Government of **Western Australia**
Department of **Environment and Conservation**

INTERIM RECOVERY PLAN NO. 329

WILSON'S WATTLE

(*Acacia wilsonii*)

INTERIM RECOVERY PLAN

2012–2017

October 2012
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: 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.

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

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

This plan will operate from October 2012 to September 2017 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked as Endangered, this plan will be reviewed after five years and the need for further recovery actions assessed.

This plan was given regional approval on 24 September 2012 and was approved by the Director of Nature Conservation on 30 October 2012. The provision of funds identified in this plan is dependent on budgetary and other constraints affecting DEC, as well as the need to address other priorities.

Information in this plan was accurate at October 2012.

IRP PREPARATION

This plan 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 plan:

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Niall Sheehy	Flora Conservation Officer, DEC Moora District
Benson Todd	Nature Conservation Coordinator, DEC Moora District

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

Cover photograph by Emma Richardson.

CITATION

This plan should be cited as:

Department of Environment and Conservation (2012) Wilson's Wattle, *Acacia wilsonii* Interim Recovery Plan 2012–2017. Interim Recovery Plan No. 329. Department of Environment and Conservation, Western Australia.

SUMMARY

Scientific name:	***Acacia wilsonii***	**Common name:**	Wilson's wattle
Family:	Fabaceae	**Flowering period:**	February to October
DEC region:	Midwest	**DEC district:**	Moora
Shires:	Carnamah, Coorow, Dandaragan	**NRM region:**	Northern Agricultural
Recovery team:	Moora District Threatened Flora Recovery Team (MDTFRT)	**IBRA region/: Subregion**	Geraldton Sandplain Leseur Sandplain GS3

Illustrations and/or further information: Cowan, R.S. and Maslin, B.R. (1999) *Acacia* miscellany. 17, miscellaneous new taxa and lectotypifications in Western Australian *Acacia*, mostly section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 12(3), 449-451; Western Australian Herbarium (1998−) *FloraBase − The Western Australian Flora*. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/.

Current status: *Acacia wilsonii* is declared as rare flora (DRF) under the Western Australian *Wildlife Conservation Act 1950* and is ranked in WA as Endangered under International Union for Conservation of Nature (IUCN 2001) criteria B1ab(ii, iii, iv)+2ab(ii, iii, iv); C2a(i); D due its extent of occurrence being less than 5,000km^2; its area of occupancy being less than 500km^2; severe fragmentation of populations; a continuing decline in area of occupancy, area, extent and/or quality of habitat and number of locations or subpopulations; no subpopulation estimated to contain more than 250 mature individuals; and population size estimated to be less than 250 mature individuals. The species is not listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats to the species are road, track and firebreak maintenance, inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion, Phytophthora dieback and future mining operations.

Description: *Acacia wilsonii* is a low shrub to 30cm tall with horizontal branches bearing terete erect phyllodes, which are sessile, continuous on the branchlets and up to 13cm long. The flower heads are globular, golden yellow in colour, with stalks about 1cm long. The flowers have united sepals. The legumes are linear, subterete, to 5.5cm long and contain oblong dull brown seeds (Patrick and Brown 2001).

Habitat requirements: *Acacia wilsonii* is endemic to Western Australia where it is found between Eneabba and Badgingarra, north of Perth. It grows on hills or slopes on grey, pale yellow-brown or pinkish sandy clay or loamy sand over a reddish pink laterite in open heath.

Habitat critical to the survival of the species, and important populations: *Acacia wilsonii* is ranked in WA as EN and, as such, it is considered that all known habitat for wild populations is critical to the survival of the species and that the wild populations are important populations. Habitat critical to the survival of *A. wilsonii* 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 *Acacia wilsonii* will also improve the status of associated native vegetation as well as a seven Declared Rare and 24 priority flora species.

International obligations: This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993, and will assist in implementing Australia's responsibilities under that Convention. The species is not listed under Appendix II in the United Nations Environment Program World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES), and this Interim Recovery Plan (IRP) does not affect Australia's obligations under any other international agreements.

Indigenous consultation: A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register revealed no sites of Aboriginal significance adjacent to populations of *Acacia wilsonii*. Input and involvement has been 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. Indigenous opportunity for future involvement in the implementation of the Recovery plan is included as an action in the plan.

