

INTERIM RECOVERY PLAN NO. 261

# CHINOCUP WATTLE

*(Acacia leptalea)*

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 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This IRP will operate from April 2008 to March 2013 but will remain in force until withdrawn or replaced.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 Vulnerable (VU), this IRP will be reviewed after five years and the need for further recovery actions assessed.

This IRP was approved by the Director of Nature Conservation on the 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 Douglas<sup>1</sup> and Bethea Loudon<sup>2</sup>

<sup>1</sup> Project Officer, Species and Communities Branch, DEC, PO Box 51 Wanneroo WA, 6946.

<sup>2</sup> Flora Conservation Officer, Great Southern District, DEC, PO Box 811, Katanning WA 6317.

## ACKNOWLEDGMENTS

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

Andrew Crawford	Technical Officer, DEC's Threatened Flora Seed Centre
Bob Elkins	Technical Assistant, Botanic Gardens and Parks Authority
Amanda Shade	Assistant curator of displays and development, Botanic Gardens Parks Authority
Andrew Brown	Threatened Flora Coordinator, Species and Communities Branch, DEC

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 Ian Dixon. Image used with the permission of the Western Australian Herbarium, DEC (<http://florabase.calm.wa.gov.au/help/copyright>). Accessed 2007.

## CITATION

This IRP should be cited as:

Department of Environment and Conservation (2008). Chinocup Wattle (*Acacia leptalea*) Interim Recovery Plan 2008-2013. Interim Recovery Plan No. 261. Department of Environment and Conservation, Western Australia.

**SUMMARY**

<b>Scientific Name:</b>	<i>Acacia leptalea</i>	<b>Common Name:</b>	Chinocup Wattle
<b>Family:</b>	Mimosaceae	<b>Flowering Period:</b>	June-July, extending to August
<b>DEC Region:</b>	Wheatbelt	<b>DEC District:</b>	Great Southern
<b>Shire:</b>	Kent	<b>Recovery Team:</b>	Great Southern Threatened Flora Recovery Team

**Illustrations and/or further information:** Atkins, K. (2008) *Declared Rare and Priority Flora List for Western Australia*. Department of Environment and Conservation, Western Australia; Brown, A., Thomson-Dans, C. and Marchant N. (1998). *Western Australia's Threatened Flora*. Department of Conservation and Land Management, Western Australia. pp 63; Maslin, B.R. (1999). *Acacia miscellany* 16. The taxonomy of fifty-five species of *Acacia*, primarily Western Australian, in section Phyllodineae (Leguminosae: Mimosoideae). *Nuytsia*. **13(3)**: 367; Maslin, B.R. (2001). *Mimosaceae Acacia part 2. Flora of Australia Volume 11B*. Melbourne: ABR/CSIRO Publishing: pp 13.

**Current status:** *Acacia leptalea* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in 1992 and is currently ranked as Vulnerable (VU) under the World Conservation Union (IUCN 1994) Red List criterion D2, due to the species being known from only a few locations. The main threats are road and firebreak maintenance, inappropriate fire regimes and weed invasion. The species is listed as Endangered (EN) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

*Acacia leptalea* is confined to the southern Wheatbelt of Western Australia where it is known from five populations totaling approximately 2,333 plants. Approximately 70% percent of plants are in Nature Reserves, 21% on Private Property, 3% on road reserves, 3% in a Shire Reserve and 0.3% on Unallocated Crown Land.

**Description:** *Acacia leptalea* is a shrub 0.5 to 2 m tall with branches covered by slightly stiffened distinct hairs that ascend from the surface. The phyllodes are crowded, scattered or slightly whorled, diverging from the axis almost at right angles. They may be straight, circular in cross-section or slightly compressed, slender, 5 to 8 mm long and 0.3 to 0.4 mm wide, with an apex that is obliquely narrowed and with small stiff, sharp, short projections of the midvein that are off centre. The inflorescences are one headed racemes. Pods are up to 2.5 cm long, 4 to 5 mm wide, covered in slightly stiffened distinct hairs ascending from the surface. Seeds are longitudinal, ovate, 3 to 3.5 mm long, shiny and brown, the aril is almost at the apex, and may or may not be club shaped (Maslin 2001).

