

Moora District Threatened Flora Recovery Team

Annual Report 2004

(PICTURE REMOVED)

Photo: Planting of the *Verticordia albida* translocation site
Three Springs, 2004

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For the Moora District Threatened Flora Recovery Team



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Acronyms Used Herein

AgWA	Dept of Agriculture, Western Australia
BGPA	Botanic Gardens and Parks Authority
CALM	Dept of Conservation and Land Management
CR	Critically Endangered (IUCN red list ranking)
DRF	Declared Rare Flora
EN	Endangered (IUCN red list ranking)
IRP	Interim Recovery Plan
IUCN	International Union for Conservation of Nature
JBRH	Jurien Bay Regional Herbarium
KPBG	Kings Park Botanic Gardens
MDTFRT	Moora District Threatened Flora Recovery Team ('Recovery Team')
MSBP	Millennium Seedbank Project
NACC	Northern Agricultural Catchments Council
NRM	Natural Resource Management
P4	Priority 4 flora species
P3	Priority 3 flora species
P2	Priority 2 flora species
P1	Priority 1 flora species
RP	Recovery Plan
TEC	Threatened Ecological Communities
TFSC	Threatened Flora Seed Centre
TSSC	Threatened Species Seed Centre
VU	Vulnerable (IUCN red list ranking)
WATSCU	West Australian Threatened Species and Communities Unit
WATSN	West Australian Threatened Species Network
WMNRMG	West Midlands Natural Resource Management Group
WWF	World Wide Fund for Nature

Summary

This report details progress made by members & associates of the MDTFRT in 2004 towards the recovery of threatened flora species and Threatened Ecological Communities occurring within CALM's Moora District. The principal District contact for threatened flora issues is Gina Broun, Conservation Officer for the Moora District CALM.

Within the District there are 75 species of DRF, of which 27 are considered Critically Endangered, 21 Vulnerable and 27 are Endangered (IUCN red list categories). There are a further 303 Priority species and 7 TECs, of which 6 are ranked as Endangered and the other as Vulnerable.

The Recovery Team met in March and November 2004, its members having worked proactively towards conservation of threatened species and ecological communities throughout the year.

Actions included implementing a suite of Recovery Actions which included monitoring of known natural and translocated populations, surveying for 'new' populations, seed and propagule collection, translocation measures, genetic research, community education, liaison with land managers, delivery of DRF notification letters, procuring external funds for on-ground works, industry consultation, field trials and writing of IRPs.

At present there are 16 current IRPs for threatened flora species and 5 current IRPs for Threatened Ecological Communities that occur within the Moora District. There are a further 9 IRPs for flora species and one full Recovery Plan which are past their currency and require review (Attachment 1). Each of these plans stipulates criteria for the recovery of the species or community, which aim to quantify the success or failure of the plan and its implementation. The standard criteria are as follows:

Criteria for success: The number of individuals within populations and/or the number of populations have increased.

Criteria for failure: The number of individuals within populations and/or the number of populations have decreased.

As the implementation of both IRPs and RPs are long term (i.e. 3 - 5 years), it is often not possible to quantify their success or failure on an annual basis. Where there have been observed increases or decreases in the number of individuals or known populations within 2004, these have been clearly stipulated within section 2.1 of this Annual Report.

1.0 RECOVERY TEAM

1.1 Membership details

In 2004, the Recovery Team met in March and October, with the next meeting planned for May 2005. In addition to MDTFRT members¹, other parties who are involved in the management of threatened flora are also encouraged to attend the biannual meetings. These representatives are listed as “*Extended Working Group*” below.

Members:

Position (area of expertise)	Representing	Currently filled by
Conservation Officer	CALM, Moora District	Gina Broun (A/Chair)
Nature Conservation Coordinator	CALM, Moora District	Rebecca Carter
Research Scientist (Translocations)	CALM, WA Herbarium	Leonie Monks
Senior Research Scientist (Priority Flora species)	CALM, WA Herbarium	Sue Patrick
Technical Officer (Seed Store)	CALM, WA Herbarium	Andrew Crawford
Ecologist	CALM, WATSCU	Val English
Project Officer (TECs)	CALM, WATSCU	Rosemary Rees
Herbarium representative	Dandaragan Herbarium	Rep - rotating
Herbarium representative	Jurien Bay Regional Herbarium	Rep - rotating
Roadside Management Officer	Main Roads WA	Larry Trinder
Community representative	Shire of Carnamah	Allan/Lorraine Tinker
Shire representative	Shire of Carnamah	Malcolm Pumphrey
Community representative	Shire of Coorow	Joy/Don Williams
Shire representative	Shire of Coorow	Peter Gillis

