

KOOBABBIE POVERTY BUSH

(*Eremophila koobabbiensis* ms)

RECOVERY PLAN



Department of Environment and Conservation
Kensington



Australian Government



Department of
Environment and
Conservation

Our environment, our future

FOREWORD

Recovery Plans (RPs) and Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Conservation and Land Management (CALM) Policy Statements Nos. 44 and 50. Note: the Department of CALM formally became the Department of Environment and Conservation (DEC) in July 2006.

Plans outline the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of threatened taxa or ecological communities, and begin the recovery process.

DEC is committed to ensuring that Threatened taxa are conserved through the preparation and implementation of plans and by ensuring that conservation action commences as soon as possible and, in the case of Critically Endangered (CR) taxa, always within one year of endorsement of that rank by the Minister.

This plan will operate until withdrawn or replaced. It is intended that, if the taxon is still ranked in Western Australia as Endangered (IUCN 2001), this plan will be reviewed after five years and the need for a revision or further recovery actions assessed.

This plan was given regional approval on 16 May 2007 and was approved by the Director of Nature Conservation on 9 July 2007. The provision of funds identified in this plan is dependent on budgetary and other constraints affecting DEC, as well as the need to address other priorities.

This plan was written and endorsed as an IRP in Western Australia, and it is also the National Recovery Plan for this Ecological Community as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Information in this plan was updated in March 2010.

IRP PREPARATION

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ACKNOWLEDGMENTS

The following people have provided assistance and advice in the preparation of this plan:

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Amanda Shade	Assistant curator of displays and development, Botanic Garden and Parks Authority
Luke Sweedman	Curator, Western Australian Seed Technology Centre, Botanic Garden and Parks Authority

Thanks also to the staff of the W.A. Herbarium for providing access to Herbarium databases and specimen information, and DEC's Species and Communities Branch for assistance.

Cover photograph by Andrew Brown

CITATION

This Recovery plan should be cited as:

Department of Environment and Conservation. (2007) Koobabbie poverty bush (*Eremophila koobabbiensis* ms), Interim Recovery Plan 2007-2012. Interim Recovery Plan No.233. Department of Environment and Conservation, Western Australia.

SUMMARY

Scientific Name:	<i>Eremophila koobabbiensis</i> ms	Common Name:	Koobabbie poverty bush
Family:	Myoporaceae	Flowering Period:	October - November
DEC Region:	Mid-west	DEC District:	Moora
Shire:	Coorow	Recovery Team:	Moora District Threatened Flora Recovery Team (MDTFRT)

Illustrations and/or further information: Brown, A.P. (2009) *A field guide to the Eremophilas of Western Australia*. pp 57 (in draft); Department of Environment and Conservation (2009) *Western Australian Herbarium FloraBase 2 – Information on the Western Australian Flora*. Department of Environment and Conservation, Western Australia. <http://www.dec.wa.gov.au/science/>.

Current status: *Eremophila koobabbiensis* ms was declared as Rare Flora in 2005 under the Western Australian *Wildlife Conservation Act 1950* and is currently ranked as Critically Endangered (CR) in Western Australia against World Conservation Union (IUCN 2001) Red List criteria B1ab(iii,v)+2ab(iii,v); C2a(i); D due to its area of occupancy being less than 10 km², area of occurrence being less than 100 km², continuing decline in the number of mature plants which are fewer than 50, and a continuing decline in habitat quality. The species is also listed as Critically Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats are weed invasion, poor seed set and lack of recruitment, and small population size.

Eremophila koobabbiensis ms has a restricted distribution in the Shire of Coorow (DEC's Moora District) where it is known from one population in four locations on a single private property together containing ninety-six mature plants.

Description: *Eremophila koobabbiensis* ms is an erect shrub 1 to 1.5 m high with small, prominently lobed leaves 4 to 6 mm long by 1.5 to 2 mm wide and small dark purple flowers. The species is related to *Eremophila pinnatifida* but is distinguished by its smaller flowers and leaves. It is also more distantly related to *Eremophila lehmanniana* but differs in its flower colour.

