CHIDDARCOOPING WATTLE (*ACACIA LOBULATA*)

INTERIM RECOVERY PLAN

2008-2013

Kate Brunt and Andrew Brown

February 2008

Department of Environment and Conservation
Yilgarn District Office, Wheatbelt Region

Natural Heritage Trust
Helping Communities Helping Australia
An Australian Government Initiative

Government of Western Australia

Department of Environment and Conservation

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.

IRP's 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This Interim Recovery Plan will operate from February 2008 to January 2013 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked Critically Endangered, this IRP will be reviewed after five years and the need for a full Recovery Plan assessed.

This IRP was given regional approval on 17 January 2008 and approved by the Director of Nature Conservation on 6 February 2008. The allocation of staff time and provision of funds identified in this Interim Recovery Plan 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 February 2008.

SUMMARY

Scientific Name:	*Acacia lobulata*	**Common Name:**	Chiddarcooping Wattle
Family:	*Mimosaceae*	**Flowering Period:**	July
Dept Region:	Wheatbelt	**Dept District:**	Yilgarn
Shires:	Westonia and Nungarin	**Recovery Team:**	Yilgarn District Threatened Flora Recovery Team (YDTFRT)

Illustrations and/or further information: R.S Cowan & B.R. Maslin, (1990) *Nuytsia* Vol. 7 (2), pp 194-195; A. Brown, C. Thomson-Dans and N. Marchant (Eds) (1998) *Western Australia's Threatened Flora*; *Flora of Australia*; C.J Yates & L.M. Broadhurst , *Biological Conservation* 108 (2002) 13-26; C.J Yates, I. Abbott, S.D Hopper & D.J Coates *Fire in Ecosystems of south-west Australia: Impacts and management*, pp 395-420 (2003); M.L. Buist, D.J Coates &C.J. Yates *Conservation Science W.Aust.* 4 (3) : 36-53 (2002); M. Byrne, G. Tischler, B. Macdonald, D.J. Coates & J. McComb, (2001) *Conservation Genetics* 2: 157 –166; C.P Elliott, C.J. Yates, P.G Ladd and D.J Coates (2002) *Aust.J. Bot*, 2002, 50, pp 63-73. M.L Buist *Comparative ecology and conservation biology of two critically endangered acacias (Acacia lobulata and A.sciophanes) and two common, widespread relatives (Acacia verrivula and A.anfractuosa) from the south-west of Western Australia*. 2003.

Current status: *Acacia lobulata* was declared as Rare Flora in 1997 and currently meets World Conservation Union (IUCN 2000) Red List category 'EN' under criterion B1a(v)+B2a(v), as populations are severely fragmented, the area of occupancy is believed to be less than 10 km^2 and there is continuing decline in the number of individuals. Threats include inappropriate fire regimes, grazing, restricted habitat, road maintenance, poor recruitment, herbicide application and weed invasion.

Description: When mature *Acacia lobulata* develops into an erect, open and often spindly shrub, 1m to 2m tall. The bark is smooth. Branchlets are slightly angled, warty and resinous. The phyllodes are asymmetrical, with curved, pointed tips. They are ascending, curve inwards, and are a dull grayish-green. Solitary globular flower heads appear in July, 3.5mm by 4.5mm in diameter, are composed of between 15 and 17 flowers. The dull dark brown seeds, 4 to 5.5 mm long and 1.8 to 2.3 mm wide, are oblong (Brown *et al* 1998).

Habitat requirements: *Acacia lobulata* occurs exclusively on colluvial quartz gravel loam of decaying kaolinite granite. This soil type is in close proximity to large granite outcrops and laterite breakaways. (Buist, 2003) The species is known from three populations over a geographic range of 17km in and adjacent to Chiddarcooping Nature Reserve. Associated species include *Acacia andrewsii, Acacia hemiteles, Daviesia nematophylla, Eucalyptus yilgarnesis, Eremophila drummondii, Gastrolobium parviflorum, Melaleuca uncinata, Maireana marginata, Waitzia acuminate, Rhodanthe sp. Austrostipa eremophila, Austrodanthania setacea, Austrodanthania ellegantissima.*

Critical habitat: The critical habitat for *Acacia lobulata* comprises the area of occupancy of the known populations; similar habitat within 200 metres of known populations; corridors of remnant vegetation that link populations and additional nearby occurrences of similar habitat that do not currently contain the species but may have done so and may be suitable for translocations.