1. As endorsed by CALM's Director of Nature Conservation, March 2004

Community representative	Shire of Dandaragan	Iain Wilson
Shire representative	Shire of Dandaragan	Steve Rowe
Community representative	Shire of Irwin	vacant
Shire representative	Shire of Irwin	Aaron Wotton
Community representative	Shire of Moora	vacant
Shire representative	Shire of Moora	John Grey
Community representative	Shire of Three Springs	Jenny Borger
Shire representative	Shire of Three Springs	Charles Strahan
Community representative	Shire of Victoria Plains	vacant
Shire representative	Shire of Victoria Plains	Allen Kent
NRM Group representative - West Midlands	West Midlands NRMG	Lisa Smith
Per Way Superintendent	Westnet Rail	Bruce Eldridge
Threatened Species Network Coordinator	World Wide Fund for Nature	Kat Miller

Extended Working Group

Position (area of expertise)	Representing	Currently filled by
Project Officer	CALM, WATSCU	Gillian Stack
Senior Research Scientist (Propagation)	Kings Park Botanic Gardens	Eric Bunn
Road Maintenance Environment Officer	Main Roads WA major contractor- CSR Emoleum	Karen Smith
Environmental Management Coordinator	Western Power	John Morrell
Per Way Supervisor	Westnet Rail	John Stevens

1.1 Role of the MDTFRT

The MDTFRT was formed in 1996 in response to the need to implement actions as described within Wildlife Management Program No. 28² recovery actions for threatened flora species with the assistance of community, industry, landowners and departmental stakeholders.

The Moora District includes the Shires of Three Springs, Carnamah, Coorow, Dandaragan, Victoria Plains, Moora and parts of the Irwin and Gingin Shires. In 2001 its role was expanded to include management of Threatened Ecological Communities.

Membership comprises representatives of: CALM Moora District, WATSCU and the WA Herbarium; local community and landholders; the Jurien Bay and Dandaragan Regional Herbaria; local shires; WWF, WMNRM Group, Westnet Rail and Main Roads WA.

In addition to the Recovery Team's endorsed members, the extended Working Group includes individuals and representatives of other groups who play an important role in management of threatened flora and TECs in the Moora District. This comprises representatives of: Western Power, CSR Emoleum; Kings Park Botanic Gardens; CALM contract staff; additional community members and core CALM volunteers.

Whilst the Recovery Team meets on a biannual basis, its members interact throughout the year to progress Recovery Actions for DRF species and to address issues related to other threatened flora and TEC management. This is conducted via a collaborative email update service in addition to liaison at an individual or sub-group level as necessary.

Recovery actions are those actions considered a priority to effect the recovery of DRF and include monitoring, survey, research, education and on ground works. They are detailed in a suite of Interim Recovery Plans for threatened flora species as well as being listed in CALM's Wildlife Management Program No. 28, *Declared Rare and Poorly Known Flora in the Moora District*³.

2. SUMMARY OF WORKS UNDERTAKEN IN 2004

Various members of the Recovery Team were involved in implementing recovery actions for a suite of Priority and Declared Rare Flora species in 2004. In addition to CALM staff from the District, WATSCU, Science Division and the WA Herbarium, these included people from other agencies (such as Botanic Gardens and Parks Authority), industry (such as Westnet Rail), community volunteers and Jurien Bay Regional Herbarium members.

2.1.1 Works on individual Declared Rare Flora and Priority Flora Species in 2004 include:

- *Acacia aprica* (DRF)
 - Translocation programs for *Acacia aprica* were set up in 1998 and have been monitored regularly since.

² Wildlife Management Program No 28 *Declared Rare and Poorly Known Flora in Moora District* was in draft stage at the time of MDTFRT formation. It was subsequently published in 2001.

³ 2001, SJ Patrick and AP Brown

- Monitoring of a selection of natural populations.
- Acacia aristulata* (DRF)**
 - Intensive monitoring of Population in Watheroo NP – individual plants were located and mapped with GPS points
- Acacia chapmanii subsp. australis* (DRF)**
 - New population discovered in 2004
- Acacia cochlocarpa* (DRF)**
 - A translocation program was set up in 1998 and has been monitored regularly since (62% survival in 2004)
 - Monitoring of a selection of natural populations.
- Acacia congesta subsp. cliftoniana* (P1)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Acacia recurvata* (DRF)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Acacia splendens* (DRF)**
 - IRP completed and endorsed by Director of Nature Conservation on 14/02/05
 - Monitoring of a selection of natural populations.
- Acacia telmica* (P3)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Acacia vittate* (P3)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Acacia wilsonii* (DRF)**
 - Gazetted as Declared Rare Flora in 2004
 - Official DRF notification letter hand delivered to property owner
- Anigozanthus humilis subsp. chrysanthus* (P4)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
 - Monitoring of a selection of natural populations.
- Asterolasia drummondii* (P4)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Baeckea sp. Three Springs* (P2)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Banksia chaemaephyton* (P4)**
 - New population found
- Banksia micrantha* (P3)**

