INTERIM RECOVERY PLAN NO. 293

(*Guichenotia seorsiflora*)

INTERIM RECOVERY PLAN

2009-2013

July 2009
Department of Environment and Conservation
Kensington

GOVERNMENT OF WESTERN AUSTRALIA

Department of Environment and Conservation
Our environment, our future

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.

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 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This plan will operate from July 2009 to June 2014 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked as Critically Endangered (CR), this IRP will be reviewed after five years and the need for further recovery actions assessed.

This IRP was given regional approval on day month year and was approved by the Director of Nature Conservation in October 2009. The 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 at July 2009.

IRP PREPARATION

This IRP was prepared by Robyn Luu[1] and Andrew Brown[2].

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ACKNOWLEDGMENTS

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

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Marie Edgley	Project Officer, DEC Great Southern District
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Amanda Shade	Assistant Curator (Nursery), 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 Ben Lullfitz.

CITATION

This IRP should be cited as:

Department of Environment and Conservation (2009) *Guichenotia seorsiflora* Interim Recovery Plan 2009-2014. Interim Recovery Plan No. #. Department of Environment and Conservation, Western Australia.

SUMMARY

Scientific Name:	***Guichenotia seorsiflora***	**Common Name:**	NA
Family:	Sterculiaceae	**Flowering Period:**	July to September
DEC Region:	Wheatbelt	**DEC Districts:**	Avon-Mortlock, Yilgarn, Great Southern
Shires:	Kellerberrin, Cunderdin, Corrigin	**NRM Region:**	Avon
Recovery Teams:	Avon-Mortlock District Threatened Flora and Communities Recovery Team (AMDTFCRT); Yilgarn District Threatened Flora and Communities Recovery Team (YDTFCRT); Great Southern District Threatened Flora Recovery Team (GSDTFRT)		

Illustrations and/or further information: Lullfitz, B.R., Konnur, A., Alderton, J., Jolliffe, D. S. and Squire, M. (2008) *Threatened and Poorly Known Flora of the Yilgarn Region*. Department of Environment and Conservation, Western Australia; Western Australian Herbarium (1998−) *FloraBase − The Western Australian Flora*. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/; Wilkins, C.F. and Chappill, J.A. (2003) Taxonomic revision of *Guichenotia* (Lasiopetaleae: Malvaceae *s.l.* or Sterculiaceae). *Australian Systematic Botany* 16, 323-360.

Current status: *Guichenotia seorsiflora* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in July 2004 and is currently ranked as Critically Endangered (CR) under World Conservation Union (IUCN 2001) criteria C2a(i);D due to the low number of mature individuals and continuing decline. The species is not currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats to the species are road and firebreak maintenance activities, erosion, competition, rabbit activity, inappropriate fire regimes, gravel extraction, weeds and poor recruitment.

Description: *Guichenotia seorsiflora* is an erect, multi-stemmed, spreading shrub, 30 to 55 cm high. The upper surface of the leaves, and young stems, are covered with white stellate hairs with dark tan centres. The leaves are erect, narrowly ovate to linear. The inflorescence is 14 to 30 mm long, and consists of a single flower. The calyx is salmon pink when in bud, becoming white, or pink, 10 to 14 mm long, with very prominent pleating at the point of lobe fusion. The petals are erect, sessile, dark red, obovate, cup-shaped and glabrous. The ovary is ovoid, and cells have no lateral indentations.

Habitat requirements: *Guichenotia seorsiflora* occurs in grey-brown sandy clay and laterite or lateritic loam, on slopes below breakaways. The slope is an ecotone between *Dryandra* scrub (breakaway) and *Eucalyptus* mallee woodland (below).

Habitat critical to the survival of the species, and important populations: Given that *Guichenotia seorsiflora* is ranked as CR, it is considered that all known habitat for wild populations is habitat critical to the survival of the species, and that all wild populations are important populations. Habitat critical to the survival of *G. seorsiflora* includes the area of occupancy of populations, areas of similar habitat surrounding and linking populations (these providing potential habitat for population expansion and for pollinators), additional occurrences of similar habitat that may contain undiscovered populations of the species or be suitable for future translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the species.

Benefits to other species or ecological communities: Recovery actions implemented to improve the quality or security of the habitat of *Guichenotia seorsiflora* will also improve the status of associated native vegetation, including a number of Priority flora.