Habitat critical to the survival of the species, and important populations: Given that this species is listed as Endangered it is considered that all known habitat for wild and translocated populations is habitat critical to its survival, and that all populations, including any resulting from translocations, are important.

Benefits to other species or ecological communities: There are no known listed threatened species or ecological communities in the habitat of *Acacia lobulata*. However, recovery actions implemented to improve the quality or security of its habitat will also improve the status of associated 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. Although the taxon is listed under the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES) this IRP does not affect Australia's obligations under international agreements.

Role and interests of indigenous people: Involvement of the Indigenous community is being sought through the South West Aboriginal Land and Sea Council (SWALSC) and the Department of Indigenous Affairs to assist in the identification of cultural values for land occupied by *Acacia lobulata*, or indigenous groups with a cultural connection to land that is important for the species' conservation and to determine whether there are issues or interests identified in the plan. A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register has identified that there are no sites of

Aboriginal significance at or near the population of the species covered by this IRP. Where no role is identified in the development of the recovery plan for the indigenous community associated with *Acacia lobulata*, opportunities may exist through cultural interpretation and awareness of the species. Indigenous involvement in the implementation of recovery actions will be encouraged.

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

Social and economic impact: Several populations of *Acacia lobulata* occur on private land and there is some potential for limited social and economic impact. However, as recovery actions will involve liaison and cooperation with all stakeholders it is unlikely that the implementation of this recovery plan will have any social and economic impact.

Evaluation of the Plan's Performance: The Department of Environment and Conservation (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 five years of implementation.

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

1. All relevant land managers have been made aware of the location and threatened status of the species.
2. Surveys have been conducted to locate new populations.
3. Markers that define populations have been installed and maintained.
4. Approximately 16,684 seeds collected from Subpopulation 1a and population 2 are stored in DEC's Threatened Flora Seed Centre at –18°C.
5. An information sheet that describes and illustrates the species and calls for information on any further sightings has been produced and distributed.
6. PHD complete on "Comparative ecology and conservation biology of two critically endangered acacias (*Acacia lobulata* and *Acacia sciophanes)* and two common, widespread relatives (*Acacia verricula* and *A. anfractuosa)* from the south-west of Western Australia.
7. Staff from DEC's Yilgarn District regularly monitor populations of the species.
8. The Yilgarn District Threatened Flora Recovery Team is overseeing the implementation of this IRP and will include information on progress in an annual report to DEC 's Corporate Executive and funding bodies.
9. Dashboard stickers, posters and can holders that illustrate DRF markers and describing their purpose have been produced and distributed.

IRP Objective: The objective of this Interim Recovery Plan 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 numbers of individuals within populations and/or the number of populations have increased by ten percent or more.

Criteria for failure: The numbers of individuals within populations and/or the number of populations have decreased by ten percent or more.

Recovery actions

1. Coordinate recovery actions	9. Develop and implement a proposal to stimulate germination of soil-stored seed and monitor periodically
2. Map critical habitat	10. Obtain biological and ecological information
3. Achieve long-term protection of habitat and secure land tenure	11. Promote community awareness
4. Develop a translocation proposal	12. Monitor populations
5. Collect seed and cutting material	13. Conduct further surveys
6. Develop and implement a rabbit control strategy	14. Liaise with relevant land managers
7. Develop and implement a weed control strategy	15. Review the need for a full Recovery Plan or an update to this IRP and prepare if necessary
8. Develop and implement a fire control strategy	

1. BACKGROUND

History

Arther Weston first discovered *Acacia lobulata* during a vegetation survey of Chiddarcooping Nature Reserve in 1985. At that time it was listed as *Acacia* sp. (Chiddarcooping) J Brown 54 and A. Williams and was known from a single population that extended from the nature reserve into adjoining property. The species was formally named in 1991, the specific name *lobulata* referring to the surface of the phyllodes.