- New population found

***Beyeria garneri* (P1)**

- New population found

***Caladenia drakeoides* (DRF)**

- Seed was collected from associated vegetation surrounding two disturbed populations of the species with the assistance of Moora TAFE students; these were grown up into 200 seedlings and planted out at the sites in winter 2004.
- A PhD student began a trial translocation for the species in 2003 and her work continued in 2004.
- Double-sided information sheet has been produced.
- Feral pig control undertaken in Capamauro NR to protect the species
- Monitoring of a selection of natural populations.

***Calendia x triangularis* (P4)**

- New population found

***Baeckea sp. Bunny Rd* (P2)**

- 3 new populations found with survey of suitable habitat in Three Springs

***Calothamnus accendens* (DRF)**

- Species previously presumed extinct prior to the examination of a voucher specimen in 2004.
- The two known roadside populations were surveyed and a further adjoining two subpopulations were found on private land
- DRF markers were installed in consultation with Shire of Moora
- Official DRF notification letters were hand delivered to both private property owners
- Seed was collected from the roadside populations and is now held in storage at the Threatened Flora Seed Centre
- Monitoring of a selection of natural populations.

***Calytrix platytheridia* (P2)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Calytrix drummondii* (P2)**

- New population found

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***Comesperma acerosum* (P3)**

- New population found

***Conospermum densiflorum unicephalatum* (DRF)**

- Surveys of existing populations resulted in the discovery of a 3 new populations near Gillingarra, Victoria Plains.
- Advice of new populations sent to Commissioner of Railways
- Double-sided information sheet has been produced.
- IRP completed and approved by Director of Nature Conservation on 22/6/04
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Monitoring of a selection of natural populations.

***Conospermum scaposum* (P3)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Darwinia chapmaniana* (DRF)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Darwinia sp. Carnamah* (DRF)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Daviesia bursariodes* (DRF)**

- Translocated populations of *Daviesia bursariodes* were monitored in winter 2004. Translocated population showed a 9% survival rate.
- IRP completed and approved by Director of Nature Conservation on 22/6/04
- 8 new seedlings found, extending a roadside population
- Roadworks completed to realign and resurface the Three Springs–Perenjori Rd to avoid harming an existing population of the species
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Monitoring of a selection of natural populations.

***Daviesia dielsii* (DRF)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Daviesia pteroclada* (P3)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Drosera marchantii subsp. prophylla* (P1)**

- New population found

***Dryandra fuscobractea* (DRF)**

- Gazetted as Critically Endangered DRF in 2004
- All populations surveyed, resulting in a substantial increase in known population numbers
- Rare flora markers installed with assistance of Shire of Moora and Shire of Dandaragan
- Official DRF notification letter hand delivered to private property owner
- Monitoring of a selection of natural populations.

***Dryandra serratuloides subsp. serratuloides* (DRF)**

- Site of illegal clearing within a roadside/railside population was rehabilitated by Westnet Rail (they were not responsible for the damage and solely bore the cost of rehabilitation) under the supervision of District CALM staff.
- Monitoring of all natural populations.

***Epitrichie demissus* (P2)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Eremophila microtheca* (P4)**

- Genetic investigation undertaken into difference between Kalbarri NP and Moora District populations to ascertain its true rarity and determine the necessity to re-rank the species as DRF

- Monitoring of all of natural populations.

***Eremophila nivea* (DRF)**

- Trial translocation plots of *E. nivea* were monitored to assess the success of germination in areas of previous direct seeding.
- Monitoring of all known populations completed
- Double-sided information sheet has been produced.
- Surveys in the Three Springs area were conducted, but no new populations were found
- 2560 fruit collected from the natural populations were directed seeded at one of the original translocation sites in the Midwest Region in 2004.
- Induced recruitment trial undertaken in Midwest region – no recruitment has been noted to date
- Survey for unconfirmed populations surrounding the townsite of Three Springs
- New population found on private property
- Official DRF notification letter hand delivered to owners

***Eremophila scaberula* (DRF)**

- Weed control was undertaken on rail and roadside reserve populations in June 2004
- IRP completed and approved by Director of Nature Conservation on 22/6/04
- Habitat rehabilitation stage 1 commenced in 3 populations
- Research into propagation of key associated vegetation
- Collection of seed from associated species for propagation and habitat restoration
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Monitoring of a selection of natural populations.

