GERALDTON DISTRICT THREATENED FLORA RECOVERY TEAM

ANNUAL REPORT

1994

by

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for

The Geraldton District Threatened Flora Recovery Team

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SUMMARY

This report covers progress made in the implementation of the Threatened Flora Management Plan for CALM's Geraldton District, (ANCA ESP Project Number 446) from January 1994 to January 1995.

Progress on the Management Plan is proceeding according to schedule. The main phase of information collation has been completed and the first year of fieldwork has been undertaken.

A Recovery Team has been formed, and three meetings have been held. Information for all taxa has been collated, and populations mapped. A field work schedule has been drawn up and commenced, some of the Poorly Known taxa already appear to be more common than our original information suggested. A total of 262 populations have been inspected, of these 156 are newly discovered populations, and of those seven are newly discovered populations of Threatened Flora.

The number of taxa on the list for the District has increased since the beginning of the Project, from 155 to 267 taxa but this was expected to occur for this large District which has had relatively little botanical survey in the past and which is known to have a higher percentage of undescribed taxa in the List of Endangered, Vulnerable and Poorly Known Taxa than have those Districts nearer to centres of population in the south-west.

It has been concluded that in order to assess adequately the increased number of Threatened and Poorly Known taxa now known to occur in the District, it would be desirable to extend the work for a further year.

INTRODUCTION

In 1993 an application for funding to prepare a Threatened Flora Management Plan for CALM's Geraldton District was made and this was subsequently funded through Australian Nature Conservation Agency's Endangered Species Program and CALM.
The scope items as listed in the contract by ANCA have been addressed according to the Schedule of Work produced February 1994 and the progress on these six items is reported below.

1. Formation of Recovery Team.

1.1 **A Recovery Team** was formed and met for the first time on 28 January 1994.

The team is now made up of the following members:

Sue Patrick (Chair)	CALM, Science and Information Division, WA Herbarium
Andrew Brown	CALM, Science and Information Division and WA Threatened Species and Communities Unit
Phil Roberts	CALM, District Wildlife Officer Flora, Midwest Region
Don Bellairs	CALM Volunteer, Wildflower Society.
Pat Fitzgerald	Murrum Station, Mt. Magnet, representing the Pastoralists and Graziers Association. of WA.
Ian Hamilton	Main Roads, Roadside Management Officer, Geraldton Division
Estelle Leyland	CALM Volunteer, Mullewa Wildflower Society
Robin Westlake	CALM Volunteer, Wildflower Society, Woorree Nursery, Geraldton
Graham Wilks	Mullewa Shire Council, Shire Clerk
Elsa Dexter	ANCA

Mrs Fitzgerald was invited to join the Team as a representative of the Pastoralists and Graziers Association after the first meeting when it was decided that the Association should be represented.

Roy Harris, Ranger in Charge, Kalbarri National Park attended the second meting, but is unable to continue owing to work commitments. He will keep in touch with the work of the Team through liaison with Don Bellairs, who lives in Kalbarri.

Subsequent meetings have been held on 31st May 1994 and 4th November 1994. The next meeting will be held on 17 February 1995.

1.2. **Major resolutions from meetings**.
1.2.1. Committee members to provide lists of taxa they were familiar with, so that on provision of distribution information they would be able to identify populations unknown to CALM.
1.2.2. A standard letter with information on the project to be sent to all Shires and Pastoralists to be visited during the project.
1.2.3. Information sheets to be written in 1995 on particularly rare species for distribution to landowners etc. to attempt to locate new populations.

2. Collation of all known information from herbarium and other records and literature.

2.1. **A consultant** was appointed for two months commencing on 11 April until 3 June 1994 to collate information for the taxa considered endangered, vulnerable or poorly known in the Geraldton District.

All population information was generated from WAHERB, the Database of the collections of the W.A. Herbarium.

All other population information and other relevant data including descriptions of species was obtained from Departmental files for each taxon, and from literature as time permitted.