Social and economic impacts: The implementation of this recovery plan may result in some social and economic impact. For the population occurring on private property (Population 3) this may be through the loss of land available for development and impacts on land management practices. For populations on land vested with the Shires of Carnamah, Coorow and Dandaragan (1, 2b, 2c, 4, 5) economic impact may be through restrictions imposed on the management of

these lands, in particular the maintenance of roads and roadside vegetation. There is also a cost involved in implementing recovery actions.

Affected interests: The implementation of this plan has some implications for land managers, including private landholders and the Shires of Carnamah, Coorow and Dandaragan, particularly where populations occur on lands not specifically managed for conservation.

Evaluation of the plan's performance: DEC, with assistance from the Moora District Threatened Flora Recovery Team (MDTFRT), will evaluate the performance of this plan. In addition to annual reporting on progress the plan will be reviewed and evaluated against the criteria for success and failure following five years of implementation.

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

1. Stakeholders have been made aware of the existence of this species and its locations.
2. Extensive surveying was undertaken for *Acacia wilsonii* in 1991 and 1992 by DEC Science Division.
3. Population 3 of *Acacia wilsonii* has been fenced.
4. Declared Rare Flora (DRF) markers have been installed at Populations 1 and 5 and Subpopulations 2b and 2c.
5. 2,398 seeds collected from *Acacia wilsonii* Population 1 and Subpopulation 2a are stored in the DEC Threatened Flora Seed Centre (TFSC) at –18°C.
6. An information sheet, which includes a description of the plant, its habitat type, threats, management actions and photos has been produced.

IRP objective: The objective of this 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 number of populations has increased and/or the number of mature individuals has increased by 10 per cent or more over the term of the plan.

Criteria for failure: The number of populations has decreased and/or the number of mature individuals has decreased by 10 per cent or more over the term of the plan.

Recovery actions

1. Coordinate recovery actions
2. Monitor populations
3. Conduct weed control
4. Undertake regeneration trials
5. Undertake surveys
6. Develop and implement a fire management strategy
7. Collect and store seed
8. Maintain disease hygiene
9. Obtain biological and ecological information
10. Liaise with land managers and Indigenous communities
11. Develop and implement a translocation proposal
12. Map habitat critical to the survival of *Acacia wilsonii*
13. Promote awareness
14. Nominate *Acacia wilsonii* for listing under the Commonwealth EPBC Act
15. Review this plan and assess the need for further recovery actions

1. BACKGROUND

History

Acacia wilsonii was first collected by Paul G. Wilson from 10km north of Badgingarra in 1965. Subsequent collections were made between Eneabba and Badgingarra (a distance of about 50km) however the original collection site has not been relocated. Cowan and Maslin described the species in 1999.

The species is currently known from five populations comprising approximately 243 mature individuals.

Description

Acacia wilsonii is a low shrub to 30cm tall with horizontal branches bearing terete erect phyllodes, which are sessile, continuous on the branchlets and up to 13cm long. The flower heads are globular, golden yellow in colour, with stalks about 1cm long. The flowers have united sepals. The legumes are linear, subterete, to 5.5cm long and contain oblong dull brown seeds (Patrick and Brown 2001). Pods characteristics of the taxon suggest some affinities to *A. ridleyana* which occurs within its geographic range. *A. ridleyana* is easily recognised by its pulvinate, flat, shorter phyllodes which have a clear articulation between the pulvinus and the branchlet (Cowan and Maslin 1999).

The species is named in honour of Paul G. Wilson from the WA Herbarium who collected the type specimen (Cowan and Maslin 1999).

Distribution and habitat

Acacia wilsonii is endemic to Western Australia where it is found between Eneabba and Badgingarra, north of Perth. It grows on hills or slopes on grey, pale yellow-brown or pinkish sandy clay or loamy sand over a reddish pink laterite in open heath. At three population locations it grows in mallee woodland (*Eucalyptus eudesmioides)*. At Population 3 it grows in open tree mallee over dense thicket with *Eucalyptus gittinsii*, *E. accedens* and *Melaleuca urceolaris* on the lower slopes of a valley, on dry bare, brown, gravely/loamy sand. Associated species include *Eucalyptus suberea*, *Allocasuarina campestris*, *Calothamnus quadrifidus*, *C. hirsutus*, *Grevillea amplexans*, *Hakea incrassata*, *H. flabellifolia*, *H. spathulata*, *Gastrolobium spinosum*, *Banksia splendida* subsp. *macrocarpa* and *Spirogardnera rubescens*.