International obligations: *Guichenotia seorsiflora* is not listed under any specific international treaty and this IRP does not affect Australia's obligations under any other international agreements. However, the 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.

Indigenous Consultation: Although the Aboriginal Sites Register maintained by the Department of Indigenous Affairs does not list any significant sites in the vicinity of populations of *Gastrolobium diabolophyllum*, input and involvement is being sought through the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs to determine if there are any issues or interests. As this is not expected to be completed before the approval of the IRP, further consultation has been included as a recovery action to ensure there has been Indigenous engagement in relation to the recovery actions posed in this plan.

Social and economic impacts: As Population 1 and Subpopulation 3b occur on private property the protection of *Guichenotia seorsiflora* may potentially affect development and asset protection measures at these sites.

Affected interests: The protection of the species may potentially impact on Shire operations and private landholder activities.

Evaluation of the Plan's Performance: DEC in conjunction with the Avon-Mortlock District Threatened Flora and Communities Recovery Team (AMDTFCRT), Yilgarn District Threatened Flora and Communities Recovery Team (YDTFCRT) and Great Southern District Threatened Flora Recovery Team (GSDTFRT) 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.

Existing Recovery Actions: The following recovery actions have been or are currently being implemented:

1. Surveys for *Guichenotia seorsiflora* were undertaken in 1997 and 2000.
2. Declared Rare Flora (DRF) markers have been installed at Population 2 and Subpopulation 4b.
3. Seed collections have been made from *Guichenotia seorsiflora* including 320 seeds from Population 1 in October 1997, 662 seeds from Population 4 in October 2006 and an unknown amount of seed from Population 1 in September 2006.
4. DEC staff from the Avon-Mortlock, Yilgarn and Great Southern Districts regularly monitor populations.
5. The AMDTFCRT, YDTFCRT and GSDTFRT are overseeing the implementation of this IRP and will include information on progress in their annual reports to DEC's Corporate Executive and funding bodies.

IRP Objective: The objective of this IRP is to abate identified threats and maintain or enhance *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 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 twenty percent or more over the term of the plan.

Recovery actions

1. Coordinate recovery actions
2. Nominate *Guichenotia seorsiflora* for listing under the Commonwealth EPBC Act
3. Map habitat critical to the survival of *Guichenotia seorsiflora*
4. Install DRF markers
5. Investigate methods to minimise erosion
6. Undertake weed control
7. Collect seed and other material
8. Monitor populations
9. Implement rabbit control
10. Conduct further surveys
11. Develop and implement a fire management strategy
12. Develop and implement disturbance trials
13. Achieve long-term protection of habitat
14. Liaise with relevant land managers and Indigenous groups
15. Promote awareness
16. Obtain biological and ecological information
17. Start the translocation process
18. Review this IRP and assess the need for further recovery actions

1. BACKGROUND

History

The first known collection of *Guichenotia seorsiflora* was made near Quairading by S. Davies in 1965. In 1997 and again in 2000 staff from the WA Herbarium undertook surveys for the species. During the second survey a total of 150 km of roadsides and 15 reserves in the vicinity of known populations were searched with one new population discovered. The species was formally described by Wilkins and Chappill in 2003.

Guichenotia seorsiflora is currently known from four populations together containing approximately 110 mature individuals.

Description

Guichenotia seorsiflora is an erect, multi-stemmed, spreading shrub, 30 to 55 cm high. The upper surface of the leaves, and young stems, are covered with white stellate hairs with dark tan centres. The leaves are erect, narrowly ovate to linear. The inflorescence is 14 to 30 mm long, and consists of a single flower. The calyx is salmon pink when in bud, becoming white, or pink, 10 to 14 mm long, with very prominent pleating at the point of lobe fusion. The petals are erect, sessile, dark red, obovate, cup-shaped and glabrous. The ovary is ovoid, and cells have no lateral indentations (Wilkins and Chappill 2003).

Guichenotia seorsiflora is similar to *G. sarotes* but can be distinguished by its solitary flowers, narrowly obovate epicalyx bracts and base of the inner surface of the calyx with soft, white, erect-armed stellate hairs (Wilkins and Chappill 2003).