Habitat requirements: *Eremophila koobabbiensis* ms occurs in open salmon gum and gimlet woodland in brown, loamy soil with *Eremophila sargentii*.

Habitat critical to the survival of the species, and important populations: *Eremophila koobabbiensis* ms is listed nationally as Critically Endangered, and it is therefore considered that the habitat of the wild population is critical to the survival of the species, and that the wild population is an important population. Habitat critical to the survival of *E. koobabbiensis* ms includes the area of occupancy of the extant population, areas of similar habitat (i.e. open salmon gum and gimlet woodland in flat, loamy, brown soil with *E. sargentii*) surrounding the population (this is necessary to provide habitat for pollinators) and other nearby areas of similar habitat that may contain the species or be suitable for future translocations.

Benefits to other species or ecological communities: One Priority flora species, *E. sargentii* (Priority 2), occurs with *Eremophila koobabbiensis* ms and recovery actions implemented to improve the quality or security of the habitat of *E. koobabbiensis* ms will also assist in protecting that species.

International obligations: This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993, and will assist in implementing Australia's responsibilities under that convention. *Eremophila koobabbiensis* ms is not listed under any specific international treaty however, and therefore this plan does not affect Australia's obligations under any other international agreements.

Role and interests of indigenous people: Involvement of the Indigenous community has been sought through the *South West Aboriginal Land and Sea Council (SWALSC)* and the *Department of Indigenous Affairs* to assist in the identification of cultural values for land occupied by *Eremophila koobabbiensis* ms, or groups with a cultural connection to land that is important for the species' conservation and to determine whether there are any issues or interests identified in the plan. A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register has identified that there are no sites of Aboriginal significance at or near populations of the species covered by this plan. Opportunities for indigenous involvement in the implementation of the recovery plan will be encouraged and may exist through cultural interpretation and awareness of the species. Continued liaison between DEC and the indigenous community will identify areas in which collaboration will assist implementation of recovery actions.

Social and economic impact: Although the known population of *Eremophila koobabbiensis* ms occurs on private land, the implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts as the owners

have fenced the area and are keen to protect the plants. Where populations are located on private property, recovery actions refer to continued liaison between stakeholders with regards to these areas.

Affected interests: Stakeholders potentially affected by the implementation of this plan are the owners of the private property on which *Eremophila koobabbiensis* ms occurs.

Evaluation of the plan's performance: The Department of Environment and Conservation, in conjunction with the Moora District Threatened Flora Recovery Team (MDTFRT) will evaluate the performance of this plan. In addition to annual reporting on progress and evaluation against the criteria for success and failure, the plan will be reviewed following four years of implementation.

Existing Recovery Actions: The following recovery actions have been or are currently being implemented in tandem with the development of this plan:

1. Land managers have been made aware of the threatened nature of this species, its location and their legal obligations to protect it.
2. The population has been fenced to exclude livestock and rabbit netting is in place to protect individual plants.
3. The current landowners are revegetating the area occupied by *Eremophila koobabbiensis* ms.
4. Numerous surveys for the species have been undertaken, however no new populations have been discovered.
5. The Botanic Garden and Parks Authority (BGPA) have two mature *Eremophila koobabbiensis* ms plants in their nursery sourced from Western Flora Nursery in 2000.
6. The Australian National Botanic Gardens (ANBG) in Canberra also have several plants in their collection sourced from cuttings taken from the population in 1997.
7. The MDTFRT is overseeing the implementation of this plan and will include it in its annual report to DEC's Corporate Executive and funding bodies.
8. Staff from DEC's Moora District are monitoring known populations.

Recovery Plan objective: The objective of this plan is to abate identified threats and maintain or enhance viable *in situ* populations to ensure the long-term preservation of the species in the wild.

Recovery criteria

Criteria for success: The number of populations have increased and/or the number of mature individuals have increased by twenty five percent or more over the term of the plan.

Criteria for failure: The number of mature individuals have decreased by twenty five percent or more over the term of the plan.

