RESINOUS EREMOPHILA

(Eremophila resinosa)

INTERIM RECOVERY PLAN

2008-2013

April 2008

Department of Environment and Conservation
Kensington
**FOREWORD**

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. DEC will continue to adhere to these Policy Statements until they are revised and reissued.

IRPs 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 Recovery Plans (RPs) or IRPs, and by ensuring that the 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This IRP will operate from April 2008 to March 2013 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked CR, this IRP will be reviewed after four years and the need for a full RP assessed.

This IRP was approved by the Director of Nature Conservation on 30 April 2008. The allocation of staff time and provision of funds identified in this IRP is dependent on budgetary and other constraints affecting DEC, as well as the need to address other priorities.

Information in this IRP was accurate in April 2008.

This IRP was prepared with financial support from the Australian Government to be adopted as a National Recovery Plan under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

**IRP PREPARATION**

This IRP was prepared by: Craig Douglas¹, Wendy Johnston² and David Jolliffe³

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**ACKNOWLEDGMENTS**

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

Andrew Crawford  Technical Officer, Threatened Flora Seed Centre, DEC
Joel Collins  Former Flora Conservation Officer, Yilgarn District, DEC
Andrew Brown  Threatened Flora Coordinator, Species and Communities Branch, DEC
Bob Dixon  Manager of Biodiversity and Extensions, Botanic Gardens and Parks Authority
Luke Sweedman  Curator of the Western Australian Seed Technology Centre, Botanic Gardens 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 Joff Start.

**CITATION**

This IRP should be cited as:

Habitat requirements: *Eremophila resinosa* occurs on soil types from sandy loams to loams and clays in open mallee woodland with a mixed *Acacia* scrub understorey.

Habitat critical to the survival of the species, and important populations: Given that *Eremophila resinosa* is ranked as EN, but is known from 24 populations, it is considered that only known habitat for extant wild and translocated populations is critical to its survival, and that all extant wild and translocated populations are important populations. Habitat critical to the survival of *E. resinosa* includes the area of occupancy of extant populations, areas of similar habitat (i.e. sandy loams, clays, and loams supporting open mallee woodland with mixed *Acacia* scrub understorey) surrounding important populations (this is necessary to allow access 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 for *Eremophila resinosa* will also improve the status of associated native vegetation. One other threatened flora species (*Cyphanthera odgersii* subsp. *occidentalis*) is located in the vicinity of *Eremophila resinosa*.

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 resinosa* is not listed under any specific international treaty however, and therefore this IRP does not affect Australia’s obligations under any other international agreements.
Role and interests of indigenous people: According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register, no sites of Aboriginal significance are known at or near populations of the species covered by this IRP. However, the involvement of the Indigenous community is currently being sought to determine whether there are any issues or interests identified in the Plan. If no role is identified for indigenous communities in the recovery of this species, opportunities may exist through cultural interpretation and awareness of the species.

The advice of the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs is being sought to assist in the identification of potential indigenous management responsibilities for land occupied by threatened species, or groups with a cultural connection to land that is important for the species' conservation.

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. However, as some of the populations of *Eremophila resinosa* occur on, or adjacent to, Private Property, the protection of them may potentially affect farming activities. Populations on road and rail reserves, and mining tenements, will require protection during management activities, and hence the occurrence of *Eremophila resinosa* in those areas may have an impact on those land managers. Actions will involve continued liaison and cooperation with all stakeholders with regard to these areas.

Affected interests: Stakeholders potentially affected by the implementation of this plan include the Shires of Westonia, Mukinbudin, Nungarin, Koorda and Mt Marshall, Main Roads WA, WestNet Rail and owners of Private Property.

Evaluation of the plan’s performance: DEC in conjunction with the Yilgarn District Threatened Flora Recovery Team (YDTFRT) will evaluate the performance of this IRP. 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.