Distribution and habitat

Guichenotia seorsiflora is known from four fragmented populations east of Perth in the Cunderdin, Corrigin and Kellerberrin areas, ranging from 50 to 100 km apart. The species is restricted to an estimated area of occupancy of 0.024 km^2.

The species occurs in grey-brown sandy clay and laterite or lateritic loam, on slopes below breakaways. The slope is an ecotone between *Banksia* scrub (breakaway) and *Eucalyptus* mallee woodland (below) (Wilkins and Chappill 2003).

Table 1. Summary of population land vesting, purpose and manager

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
1. South of Cunderdin	Avon-Mortlock	Cunderdin	Freehold	Private Property	Landowners
2. South of Corrigin	Great Southern	Corrigin	Shire of Corrigin	Road Reserve	Shire of Corrigin
3a. South east of Doodlakine	Yilgarn	Kellerberrin	Shire of Kellerberrin	Road Reserve	Shire of Kellerberrin
3b. South east of Doodlakine	Yilgarn	Kellerberrin	Freehold	Private Property	Landowners
4a. North west of Kellerberrin	Yilgarn	Kellerberrin	Conservation Commission of Western Australia	Conservation of Flora and Fauna	DEC
4b. North of Kellerberrin	Yilgarn	Kellerberrin	Shire of Kellerberrin	Road Reserve	Shire of Kellerberrin

Populations in **bold text** are considered to be important populations.

Biology and ecology

The specific name of *Guichenotia seorsiflora* is derived from the Greek *seorsi* meaning individual and *floris* meaning flower, in reference to its single flowered inflorescence (Wilkins and Chappill 2003).

There is little known about the biology and ecology of the species, and recovery actions refer to a need for research.

Threats

Guichenotia seorsiflora was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in July 2004 and is currently ranked as Critically Endangered (CR) under World Conservation Union (IUCN 2001) criteria C2a(i);D due to the low number of mature individuals and continuing decline. The species is not currently listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats to the species are road and firebreak maintenance activities, erosion, competition, rabbit activity, inappropriate fire regimes, gravel extraction, weeds and poor recruitment.

- **Road and firebreak maintenance activities** threaten Population 2 and subpopulations 3a, 4a and 4b. Threats include grading, herbicide application, construction and maintenance of drainage channels and the mowing roadside vegetation.
- **Erosion** due to surface water flow from the road threatens Population 2.
- **Competition** from a native vine species (*Cassytha* sp.) is a potential threat to Subpopulation 4b. The vine competes for light, nutrients and physically restricts the host.
- **Rabbit** (*Oryctolagus cuniculus*) **activity** has been observed at Population 2 and Subpopulation 4a. However, it is not known how great an impact they are having on the species.
- **Inappropriate fire regimes** is a threat to all populations of *Guichenotia seorsiflora* and may also facilitate weed invasion.
- **Future gravel extraction** is a potential threat to Population 2.
- **Weeds** are a threat to Population 4.
- **Poor recruitment** has been observed at some populations and may be due to a reduction of fire or other factors that influence reproduction.

The intent of this plan is to provide actions that will deal with immediate threats to *Guichenotia seorsiflora*. Although climate change may have a long-term effect on the species, actions taken directly to prevent the impact of climate change are beyond the scope of this plan.

Table 2. Summary of population information and threats

Pop. No. & Location	Land Status	Year / No. of plants	Current Condition	Threats
1. South of Cunderdin	Private Property	1997 17 2000 16 2001 69 2006 4	Healthy/moderate	Inappropriate fire regimes
2. South of Corrigin	Shire Road Reserve	1997 46 2000 26 2005 63 2006 56	Healthy	Road maintenance, erosion, inappropriate fire regimes, rabbits, gravel extraction
3a. South east of Doodlakine	Shire Road Reserve	1992 1* 2000 0 2006 0 2008 1	Healthy	Road maintenance, inappropriate fire regimes, poor recruitment
3b. South east of Doodlakine	Private Property	1992 1* 2000 0 2006 1 2008 46	Healthy	Inappropriate fire regimes
4a. North west of Kellerberrin	Nature Reserve	2000 2 (1) 2005 2 2006 2 2008 1	Moderate	Firebreak maintenance, rabbits, weeds, inappropriate fire regimes, poor recruitment
4b. North of Kellerberrin	Shire Road Reserve	2000 2 2005 1 2006 2 2008 2	Moderate	Vine infestation, weeds, road maintenance, inappropriate fire regimes, poor recruitment

