

National Recovery Plan for the Grampians Rice-flower *Pimelea pagophila*

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Australian Government

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Published by the Victorian Government Department of Sustainability and Environment (DSE)
Melbourne, November 2006.

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ISBN 1 74152 323 0

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Citation: Carter, O. 2006. National Recovery Plan for the Grampians Rice-flower *Pimelea pagophila*. Department of Sustainability and Environment, Melbourne.

Cover photograph: Grampians Rice-flower *Pimelea pagophila*, by Oberon Carter.

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Summary

The Grampians Rice-flower *Pimelea pagophila* is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. The species is endemic to the Grampians region of western Victoria, where only about 70 plants occur in four wild populations. This national Recovery Plan for *P. pagophila* details the species' distribution and biology, conservation status, threats, and recovery objectives and actions necessary to ensure its long-term survival.

Species Information

Description

The Grampians Rice-flower *Pimelea pagophila* is a small spreading shrub growing to 1.2 m tall (rarely to 2m). Leaves are opposite and narrowly obovate to elliptic, 7–20 mm long and 2–5 mm wide, green above and somewhat paler below. Flowers are terminal on pendulous branches, white, tubular, to 15 mm long and 8 mm wide, and are surrounded by 4–8 pale green or yellow, hairless floral bracts. Flowers appear in October and November. The fruit is a dry capsule about 5 mm long (description from Walsh & Entwisle 1996).

There have been no specific studies of the biology or ecology of *P. pagophila*. However, information on other *Pimelea* species may be usefully considered in relation to *P. pagophila* in the absence of such specific data. For example, *Pimelea curviflora*, and *Pimelea spinescens* subsp. *spinescens* resprout following fire (Mueck 2000; Morgan 2001), while *Pimelea spicata* shows high seed germination or vigorous resprouting after fire (NPWS 1993). These three species are distributed across similarly fire-prone grassland and open woodland communities to the heathy forests of the Grampians. Morrison (2002) found *Pimelea linifolia* to be more abundant in recently burnt areas of Sydney's sandstone belt, than in unburnt areas. *Pimelea spinescens* subsp. *spinescens* species tends to be slow-growing and long-lived, and like many other slow-recruiting species, tends to be vulnerable to population crashes when existing plants become senescent (Mueck 2000). Seedlings of *P. pagophila* were seen at the 'Mt William slope' site in 2002, although the area had not been recently burnt. Germination may have occurred there after soil disturbance such as by herbivores or track works. The narrow tubular odourless flowers on various *Pimelea* species is a plant syndrome that suggests pollination by butterflies, however casual observations by Hingston and McQuillan (2000) of *Pimelea* spp. in Tasmania did not detect those pollinators.

Distribution

Pimelea pagophila is endemic to the Grampians region of western Victoria, in the Victorian Midlands IBRA Bioregion (DEH 2000).

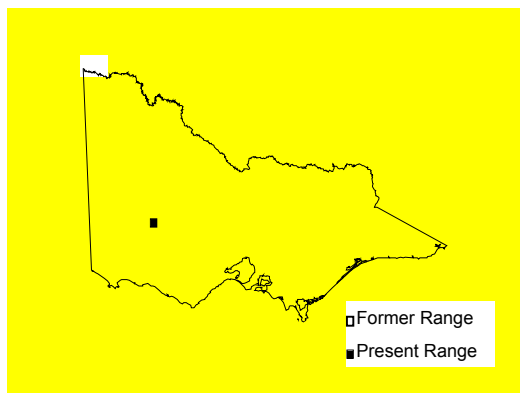


Figure 1. Distribution of *Pimelea pagophila* in Victoria.

Maps showing the detailed distribution of *P. pagophila* are available from the DSE Flora Information System (FIS). The FIS is a state-wide repository for flora grid and site distribution

data, photographs and text descriptions. This information is available on request in a variety of formats for natural resource management purposes.