Completed Recovery Actions

1. Land managers including private land owners, Main Roads WA, WestNet Rail and Shires with populations on land under their management have been made aware of the threatened nature of this species, its location and their legal obligations to protect it.
2. Declared Rare Flora (DRF) markers have been installed at Populations 3, 5-7, 9, 11-12, 15, 18-20 and 22 and Subpopulations 1bc, 2c, 4ab, 14b, 16b and 17ab.
3. Six plants have been propagated from part of Population 23 (mining lease), and successfully translocated. Seed was collected from parent plants prior to their taking.
4. Collections of seed from several populations have been stored at the Botanic Gardens and Parks Authority (BGPA) and DEC’s Threatened Flora Seed Centre (TFSC).
5. Rubbish dumped in Subpopulation 16a has been removed by the Shire of Westonia and measures taken to restrict vehicle access.

Ongoing and future recovery actions

6. The YDTFRT is overseeing the implementation of this IRP and will include it in their annual report to DEC’s Corporate Executive and funding bodies.
7. Staff from DEC’s Yilgarn District office are monitoring all known populations.

IRP objective: The objective of this IRP 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 ten percent or more over the term of the plan.

Criteria for failure: The number of populations have decreased and/or the number of mature individuals have decreased by ten percent or more over the term of the plan.

Recovery actions

1. Coordinate recovery actions
2. Conduct further surveys
3. Liaise with land managers
4. Install DRF markers
5. Monitor populations
6. Undertake weed control
7. Fencing
8. Obtain biological and ecological information
9. Collect seed
10. Promote awareness
11. Map habitat critical to the survival of *Eremophila resinosa*
12. Review the plan and need for further recovery actions
Interim Recovery Plan for *Eremophila resinosa*
1. BACKGROUND

History:

Eremophila resinosa was described by Stephan Endlicher in 1839 as Pholidia resinosa based on specimens collected by John Septimus Roe in 1835 (Endlicher and Fenzl 1839). Ferdinand Mueller later moved the species into the genus Eremophila (Mueller 1859). In 1908 Alfred Ewart not realizing that it had already been named, invalidly described the species as Eremophila kochii, after the collector Max Koch (Ewart et al. 1908).

In 2003 Westonia Mining Ltd. conducted a floristic survey during which a population of 441 Eremophila resinosa plants were found on land under their lease. The following year the company developed a translocation proposal as five plants were to be taken during mining operations. At this time seed was collected from those plants. 321 plants were subsequently raised by the Botanic Gardens and Parks Authority (BGPA) and planted into the translocation area. In Winter 2005 a further 257 plants were raised by BGPA and planted in the same area (B. Dixon pers. comm.). As at 2006 the translocated population numbered 509 individuals.

Eremophila resinosa is known from 24 natural populations and 697 plants in DEC’s Yilgarn District. Populations 7, 8 and 19 and 20 are now presumed extinct.

Description

Eremophila resinosa is a spreading shrub 40 to 80 cm tall by 60 to 100 cm wide with branches that are densely covered in short white woolly hairs and sprinkled with resinous wart-like projections. The leaves are 4 to 8 mm long by 2 to 3 mm wide, alternate, obovate, obtuse with a minute point, rather thick and flat with a greyish layer of very short, closely interwoven star shaped hairs on both sides. The peduncles are axillary, solitary and exceedingly short. The calyx-segments are linear-lanceolate. The corolla is 15 mm long, funnel-shaped, the tube scarcely exceeding the calyx, the throat is dilated with five free lobes, each 5 mm long, all pointed, the upper ones recurved, the lower ones spreading, all sprinkled outside with short star shaped wooly hairs. The throat is covered in long sparse hairs with a ring of numerous hairs occurring at the base. The flowers are blue or purple with white spots inside. There are four stamens not exceeding the length of the corolla. The ovary is densely covered in short wooly hairs and is four celled with one ovule in each cell (Bentham 1870; Ewart et al. 1908; Brown 2005).

Distribution and habitat

Eremophila resinosa is confined to the central eastern Wheatbelt of Western Australia.