2.2. **Mapping**
A further appointment of the Consultant was made from 15 June to 12 July during which time all populations were mapped on a series of topographical maps at 1:100000 scale where available, and at 1: 250 000 for other areas, mainly in the east of the District. A small scale map of the present known distribution of each taxon has also been compiled from this information.

2.3. **The above maps at 1: 100 000 and 250 000 scale** have also been enhanced for the survey work by the addition of boundaries of all nature reserves, obtained from Land Information Branch, CALM, and of other reserves and vacant crown land from the Department of Land Administration. Vegetation and Geological Maps have also been obtained for the District.

3. Identification of all plant taxa at present considered endangered, vulnerable or poorly known in the district.

3.1. **A list of plant taxa** considered to be in these categories has been drawn up for the Geraldton District. The total list has increased to 267 taxa from 155 listed at the beginning of the project. This is a result of several factors:

1. Species added to the new CALM Declared Rare and Priority Flora list for 1994.
2. Taxa now known to extend into the District as a result of survey work carried out for the Moora District Threatened Flora Management Plan.
3. Taxa recently proposed for CALM's Declared Rare and Priority Flora List for 1995 as a result of ongoing taxonomic work on various genera particularly in the Families Myrtaceae and Rhamnaceae.

It is expected that further taxa will be added to the list, and will be included in field surveys where possible. Most will fall into the Poorly Known category. Recently published papers on *Grevillea* and *Eremaea* for example, have included taxa which needed to be considered and added to the list.

It is also likely that further taxa will be discovered for inclusion as a result of fieldwork in the District. Information on new taxa is compiled and added to maps and survey schedules as they are added to the list.

3.2. **A collection of Field Specimen Cards** and photocopies of drawings and specimens has been assembled for all taxa to aid identification in the field.

4. Survey all known or past recorded populations of endangered taxa. Check for new populations in the district, particularly in conservation reserves. Survey for all vulnerable and poorly known taxa.

4.1. **Map coverage** for the District has been obtained at scale 1:100 000 where available or at 1:250 000 elsewhere.

4.2. **Survey schedules** have been drawn up in order of flowering time starting from July. These have been made available so that members of the team have been able to participate where necessary.

Field Surveys undertaken 1994

27.1.1994
Two populations of Priority taxa were surveyed whilst in the District for the first Recovery Team meeting at the end of January.

1-4.4.1994
Three nature reserves were surveyed at the beginning of April with the aid of the W.A. Naturalists' Club for opportunistically flowering taxa following earlier rains. Six populations surveyed, not all specimens yet identified.

18 & 21. 5. 1994
Four populations surveyed opportunistically, near Geraldton during Networks Conference.

1-2.6.1994
Two and a half days field work were undertaken with the District Wildlife Officer (Flora) 1-2 June 1994 after the Recovery Team meeting on 31st May. These were primarily to survey new populations of Declared Rare Flora which had been recently discovered. Eighteen populations surveyed.

14- 22.7.1994
Nine days survey throughout the District, mainly eastern section. Fifty-seven populations surveyed.

4-12.8.1994
Nine days survey, mainly western section of District. Eighty-nine populations surveyed.

3-7.10.1994
Five days survey, mainly western section of District. Twenty-eight populations surveyed.

27.10- 4.11.1994
Nine days survey, from eastern boundary to western boundary. Fifty-eight populations surveyed.

Table 1. Showing total numbers of populations surveyed during the year, with relative numbers of Threatened (Declared Rare, Endangered and Vulnerable) Taxa and Poorly Known (Priority) Taxa surveyed, and numbers of new populations found.

Date	Total Populations	Total Threatened	New Threatened	Total Poorly Known	New Poorly Known
27.1.1994	2			2	
1-4.4.1994	6			6	6
18 & 21. 5. 1994	4	2	1	2	
1-2.6.1994	18	3	1	15	8
14- 22.7.1994	57	2	1	55	45
4-12.8.1994	89	24	1	65	41
3-7.10.1994	28			28	18
27.10- 4.11.1994	58	8	3	50	31
Total	**262**	**39**	**7**	**223**	**149**

It appears from the work done so far this year that some of the Poorly Known taxa that have been searched for in the field, are more common than was indicated by our previous knowledge. A thorough assessment of the taxa surveyed has not yet been undertaken, but indications are that several taxa will be moved to a lower category in the Priority List and possibly some may be deleted.