*Acacia leptalea* appears to be most closely related to *Acacia viscifolia*, which is distinguished by its sparse, appressed peduncle hairs, small bracteoles that do not taper gradually to a protracted point or protrude in the buds and narrower, hairless pods, also its appressed branchlet hairs (Maslin 2001).

**Habitat requirements:** *Acacia leptalea* occurs on slopes with sand or sandy loams and clays in open mallee woodland with dense understorey.

**Habitat critical to the survival of the species, and important populations:** Given that *Acacia leptalea* is known from only five populations, it is considered that all known habitat for wild populations is critical to the survival of the species, and that all known wild populations are important populations. Habitat critical to the survival of *A. leptalea* includes the area of occupancy of extant populations, areas of similar habitat (i.e. sandy soils or sandy loams and clays on slopes in open mallee woodland with dense understorey) surrounding and linking important populations (this is necessary to allow access for pollinators) 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 *Acacia leptalea* will also improve the status of associated native vegetation dominated by *Melaleuca ?uncinata*, *Melaleuca adnata*, *Hakea lissocarpha*, *Santalum acuminatum* and *Dianella revoluta*.

**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. *Acacia leptalea* is not listed under any specific international treaty however, and therefore this IRP does not affect Australia's obligations under any other international agreements.

**Indigenous Consultation:** According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register, one subpopulation of the species covered by this IRP occurs within a registered site of Aboriginal significance.

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 taxa, 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 IRP is unlikely to cause significant adverse social and economic impacts but, as one population is located on Private Property, its protection has the potential to affect farming activities. Where a population is located on Private Property, recovery actions refer to continued liaison between stakeholders with regards to this area.

**Affected interests:** Stakeholders potentially affected by the implementation of this plan include owners of Private Property, the Shire of Kent and the Water and Rivers Commission.

**Evaluation of the plan's performance:** DEC, in conjunction with the 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.

### Completed recovery actions

1. Land managers including private land owners, Water and Rivers Commission and the Shire of Kent with populations or parts of populations on their property 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 and 4, and subpopulations 1b-c, 2a-b and 5a.
3. Subpopulation 2a, vested with the Water and Rivers Commission, and 2c on Private Property are fenced.
4. Seed collections are stored with DEC's Threatened Flora Seed Centre (TFSC).
5. The Botanic Gardens and Parks Authority (BGPA) holds one plant of *Acacia leptalea* in their Rare Flora Garden.

### Ongoing and future recovery actions

1. The GSDTFRT is overseeing the implementation of this IRP and will include it in its annual report to DEC's Corporate Executive and funding bodies.
2. Staff from DEC's Great Southern District 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 in populations 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 in populations have decreased by ten percent or more over the term of the plan.

### Recovery actions

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| <ol style="list-style-type: none"> <li>1. Coordinate recovery actions</li> <li>2. Liaise with relevant land managers</li> <li>3. Monitor populations</li> <li>4. Seek security of tenure for subpopulations 2a and 2c</li> <li>5. Promote awareness</li> <li>6. Conduct further surveys</li> <li>7. Develop and implement fire and disturbance trails</li> </ol> | <ol style="list-style-type: none"> <li>8. Develop and implement a fire management strategy</li> <li>9. Collect seed and other material to preserve genetic diversity</li> <li>10. Undertake weed control and follow up with regular monitoring and additional control if required.</li> <li>11. Obtain biological and ecological information</li> <li>12. Map habitat critical to the survival of <i>Acacia leptalea</i></li> <li>13. Review the plan and need for further recovery actions</li> </ol> |
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## 1. BACKGROUND

### History

*Acacia leptalea* was first collected between Nyabing and Pingrup by Ken Newbey in 1971 and was described by Bruce Maslin in 1999 (Maslin 1999).

The species is known from five populations totaling 2,333 plants in DEC's Great Southern District.

