

INTERIM RECOVERY PLAN NO. 88

**LONG-LEAVED MYRTLE**  
**(*HYPOCALYMMMA LONGIFOLIUM*)**  
**INTERIM RECOVERY PLAN**  
**2001-2004**

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Photograph: S. Patrick

May 2001

Department of Conservation and Land Management  
Western Australian Threatened Species and Communities Unit (WATSCU)  
PO Box 51, Wanneroo, WA 6946



## **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.

This Interim Recovery Plan will operate from May 2001 to April 2004 but will remain in force until withdrawn or replaced.

This IRP was approved by the Director of Nature Conservation on 27 June 2001. 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 May 2001.

**SUMMARY**

|                         |                                |                          |  |
|-------------------------|--------------------------------|--------------------------|--|
| <b>Scientific Name:</b> | <i>Hypocalymma longifolium</i> | <b>Common Name:</b>      | Long-leaved myrtle   |
| <b>Family:</b>          | Myrtaceae                      | <b>Flowering Period:</b> | August to September  |
| <b>CALM Region:</b>     | Midwest                        | <b>CALM District:</b>    | Geraldton  |
| <b>Shire:</b>           | Northampton                    | <b>Recovery Team:</b>    | Geraldton District Threatened Flora Recovery Team (GDTFRT) |

**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; Keighery, G. (1991) *Hypocalymma longifolium*: A species refound and a mystery solved. *Research News* 9, p2.

**Current status:** *Hypocalymma longifolium* was declared as Rare Flora in July 1992 and ranked in May 1997 as Endangered (EN). It currently meets World Conservation Union (IUCN 2000) Red List Category 'EN' under criteria A2c, B1a+biii and B2a+biii as it is only known from a few locations, and the area, extent and quality of habitat is continuing to decline. The main threats are hydrological changes, weeds, road and track maintenance activities, water erosion, feral animals, disturbance by stock, and inappropriate fire regimes.

**Critical habitat:** The critical habitat for *Hypocalymma longifolium* comprises the area of occupancy of the known populations; areas north east of Kalbarri, and north east of Port Gregory of similar habitat ie. permanently damp springs and swamps, in low heath and sedges, or in damp areas on the west-facing slopes of breakaways, among open, low scrub on white sand with sandstone, within 200 metres of known populations; corridors of remnant vegetation that link populations; the local catchment for the surface and ground waters that provide the wetland habitat of the species; additional occurrences of permanently damp springs and swamps, in low heath and sedges, or in damp areas on the west-facing slopes of breakaways, among open, low scrub on white sand with sandstone, that do not currently contain the species.

**Habitat requirements:** *Hypocalymma longifolium* is currently known from between Yerina Springs and the Murchison River in Western Australia. The species grows in permanently damp springs and swamps, in low heath and sedges. Near the Murchison River the species occurs in damp areas on the west-facing slopes of breakaways, among open, low scrub on white sand with sandstone (Brown *et al.* 1998).

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

1. All relevant land managers have been informed of the species' locations and the associated legal obligations.
2. Declared Rare Flora (DRF) markers have been installed at Subpopulation 2a.
3. Dashboard stickers and posters, that illustrate DRF markers and note their purpose, and a contact telephone number to use if such a marker is encountered, have been produced and distributed.
4. *Hypocalymma longifolium* cuttings were taken in 1991 and forwarded to the BGPA for propagation.
5. Two monitoring quadrats that include Population 2 have been set up for biodiversity sampling to cover the Northern Band of the Salinity Action Plan.
6. Population 2 on private property was fenced in 1997.
7. The Geraldton District Threatened Flora Recovery Team (GDTFRT) is overseeing the implementation of this IRP.
8. Staff from CALM's Geraldton District office regularly monitor the populations.

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

**Recovery criteria**

**Criteria for success:** The 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. Coordinate recovery actions.
2. Clarify the taxonomy of the species.
3. Conduct further surveys.
4. Undertake weed control.
5. Undertake feral animal control.
6. Collect seed and cutting material.
7. Seek measures to achieve conservation management.
8. Develop and implement drainage strategy at Population 2.
9. Monitor populations.
10. Develop and implement a fire management strategy.
11. Liaise with relevant land managers.
12. Promote awareness.
13. Obtain biological and ecological information.
14. Write a full Recovery Plan.

