Data Base

To establish and maintain a data base on the geographical distribution and conservation status of Western Australia's native flora and plant communities.

Public Involvement

To foster a sympathetic public attitude to flora conservation through direct involvement of the public in appropriate research projects.

Wildflower Industry

To undertake research and provide advice with a view to producing wildlife management programs for plants used in the wildflower industry.

Communication

To communicate research results through scientific and technical publications, through advice and liaison with other CALM staff, other organisations and the public and through involvement in training and public conferences and seminars.

20 YEAR GOALS (based on current resources and in priority order)

1. Develop and maintain a comprehensive data base for declared endangered flora and other priority species and undertake surveys and implement findings on poorly known species at risk. ***
2. Prepare Wildlife Management Plans and establish a network of permanent monitoring quadrats for all declared endangered flora. ***
3. Involve the public in monitoring and surveys of all declared endangered flora and other groups of flora.**
4. Provide management plans for all major species utilized in the wildflower industry, continue monitoring effects of the industry on native flora and undertake research on the management of selected priority species.*

5 Year Goals (with existing resources)

1. Undertake field surveys of poorly known high priority species at risk, and review the schedule of declared rare flora annually.
2. Develop and maintain a computerized data base for declared rare flora and other priority species, and an ability to map geographical distributions using FLORAPLOT.
3. Produce 5 Endangered Flora Wildlife Management Plans that are either species, reserve or CALM Region based.
4. Establish a network of permanent monitoring quadrats on all species for which Endangered Flora Wildlife Management Plans are produced.
5. Produce a colour book on the Declared Endangered Flora and a review of rare flora conservation in W.A.
6. Carry out studies on the biosystematics and conservation status of Western Australian flora.
7. Publish the Orchid atlas.
8. Complete an endangered eucalypt atlas.
9. Seek public involvement in the monitoring of declared endangered flora.
10. Produce, through the letting of consultancies, three Wildlife Management Plans on species used in the wildflower industry.
11. Undertake research on the management of *Boronia megastima* and other priority species in relation to commercial harvesting techniques.
12. Conduct an annual review of the Australian National Parks and Wildlife Service's statistics on Western Australian cut flowers exported under legislative permit.
13. Review research priorities regarding the wildflower industry after proclamation of the proposed flora licensing amendments to the Wildlife Conservation Act.
14. Publish educational material, field guides to eucalypts and orchids of five national parks, and books on trees and tall shrubs of Perth and on orchid pollination.
15. Establish field herbaria in all CALM regional and district offices and ranger stations.

RARE FLORA DATA BASE

Stephen van Leeuwen

The main aim of the rare flora database is to provide an efficient and accurate means by which the location of rare flora within the State can be quickly determined. The database will enable CALM personnel to rapidly assess the conservation value of an area based on its floristic status. Such information will assist, for example, managers planning burning programs, planners designing management policies, mining personnel undertaking exploration activities, and the Main Roads Department planning road works and/or maintenance operations. Currently, such information is only available on Departmental files and its retrieval is often time consuming.

The database will contain information on those species of flora within the State which are currently considered to be rare, poorly known or in need of some form of protection. The species recorded on this database will include 238 declared as Rare Flora and some 1000+ presently on CALM's Reserve List.

The Reserve List currently consists of five species categories which are based on an assessment of the abundance, conservation status and need for protection of the species concerned. There are five categories of species in order of rating priority which require further survey and research:

Priority 1 - only known from one or a few populations on land under immediate threat.

Priority 2 - only known from one or a few populations on land not under immediate threat.

Priority 3 - known from several populations on land not under threat.

Priority 4 - presumed extinct.

Priority 5 - require monitoring.

The establishment and continued maintenance of the database will increasingly become dependant on the accurate completion of Rare Flora Field Report Forms (CLM142, RFFR Forms). These forms have been designed to provide as much information as possible without making them too cumbersome and complicated to complete. In addition to providing locality, land status and administrative information, this form also provides information on biological aspects of the species and its habitat. It is envisaged, that at some point in the future, this information will also be used to create a

biological database for rare species. This will enable CALM to manage these species with an increasing degree of confidence.

