INTERIM RECOVERY PLAN NO. 35

WING-FRUITED LASIOPETALUM

(LASIOPETALUM PTEROCARPUM MS*)*

INTERIM RECOVERY PLAN

1999-2002

by

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Photograph: Andrew Brown

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Natural Heritage Trust
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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.

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.

CALM 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This Interim Recovery Plan will operate from June 1999 to May 2002 but will remain in force until withdrawn or replaced.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 replaced by a full Recovery Plan after three years.

This IRP was approved by the Director of Nature Conservation on 1 September 1999. The provision of funds identified in this Interim Recovery Plan is dependent on budgetary and other constraints affecting CALM, as well as the need to address other priorities.

Information in this IRP was accurate at June 1999.

SUMMARY

Scientific Name: ***Lasiopetalum pterocarpum* ms**
Common Name: Wing-fruited Lasiopetalum
Family: STERCULIACEAE
Flowering Period: September - November
CALM Region: Swan
CALM District: Mundaring
Shire: Serpentine/Jarrahdale
Recovery Team: Swan Region Threatened Flora Recovery Team (SRTFRT).

Illustrations and/or further information: Brown, A., Thomson-Dans, C. and Marchant, N. (Eds.). (1998). *Western Australia's Threatened Flora*. Department of Conservation and Land Management, Western Australia; Western Australian Herbarium (1999). FloraBase - Information on the Western Australian Flora. Department of Conservation and Land Management, Western Australia. http://www.calm.wa.gov.au/science/

Current status: *Lasiopetalum pterocarpum* ms was declared as Rare Flora, and ranked as Critically Endangered (CR) in 1998. It currently meets World Conservation Union (IUCN) Red List category 'CR' under criteria A2c, B1+2c, C2a, b and D (IUCN 1994) as it is only known from a single population comprised of less than 50 mature individuals that occur over a very small range, with continued decline in the quality of the habitat from weed invasion. There are currently 17 plants known from a single population. This population occurs in an area of National Park subject to heavy visitation by recreational users. Established weed invasion by blackberry (*Rubus* aff. *selmeri*), watsonia (*Watsonia meriana*) and gladioli (*Gladiolus undulatus*) is a major threat to this species, as are trampling by recreational users of the National Park in which the species occurs, inappropriate fire regimes and inappropriate stream flows or water quality in the stream that flows adjacent to the population.

Habitat requirements: *Lasiopetalum pterocarpum* ms is endemic to the Serpentine area of Western Australia. It occurs in a riparian community in a National Park, very close to a major carpark and walkway.

Existing Recovery Actions: The following recovery actions have been or are currently being implemented -
1. Surveys for new populations conducted.
2. Ongoing weed control.
3. Seed collected and stored.
4. Population regularly monitored.

IRP Objective: The objective of this Interim Recovery Plan is to abate identified threats and maintain 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 have increased.
Criteria for failure: The number of individuals within populations and/or the number of populations have decreased.

Recovery actions
1. Undertake weed control.
2. Restrict access, rehabilitate unauthorised tracks.
3. Ensure appropriate stream flow and water quality adjacent to population.
4. Develop and implement fire management strategy.
5. Monitor the population.
6. Collect seed and cutting material.
7. Conduct further surveys.
8. Develop a Translocation Proposal.
9. Propagate plants for translocation.
10. Obtain biological and ecological information.

11. Promote awareness.
12. Coordinate recovery actions.
13. Incorporate general recovery actions for *Lasiopetalum pterocarpum* ms in Management Plan for National Park.
14. Write full Recovery Plan.

1. BACKGROUND

History

L. pterocarpum ms was poorly surveyed until recently, when a floristic survey of the Darling Scarp was conducted by A. Markey (Markey, 1997). No additional populations were located during this survey, or in other subsequent surveys undertaken by CALM District staff, and the species was ranked Critically Endangered in November 1998.

Description

Distribution and habitat

L. pterocarpum ms is endemic to the Serpentine area. It is known from a single population of just 17 plants that occur on either side of a stream (sub-populations 1a and 1b). Sub-population 1b is slightly higher in the landscape than sub-population 1a and is less likely to be subject to flooding. The population is located within National Park in a riparian community with *Eucalyptus rudis*, *Corymbia calophylla*, *Agonis linearifolia* and *Melaleuca rhaphiophylla*. Markey (1997) noted that this was the site of the only intact example of this type of riverine woodland within the northern Darling Scarp.