## 1. BACKGROUND

### History

*Hypocalymma longifolium* was described in 1860 by Ferdinand von Mueller from a collection made by English botanist Augustus Oldfield near the Murchison River (Population 1). This collection was relocated in 1932 by W. Blackall. *H. longifolium* was not collected between 1932 and 1990, and the species was considered extinct. However, in 1991, during a review of the genus for the Flora of Australia, *H. longifolium* was determined as being related to *H. angustifolium* and not *H. strictum* as originally thought. A collection of *H. longifolium* made over 50 years ago from between Northampton and Lynton was found during inspection of herbarium specimens of *H. angustifolium*. Surveys by G. Keighery<sup>1</sup>, D. Coates<sup>2</sup> and R. Sokolowski<sup>3</sup> in 1991 relocated this population of *H. longifolium* (Population 2), north-east of Port Gregory (Keighery 1991). This large population is located on private property, road and water reserves.

A survey conducted in 1992 by Don Bellairs<sup>4</sup>, resulted in the rediscovery of the original collection (Population 1). Currently, *Hypocalymma longifolium* is known from 2 populations consisting of over 1,300 mature plants.

### Description

*Hypocalymma longifolium* is a low, hairless shrub, up to 20 cm tall, with rigid, erect branches and attractive pale pink to white flowers. The leaves are 4 to 6 cm long, linear and triangular in cross-section, tapering to a slightly recurved point and are held in opposite pairs. The flowers are stalkless, in pairs and are held on a short, thick inflorescence stalk. There are five pale pink to white petals. The ovary has two cells with ovules in each cell and the capsule is very convex (Brown *et al.* 1998).

*Hypocalymma longifolium* is distinguished from a close relative *H. angustifolium* by its much longer leaves and more northern occurrence (Brown *et al.* 1998).

### Distribution and habitat

*Hypocalymma longifolium* is currently known from between Yerina Springs and the Murchison River in Western Australia. The Yerina Springs is a freshwater wetland fed by catchments to the north and west and is currently under evaluation as a Threatened Ecological Community (pers comm. S. Hamilton-Brown<sup>5</sup>). The species grows in a permanently damp spring and in surrounding swamp, in low heath and sedges. Near the Murchison River the species occurs in damp areas on the west-facing slopes of breakaways, among open, low scrub on white sand with sandstone (Brown *et al.* 1998).

Species associated with *Hypocalymma longifolium* at Population 1 include *Grevillea pinaster*, *Melaleuca uncinata*, *Melaleuca nematophylla*, *Acacia oldfieldii*, *Grevillea leuoclada*, and the Declared Rare Flora species *Lechenaultia chlorantha*; and the sedges *Baumea juncea* and *Baumea acuta*. *Banksia sphaerocarpa* and *Hibbertia spicata* occur, in addition, in the habitat of Population 2.

### Critical habitat

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

The critical habitat for *Hypocalymma longifolium* comprises:

- the area of occupancy of the known populations,
- areas of similar habitat ie. permanently damp springs and swamps, in low heath and sedges, or in damp areas on the west-facing slopes of breakaways, among open, low scrub on white sand with sandstone, within 200 metres of known populations (these areas provide potential habitat for natural range extension),
- corridors of remnant vegetation that link populations (these areas are necessary to allow pollinators to move between populations and are usually road verges),

<sup>1</sup> Greg Keighery, Principal Research Scientist, CALMScience Division

<sup>2</sup> Dave Coates, Principal Research Scientist, CALMScience Division

<sup>3</sup> Ron Sokolowski, formerly Technical Officer, CALMScience Division

<sup>4</sup> Don Bellairs, Kalflora, Wildflower Nature Park and Nursery

<sup>5</sup> Sheila Hamilton-Brown, Project Officer, Western Australian Threatened Species and Communities Unit

- the local catchment for the surface and ground waters that provide the wetland habitat of the species (the species generally occurs in areas that are permanently inundated and are dependent on maintenance of local surface and ground water hydrology),
- additional occurrences of similar habitat ie. permanently damp springs and swamps, in low heath and sedges, or in damp areas on the west-facing slopes of breakaways, among open, low scrub on white sand with sandstone that do not currently contain the species (these areas represents possible translocation sites).