Note 1: ( ) = number of seedlings; * = combined total for subpopulation 3a and 3b. Note 2: Plant numbers appear to fluctuate greatly which may be a result of other species of *Guichenotia* being included during counting.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Development and/or land clearing in the immediate vicinity of *Guichenotia seorsiflora* will require assessment. On-ground works should not be approved unless the proponents can demonstrate that their actions will have no significant negative 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 *Guichenotia seorsiflora* is ranked as CR, it is considered that all known habitat for wild populations is critical to the survival of the species, and that all wild populations are important populations. Habitat critical to the survival of *G. seorsiflora* includes the area of occupancy of populations, areas of similar habitat surrounding and linking populations (these providing potential habitat for population expansion and for pollinators), additional occurrences of similar habitat that may contain undiscovered populations of the species or be suitable for future translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the species.

Benefits to other species or ecological communities

Recovery actions implemented to improve the quality or security of the habitat of *Guichenotia seorsiflora* will improve the status of associated native vegetation, including other rare flora species. The five Priority flora taxa listed in the table below occur in association with *G. seorsiflora*:

Table 3. Conservation-listed flora species occurring in habitat of *Guichenotia seorsiflora*

Species name	Conservation Status (WA)	Conservation Status (EPBC Act 1999)
Acacia lirellata subsp. *compressa*	Priority 2	None
Leucopogon amplectens	Priority 2	None
Cryptandra dielsii	Priority 3	None
Daviesia oxylobium	Priority 4	None
Acacia merrickiae	Priority 4	None

For a description of the priority categories see Atkins (2008).

Guichenotia seorsiflora does not occur in any Threatened Ecological Communities (TECs). The species is, however, near Salmon gum woodlands and York gum woodlands and could possibly be within these community types. These woodland communities are currently being assessed as possible Priority Ecological Communities (PECs). For a description of the TEC and PEC categories see DEC (2007).

International obligations

Guichenotia seorsiflora is not listed under any specific international treaty and this IRP does not affect Australia's obligations under any other international agreements. However, 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.

Indigenous Consultation

Although the Aboriginal Sites Register maintained by the Department of Indigenous Affairs does not list any significant sites in the vicinity of populations of *Guichenotia seorsiflora*, input and involvement is being sought through the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs to determine if there are any issues or interests. As this is not expected to be completed before the approval of the IRP, further consultation has been included as a recovery action to ensure there has been Indigenous engagement in relation to the recovery actions posed in this plan.

Social and economic impacts

As Population 1 and Subpopulation 3b occur on private property the protection of *Guichenotia seorsiflora* may potentially affect development and asset protection measures at these sites.

Affected interests

The protection of the species may potentially impact on Shire operations and private landholder activities.

Evaluation of the Plan's Performance

DEC in conjunction with the Avon-Mortlock District Threatened Flora and Communities Recovery Team (AMDTFCRT), Yilgarn District Threatened Flora and Communities Recovery Team (YDTFCRT) and Great Southern District Threatened Flora Recovery Team (GSDTFRT) 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 five years of implementation.

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

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

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

3. RECOVERY ACTIONS

Existing recovery actions

In 1997 and again in 2000 staff from the WA Herbarium undertook surveys for the species. During the second survey a total of 150 km of roadsides and 15 reserves in the vicinity of known populations were searched with one new population discovered.

Declared Rare Flora (DRF) markers have been installed at Population 2 and Subpopulation 4b.

Seed collections include 320 seeds from Population 1 in October 1997, 662 from Population 4 in October 2006 and an unknown amount from Population 1 in September 2006. All collections are stored in DEC's Threatened Flora Seed Centre (TFSC) at –18°C. The TFSC test the viability of the seed initially and after one year in storage. The germination rate of *G. seorsiflora* seed has been tested and was found to be 90%.

Staff from DEC's Avon-Mortlock, Yilgarn and Great Southern Districts regularly monitor populations.

The AMDTFCRT, YDTFCRT and GSDTFRT are overseeing the implementation of this IRP and will include information on progress in their annual reports to DEC's Corporate Executive and funding bodies.

