INTERIM RECOVERY PLAN NO. 240

ROBUST CONE-FLOWER

(*Isopogon robustus*)

INTERIM RECOVERY PLAN

2007-2013

February 2008

Department of Environment and Conservation
Kensington

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.

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

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

This IRP will operate from May 2007 to April 2012 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked as CR at the end of the five-year term, this IRP will be reviewed and the need for further recovery actions assessed.

This IRP was given regional approval on 11 January 2008 and was approved by the Director of Nature Conservation on 6 February 2008. The provision of funds identified in this IRP is dependent on budgetary and other constraints affecting DEC, as well as the need to address other priorities.

Information in this IRP was accurate at February 2007.

IRP PREPARATION

This IRP was prepared by Craig Douglas[1], Amanda Fairs[2], Wendy Johnston [3] and David Jolliffe[4]

[1] Project Officer, Species and Communities Branch, DEC, 17 Dick Perry Ave, Technology Park, Western Precinct, Kensington, WA 6151.
[2] Project Officer, Species and Communities Branch, DEC, 17 Dick Perry Ave, Technology Park, Western Precinct, Kensington, WA 6151.
[3] Flora Conservation Officer, Yilgarn District, DEC, PO Box 332, Merredin WA 6415.
[4] District Nature Conservation Officer, Yilgarn District, DEC, PO Box 332, Merredin WA 6415.

ACKNOWLEDGMENTS

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

Andrew Brown	Threatened Flora Coordinator, Species and Communities Branch, DEC
Andrew Crawford	Technical Officer, Threatened Flora Seed Centre, DEC
Amanda Shade	Assistant curator of displays and development, Botanic Gardens Parks Authority
Jasmyn Lynch	ACC Flora Officer, Yilgarn District, DEC

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

Cover photograph by Wendy Johnston.

CITATION

This IRP should be cited as:
Department of Environment and Conservation. (2007). Robust Cone-Flower (*Isopogon robustus*) Interim Recovery Plan 2007-2013. Interim Recovery Plan No. #. Department of Environment and Conservation, Western Australia.

SUMMARY

Scientific Name	***Isopogon robustus***	**Common Name**	Robust Cone-flower
Family	Proteaceae	**Flowering Period**	September - October
DEC Region	Wheatbelt	**DEC District**	Yilgarn
Shire	Yilgarn	**Recovery Team**	Yilgarn District Threatened Flora Recovery Team
NRM Region	Avon		

Illustrations and/or further information: Gibson, N. (2005). A new species of *Isopogon* (Proteaceae) from southwest Western Australia. *Muelleria*. **21**: 97-99; DEC. (2007). *Western Australian Herbarium FloraBase 2 – Information on the Western Australian Flora* (Accessed 2007). Department of Environment and Conservation, Western Australia. http://www.calm.wa.gov.au/science/.

Current status: *Isopogon robustus* was declared as Rare Flora in 2001 under the Western Australian *Wildlife Conservation Act 1950* and is currently ranked as Critically Endangered (CR) under the World Conservation Union (IUCN 2001) Red List criteria B2ab(v); C2a(ii), due to its area of occupancy being less than 10 km^2, the species being known from a single location, a continuing decline in the number of mature plants and at least 90% of mature individuals in one population. The species is not currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats are mining activities, small population size and inappropriate fire regimes.

Isopogon robustus is known from a single population of 203 mature plants south-east of Marvel Loch.

Description: *Isopogon robustus* is a shrub to 1.5 m high by 2 m across. Branchlets are red-brown to grey-brown, with a sparse covering of small hairs. Leaves are simple, circular in cross-section, 15 cm long and 2.5 to 3.3 mm wide with no distinct petiole. They are pungent, rough to touch with a covering of silky hairs, becoming hairless. The inflorescence is solitary, obovoid to 38 mm in diameter and surrounded by leaves. The bracts are broad, ovate, closely packed and overlapping, with long cottony hairs on the outside. Bracts remain attached and become hard after flowering. The cone scales are narrower, densely packed and overlapping, with orange hairs. The cone usually lacks hairs toward the apex. Flowers are pink and 19 to 25 mm long. Cones are 19 to 24 mm in diameter and lack hairs. Nuts are ovoid, beaked, 2.8 to 3.7 mm long, with a covering of long soft yellow hairs (Gibson, 2005).

Habitat requirements: *Isopogon robustus* occurs on an unusual substrate of decomposing laterite shelves in grey skeletal sandy loam over laterite, in very open shrubland (Gibson, 2000).

