INTERIM RECOVERY PLAN NO. 287

GIBSON WATTLE

(*Acacia imitans*)

INTERIM RECOVERY PLAN

2009-2014

July 2009

Department of Environment and Conservation
Kensington

Government of Western Australia

Department of Environment and Conservation
Our environment, our future

FOREWORD

Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Conservation and Land Management (CALM) Policy Statements Nos. 44 and 50. Note: the Department of CALM formally became the Department of Environment and Conservation (DEC) in July 2006. 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 Critically Endangered taxa are conserved through the preparation and implementation of Recovery Plans or Interim Recovery Plans and by ensuring that conservation action commences as soon as possible and always within one year of endorsement of that rank by the Minister.

This Interim Recovery Plan will operate from June 2008 to May 2013 but will remain in force until withdrawn or replaced.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 further recovery actions assessed.

This IRP was given regional approval on 3 June 2009 and approved by the Director of Nature Conservation on 31 July 2009. 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 July 2009.

IRP PREPARATION

This IRP was prepared by Rebecca Hayes[1] and Catherine Page[2]

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ACKNOWLEDGMENTS

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

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Amanda Shade	Assistant Curator (Nursery) Botanic Gardens and Parks Authority
Andrew Brown	Threatened Flora Coordinator, DEC Species and Communities Branch
Andrew Crawford	Principal Technical Officer (Threatened Flora Seed Centre), DEC Science Division
Anne Cochrane	Senior Research Scientist (Threatened Flora Seed Centre), DEC Science Division
Bridgitte Long	Technical Officer (DRF Database) DEC Species and Communities Branch
Craig Stevens	Mt Gibson Sanctuary Manager, Australian Wildlife Conservancy
Pindiddy Aboriginal Corporation	Ninghan Station IPA Managers
Victoria Cunningham	Technical Officer (Threatened Flora Seed Centre), DEC Science Division

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.

CITATION

This IRP should be cited as:

Department of Environment and Conservation (2009) *Acacia imitans* Interim Recovery Plan 2009-2014. Interim Recovery Plan No. 287. Department of Environment and Conservation, Western Australia.

SUMMARY

Scientific Name:	*Acacia imitans*	**Common Name:**	Gibson Wattle
Family:	Mimosaceae	**Flowering Period:**	August - September
DEC Region:	Midwest	**DEC District:**	Geraldton
Shire:	Yalgoo	**Recovery Team:**	Geraldton District Threatened Flora Recovery Team

Illustrations and/or further information: Patrick S (2001) *Declared Rare and Poorly Known Flora in the Geraldton District*, Department of Conservation and Land Management, Western Australia; Maslin, B.R. (1999) *Acacia* miscellany? (miscellaneous??) 16. The Taxonomy of Fifty-Five Species of *Acacia*, Primarily Western Australian, in Section *Phyllodineae* (Leguminosae: Mimosoideae). *Nuytsia* 12(3), 356-358; Western Australian Herbarium (2007) *Florabase – The Western Australian Flora*, Department of Environment and Conservation. http://florabase.dec.wa.gov.au; Paul Armstrong and Associates (2004) *Vegetation Assessment and Rare Flora Search Between Perenjori and Mt Gibson Conducted September and October 2003*, for Mt Gibson Iron Limited; Vital Options Consulting, *Ninghan Indigenous Protected Area Plan of Management 2004.*

Current status: *Acacia imitans* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in April 2002 and is ranked as Critically Endangered (CR) under World Conservation Union (IUCN 2001) Red List criteria B1ab(iii)+2ab(iii) due to its extent of occurrence being less than 100 km^2, very small and restricted population size and its highly disturbed habitat with a continued decline in quality. This species is not currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Acacia imitans has a restricted distribution between Wubin and Paynes Find, where it is known from seven populations on pastoral leases. The main threats are grazing by goats, track maintenance, inappropriate fire regimes and drought.

Description: *Acacia imitans* is a low, intricately branched, semi-prostrate shrub 0.3-1 m tall by 3 m across. Branches divide into numerous short, ridged smaller branchlets which end in a spine. Phyllodes are asymmetrical in shape, the upper margin straight or slightly concave, the lower margin convex, 3.5-7 mm long, 1.5-2.5 mm wide, thin, hairless and sharp-tipped. They are often bent backwards on the branches but are not grouped in clusters. Inflorescences are singular at each node, on a stalk 3-4 mm long. The flower head is golden, 6-8 mm long and 4-5 mm wide. Pods are tightly coiled to 7 mm long (when coiled) and 3 mm wide.

Habitat requirements: Plants grow on the summit and slopes of hills over rocky red loam and dolerite in open areas amongst tall shrubland with species of *Allocasuarina*, *Acacia*, *Grevillea* and *Dodonaea inaequifolia*.

Habitat critical to the survival of the species, and important populations: Habitat critical to the survival of the species includes the area of occupancy of important populations, areas of similar habitat surrounding important populations (i.e. hills and slopes of rocky red loam and dolerite), additional occurrences of similar habitat 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 for *Acacia imitans* will improve the health of associated native vegetation. Additionally, two Critically Endangered and four Priority Flora species occur in association with *Acacia imitans*.