### Description

*Acacia leptalea* is a shrub 0.5 to 2 m tall with branches covered in slightly stiffened distinct hairs that ascend from the surface. On older plants raised leaf bases become prominent. The phyllodes are crowded, scattered or slightly whorled, diverging from the axis almost at right angles. They may be straight, circular in cross-section or slightly compressed, slender, 5 to 8 mm long and 0.3 to 0.4 mm wide, with an apex that is obliquely narrowed and with small stiff, sharp, short projections of the midvein that are off centre. The phyllodes either lack hairs or are sparsely covered in slightly stiffened distinct hairs ascending from the surface, nerves are not discernable and glands are absent. The inflorescences are one headed racemes. The raceme axis is 0.5 to 1 mm long, the peduncles are 3 to 4 mm long, densely pale yellow and covered in very short fine straight erect hairs, the basal bract is solitary, the heads are globular, 4 mm in diameter, dry, twenty five flowered and golden, the bracteoles taper gradually to a protracted point and in buds they protrude. Flowers are five merous, the sepals a half to three quarters united, densely pale yellow and covered in very short fine straight erect hairs. Pods are up to 2.5 cm long, 4 to 5 mm wide, covered in slightly stiffened distinct hairs ascending from the surface, and the surface is slightly sticky, the dehisced valves are curved to sigmoid. Seeds are longitudinal, ovate, 3 to 3.5 mm long, shiny and brown, the aril is almost at the apex, and may be club shaped (Maslin 2001).

*Acacia leptalea* appears to be most closely related to *Acacia viscifolia*, which is distinguished by its sparse, appressed peduncle hairs, small bracteoles that do not taper gradually to a protracted point or protrude in the buds and narrower, hairless pods, also its appressed branchlet hairs (Maslin 2001).

### Distribution and habitat

*Acacia leptalea* is confined to the southern Wheatbelt of Western Australia.

Habitat is sands or sandy loams and clays supporting open mallee woodland with a dense understorey. Associated species include *Eucalyptus platypus*, *Allocasuarina campestris*, *Melaleuca ?uncinata*, *Melaleuca adnata*, *Hakea lissocarpha*, *Hakea adnata*, *Grevillea oligantha*, *Santalum acuminatum* and *Dianella revoluta*.

### Summary of population land vesting, purpose and tenure

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
<b>1a W of Pingrup</b>	Great Southern	Shire of Kent	Shire of Kent	Recreation Reserve	Shire of Kent
<b>1b W of Pingrup</b>	Great Southern	Shire of Kent	Unvested Reserve	Road Reserve	Shire of Kent
<b>1c W of Pingrup</b>	Great Southern	Shire of Kent	Unvested Reserve	Road Reserve	Shire of Kent
<b>2a W of Pingrup</b>	Great Southern	Shire of Kent	Water & Rivers Commission	Water and Conservation of Flora and Fauna	DEC
<b>2b W of Pingrup</b>	Great Southern	Shire of Kent	Shire of Kent	Road Reserve	Shire of Kent
<b>2c W of Pingrup</b>	Great Southern	Shire of Kent	Freehold	Private Property	Landholders
<b>3 E of Pingrup</b>	Great Southern	Shire of Kent	Conservation Commission of Western Australia	Conservation of Flora and Fauna	DEC
<b>4 E of Pingrup</b>	Great Southern	Shire of Kent	Conservation Commission of Western Australia	Conservation of Flora and Fauna	DEC
<b>5a W of Pingrup</b>	Great Southern	Shire of Kent	Unvested Reserve	Road Reserve	Shire of Kent
<b>5b W of Pingrup</b>	Great Southern	Shire of Kent	DLI	Unallocated Crown Land	DPI / DEC

Populations in **bold text** are considered to be Important Populations; DEC = Department of Environment and Conservation, DPI = Department of Planning and Infrastructure

## Biology and ecology

*Acacia leptalea* appears to be killed by fire but germinates from soil stored seed post fire. Germination has also been observed following grading of firebreaks. Flowering occurs between July and August, with immature fruit appearing between October and November and dehisced fruit recorded in February. The species is thought to be insect pollinated.

Germination trials for *Acacia leptalea* conducted by DEC's Threatened Flora Seed Centre (TFSC) produced germination results ranging from 92-98% (Andrew Crawford pers. comm.)

## Threats

*Acacia leptalea* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in 1992 and is currently ranked as Vulnerable (VU) under the World Conservation Union (IUCN 1994) Red List criterion D2, due to the species being known from only a few locations. The main threats are road and firebreak maintenance, inappropriate fire regimes and weed invasion. The species is listed as Endangered (EN) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

- **Road and Firebreak maintenance.** Populations 3 and 4, and subpopulations 1bc, 2ab and 5a border firebreaks and are threatened by grading and spraying of verge vegetation.
- **Inappropriate fire regimes.** Frequent fire may result in the death of immature plants and reduce the quantity of soil-stored seed. Conversely, a lack of fire for prolonged periods is also detrimental as this species requires fire to stimulate germination and a lack of fire results in population senescence.
- **Weed invasion** is a threat in Subpopulations 1b, 2b and 5b. Weeds compete for resources reducing the health of plants. Heavy weed infestation also generates high fuel loads which increase the frequency and intensity of fire.