In 1988 a second population was located on private property near Yanneymooning Hill. This portion of the property was later reserved as part of a land swap. A third population was located by Marcelle Buist in September 1999. It occured on a roadside and in adjoining property.

The Department of Environment and Conservation (DEC) has provided relevant land managers the locations of populations and DRF markers have been installed where required.

Description

Acacia lobulata is an erect, open spindly shrub 1–2m tall with smooth bark and slightly angled, tuberculate, glabrous, resinous branches. Phyllodes are ascending, incurved, glabrous, dull, grey-green with strongly, excentrically curved, acute tips. Flower-heads are globular, solitary, 3.5-4.5 mm diameter with 15-17 flowers. Seeds are longitudinal, oblong, compressed, 4-5.5 mm long, 1.8-2.3 mm wide, dull dark brown. The species flowers in July and fruits in November.

The most notable characteristic of *Acacia lobulata* is the impressed net-nervature of the phyllodes with the areoles raised, giving the phyllodes a regular cobblestone appearance or, perhaps better, the appearance of a slender sausage in a too-small net (Cowan and Maslin 1990).

Distribution and habitat

Acacia lobulata is known from three populations comprising five subpopulations. The species is located in nature reserves, private property and on Shire road reserve over a geographic range of 17km in and adjacent to Chiddarcooping Nature Reserve.

Acacia lobulata occurs exclusively on colluvial quartz gravel loam of decaying kaolinite granite in *Eucalyptus* woodland and mixed shrubland associated with breakaways. The soil type is in close proximity to large granite outcrops and laterite breakaways. Associated species include *Acacia andrewsii, Acacia hemiteles, Daviesia nematophylla, Eucalyptus yilgarnensis, Eremophila drummondii, Gastrolobium parviflorum, Melaleuca uncinata, Maireana marginata, Waitzia acuminate, Rhodanthe sp. Austrostipa eremophila, Austrodanthania setacea, Austrodanthania elegantissima.*

Biology and ecology

Acacia is the largest genus in Australia, comprising some 700 named species and many more that are currently un-named. Commonly known as wattles, *Acacia* species are found in all states of Australia and in a broad range of environmental conditions (Elliot and Jones 1982). Because of their adaptability, many are important horticultural and commercial plants.

A recently completed thesis on the "Comparative ecology and conservation biology of two critically endangered acacias (*Acacia lobulata* and *A. sciophanes)* and two common, widespread relatives (*Acacia verricula* and *A. anfractuosa)* from the south –west of Western Australia." By Marcelle Buist, 2003, provided a good insight into the ecology and biology of *Acacia lobulata.*

It was found that *Acacia lobulata* demonstrated lower reproductive capacity than the more common species of *Acacia*. It also had a lower fruit set efficiency. Although *Acacia lobulata* had more viable fruit than the more common species, it suffered significantly from predation (Buist 2003).

Ants disperse *Acacia lobulata* seed. This specialized relation with ants as a form of dispersal exposes a vulnerability of the species. Ant dispersal is generally characterized as short distance dispersal and because of this may result in local endemism of many ant dispersed species. A high amount of seed was also eaten, therefore it is likely the relationship that the ants have with *Acacia lobulata* is predator – disperser (Buist 2003)

Acacia lobulata is thought to have a persistent seed bank, as viable seeds is known to be present in the soil for longer than one year (Thompson and Grime 1979).

Acacia lobulata has demonstrated characteristics of a species that relies on fire to drive its population dynamics. It employs a non-re-sprouting strategy following fire and regenerates solely from seeds. This species is therefore sensitive to interval-dependant effects and requires a minimal fire-free period to reach reproductive maturity and produce enough seed to ensure plant replacement (Whelan 1995; Bond and van Wilgen 1996).