Recovery actions

- | | |
|---|---|
| 1. Coordinate recovery actions | 7. Promote awareness |
| 2. Liaise with land managers and relevant Indigenous groups | 8. Map habitat critical to the survival of <i>Eremophila koobabbiensis</i> ms |
| 3. Monitor population | 9. Conduct further surveys |
| 4. Collect seed and other material to preserve genetic diversity | 10. Obtain biological and ecological information |
| 5. Undertake weed control and follow-up with additional control if required | 11. Develop and implement a translocation proposal |
| 6. Develop and implement disturbance trials | 12. Review the need for further recovery actions |

1. BACKGROUND

History

The first collection of *Eremophila koobabbiensis* ms was made from an area of remnant bushland on a farm near Coorow in 2001. The property owner, along with members of the local Landcare Group and DEC staff, have since searched other parts of the property and similar habitat in surrounding areas, but have not located plants outside the known population. The species currently consists of four populations together containing ninety-six mature plants, in an area of degraded woodland, over rare scattered native shrubs and introduced grasses.

When first discovered *Eremophila koobabbiensis* ms was thought to be a form of *Eremophila pinnatifida* but is now considered a distinct species.

Description

Eremophila koobabbiensis ms is an erect shrub 1 to 1.5 m high with small, lobed leaves 4 to 6 mm long by 1.5 to 2 mm wide and small dark purple flowers. Its name is a combination of the farm name (Koobabbie) where the single known population is found and the Latin *ensis* belonging to, originating from. The species is related to *E. pinnatifida* but is distinguished by its smaller flowers and smaller, less prominently lobed leaves (Brown, in press).

Distribution and habitat

Eremophila koobabbiensis ms has a highly restricted distribution, being known from a single population occupying approximately 150 m² on private property near Coorow.

The habitat consists of open salmon gum and gimlet woodland in flat, loamy, brown soil with a single plant of *Eremophila sargentii*. Species associated with *Eremophila koobabbiensis* ms include *Eucalyptus salubris*, *Eucalyptus salmonophloia*, *Maireana brevifolia* and *Acacia hemiteles*.

Summary of population land vesting, purpose and tenure

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
1. E of Coorow	Mid-west	Coorow	Freehold	Private Property	Landholders
2. E of Coorow	Mid-west	Coorow	Freehold	Private Property	Landholders
3. E of Coorow	Mid-west	Coorow	Freehold	Private Property	Landholders
4. E of Coorow	Mid-west	Coorow	Freehold	Private Property	Landholders

Populations in **bold text** are considered to be Important Populations.

Biology and ecology

The response of *Eremophila koobabbiensis* ms to fire is unknown, however it is likely that the species requires occasional fire to induce germination of soil-stored seed. The species flowers all year round but is best between October and November.

Threats

Eremophila koobabbiensis ms was declared as Rare Flora in 2005 under the Western Australian *Wildlife Conservation Act 1950* and is currently ranked as Critically Endangered (CR) in Western Australia against World Conservation Union (IUCN 2001) Red List criteria B1ab(iii,v)+2ab(iii,v); C2a(i); D, due to its area of occupancy being less than 10 km², area of occurrence being less than 100 km², and a continuing decline in the number of mature plants that are fewer than 50, and a decline in habitat quality. The species is also listed as Critically Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999).

The main threats to the species are:

- **Limited habitat.** *Eremophila koobabbiensis* ms is known from a small area of degraded remnant native vegetation surrounded by cleared farmland.
- **Weed invasion.** The area occupied by *Eremophila koobabbiensis* ms was grazed by stock until fenced in 1989. This grazing led to degradation of the habitat and weed invasion. Weeds compete for resources with *E. koobabbiensis* ms reducing the health of mature plants, fecundity and recruitment.
- **Poor seed set and lack of recruitment.** The lack of associated local native plant species is likely to have resulted in a reduction in pollinators. Some revegetation of the area is being conducted by the landowners and may increase pollinator presence at the site.
- **Small population size.** As *Eremophila koobabbiensis* ms is known from just four populations together containing ninety-six mature plants the likelihood of the species falling victim to a chance demographic or environmental event is high.