### Biology and ecology

Little is known about the biology and ecology of this species. Morphological and habitat differences between the two populations of *Hypocalymma longifolium* suggest that the populations may be two separate species (pers. comm. G. Keighery).

### Threats

*Hypocalymma longifolium* was declared as Rare Flora in July 1992 and ranked in May 1997 as Endangered (EN). It currently meets World Conservation Union (IUCN 2000) Red List Category 'EN' under criteria A2c, B1a+biii and B2a+biii as it is only known from a few locations, and the quality of habitat is continuing to decline. The main threats are hydrological changes and salination, weeds, road and track maintenance activities, water erosion, feral animals, disturbance by stock, and inappropriate fire regimes.

- **Hydrological changes and salination** may in future become a threat to Population 2. Extensive clearing for agriculture in the area is likely to have increased surface runoff and recharge of the groundwater. Waterlogging and salinity will require monitoring. Further clearing in the catchment of the population has the potential to alter hydrological processes and further threaten the species.
- **Weed invasion** is a threat to Population 2, with grasses, melons (*Citrullus lanatus*), *Typha* sp. and nightshade (*Solanum* sp.) present, mostly along the road reserve. Weeds suppress early plant growth by competing for space, light and nutrients.
- **Road and track maintenance activities** threaten Population 2 and its habitat. Threats include actions such as grading of the road reserve and access tracks, spraying of chemicals, constructing drainage channels and mowing or completely removing the roadside vegetation to improve visibility. These disturbance events also often encourage weed invasion into adjacent habitat, as well as causing damage to actual plants. Relevant authorities have been informed of the location of populations so that appropriate protective measures can be implemented. Other relevant land managers have also been informed of the locations to prevent possible damage due to grazing, crop maintenance, firebreak and access track maintenance or other activities that may damage populations.
- **Water erosion** in a drainage channel at Population 2 is directly effecting *Hypocalymma longifolium* plants and their habitat. Water runoff from the road has resulted in sections of the road reserve eroding away, causing roots to become exposed in many species including *Hypocalymma longifolium*.
- **Feral animals**, including goats and pigs are impacting on Population 1. Although it appears that *Hypocalymma longifolium* plants are not being grazed, goats and pigs are having a major impact on the habitat through digging, trampling and breaking foliage while moving through the area. Increased nutrient levels in the soil from droppings may also occur, and result in increased weed invasion. Grazing may also impact on the establishment of *H. longifolium* seedlings thereby limiting natural recruitment.
- **Disturbance by stock** (sheep) is a minor threat to Population 1, located on a pastoral station. Stock impact on the habitat of the species by trampling, grazing vegetation and increased nutrient levels in the soil from droppings. They may also impact on the establishment of *Hypocalymma longifolium* seedlings. The population is located on a sandstone breakaway and so that fencing would be difficult, if not impossible.
- **Inappropriate fire regimes** may affect the viability of the populations of *Hypocalymma longifolium*. The fire response of the species is not known, however, too frequent fire is likely to destroy populations before regenerating or juvenile plants reach maturity. This is less likely at Population 2 as it is permanently inundated. Occasional fires may, however, be required for the species to propagate from soil stored seed.

### Summary of population information and threats

| Pop. No. & Location    | Land Status        | Year/No. plants  | Condition   | Threats  |
|------------------------|--------------------|--|-------------|--|
| 1. NE of Kalbarri      | Pastoral Lease     | 1992 50<br>1993 60+<br>1999 100+<br>2000 200+<br>2001 300+ | Undisturbed | Feral animals, disturbance by stock, inappropriate fire regimes                                  |
| 2A. NE of Port Gregory | Shire Road Reserve | 1991 *1,000+<br>1995 *10,000+<br>2001 *1,000+              | Disturbed   | Hydrological changes, weed invasion, road maintenance, water erosion, inappropriate fire regimes |
| 2B. NE of Port Gregory | Private Property   | 1991 *1,000+<br>1995 *10,000+<br>2001 *1,000+              | Healthy     | Hydrological changes, weed invasion, track maintenance, inappropriate fire regimes               |
| 2C. NE of Port Gregory | Water Reserve      | 1991 *1,000+<br>1995 *10,000+<br>2001 *1,000+              | Healthy     | Hydrological changes, weed invasion, inappropriate fire regimes                                  |

\* = total for subpopulations combined.