Acacia imitans does not occur within a Threatened Ecological Community (TEC).

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 imitans* is not specifically listed under any international treaty and this 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 has identified that there are no sites of Aboriginal significance at or near populations of *Acacia imitan*s. However, involvement of the Indigenous community has been sought through the Pindiddy Aboriginal Corporation (PAC) to determine whether there are any issues or interests identified in the plan. Recovery actions identified within this plan refer to continued liaison and cooperation with the managers of the land, and in the case of those populations which are located on Ninghan Station, this refers to the PAC.

Social and economic impact: The implementation of this recovery plan may have some social and economic impact as all populations of *Acacia imitans* occur on pastoral leases. Negotiations will continue with regard to the future management of these populations. Mt Gibson Station is managed for conservation so social and economic impacts on this pastoral lease are less likely.

Affected interests: All known populations are found on pastoral leases and protection of habitat may potentially impact on their management. Mining tenement holders may also be affected by actions referred to in this plan. Other affected interests include Telstra, Department of Aviation, Department of Industry and Resources and Department of Environment and Conservation.

Evaluation of the plan's performance: DEC, in conjunction with the Geraldton District Threatened Flora Recovery Team (GDTFRT) 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.

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 individuals within populations and/or the number of populations increasing by ten percent or more over the term of the plan.
Criteria for failure: The number of individuals within populations and/or the number of populations decreasing by ten percent or more over the term of the plan.

Completed Recovery Actions

1. The managers of the pastoral leases containing the populations of *Acacia imitans* have been notified and advised of the locations and their legislative responsibilities to protect the plants.
2. The Geraldton District Flora Conservation Officer has liaised with managers.
3. An area which included habitat of *Acacia imitans* was declared an Indigenous Protected Area in October 2006. Through this declaration, funds are being provided by the Department of Environment, Water, Heritage and the Arts to conduct a range of conservation initiatives. These included the erection of a goat proof fence which was completed in 2006.
4. Mt Gibson Station, purchased by the Australian Wildlife Conservancy in 2001, has now largely been destocked.
5. Sue Patrick, from DEC, conducted surveys for *Acacia imitans* over 11.5 days between April 1992 and April 2001. These surveys covered much of the species' range, similar habitat close by, and hills west and north of known populations.
6. Population 1 has been monitored since 1992. Population 2 was monitored in 1994 and 2004, and has not been relocated since. Populations 3, 4 and 5 have been monitored since 2001 and Population 6 was monitored from 2001 to 2004, but also has not been relocated since.
7. DEC's Threatened Flora Seed Centre currently holds 5 collections of *Acacia imitans* totaling 5,494 seeds seed in storage at -18°C.
8. Germination trials have been conducted, resulting in a 96.3% average germination rate.
9. The Botanic Gardens and Parks Authority has two plants in its nursery.

Ongoing and future recovery actions

1. Feral goat control is being implemented, with approximately 1,300 goats removed from Ningan Station since the installation of a goat proof fence.
   Feral goat control is occurring on both Ninghan and Mt Gibson Stations, with approximately 1640 goats removed in total since the installation of the goat proof fence. 1300 of these have been removed from within the fenced area on Ninghan Station, and the remaining 340 goats were removed from the southern 'unfenced' border of the Indigenous Protected Area, from within the Mt Gibson Station. (*comment- statement taken from A.unguicula IRP- may be a more accurate description)*
2. Staff from DEC's Geraldton District regularly monitor all populations.
3. The GDTFT is overseeing the implementation of this IRP.

Recovery actions

1. Coordinate recovery actions	9. Obtain biological and ecological information
2. Nominate *Acacia imitans* for listing as Critically Endangered under the Commonwealth EPBC Act	10. Conduct further surveys
3. Liaise with relevant land managers and indigenous groups	11. Collect further seed
4. Develop and implement a feral goat control strategy	12. Monitor the level of weeds impacting populations and undertake weed control if considered necessary
5. Monitor populations	13. Start the translocation process, if necessary
6. Resurvey Populations 2 and 6	14. Promote awareness
7. Develop and implement a fire management strategy	15. Review the IRP and need for further recovery actions
8. Map habitat critical to the survival of *Acacia imitans*	

1. BACKGROUND

History

Collectively known as wattles, there are some 1000 species of *Acacia* found throughout Australia. One of the rarest is *Acacia imitans* which was first collected by Ken Newbey in 1965 and named by B.M. Maslin in 1999. Until formally named the species was confused with *Acacia kochii* and the name *imitans* refers to it imitating that species.

During surveys by Conservation and Land Management (CALM) staff in April 1992 there was evidence that *Acacia imitans* was subject to grazing by goats that were common in the plants habitat at that time (S. Patrick[1]). In August 2000, large numbers of goats were recorded and, during surveys undertaken in 2001, individual plants of *Acacia imitans* were recorded as grazed back to "spiny cushions", with phyllodes at the top of plants removed. Plant deaths were recorded in 2001 and 2002. The drought conditions experienced from 2001 to 2004 resulted in the grazing impact being particularly prominent over the plant's habitat.