Table 2. Relative numbers on the list of Threatened and Poorly Known Taxa for the Geraldton District.

Date	Total number	Threatened Taxa	Poorly Known Taxa
1993	155	23	132
June 1994	233	31	202
Dec. 1994	267	30 one species removed from Declared List	237
No. of taxa surveyed in field 1994	106	30	76

The increase in number of taxa to be included in the Plan indicates that further time and resources are necessary to assess their conservation status in the field. Application will be made early in 1995 to determine whether their is a possibility of extending the Plan for a further year in order to take account of these taxa adequately.

5. Assess conservation status of these taxa in the field by recording distribution of each taxon, numbers of populations and individuals and threats to each population.

5.1. Work has commenced on **analysis of populations** as listed in Table 1. All information relating to each population has been recorded on Rare Flora Report Forms and will be mapped on the survey maps and also on the distribution maps for each species. As not all collections have yet been confirmed in their identification the figures expressed in Table 1 may change slightly.

5.2. Work has commenced on the processing of **Voucher specimens** into the collections of the W.A. Herbarium.

6. Produce a Conservation Research Statement for the Geraldton District.

6.1. **Computer files** for the report have been commenced, format for species accounts produced and information will be added as acquired.

6.2. **Descriptions for a number of taxa** represented both in the Moora and Geraldton Districts have already been written for the Moora District Threatened Flora Management Program and need only to be transferred to the relevant files.
Descriptions of some taxa can now be supplemented and amended from observations and photographs in the field.

6.3. **Habitat Descriptions** can also be improved for some poorly known taxa as a result of field survey this year.

6.4. **Drawings** for some taxa also present in the Moora District have been completed.

CONCLUSIONS

Implementation of the Threatened Flora Management Plan for the CALM Geraldton District has progressed well in 1994.

A Recovery Team has been formed which has met three times during the year. The range of organisations represented on the team is proving helpful to facilitate the work being carried out, and members are providing much useful information with regard to the taxa that they already know. Provision of further information on all taxa should enhance this process further.

Completion of the collation of all species information, compilation of distribution maps and gathering of identification aids (drawings, photocopies of specimens etc.) has enabled efficient fieldwork schedules to be drawn up and commenced, and has also enabled dissemination of information to team members. Identification of all taxa at present considered to be endangered, vulnerable or poorly known in the District has proved to be an ongoing process, with the list still increasing. Although many fall into the Poorly Known category, a significant number are endangered, or vulnerable and need urgent further survey.

A field work schedule has commenced and although the number of taxa on the list for the District has increased since the beginning of the Project, it appears already that some of the Poorly Known taxa are more common than had been thought from the information available. This was expected to occur in this large District which has had relatively little botanical survey in the past and which is

known to have a higher percentage of undescribed taxa in the List of Endangered, Vulnerable and Poorly Known Taxa than have those Districts nearer to centres of population in the south-west.

All threatened taxa have been seen in the field as have approx. one third of the poorly known taxa. This will enable conservation status of these taxa to be further assessed by survey for them on conservation areas, now that they are known in the field.
The increase in the number of taxa to be considered for the project indicates that it would be desirable to extend the project for a further year, if their conservation status is to be assessed adequately in the field.

Production of the Conservation Research Statement for the Geraldton District has been commenced and will continue to completion during 1995, unless further funding becomes available to extend the project. This is desirable if a report is to be produced that will adequately cover the additional taxa discovered during 1994.