***Eremophila vernicosa* ms (DRF)**

- SPRAT (Species alignment project) Data Sheet completed for submission to the Commonwealth

***Eucalyptus absita* (DRF)**

- Draft IRP completed
- Genetic investigation undertaken into difference between and within populations. Report pending

***Eucalyptus arguitifolia* (DRF)**

- Background research into requirements, applicability and costing of invitro culture

***Eucalyptus balanites* (DRF)**

- IRP completed and approved by Director of Nature Conservation on 24/9/04
- Background research into requirements, applicability and costing of invitro culture

***Eucalyptus dolorosa* (DRF)**

- IRP completed and approved by Director of Nature Conservation on 22/6/04

***Eucalyptus impensa* (DRF)**

- IRP completed and approved by Director of Nature Conservation on 24/9/04

***Eucalyptus macrocarpa* subsp *elacantha* (P4)**

- New population found
- Monitoring of a selection of natural populations.

***Eucalyptus pruinimaris* (DRF)**

- Surveyed several populations, mapping individuals into Arcview system
- Monitoring of a selection of natural populations.

***Gastrolobium hamulosum* (DRF)**

- Monitoring of all known populations completed. A decline in the number of mature plants since they were last monitored was noted at some populations of this species.
- Surveys were conducted and new populations were located
- Monitored population 1 in conjunction with Coorow Shire staff
Seed was collected from this species and is now held in storage at the Threatened Flora

***Geleznovia verrucosa subsp formosa* (P4)**

- New population found

***Grevillea althoferorum* (DRF)**

- Work continues on tissue culturing of this species for a translocation planned for 2005. High contamination rates prevented establishment of most clones. At present two clones are in tissue culture and are progressing slowly.
- Genetic investigation undertaken into difference between plants in the solitary clonal population. Report pending
- Population monitored
- Translocation site selection and cuttings taken are being grown for translocation in winter 2005

***Grevillea batrachioides* (DRF)**

- Translocation 90 seedlings to a site in the Lesueur National Park in winter 2004.
- Translocated population is monitored regularly
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Direct seed trial into area burnt in summer wildfire

***Grevillea biformis subsp. cymbiformis* (P2)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Grevillea bracteosa* (DRF)**

- Species was Gazetted as DRF in 2004
- All populations surveyed
- Official DRF notification letter hand delivered to property owner in 2004
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Grevillea calliantha* (DRF)**

- Natural populations and translocated population were monitored in winter 2004. The translocated population exhibited a 26% survival in 2004

***Grevillea christineae* (DRF)**

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

***Grevillea humifusa* (DRF)**

- This translocated population has been monitored regularly since planting to assess its response to water vs. non-watered treatments. Health estimates were also taken as were height x width measurements.
- A secondary translocation of 184 seedlings was planted at the translocation site in winter 2004.
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- Monitoring of a selection of natural populations.
- Grevillea makinsonii* (P3)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Grevillea rudis* (P4)**
 - New population found - this resulted in a down-ranking of the species from P3 to P4
- Grevillea uniformis* (P3)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Hakea megalosperma* (DRF)**
 - A new population of the species was found in private property adjacent to Wotto Reserve and represents a significant extension to its known range.
 - The PP containing the new population has been purchased by CALM
- Hemiandra gardneri* (DRF)**
 - IRP completed and approved by Director of Nature Conservation on 24/11/04
- Hemiandra hancocksiana* (DRF)**
 - SPRAT (Species alignment project) Data Sheet completed for submission to the Commonwealth
- Hensmania chapmanii* (DRF)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
 - Monitoring of a selection of natural populations.
- Homalocalyx chapmanii* (P1)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Hydrocotyle coorowensis* (P2)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Hypocalymma tetrapterum* (P3)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre
- Isopogon tridens* (P3)**
 - New population found
- Leucopogon obtectus* (DRF)**
 - IRP completed and awaits endorsement
 - Boundaries of populations redefined into more appropriate management units
 - New plants found
 - Populations monitored with the assistance of Illuka mine's Environmental Officer
- Micromyrtus uniovular* (P2)**
 - Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Patersonia spirifolia* (DRF)**
- IRP completed and approved by Director of Nature Conservation on 22/6/04
- Monitoring of a selection of natural populations.