Following early rains in 2004, DEC staff recorded a significant increase in the number of mature plants at Population 1, commenting that many plants that were previously unrecognisable and dead looking now had new growth.

The Australian Wildlife Conservancy purchased the pastoral lease for the Mt Gibson Station in 2001 and now manages the property for conservation.

In October 2006, the Pindiddy Aboriginal Corporation voluntarily declared two areas within Ninghan Station as Indigenous Protected Areas. The Ninghan Indigenous Protected Areas are currently managed in accordance with IUCN categories III and VI for conservation of biodiversity and associated cultural resources (DEWHA 2007b).

Description

Acacia imitans is a low intricately branched and semi-prostrate shrub 0.3-1 m tall by 3m across. Branches divide into numerous short, ridged smaller branchlets which end in a spine. Phyllodes are asymmetrical in shape, the upper margin straight or slightly concave, the lower margin convex, 3.5-7 mm long, 1.5-2.5 mm wide, thin, hairless and sharp-tipped. They are not grouped in clusters and are often bent backwards on the branches. Inflorescences are singular at each node, on a stalk 3-4 mm long. The flower head is golden, 6-8 mm long and 4-5 mm wide. Pods are tightly coiled to 7 mm long (when coiled) and 3 mm wide (Maslin 1999).

This species has been confused with *Acacia kochii* which occurs in the same area. Phyllodes of *A. kochii* are 1-2 cm long, grouped in bundles of 2-8 with a spine associated with each bundle. Flower heads are 7-13 mm long on stalks 1-2 cm. Pods are to 9 cm long and are not tightly coiled. *A. erinacea* also occurs in the same area and has a similar habit, small phyllodes and branches that form spines. It can be distinguished from *A. imitans* by its globular flower heads and pods which are short, straight and oblong, c. 8mm wide (Maslin 1999).

Distribution and habitat

Acacia imitans is currently known from 7 populations in a single area approximately 300 km northeast of Perth. Plants grow in disturbed, open locations on red loam amongst dolerite rocks on the summits and slopes of hills with *Allocasuarina tessellata*, *A. dielsiana*, *Acacia acuminata*, *Grevillea* species and *Dodonaea inaequifolia*. The extent of occurrence is estimated to be approximately 20 km^2. There is insufficient data to calculate the area of occupancy, as not all populations have it recorded. There are currently approximately 661 plants known.

Summary of population land vesting, purpose and manager

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
1. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Pindiddy Aboriginal Corporation

[1] Sue Patrick, former Research Scientist, CALM

2. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Australian Wildlife Conservancy
3. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Pindiddy Aboriginal Corporation
4. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Pindiddy Aboriginal Corporation
5. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Pindiddy Aboriginal Corporation
6. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Australian Wildlife Conservancy
7. North East of Wubin	Geraldton	Yalgoo	Pastoral Lease	Pastoral	Australian Wildlife Conservancy

Biology and ecology

Acacia imitans is a member of the Mimosaceae family and is likely to have a similar biology and ecology to other members. Germination of *Acacia imitans* is likely to be triggered by natural disturbance events (physical or fire), which may explain why many plants are located in disturbed areas.

Galls were recorded on some plants in Population 6 during a survey in October 2003.

Germination trials conducted on seed collections made from Population 3 resulted in a 98.5% average success rate. Trials conducted on the 2001 seed collection made from Population 5 resulted in a 92% success rate (A. Crawford[3] pers. comm.). Such a high success rate indicates there are other factors inhibiting natural recruitment, such as grazing of new seedlings, or insufficient germination triggers such as fire or other natural disturbance events.

Threats

Acacia imitans was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in April 2002 and is currently ranked as Critically Endangered (CR) under World Conservation Union (IUCN 2001) Red List criterion B1ab(iii)+2ab(iii) due to its extent of occurrence being less than 100 km^2, very small and restricted population sizes and a continuing decline in quality of habitat. The main threats are grazing by feral goats, track maintenance, inappropriate fire regimes and drought. *Acacia imitans* is not currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Grazing by goats is a serious threat. Grazing removes new growth and reduces reproductive output. All populations have been seriously affected by grazing.

Track maintenance threatens most populations.

Inappropriate fire regimes may affect the viability of populations. As seeds of *Acacia imitans* are thought to germinate following fire, it is likely that occasional fires are needed for recruitment. A lack of fire may therefore result in population senescence and rapid decline.

Drought is a threat to all populations of *Acacia imitans*, and has the potential to increase grazing impact as animals become more desperate for food.

Small population size increases the likelihood of populations being adversely impacted on by a single event. As *Acacia imitans* populations are mostly very small, the likelihood of the species being adversely impacted by chance demographic or environmental events is increased. Small populations are also at a greater risk of loss of genetic diversity and inbreeding depression.

Mineral exploration is a potential threat to populations of *Acacia imitans*. All are located in areas covered by mining tenements.