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

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
1. E of Eneabba	Moora	Carnamah	Unvested reserve	Road reserve	Shire of Carnamah
2a. N of Badgingarra	Moora	Coorow	Conservation Commission of WA	National park	DEC
2b. N of Badgingarra	Moora	Coorow	Unvested reserve	Road reserve	Shire of Coorow
2c. N of Badgingarra	Moora	Coorow	Unvested reserve	Road reserve	Shire of Coorow
3. N of Badgingarra	Moora	Coorow	Freehold	Private property	Landholders
4. N of Badgingarra	Moora	Dandaragan	Unvested reserve	Road reserve	Shire of Dandaragan
5. N of Badgingarra	Moora	Coorow	Unvested reserve	Road reserve	Shire of Coorow

Biology and ecology

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

Acacia wilsonii is a member of the Mimosaceae family and is likely to have a similar biology and ecology to other *Acacia* species. Germination of *A. wilsonii* is likely to be triggered by natural disturbance events (physical or fire), hence its affinity for growing in disturbed areas. *Acacia* seeds often have a hard seed coat and remain dormant until the seed coat is ruptured by heating or scarifying. This is a method exploited by many Australian species of *Acacia* to survive the fires that were a regular natural occurrence in many

Australian habitats. This was evident at Subpopulation 2a, which was burnt in 1995. The number of plants increased from five in 1996 to 31 in 2002.

Threats

Acacia wilsonii is declared as rare flora (DRF) under the Western Australian *Wildlife Conservation Act 1950* and is ranked in WA as Endangered under International Union for Conservation of Nature (IUCN 2001) criteria B1ab(ii, iii, iv)+2ab(ii, iii, iv); C2a(i); D due its extent of occurrence being less than 5,000km^2; its area of occupancy less than 500km^2; a severe fragmentation of populations; a continuing decline in area of occupancy, area, extent and/or quality of habitat and number of locations or subpopulations; no subpopulation estimated to contain more than 250 mature individuals; and population size estimated to be less than 250 mature individuals. The species is not listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). Current threats include:

- **Road, track and firebreak maintenance.** Threats include grading, chemical spraying and construction of drainage channels and the mowing of roadside vegetation. Several of these actions also encourage weed invasion.
- **Inappropriate fire regimes.** Frequent fire would likely deplete the soil seed store and conversely occasional fires may be required to germinate soil stored seed. Fire appears to also facilitate weed invasion and when it occurs should be followed up with appropriate weed control.
- **A reduction of factors positively influencing reproduction.** These may include a reduction of natural fire and disturbance in the habitat of the species.
- **Weed invasion.** Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also increase the fire hazard due to the easy ignition of high fuel loads, which are produced annually by many grass weed species.
- **Phytophthora dieback.** *Phytophthora* is a pathogen that causes root rot resulting in susceptible plants dying of drought stress. Although it is unlikely the species is susceptible, associated habitat species are highly susceptible.
- **Future mining operations.** Active exploration permits (EP320 R4 Origin Energy Developments Pty Ltd; EP454 Empire Oil Company) cover the sites of Populations 1, 2b, 2c and 4. Any future mining has the potential to severely impact the habitat.

The intent of this plan is to provide actions that will deal with immediate threats to *Acacia wilsonii*. Although climate change and drought may have a long-term effect on the species, actions taken directly to prevent their impact 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 (habitat)	Threats
1. E of Eneabba	Road reserve	1993 2 1996 24 2002 12 2007 98	Moderate	Road maintenance, inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion, future mining operations
2a. N of Badgingarra	National park	1996 *5 2002 31+	Healthy	Inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion
2b. N of Badgingarra	Road reserve	1996 *5 2002 64	Healthy	Road maintenance, inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion, future mining operations
2c. N of Badgingarra	Road reserve	1996 20+ 2007 38	Moderate	Road maintenance, inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion, future mining operations
3. N of Badgingarra	Private property	2000 <5 2007 8	Moderate	Inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion
4. N of Badgingarra	Road reserve	2002 1 2010 0	Poor (burnt 12/2009)	Road maintenance, inappropriate fire regimes, reduction of factors positively influencing

				reproduction, weed invasion, future mining operations
5. N of Badgingarra	Road reserve	2002 46 2007 4 (not fully surveyed)	Moderate	Road maintenance, inappropriate fire regimes, reduction of factors positively influencing reproduction, weed invasion

Populations in **bold text** are considered to be important populations. Note: * = total for subpopulations combined.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Actions for development and/or land clearing in the immediate vicinity of *Acacia wilsonii* may require assessment.