It was found that *Acacia lobulata* plants take three seasons to produce flowers following germination.

Acacia lobulata plants persist in woodlands that are close to granite outcrops and breakaways. These areas experience few fire events and may provide a refugial habitat for fire – sensitive taxa. A restriction of *Acacia lobulata* to this fire refugial habitat may contribute to population constraints. It was also found that the best germination of *Acacia lobulata* seeds occurs following winter fire (Buist 2003).

A number of seedlings have been grown in the Botanic Gardens and Parks authority nursery for research purposes.

Threats

Current status: *Acacia lobulata* was declared as Rare Flora in 1997 and currently meets World Conservation Union (IUCN 2000) Red List category 'EN' under criterion B1a(v)+B2a(v), as populations are severely fragmented, with area of occupancy is believed to be less than 10 km^2 and there is continuing decline in the number of individuals. Threats include Inappropriate fire regimes, grazing, restricted habitat, road maintenance, poor recruitment, herbicide application and weed invasion.

- **Road maintenance** threatens road reserve populations. Threats include grading, chemical spraying, construction of drainage channels and the mowing of roadside vegetation. Several of these actions also encourage weed invasion.

- **Low numbers of plants and populations** may effect the long-term survival of the species. The number of mature *Acacia lobulata* plants could be dramatically reduced as a result of one catastrophic event.

- **Insecure Land Tenure** threatens one population and several subpopulations as they occur on land tenures not consistent with conservation. These areas are subject to continued clearing, road works and agricultural processes (Buist 2003). Although not all of these activities directly conflict with conservation, the primary use of the areas are not for the preservation of the threatened species.

- **Weed invasion** is a threat to all populations. Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also exacerbate grazing pressure and increase the fire hazard due to the easy ignition of high fuel loads, which are produced annually by many grass weed species.

- **Inappropriate fire regimes** may affect the viability of populations as seeds of *Acacia lobulata g*erminate following fire. The soil seed bank would therefore, be rapidly depleted if fires recurred before regenerating or juvenile plants reached maturity and replenished the soil seed bank. However, it is likely that occasional fires are needed for reproduction of this species.

- **Herbicide application** by land managers and adjacent private property owners threatens populations of *Acacia lobulata* growing within road reserves. While spray is aimed at eradicating weeds it is not known what effect it has on the threatened species.

- **Grazing** by rabbits, kangaroos and stock has been noted at four of *Acacia lobulata* subpopulations. In addition to grazing, rabbits also impact on populations by encouraging invasion of weeds through digging, erosion, the addition of nutrients and introduction of weed seeds. The high levels of palatable weeds near these subpopulations and in adjacent farming properties attract herbivorous animals that are often unselective between species when grazing.

- **Restricted habitat** also threatens the long term viability of populations. As outlined earlier the species requires very specific habitat, which limits the ability of populations to increase in size.

- **Poor recruitment** threatens most populations with few seedlings observed in areas that have been fire free in recent times.

Summary of population information and threats

Pop. No. & Location	Land Status	Month/Year - No. plants	Condition	Threats
1a E of Mukinbudin	Nature Reserve	1988 40,000+ (100+) 1990 2,000 1998 30+ 2003 1000+	Healthy	Inappropriate fire regimes, grazing, restricted habitat
1b E of Mukinbudin	Private Property	1988 10,000+ (100+) 1990 1,000+	Healthy	Inappropriate fire regimes, grazing, restricted habitat, unsecure land tenure.
2 NE of Mukinbudin	Nature Reserve	1988 300+ 1994 300+ 1998 20+	Moderate	Inappropriate fire regime, grazing, restricted habitat
3a E of Mukinbudin	Private Property	1999 35 (4) [1]	Healthy	Inappropriate fire regime, grazing, restricted habitat, road maintenance, poor recruitment, herbicide application, weed invasion.
3b E of Mukinbudin	Shire RD Reserve	1999 35 (4) [1] 2001 52 2003 40	Healthy	Inappropriate fire regime, grazing, restricted habitat, road maintenance, poor recruitment, herbicide application weed invasion.
3c E of Mukinbudin	Private Property	1999 35 (4) [1] 2001 39 2004 17	Moderate	Inappropriate fire regime, grazing, restricted habitat, road maintenance, poor recruitment, herbicide application, weed invasion.