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

Summary of population information and threats

Pop. No. & Location	Year	No. plants	Condition	Threats
1. North East of Wubin	1992 2004 2007	ca. 100+ ca. 200+ ca. 200+	Moderate Moderate Moderate	Grazing, drought, wildfire, small population size, mineral exploration, potential mining operations
2. North East of Wubin	1994	ca. 10+	Healthy	Grazing, drought, wildfire, small population size, mineral exploration, potential mining operations
3. North East of Wubin	2001 2004 2006 2007	ca. 30 ca. 30+ 33 ca. 36+ (ca. 5+)	Moderate Poor Moderate Moderate	Grazing, drought, wildfire, small population size, mineral exploration, potential mining operations
4. North East of Wubin	2001 2002 2007	30 36 ca. 300+	Moderate Poor Moderate	Grazing, drought, wildfire, small population size, mineral exploration, potential mining operations
5. North East of Wubin	2001 2006 2007	132 ca. 80+ ca. 100+	Moderate Moderate Moderate	Grazing, drought, wildfire, small population size, mineral exploration, potential mining operations
6. North East of Wubin	2001 2004	ca. 6 ca. 25+	Poor Healthy	Grazing, drought, wildfire, small population size, mineral exploration, potential mining operations

( ) = number of seedlings.

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 imitans* will require assessment. On-ground works should not be approved unless the proponents can demonstrate that they will not have a significant negative impact on the species, its habitat or potential habitat or on the local surface hydrology, such that drainage in the habitat of the species would be altered.

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

Habitat critical to the survival of the species includes:

- The area of occupancy of important populations.
- Areas of similar habitat surrounding important populations (i.e. open areas in red loam amongst dolerite rocks - these provide potential habitat for natural range extension).
- Remnant vegetation that surrounds and links populations (this is necessary to allow pollinators to move between populations).
- The local catchment for the surface and ground waters that maintain the habitat of the species.
- Additional occurrences of similar habitat that may contain the species or be suitable for future translocations.

Given that *Acacia imitans* is ranked as Critically Endangered, it is considered that all known habitat of wild populations is critical to the survival of the species and that all wild populations are important populations.

Benefits to other species or ecological communities

Recovery actions implemented for *Acacia imitans* will also improve the health of associated native vegetation. Additionally, two Critically Endangered and four Priority Flora occur in association with *Acacia imitans*. These taxa are listed in the table below.

Conservation-listed flora species occurring in habitat of *Acacia imitans*

Species Name	Conservation Status (Western Australia)	Conservation Status (EPBC Act 1999)
Acacia unguicula	Critically Endangered	Critically Endangered
Hybanthus cymulosus	Critically Endangered	-
Allocasuarina tessellata	Priority 1	-
Grevillea scabrida	Priority 3	-
Grevillea subtiliflora	Priority 1	-
Micromyrtus racemosa var. *mucronata*	Priority 1	-

Acacia imitans does not occur within a Threatened Ecological Community (TEC).

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 imitans* is not listed under any specific international treaty and this 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 has identified that there are no sites of Aboriginal significance at or near populations of *Acacia imitans*. However, involvement of the Indigenous community has been sought through the Pindiddy Aboriginal Corporation (PAC) to determine whether there are any issues or interests identified in the plan.

The PAC manages Ninghan Station, and together with Vital Options Consulting, has produced a comprehensive plan of Management for the Indigenous Protected Area (IPA), which recognizes the values of this and other species of rare flora within the IPA, and sets out management objectives to assist with the conservation of these species (Vital Options Consulting 2004). A 480 sq km area on Ninghan Station was declared as an Indigenous Protected Area in October 2006 (DEWHA 2007b). This area also includes all known populations of *Acacia unguicula* within its boundaries. The Indigenous Protected Areas (IPA) program is part of Australia's National Reserve System Program which aims to establish a network of protected areas which includes a representative sample of all types of ecosystems across the country. With support from the IPA program, Indigenous landowners commit themselves to manage their lands for the protection of natural and cultural features in accordance with internationally recognised standards and guidelines (DEWHA 2007a). Recovery actions identified within this plan refer to continued liaison and cooperation with the managers of the land, and this refers to the PAC.

Social and economic impact

The implementation of this recovery plan has the potential to have some limited social and economic impact. All populations of *Acacia imitans* occur in a pastoral lease and negotiations will continue with regard to the future management of these populations. A mineral exploration tenement also covers the area where *A. imitans* is known to occur, and there is potential for some economic impact should the owners of this licence wish to explore the area. Recovery actions refer to continued liaison between stakeholders with regard to populations located on the pastoral leases.

Affected interests

All known populations occur pastoral leases and protection of plants potentially impacts on the management of the leases. Mining tenement holders may also be affected by actions referred to in this plan. Other parties that may be affected include Telstra, Department of Aviation, Department of Industry and Resources and Department of Environment and Conservation.

Evaluation of the plan's performance

The DEC in conjunction with the Geraldton District Threatened Flora Recovery Team (GDTFRT) will evaluate the performance of this IRP. In addition to annual reporting on progress and evaluation against the criteria for success and failure, the plan will be reviewed following five years of implementation.