Habitat is sandy loams and clays in open mallee woodland with a mixed Acacia scrub understorey. Species associated with Eremophila resinosa include Eucalyptus salubris, Eucalyptus salmonophloia, Eucalyptus longicornis, Eucalyptus transcontinentalis and Acacia acuminata, Acacia erinacea, Acacia hemiteles and Eremophila oppositifolia.

Summary of population land vesting, purpose and manager

<table>
<thead>
<tr>
<th>Pop. No. &amp; Location</th>
<th>DEC District</th>
<th>Shire</th>
<th>Vesting</th>
<th>Purpose</th>
<th>Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a N of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>1b N of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>1c N of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>2a NW of Mukinbudin</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Mukinbudin</td>
</tr>
<tr>
<td>2b NW of Mukinbudin</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Mukinbudin</td>
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<td>Yilgarn</td>
<td>Wyalkatchem</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Wyalkatchem</td>
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<tr>
<td>3 SW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>4a NW of Nungarin</td>
<td>Yilgarn</td>
<td>Nungarin</td>
<td>Public Transport Authority</td>
<td>Rail Reserve</td>
<td>WestNet Rail</td>
</tr>
<tr>
<td>4b NW of Nungarin</td>
<td>Yilgarn</td>
<td>Nungarin</td>
<td>Minister for Transport</td>
<td>Road Reserve</td>
<td>MainRoads WA</td>
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<tr>
<td>5 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>6 SW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>7 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
</tr>
</tbody>
</table>
Interim Recovery Plan for *Eremophila resinosa*

<table>
<thead>
<tr>
<th>Pop. No. &amp; Location</th>
<th>DEC District</th>
<th>Shire</th>
<th>Vesting</th>
<th>Purpose</th>
<th>Manager</th>
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<tbody>
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<td>8 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<td>9 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<td>10 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<td>11 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>12 SW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<tr>
<td>13 Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Recreation-Race track</td>
<td>Shire of Westonia</td>
</tr>
<tr>
<td>14a S of Koorda</td>
<td>Yilgarn</td>
<td>Koorda</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Koorda</td>
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<tr>
<td>14b S of Koorda</td>
<td>Yilgarn</td>
<td>Koorda</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Koorda</td>
</tr>
<tr>
<td>15 NW of Westonia</td>
<td>Yilgarn</td>
<td>Nungarin</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Nungarin</td>
</tr>
<tr>
<td>16a Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Shire Reserve – proposed hospital site</td>
<td>Shire of Westonia</td>
</tr>
<tr>
<td>16b Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
</tr>
<tr>
<td>17a NW of Nungarin</td>
<td>Yilgarn</td>
<td>Nungarin</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Nungarin</td>
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<tr>
<td>17b NW of Nungarin</td>
<td>Yilgarn</td>
<td>Nungarin</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Nungarin</td>
</tr>
<tr>
<td>18 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<td>19 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
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<td>20 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Unvested Reserve</td>
<td>Road Reserve</td>
<td>Shire of Westonia</td>
</tr>
<tr>
<td>21 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Freehold</td>
<td>Private property</td>
<td>Landholders</td>
</tr>
<tr>
<td>22 E of Kalannie</td>
<td>Yilgarn</td>
<td>Mt Marshall</td>
<td>Minister for Transport</td>
<td>Road Reserve</td>
<td>MainRoads WA</td>
</tr>
<tr>
<td>23 NW of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Shire of Westonia</td>
<td>Common - mining</td>
<td>Westonia Mines</td>
</tr>
<tr>
<td>24 N of Westonia</td>
<td>Yilgarn</td>
<td>Westonia</td>
<td>Shire of Westonia</td>
<td>Common - mining</td>
<td>Westonia Mines</td>
</tr>
</tbody>
</table>

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

**Biology and ecology**

Richmond and Coates (1995) concluded that *Eremophila resinosa* is highly flammable but based on the concentration of starch grains within the roots, mature plants are likely to resprout from underground stock post fire. However, they also concluded that young seedlings (1 to 2 years old) are likely to be fire sensitive and may be killed even by low intensity spring fires.