This presentation will introduce Workshop participants to the rare flora database, explain the numerous lists of rare flora and detail how to complete RFFR Forms.

THE ROLE OF BOTANIC GARDENS IN THE CONSERVATION OF RARE FLORA

Kingsley W. Dixon, Senior Research Botanist,
Kings Park and Botanic Gardens, West Perth

Botanic gardens are playing an increasingly important role in ex situ conservation of rare and endangered flora. Kings Park and Botanic Gardens, a member of the IUCN Botanic Gardens Conservation Secretariat, has initiated an active program specialising in propagation and cultivation of declared rare and endangered Western Australian flora.

Macropropagation (seed, cutting, grafting) and micropropagation (in vitro shoot, whole seed and embryo culture) procedures have been developed using explants sourced from a wide cross section of the population. Once propagated, representative plants are displayed in a self-guiding public access area. Permanent living collections for all species are maintained in greenhouse or container arboreta with tissue cultured stock held in low temperature storage.

This paper will present case studies representative of the problems encountered in ex situ conservation of rare flora and the role of botanic gardens in the global strategy to preserve endangered species.

CALM'S FIELD HERBARIA - ARE THEY WORKING?

Mrs S. Patrick, Botanist W.A. Herbarium

In this workshop an overview will be given on the reasons for the establishment of the field herbaria and their present levels of activity within the various CALM regions will be reviewed. An analysis will be made of the part field herbaria play in increasing our knowledge of the declared rare flora, and in highlighting species not previously known to be rare or under threat. A manual for the establishment and maintenance of a field herbarium will be presented.

There are a total of fifty two field herbaria established in CALM offices throughout Western Australia, at most of the Regional/District and Ranger Station offices. The Western Australian Herbarium was recently integrated into CALM and the Herbarium is now keen to review the effectiveness of CALM's Field Herbaria which were established from 1985-88 by the Flora Conservation Program.

SURVEY OF ENDANGERED POISON PLANTS OF WESTERN AUSTRALIA

Dr Jane Sampson, Consultant

A volunteer-based survey of fourteen rare or poorly known poisonous species of Gastrolobium is being conducted by CALM in association with the World Wildlife Fund Australia. Many of these species have been subjected to selective destruction in the wheatbelt and three are Declared Rare. The format of the survey is based on that of the successful 'Banksia Atlas' and the 'Survey of Rare and Poorly Known Eucalypts of WA' but the scope is more restricted and the survey will be conducted for only one year. The northernmost species included in the survey occurs around Hill River. In addition, volunteers are asked to collect seed when it is available so that a seed bank can be established. As in previous projects, a Field Guide containing descriptions, illustrations and FLORAPLOTS of known locations of each species has been produced to assist volunteers. It is hoped that the survey will provide valuable information to assess the conservation status of these Gastrolobium.

Survey of Rare and Poorly Known Eucalypts of W.A.

By: Anna Napier/Anne Kelly, Consultants

The use of volunteers is becoming increasingly more common for the survey of both plant and animal species. The success of the national volunteer-based 'Banksia Atlas' prompted a survey of the States Declared Rare, geographically restricted and poorly known Eucalypts. The survey, now in its third year, has enlisted the aid of over 90 volunteers, distributed throughout the State from Kununurra and Broome in the Kimberley to Kalgoorlie, Esperance and Albany. Five field guides, covering eight of the eleven CALM Regions (Goldfields, Forests (3) and Metropolitan, Greenough, Wheatbelt and South Coast), provide descriptions, illustrations and FLORAPLOT maps of 158 species, 88% of the species of interest. Maps have been produced for all recorded locations of the species of interest in the Gascoyne, Kimberley and Pilbara Regions.

Steady progress is being made with many hundreds of new records for the rare and poorly known species. It is hoped that through the survey, the co-ordinators and volunteers (including many Dept. of CALM staff) will be able to cover the State in search of Eucalypts and obtain valuable information on ranges, population size and conservation status.