Actions that could result in any of the following may potentially result in a significant impact on the species:

- Damage or destruction of occupied or potential habitat.
- Alteration of the local surface hydrology or drainage.
- Reduction in population size.
- A major increase in disturbance in the vicinity of a population.
- Spread or amplification of dieback disease.

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

Acacia wilsonii is ranked in WA as EN and, as such, it is considered that all known habitat for wild populations is critical to the survival of the species and that the wild populations are important populations. Habitat critical to the survival of *A. wilsonii* 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 *Acacia wilsonii* will also improve the status of associated native vegetation. Seven DRF species and 24 priority flora taxa occur within 500 meters of *A. wilsonii* (see table below).

Table 3. Conservation–listed flora species occurring within 500m of *Acacia wilsonii*

Species name	**Conservation status (WA)**	**Conservation status (EPBC Act 1999)**
Banksia serratuloides subsp. *perissa*	DRF (Critically Endangered)	Vulnerable
Eucalyptus lateritica	DRF (Endangered)	Vulnerable
Eucalyptus leprophloia	DRF (Endangered)	Endangered
Banksia catoglypta	DRF (Vulnerable)	
Eucalyptus suberea	DRF (Vulnerable)	Vulnerable
Petrophile nivea	DRF (Vulnerable)	
Spirogardnera rubescens	DRF (Vulnerable)	Endangered
Arnocrinum gracillimum	Priority 2	
Baeckea sp. Bunney Road (S. Patrick 4059)	Priority 2	
Boronia scabra subsp. *condensata*	Priority 2	
Loxocarya gigas	Priority 2	
Stylidium diplotrichum	Priority 2	
Acacia flabellifolia	Priority 3	
Banksia nobilis subsp. *fragans*	Priority 3	
Banksia splendida subsp. *macrocarpa*	Priority 3	
Beaufortia bicolor	Priority 3	
Drosera marchantii subsp. *prophylla*	Priority 3	
Grevillea makinsonii	Priority 3	
Grevillea thyrsoides subsp. *thyrsoides*	Priority 3	

Lepidobolus quadratus	Priority 3	
Stylidium nonscandens	Priority 3	
Synaphea aephynsa	Priority 3	
Verticordia rutilastra	Priority 3	
Astoloma sp. Cataby (E.A. Griffin 1022)	Priority 4	
Banksia chamaephyton	Priority 4	
Desmocladus elongatus	Priority 4	
Eucalyptus pendens	Priority 4	
Grevillea rudis	Priority 4	
Hakea neurophylla	Priority 4	
Hibbertia propinqua	Priority 4	
Stylidium inversiflorum	Priority 4	

For a description of the Priority categories see Smith (2012).

Acacia wilsonii does not occur in association with any Threatened (TEC) or Priority (PEC) Ecological Communities.

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. The species is not listed under Appendix II in the United Nations Environment Program World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES), and this plan does not affect Australia's obligations under any other international agreements.

Indigenous consultation

A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register revealed no sites of Aboriginal significance adjacent to populations of *Acacia wilsonii*. Input and involvement has been 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. Indigenous opportunity for future involvement in the implementation of the Recovery plan is included as an action in the plan.

Social and economic impacts

The implementation of this recovery plan may result in some social and economic impact. For the population occurring on private property (Population 3) this may be through the loss of land available for development and impacts on land management practices. For populations on land under the management responsibility of the Shires of Carnamah, Coorow and Dandaragan (Populations 1 and 5 and Subpopulations 2b and 2c) economic impact may be through restrictions imposed on the management of these lands, in particular the maintenance of roads and roadside vegetation. There is also a cost involved in implementing recovery actions.

Affected interests

The implementation of this plan has some implications for land managers including private landholders and the Shires of Carnamah, Coorow and Dandaragan, particularly where populations occur on lands not specifically managed for conservation.