The intent of this plan is to propose actions that will deal with immediate threats to *Eremophila koobabbiensis* ms. Long term threats such as climate change may also impact on the species over time, however actions taken to prevent such threats are beyond the scope of this plan.

Summary of population information and threats

Pop. No. & Location	Land Status	Year/No. plants	Habitat condition	Threats
1. E of Coorow	Private Property	2000 7 [2] 2002 3 2003 4 2004 4 2005 4 2009 3	Poor	Degraded habitat, weed invasion, poor seed set, lack of recruitment and small population size
2. E of Coorow	Private Property	2009 1	Poor	Degraded habitat, weed invasion, poor seed set, lack of recruitment and small population size
3. E of Coorow	Private Property	2009 0 [74]	Poor	Degraded habitat, weed invasion
4. E of Coorow	Private Property	2009 92	Poor	Degraded habitat, weed invasion

Populations in **bold text** are considered to be important populations; [] = number of seedlings

Guide for decision-makers

Section 1 provides details of current and possible future threats. Development and/or land clearing in the immediate vicinity of the population of *Eremophila koobabbiensis* ms require assessment. No development or clearing should be approved unless the proponents can demonstrate that their actions will not have a significant impact on the species, its habitat or potential habitat or on the local surface hydrology, such that drainage or soil moisture levels in the habitat of the species would be altered.

Habitat critical to the survival of the species, and important populations

Eremophila koobabbiensis ms is listed Nationally as Critically Endangered, and it is therefore considered that all known habitat for wild populations is critical to the survival of the species, and that wild populations are important populations. Habitat critical to the survival of *E. koobabbiensis* ms includes the area of occupancy of extant populations, areas of similar habitat (i.e. open Salmon Gum and Gimlet woodland in flat, loamy, brown soil with *E. sargentii*) surrounding populations (this is necessary to provide habitat for pollinators and population expansion) and additional occurrences of similar habitat that may contain the species or be suitable for future translocations.

Benefits to other species or ecological communities

Recovery actions implemented to improve the quality or security of the habitat of *Eremophila koobabbiensis* ms will also improve the status of associated native vegetation dominated by *Eucalyptus salubris*, *E. salmonophloia*, *Maireana brevifolia* and *Acacia hemiteles*. One priority flora species is located with *E.*

koobabbiensis ms and is listed in the table below.

Conservation-listed flora species occurring in habitat of *Eremophila koobabbiensis* ms

Species name	Conservation Status (Western Australia)	Conservation Status (EPBC Act 1999)
<i>Eremophila sargentii</i>	Priority 2	-

For a description of priority categories see Atkins (2009)

International obligations

This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993, and will assist in implementing Australia's responsibilities under that convention. *Eremophila koobabbiensis* ms is not listed under any specific international treaty however, and this plan does not affect Australia's obligations under any other international agreements.

Role and interests of indigenous people

Involvement of the Indigenous community has been sought through the *South West Aboriginal Land and Sea Council (SWALSC)* and the *Department of Indigenous Affairs* to assist in the identification of cultural values for land occupied by *Eremophila koobabbiensis* ms, or groups with a cultural connection to land that is important for the species' conservation and to determine whether there are any issues or interests identified in the plan. A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register has identified that there are no identified sites of Aboriginal significance at or near populations of the species covered by this plan. Opportunities for indigenous involvement in recovering the species will be encouraged and may exist through cultural interpretation and awareness of the species.

Continued liaison between DEC and the indigenous community will identify areas in which collaboration will assist implementation of recovery actions.

Social and economic impact

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts as the owners of the private land containing the single known population are actively involved in its protection and have fenced the area to protect it. However, as the protection of the species may potentially affect future farming activities, recovery actions refer to continued liaison between stakeholders with regard to this area.

Affected interests

Stakeholders potentially affected by the implementation of this plan include the owners of the private property.

Evaluation of the plan's performance

The Department of Environment and Conservation, in conjunction with the Moora District Threatened Flora Recovery Team (MDTFRT) will evaluate the performance of this plan. In addition to annual reporting on progress and evaluation against the criteria for success and failure, the plan will be reviewed following five years of implementation.