2. RECOVERY OBJECTIVE AND CRITERIA

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 removal of major threats resulting in the number of individuals within populations and/or the number of populations increasing by ten percent or more over the term of the plan.
Criteria for failure: The continuation of major threats resulting in the number of individuals within populations and/or the number of populations decreasing by ten percent or more over the term of the plan.

3. RECOVERY ACTIONS

Completed recovery actions

The managers of the pastoral leases have been made aware of the threatened nature of this species, its location and their legal obligations to protect it.

The Geraldton District Flora Conservation Officer has liaised with the managers to raise awareness of the threatened flora values and encourage destocking and fencing areas containing rare flora. This has also involved liaison with staff from the WA Department of Agriculture and Food regarding levels of grazing.

According to a Department of the Environment and Water Resources report in 2007, pastoralists on Ninghan Station reduced sheep stocking levels from 18000 in 1993 to c. 2300 by 2004. Around 9000 feral goats were removed from the Station over a 10 year period between 1997 and 2007, with 1300 of those being removed since the installation of a goat proof fence.

A large area, including habitat for *Acacia imitans*, was declared an Indigenous Protected Area (IPA) in October 2006 under World Conservation Union (IUCN 2001) *Category III – Natural Monument: Protected Area managed for conservation of specific natural features* (700 hectares) and *Category IV – Habitat/Species Management Area: Protected Area managed mainly for conservation through management intervention* (47000 hectares). A proposal to fence the area was developed, and the Central Agricultural and Pastoral Aboriginal Corporation (CAPAC) assisted the Pindiddy Aboriginal Corporation in preparing an application for funds through the Indigenous Protection Program. In 2006, $200,000 was granted to Ninghan Station IPA through the Australian Government's Natural Heritage Trust towards the fencing of a 50,000 hectare area (NHT 2005). A goat proof fence was erected along the western, northern and northeastern border of the IPA. This funding is also being used for portable goat trap yards to aid the ongoing removal of goats and other feral animals (DEWHA 2007b). A DEC Flora Conservation Officer liaised with the Central Agricultural and Pastoral Aboriginal Corporation (CAPAC) and provided assistance.

Mt Gibson Station pastoral lease was purchased in 2001 by the Australian Wildlife Conservancy, a private conservation group, who aim to remove all stock and feral animals from the station (AWC 2006). Numerous musters for feral goats and livestock have occurred since purchasing the property, with the vast majority of stock now removed from the Station. Following the erection of the goat proof fence bordering the west, north and northeast boundary of the Ninghan IPA, in February 2007, 340 goats were removed from the northern boundary of Mt Gibson Station (southern border of the Ninghan IPA), contributing to the feral goat control measures carried out within the IPA. The mustering program for feral goats is ongoing in this area (C. Stevens[2] pers. comm.).

Sue Patrick, from DEC, conducted surveys for *Acacia imitans* and other rare flora over 11.5 days from April 1992 to April 2001. These surveys covered much of the species' habitat, similar habitat close by, and hills west and north of populations.

The Threatened Flora Seed Centre (TFSC) holds five collections, totaling 5494 seeds, of *Acacia imitans* in storage at -18°C. Of these, 323 seeds were collected from Population 3 and 2069 seeds collected from Population 5. In November 2004, an additional 323 seeds were collected from Population 3, 2741 seeds from Population 5 and 38 seeds from Population 6. Germination trials on seeds collected from Population 3 resulted in 97% germination, Population 5 - 92% germination and Population 3 - 100% germination. Other collections have not yet been tested (A. Crawford[3] pers. comm.). The germinants resulting from TFSC germination trials

were given to the Botanic Gardens and Parks Authority (BGPA) nursery. Only 2 survived (A. Shade[2] pers. comm.).

Ongoing and future recovery actions

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

The GDTFRT is overseeing the implementation of this IRP.

Permission has been/will be sought from the appropriate land managers prior to any recovery actions being undertaken on their land. 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 GDTFRT will continue to coordinate the implementation of recovery actions for *Acacia imitans* and other Declared Rare Flora in their district and will include information on progress in their annual report to DEC's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $1,400 annually.

2. Nominate *Acacia imitans* for listing as Critically Endangered under the Commonwealth EPBC Act.

Staff from DEC's Species and Communities Branch (SCB) will develop a Species Profile and Threats (SPRAT) and nomination form for this species, and forward it to the Commonwealth Department of Environment, Water, Heritage and the Arts for referral to the Threatened Species Scientific Committee (TSSC) for endorsement under the EPBC Act.

Action: Nominate *Acacia imitans* for listing as Critically Endangered under the Commonwealth EPBC Act
Responsibility: DEC (Species and Communities Branch)
Cost: $1,400 in the first year.

3. Liaise with relevant land managers and Indigenous groups

Staff from DEC's Geraldton District will liaise with appropriate land managers to ensure that populations of *Acacia imitans* are not accidentaly damaged or destroyed. Input and involvement will also be sought from Indigenous groups that have an active interest in areas that are habitat of the species.