Evaluation of the plan's performance

DEC, with assistance from the Moora District Threatened Flora Recovery Team (MDTFRT), will evaluate the performance of this plan. In addition to annual reporting on progress the plan will be reviewed and evaluated against the criteria for success and failure following five years of implementation.

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

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

Criteria for success: The number of populations has increased and/or the number of mature individuals has increased by 10 per cent or more over the term of the plan.

Criteria for failure: The number of populations has decreased and/or the number of mature individuals has decreased by 10 per cent or more over the term of the plan.

3. RECOVERY ACTIONS

Existing recovery actions

All relevant stakeholders have been made aware of the existence of this species and its locations. These notifications detail the current status of the species as DRF and the associated legal obligations in regards to their protection.

Extensive surveying for *Acacia wilsonii* was undertaken by DEC Science Division staff in 1991 and 1992. Plants were found in four of the five recorded sites, however, the original collection site not was not relocated. One new population was located.

Population 3 of *Acacia wilsonii* has been fenced to protect the native vegetation.

Declared Rare Flora (DRF) markers have been installed at Populations 1 and 5 and Subpopulations 2b and 2c. These alert people working in the vicinity to the presence of the DRF and the need to avoid work that may damage the species or its habitat. Dashboard stickers and posters describing the significance of DRF markers have been produced and distributed to relevant Shires and other organisations.

2,398 seeds collected from *Acacia wilsonii* from Population 1 and Subpopulation 2a, are stored in DEC's Threatened Flora Seed Centre (TFSC) at –18°C (see table 4). The seed has been processed and the germination rates were 60 and 80%.

Table 4. Threatened flora feed centre collection details for *Acacia wilsonii*

Accession Number	Date collected	Population number	Collection type	Seeds/follicles in storage	Germination rate (%)
00350	20/10/1996	1	I/16	2370	60
01047	?	2a	B/0	28	80

Note: 'I' = a collection of individuals and the number of plants collected; 'B' = a bulked collection and the number of plants sampled

An information sheet, which includes a description of the plant, its habitat type, threats, management actions and photos has been produced.

Future recovery actions

DEC with assistance from the Moora District Threatened Flora Recovery Team (MDTFRT) is overseeing the implementation of this plan and will include information on progress in annual reports to DEC's Corporate Executive and funding bodies. 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

DEC with assistance from the MDTFRT will coordinate recovery actions for *Acacia wilsonii*.

Action: Coordinate recovery actions
Responsibility: DEC (Moora District) with assistance from the MDTFRT
Cost: $6,000 per year

2. Monitor populations

All populations will be inspected with accurate counts undertaken and locational information recorded. Monitoring of factors such as grazing, weed invasion, habitat degradation, hydrology (including salinity), population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity will also be undertaken.

Action: Monitor populations
Responsibility: DEC (Moora District)
Cost: $5,000 per year

3. Conduct weed control

Weeds are a potential threat to all populations and control may be required. The following actions will be implemented:

1. Determine which weeds are present and map them.
2. Select appropriate control technique; herbicide, mowing or hand weeding.
3. Control invasive weeds by hand removal and/or spot spraying around the *Acacia wilsonii* plants when weeds first emerge.
4. Revegetation with site specific species is required (in Autumn) to maintain low weed levels.
5. Monitor the success of the treatment on weed death, and the tolerance of *Acacia wilsonii* and associated native plant species to the treatment.
6. Report on the method and success of the threatment, and effect on *Acacia wilsonii* plants and associated species.

Action: Conduct weed control
Responsibility: DEC (Moora District) and Shires of Carnamah, Dandaragan and Coorow
Cost: $6,000 per year, as required

4. Undertake regeneration trials

Natural disturbance events (physical or fire) may be the most effective means of germinating *Acacia wilsonii* in the wild. Different disturbance techniques should be investigated (i.e. soil disturbance and fire), to determine the most successful and appropriate method. As well as the known population sites, trials will also be carried out at historical locations. Records will need to be maintained for future research. Any disturbance trials will need to be undertaken in conjunction with weed control.