Cochrane *et al.* (2002) conclude that only 31.5% of *Eremophila resinosa* locules contained at least one healthy seed. This low result has several plausible explanations including, habitat fragmentation which may be reducing pollination through lack of habitat connectivity and permeability and lack of resources for pollinators. Inbreeding may also be a cause, however many species in the transitional rainfall zone of Western Australia have developed diverse genetic system responses to inbreeding in order to cope with long periods of small population size imposed on them (Hopper *et al.* 1996).

Healthy *Eremophila resinosa* seed was found to have a germination rate of 77% for fresh seed and 67% for seeds kept for one year under standard storage conditions (Cochrane *et al.* 2002). Cochrane *et al.* 2002 found *E. resinosa* had the broadest range of germination times amongst twelve *Eremophila* species with first germination recorded at 10 days and last germination at 74 days for fresh seed. This range is reduced for stored seed with initial germination recorded at 14 days and last germination at 35 days.

Richmond and Coates (1995) recorded a grafting strike rate of 100% for *Eremophila resinosa* and cutting survival rate of 1%.

Flowering of *Eremophila resinosa* appears to occur all year round with the main flowering time being between October-November. Fruits mainly develop between December to January with records of limited fruiting occurring in November and March.

**Threats**

*Eremophila resinosa* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in 1982 and is currently ranked as Endangered (EN) under World Conservation Union (IUCN 1994) Red List criterion C2a due to the total population size being less than 2500 mature individuals, with continuing decline observed and no subpopulation estimated to contain more than 250 mature individuals. The main threats are road, rail and firebreak maintenance, farming operations including grazing and fence maintenance, weeds,
Interim Recovery Plan for *Eremophila resinosa*

Degradation of habitat through activities such as traffic and rubbish dumping, inappropriate fire regimes, low seed set and poor recruitment. *Eremophila resinosa* is listed as Endangered (EN) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

- **Road, rail and firebreak maintenance.** Ten populations and thirteen subpopulations of *Eremophila resinosa* occur on road (Shire and MainRoads WA) and rail (WestNet Rail) reserves. Relevant authorities have been informed of their location so that appropriate protective actions can be implemented.

- **Farming operations.** Populations of *Eremophila resinosa* bordering Private Property are threatened by fence maintenance, spray drift and grazing. 

- **Weeds** are a significant threat to eight populations and four subpopulations of *Eremophila resinosa*. Weeds complete for resources and reduce germination success. In areas where introduced and native grasses produce large fuel loads intense fires could damage the subterranean stock of *E. resinosa* (Richmond and Coates 1995).

- **Degradation of habitat through recreational activities, traffic and rubbish dumping** threatens one population and one subpopulation of *Eremophila resinosa*. Since 1993 the number of plants in Subpopulation 16a has been substantially reduced following these activities and recruitment has ceased.

- **Inappropriate fire regimes.** Because seedlings of this species are likely to be killed by fire within the first 1 to 2 years following germination, frequent fire has the potential to affect all populations.

- **Low seeds set.** *Eremophila resinosa* is recorded as producing low numbers of healthy seeds.

- **Poor recruitment.** No populations have shown signs of recruitment since 1993.