Action: Liaise with relevant land managers and Indigenous groups
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $1,000 annually.

4. Develop and implement a feral goat control strategy

Grazing by goats (*Capra hircus*) threatens all populations of *Acacia imitans.* Although aerial mustering is proving to be most successful in their control, a range of factors are inhibiting their eradication. One possible option may include fencing of populations most at risk from grazing. Methods of controlling grazing will be investigated and a control strategy developed, implemented and monitored for success.

Action: Develop and implement a feral goat control strategy
Responsibility: DEC (Geraldton District) through the GDTFRT, in partnership with land managers

[2] Amanda Shade, Assistant Curator, Botanic Gardens and Parks Authority

Cost: $6,000 in year 1 for development and implementation; $3,700 in years 2-5 for implementation

5. Monitor populations

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

Action: Monitor populations
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $2,200 annually.

6. Resurvey Populations 2 and 6.

Population 2 was last surveyed by DEC staff in 2004 and Population 6 in 2003. At that time it was recorded that 80% of plants in Population 6 were dead, and that some live plants had galls. Further surveys of these populations are required.

Action: Resurvey Populations 2 and 6.
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $1,000 in year 1.

7. Develop and implement a fire management strategy

Evidence suggests that *Acacia imitans* seed germination may be triggered by fire. However, frequent fire may result in the death of immature plants before they are able to provide sufficient soil-stored seed for recruitment. Fire also promotes the introduction and proliferation of weed species. Fire should therefore 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 land managers, and will include recommendations on prescription fire frequency and intensity; precautions to prevent fire; a strategy for reacting to wildfire; and the need, method of construction, and maintenance of firebreaks. The Australian Wildlife Conservancy (AWC) has consulted with DEC's Fire Management Services Branch and is currently preparing a Fire Management Plan for Mt Gibson Station. Opportunities may exist for DEC to work with AWC in the preparation and application of this plan over a wider area, including the Ninghan IPA.

Action: Develop and implement a fire management strategy
Responsibility: DEC (Geraldton District and FMSB) through the GDTFRT, and relevant authorities
Cost: $2,100 in the first year for development; $1,500 per year thereafter for implementation.

8. Map habitat critical to the survival of *Acacia imitans*

While this species is not currently listed under the EPBC Act, this is a future intention, and it is a requirement of the EPBC Act that spatial data relating to habitat critical to the survival of *Acacia imitans* be determined. Although this is described in Section 1, it has not yet been mapped and will be addressed under this action. If additional populations are located, then habitat critical to the survival of the species will be determined and mapped for these locations also.

Action: Map critical habitat critical to the survival of *Acacia imitans*
Responsibility: DEC (Geraldton District) and SCB through the GDTFRT
Cost: $2,500 in year 2.

9. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Acacia imitans* will provide a scientific basis for its management in the wild. An understanding of the following is necessary for effective management:

- The pollination biology of the species.

- The requirements of pollinators.
- Soil seed bank dynamics, including seedbank location and viability.
- The role of fire, competition, rainfall and grazing in germination and recruitment.
- The reproductive strategies, phenology and seasonal growth of the species.
- The population genetic structure, levels of genetic diversity and minimum viable population size.
- Longevity of plants and time taken to reach maturity.
- Where galls are present, identification of insect and an assessment of whether control measures are required.

Action: Obtain biological and ecological information
Responsibility: DEC (Geraldton District, Science Division) through the GDTFRT
Cost: $10,000 annually.

10. Conduct further surveys

Areas of potential habitat (i.e. open areas in red loam amongst dolerite rocks) will be surveyed for the presence of *Acacia imitans* during its flowering period. All surveyed areas will be recorded and the presence or absence documented to increase survey efficiency and reduce the possibility of duplication. Surveys should focus on areas between Wubin and Paynes Find. Where possible, volunteers from the local community, wildflower societies and naturalists clubs should be involved in surveys, supervised by DEC staff.

Action: Conduct further surveys
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $3,500 in years 1, 3 and 5.

11. Collect further seed

Germplasm should be stored as an insurance against extinction in the wild. Some seed has been collected but additional collections are required to maintain adequate representation of the genetic diversity of this species. The patterns of viability that emerge from standard tests on seed collected may indicate the need for other recovery actions. Germinants from seed testing at the TFSC should be used to enhance the living collection at BGPA. The "Germplasm Conservation Guidelines for Australia" produced by the Australian Network for Plant Conservation (ANPC) should be used as a minimum standard to guide this process (ANPC 1997).

Action: Collect further seed
Responsibility: DEC (TFSC, BGPA, Geraldton District) through the GDTFRT
Cost: $4,500 annually, if required.