## Summary of population information and threats

Pop. No. & Location	Land Status	Year/No. plants	Condition	Threats
<b>1a</b> W of Pingrup	Recreation Reserve	1990 120 [2]* 1992 100 1995 120* 1996 96 (6) [5] 2003 82 (4) [7]*	Healthy	
<b>1b</b> W of Pingrup	Road Reserve	1990 120 [2]* 1992 20 1995 120* 1997 28 [6] 2003 82 (4) [7]*	Healthy	Road maintenance, weeds
<b>1c</b> W of Pingrup	Road Reserve	2000 1 2003 1	Healthy	Grazing
<b>2a</b> W of Pingrup	Water Reserve	1990 350 1995 100 1996 1496 (68) [17] 2004 351 (16) [24]*	Moderate	Firebreak maintenance, weeds
<b>2b</b> W of Pingrup	Road Reserve	1990 50 1996 28 [6] 2001 66 [11]	Healthy	Firebreak maintenance, weeds
<b>2c</b> W of Pingrup	Private Property	1990 30 1996 500 (10) 2004 351 (16) [24]*	Healthy	
<b>3</b> E of Pingrup	Nature Reserve	2002 150	Healthy	Firebreak maintenance, inappropriate fire regimes
<b>4</b> E of Pingrup	Nature Reserve	2003 31 (22)	Healthy	Firebreak maintenance, inappropriate fire regimes
<b>5a</b> W of Pingrup	Road Reserve	2003 1	Healthy	Road maintenance, weeds
<b>5b</b> W of Pingrup	Unallocated Crown Land	2003 6	Healthy	

Populations in **bold text** are considered to be Important Populations; Note: \* = total for both subpopulations, ( ) = number of seedlings, [ ] = number dead

## Guide for decision-makers

Section 1 provides details of current and possible future threats. Developments and/or land clearing in the immediate vicinity of any of the populations of *Acacia leptalea* require assessment. 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 *Acacia leptalea* is ranked as VU, 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 *A. leptalea* includes the area of occupancy of extant populations, areas of similar habitat (i.e. sandy soils or sandy loams and clays on slopes in open mallee woodland with dense understorey) surrounding and linking important populations (this is necessary to allow access for pollinators) 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 *Acacia leptalea* will also improve the status of associated native vegetation.

## 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. *Acacia leptalea* is not listed under any specific international treaty however, and therefore this IRP does not affect Australia's obligations under any other international agreements.

## Indigenous Consultation

According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register one subpopulation of *Acacia leptalea* occurs within a registered site of Aboriginal significance.

## Site of Aboriginal significance

Site ID	Site Name	Site Type	Aboriginal Clan	Population
5053	Chinocup 1	Artefacts / Scatter	Bibbulmun	Subpopulation 2a

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 taxa, 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 IRP is unlikely to cause significant adverse social and economic impacts but, as one population is located on Private Property its protection has the potential to affect farming activities. Recovery actions relating to the population located on Private Property refer to continued liaison between stakeholders which include the land owner.

## **Affected interests**

Stakeholders potentially affected by the implementation of this plan include owners of Private Property, the Shire of Kent and the Water and Rivers Commission.

## **Evaluation of the plan's performance**

DEC in conjunction with the 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.

## **2. RECOVERY OBJECTIVE AND CRITERIA**

### **Objectives**

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.

**Criteria for success:** The number of populations have increased and/or the number of mature individuals in populations 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 in populations 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 Shire of Kent and the Water and Rivers Commission 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 installed at Populations 3 and 4 and Subpopulations 1b-c, 2a-b and 5a.

Subpopulation 2a, vested with the Water and Rivers Commission, and Subpopulation 2c on Private Property are fenced.

DEC's Threatened Flora Seed Centre (TFSC) holds 9,513 seeds collectively from populations 3 and 4, and from subpopulations 1b and 2a. These collections were made in December 1995 (subpopulations 1b and 2a) and December 2003 (populations 3 and 4).