( ) = seedlings; [ ] = number of dead plants.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Any on-ground works (clearing, firebreaks, roadworks etc) in the immediate vicinity of *Acacia lobulata* will require assessment. On-ground works should not be approved unless the proponents can demonstrate that they will not have an 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.

Critical habitat

Critical habitat is habitat identified as being critical to the survival of a listed threatened species or listed threatened ecological community. Habitat is defined as the biophysical medium or media occupied (continuously, periodically or occasionally) by an organism or group of organisms or once occupied (continuously, periodically or occasionally) by an organism, or group of organisms, and into which organisms of that kind have the potential to be reintroduced (*Environment Protection and Biodiversity Conservation Act 1999*).

The critical habitat for *Acacia lobulata* comprises:

- the area of occupancy of known populations;
- areas of similar habitat within 200 m of known populations, i.e. brown loamy clay over laterite or yellow-white sandy soils over granite in mallee shrubland or heath (these provide potential habitat for natural range extension);
- corridors of remnant vegetation that link populations (these are necessary to allow pollinators to move between populations and are usually road and rail verges); and
- additional occurrences of similar habitat that do not currently contain the species but may have done so in the past (these represent possible translocation sites).

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

Given that *Acacia lobulata* is listed as Endangered it is considered that all known habitat is habitat critical. In addition all populations, including translocated populations, are considered important to the survival of the species. Recovery actions include survey for further populations that could lead to the identification of additional habitat critical to the survival of the species.

Benefits to other species or ecological communities

There is no other known listed threatened species or ecological communities in the habitat of *Acacia lobulata*. However, recovery actions implemented to improve the quality or security of its habitat will also improve the status of remnant vegetation in which it is located. .

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. Although the taxon is listed under the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES) this IRP does not affect Australia's obligations under international agreements.

Role of indigenous people and their knowledge

Involvement of the Indigenous community is being sought through the South West Aboriginal Land and Sea Council (SWALSC) and the Department of Indigenous Affairs to assist in the identification of cultural values for land occupied by *Acacia lobulata*, or indigenous groups with a cultural connection to land that is important for the species' conservation and to determine whether there are issues or interests identified in the plan. A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register has identified that there are no sites of Aboriginal significance at or near populations of the species covered by this IRP. Where no role is identified in the development of the recovery plan for the indigenous community associated with *Acacia lobulata*, opportunities may exist through cultural interpretation and awareness of the species. Indigenous involvement in the implementation of recovery actions will be encouraged.

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

Social and economic impacts

Several populations of *Acacia lobulata* occur on private land and there is some potential for limited social and economic impact. Recovery actions refer to continued liaison between stakeholders with regard to these areas.

Evaluation of the plan's performance

DEC, in conjunction with the Yilgarn District Threatened Flora Recovery Team will evaluate the performance of this Interim Recovery Plan. The plan is to be reviewed within five years of its implementation. Any changes to management / recovery actions will be documented accordingly.

2. RECOVERY OBJECTIVE AND CRITERIA

Objectives

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

Criteria for success: The numbers of individuals within populations and/or the number of populations have increased by ten percent or more.
Criteria for failure: The numbers of individuals within populations and/or the number of populations have decreased by ten percent or more.

3. RECOVERY ACTIONS

Existing recovery actions

The Shire of Nungarin and relevant private property owners have been notified about populations of *Acacia lobulata* that occur on lands that they manage. Notifications detail the Declared Rare status of the species and the associated legal obligations.