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

The objective of this plan is to abate identified threats and maintain or enhance viable *in situ* populations to ensure the long-term preservation of the species in the wild.

Criteria for success: The number of populations have increased and/or the number of mature individuals have increased by twenty five percent or more over the term of the plan.

Criteria for failure: The number of mature individuals have decreased by twenty five percent or more over the term of the plan.

3. RECOVERY ACTIONS

Existing recovery actions

Land managers have been made aware of the threatened nature of this species, its location and their legal obligations to protect it.

The known populations have been fenced to exclude livestock and rabbit netting is in place to further protect individual plants. Following additional fencing of a larger area of remnant vegetation surrounding existing populations a further two populations consisting of 92 mature plants and 72 seedlings have appeared.

The landowners are revegetating the habitat of *Eremophila koobabbiensis* ms with local native plant species.

Numerous surveys for the species have been undertaken. In 2000 the property owners and members of the local Landcare group searched widely for new populations of the species; in 2001 and 2002 staff from DEC and the Department of Agriculture and Foods searched likely habitat in the Wubin and Dalwallinu areas; in 2003 a DEC botanist searched areas of remnant vegetation between Dalwallinu and Coorow; and an *Eremophila* expert from the Adelaide Herbarium has also searched for this species. With the exception of the new populations that appeared within the known area following fencing, all surveys failed to locate additional populations.

The Botanic Garden and Parks Authority (BGPA) have two mature *Eremophila koobabbiensis* ms plants in their nursery sourced from the Western Flora Nursery in 2000.

The Australian National Botanic Gardens (ANBG) in Canberra has two cutting derived plants of this species in poor condition in their gardens. They also have two healthy one year old plants that have been grafted onto *Myoporum insulare* root stock in permanent pot holdings, and approximately nine healthy grafts in a propagation house. All plants originate from cuttings collected from the single known population in Coorow in 1997 (Stuart Donaldson, personal communication¹).

The MDTFRT is overseeing the implementation of this plan and will include it in its annual report to DEC's Corporate Executive and funding bodies.

Staff from DEC's Moora District are monitoring the known population.

Future recovery actions

Where recovery actions are implemented on lands other than those managed by DEC, permission has been or will be sought from the appropriate land managers prior to actions being undertaken. The following recovery actions are roughly in order of descending priority, influenced by their timing over the term of the plan. However this should not constrain addressing any recovery action if funding is available and other opportunities arise.

1. Coordinate recovery actions

The MDTFRT will coordinate recovery actions for *Eremophila koobabbiensis* ms and other Declared Rare Flora in the District and will include information on progress in their annual report to DEC's Corporate Executive and funding bodies.

Action:	Coordinate recovery actions
Responsibility:	MDTFRT
Cost:	\$1,400 annually.

¹ Stuart Donaldson, Australian National Botanic Gardens

2. Liaise with land managers and relevant Indigenous groups

Staff from DEC Moora District will liaise with land managers to ensure that the population is not accidentally damaged or destroyed. Input and involvement will continue to be sought from Indigenous groups that have an active interest in the area that is habitat for *Eremophila koobabbiensis* ms.

Action: Liaise with land manager and relevant Indigenous groups
Responsibility: DEC (Moora District) through the MDTFRT
Cost: \$500 annually.

3. Monitor population

Annual monitoring of factors such as habitat degradation, population stability (expansion or decline), pollination activity, seed production, predation, recruitment and longevity is essential.

Action: Monitor population
Responsibility: DEC (Moora District) through MDTFRT
Cost: \$500 annually.

4. Collect seed and other material to preserve genetic diversity

DEC Threatened Flora Seed Centre (TFSC) and the Botanic Garden and Parks Authority (BGPA) do not currently hold any seed of *Eremophila koobabbiensis* ms. BGPA do however have two mature *E. koobabbiensis* ms plants in their nursery. As preservation of genetic material is essential to guard against extinction of the species if the wild population is lost, it is recommended that seed be collected and stored by DEC's TFSC and that cuttings be collected and used to propagate additional Nursery held plants by the BGPA. Collections should aim to sample and preserve the maximum range of genetic diversity possible. The "Germplasm Conservation Guidelines for Australia" produced by the Australian Network for Plant Conservation (ANPC) in 1997 should be used to guide this process.