Biology and ecology

Little is known about the biology and ecology of this species.

Threats

This species is currently ranked as Critically Endangered under IUCN Red List criteria A2c, B1+2c, C2a, b and D1 (IUCN 1994) as it is only known from a single population comprised of less than 50 mature individuals that occur over a very small range, with continued decline in the quality of the habitat from weed invasion. The main threats are weed competition, trampling by recreational users in the National Park, inappropriate stream flows or water quality in the stream that flows adjacent to the population, and inappropriate fire regimes.

- **Weed competition** is a major threat to the only known population of the species. There is already heavy invasion of blackberry (**Rubis* aff. *selmeri*), watsonia (**Watsonia meriana*) and gladioli (**Gladiolus undulatus*). Weeds suppress early plant growth by competing for soil moisture, nutrients and light.

- **Trampling** by recreational users of the National Park is a threat to this species, as the only known population occurs very near major walking tracks. Numerous visitors come to the Park each year and recreational use of some areas adjacent to trails leads to trampling and degradation of the habitat of *Lasiopetalum pterocarpum* ms. This may also lead to accidental destruction of *Lasiopetalum pterocarpum* ms plants.

- **Changes to streamflow or water quality** are a threat to *Lasiopetalum pterocarpum* ms. The only known population occurs in close proximity to a creekline. A gauging station is immediately upstream, and two additional dams are located further upstream of this population. The water flow at the latter two dams is controlled by the Water Corporation. Changes to stream flow or water quality as a result of any developments along the stream channel upstream have the potential to impact the population. Redevelopment of the recreational site adjacent to the population is recommended in the draft Management Plan for the National Park. This includes removal of the weir immediately upstream and alterations to the nearby carpark.

- **Inappropriate fire regimes** would affect the viability of populations, as seeds of *Lasiopetalum pterocarpum* ms probably germinate following fire. If this is the case, the soil seed bank would rapidly be depleted if fires recurred before regenerating or juvenile plants reached maturity and replenished the soil seed bank. In addition, fires generally stimulate weed invasion, and weeds have already infested the habitat of the known population.

Summary of population information and threats

Pop. No. & Location	Land Status	Date / No. of Plants	Condition	Threats
1a. Serpentine	National Park	07.97 6	Healthy	Weed competition, trampling, inappropriate water flow or quality, inappropriate fire regimes.
		02.99 7	Healthy	Weed competition, trampling, inappropriate water flow or quality, inappropriate fire regimes.
1b. Serpentine	National Park	07.97 2	Healthy	Weed competition, trampling, inappropriate fire regimes.
		02.99 10	Healthy	Weed competition, trampling, inappropriate fire regimes.

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

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

Criteria for success: The number of individuals within populations and/or the number of populations have increased.
Criteria for failure: The number of individuals within populations and/or the number of populations have decreased.

3. RECOVERY ACTIONS

Existing recovery actions

All appropriate people have been made aware of the existence of this species and its locations. The National Park Rangers are familiar with the location of this species and its management needs.

Searches for this species have been carried out upstream and downstream of the known population and in other similar habitat close to the population.

Where there is sufficient distance from water to allow herbicide use, weed control of the watsonia (*Watsonia meriana*) has been undertaken.

Seed was collected in December 1998 from the only known population and stored in CALM's Threatened Flora Seed Centre (TFSC). More than 1,000 seeds are stored at -18°C. The TFSC tests viability of the seed initially, after one year in storage and again after five years. The initial viability of these collections was 84%.

Staff from CALM's Mundaring District regularly monitor the population.

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

Future recovery actions

1. Undertake weed control

The known population is severely infested with blackberry (*Rubis* aff. *selmeri*), watsonia (*Watsonia meriana*) and gladioli (*Gladiolus undulatus*). Adult *Lasiopetalum pterocarpum* ms plants are threatened by competition from weeds, and recruitment is severely threatened. The objectives of weed control are to reduce weed competition and create opportunities for recruitment of the species, and to lessen the fire risk through reduction in fuel loadings. Effective weed control with the use of herbicides and hand removal will be undertaken. The tolerance of native plant species to herbicides at *L. pterocarpum* ms sites is unknown, so caution is necessary. Herbicide has already been used successfully on the watsonia, as it occurs further from the water and a small distance away from the *L. pterocarpum* ms plants. The proposed strategy is to continue to control the watsonia and gladioli with herbicides, and hand grubbing where necessary. The blackberry will be controlled through slashing and wick application of herbicides in the first two years, and if feasible through careful selective cool burns of the infestation in the second and third years.