Habitat

Pimelea pagophila occurs in *Eucalyptus baxteri* - *Eucalyptus obliqua* heathy forest, with associated species including *Banksia saxicola*, *Banksia serrata*, *Pteridium esculentum*, *Poa sieberiana* and *Viola hederacea*, on sandy loam soils. Recovery actions include survey and mapping of habitat that will lead to the identification of habitat critical to the survival of the species.

Population Information

Currently there are four populations containing about 70 plants, in the following locations:

- Small track NW of Emmitts Track: about 60 plants.
- Mt William slope, 550m below Mt William carpark: 9 plants.
- Mt William Summit, about 300–500m above Mt William carpark: 1 plant.
- 2nd Wannon Creek Track: 1 plant.

In addition, there is an old record from a fifth location, on a spur above Jimmy's Creek on the SE slope of Major Mitchell Plateau, but the precise location is not known, so it is uncertain if plants still occur there.

All locations occur within the Grampians National Park.

Threats

The Grampians Rice-flower is known only from a very small area in western Victoria. As there is no information on past distribution, it is not possible to determine if the species has suffered any decline in range. Some plants have apparently been destroyed due to management activities, so there may have been a decline in numbers. With the extremely limited distribution and very low numbers of plants, the risk from stochastic events is probably high, with populations most at risk from inadvertent damage. Main threats are summarised as follows:

Inappropriate fire regimes: Most *Pimelea* species resprout or recruit from seed after fire, and *P. pagophila* is also likely to require some disturbance to regenerate. Long fire-free intervals may threaten the viability of populations by suppressing regeneration.

Road and channel works: Almost all plants occur close to tracks or a water channel (within 10 m), and any maintenance works such as widening, clearing or slashing of vegetation and weed control, along roads and tracks adjacent to populations risks damaging or destroying plants. Resprouting of damaged plants is not assured.

Grazing: Herbivore grazing of seedlings is known to have occurred in 2002, and high macropod and rabbit numbers may be a threat to populations.

Herbicide spraying: Weed spraying with herbicides at the 2nd Wannon Creek site is likely to have destroyed some plants of *P. pagophila*. Previous records indicate that at least 14 plants occurred in this population, although only one has been seen in recent years.

Vehicle movement: As most plants occur close to tracks, they are at risk from damage by vehicle movement, especially from 4WDs and trail bikes.

Recovery Information

Overall Objective

The **overall objective** of recovery is to minimise the probability of extinction of *Pimelea pagophila* in the wild and to increase the probability of important populations becoming self-sustaining in the long term.

Within the life span of this Recovery Plan, the **specific objectives** of recovery for *Pimelea pagophila* are to:

- Acquire accurate information for conservation status assessments.
- Identify habitat that is critical, common or potential.
- Ensure that all populations and their habitat are protected and managed appropriately.
- Manage threats to populations.
- Identify key biological functions
- Determine the growth rates and viability of populations.
- Establish populations in cultivation.
- Build community support for conservation.

Program Implementation

The Recovery Plan will run for five years from the time of implementation and will be managed by the Department of Sustainability and Environment. A Threatened Flora Recovery Team, consisting of scientists, land managers and field naturalists will be established to oversee threatened flora recovery in Victoria in general. Technical, scientific, habitat management or education components of the Recovery Plan will be referred to specialist sub-committees on research, *in situ* management, community education and cultivation. Regional Recovery Teams will be responsible for preparing work plans and monitoring progress toward recovery.

Program Evaluation

The Recovery Team will be responsible for annual assessments of progress towards recovery. This Recovery Plan will be reviewed within five years of the date of adoption.