Habitat critical to the survival of the species, and important populations: Given that *Isopogon robustus* is ranked as CR, it is considered that all known habitat for the wild population is critical to the survival of the species, and that the wild population is an important population. Habitat critical to the survival of *Isopogon robustus* includes the area of occupancy of the known population, areas of similar habitat surrounding the known population, these providing potential habitat for population expansion and for pollinators, additional occurrences of similar habitat that may contain undiscovered populations of *Isopogon robustus* or be suitable sites 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: *Isopogon robustus* occurs within the Priority 3(iii) Parker Range Ecological Community (PEC). Two priority species also occur in association with *Isopogon robustus*, these being listed in the table below

Conservation-listed flora species occurring in habitat of *Isopogon robustus*

Species name	Conservation Status (Western Australia)	Conservation Status (EPBC Act 1999)
Leucopogon sp. Parker Range	Priority 1	-
Hakea pendens	Priority 2	-

For a description of the priority categories see Atkins (2006)

Recovery actions implemented to improve the quality or security of the habitat of *Isopogon robustus* will improve the status of associated species and the PEC 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. *Isopogon robustus* is not listed under any specific international treaty, however, and this IRP does not affect Australia's obligations under any other international agreements.

Indigenous Consultation: 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 *Isopogon robustus*, 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 *Isopogon robustus*, 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: The implementation of this recovery plan is unlikely to cause significant adverse social and economic impact as the population is located on unallocated crown land. However, possible future mining activities in the area may be affected.

Affected interests: Currently, no stakeholders are affected by the implementation of this plan.

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 four years of implementation.

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

1. Land managers potentially affected by the implementation of this plan have been made aware of the threatened nature of this species, its location and their legal obligations to protect it. The Department for Planning and Infrastructure has also been notified of the presence of the species.
2. DEC's Threatened Flora Seed Centre has two seed collections in storage, one accession of 1233 seeds from 43 plants and a second collection from 50 plants with the number of seeds yet to be quantified.
3. Regional flora and vegetation surveys of the eastern Goldfields Ranges were undertaken over a three year period with *Isopogon robustus* found at a single site. The population was surveyed in October 2006 and seedlings were recorded.
4. ACTIS Environmental Services prepared a critical habitat report for *Isopogon robustus* in March 2007. This report will be used by DEC's Yilgarn District as a habitat guide to survey for new populations and also to determine suitable future translocation sites.
5. The YDTFRT is overseeing the implementation of this IRP and will include the species in its annual report to DEC's Corporate Executive and funding bodies.
6. Staff from DEC's Yilgarn District are monitoring the population.

IRP objective: The objective of this IRP is to abate identified threats and maintain or enhance a viable *in situ* population to ensure the long-term preservation of the species in the wild.

Recovery criteria

Criteria for success: The number of populations have increased and/or the number of mature individuals have increased by fifteen percent or more over the term of the plan.

Criteria for failure: The number of mature individuals in the known population have decreased by fifteen percent or more over the term of the plan.

Recovery actions

1. Coordinate recovery actions
2. Liaise with relevant land managers and indigenous groups
3. Monitor population
4. Collect seed to preserve genetic diversity
5. Obtain biological and ecological information
6. Promote awareness
7. Conduct further surveys
8. Develop and implement a translocation proposal
9. Develop and implement a fire management strategy
10. Review the need for further recovery actions

1. BACKGROUND

History

Isopogon robustus was first collected from the Parker Range by Neil Gibson and Mike Lyons in 1994. The species was formally described by Neil Gibson in 2005 (Gibson, 2005).

To date the species has not been found elsewhere.

Isopogon robustus is known from one population of 217 mature plants south-east of Marvel Loch.

Description

Isopogon robustus is a shrub to 1.5 m high by 2 m across. Branchlets are red-brown to grey-brown, with a sparse covering of small hairs. Leaves are simple, circular in cross-section, 15 cm long by 2.5 to 3.3 mm wide with no distinct petiole. They are pungent, rough to touch with a covering of silky hairs, becoming hairless. The inflorescence is solitary, obovoid to 38 mm in diameter and surrounded by leaves. The bracts are broad, ovate, closely packed and overlapping, with long cottony hairs on the outside. Bracts remain attached and become hard after flowering. The cone scales are narrower, densely packed and overlapping, with orange hairs. The cone usually lacks hairs toward the apex. Flowers are pink and 19 to 25 mm long. Cones are 19 to 24 mm in diameter and lack hairs. Nuts are ovoid, beaked, 2.8 to 3.7 mm long, with a covering of long soft yellow hairs (Gibson, 2005).