- ***Podotheca uniseta* (P3)**
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Ptilotus fasciculatus* (DRF)**
- SPRAT (Species alignment project) Data Sheet completed for submission to the Commonwealth

- ***Scholtzia sp. Yandanooka* (P1)**
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Stachystemon axillaris* (P4)**
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Stawellia dimorphantha* (DRF)**
- Survey by contract botanists resulted in new populations being found in Yandanogo NR as well as additional ecological information being collected

- ***Strenantheum reissekii* (P3)**
- New population found

- ***Stylidium diuroides subsp paucifoliatum* (P3)**
- New population found
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Stylidium inversiflorum* (P4)**
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Stylidium torticarpum* (P3)**
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Synaphea sparsiflora* (P1)**
- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

- ***Synaphea quartzitica* (DRF)**
- Work continues on tissue culturing of this species for a translocation planned for winter 2005, with excellent results. Shoot material from all 12 plants were able to be established in tissue culture and are multiplying well.
- Monitoring of a selection of natural populations.

- ***Thelymitra apiculate* (P3)**
- New population found

- ***Thelymitra stellata* (DRF)**
- New population found

Thryptomene sp. Mingenew (P1)

- Seed was collected from this species and is now held in storage at the Threatened Flora Seed Centre

Verticordia albida (DRF)

- Translocated 67 seedlings to an approved site in Three Springs in winter 2004, more are planned for planting in winter 2005.

Verticordia spicata subsp. squamosa (DRF)

- IRP completed and approved by Director of Nature Conservation on 7/12/04
- Seed was collected from this species and was used in a direct seed trial
- Monitoring of a selection of natural populations.

2.2 Habitat species associated with DRF populations

Collection of a suite of general flora species associated with several populations of DRF have also been made in 2004 as part of an externally funded grant entitled the “Hotspots Project”.

2.3 New species found

A new species of *Leucopogon* and a new species of *Drosera* have been found as part of a volunteer’s survey efforts in Three Springs in 2004 and the Jurien Bay Regional Herbarium surveys in Jurien, respectively.

2.4 Threatened Ecological Communities (TEC) recovery work in Moora District

There are six Endangered, one Critically Endangered and two Vulnerable TECs in the Moora District, which are currently listed in the TEC database, and an additional community, which has been listed as Priority 2. Works in 2004 include:

2.4.2 Assemblages of organic mound springs of Three Springs (EN)

- Acquisition and reservation of property adjacent to Bunny Rd Reserve
- Hydro Monitoring by the Ag Department is ongoing
- An IRP for this community is in draft form

2.4.3 Ferricrete floristic community (Rocky Springs type) (EN)

- IRP completed and approved by Director of Nature Conservation on 29/9/04

2.4.4 Herbaceous plant assemblages on bentonite lakes (EN)

- NACC Biodiversity hotspots funding for hydrological investigation
- Background data gathered from existing bore network
- The IRP for this community has been completed. Two more occurrences were found in the Buntine-Marchagee catchment area last year! Works will be undertaken within the Hotspots Project

2.4.5 Heath community on chert hills of the Coomberdale Floristic Region (EN)

- Removal of dumped soil from Cairn Hill gravel pits
- New proposed nature reserve signs erected at Cairn Hill
- Gazetted as A Class Reserve

2.4.6 Lesueur-Coomallo Floristic Community A1.2 (EN)

- Seed was collected from the major floral constituents of this TEC and is held in storage at the TFSC

2.4.8 Plant Assemblages of the Innering System (VU)

- Landscape article published Summer ¾

- A Lotteries (Gordon Reid) funded fencing project was completed in 2003 with an article published in the Landscape magazine's summer 2003-04 edition. 50km of fencing was completed to protect the community across several farms in Carnamah.

3.0 CONSULTATION

As part of cooperative management of threatened species and communities, CALM receives requests for information and advice from private industry, public utilities, volunteer groups, educational facilities and the general public. Examples of requests received in 2004 are briefly detailed below.