Table 1. Numbers of rare, threatened or poorly known eucalypts in CALM's eleven operational regions in Western Australia.

	IUCN CATEGORY						
REGION	EXTINCT	ENGANGERED	VULNERABLE	RARE	POORLY KNOWN	*COMMON	TOTAL
South Coast	-	1	14(31.1%)	36(41.4)	14(29.8%)	14(41.2%)	79
Wheatbelt	-	-	6(13.3%)	15(17.2%)	9(19.1%)	8(23.5%)	38
Greenough	-	2	13(28.9%)	7(8.0%)	2(4.2%)	4(11.8%)	28
Goldfields	1	-	2(4.4%)	14(16.1%)	1(2.2)	2(5.9%)	20
Kimberley	-	-	2(4.4%)	1(1.1%)	14(29.8%)	-	17
Pilbara	-	-	1(2.2%)	1(1.1%)	3(6.4%)	1(2.9%)	6
Gascoyne	-	-	1(2.2%)	1(1.1%)	2(4.2%)	2(5.9%)	6
Northern Forest	-	-	3(6.6%)	3(3.4%)	-	1(2.9%)	7
Central Forest	-	-	3(6.6%)	2(2.3%)	2(4.2%)	2(5.9%)	9
Southern Forest	-	-	-	4(4.6%)	-	-	4
Metropolitan	-	-	-	3(3.4%)	-	-	3
Total	1	3	45(100%)	87(100%)	47(100%)	34(100%)	217

*Considered in previously published works to be rare or threatened but actually common and at no risk on the basis of recent survey.

N.B: Species which occur in more than one region are counted for each region.

MANAGEMENT OF RARE FLORA IN RESPECT OF FIRE

Angus Hopkins, Senior Research Scientist, Woodvale

Fire is a major management consideration for all naturally vegetated land throughout the State. Because removal by burning is included within the meaning of "to take" in relation to flora, there is a legal obligation to understand what happens to gazetted rare flora when burnt. It is also necessary to understand fire effects for ordinary conservation purposes.

At present little is known about the fire ecology of rare flora. There are, however, some guiding principles which will be outlined here. Knowledge of fire ecology of rare flora will be enforced through monitoring.

THE BUSH FIRE ORGANISATION AND THE PRESERVATION OF RARE AND ENDANGERED FLORA

B.W. Harris
Manager Operations Bush Fires Board

Volunteer Bush Fire Control Officers in Western Australia are authorised by legislation to enter vacant Crown land and Reserves to remove fire hazards by burning. They have similar authority on road verges, private property etc.

Increasingly CALM is dependant on the good will, co-operation and assistance of volunteer Fire Control Officers and Brigades. A significant part of the activities of these volunteers is the reduction of fire hazards in their areas.

Consequently the need for good relations, communications, between CALM Officers protecting rare flora and Fire Control Officers is obvious and it is suggested that simple procedures are developed to remove possible areas of conflict.

Let us now look at how we can avoid the potential for conflict of vested interests.

Diseases Threatening Declared Rare Flora

B. L. Shearer and T. C. Hill

Phytophthora species, *Armillaria luteobubalina* and canker fungi are pathogens that can threaten rare flora with extinction or decline. Examples of the destruction of plant communities following infection with *P. cinnamomi* occur throughout the south-west of the state. Plant communities in the north-west may also be at risk as illustrated by the death of *Eucalyptus tetrodonta* in the Northern Territory following infection by *Phytophthora* species.

Phytophthora means "plant killer", a name very appropriate for *P. cinnamomi* which can attack nearly 1,000 hosts. Many of endemic species belonging to the Epacridaceae, Myrtaceae, Papilionaceae and Proteaceae are susceptible to the pathogen. For example a number of rare *Adenanthos* species would become extinct if infected with *P. cinnamomi*. Many susceptible, but common hosts could become rare if *P. cinnamomi* infection goes unabated. The fungus requires moist conditions to survive and warm, moist conditions for sporulation and infection. Since it's introduction in the early 1900's, *P. cinnamomi* has mainly been dispersed in infected soil aided by human activity. We are determining the effect of environment on survival, sporulation and dispersal of the fungus and infection of hosts so as to identify areas with the greatest risk of infection. Fungicides are being tested to control "spot infections".