### Summary of population information and threats

<table>
<thead>
<tr>
<th>Pop. No. &amp; Location</th>
<th>Land Status</th>
<th>Year/No. plants</th>
<th>Current Condition</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a N of Westonia</td>
<td>Shire Road Reserve</td>
<td>1993</td>
<td>Moderate</td>
<td>Road maintenance, weeds, farm operations-grazing, fence maintenance</td>
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<td></td>
<td></td>
<td>2003 37 [1]*</td>
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<td>2005 14*</td>
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<td></td>
<td></td>
<td>2005 7</td>
<td></td>
<td></td>
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<tr>
<td>1b N of Westonia</td>
<td>Shire Road Reserve</td>
<td>1993</td>
<td>Moderate</td>
<td>Road maintenance, weeds, farm operations-grazing, fence maintenance</td>
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<tr>
<td></td>
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<td>2003 37 [1]*</td>
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<td>2005 14*</td>
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<tr>
<td>1c N of Westonia</td>
<td>Shire Road Reserve</td>
<td>1993</td>
<td>Moderate</td>
<td>Road maintenance, weeds, farm operations-grazing, fence maintenance</td>
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<tr>
<td></td>
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<td>2003 37 [1]*</td>
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<td></td>
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<td>2005 14*</td>
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<tr>
<td>2a NW of Mukinbudin</td>
<td>Shire Road Reserve</td>
<td>2003</td>
<td>Moderate</td>
<td>Road maintenance</td>
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<td></td>
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<td>2005 9</td>
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<tr>
<td></td>
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<td>2003 3</td>
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<tr>
<td>2b NW of Mukinbudin</td>
<td>Shire Road Reserve</td>
<td>2003</td>
<td>Healthy</td>
<td>Road maintenance</td>
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<td></td>
<td></td>
<td>2005 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 NW of Westonia</td>
<td>Shire Road Reserve</td>
<td>1989</td>
<td>Poor</td>
<td>Road maintenance, weeds</td>
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<td></td>
<td></td>
<td>2000 44 [2]</td>
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<td></td>
<td></td>
<td>2006 20</td>
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<tr>
<td>4a NW of Nungarin</td>
<td>WestNet Rail reserve</td>
<td>1991</td>
<td>Moderate</td>
<td>Rail maintenance, spraying, grazing by 'moving' stock</td>
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<td></td>
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<td>1994 4*</td>
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<td></td>
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<td>1994 3</td>
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<tr>
<td>4b NW of Nungarin</td>
<td>Main Roads WA reserve</td>
<td>1991</td>
<td>Disturbed</td>
<td>Road maintenance</td>
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<td></td>
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<td>1994 4*</td>
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<td>1994 1</td>
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<td>2005 15*</td>
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<tr>
<td>5 NW of Westonia</td>
<td>Shire Road Reserve</td>
<td>1993</td>
<td>Disturbed</td>
<td>Road maintenance, weeds</td>
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<tr>
<td></td>
<td></td>
<td>2005 2</td>
<td></td>
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</tr>
<tr>
<td>6 NW of Westonia</td>
<td>Main Roads WA reserve</td>
<td>1992</td>
<td>Disturbed</td>
<td>Road maintenance</td>
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<td></td>
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<td>2005 15</td>
<td></td>
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</tr>
<tr>
<td>7 NW of Westonia</td>
<td>Shire Road Reserve</td>
<td>1991</td>
<td></td>
<td>Road maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2003 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 NW of Westonia</td>
<td>Shire Road Reserve</td>
<td>2000</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2000 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 NW of Westonia</td>
<td>Shire Road Reserve</td>
<td>1992</td>
<td>Poor</td>
<td>Road maintenance, farming operations-soil erosion, grazing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2003 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2003 7 [5]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 NW of Westonia</td>
<td>Shire Road Reserve</td>
<td>1992</td>
<td>Disturbed</td>
<td>Road maintenance, farming operations-soil erosion, wind blown medic seed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2005 9</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>2005 3</td>
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</tbody>
</table>
## Guide for decision-makers

Section 1 provides details of current and possible future threats. Developments and/or clearing in the immediate vicinity of any of the populations of *Eremophila resinosa* require assessment and no developments 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 in the habitat of the species would be altered.

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

Given that *Eremophila resinosa* is ranked as EN, but is known from 24 locations, some of which have few or no recently recorded plants, it is considered that all known habitat for extant wild and translocated populations is critical to the survival of the species, and that extant wild and translocated populations are important populations. Important populations, which also contain habitat critical to the survival of the species, are identified in the above table. Populations not considered important are 7, 8, 19 and 20 which have not recently had any extant plants recorded. Habitat critical to the survival of *E. resinosa* includes the area of occupancy of extant populations, areas of similar habitat (i.e. sandy loams, clays, and loams supporting open mallee woodland with mixed *Acacia* scrub understorey) surrounding important populations (this is necessary to provide habitat for pollinators and future 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 for *Eremophila resinosa* will also improve the status of associated vegetation. One other threatened flora species is located in the area of *Eremophila resinosa* (see table below).