Distribution and habitat

Isopogon robustus has a restricted distribution over a range of 2.5 km^2 southeast of Marvel Loch.

Habitat is open shrubland on grey skeletal sandy loam over laterite on decomposing laterite shelves. Species associated with *Isopogon robustus* include *Leucopogon* sp. Parker Range (P1), *Acrotriche* aff. *patula*, *Borya nitida*, *Callitris glaucophylla*, *Eremophila granitica* and *Melaleuca uncinata*. *Hakea pendens* (P2) also occurs in the same habitat.

Summary of population land vesting, purpose and manager

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
1. SE of Marvel Loch*	Yilgarn	Yilgarn	Not vested	Unallocated Crown Land	DPI

*This population is considered an important population.

Biology and ecology

Isopogon robustus flowers in September and October.

There is a current lack of biological and ecological information on *Isopogon robustus*. Information required includes the response of the species to habitat disturbance, its pollination biology, seed viability, conditions necessary for germination and the time till maturation.

Threats

Isopogon robustus was declared as Rare Flora in 2001 under the Western Australian *Wildlife Conservation Act 1950* and is currently ranked as Critically Endangered (CR) under World Conservation Union (IUCN 2001) Red List criteria B2ab(v); C2a(ii), due to its area of occupancy being less than 10 km^2, the species known from a single location, a continuing decline in the number of mature plants and at least 90% of mature individuals in one population. The species is not currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats are mining activities, small population size and inappropriate fire regimes.

- **Mining.** *Isopogon robustus* occurs in an area that may be subject to future mining with some plants already damaged during mineral exploration activities.
- **Small population size.** As *Isopogon robustus* is known from a single population, the likelihood of the species falling victim to chance demographic or environmental events is high.
- **Inappropriate fire regimes** may pose a threat to *Isopogon robustus* as they could potentially kill plants. The fire ecology of the species is currently unknown.

The intent of this plan is to provide actions that will deal with immediate threats to *Isopogon robustus*. 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	Land Status	Year/No. plants		Current Condition	Threats
1. SE of Marvel Loch*	Unallocated Crown Land	2001	120 (7) [1]	Healthy	Mining, inappropriate fire regimes, small population size.
		2003	269		
		2006	203 (14)	Healthy	

*This population is considered to be an important population; Note: ( ) = number of seedlings, [ ] = number dead

Guide for decision-makers

Section 1 provides details of current and possible future threats. Developments and/or land clearing in the immediate vicinity of *Isopogon robustus* requires assessment. No developments or clearing should be approved unless the proponents can demonstrate that their actions will not have a significant impact on the species, its habitat or potential habitat or on the local surface hydrology, such that drainage in the habitat of the species would be altered.

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

Given that *Isopogon robustus* is ranked as CR, it is considered that all known habitat for the wild population is critical to the survival of the species, and that the wild population is an important population.

Habitat critical to the survival of *Isopogon robustus* includes the area of occupancy of the known population, areas of similar habitat surrounding the known population (these providing potential habitat for population expansion and for pollinators), additional occurrences of similar habitat that may contain undiscovered populations of *Isopogon robustus* or be suitable sites 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

Isopogon robustus occurs within the Priority 3(iii) Parker Range Priority Ecological Community (PEC). Two priority species also occur in association with Isopogon robustus, these being listed in the table below.

Conservation-listed flora species occurring in habitat of *Isopogon robustus*

Species name	Conservation Status (Western Australia)	Conservation Status (EPBC Act 1999)
Leucopogon sp. Parker Range	Priority 1	-
Hakea pendens	Priority 2	-

For a description of the priority categories see Atkins (2005)

Recovery actions implemented to improve the quality or security of the habitat of *Isopogon robustus* will improve the status of associated species and the PEC 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. *Isopogon robustus* is not listed under any specific international treaty however and this IRP does not affect Australia's obligations under any other international agreements.

Indigenous Consultation

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 *Isopogon robustus*, or indigenous groups with a cultural connection to land that is important for the species' conservation and to determine whether there are any 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 *Isopogon robustus*, 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

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impact as the known population is located on unallocated crown land. However, possible future mining activities in the area may be affected.

Affected interests

Currently no stakeholders are affected by the implementation of this plan.

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 four years of implementation.