Action: Collect seed and other material to preserve genetic diversity
Responsibility: DEC (TFSC, Moora District) and BGPA through MDTFRT
Cost: \$2,800 in the first, third and fifth years.

5. Undertake weed control and follow up with additional control if required

Weeds are a threat to the population of *Eremophila koobabbiensis* ms and the following actions will be implemented:

1. Select appropriate herbicides after determining which weeds are present.
2. Protect *Eremophila koobabbiensis* ms plants from herbicide drift/application during operations by covering them.
3. Control invasive weeds by hand removal and spot spraying around *Eremophila koobabbiensis* ms plants when weeds first emerge.

The tolerance of associated native plant species to herbicides at the site of *Eremophila koobabbiensis* ms is not known and weed control programs will need to ensure that plants are protected.

Action: Undertake weed control and follow up with additional control if required
Responsibility: DEC (Moora District) through the MDTFRT
Cost: \$2,100 annually.

6. Develop and implement disturbance trials

DEC Moora District and Science Division will, in consultation with the private landowners, conduct research into the effectiveness of fire and mechanical disturbance in stimulating the germination of soil stored seed of *Eremophila koobabbiensis* ms. The results of trials will be monitored regularly and, if successful, further

disturbance undertaken. Attention will be given to each of the following to ensure maximum recruitment but at the same time maintaining the integrity of the population:

- a) burning discrete dead plants
- b) raking of the soil near dead plants

Action: Develop and implement disturbance trials
Responsibility: DEC (Moora District, Science Division) through the MDTFRT, and relevant authorities
Cost: \$3,400 in the first year; \$2,500 in years 3 and 5; \$700 in years 2 and 4.

7. Promote awareness

The importance of biodiversity conservation and the protection of *Eremophila koobabbiensis* ms will be promoted to the public. This will be achieved through an information campaign using local print and electronic media and by setting up poster displays. An A4 sized information sheet that provides a description of the species and information about threats and recovery actions will be developed for *E. koobabbiensis* ms and will be distributed to local land owners, relevant authorities and volunteer organizations, libraries and schools. It is hoped that the poster will result in the discovery of new populations. Formal links with local naturalist groups and interested individuals should also be encouraged.

Action: Promote awareness
Responsibility: DEC (Moora District, Species and Communities Branch (SCB) and Strategic Development and Corporate Affairs Division) through the MDTFRT
Cost: \$1,600 in the first year; \$1,000 in years 2-5.

8. Map habitat critical to the survival of *Eremophila koobabbiensis* ms

It is a requirement of the EPBC Act that spatial data relating to habitat critical to the survival of threatened species be determined. Although this is outlined in Section 1, the areas described have not yet been mapped and this will be addressed under this action. If additional populations are located, then critical habitat will also be determined and mapped for them.

Action: Map habitat critical to the survival of *Eremophila koobabbiensis* ms
Responsibility: DEC (Moora District, SCB) through MDTFRT
Cost: \$3,100 in the first year.

9. Conduct further surveys

It is recommended that areas of potential habitat (i.e. open salmon gum and gimlet woodland in flat, loamy, brown soil) be surveyed for the presence of *Eremophila koobabbiensis* ms. Surveys will ideally be done during the species main flowering period between October and November, and will include surveys of areas after known disturbance events. All surveyed areas will be recorded and the presence or absence of *E. koobabbiensis* ms, and the disturbance history, documented to increase survey efficiency and reduce unnecessary duplication of surveys. Where possible, volunteers from the local community, wildflower societies and naturalists clubs should be involved and supervised by DEC staff.

Action: Conduct further surveys
Responsibility: DEC (Moora District) through MDTFRT
Cost: \$3,900 in years 1, 3 and 5.

10. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Eremophila koobabbiensis* ms will provide a better scientific basis for management of the wild population. An understanding of the following is necessary for effective management:

1. The response of the species to disturbance including fire
2. The pollination biology of the species and identification of pollinators
3. Seed viability
4. Conditions necessary for germination
5. Longevity of plants and time taken to reach maturity

Actions: Obtain biological and ecological information

Responsibility: DEC (Science Division, TFSC, Moora District) and BGPA through the MDTFRT

Cost: \$13,000 annually in years 1-3; \$18,000 in year 4.

11. Develop and implement a translocation proposal

As *Eremophila koobabbiensis* ms is restricted to a relatively small area in otherwise cleared farmland it is particularly vulnerable to stochastic events. It is therefore recommended that a translocation proposal be developed and implemented to increase habitat security and the number of populations of the species. Following implementation the translocation should be monitored to assess success.

Information on the translocation of threatened animals and plants in the wild is provided in CALM *Policy Statement No. 29: Translocation of Threatened Flora and Fauna*. All translocation proposals require endorsement by the Director of Nature Conservation.

Action: Develop and implement a translocation proposal

Responsibility: DEC (Moora District) through the MDTFRT

Cost: \$5,000 in the second year and \$10,000 annually in years 3-5.

12. Review the need for further recovery actions

At the end of the five-year term, this plan will be reviewed and the need for further recovery actions assessed.

Action: Review the need for further recovery actions

Responsibility: DEC (SCB, Moora District) through MDTFRT

Cost: \$1,500 in the fifth year.

Summary of recovery actions:

Total DEC:	\$77,100
Total other:	\$16,000
Total EXT:	\$61,500
TOTAL COSTS:	\$154,600

Recovery Actions	Priority	Responsibility	Completion date
Coordinate recovery actions	High	MDTFRT	Ongoing
Liaise with land managers and relevant Indigenous groups	High	DEC (Moora District) through the MDTFRT	Ongoing
Monitor population	High	DEC (Moora District) through MDTFRT	Ongoing
Collect seed and other material to preserve genetic diversity	High	DEC (TFSC, Moora District) and BGPA through MDTFRT	Ongoing
Undertake weed control and follow-up with additional control if required	High	DEC (Moora District, Science Division) through the MDTFRT	Ongoing
Develop and implement disturbance trials	High	DEC (Science Division, Moora District) through the MDTFRT, and relevant authorities	Developed in first year with implementation ongoing
Promote awareness	High	DEC (Moora District, SCB and Strategic Development and Corporate Affairs Division) through the MDTFRT	Ongoing
Map habitat critical to the survival of <i>Eremophila koobabbiensis</i> ms	High	DEC (Moora District, SCB) through the MDTFRT	First year

Conduct further surveys	High	DEC (Moora District) through MDTFRT	Ongoing
Obtain biological and ecological information	High	DEC (Science Division, TFSC, Moora District) and BGPA through the MDTFRT	Fourth year
Develop and implement a translocation proposal	High	DEC (Moora District) through the MDTFRT	Fifth year
Review the need for further recovery actions	Moderate	DEC (SCB, Moora District) through MDTFRT	Fifth year

4. TERM OF PLAN

Western Australia

This plan will operate from July 2007 to June 2012 but will remain in force until withdrawn or replaced. If the taxon is still ranked by the WA Government as EN (IUCN) after five years, the need for further recovery actions and an update of this plan will be assessed. The current plan was updated in March, 2010.

Commonwealth

In accordance with the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) this adopted recovery plan will remain in force until revoked.

The recovery plan must be reviewed at intervals of not longer than 5 years.

5. REFERENCES

- Atkins, K. (2009) *Declared Rare and Priority Flora List for Western Australia*. Department of Environment and Conservation, Perth, Western Australia.
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- World Conservation Union (2001) *IUCN Red List Categories: Version 3.1*. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

6. TAXONOMIC DESCRIPTION

Excerpt from: Brown, A. P. (2006) *A field guide to the Eremophilas of Western Australia*. pp 57 (in draft).

Eremophila koobabbiensis ms is an erect shrub 1 to 1.5 m high with small, lobed leaves 4 to 6 mm long by 1.5 to 2 mm wide and small dark purple flowers. The species is related to *E. pinnatifida* but is distinguished by its smaller flowers and less prominently lobed leaves.