Phytophthora species other than *P. cinnamomi* also infect native communities. They were probably introduced into the state at about the same time as *P. cinnamomi*. Before an evaluation can be made of the threat that *Phytophthora* species other than *P. cinnamomi* pose to native communities we need to determine their distribution, host range and the conditions favouring survival, sporulation and dispersal.

Armillaria luteobubalina is a widespread endemic pathogen capable of killing a wide range of hosts throughout the south-west. As the fungus is spread by air-borne spores and through infected roots, human activity does not influence the spread of *A. luteobubalina* as much as it does *Phytophthora* species. Very little is known of communities at risk from *A. luteobubalina* infection.

Crown decline and cankered stems of *E. ficifolia* and tuart are examples of the debilitating effects of infection by canker fungi. Little is known of the distribution, pathogenicity and control of canker fungi.

As big fleas have little fleas, plants can be parasitized by other plants. Although Dodder is a widely distributed plant parasite, little is known of its effects on plant communities in the south-west.

WEEDS IN CONSERVATION RESERVES

Greg Keighery, E.M. Goble Garrett and Jeni Alford

Western Australia has approximately 800 species of naturalized plants, growing at the rate of 6/10 per year. Of these, 447 have been recorded on actual or proposed conservation reserves. During the past year we have been endeavouring to obtain an overview of the problem within each CALM region.

Results of the weed survey are highlighted with a listing of major weeds per region.

A series of case studies on:

1. Banksia woodlands
2. Boxthorn (*Lycium ferocissimum*) on the Lancelin-Dongara Islands
3. Bridal Creeper (*Myrsiphyllum asparagoides*) are presented

A comprehensive set of colour photographs of each weed, with known distribution is being established at Woodvale and Environmental Protection Branch. The need for integration between Operations, Regions, Research and external bodies is stressed.

RESEARCH AND OPERATIONS: WHAT DO THEY WANT?

Greg Keighery and Jeni Alford

This paper presents the results of a questionnaire sent out after the last workshop on what operations staff need from research.

Basically, Operations staff want illustrated field guides (not floras) for their regions (or parks). Most wanted regular updates to Green's census)as in Landnote 5/86).

They found maps of the flora at 1:250,000 useful, but thought the scale too coarse except as an ally to determining material. Most wanted checklists for the reserves in their area, and ecological data (soil types, flowering times etc.) was considered more useful than coarse scale maps only.

Common names were not considered vital, except for park checklists to be used for the public.

Regional staff said that they could provide ecological data (including fire responses) on rare and interesting flora.

The authors consider that liaison between operations and research would be greatly enhanced by a senior "wildlife operations" position.

THE MANAGEMENT OF DECLARED RARE FLORA IN THE CONSTRUCTION AND MAINTENANCE OF ROADS

Brett Loney, Roadside Environmental Officer,
Main Roads Department, Perth W.A.

The management of Declared Rare Flora (DRF) in roadsides requires consideration in all phases of the overall road management process. Its integration with the engineering, economic and traffic safety requirements of the road, and public expectation of road management often results in compromise solutions in management of the road and the flora.

It is important that the management of DRF is carried out in an informed yet discreet manner. The location of the flora must be easily ascertained by all levels of personnel in the various stages of road management. This presentation outlines the method used by the Main Roads Department of Western Australia to achieve this goal. This method of delineation has been developed to conserve a number of important environmental values in the roadside.

The conservation of DRF in roadsides is a topic of considerable discussion. The long term conservation, periods in excess of 20 years, is dependent on the ability of scientists to research species and convey their results to the land manager for field application. Conservation goes beyond locating the presence of a species.

This paper addresses these issues along with the overall management needs of the road system, and discusses the implications for DRF in roadsides.