12. Monitor the level of weeds impacting populations and undertake weed control if considered necessary

The current level of threat from weeds is low at all populations. However, if weed numbers increased, i.e. following fire, they would impact on *Acacia imitans* by competing for resources, degrading habitat, exacerbating grazing pressure, and increasing the risk and severity of fire. If during monitoring it is deemed that the threat from weeds has increased, weed control will be undertaken in consultation with land managers: Actions will include:

1. Monitor all populations for weed invasion.
2. Select appropriate herbicides after determining which weeds are present.
3. Control invasive weeds by hand removal or spot spraying around plants of the *Acacia imitans* when weeds first emerge.
4. Schedule weed control to include spraying at other threatened flora populations within the area.
5. Regularly monitor weeds and implement additional weed control if required.

The tolerance of associated native plant species to herbicides at the site of *Acacia imitans* is not known and weed control programs will be undertaken in conjunction with research and in a manner that minimises negative impacts on associated native flora.

Action: Monitor the level of weeds impacting populations and undertake weed control if considered necessary
Responsibility: DEC (Geraldton District, Science Division) through the GDTFRT
Cost: $1,500 annually if required.

13. Start the translocation process, if necessary

Translocation may be deemed desirable for the conservation of this species if attempts to control the feral goat population are not successful. 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). All translocation proposals require endorsement by DEC's Director of Nature Conservation. Monitoring of translocations is essential and will be included in the timetable developed for the Translocation Proposal.

Action: Start the translocation process, if necessary
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $2,200 in year 5.

14. Promote awareness

The importance of biodiversity conservation and the need for the long-term protection of wild populations of *Acacia imitans* will be promoted to the community through poster displays and the local print and electronic media. Formal links with local naturalist groups and interested individuals will also be encouraged. An information sheet will be produced, and will include a description of the plant, its habitat, threats, recovery actions and photos. This will be distributed to the public through DEC's Geraldton District office and at the offices and libraries of the Shires of Yalgoo, Mt Marshall, Perenjori and Dalwallinu. Such information distribution may lead to the discovery of new populations.

Action: Promote awareness
Responsibility: DEC (Geraldton District) through the GDTFRT
Cost: $1,700 in year 1 and $1,000 for years 2 to 5.

15. Review the IRP and need for further recovery actions

At the end of its five-year term the IRP will be reviewed and the need for further recovery actions will be assessed. If *Acacia imitans* is still ranked as Critically Endangered at that time a full Recovery Plan may be required.

Action: Review the IRP and the need for further recovery actions
Responsibility: DEC (Geraldton District and SCB) through the GDTFRT
Cost: $2,000 in year 5.

Summary of recovery actions

Recovery Actions	Priority	Responsibility	Completion date
Coordinate recovery actions	High	Geraldton District, GDTFRT	Ongoing
Nominate *Acacia imitans* for listing as Critically Endangered under the Commonwealth EPBC Act	High	Species and Communities Branch	2009
Liaise with relevant land managers and Indigenous groups	High	Geraldton District, GDTFRT	Ongoing
Develop and implement a feral goat control strategy	High	Geraldton District, GDTFRT, land managers	Ongoing
Monitor populations	High	Geraldton District, GDTFRT	Ongoing
Resurvey Populations 2 and 6	Medium	Geraldton District, GDTFRT	2009
Develop and implement a fire management strategy	Medium	Geraldton District, GDTFRT, relevant authorities	Ongoing
Map habitat critical to the survival of *Acacia imitans*	Medium	Species and Communities Branch, Geraldton District, GDTFRT	2009

Obtain biological and ecological information	Medium	Science Division, Geraldton District, GDTFRT	2009
Conduct further surveys	Medium	Geraldton District, GDTFRT	Ongoing
Collect further seed	Medium	Threatened Flora Seed Centre, Geraldton District, GDTFRT	2009
Monitor the level of weeds impacting populations and undertake weed control if considered necessary	Low	Science Division, Geraldton District, GDTFRT	Ongoing
Start the translocation process, if necessary	Low	Species and Communities Branch, Geraldton District, GDTFRT	Ongoing
Promote awareness	Low	Geraldton District, GDTFRT	2009
Review the IRP and the need for further recovery actions	Low	Species and Communities Branch, Geraldton District, GDTFRT	2013

4. TERM OF PLAN

This IRP will operate from June 2008 to May 2013 but will remain in force until withdrawn or replaced. If the taxon is still ranked Critically Endangered after five years, the need for further recovery actions and an update of this IRP will be assessed.

5. REFERENCES

Atkins, K. (2008) *Declared Rare and Priority Flora List for Western Australia.* Department of Environment and Conservation, Western Australia.

AWC (2006) *Mt Gibson Sanctuary – Programs*, Australian Wildlife Conservancy, available at http://www.australianwildlife.org/mtgibson_programs.asp

Conservation and Land Management (1995) Policy Statement No. 29 *Translocation of Threatened Flora and Fauna*. Department of Conservation and Land Management, Western Australia.

Department of Environment and Conservation (2007) *Threatened Flora Database (DEFL)*. Species and Communities Branch, Department of Environment and Conservation, Western Australia.