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

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

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

3. RECOVERY ACTIONS

Existing recovery actions

Land managers potentially affected by the implementation of this plan have been made aware of the threatened nature of this species, its location and their legal obligations to protect it. The Department for Planning and Infrastructure has also been notified of the presence of the species.

DEC's Threatened Flora Seed Centre has two seed collections in storage, one accession of 1233 seeds from 43 plants and a second collection from 50 plants with the number of seeds yet to be quantified.

Regional flora and vegetation surveys of the eastern Goldfields Ranges were undertaken over a three year period with *Isopogon robustus* found at a single site. The population was surveyed in October 2006 and seedlings were recorded.

ACTIS Environmental Services prepared a habitat mapping report for *Isopogon robustus* in March 2007. This report will be used by DEC Yilgarn District as a habitat guide to survey for new populations and also to determine suitable future translocation sites.

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

Staff from DEC's Yilgarn District are monitoring the known population.

Future recovery actions

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 of the priorities if funding is available for 'lower' priorities and other opportunities arise.

1. Coordinate recovery actions

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

Action: Coordinate recovery actions
Responsibility: YDTFRT
Cost: $1,400 annually.

2. Liaise with relevant land managers and indigenous groups

Staff from DEC's Yilgarn District will liaise with appropriate land managers to ensure that the population is not accidentally damaged or destroyed. Input and involvement will also be sought from Indigenous groups that have an active interest in areas that are habitat for *Isopogon robustus*.

Action: Liaise with relevant land managers and indigenous groups
Responsibility: DEC (Yilgarn District), through the YDTFRT
Cost: $1,900 annually in years 1 to 5.

3. Monitor the population

Annual monitoring of factors such as habitat degradation, population stability (expansion or decline), pollination activity, seed production, recruitment, longevity and predation is essential and will be met under this action.

Action: Monitor the population
Responsibility: DEC (Yilgarn District) through YDTFRT
Cost: $2,100 annually.

4. Collect seed to preserve genetic diversity

Although two seed collections have been made, further collections are required to preserve the maximum range of genetic diversity within the known population (this can be determined by an appropriate molecular technique such as genetic fingerprinting). The *Germplasm Conservation Guidelines for Australia* produced by the Australian Network for Plant Conservation (ANPC) should be used to guide this process (ANPC, 1997).

Action: Collect seed to preserve genetic diversity
Responsibility: DEC (Yilgarn District) and BGPA through YDTFRT
Cost: $3,400 in years 1, 3 and 5.

5. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Isopogon robustus* will provide a better scientific basis for management of the wild population. An understanding of the following is particularly necessary for effective management for its continued survival in the wild:

1. Investigate the species response to disturbance, including fire.
2. Investigate the species' pollination biology and identification of pollinators.
3. Investigate seed longevity and viability.
4. Investigate conditions necessary for germination.
5. Investigate longevity of plants, and time taken to reach maturity.

Actions: Obtain biological and ecological information
Responsibility: DEC (Science Division, TFSC, Yilgarn District) and BGPA through the YDTFRT
Cost: $13,000 in years 1 to 3 and $18,000 in year 4.

6. Promote awareness

The importance of biodiversity conservation and the protection of *Isopogon robustus* 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. An A4 sized information sheet that provides a description of the species and information about threats and recovery actions will be developed for the species and will be distributed to relevant authorities, land managers and volunteer organisations. Promotion and awareness raising activities may result in the discovery of new populations. Formal links with local naturalist groups and interested individuals should also be encouraged.

To minimise the risk of destruction, it is recommended that the exact location of *Isopogon robustus* be kept from the general public. Such information should, however, be provided to government authorities and relevant mining companies.

Action: Promote awareness
Responsibility: DEC (Yilgarn District, SCB and Strategic Development and Corporate Affairs Division) through the YDTFRT
Cost: $1,600 in year 1 and $1,000 in years 2 to 5.

7. Conduct further surveys

In addition to regular population monitoring it is recommended that areas of potential habitat be surveyed for the presence of this species.

Surveying for new populations and the determination of suitable translocation sites is required for the 2007 ACTIS Environmental Services critical habitat mapping report.

Surveying will be done during the species flowering period in September and October. All surveyed areas will be recorded and the presence or absence of *Isopogon robustus* documented to increase survey efficiency and reduce unnecessary duplicate surveys. Where possible volunteers from the community, wildflower societies and naturalists clubs will be involved in surveys supervised by DEC staff.