Declared Rare Flora (DRF) markers have been installed at all road reserve populations. The markers alert people working in the vicinity to the presence of DRF, and the need to avoid work that may damage vegetation in the area. The significance of these markers is being promoted to relevant bodies such as Shires and MRWA through posters, dashboard stickers and stubby holders that illustrate DRF markers and explain their purpose.

Approximately 16,684 seeds collected from Subpopulation 1a and population 2 are stored in DEC 's Threatened Flora Seed Centre (TFSC) at –18°C. The viability of seed tested by TFSC staff ranged from 60% to 94% (unpublished data A. Crawford).

Staff from the DEC's Yilgarn District regularly monitor all populations of this species.

Marcelle Buist completed a thesis on the "Comparative ecology and conservation biology of two critically endangered acacias (*Acacia lobulata* and *Acacia sciophanes)* and two common, widespread relatives (*Acacia verricula* and *A. anfractuosa)* from the south-west of Western Australia."

The aims of the research was to:

(a) Determine the underlying causes of rarity of the critically endangered *Acacia lobulata* and *Acacia sciophanes* by identifying and ranking the factors which limit population growth, and
(b) To develop strategies for increasing size and spatial extent of the populations of these rare *Acacias.*

Surveying of appropriate habitat was undertaken by M. Buist as part of her research and as a result population 3 was discovered.

An information brochures that provides a description of the species and information about threats has been developed and distributed for *Acacia lobulata.* It is hoped that the poster will result in the discovery of new populations.

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

Future recovery actions

Where populations occur on lands other than those managed by DEC, permission has been or will be sought from appropriate land managers prior to recovery actions being undertaken.

1. Coordinate recovery actions

The Yilgarn District Threatened Flora Recovery Team (YDTFRT) will coordinate recovery actions for *Acacia lobulata* and other Declared Rare Flora in the region and will include information on progress in their annual report to DEC's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: DEC (Yilgarn District) through the YDTFRT
Cost: $1,000 per year.

2. Map critical habitat

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 have not been fully mapped and that will be done under this action. If additional populations are located, critical habitat will be determined and mapped for them also.

Action: Map critical habitat
Responsibility: DEC (Yilgarn District, Species and Communities Branch) through the YDTFRT
Cost: $2000 in the first year.

3. Achieve long-term protection of habitat and secure land tenure

Staff from DEC's Yilgarn District, are liaising with land managers and landowners to ensure that populations are not accidentally damaged or destroyed. In addition, methods of improving the security of populations and their habitat within private property will be investigated. This may include conservation covenants, the Land for Wildlife scheme and possibly land purchase. Three subpopulations currently occur in private property.

Action: Achieve long-term protection of habitat
Responsibility: DEC (Yilgarn District) and landowners through the YDTFRT
Cost: $500 per year for liaison.

4. Develop a translocation proposal

Translocation is desirable for the conservation of this species, as the number of populations are low and not secure from threats. Information on the translocation of threatened plants and animals in the wild is provided in the Department's Policy Statement No. 29 *Translocation of Threatened Flora and Fauna.*

Although translocations are generally undertaken under full Recovery Plans, it is desirable to develop the proposal and start growing plants within the time frame of an Interim Recovery Plan. All translocation proposals require endorsement by the Department's Director of Nature Conservation.

Action: Develop translocation proposal
Responsibility: DEC (Science Division, Yilgarn District) through the YDTFRT.
Cost: $4,000 in the third year.

5. Collect seed and cutting material

Preservation of germplasm is essential to prevent extinction if the wild population is lost. Seed and cuttings will be collected for storage and to propagate plants for translocations. A quantity of *Acacia lobulata* seed collected from Subpopulation 1a and population 2 is currently held in DEC's TFSC, however no seedlings are currently held in the nursery at BGPA. Further seed and cutting collections are therefore needed from as many plants as possible are needed to maximise the genetic diversity of the material for storage and for use in translocations.

Action: Collect seed and cutting material
Responsibility: DEC (TFSC, Yilgarn District) BGPA through the YDTFRT
Cost: $2,000 per year.