Communication with	Issue	Outcome	Species involved
CSR Emoleum (Main Roads WA contractor)	Roadside maintenance beside DRF areas	Liaison with Wildlife Branch and Moora District as to potential impacts of upcoming works and avoidance of harming DRF wherever possible whilst maintaining safety standards for road users.	Several species of DRF yet to be surveyed.
CSR Emoleum (Main Roads WA contractor)	Accidental damage to DRF plants by CSR subcontractor during weed control works	Revision of licence conditions and improved protocol to ensure it does not happen in the future, established between Main Roads, their contractors and their subcontractors	<i>Eremophila scaberula</i> (DRF)
Jurien Bay Regional Herbarium	Capacity Building needs of volunteers	Involvement in Seaweed workshop. Training in voucher specimen collection techniques. Discovery of new populations of Priority species, compilation of comprehensive vegetation lists for parts of the Hill River Nature Reserve.	<i>Various general and Priority species local to the Jurien Bay area</i>
Shire of Dandaragan	Identification of threatened for a in areas of proposed track widening	Avoidance of potential damage by altering alignment of road slightly, hand pruning in areas. Strengthened relationship between CALM and shire staff	<i>Grevillea olivaceae</i> (P4)
Shire of Moora	Installation of DRF markers around new populations of DRF on roadsides	Education about the species. Avoidance of potential future machinery damage. Strengthened relationship between CALM and shire staff.	<i>Calothamnus accedens</i> (DRF), <i>Dryandra fuscobracteata</i> (DRF)
Shire of Victoria Plains	Installation of DRF markers around new populations of DRF on roadsides	Education about the species. Avoidance of potential future machinery damage. Strengthened relationship between CALM and shire staff.	<i>Dryandra fuscobracteata</i> (DRF)
Shire of Coorow	Identification of DRF plants and recommendations as to preferred alignment of proposed roadworks to minimise damage	Awareness of DRF species to be avoided during future works. Strengthened relationship between CALM and shire staff	<i>Gastrolobium hamulosum</i> (DRF)

Westnet Rail	Railway maintenance between Moora-Mooliabenie – Dongara. Advice on location and identification of species in area of routine maintenance and resleepering.	Permit to take approved. Damage to species avoided. Increased knowledge of DRF species.	<i>Conospermum densiflorum</i> subsp. <i>unicephalatum</i> , <i>Dryandra serratulioides</i> subsp. <i>serratulioides</i> , <i>Eremophila scaberula</i>
CALM Organisational Learning and Development	Local expertise and technical input into annual internal CALM <i>Flora Management Course</i> run out of Jurien Bay	Improved learning outcome for students, sharing techniques used for field work, understanding and involvement in local flora management issues relevant to the Moora District	Non-specific flora species.

4.0 EXTERNAL FUNDING

4.1 Hotspots Project

The year of 2004 saw further progression towards Regional Delivery of NHT funding. Through this system, a grant of \$164,000 was made to CALM Midwest Region to implement recovery actions for 24 DRF taxa in the region, 18 of which occur in the Moora District as well as 4 TECs in the Midwest Region 3 of which are in Moora District. This project is entitled the “Biodiversity Hotspots Project” and is overseen by the Recovery Teams of Moora District and the Midwest Region.

4.2 Priority Projects

Through a Regional prioritisation process, CALM Midwest region has submitted approximately four grants as expressions of interest for funding under NHT - NACC Priority Projects, one of which focuses specifically on threatened flora and fauna management. However no response as to their acceptance has been provided as yet.

4.3 State-wide program

In late 2004, the Commonwealth Department of Environment and Heritage (DEH) asked if CALM had any programs that were ‘state-wide’ which we considered a high priority but that had not been supported at Regional levels. A project to focus on implementing Recovery Actions on threatened flora species which cross District boundaries project was recommended and accepted.. The proposal is for recovery work on nine taxa that cross boundaries of NRM groups and will be undertaken by project officer, Gillian Stack throughout 2004-05.

4.4 National Program

Under the National Program, WATSCU received funding for writing a series of Interim Recovery Plans (IRPs) for DRF taxa and updating IRPs for threatened ecological communities (TECs). Taxa in the Midwest are split between 12 and 24 month projects:

12 month project completed and delivered to Canberra June 2004

Eucalyptus leprophloia

Leucopogon obtectus

Andersonia gracilis

24 month project underway, to be completed by November 2005

Eucalyptus absita

Darwinia carnea

Macarthuria keigherii

5.0 Bibliography

Patrick, S. and Brown, A.P. (2001). *Declared Rare and Poorly Known Flora in the Moora District. Wildlife Management Program No. 28*. Department of Conservation and Land Management, Perth.