APPENDIX 7:

Tick Flat vegetation associations

HS : Heath over Sedges

Muir: Heath B to Low Scrub B over Dense Low Sedges to Low Sedges.
This is the most common association, usually located on mid and lower slopes, on grey-white siliceous sands. Generally the sedge component (especially *Anarthria scabra*) provides the greatest cover with the heath frequently being composed of scattered emergent shrubs, *Melaleuca thymoides* being the most common. Several species included here as "sedges", such as *Dasypogon* and *Conostylis*, are more closely allied to Liliaceae, but have a life form more similar to the sedges than to the heath. The mid to lower southern slopes of the valley [illegible] often providing 100% cover up to 1m deep. Tall (1 - 3 m) [illegible] *furfuracea* and *Agonis* aff. *linearifolia* also occur on this [illegible] lowest (ca. 0.5 m) and most open on the upper slopes. Where [illegible] clay component in the soil, as may occur immediately downslope [illegible] Agonis association, the sedge component (especially *Anarthria* [illegible] and provides less cover; shrubs (particularly *Allocasuarina humilis*) [illegible] the structure and cover. This combination of vegetation association [illegible] higher dieback hazard rating and often shows evidence of *Phytophthora* dead Proteaceae and *Daviesia* resulting in a higher bare ground comp[illegible] In the lower south western end of the valley, *Agonis flexuosa* forms very [illegible] open woodland over the heath and sedges.

HEATH - Characteristic Species
Melaleuca thymoides
Allocasuarina humilis
Agonis hypericifolia
A. aff. linearifolia
Adenanthos cuneatus
Eucalyptus marginata (mallee)
Petrophile rigida
Daviesia incrassata
Hypocalymma strictum
Jacksonia horrida
Hibbertia furfuracea
Xanthorrhoea preissii
Xanthosia rotundifolia
Banksia attenuata
Gompholobium scabrum
Darwinia vestita

SEDGES - Characteristic species
Anarthria scabra
A. prolifera
Patersonia umbrosa
Cyathochaeta clandestina
Dasypogon bromeliifolius
Hypolaena exsulca
Lyginia barbata
Schoenus caespitius

Lepidosperma squamatum
Conostylis serrulata

JHA : Jarrah - Hakea - Agonis Scrub

Muir:Thicket to Scrub over Open to Very Open Low Sedges

This association occurs on shallow sandy loam or clay immediately downslope from the granite outcrops and in some of the upper drainage lines. The stunted mallee Jarrah and proteaceous elements of this community have in many areas suffered [illegible]. The taller species on the upper slopes may reach 2.3 m and slightly higher in the drainage lines. Some elements of the Heath over sedges community are present, however *Anarthria scabra* is either absent or a minor component of [illegible]

Characteristic Species

Eucalyptus marginata
Dryandra formosa
Hakea trifurcata
H. ceratophylla
H. varia
Hibbertia furfuracea
Agonis aff. linearifolia
A. hypericifolia
Acacia leioderma
Xanthorrhoea preissii
Patersonia umbrosa
Tetraria capillaris
T. octandra
Loxocarya fasciculata
L. flexuosa
Mesomelaena gracilliceps
M. stygia
Anarthria prolifera

SW : Sheoak Woodland

Muir: Low Forest to Low Woodland B over Low Scrub B to Low Heath C over Low Seges

The most dense *Allocasuarina fraseriana* is upslope, toward the granite outcrops north of the middle of Tick Flat. The understorey is largely composed of dense *Anarthria scabra* (often covered to 0.5m in Sheoak needles) with occassional, widely scattered shrubs of *Melaleuca* and *Agonis*. On the margins of this woodland and in the woodland lower in the valley, either side of the track, the *Allocasuarina* canopy is less dense and the heath over sedges or *Melaluca striata* heath component is significant.

BW : Bullich Woodland

Muir:Low Forest B over Heath B over Tall Sedges

Bullich Woodland is located in several positions in the Tick Flat valley, where a north-south sand drift has crossed the westerly drainage line to create small areas of increased soil moisture, resulting in taller shrubs and sedges under the Eucalypt canopy.