The Botanic Gardens and Parks Authority (BGPA) holds one plant of *Acacia leptalea* in their Rare Flora Garden.

### **Ongoing and future recovery actions**

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

Staff from DEC's Great Southern District monitor all known 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 recovery action if funding is available and other opportunities arise.



### 1. Coordinate recovery actions

The GSDTFRT will continue to coordinate the implementation of recovery actions for *Acacia leptalea* and will include information on progress in their annual reports to DEC's Corporate Executive and funding bodies.

**Action:** Coordinate recovery actions  
**Responsibility:** GSDTFRT  
**Cost:** \$1,400 per year

### 2. Liaise with relevant land managers

Staff from DEC's Great Southern District will liaise with appropriate land owners to ensure that populations are not accidentally damaged or destroyed. Input and involvement will also be sought from any Aboriginal groups that have an active interest in areas that are habitat for *Acacia leptalea*.

**Action:** Liaise with relevant land managers  
**Responsibility:** DEC (Great Southern District), through the GSDTFRT  
**Cost:** \$1,300 per year

### 3. Monitor populations

Monitoring of factors such as weed invasion, habitat degradation, population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity is essential. The populations will be inspected annually and Rare Flora Report Forms completed.

**Action:** Monitor populations  
**Responsibility:** DEC (Great Southern District) through the GSDTFRT  
**Cost:** \$1,700 per year

### 4. Seek security of tenure for Subpopulation 2a and 2c

The conservation status of a portion of remnant vegetation on Private Property supporting Subpopulation 2c will be reviewed and the possibility of additional protection through the reservation system investigated. Protection of this large subpopulation through conservation covenants or registration with the Land for Wildlife or other private land conservation schemes will also be investigated. It is recommended that vesting of Subpopulation 2a be changed from the Water and Rivers Commission to the Conservation Commission and that this land be registered as a Nature Reserve. These actions will secure habitat on which *Acacia leptalea* can be managed and potentially allow for increases in population size.

**Action:** Seek security of tenure for Subpopulation 2a and 2c  
**Responsibility:** DEC (Great Southern District) through the GSDTFRT  
**Cost:** \$1,600 in the first year, \$200 in years 2 and 3.

### 5. Promote awareness

It is recommended that an A4 sized information sheet that provides a description of the species and information about threats and recovery actions be developed for *Acacia leptalea* and 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. In conjunction with this, a publicity campaign will also be run to increase local community awareness of this threatened species. Formal links with local naturalist groups and interested individuals should also be encouraged.

To minimize the risk of accidental or deliberate destruction, it is recommended that the exact location of *A. leptalea* be kept from the general public. Such information should, however, be given to relevant landowners, Shire staff and government authorities.

**Action:** Promote awareness

**Responsibility:** DEC (Great Southern District, Species and Communities Branch (SCB) and Strategic Development and Corporate Affairs Division) through the GSDTFRT  
**Cost:** \$1,600 in the first year, \$1000 in years 3 and 5.

## 6. Conduct further surveys

The known populations of *Acacia leptalea* will be resurveyed to ascertain accurate boundaries and ensure that no plants have been missed during previous surveys. This will be done during the species flowering period, which is June to August.

It is suggested that surveys be done in conjunction with surveying other possible areas of suitable habitat within the Shire and should include appropriate habitat on private land. Volunteers from the local community, wildflower societies and naturalists clubs could be involved in surveys supervised by DEC staff.

**Action:** Conduct further surveys  
**Responsibility:** DEC (Great Southern District) through the GSDTFRT  
**Cost:** \$2,000 in years 1, 3, and 5.

## 7. Develop and implement fire and disturbance trials

DEC's Great Southern District will, in consultation with private landowners, the Shire of Kent, Water and Rivers Commission and relevant authorities develop and implement burn and disturbance trials to stimulate germination and recruitment in *Acacia leptalea* populations. Care will be taken to avoid stimulating competition with existing *A. leptalea* plants. The results of all trials will be monitored regularly and, if successful, a larger scale operation 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 fire and disturbance trials  
**Responsibility:** DEC (Science Division, Great Southern District) through the GSDTFRT, and relevant authorities.  
**Cost:** \$6,900 in years 1, 3 and 5; \$1,100 in years 2 and 4.