Action: Undertake regeneration trials
Responsibility: DEC (Science Division and Moora District)
Cost: $7,000 in years 1 and 3, $2,000 in years 2, 4 and 5

5. Undertake surveys

It is recommended that areas of potential suitable habitat be surveyed for the presence of *Acacia wilsonii* during its flowering between February and October. All surveyed areas will be recorded and the presence or absence of the species documented to increase survey efficiency and reduce unnecessary duplicate surveys. Where possible, volunteers from the local community, landcare groups, wildflower societies and naturalists clubs will be encouraged to be involved.

Action: Undertake surveys
Responsibility: DEC (Moora District) with assistance from volunteers
Cost: $5,000 per year

6. Develop and implement a fire management strategy

Fire will, if possible, be excluded from the habitat of the 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 (Moora District)
Cost: $10,000 in first year and $2,000 in subsequent years

7. Collect and store seed

Preservation of genetic material is essential to guard against extinction of the species if the wild populations are lost. It is recommended that seed be collected and stored at DEC's TFSC and the Botanic Gardens and Parks Authority (BGPA).

Action: Collect and store seed
Responsibility: DEC (Moora District and TFSC) and BGPA
Cost: $5,000 per year

8. Maintain disease hygiene

Although it is unlikely the species is susceptible to Phytophthora dieback, the habitat is highly susceptible and hygiene measures are required. Dieback hygiene (outlined in CALM 2003 (now DEC)) will be followed for activities such as installation and maintenance of firebreaks and walking into the populations in wet soil conditions. Purpose built signs advising of the dieback risk and high conservation values of the sites will be installed if required.

Action: Maintain disease hygiene
Responsibility: DEC (Moora District)
Cost: $2,000 per year

9. Obtain biological and ecological information

Improved knowledge of the biology and ecology of the species will provide a scientific basis for management of *Acacia wilsonii* in the wild and should include:

1. soil seed bank dynamics and the role of various factors including disturbance, competition, drought, inundation and grazing in recruitment and seedling survival;
2. reproductive strategies, phenology and seasonal growth;
3. reproductive success and pollination biology;
4. minimum viable population size; and
5. the impact of changes in hydrology in the habitat.

Action: Obtain biological and ecological information
Responsibility: DEC (Science Division and Moora District)
Cost: $10,000 per year

10. Develop and implement a translocation proposal

Translocation may be deemed desirable for the conservation of this species if surveys fail to locate new populations and current populations decline. If deemed necessary, 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), and the Australian Network for Plant Conservation translocation guidelines (Vallee *et al*. 2004). 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: Develop and implement a translocation proposal if required
Responsibility: DEC (Science Division and Moora District)
Cost: $5,000 in year 4

11. Liaise with land managers and Indigenous communities

Staff from DEC's Moora District will liaise with appropriate land managers to ensure that populations of *Acacia wilsonii* are not accidentaly damaged or destroyed. Indigenous consultation will take place to determine if there are any issues or interests in areas that are habitat for the species.

Action: Liaise with land managers and Indigenous communities
Responsibility: DEC (Moora District)
Cost: $2,000 per year

12. Map habitat critical to the survival of *Acacia wilsonii*

Although habitat critical to the survival of the species is alluded to in Section 1, it has not yet been mapped and will be addressed under this action. If additional populations are located, habitat critical to their survival will also be determined and mapped.

Action: Map habitat critical to the survival of *Acacia wilsonii*
Responsibility: DEC (SCB and Moora District)
Cost: $6,000 in year 2

13. Promote awareness

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

Action: Promote awareness
Responsibility: DEC (Moora District, SCB and Corporate Relations) with assistance from the MDTFRT
Cost: $4,000 in year 1 and $2,000 in years 2-5

14. Nominate *Acacia wilsonii* for listing under the Commonwealth EPBC Act

A Species Profile and Threats (SPRAT) form will be forwarded to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities for referral to the Commonwealth Threatened Species Scientific Committee (TSSC) and Minister for the Environment for listing under the EPBC Act.

Action: Nominate *Acacia wilsonii* for listing under the Commonwealth EPBC Act
Responsibility: DEC (SCB)
Cost: $3,000 in year 1

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

If *Acacia wilsonii* is still ranked as Endangered at the end of the five-year term of this plan, the need for further recovery actions, or a review of this plan will be assessed and a revised plan prepared if necessary.