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Table of Recovery Plans and Interim Recovery Plans for Threatened Flora species and Threatened Ecological Communities occurring within the Moora District (current as at Dec 2004)

	Date approved DNC	WA Ranking	Life of plan	Adopted under <i>EPBC Act 1999</i>
Red Snakebush, <i>Hemiandra gardneri</i>	7-May-97	CR	1996-1999	
Mogumber Bell, <i>Darwinia carnea</i>	7-May-97	CR	1996-1999	
Blunt Wattle, <i>Acacia aprica</i> ms	30-Aug-99	CR	1999-2002	9/03/2001
Spiral Fruited Wattle, <i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i> ms	30-Aug-99	CR	1999-2002	9/03/2001
Spreading Grevillea, <i>Grevillea humifusa</i>	30-Aug-99	CR	1999-2002	14/07/2001
Green Hill Thomasia, <i>Thomasia</i> sp. Green Hill	30-Aug-99	CR	1999-2002	14/07/2001
Rough Emu Bush, <i>Eremophila scaberula</i>	31-Aug-99	CR	1999-2002	9/03/2001
Hinged Dragon Orchid, <i>Drakonorchis drakeoides</i> ms	31-Aug-99	CR	1999-2002	9/03/2001
Prostrate Flame Flower, <i>Chorizema humile</i>	31-Aug-99	CR	1999-2002	9/03/2001
Pungent Jackson, <i>Jacksonia pungens</i> ms	10-Oct-99	CR	1999-2002	14/07/2001
Split-leaved Grevillea, <i>Grevillea althoferorum</i>	10-Oct-99	CR	1999-2002	14/07/2001
Scaly-leaved Featherflower, <i>Verticordia spicata</i> subsp. <i>squamosa</i>	2-Feb-00	CR	1999-2002	14/07/2001
Quartz-loving Synaphea, <i>Synaphea quartzitica</i>	2-Feb-00	CR	1999-2002	14/07/2001
Heath dominated by one or more of <i>Regelia megacephala</i> , <i>Kunzea praestans</i> and <i>Allocasuarina campestris</i> on ridges and slopes of the chert hills of the Coomberdale Floristic Region	20-Aug-00	CR	2000-2003	
Narrow Curved-leaf Grevillea, <i>Grevillea curviloba</i> subsp. <i>Incurva</i>	20-Aug-00	CR	2000-2003	26/03/2002
White Featherflower, <i>Verticordia albida</i>	26-Jun-01	CR	2001-2004	
Silky eremophila, <i>Eremophila nivea</i>	13-Sep-01	CR	2001-2004	
Foote's Grevillea, <i>Grevillia calliantha</i>	23-Mar-02	CR	2001-2004	
Lesueur-Coomallo Floristic Community A1.2	22-May-02	CR	2002-2007	
Plant assemblages of the Inering System	22-May-02	CR	2002-2007	
Herbaceous Plant assemblages on bentonite lake beds (Vegetation types 1,2,3&7) and margins	24-Sep-02	CR	2002-2007	

(Vegetation types 4,5&6) of the Watheroo-Marchagee Region				
Lesueur-Coomallo Floristic Community D1	24-Sep-02	CR	2002-2007	
Hook Point Poison, <i>Gastrolobium hamulosum</i>	24-Sep-02	CR	2002-2005	
Mt Lesueur Grevillea, <i>Grevillea batrachioides</i>	24-Sep-02	CR	2002-2004	
Quartz-loving Synapea, <i>Synaphea quartzitica</i>	20-Jun-03	CR	2002-2007	
Split-leaved Grevillea, <i>Grevillea althoferorum</i>	20-Jun-03	CR	2003-2008	
Spreading Grevillea, <i>Grevillea humifusa</i>	20-Jun-03	CR	2003-3008	
Green Hill Thomasia, <i>Thomasia</i> sp. Green Hill	20-Jun-03	CR	2003-2008	
Hinged Dragon orchid, <i>Caladenia drakeoides</i>	21-Jul-03	CR	2003-2008	
Blunt Wattle <i>Acacia aprica</i>	21-Sep-03	CR	2003-2008	
Ferricrete Floristic Community (Rocky Springs type)	29-Sep-04	VU	2004-2009	
One-headed Smokebush, <i>Conospermum densiflorum</i> subsp. <i>unicephalatum</i>	22-Jun-04	EN	2004-2009	
Three Springs Daviesia, <i>Daviesia bursarioides</i>	22-Jun-04	CR	2004-2009	
Dandaragan Mallee, <i>Eucalyptus dolorosa</i>	22-Jun-04	CR	2004-2009	
Rough Emu Bush, <i>Eremophila scaberula</i> updated	22-Jun-04	CR	2004-2009	
Spiral Flag, <i>Patersonia spirifolia</i>	22-Jun-04	EN	2004-2009	
Eneabba Mallee, <i>Eucalyptus impensa</i>	24-Sep-04	CR	2004-2009	
Cadda Road Mallee, <i>Eucalyptus balanites</i>	24-Sep-04	CR	2004-2009	
Red Snakebush, <i>Hemiandra gardneri</i>	24-Dec-04	CR	2004-2009	
Scaly-leaved Featherflower, <i>Verticordia spicata</i> subsp. <i>Squamosa</i> updated	7-Dec-04	CR	2004-2009	