### Guide for decision-makers

Section 1 provides details of current and possible future threats. Developments in the immediate vicinity of any of the populations or within the defined critical habitat of *Hypocalymma longifolium* require assessment. No developments should be approved unless the proponents can demonstrate that they will have no significant impact on the species, its habitat or potential habitat, or on the local surface or groundwater.

## 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 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 relevant land managers have been made aware of the Endangered status of the species and its locations. A private property owner, a leaseholder, the Shire of Northampton and the Water Corporation have been formally notified of the presence of *Hypocalymma longifolium* populations on or adjacent to their land. This notification details the Declared Rare status of the taxon and the associated legal responsibilities.

Declared Rare Flora (DRF) markers have been installed at Subpopulation 2a. These alert people working in the area to the presence of significant flora, helping to prevent accidental damage during maintenance operations. Awareness of the significance of these markers is being promoted to relevant bodies such as Shires. To this end, dashboard stickers and posters have been produced and distributed. These illustrate DRF markers, inform of their purpose and provide a contact telephone number to use if such a marker is encountered.

Cuttings were taken from *Hypocalymma longifolium* in 1991 by G. Keighery and forwarded to the BGPA for propagation. Only five plants were produced from the 46 cuttings that were collected. The species therefore appears to be quite difficult to propagate from cuttings. Propagation was attempted another three times and has resulted in an additional 10 plants. Currently six plants remain in cultivation and are located in the gardens at the BGPA (pers. comm. A. Shade<sup>6</sup>).

Two monitoring quadrats that were set up for biodiversity sampling to cover the Northern Band of the Salinity Action Plan include Population 2.

Population 2 on private property was fenced in 1997. This was funded by the private property owner and the Remnant Vegetation Protection Scheme.

<sup>6</sup> Amanda Shade, Horticulturalist, Botanic Gardens and Parks Authority

Staff from CALM's Geraldton District office regularly monitor the populations.

The Geraldton District Threatened Flora Recovery Team (GDTFRT) 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**

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

#### **1. Coordinate recovery actions**

The GDTFRT will continue to oversee the implementation of recovery actions for *Hypocalymma longifolium* and will include information on progress in their annual report to CALM's Corporate Executive and funding bodies.

**Action:** Coordinate recovery actions  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$800 per year.

#### **2. Clarify the taxonomy of the species**

Plants in the two populations of *Hypocalymma longifolium* differ in morphology and habitat. The taxonomy of the species will therefore be determined and described.

**Action:** Clarify the taxonomy of the species  
**Responsibility:** CALM (CALMScience Division) through the GDTFRT  
**Cost:** \$2,200 in first year.

#### **3. Conduct further surveys**

Community-based groups and individuals will be encouraged to be involved in further surveys during the species' flowering period (August to September) supervised by CALM staff.

**Action:** Conduct further surveys  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$5,300 per year.

#### **4. Undertake weed control**

Weeds are a threat to Population 2. The following actions will be implemented:

1. Selection of appropriate herbicides after determining which weeds are present.
2. Controlling invasive weeds by hand removal or spot spraying around *Hypocalymma longifolium* plants when weeds first emerge.
3. Scheduling weed control to include spraying at other threatened flora populations within the district.

The tolerance of associated native plant species to herbicides at the site of *Hypocalymma longifolium* is not known and weed control programs will be undertaken in conjunction with research.

**Action:** Undertake weed control  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$700 per year.

#### **5. Undertake feral animal control**

Feral goat and pig control will be undertaken using a method such as bait stations, in consultation with the lease holder of the land on which Population 1 is located.

**Action:** Undertake feral animal control  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$1,500 per year.

#### **6. Collect seed and cutting material**

Preservation of germplasm is essential to guard against extinction if wild populations are lost. Seed collections are also needed to propagate plants for translocations. Cuttings will also be collected to further establish a living collection of genetic material at the BGPA.

**Action:** Collect seed and cutting material  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$3,900 in first and second years.

#### 7. Seek measures to achieve conservation management

Ways and means of achieving protection of the land on which Population 1 and Subpopulation 2b of *Hypocalymma longifolium* occur will be investigated. Possible methods of achieving future conservation management include developing a Management Plan in consultation with the land manager, covenanting, and acquiring the land.

**Action:** Seek measures to achieve conservation management  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** To be determined.