6. Develop and implement a rabbit control strategy

Rabbits are thought to be a threat to most Populations of *Acacia lobulata*. Rabbits are known to preferentially graze soft young growth, and it seems likely that they will either reduce or prevent recruitment by grazing on young seedlings. In addition to grazing, rabbits also impact on populations by encouraging the invasion of weeds through soil digging, erosion, addition of nutrients and the introduction of weed seeds.

Control strategies will be developed and implemented in consultation with relevant land managers.

Action: Develop and implement a rabbit control strategy
Responsibility: DEC (Yilgarn District) and land managers through the YDTFRT
Cost: $800 in first year then $600 for second and third years.

7. Develop and implement a weed control strategy

Weeds are a threat to population 3. Weeds impact on the species by competing for resources, degrading habitat, exacerbating grazing pressure, and increasing the risk and severity of fire.

Weed control, undertaken in consultation with relevant land managers, will be achieved through hand weeding or localised application of herbicide. Any weed control will be followed by a report on the method, timing and success of the treatment, and any detrimental effect on *Acacia lobulata* and associated native plant species. It is anticipated that a number of native species will regenerate after weed competition is removed.

Action: Develop and implement a weed control strategy
Responsibility: DEC (Yilgarn District) through the YDTFRT
Cost: $500 per year.

8. Develop and implement a fire management strategy

It is known that *Acacia lobulata* requires occasional fire for recruitment from soil-stored seed. However, fire is known to kill adult plants and frequent fires would be detrimental to the long-term survival of the species as it may prevent the accumulation of sufficient soil-stored seed for recruitment. Fire also promotes the introduction and proliferation of weed species and should be prevented from occurring in the area of populations, except where it is being used as a recovery tool.

A fire management strategy will be developed in consultation with relevant authorities and land managers to determine fire control measures and fire frequency. This strategy should incorporate other priority and threatened flora species in the district.

Action: Develop and implement a fire management strategy
Responsibility: DEC (Yilgarn District) and relevant authorities through the YDTFRT
Cost: $4,200 in first year and $2,000 in second and third years.

9. Develop and implement a proposal to stimulate germination of soil-stored seed and monitor periodically

Research has shown of *Acacia lobulata* seed can remain viable in the soil for an extended period and that fire stimulates germination. A proposal will be developed and fire used to stimulate germination of soil-stored seed in areas adjacent to population three. Once this has been done the area will be periodically monitored.

Action: Develop a proposal to stimulate soil stored seed and monitor
Responsibility DEC (Science Division, Yilgarn District) through the YDTFRT
Cost: $3,000 in first year, $2,000 per year for the second and third years, then $500 per year.

10. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Acacia volubilis* will provide a better scientific basis for its management in the wild. Some of this information can be obtained while monitoring. Buist (2003) outlines a number of areas that requires further research including:

1. Further studies on reproduction to confirm reproductive strategies
2. Pollination studies to determine which insects act as vectors
3. Identification of the ants that are thought to disperse its seed
4. A continuation of soil seed bank trials
5. Continued sampling of fire-recruited seedlings to determine the length of their primary juvenile period
6. The mycorrhizal association of the species
7. Further investigation into the suggestion that *Acacia lobulata* occupies its current habitat due to their being less competition for resources.

Action: Obtain biological and ecological information
Responsibility: DEC (Science Division, Yilgarn District) through the YDTFRT
Cost: $20,000 in second and third years then $11,500 in fourth year.

11. Promote community awareness

Community awareness has been promoted through posters, DEC's Landscope magazine and the electronic media. Information provided includes a description of *Acacia lobulata* and its habitat, information on its rediscovery, photographs of the species and a list of the recovery actions being undertaken. An information sheet, that will be distributed through DEC's Yilgarn District Office and at the offices and libraries of the Shires of Westonia and Nungarin, may lead to the discovery of new populations. The preparation of a poster illustrating all Critically Endangered flora species in the District is recommended. Awareness of the importance of biodiversity conservation and the need for the long-term protection of wild populations of this species will continue to be promoted throughout the community. Formal links with local naturalist groups and interested individuals will also be encouraged.