Recovery Actions and Performance Criteria

Action	Description	Performance Criteria
Specific objective 1		
Acquire accurate information for conservation status assessments		
1.2	Acquire baseline population data by conducting detailed field surveys including (a) identification of the area and extent of populations; (b) estimates of the number, size and structure of populations and (c) inference or estimation of population change. Responsibility: DSE	• Accurate determination or update of conservation status for inclusion on state and national threatened species lists completed. • Populations accurately mapped.
Specific objective 2		
Identify habitat that is critical, common or potential		
2.1	Accurately survey known habitat and collect floristic and environmental information describing community ecology and condition. Responsibility: DSE	• Requirements for completion of essential life history stages, recruitment and dispersal identified at known sites. • Habitat critical to the survival of the species is mapped.
2.2	Identify and survey potential habitat, using ecological and bioclimatic information indicating habitat preference. Responsibility: DSE	• Sites supporting potential habitat identified and surveyed.
Specific objective 3		
Manage threats to populations		
3.1	Identify disturbance regimes to maintain habitat. Responsibility: DSE, PV	• Preparation of ecological burning prescriptions for all sites based on the vital attributes of this species and associated vegetation.
3.2	Control threats from pest animals and plants, predation, disturbance and inappropriate management activities, by implementing weed control, re-routing tracks, limiting access, direct protection (eg. fencing, caging plants) and erecting signage. Responsibility: PV	• Measurable seedling recruitment/vegetative regeneration at Logging Track NW of Emmitts Track, and Mt William slope sites. • Measurable reduction in plant mortality in all populations. • Prevent vehicular access to track NW of Emmitts Track.

Action	Description	Performance Criteria
Specific objective 4		
Identify key biological functions		
4.1	Evaluate current reproductive/regenerative status, seed bank status and longevity, fecundity and recruitment levels by conducting field based experimental trials. Responsibility: DSE	Seed bank/regenerative potential quantified for targeted populations.
4.2	Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli and determine stimuli for vegetative regeneration. Responsibility: DSE	- Stimuli for recruitment/regeneration identified. - Management strategies identified to maintain, enhance or restore processes fundamental to reproduction and survival.
Specific objective 5		
Determine the growth rates and viability of populations		
5.1	Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. Responsibility: DSE	- Techniques for monitoring developed and implemented. - Collection of census data.
5.2	Collate, analyse and report on census data and compare with management histories. Responsibility: DSE	Population growth rates determined and Population Viability Analysis completed for targeted populations.
Specific objective 6		
Establish populations in cultivation		
6.1	Establish cultivated plants <i>ex situ</i> for inclusion in living collections to safeguard against any unforeseen destruction of wild populations. Responsibility: DSE	- Development of effective propagation and cultivation techniques. - At least 20 mature plants in cultivation.
6.2	Establish a seed bank and determine seed viability. Responsibility: DSE	- Seed from important populations in long term storage. - Long-term storage facility identified.
Specific objective 7		
Build community support for conservation		
7.1	Identify opportunities for community involvement in the conservation of <i>Pimelea pagophila</i> . Responsibility: DSE, PV	- Presentation to community nature conservation groups. - Develop strategies with Public Authorities and contractors, to protect populations from inappropriate management activities and maintenance programs, at Mt William and 2nd Wannon Ck..

Abbreviations: DSE: Department of Sustainability and Environment, Victoria; PV: Parks Victoria; RBG: Royal Botanic Gardens, Melbourne

Management Practices

The philosophy of the strategy for recovery is habitat conservation, restoration and management combined with an understanding of the ecological and biological requirements of *Pimelea pagophila*. The emphasis is on using knowledge to better implement *in situ* management techniques that protect populations and promote regeneration and recruitment. To achieve this, recovery actions are primarily structured to (i) acquire baseline data, (ii) assess habitat condition including ecological and biological function, (iii) protect populations to maintain or improve population growth and (iv) to engage the community in recovery actions.

On-ground site management will aim to mitigate threatening processes and thereby ensure against extinction. Major threats requiring management include accidental destruction, inappropriate fire regimes and grazing by pest animals. A range of strategies will be necessary to alleviate these threats including fire management, fencing, and control of pest animals.

Broad-scale protection measures applicable to all populations include legal protection of sites, habitat retention and liaison with land managers including private landholders. In addition, searches of known and potential habitat should continue to better define the distributions and size of populations.

The Recovery Plan also advocates strategies to fill some of the major gaps in our knowledge to date. These include an understanding of the mechanisms underlying recruitment and regeneration. Successful *in situ* population management will be founded on understanding the relationships between *Pimelea pagophila* and associated flora, and its response to environmental processes. These are directly linked to biological function and are thus vital to recovery. Demographic censusing will be necessary to gather life history information and to monitor the success of particular management actions.