#### 8. Develop and implement a drainage strategy for Population 2

A strategy is required to manage drainage for Population 2. A drainage control and rehabilitation strategy will be developed and implemented in liaison with relevant stakeholders including the local shire. Water flows around the population will be examined during a high rainfall event to help determine local topography and to help determine the most appropriate actions.

**Action:** Develop and implement a drainage strategy for Population 2  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** To be determined.

#### 9. Monitor populations

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

**Action:** Monitor populations  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$2,600 per year.

#### 10. Develop and implement a fire management strategy

The fire response of *Hypocalymma longifolium* is not known. Frequent fire may, however, prevent the accumulation of sufficient soil-stored seed to allow regeneration of the population. A fire management strategy will be developed to determine fire control measures and appropriate timing and frequency of fire.

**Action:** Develop and implement a fire management strategy  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$2,600 in first year and \$1,000 in subsequent years.

#### 11. Liaise with relevant land managers

Staff from CALM's Geraldton District will continue to liaise with land managers to ensure the populations are not damaged or destroyed accidentally.

**Action:** Liaise with relevant land managers  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$600 per year.

#### 12. Promote awareness

The importance of biodiversity conservation and the protection of the Endangered *Hypocalymma longifolium* will be promoted to the public. Awareness will be encouraged in the community by a publicity campaign through the local print and electronic media and poster displays. An information sheet, that includes a description of the plant, its habitat type,



threats, management actions and photos will be produced. Formal links with local naturalist groups and interested individuals will also be encouraged.

**Action:** Promote awareness  
**Responsibility:** CALM (Geraldton District) through the GDTFRT  
**Cost:** \$1,600 in first year and \$900 in second and third years.

### 13. Obtain biological and ecological information

Increased knowledge of the biology and ecology of the species will provide a scientific basis for management of *Hypocalymma longifolium* in the wild. Investigations will include:

1. Study of the soil seed bank dynamics and the role of various factors including disturbance (such as fire), competition, rainfall, and grazing in recruitment and seedling survival.
2. Determination of reproductive strategies, phenology and seasonal growth.
3. Investigation of the mating system and pollination biology.
4. Investigation of population genetic structure, levels of genetic diversity and minimum viable population size.
5. The impact of salinity on *Hypocalymma longifolium* and its habitat.

**Action:** Obtain biological and ecological information  
**Responsibility:** CALM (CALMScience, Geraldton District) through the GDTFRT  
**Cost:** \$19,900.

### 14. Write a full Recovery Plan

At the end of the second-year of implementation of this IRP, the need for further recovery will be assessed. If *Hypocalymma longifolium* is still ranked Endangered at that time a full Recovery Plan will be developed that prescribes actions required for the long-term recovery of the species.

**Action:** Write a full Recovery Plan  
**Responsibility:** CALM (WATSCU, Geraldton District) through the GDTFRT  
**Cost:** \$21,000 once in the final year.

## 4. TERM OF PLAN

This Interim Recovery Plan will operate from May 2001 to April 2004 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked 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:

|                       |   |
|-----------------------|---|
| Alanna Chant          | Conservation Officer, CALM Geraldton District               |
| Anne Cochrane         | Manager, CALM Threatened Flora Seed Centre                  |
| Sheila Hamilton-Brown | Project Officer, WA Threatened Species and Communities Unit |
| Greg Keighery         | Principal Research Scientist, CALMScience Division          |
| Amanda Shade          | Horticulturalist, Botanic Garden and Parks Authority        |

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

## 6. REFERENCES

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Keighery, G. (1991) *Hypocalymma longifolium*: A species refound and a mystery solved. *Research News* 9, p2.

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## 7. TAXONOMIC DESCRIPTION

Bentham, G. (1967) *Flora Australiensis: A description of the plants of the Australian Territory*. Vol III Myrtaceae to Compositae, p92-93.

***Hypocalymma longifolium* F. Muell.** Branches are rigid, virgate, glabrous. Leaves linear-triquetrous, rigid, tapering into a slightly recurved point, 1.5 to 2.5 in. long. Flowers sessile, in pairs, on an exceedingly short, thick, common peduncle. Fruiting-calyx very flat and broad, nearly 3 lines diameter, the lobes very short and broad. Petals not seen. Capsule very convex, 2-celled. Seeds not seen.