Characteristic Species

Eucalyptus megacarpa
Agonis flexuosa
A. aff. linearifolia
Bossiaea linophylla
Hibbertia furfuracea
Anarthria scabra
Patersonia umbrosa
Platysace compressa
Lepidosperma squamatum

JMW : Jarah-Marri Woodland

Muir: Low Forest B to Low Woodland B over Heath A-B over Tall Sedges to Low Sedges

Located in the main drainage line of Tick Flat valley and consists of a overstorey of 3-4 m Jarrah and/or Marri over dense tall shrubs and

Characteristic Species

Eucalyptus marginata
E. calophylla
Agonis aff. linearifolia
A. flexuosa
A. hypericifolia
Acacia leioderma
Bossiaea linophylla
B. dentata
Boronia crenulata
Banksia grandis
Gastrolobium bilobum
Hakea elliptica
H. varia
Leucopogon revolutus
Nemcia coriacea
Xanthorrhoea preissii
Anarthria scabra
Patersonia umbrosa
Loxocarya flexuosa
Cyathochaeta clandestina

MW : Marri Woodland

Muir: Low Forest B over Heath B over Tall Sedges

This association of dense trees (under 5m), over tall shrubs and clumped sedges is primarily located in shallow loamier soils over granite at the margins of exposed granite sheets.

Characteristic Species

Eucalyptus calophylla
Acacia leioderma
Leucopogon parviflorus
L. verticillatus
L. revolutus
Hibbertia furfuracea
Agonis hypericifolia
Gastrolobium bilobum
Bossiaea linophylla
Lepidosperma gracile
Anarthria scabra
A. prolifera
Patersonia umbrosa
Loxocarya flexuosa
Tetraria capillaris

GAT : Gastrolobium - Agonis Thicket

Muir: Thicket over Tall Sedges

This dense association is confined to the margins of the granite outcrops.

Characteristic Species

Gastrolobium bilobum
Agonis marginata
A. hypericifolia
A. aff. linearifolia
Acacia myrtifolia
Hibbertia furfuracea
Patersonia umbrosa
Lepidosperma gracile
L. squamatum
Anarthria prolifera
Mesomelaena graciliceps
M. stygia

BH : Banksia - Hakea Scrub

Muir: Thicket to Scrub over Low to Open Low Sedges

This association is confined to a lense of partially lateritised substrate, surfacing below the track, on the northern slope of the lower end of Tick Flat valley. It is typified by emergent *Banksia coccinea* and *Hakea trifurcata*, both of which have been affected by *Phytophthora* dieback, to the extent that what was once a more dense thicket is now open scrub, with frequent patches of bare soil.

Characteristic Species

Banksia coccinea
Hakea trifurcata
Allocasuarina humilis
Melaleuca striata
Mesomelaena stygia
Cyathochaeta clandestina
Hypolaena exsulca

MS : Melaleuca striata Heath

Muir: Dense Heath B to Heath B over Open Tall Sedges

Melaleuca striata, with occassional other shrubs, forms an almost continuous canopy at about 1 m, over sedges which are much less dense in this association than in the more open heath characterised by emergent *M. thymoides*.

Characteristic Species

Melaleuca striata
M. thymoides
Agonis hypericifolia
Hypocalymma strictum
Anarthria scabra
A. prolifera
Cyathochaeta clandestina
Dasypogon bromeliifolius
Hypolaena exsulca

CH : Coastal Heath

Muir: Heath B

At the western end of Tick Flat valley, a number of limestone caprock outcrops support fragments of the association which is more common further west and toward Sinker Reef.

Characteristic Species

Dryandra sessilis
Agonis flexuosa
Melaleuca pentagona
M. thymoides
Spyridium majorifolium
S. globulosum
Pimelea rosea
Hakea prostrata
Sollya heterophylla

Acacia littorea
Acrotriche cordata
Hibbertia racemosa
Platysace compressa
Olearia axillaris
Lysinema ciliatum
Gahnia lanigera
Lozocarya flexuosa
Cyathochaeta clandestina
Lepidosperma squamatum
Anarthria prolifera