## 8. Develop and implement a fire management strategy

Fire stimulates the germination of soil-stored seeds of *Acacia leptalea*. However, fires occurring too frequently result in the premature death of plants reducing the quantity of seed in soil seed banks and reducing recruitment at subsequent disturbance events thus leading to the decline of populations. Populations may senesce in the absence of fire or beneficial disturbance over a prolonged period as mature plants die out and no recruitment occurs to replace them. A fire regime with appropriate fire intensity, frequency and season will be developed to maximize population size and health.

**Action:** Develop and implement a fire management strategy  
**Responsibility:** DEC (Great Southern District) through the GSDTFRT, and relevant authorities.  
**Cost:** \$2,100 in the first year.

## 9. Collect seed and other material to preserve genetic diversity

DEC's TFSC currently holds seed from populations 3 and 4, and from subpopulations 1b and 2a. The Botanic Gardens and Parks Authority (BGPA) currently hold no seed from *Acacia leptalea*, however they do hold one plant in their Rare Flora Garden. Preservation of genetic material is essential to guard against extinction of the species if the wild populations are lost. It is recommended that seed and, if necessary, cuttings be collected and stored by DEC's TFSC and BGPA. Consideration should be given to holding material in a variety of forms, including seed storage, living collections and tissue collections. Collections should aim to sample and preserve the maximum range of genetic diversity possible (which should be determined by an appropriate molecular technique such as genetic fingerprinting if feasible), thus collection of seed and/or cuttings from all populations

should be a priority. 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 and other material to preserve genetic diversity  
**Responsibility:** DEC (Great Southern District, TFSC), and BGPA through the GSDTFRT  
**Cost:** \$2,800 in years 1, 3 and 5.

#### 10. Undertake weed control and follow up with regular monitoring and additional control if required

Weeds are a threat for several populations of *Acacia leptalea*. The following actions will be implemented:

1. Selection of appropriate herbicides after determining which weeds are present
2. Controlling invasive weeds by hand removal or spot spraying around *Acacia leptalea* plants when weeds first emerge.
3. Protection of plants from herbicide drift/application during operations by covering plants or use of shrouds where appropriate in conditions of little to no wind.

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

**Action:** Undertake weed control and follow up with regular monitoring and additional control if required.  
**Responsibility:** DEC (Great Southern District, Science Division) through the GSDTFRT  
**Cost:** \$2,300 per year.

#### 11. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Acacia leptalea* will provide a better scientific basis for management of the wild populations. An understanding of the following is particularly necessary for effective management:

1. Optimal fire frequency and intensity to maximise population size and health
2. Longevity of plants, and time taken to reach maturity.
3. Appropriate herbicides for weed control that will not adversely affect *A. leptalea*.
4. Size of soil seed banks
5. Seed viability and germination rate
6. Pollination biology and method of seed dispersal

**Action:** Obtain biological and ecological information  
**Responsibility:** DEC (Science Division, Great Southern District) through the GSDTFRT  
**Cost:** \$5,000 per year for the first two years; \$3,800 in year 3 and \$500 in years 4 and 5.

#### 12. Map habitat critical to the survival of *Acacia leptalea*

It is a requirement of the EPBC Act that spatial data relating to critical habitat be determined. Although critical habitat is described in Section 1, the areas described have not yet been mapped and that will be redressed under this action.

**Action:** Map habitat critical to the survival of *Acacia leptalea*  
**Responsibility:** DEC (Great Southern District) through the GSDTFRT  
**Cost:** \$3,000 in the second year

#### 13. Review the plan and need for further recovery actions

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

**Action:** Review the plan and need for further recovery actions  
**Responsibility:** DEC (SCB, Great Southern District) through the GSDTFRT  
**Cost:** \$1,500 in the fifth year