Action: Review this plan and assess the need for further recovery actions
Responsibility: DEC (SCB and Moora District)
Cost: $3,000 in year 5

Table 5. Summary of recovery actions

Recovery action	Priority	Responsibility	Completion date
Coordinate recovery actions	High	DEC (Moora District) with assistance from the MDTFRT	Ongoing
Monitor populations	High	DEC (Moora District) with assistance from the MDTFRT	Ongoing
Conduct weed control	High	DEC (Moora District) and Shires of Carnamah, Dandaragan and Coorow	Ongoing
Undertake regeneration trials	High	DEC (Science Division and Moora District)	2017
Undertake surveys	High	DEC (Moora District) with assistance from the MDTFRT and volunteers	Ongoing
Develop and implement a fire management strategy	High	DEC (Moora District)	Developed by 2013 with implementation ongoing
Collect and store seed	High	DEC (Moora District and TFSC) and BGPA	2017
Maintain disease hygiene	High	DEC (Moora District)	Ongoing
Obtain biological and ecological information	High	DEC (Science Division and Moora District)	2017
Develop and implement a translocation proposal	High	DEC (Moora District) and BGPA	2016
Liaise with land managers and Indigenous communities	High	DEC (Moora District)	Ongoing
Map habitat critical to the survival of *Acacia wilsonii*	Medium	DEC (SCB and Moora District)	2014
Promote awareness	Medium	DEC (Moora District, SCB and Corporate Relations) with assistance from the MDTFRT	Ongoing
Nominate *Acacia wilsonii* for listing under the Commonwealth EPBC Act	Medium	DEC (SCB)	2013
Review this plan and assess the need for further recovery actions	Medium	DEC (SCB and Moora District)	2017

4. TERM OF PLAN

This plan will operate from October 2012 to September 2017 but will remain in force until withdrawn or replaced. If the species is still ranked Endangered (or higher) after five years the need for further recovery actions will be determined.

5. REFERENCES

Cowan, R.S. and Maslin, B.R. (1999) *Acacia* miscellany. 17, miscellaneous new taxa and lectotypifications in Western Australian *Acacia*, mostly section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 12(3), 449-451.

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6. TAXONOMIC DESCRIPTION

***Acacia wilsonii* R.S. Cowan & Maslin**

Cowan, R.S. and Maslin, B.R. (1999) *Acacia* miscellany. 17, miscellaneous new taxa and lectotypifications in Western Australian *Acacia*, mostly section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 12(3), 449-451.

Prostrate *shrub*, normally 0.2−0.3m tall, to *c*. 0.3m wide, the branches spreading horizontally. *Branchlets* at first slightly angled, densely villous to pubescent with minute black resin hairs intermixed, soon terete and glabrous except resin hairs sometimes persistent. *Stipules* triangular, acuminate, 1.5−3mm long, persistent. *Phyllodes* sessile, continuous on branchlets and not easily detached from them, terete to subterete, 6.5−22.5mm long, 1−1.5mm diam., coriaceous to semi-rigid, ascending to erect, shallowly incurved to shallowly sigmoid or sinuous, glabrous, green (ageing yellow-green), stomata evident at x10 mag.; *apex* acute, commonly slightly curved to uncinated, innocuous; *longitudinal nerves* 8, strongly raised when dry (nerves separated by well-defined, longitudinal furrows). *Gland* absent. *Inflorescences* simple, 1 or 2 per axil; *peduncles* 4−10mm long, sometimes to 14mm long in fruit, densely villous and with minute resin hairs intermixed; *basal peduncular bract* lanceolate, 2.5mm long, persistent. *Heads* globular, golden, 8mm diam., densely 24−37-flowered; *bracteoles* exserted in young bud. *Flowers* 5-numerous; *sepals* 1/2−3/4 as long as petals, narrowly elliptic, 1/2−3/4 -united, ciliolate; *petals* 1/2-united, elliptic, glabrous. *Pods* linear, subterete, not constricted between seeds, 3−5.5cm long, 3−3.5mm wide, thinly crustaceous, slightly curved, dotted with minute, black resin hairs, greenish grey with yellowish, non-thickened margins. *Seeds* longitudinal, obloid, 2−3mm long, 1.5mm wide, 1.5mm thick, dull, brown, tuberculate, tubercules irregular in form, the areole area smooth, paler, sometimes raised; *pleurogram* U-shaped to nearly semicircular; aril terminal, yellow, scalloped.