Future recovery actions

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

1. Coordinate recovery actions

The AMDTFCRT, YTDFCRT and GSDTFRT will continue to oversee the implementation of recovery actions for *Guichenotia seorsiflora* and will include information on progress in their annual reports to DEC's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $3,000 per year

2. Nominate *Guichenotia seorsiflora* for listing under the Commonwealth EPBC Act

Staff from DEC's Species and Communities Branch (SCB) have developed a Species Profile and Threats (SPRAT) form for this species and have forwarded it to the Commonwealth Department of the Environment, Water, Heritage and the Arts for referral to the Commonwealth Threatened Species Scientific Committee (TSSC) for endorsement under the EPBC Act. The nomination of this species for listing needs to be pursued.

Action: Follow up the nomination of *Guichenotia seorsiflora* for listing under the Commonwealth EPBC Act
Responsibility: DEC (Species and Communities Branch)
Cost: $200 in year 1

3. Map habitat critical to the survival of *Guichenotia seorsiflora*

It is a requirement of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that spatial data relating to habitat critical for the survival of threatened species be determined. Although habitat critical to the survival of *Guichenotia seorsiflora* is alluded to in Section 1, it has not yet been mapped and this will be addressed under this action. If additional populations are located, then habitat critical to their survival will be determined and mapped also.

Action: Map habitat critical to the survival of *Guichenotia seorsiflora*
Responsibility: DEC (Species and Communities Branch (SCB), Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $3,000 in year 1

4. Install DRF markers

DRF markers are required for Subpopulations 3a and 4a.

Action: Install DRF markers
Responsibility: DEC (Yilgarn District) through the YDTFCRT
Cost: $2,000 in year 1

5. Investigate methods to minimise erosion

Erosion due to surface water flow from an adjacent road is a threat to Population 2. Ways of minimising the erosion will be investigated.

Action: Investigate methods to minimise erosion
Responsibility: DEC (Great Southern District) through the GSDTFRT
Cost: $3,000 in years 1 and 2

6. Undertake weed control

Weeds and invasive native plants threaten Population 4 and the following actions are recommended:

1. Determine which weeds are present.
2. Select appropriate technique; herbicide, mowing or hand weeding.

3. Control invasive weeds when they first emerge.
4. Control Dodder Laurel infestations by hand removal where deemed necessary.
5. Revegete with local species (in Autumn) to maintain low weed levels.
6. Monitor weed treatment on weed death and the tolerance of *Guichenotia seorsiflora* and associated native plant species.
7. Report on the method and success of threatments and their effect on *Guichenotia seorsiflora* and associated native plant species.

Action: Undertake weed control
Responsibility: DEC (Yilgarn District, Science Division) through the YDTFCRT
Cost: $2,000 per year, as required

7. Collect seed and other material

To ensure the genetic diversity of the species is captured DEC's TFSC staff will collect seed from all populations. Cuttings will also be collected to establish a living collection.

Action: Collect seed and other material
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts, TFSC), BGPA through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $2,500 per year

8. Monitor populations

Monitoring weed invasion, habitat degradation, hydrology (inundation and drought), erosion and population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity is essential.

Action: Monitor populations
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $3,500 per year

9. Implement rabbit control

Baiting using 1080 oats should be undertaken when monitoring ascertains the threat of rabbit damage is high.

Action: Implement rabbit control where necessary
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT; relevant land managers
Cost: $3,000 in first, third and fifth years

10. Conduct further surveys

It is recommended that areas of potential habitat be surveyed for the presence of *Guichenotia seorsiflora* during its flowering period.

Action: Conduct further surveys
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $3,000 in years 1, 3 and 5

11. Develop and implement a fire management strategy

Fire will be prevented from occurring in the habitat of populations, except where it is being used experimentally as a recovery tool. A fire management strategy will be developed that recommends fire frequency, intensity, season, and control measures.

Action: Develop and implement a fire management strategy

Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $2,500 in first year and $1,000 in subsequent years

12. Develop and implement disturbance trials

Suitable disturbance events may be the most effective means of germinating *Guichenotia seorsiflora* seed in the wild. Different disturbance techniques should be investigated (i.e. soil disturbance and fire) to determine the most successful and appropriate method.