Action: Promote community awareness
Responsibility: DEC (Yilgarn District) through the YDTFRT
Cost: $2,800 in first year, $1,400 in second year and $1,100 per year.

12. Monitor populations

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

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

13. Conduct further surveys

Volunteers from the local community, Wildflower Societies, Naturalist Clubs and other community-based groups will be encouraged to undertake surveys for *Acacia lobulata*. Departmental staff will also conduct opportunistic surveys, particularly during the species' flowering period

Action: Conduct further surveys
Responsibility: DEC (Yilgarn District) through the YDTFRT
Cost: $1700 per year.

14. Liaise with relevant land managers

Staff from DEC 's Yilgarn District will continue to liaise with managers and owners of land on which populations of *Acacia lobulata* occur, and with managers of adjacent land. This will help prevent accidental damage or destruction of the plants.

Action: Liaise with relevant land managers
Responsibility: DEC (Yilgarn District) through the YDTFRT
Cost: $500 per year.

15. Review the plan and the need for further recovery actions

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

Action: Review the need for a full Recovery Plan or an update to this IRP and prepare if necessary
Responsibility: DEC (Species and Communities Branch, Yilgarn District) through the YDTFRT
Cost: $15,000 in the fifth.

4. TERM OF PLAN

This Interim Recovery Plan will operate from February 2008 to January 2013 but will remain in force until withdrawn or replaced. If the taxon is still ranked Endangered after four years, the need to review this IRP will be determined.

5. ACKNOWLEDGMENTS

The following people have provided assistance and advice in the preparation of this Interim Recovery Plan:

Andrew Crawford	Technical Officer, DEC 's Threatened Flora Seed Centre
Andrew Brown	Threatened Flora Coordinator, Species and Communities Branch
Amanda Shade	Horticulturist, Botanic Garden and Parks Authority
Leonie Monks	Research Scientist, DEC's Science Division
Marcelle Buist	Ecologist, Kings Park.

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

6. REFERENCES

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7. TAXONOMIC DESCRIPTION

Maslin, B.R. (1995). *Acacia* Miscellany No. 1 - *Nuytsia* 7(2): 194-195

Acacia lobulata

Erect, openm often spindly *shrubs i1-2 m tall. Bark* smooth. *Branchlets* slightly angled, tuberculate, glabrous, resinous. *Stipules* not seen, apparently absent. *Phyllodes* terete with atrongly, excentrically curved, acute tips and a 0.5mm long pulvinus (1-5)25-30(-35)mm long, 0.7-0.8 mm diam., ascending, incurved, glabrous, dull, dry-green; nerves resinous, impressed, forming a coarse, regular reticulm, areoles raised markedly. *Gland* circular, brownish, depressed in centre, situated on upper surface of phyllode 0.5-2 mm above pulvinus. *Peduncles*(2.5-)3-4.59-6) mm long, solitary, occasionally in pairs, puberulous; basal peduncular bracts ovate, slightly concave, acute. *Flower-heads* globular, 3.5-4.5 mm diam., 15-17-flowered. *Bracteoles* spathulate to obovate-spathulate, blade ovate to lanceolate, puberulous, ciliolate. *Flowers* 5-merous. *Sepals* less than half to about half as long as the petals 1/3-1/2-united, oblong, ciliolate. *Petals* narrowly elliptic, acute, free, glabrous. *Ovary* densly white pilose. *Legumes* linear, raised over but not constricted between seeds, 40-60 mm long, 3-4 mm wide, thin-chartaceous, strongly curved, smooth, glabrous, resinous. *Seed* longitudinal, oblong, compressed, 4-5.5 mm long, 1.8-2.3 mm wide, dull dark-brown; pleurogram narrowly oblong, 2/3 seed length; aril membranous, apical, more than half as long as seed.