The Management of Declared Rare Flora in the Construction and Maintenance of Roads.

1. The process of road development.

2. Requirements of a road:
   - engineering
   - traffic safety
   - economic
   - public expectation

3. Presence of DRF
   - method of notification
   - field marking
   - issues in the various stages of road development

4. Field management of DRF
   - its biology
   - its extent at specific site and generally
   - its conservation and regeneration

5. Conclusion

LOCAL GOVERNMENT AND ITS RESPONSIBILITIES IN THE PROTECTION AND/OR MANAGEMENT OF AREAS CONTAINING DECLARED RARE FLORA

Mr J. North
Country Shire Councils Association Representative Morowa

How local government currently contributes to the protection and management of Declared Rare Flora. Areas of conflict which effect the capacity of local government to fully undertake the role of custodian and manager of the State's flora and particularly rare and endangered species within Shire reserves and road verges.

The training of personnel and precise communications to field operators and/or supervisory staff working in known areas which contain Declared Rare Flora. The use of volunteer wildflower study groups and the help that they can give to the Shire in assisting in the identification of rare flora for protection needs.

CALMS RESPONSIBILITIES IN THE PROTECTION AND MANAGEMENT OF DECLARED RARE FLORA ON ROADSIDE VERGES

P. Hussey

Under the Wildlife Conservation Act, CALM has legislative responsibility for the protection of native flora on Crown land, including road reserves. Many of these were created wider than necessary for traffic purposes specifically to preserve them as wildflower drives.

Where DRF occurs on road reserves, CALM has the responsibility to liaise with the managing authority - MRD or LGA - to ensure its protection. Since the managing authority may have limited biological expertise, this may involve considerable input from staff, especially at the regional level.

CALM also services the Roadside Conservation Committee which acts as a liaison between road managers and other authorities on all matters concerning the conservation of roadside ecosystems.

THE ROLE OF NATIONAL PARKS

C. Haynes

National parks are places set aside for the long term conservation of scenic, biological and cultural values - but they are also places set aside for visitors to use, provided that such use is not detrimental to long term values.

They are therefore suitable places as repositories for declared rare flora, but management of people has to receive careful attention. This might appear to be simply keeping people away, but there are other avenues and opportunities which may enhance both the conservation of the resource and the experience of visitors.

The talk will concentrate mostly on the background to national parks, with some suggestions for consideration about rare flora management.

A REVIEW OF THE DRF REGISTER USED IN FOREST REGIONS AND THE PROPOSED NEW DEVELOPMENTS BY COMPUTER ANALYSES

G. McCutcheon, Environmental Officer

A brief review of the distribution of populations of Declared Rare Flora is presented, with the greatest emphasis on listings in the Register for Forest Regions. The changes following gazettal of the 1989 list of additions and deletions are indicated.

The standard of information in the Register will be reviewed, and the possibility of improving that standard is foreshadowed for later discussion.

Proposed developments in compilation of the Register using computers will be discussed and the advantages and disadvantages of that new development.

A similar Register which has been produced for local authorities is to be described together with the involvement which is now expected of District Officers to assist the Shires in achieving better management of rare flora.

DECLARED RARE/GEOGRAPHICALLY RESTRICTED FLORA AND ASSOCIATED PROBLEMS IN THE DISTRICTS

by

P.L. Lambert and L. Anderson
District Wildlife Officers

A summary of some of the State's rare and restricted species throughout the districts and highlighting:

Problems associated with DRF species management

1) on roadside verges, private property and Crown land reserves;

ii) land usage and the use of weedicides by other authorities - i.e. Westrail, Water Authorities, Local Government, etc;

iii) site identification and species recognition;

iv) the potential exploitation by commercial and hobby groups.

RARE FLORA MANAGEMENT PROBLEMS
OR
"WHAT DO I DO WHEN.....?"

Mal Graham

A summary of the most commonly occurring questions and problems concerning the management of rare flora in the southern Wheatbelt Region. How to go about finding the answers, some solutions identified and some further questions posed.