Conservation-listed flora species occurring in habitat of *Eremophila resinosa*

<table>
<thead>
<tr>
<th>Species name</th>
<th>Conservation Status (Western Australia)</th>
<th>Conservation Status (EPBC Act)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cyphanthera odgersii</em> subsp. <em>occidentalis</em></td>
<td>DRF, Critically Endangered</td>
<td>Endangered</td>
</tr>
</tbody>
</table>

DRF – Declared Rare Flora.

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 resinosa* is not listed under any specific international treaty however, and therefore this Interim Recovery Plan does not affect Australia’s obligations under any other international agreements.

Role and interests of indigenous people

According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register, no sites of Aboriginal significance are known at or near populations of the species covered by this IRP. However, the involvement of the Indigenous community is currently being sought to determine whether there are any issues or interests identified in the Plan. If no role is identified for indigenous communities in the recovery of this species, opportunities may exist through cultural interpretation and awareness of the species.

The advice of the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs is being sought to assist in the identification of potential indigenous management responsibilities for land occupied by threatened species, or groups with a cultural connection to land that is important for the species' conservation.

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 impact. However, as some populations of *Eremophila resinosa* occur on, or adjacent to, Private Property the protection of them may potentially affect farming activities. Populations on road and rail reserves, and mining tenements, will require protection during management activities, and hence the occurrence of *Eremophila resinosa* in those areas may have an impact on those land managers. Actions will involve continued liaison and cooperation with all stakeholders with regard to these areas.

Affected interests

Stakeholders potentially affected by the implementation of this plan include the Shires of Westonia, Mukinbudin, Nungarin, Koorda and Mt Marshall, Main Roads WA, WestNet Rail and owners of Private Property.

Evaluation of the plan’s performance

The Department of Environment and Conservation (DEC), in conjunction with the Yilgarn District Threatened Flora Recovery Team (YDTFRFT) will evaluate the performance of this IRP. 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.
2. RECOVERY OBJECTIVE AND CRITERIA

Objectives

The objective of this IRP is to abate identified threats and maintain or enhance viable *insitu* 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 ten percent or more over the term of the plan.

**Criteria for failure:** The number of populations have decreased and/or the number of mature individuals have decreased by ten percent or more over the term of the plan.

3. RECOVERY ACTIONS

**Completed recovery actions**

Land managers, including private landowners, the Shires of Westonia, Wyalkatchem, Mukinbudin, Nungarin and Koorda, Main Roads WA and WestNet Rail have been made aware of the threatened nature of the species, its location and their legal obligations to protect it.

Declared Rare Flora (DRF) markers have been placed at most road verge populations.

In 2004 expanded operations at Westonia Mines necessitated the taking of five *Eremophila resinosa*. Cuttings and seed collected were used to establish a translocated population.

In January 1997 and 2004 the BGPA collected seed from six populations of *Eremophila resinosa* and currently hold 275.5g of seed in their seed store. DEC’s TFSC have 2774 seeds collected from Populations 3, 12, 14, 23 and Subpopulation 16a.

Car bodies dumped a Shire Reserve occupied by Subpopulation 16a have been removed and measures taken to restrict vehicle access.

**Ongoing and future recovery actions**

The Yilgarn District Threatened Flora Recovery Team (YDTFRT) is overseeing the implementation of this IRP and will include information on progress in their annual reports to DEC’s Corporate Executive and funding bodies.

Staff from DEC’s Yilgarn District office monitor all populations.

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 of the priorities if funding is available for ‘lower’ priorities and other opportunities arise.

1. Coordinate recovery actions

The YDTFRT is coordinating the implementation of recovery actions for *Eremophila resinosa* and will include information on progress in their annual reports to DEC’s Corporate Executive and funding bodies.

**Action:** Coordinate recovery actions  
**Responsibility:** The YDTFRT  
**Cost:** $1,600 per year

2. Conduct further surveys
Expanded surveys of remnant bushland in the area of existing populations is recommended. It is suggested that surveys be conducted with the help of volunteers from the local community, wildflower societies and naturalist clubs during the species’ flowering period between October and November.