Action: Conduct further surveys
Responsibility: DEC (Yilgarn District) through YDTFRT
Cost: $6,100 in year 1 and $4,100 in years 3 and 5.

8. Develop and implement a translocation proposal

Translocation is essential for the conservation of *Isopogon robustus*, as the total number of extant plants is low, and the known population is not secure from threats such as inappropriate fire regimes, future mining operations and small population size. The single known population occurs on Unallocated Crown Land (UCL) which does not have a strong tenure protection.

It is recommended that a translocation proposal be prepared for *Isopogon robustus* with the aim being to establish a new population and increase plant numbers.

Information on the translocation of threatened animals and plants in the wild is provided in CALM (1995) *Policy Statement No. 29: Translocation of Threatened Flora and Fauna.* All translocation proposals require endorsement by the Director of Nature Conservation.

Action: Develop and implement a translocation proposal
Responsibility: DEC (Yilgarn District) through YDTFRT
Cost: $20,000 in year 1, $4,000 per year in years 2 to 4 and $6,000 in year 5.

9. Develop and implement a fire management strategy

Although the fire ecology of *Isopogon robustus* is poorly understood, fire may kill plants and a fire management strategy is required.

Action: Develop and implement a fire management and management strategy
Responsibility: DEC (Yilgarn District) through YDTFRT
Cost: $2,900 in year 1 and $1,700 per year in years 2 to 5.

10. Review the Plan and need for further recovery actions

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

Action: Review the need for further recovery actions
Responsibility: DEC (SCB, Yilgarn District) through YDTFRT
Cost: $1,500 in the fifth year.

Summary of recovery actions

Recovery Action	Priority	Responsibility	Completion date
Coordinate recovery actions	High	YDTFRT	Ongoing
Liaise with relevant land managers and indigenous groups	High	DEC (Yilgarn District), through the YDTFRT	Ongoing
Monitor population	High	DEC (Yilgarn District) through YDTFRT	Ongoing
Collect seed to preserve genetic diversity	High	DEC (Yilgarn District) and BGPA through YDTFRT	Ongoing
Obtain biological and ecological information	High	DEC (Science Division, TFSC, Yilgarn District) and BGPA through the YDTFRT	2011
Promote awareness	High	DEC (Yilgarn District, SCB and Strategic Development and Corporate Affairs Division) through the YDTFRT	Ongoing
Conduct further surveys	High	DEC (Yilgarn District) through YDTFRT	Ongoing
Develop and Implement a translocation Proposal	High	DEC (Yilgarn District) through YDTFRT	2013
Develop and implement a fire	Moderate	DEC (Yilgarn District) through YDTFRT	Developed by

Recovery Action	Priority	Responsibility	Completion date
management strategy			2008, with implementation ongoing
Review Plan and the need for further recovery actions	Moderate	DEC (SCB, Yilgarn District) through YDTFRT	2013

4. TERM OF PLAN

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

5. REFERENCES

Atkins, K. (2006). *Declared Rare and Priority Flora List for Western Australia*. Department of Conservation and Land Management, Perth, Western Australia

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Gibson, N. (2005). A new species of *Isopogon* (Proteaceae) from southwest Western Australia. *Muelleria*. **21**: 97-99

6. TAXONOMIC DESCRIPTION

Excerpt from: Gibson, N. (2005). A new Species of *Isopogon* (Proteaceae) from southwest Western Australia. *Muelleria* **21**: 97-99.

Shrub to 1.5 m high and to 2 m diameter. *Branchlets* red-brown to grey-brown, minutely pubescent. *Leaves* simple; petiole not distinct; lamina terete, to 15 cm long and 2.5 to 3.3 mm diameter, pungent, minutely scabrous minutely sericeous, becoming glabrescent. *Inflorescence* terminal, sessile, solitary, obovoid to 38 mm diameter, surrounded by leaves; involucral bracts broad, ovate, imbricate, tomentose outside, persistent, becoming hard after flowering; cone scales narrower, densely tomentose outside with orange hairs, usually glabrous toward apex. *Flowers* 19-25 mm long, pink; perianth tube pubescent, with a tuft of hairs on apex of each tepal. Pollen presenter 2.6-4.5 mm long; basal part papillose, 4-angled, swollen at base, constricted near mid-point then dilated and globose; apical part glabrous, swollen near its base then tapering slightly to stigmatic cup. *Cones* globose, 19-24 mm diameter. *Nuts* ovoid, beaked, 2.8-3.7 mm long, villous, hairs yellow