Department of Environment, Water, Heritage and the Arts (2007a), *The Indigenous Protected Area Programme*, Indigenous Communities and the Environment, Department of the Environment, Water, Heritage and the Arts, available at http://www.environment.gov.au/indigenous/ipa/index.html

Department of Environment, Water, Heritage and the Arts (2007b), *Ninghan – Indigenous Protected Area*, Indigenous Communities and the Environment, Department of the Environment, Water, Heritage and the Arts, available at http://www.environment.gov.au/indigenous/ipa/declared/ninghan.html

World Conservation Union (2001) *IUCN Red List Categories: Version 3.1.* Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

Maslin, B.R. (1999) *Acacia* miscellany 16. The Taxonomy of Fifty-Five Species of *Acacia*, Primarily Western Australian, in Section *Phyllodineae* (Leguminosae: Mimosoideae). *Nuytsia* 12(3), 356-358.

Patrick S.J. (2001) *Declared Rare and Poorly Known Flora in the Geraldton District – Wildlife Management Program No. 26*, Department of Conservation and Land Management, Western Australia.

Vital Options Consulting (2004), *Ninghan Indigenous Protected Area Plan of Management*, for Pindiddy Aboriginal Corporation and the Department of Environment and Heritage

Western Australian Herbarium (2007), *Florabase – The Western Australian Flora*, Department of Environment and Conservation http://florabase.dec.wa.gov.au

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* 12(3), 356-358.

Acacia imitans Maslin, *sp. nov.*

Dense, intricate, low-domed, semi-prostrate, spreading *shrub* 0.3-1 m tall, to 3 m wide. *Bark* grey, smooth or slightly roughened. *Branches* terete, ribless, glabrous, dividing into numerous, divaricate, short, straight, rigid,

spinescent branchlets which (especially with age) are commonly devoid of phyllodes. *Stipules* united, c. 0.5mm long, ciliolate, otherwise glabrous, early caducous. *Phyllodes* asymmetric, arcuata-oblong or widely elliptic, upper margin straight to shallowly concave, lower margin markedly convex, 3.5-7 mm long, 1.5-2.5 mm wide, 1:w 2-3, thin, not fasciculate, patent to slightly or prominently reflexed, glabrous, subglaucous; *midrib* not prominent, brown, upturned; base unequal; *pulvinus* terete, 0.5 mm long, yellow, finely transversely wrinkled when dry. *Gland* situated on adacial margin 0.3-0.5 mm above pulvinus, circular, minute, 0.1-0.2 mm <0.5 mm long; *peduncles* 3-4 mm long, antrorsely appressed-puberulous; *basal bract* solitary, widely ovate, c. 0.5 mm long, thickened at the base. *Spikes* obloid to shortly cylindrical, 6-8 mm long and 4-5 mm wide at anthesis (dry), probably golden, 25-30-flowered; *bracteoles* peltate, those at base of ciliolate otherwise glabrous. *Flowers* 5-merous; *calyx* c. ½ length of corolla, divided to ¼-½ its length into broadly triangular or oblong lobes, sparsely puberulous; *petals* 1-1.2 mm long, free almost to base, glabrous, nerveless. *Pod* tightly coiled as in *Medicago*, to c. 7mm long (unexpanded), 3 mm wide, firmly chartaceous; glabrous, dark red-brown. *Seeds* (old crop retained in pod), longitudinal, obloid-ellipsoid to ovoid, 3 mm long, 2 mm wide, 1 mm thick, dull, dark brown; *funicle* filiform; aril 0.6-0.8 mm long, obliquely placed at end of seed.

Affinities. Until now the new species has usually been confused with *A. kochii* W. Fitzg. Ex A.J. Ewart & Jean White which is recorded from the type locality and resembles the new species superficially in its spinescent branchlets, cylindrical spikes and 1-nerved phyllodes with fine, anastomosing lateral veins. Other characters shared by these two species include their ± ribless, commonly glabrous branchlets, their united sepals and peltate bracteoles. *Acacia kochii* can be distinguished easily from *A. imitans* in the following ways: mature phyllodes 10-20 mm long and fasciculate in groups of 2-8, a patent thorn (modified branchlet) 10-20 mm long associated with most fascicles; peduncles10-20 mm long; spikes 7-15 mm long (at anthesis, dry); petals c. 2 mm long; pods torulosa, to 9 cm long, not tightly spirally coiled; seeds 5 x 3.5 mm; aril ± conical and conspicuous. *Patrick* 1850 from NNW of Mt Gibson (PERTH) is more openly branched and has phyllodes 5-9 mm long and peduncles 3-4 mm long, giving it some resemblance to *A. kochii*.

Acacia erinacea Benth. also occurs near the type locality and superficially resembles the new species in its habitat, spinescent branchlets and small phyllodes. This species is readily distinguished from *A. imitans* by its globular heads and short, straight, flat oblong pods 7-10 mm wide.

Species such as *Acacia imitans* and *A. kochii* which combine 1-nerved phyllodes and spicate inflorescences are rare in *Acacia*. Such a combination of characters is known in *A. dorothea* Maiden (New South Wales), *A. lucasii* Blakely (New South Wales, Victoria) and *A. anomala* Court (Western Australia) but these taxa are not closely related to the new species.