## Summary of recovery actions

Recovery Actions	Priority	Responsibility	Completion date
Coordinate recovery actions	High	GSDTFRT	Ongoing
Liaise with relevant land managers	High	DEC (Great Southern District), through the GSDTFRT	Ongoing
Monitor populations	High	DEC (Great Southern District) through the GSDTFRT	Ongoing
Seek security of tenure for subpopulation	High	DEC (Great Southern District) through the GSDTFRT	2011
Promote awareness	High	DEC (Great Southern District, Species and Communities Branch (SCB) and Strategic Development and Corporate Affairs Division) through the GSDTFRT	Ongoing
Conduct further surveys	High	DEC (Great Southern District) through the GSDTFRT	Ongoing
Develop and implement fire and disturbance trials	High	DEC (Science Division, Great Southern District) through the GSDTFRT, and relevant authorities.	2013
Develop and implement a fire management strategy	High	DEC (Great Southern District) through the GSDTFRT, and relevant authorities.	Develop by 2007 with implementation ongoing
Collect seed and other material to preserve genetic diversity	Moderate	DEC (Great Southern District, TFSC), and BGPA through the GSDTFRT	2013
Undertake weed control and follow up with regular monitoring an additional control if required	Moderate	DEC (Great Southern District, Science Division) through the GSDTFRT	Ongoing
Obtain biological and ecological information	Moderate	DEC (Science Division, Great Southern District) through the GSDTFRT	2013
Map habitat critical to the survival of <i>Acacia leptalea</i>	Moderate	DEC (Great Southern District) through the GSDTFRT	2010
Review the plan and need for further recovery actions	Moderate	DEC (SCB, Great Southern District) through the GSDTFRT	2013

## 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 the species is still ranked VU after five years, the need for further recovery actions and an update of this IRP will be assessed.

### 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

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- World Conservation Union (1994) *IUCN Red List Categories: Version 2.3*. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

## 6. TAXONOMIC DESCRIPTION

Excerpt from: Maslin, B.R. (1999). Acacia miscellany 16. The taxonomy of fifty-five species of Acacia, primarily Western Australian, in section *Phyllodineae* (Leguminosae: Mimosoideae). *Nuytsia*. **13(3)**: 367.

Dense, rounded *shrub* 0.5-2 m tall, to about 2 m across, branching at ground level. *Bark* dark grey, roughened towards base of main stems, otherwise smooth. *Branchlets* terete, very obscurely ribbed, shortly pilose, the raised leaf bases prominent on older parts where phyllodes have fallen. *Stipules* absent. *Phyllodes* terete or slightly compressed, 5-8 mm long, 0.3-0.4 mm wide, rather crowded, some sub-verticillate (although commonly obliquely so), some scattered, patent (except erect on new shoots),  $\pm$  straight or sometimes slightly recurved, slender, very finely wrinkled when dry, glabrous or sparsely pilose; *nervation* superficially not discernable; *apex* obliquely narrowed to a minute yet distinct excentric mucro; *pulvinus* minute (c. 0.3 mm long) yet distinct (at 10 mag.) *Gland* seemingly absent. *Inflorescence* an extremely reduced, 1(2)-headed raceme; axis 0.5-1 mm long, ebracteate at base, terminated by a vegetative bud; *peduncles* 3-4 mm long, densely puberulous, hairs pale yellow; *basal peduncular bract* solitary, persistent, scarious, c. 1 mm long, glabrous, light brown. *Heads* globular to very slightly obloid, 4 mm diam. (dry), 25-flowered, golden; *bracteoles* c.2 mm long, acuminate and slightly exserted in mature buds; base auriculate, puberulous, otherwise  $\pm$  glabrous; claw c. 0.5 mm long. *Flowers* 5-merous; calyx  $\frac{3}{5}$  length of corolla, gamosepalous, dissected for  $\frac{1}{4}$ - $\frac{1}{2}$  its length, densely puberulous; hairs pale yellow except silvery at apices of lobes; *petals* 1.5-2 mm long, free, nerves not evident, appressed-puberulous on upper  $\frac{1}{3}$ - $\frac{1}{2}$  with pale yellow hairs, or glabrous. *Pod* narrowly oblong, to 25 mm long, 4-5 mm wide, firmly chartaceous to thinly coriaceous, sparsely to moderately pilose with pale yellow or white hairs, slightly viscid, brown; dehisced vales curved to sigmoid. *Seeds* longitudinal, ovoid, 3-3.5 mm long, 2 mm wide, compressed (1 mm thick), brown, moderately shiny; *pleurogram* very obscure, open at hilar end; *areole* c. 1 mm long, c.5 mm wide; *funicle* not seen; aril subterminal,  $\pm$  clavate, c. 2 mm long, extending  $\frac{1}{3}$ - $\frac{1}{2}$  down one side of seed.