Action: Develop and implement disturbance trials
Responsibility: DEC (Science Division, Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $3,400 in years 1 and 3, $700 in years 2, 4 and 5

13. Achieve long-term protection of habitat

Ways and means of improving the security of populations and their habitat will be investigated. The owner of private property containing Subpopulation 3b has expressed interest in selling the area of remnant vegetation containing the species The lot also contains the threatened and priority flora *Grevillea dryandroides* subsp. *hirsuta* (Vulnerable), *Acacia lirellata* subsp. *compressa* (Priority 2) and *Daviesia oxylobium* (Priority 4).

Action: Achieve long-term protection of habitat
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $1,500 per year

14. Liaise with relevant land managers and Indigenous groups

Staff from DEC's Wheatbelt Region will liaise with appropriate land managers to ensure that populations of *Guichenotia seorsiflora* are not damaged or destroyed. Input and involvement will also be sought from Indigenous groups that have an active interest in areas that are habitat for *G. seorsiflora*.

Action: Liaise with relevant land managers and Indigenous groups
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $500 per year

15. Promote awareness

The importance of biodiversity conservation and the protection of *Guichenotia seorsiflora* should be promoted to the public through an information campaign using local print and electronic media and by setting up poster displays. Formal links with local naturalist groups and interested individuals will also be encouraged.

Action: Promote awareness
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts, SCB, and Strategic Development and Corporate Affairs Division) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $1,600 in year 1 and $1,000 in years 2-5

16. Obtain biological and ecological information

Knowledge of the biology and ecology of the species will provide a scientific basis for its management in the wild. It will ideally include:

1. Study of the soil seed bank dynamics and the role of disturbance, competition, drought, inundation and grazing on recruitment and seedling survival.

2. Determination of reproductive strategies, phenology and seasonal growth.
3. Investigation of the mating system and pollination biology.
4. Investigation of population genetic structure, levels of genetic diversity and minimum viable population size.

Action: Obtain biological and ecological information
Responsibility: DEC (Science Division, Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $10,000 per year

17. Start the translocation process

If surveys fail to locate new populations a translocation proposal will be developed and suitable translocation sites selected. Information on the translocation of threatened plants and animals in the wild is provided in DEC's Policy Statement No. 29 *Translocation of Threatened Flora and Fauna* (CALM 1995). All translocation proposals require endorsement by DEC's Director of Nature Conservation. Monitoring of translocations is essential and will be included in the timetable developed for the Translocation Proposal.

Action: Start the translocation process if necessary
Responsibility: DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $2,200 in year 5

18. Review this IRP and assess the need for further recovery actions

If *Guichenotia seorsiflora* is still listed as threatened flora at the end of the five-year term of this IRP, the need for further recovery actions, or a review of this IRP will be assessed and a revised plan prepared if necessary.

Action: Review this IRP and assess the need for further recovery actions
Responsibility: DEC (SCB, Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT
Cost: $2,000 in year 5

Table 4. Summary of Recovery Actions

Recovery Action	Priority	Responsibility	Completion Date
Coordinate recovery actions	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Nominate *Guichenotia seorsiflora* for listing under the Commonwealth EPBC Act	High	DEC (Species and Communities Branch)	2010
Map habitat critical to the survival of *Guichenotia seorsiflora*	High	DEC (Species and Communities Branch (SCB), Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	2010
Install DRF markers where necessary	High	DEC (Yilgarn District) through the YDTFCRT	2010
Investigate methods to minimise erosion	High	DEC (Great Southern District) through the GSDTFRT	2011
Undertake weed control	High	DEC (Yilgarn District, Science Division) through the YDTFCRT	Ongoing
Collect seed and other material	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts, TFSC), BGPA through the AMDTFCRT, YDTFCRT and GSDTFRT	2013
Monitor populations	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Implement rabbit control	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT; relevant land managers	Ongoing

Conduct further surveys	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Develop and implement a fire management strategy	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Developed by 2010 with implementation ongoing
Develop and implement disturbance trials	High	DEC (Science Division, Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	2013
Achieve long-term protection of habitat	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Liaise with relevant land managers and Indigenous groups	High	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Promote awareness	Medium	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts, SCB, and Strategic Development and Corporate Affairs Division) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Obtain biological and ecological information	Medium	DEC (Science Division, Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	2014
Start the translocation process	Medium	DEC (Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	Ongoing
Review the IRP and assess the need for further recovery actions	Medium	DEC (SCB, Avon-Mortlock, Yilgarn and Great Southern Districts) through the AMDTFCRT, YDTFCRT and GSDTFRT	2014

4. TERM OF PLAN

This IRP will operate from July 2009 to June 2014 but will remain in force until withdrawn or replaced. If the species is still listed as threatened after five years, the need for further recovery actions will be determined.