**Action:** Conduct further surveys  
**Responsibility:** DEC (Yilgarn District) through the YDTFRT  
**Cost:** $1,900 in year 2 and 3

3. **Liaise with land managers**

Staff from DEC’s Yilgarn District will continue to liaise with appropriate land owners and managers to ensure that populations are not accidentally damaged or destroyed. Input and involvement will also be sought from Aboriginal groups that have an active interest in areas that are habitat for *Eremophila resinosa*.

**Action:** Liaise with land managers  
**Responsibility:** DEC (Yilgarn District) through the YDTFRT  
**Cost:** $1,200 per year

4. **Install DRF markers**

Declared Rare Flora (DRF) markers are required at Populations 6 and 7 and at Subpopulations 1a, 2a-c, 4ab and 14a.

**Action:** Install DRF Markers  
**Responsibility:** DEC (Yilgarn District) through the YDTFRT  
**Cost:** $3,300 in the first year

5. **Monitor populations**

Monitoring of weed encroachment, habitat degradation, population stability (expansion or decline), pollination activity, seed production, recruitment, and longevity is essential.

**Action:** Monitor populations  
**Responsibility:** DEC (Yilgarn District) through the YDTFRT  
**Cost:** $1,400 per year.

6. **Undertake weed control**

As weeds are a major threat to several populations, the following actions will be implemented.

1. Select appropriate herbicides after determining which weeds are present
2. Control invasive weeds by hand removal or spot spraying around *Eremophila resinosa* plants when weeds first emerge
3. Schedule weed control to include spraying at other threatened flora populations within the district

The tolerance of associated native plant species to herbicides at the site of *Eremophila resinosa* is not known and weed control programs will be undertaken in conjunction with research.

**Action:** Undertake weed control  
**Responsibility:** DEC (Yilgarn District, Science Division) through the YDTFRT  
**Cost:** $1,500 per year

7. **Fencing**

Population 7 on Private Property requires an extension of protective fencing.

**Action:** Fencing
Responsibility: DEC (Yilgarn District) through the YDTFRT  
Cost: $600 in the first year

8. Obtain biological and ecological information

Research designed to increase understanding of the biology and ecology of the species will provide a scientific base for management of *Eremophila resinosa* in the wild. Research will include:

1. Pollination biology of the species and the requirements of pollinators.
2. Seed dispersal mechanisms.
3. Role of disturbance in reproduction of *E. resinosa*.
4. Response of *E. resinosa* to fire intensity and frequency.
5. Response of *E. resinosa* to applications of various herbicides.

Action: Obtain biological and ecological information  
Responsibility: DEC (Science Division, Yilgarn District) through the YDTFRT  
Cost: $7,500 in years 2 and 3.

9. Collect seed

Collection of seed is essential to guard against extinction if wild populations are lost. Some seed has been collected and stored by DEC’s TFSC and the BGPA, however additional collections should be made from a wider range of populations. The "Germplasm Conservation Guidelines for Australia" produced by the Australian Network for Plant Conservation (ANPC) should be used to guide this process.

Actions: Collect seed  
Responsibility: DEC (Yilgarn District, TFSC), and BGPA through the YDTFRT  
Cost: $2,300 in years 1, 3 and 5.

10. Promote awareness

The importance of biodiversity conservation and the protection of *Eremophila resinosa* will be promoted to the public. This will be achieved through an information campaign using the local print and electronic media and by setting up poster displays. An A4 sized information sheet, which includes a description of the plant, its habitat type, status, threats, management actions and photos, will be developed for *Eremophila resinosa* and distributed to local land owners, relevant authorities and volunteer organizations, libraries and schools. Formal links with local naturalist groups and interested individuals are encouraged. It is hoped that these actions will result in the discovery of new populations.