Action: Undertake weed control
Responsibility: CALM (Mundaring District) through the SRTFRT
Cost: $3,900 in the first and second years, and $3,400 in the third year.

2. Restrict access, rehabilitate unauthorised tracks

Foot access to the population will be restricted and subject to strict hygiene conditions. The small unauthorised access tracks to the population will be blocked off using strategic placements of boulders, and through construction of a barrier fence and other associated works. Trampled areas on unauthorised tracks will be rehabilitated through placement of brush cut from local species, and strategic plantings. The composition of the riparian community will be maintained by ensuring that only local native species that occur in the community are used for rehabilitation. Signs will be erected at the site to indicate the area is a rehabilitation zone.

Action: Restrict access, rehabilitate unauthorised tracks
Responsibility: CALM (Mundaring District) through the SRTFRT
Cost: $3,700 in the first year, $2,600 in the second and third years.

3. Ensure appropriate stream flow and water quality adjacent to population

Water flows and water quality in the stream adjacent to the population must be adequate to maintain the *Lasiopetalum pterocarpum* ms population and its habitat, whilst not causing excessive erosion of the stream bank habitat. CALM will liaise with the Water Corporation, and ensure flows and water quality are monitored and are appropriate for the population of *Lasiopetalum pterocarpum* ms and its habitat.

Action: Ensure appropriate stream flow and water quality adjacent to population
Responsibility: CALM (Mundaring District) through the SRTFRT
Cost: $200 per year.

4. Develop and implement fire management strategy

Little is known about the effects of fire on this species. It is possible that the species requires occasional fire for recruitment from soil stored seed, but that frequent fires would be detrimental to the species' long-term survival. Fire also promotes the introduction and proliferation of weed species.

A fire management strategy will be developed by CALM's Mundaring District in consultation with the SRTFRT.

Action: Develop and implement fire management strategy
Responsibility: CALM (Mundaring District) through the SRTFRT
Cost: $2,000 in the first year, and $1,000 in years two and three.

5. Monitor the population

Monitoring of factors such as weed densities, habitat degradation, population stability (expansion or decline), pollination activity, seed production, recruitment and longevity is essential. The germination of *Lasiopetalum pterocarpum* ms from soil stored seed as a result of the removal of weeds such as blackberry and watsonia from the habitat, and the requirement for rehabilitation following weed control will be monitored in particular. The known population will be inspected annually.

Action:	Monitor the population
Responsibility:	CALM (Mundaring District) through the SRTFRT
Cost:	$500 per year.

6. Collect seed and cutting material

Preservation of germplasm is essential to prevent extinction if the wild population is lost. If possible, the germplasm will include seed and tissue cultured material from all 17 known plants as it is necessary to ensure that all of the remaining genetic diversity of this species is stored. Seed and cuttings will be collected for storage and for use in propagating plants for translocations (see Recovery Action 8).

Action:	Collect seed and cutting material
Responsibility:	CALM (TFSC, Mundaring District) and Kings Park and Botanic Garden (KPBG) through the SRTFRT
Cost:	$2,300 in the first and third years.

7. Conduct further surveys

Surveys for additional populations will be undertaken in likely habitat such as Oakley Dam during the species' flowering period (September - November). Local volunteers such as members of naturalists clubs and wildflower societies will be encouraged to be involved in surveys supervised by CALM staff.

Action:	Conduct further surveys
Responsibility:	CALM (Mundaring District) through the SRTFRT
Cost:	$2,200 per year.

8. Develop a Translocation Proposal

Translocation is essential for the conservation of this species, as the single population is not secure from threats including weed competition and trampling. Although translocations are generally undertaken under full Recovery Plans, it is possible to develop a Translocation Proposal and start propagating the plants necessary within the timeframe of an Interim Recovery Plan. This will be coordinated by the SRTFRT. Information on the translocation of threatened animals and plants in the wild is provided in CALM Policy Statement No 29 *Translocation of Threatened Flora and Fauna*. All Translocation Proposals require endorsement by the Director of Nature Conservation.