5. REFERENCES

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6. TAXONOMIC DESCRIPTION

Guichenotia seorsiflora

Wilkins, C.F. and Chappill, J.A. (2003) Taxonomic revision of *Guichenotia* (Lasiopetaleae: Malvaceae *s.l.* or Sterculiaceae). *Australian Systematic Botany* 16, 323-360.

Shrub, erect, spreading, 30-45 x 30-55 cm; *young stems* with tomentum of white stellate hairs up to 0.2 mm diam., with dark tan centres. *Stipules* shortly petiolate, base indistinctly oblique, blade leaf-like, narrowly ovate to linear, 9.0-12.5 x 1.1-1.5 mm, ½-2/3 of leaf length, apex obtuse to acute. *Leaves* erect, petiole 0.8-1.5 mm long, base attenuate, blade narrowly ovate to linear, 8-20 x 1-2 mm; adaxial surface with dense, fine, white stellate hairs up to 0.15 mm diam., rarely with stalked, clavate glands present, glabrescent; adaxial surface, rib with a tomentose of white stellate hairs up to 0.15 mm diam., with dark brown centres, blade with dense, white stellate hairs; margin revolute; apex obtuse. *Inflorescence* 14-30 mm long, single flower. *Bud* base cordate, apex acute. *Peduncle* recurved, 9-25 mm long. *Pedicel* 5-7 mm long. Peduncle with dense hairs, becoming glabrous at the base and pedicel, with a tomentum of white stellate hairs up to 0.2 mm diam. with brown centres. *Bract* and *epicalyx bracts* shortly petiolate, base attenuate, blade green with red petiole and rib, apex acute. *Bract* linear or narrowly obovate, 2.8-4 x *c*. 0.5 mm. *Epicalyx bracts* linear or narrowly obovate, 1.3-2 mm below calyx, 1-4 x *c*. 0.5 mm. *Calyx* salmon pink in bud, becoming white, or pink, 10-14 mm long, very prominent pleating at the point of lobe fusion, tube *c*. 1/3 of total calyx length, total lobe broadly ovate *c*. 12.5 x 10.4 mm, apex acute; base of adaxial surface same colour as apex, base and centre with dense, fine, white erect-armed stellate hairs up to 0.15 mm diam., becoming scattered on margin; abaxial surface of calyx, base and rib with medium-density, white stellate hairs up to 0.4 mm diam. with dark brown centres, apex with scattered white stellate hairs. *Petals* erect, sessile, dark red, obovate, cup-shaped, 1-2 x 0.7-1.7 mm, glabrous or with 1 apical stellate hair, apex rounded or acute. *Staminal tube* glabrous, short 0.1-0.3 mm or absent. *Staminodes* absent. *Filaments* white, glabrous, broad 0.8 x 1-1.5 mm (0.1 visible below anther). *Anthers* touching laterally at the apex, dark red, very narrowly ovate, 3-4.5 x 0.7-1.3 mm, ventri-adnate, dorsal surface with deep indentations, apex recurved, dark red, obtuse, glabrous, pores narrowly ovate. *Ovary* ovoid, *c*. 1.5 x 1.3 mm; cells with no lateral indentations and central axis of cells fused with tissue, inner surface of loculus with sparse to medium-density stellate hairs; outer surface with a tomentum of white, stellate hairs up to 0.15 mm diam., intermixed with short-stalked, pink or white, globose glands up to 0.15 mm long. *Ovules* 3 or 4 per cell. *Style* 2.2-4 mm long, base with scattered, sessile, stellate hairs, distally with disc-like stellate hairs 1/3-1/2 of length, stalks equal lengths. *Fruit* sessile, chartaceous, ovoid, *c*. 7 x 7.5-10 mm. *Seed* ellipsoid, straight, 1.8-2 x 1 mm, outer surface with scattered stellate hairs. *Aril* a cap with a yellow centre and 2 lobes to half of the length of the seed. *Seedling* not observed.