In addition to the above, *ex situ* conservation measures will be required and will include seed storage and plant cultivation. Cultivating *ex situ* populations will also aim to increase the amount of seed available for reintroduction to sites.

Community participation in recovery actions will be sought, particularly in regard to recovery team membership and implementation of on-ground works.

Affected interests

All known populations fall under the jurisdiction of Parks Victoria, who has been contacted and has approved the actions as outlined in this Recovery Plan, subject to the availability of adequate funding.

Role and interests of indigenous people

Indigenous communities on whose traditional lands occurs will be advised,

Indigenous communities on whose traditional lands *Pimelea pagophila* occurs will be advised, through the relevant DSE Regional Indigenous Facilitator, of the preparation of this Recovery Plan and invited to provide comments if so desired. Indigenous communities will be invited to be involved in the implementation of the Recovery Plan.

Benefits to other species/ecological communities

The Recovery Plan includes a number of potential biodiversity benefits for other species and vegetation communities in Victoria. Principally, this will be through the protection and management of habitat. The adoption of broad-scale management techniques and collection of baseline data will also benefit a number of other plant species growing in association with *Pimelea pagophila*, particularly those species with similar life forms and/or flowering responses.

The Recovery Plan will also provide an important public education role as threatened flora have the potential to act as 'flagship species' for highlighting broader nature conservation and biodiversity issues such as land clearing, grazing, weed invasions and habitat degradation.

Social and economic impacts

The implementation of this Recovery Plan is unlikely to cause significant adverse social and economic impacts. All sites where *P. pagophila* occurs are within the Grampians National Park, and protection measures outlined in the Recovery Plan will have negligible impact on current recreational and commercial activities there.

Acknowledgments

The author would like to thank Fiona Coates, Judy Downe and Gary Backhouse (DSE) and Susan Hansen and Mike Stevens (Parks Victoria) for their contributions to this Recovery Plan.

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Priority, Feasibility and Estimated Costs of Recovery Actions

Action	Description	Priority	Feasibility	Responsibility	Cost estimate					
					Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	Conservation status									
1.1	Collect baseline data	1	100%	DSE	\$4,000	\$0	\$0	\$0	\$0	\$4,000
2	Habitat requirements									
2.1	Survey known habitat	2	100%	DSE	\$6,000	\$0	\$0	\$0	\$0	\$6,000
2.2	Identify, survey potential habitat	1	75%	DSE	\$6,000	\$0	\$0	\$0	\$0	\$6,000
3	Manage threats									
3.1	Identify disturbance regimes	1	75%	DSE	\$4,000	\$0	\$0	\$0	\$0	\$4,000
3.2	Control threats	1	75%	PV	\$10,000	\$20,000	\$10,000	\$5,000	\$5,000	\$50,000
4	Identify key biol. functions									
4.1	Evaluate reproductive status	2	75%	DSE	\$4,000	\$0	\$0	\$0	\$0	\$4,000
4.2	Seed germination	2	75%	DSE	\$0	\$10,000	\$10,000	\$0	\$0	\$20,000
5	Growth rates, pop. viability									
5.1	Conduct censusing	3	100%	DSE	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$75,000
5.2	Collate, analyse and report	3	100%	DSE	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000	\$9,000
6	Establish pops. in cultivation									
6.1	Establish cultivated plants	3	50%	DSE	\$0	\$6,000	\$6,000	\$6,000	\$6,000	\$24,000
6.2	Establish a seed bank	3	50%	DSE	\$0	\$4,000	\$4,000	\$4,000	\$4,000	\$16,000
6.3	Maintain a database	3	100%	DSE	\$0	\$2,000	\$2,000	\$2,000	\$2,000	\$8,000
7	Education, communication									
7.1	Community extension	2	100%	DSE, PV	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$30,000
TOTAL					\$56,000	\$62,000	\$52,000	\$37,000	\$41,000	\$248,000