Action:	Develop a Translocation Proposal
Responsibility:	CALM (Mundaring District) through the SRTFRT
Cost:	$9,200 in the third year.

9. Propagate plants for translocation

The propagation of plants in readiness for translocation is essential as the only known population is under threat in the wild.

Action:	Propagate plants for translocation
Responsibility:	CALM (Mundaring District, TFSC), and KPBG through the SRTFRT
Cost:	$2,000 in the third year.

10. Obtain biological and ecological information

Increased knowledge of the biology and ecology of the species will provide a scientific basis for management of *Lasiopetalum pterocarpum* ms in the wild. Research institutions will be encouraged to be involved in gathering information about the species. Investigations will include:

1. Response of *L. pterocarpum* ms and its habitat to fire. This may include examination of the response of nursery specimens to smoke-water or fire.
2. Role of disturbance in regeneration.
3. Seed germination requirements of *L. pterocarpum* ms.
4. Longevity of plants, and time taken to reach maturity.

Action: Obtain biological and ecological information
Responsibility: CALM (CALMScience, Mundaring District) through the SRTFRT
Cost: $16,300 per year.

11. Promote awareness

The importance of biodiversity conservation and the protection of the Critically Endangered *Lasiopetalum pterocarpum* ms will be promoted to the public. This will be achieved through an information campaign using the local print and electronic media and poster displays. This is particularly important as there is only one known population of the species and an increased awareness may result in the discovery of others.

An information sheet that includes a description of the plant, its habitat, threats, management actions, and photos will be produced. Slides and general information about the species will be compiled for presentation to CALM staff and the public. Formal links with local naturalist groups and interested individuals will also be encouraged.

Action: Promote awareness
Responsibility: CALM (Mundaring District, Corporate Relations, WATSCU) through the SRTFRT
Cost: $1,400 in the second year.

12. Coordinate recovery actions

The Swan Region Threatened Flora Recovery Team will continue to oversee the implementation of recovery actions for *Lasiopetalum pterocarpum* ms and will include information on progress in its annual report to CALM's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: CALM (Mundaring District) through the SRTFRT
Cost: $5,100 per year.

13. Incorporate general recovery actions for *Lasiopetalum pterocarpum* ms in Management Plan for Park

The general management recommendations for *Lasiopetalum pterocarpum* ms will be included in the Management Plan for the National Park in which the species occurs. This will include recommendations on weed control, restricting access, maintaining steam flow and water quality, fire management and monitoring.

Action: Include general recovery actions in Management Plan for National Park
Responsibility: CALM (Planning Branch, Mundaring District) through the SRTFRT
Cost: $900 in year three.

14. Write full Recovery Plan

At the end of the three-year term of this Interim Recovery Plan, the need for further recovery will be assessed. If the species is still ranked Critically Endangered, a full Recovery Plan will be written to describe action required for long-term maintenance of the taxon.

Action:	Write full Recovery Plan
Responsibility:	CALM (WATSCU and Mundaring District) through the SRTFRT
Cost:	$18,300 in year three.

4. TERM OF PLAN

This Interim Recovery Plan will operate from July 1999 to June 2002 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 replaced by a full Recovery Plan after three years.

5. ACKNOWLEDGMENTS

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

Mr Philip Bastian	Ranger-in-charge, CALM Perth Region
Ms. Anne Cochrane	Manager, CALM Threatened Flora Seed Centre
Ms. Sophie Juszkiewicz	Propagator, Kings Park and Botanic Garden
Ms. Adrienne Markey	Previously Research Scientist, CALMScience
Mr David Mitchell	Program Leader Nature Conservation, CALM Swan Region
Mr Alan Wright	Forest Ranger, CALM Mundaring District

Thanks also to CALMScience staff for providing access to Herbarium databases and specimen information, and staff of CALM's Wildlife Branch for assistance.

6. REFERENCES

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7. TAXONOMIC DESCRIPTION

From Brown *et al*. (1998).

The winged membranous fruit is the main distinguishing feature of *Lasiopetalum pterocarpum* ms. The fruit has six to twelve elongated wings that usually consists of five large and several smaller wings. The fruit splits open when mature. The leaves are more obviously lobed than any other species of the genus *Lasiopetalum*. The bracteoles are linear and there are no petals or stipules. The apex of the style contains stalked star-shaped hairs.