Action: Promote awareness  
Responsibility: DEC (Yilgarn District, Species and Communities Branch (SCB) and Strategic Development and Corporate Affairs Division) through the YDTFRT  
Cost: $1,600 in the first year, $1,000 in years 3 and 5.

11. Map habitat critical to the survival of *Eremophila resinosa*

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

Action: Map habitat critical to the survival of *Eremophila resinosa*  
Responsibility: DEC (Yilgarn District) through the YDTFRT  
Cost: $2,000 in the first year

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

Action: Review the need for further recovery actions
Responsibility: DEC (Yilgarn District, Species and Communities Branch) through the YDTFRT
Cost: $1,500 in the fourth year.

Summary of recovery actions

<table>
<thead>
<tr>
<th>Recovery Actions</th>
<th>Priority</th>
<th>Responsibility</th>
<th>Completion date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinate recovery actions</td>
<td>High</td>
<td>YDTFRT</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Conduct further surveys</td>
<td>High</td>
<td>DEC (Yilgarn District) through the YDTFRT</td>
<td>2011</td>
</tr>
<tr>
<td>Liaise with relevant land managers</td>
<td>High</td>
<td>DEC (Yilgarn District) through the YDTFRT</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Install DRF markers</td>
<td>High</td>
<td>DEC (Yilgarn District) through the YDTFRT</td>
<td>2009</td>
</tr>
<tr>
<td>Monitor populations</td>
<td>High</td>
<td>DEC (Yilgarn District) through the YDTFRT</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Undertake weed control</td>
<td>High</td>
<td>DEC (Yilgarn District, Science Division) through the YDTFRT</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Fencing</td>
<td>Medium</td>
<td>DEC (Yilgarn District) through the YDTFRT</td>
<td>2009</td>
</tr>
<tr>
<td>Obtain biological and ecological</td>
<td>Medium</td>
<td>DEC (Science Division, Yilgarn District) through the YDTFRT</td>
<td>2011</td>
</tr>
<tr>
<td>information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collect seed</td>
<td>Medium</td>
<td>DEC (Yilgarn District, TFSC), and BGPA through the YDTFRT</td>
<td>2013</td>
</tr>
<tr>
<td>Promote awareness</td>
<td>Medium</td>
<td>DEC (Yilgarn District, Species and Communities Branch (SCB) and Strategic</td>
<td>2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development and Corporate Affairs Division) through the YDTFRT</td>
<td></td>
</tr>
<tr>
<td>Map habitat critical to the survival</td>
<td>Medium</td>
<td>DEC (Yilgarn District) through the YDTFRT</td>
<td>2009</td>
</tr>
<tr>
<td>of Eremophila resinosa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review the plan and need for further</td>
<td>Medium</td>
<td>DEC (Yilgarn District, Species and Communities Branch) through the YDTFRT</td>
<td>2013</td>
</tr>
<tr>
<td>recovery actions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. TERM OF PLAN

Western Australia

This IRP will operate from April 2008 to March 2013 but will remain in force until withdrawn or replaced. If *Eremophila resinosa* is still ranked EN after five years, this IRP will be reviewed and, if necessary, further recovery actions put in place.

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


6. **TAXONOMIC DESCRIPTION**


Spreading shrub 40-80 cm tall, 60-100 cm wide. Branches densely covered in short white tomentum (short woolly hairs) and sprinkled with resinous tubercles. Leaves 4-8 mm long by 2-3 mm wide; alternate, obovate, obtuse with a minute point, rather thick, flat, hoary with stellate hairs on both sides. Peduncles axillary, solitary, exceedingly short. Calyx-segments, linear-lanceolate. Corolla 15 mm long, funnel-shaped, the tube scarcely exceeding the calyx, the throat dilated with 5 free lobes, each 5 mm long, all pointed, the upper ones recurved, the lower ones spreading, all sprinkled outside with stellate tomentum; throat covered in long sparse hairs with a ring of numerous hairs occurring at the base. Flowers blue or purple, spotted inside; when young corolla is white. Four stamens not exceeding the length of the corolla. Ovary densely tomentose, 4 celled, with 1 ovule in each cell.