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Table of DRF species and their current status (current as at Sept 2004)

Declared Rare Flora Species	Threat (State)	ESP (Federal)
<i>Acacia aprica</i>	CR	E*
<i>Acacia aristulata</i>	E	E
<i>Acacia chapmanii</i> subsp. <i>australis</i>	E	*
<i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i>	CR	E*
<i>Acacia forrestiana</i>	V	V
<i>Acacia recurvata</i>	V	E*
<i>Acacia</i> sp. <i>Dandaragan</i> (S van Leeuwen 269)	CR	E*
<i>Acacia vassalii</i>	CR	E*
<i>Acacia wilsonii</i>	E	*
<i>Andersonia gracilis</i>	V	E*
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>	V	V
<i>Caladenia drakeoides</i>	CR	E*
<i>Calectasia pignattiana</i>	V	V
<i>Chamelaucium griffinii</i> ms	V	V
<i>Chorizema humile</i>	CR	E*
<i>Conospermum densiflorum</i> subsp. <i>unicephalatum</i>	E	E
<i>Darwinia acerosa</i>	E	E
<i>Darwinia carnea</i>	CR	E*
<i>Darwinia chapmaniana</i> ms	V	E*
<i>Darwinia</i> sp. <i>Carnamah</i> (J Coleby-Williams 148)	E	E
<i>Daviesia bursarioides</i>	CR	E*
<i>Daviesia dielsii</i>	E	V*
<i>Daviesia speciosa</i>	E	E
<i>Drakaea elastica</i>	E	E
<i>Dryandra fuscobracteata</i>	CR	*
<i>Dryandra mimica</i>	V	E*
<i>Dryandra serratuloides</i> subsp. <i>perissa</i>	E	V*
<i>Dryandra serratuloides</i> subsp. <i>serratuloides</i>	V	V
<i>Eleocharis keigheryi</i>	V	V
<i>Eremophila nivea</i>	CR	E*
<i>Eremophila scaberula</i>	CR	E*
<i>Eremophila vernicosa</i> ms	V	X*
<i>Eucalyptus absita</i>	CR	E*
<i>Eucalyptus argutifolia</i>	V	V
<i>Eucalyptus balanites</i> x	CR	E*
<i>Eucalyptus crispata</i>	E	V*
<i>Eucalyptus dolorosa</i>	CR	E*
<i>Eucalyptus impensa</i>	CR	E*
<i>Eucalyptus johnsoniana</i>	V	V
<i>Eucalyptus lateritica</i>	E	V*
<i>Eucalyptus leprophloia</i>	E	E
<i>Eucalyptus pruiniramis</i>	E	E
<i>Eucalyptus rhodantha</i> var. <i>rhodantha</i>	V	V
<i>Eucalyptus suberea</i>	V	V
<i>Gastrolobium appressum</i>	E	V*
<i>Gastrolobium hamulosum</i>	CR	E*

<i>Grevillea althoferorum</i>	CR	E*
<i>Grevillea batrachioides</i>	CR	E*
<i>Grevillea bracteosa</i>	E	*
<i>Grevillea calliantha</i>	CR	E*
<i>Grevillea christineae</i>	E	E
<i>Grevillea curviloba subsp. incurva</i>	CR	E*
<i>Grevillea humifusa</i>	CR	E*
<i>Grevillea murex</i>	E	E
<i>Hakea megalosperma</i>	V	V
<i>Hemiandra gardneri</i>	CR	E*
<i>Hensmania chapmanii</i>	V	V
<i>Hypocalymma longifolium</i>	E	E
<i>Jacksonia pungens ms</i>	CR	E*
<i>Lasiopetalum rotundifolium</i>	E	E
<i>Leucopogon obtectus</i>	E	E
<i>Macarthuria keigheryi</i>	E	E
<i>Paracaleana dixonii ms</i>	V	E*
<i>Patersonia spirifolia</i>	E	E
<i>Ptilotus fasciculatus</i>	E	X*
<i>Ptychosema pusillum</i>	V	V
<i>Spirogardnera rubescens</i>	E	E
<i>Stawellia dimorphantha</i>	V	V
<i>Synaphea quartzitica</i>	E	E
<i>Thelymitra stellata</i>	E	E
<i>Thomasia sp. Green Hill (Paust 1322)</i>	CR	E*
<i>Verticordia albida</i>	CR	E*
<i>Verticordia spicata subsp. squamosa</i>	CR	E*
<i>Wurmbea tubulosa</i>	V	E*