Department of
Sustainability and
Environment

National Recovery Plan for the Betka Bottlebrush *Callistemon kenmorrisonii*

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Australian Government

Victoria
The Place To Be

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This is a Recovery Plan prepared under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999, with the assistance of funding provided by the Australian Government.

This Recovery Plan has been developed with the involvement and cooperation of a range of stakeholders, but individual stakeholders have not necessarily committed to undertaking specific actions. The attainment of objectives and the provision of funds may be subject to budgetary and other constraints affecting the parties involved. Proposed actions may be subject to modification over the life of the plan due to changes in knowledge.

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Summary

The Betka Bottlebrush *Callistemon kenmorrisonii* is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. The species is endemic to far East Gippsland in Victoria, where there are only 90–130 plants known in two wild populations. This national Recovery Plan for *C. kenmorrisonii* 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 Betka Bottlebrush *Callistemon kenmorrisonii* is an erect to spreading shrub to 3 m tall and 1–4 m wide, with spongy, papery bark. Leaves are narrowly lanceolate, to 52 mm x 6 mm, hairless, stiff and leathery. Bright red flowers with purple anthers form dense 'bottle-brush' spikes, to 100 mm x 60 mm, in upper parts of younger branches. Flowers appear between November and February. The fruits are woody and cup-shaped, to 9 mm across and are clustered along older branches (description from Molyneux 1995; Walsh & Entwisle 1996).

Callistemon kenmorrisonii resembles *Callistemon citrinus*, which grows nearby. However, that species occurs in moist ground or heathland, while *C. kenmorrisonii* is a rheophytic chasmophyte (ie. a plant which is anchored into crevices in rock) (Molyneux 1995). The leaves and flower spikes of *C. citrinus* are generally larger than those of *C. kenmorrisonii* (Walsh & Entwisle 1996).

Distribution

The Betka Bottlebrush is endemic to Victoria and is apparently confined to a very small area along the Betka River, near Mallacoota in far River East Gippsland, within the South East Corner IBRA Bioregion (DEH 2000), where it is known from just two tiny populations (Molyneux 1997; N. Walsh unpubl.).

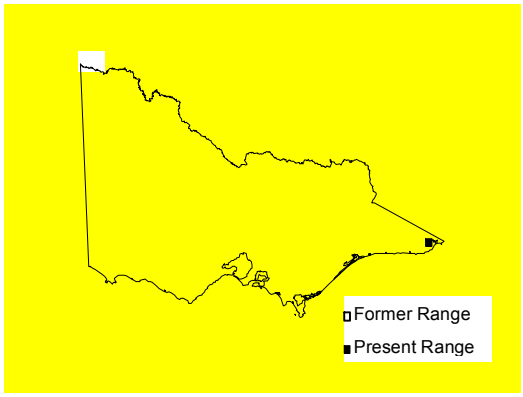

Figure 1. Distribution of *Callistemon kenmorrisonii* in Victoria.

Maps showing the detailed distribution of *Callistemon kenmorrisonii* 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.

Population Information

The two known populations of *C. kenmorrisonii* occur on public land, in State forest, at the following locations:

- Betka River, Stony Peak Rd (40–60 plants)
- Betka River, Roger Track (50–70 plants)

Habitat

Populations of *C. kenmorrisonii* grow in crevices of the rock bars of undifferentiated Devonian-Silurian granite across the Betka River (Molyneux 1995). At the Stony Peak Rd site the vegetation is riparian scrub within woodland dominated by *Eucalyptus radiata* and *Eucalyptus sieberi*. Associated species include *Tristaniopsis laurina*, *Leptospermum glabrescens* and *Gahnia sieberiana*. At the Roger Track site the vegetation is riparian scrub with *Allocasuarina littoralis*, *Hakea decurrens*, *Platylobium formosum* and *Tristaniopsis laurina*. Recovery actions include survey and mapping of habitat that will lead to the identification of habitat critical to the survival of the species.

Threats

The Betka Bottlebrush is known only from one very small area in far East Gippsland. As there is no information on past distribution or abundance, and no evidence of any declines in existing populations, it is not possible to determine if the species has suffered any decline in range and/or abundance. Threats are generally rated as low, with populations most at risk from inadvertent damage. Given the extremely limited distribution and very low numbers of plants, the risk from stochastic events is probably high.

Altered hydrology: The response of *C. kenmorrisonii* to flooding has not been studied but its habitat suggests it is tolerant of occasional flooding. A bigger risk is possibly from reduced flows in the Betka River, as there is considerable logging in the area, and this may alter hydrological processes.

Forestry operations: The sites where both populations of *C. kenmorrisonii* occur have been designated as Special Protection Zones, which excludes forestry operations within the zones. However, the population at Roger Track is currently threatened by the indirect effects of logging activities.

Roadworks: Bridge works or road works associated with logging or fire control, may threaten sites containing *C. kenmorrisonii*.

Mining: There has been a licence sought for mineral exploitation in the Roger Track area, but the status of the licence application is currently unknown.

Feral Honeybees: Some *Callistemon* species are pollinated by honeyeaters which can be displaced by introduced honeybees, leading to a reduction in seed production (Paton 1993). Whether any such impact is affecting *C. kenmorrisonii* is not known.

Recovery Information

Directions for recovery of *C. kenmorrisonii* include habitat conservation, restoration and management, combined with an understanding of the species' ecological and biological requirements. 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.

Objectives

The **overall objective** of recovery is to minimise the probability of extinction of *Callistemon kenmorrisonii* 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 *Callistemon kenmorrisonii* are to:

- Acquire accurate information for conservation status assessments.

- Identify habitat that is critical, common or potential.
- Manage threats to populations.
- Identify key biological functions
- Determine the growth rates and viability of populations.
- Establish populations in cultivation.
- Undertake community education and information.

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 Objectives, Actions and Performance Criteria

Action	Description	Performance Criteria
Specific objective 1		
Acquire accurate information for conservation status assessments		
1.1	Acquire baseline population data by conducting detailed field and desk top 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**	• Determination or update of conservation status for inclusion on state and national threatened species lists. • 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 relevant to 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**	• Predictive model for potential habitat developed and tested.
Specific objective 3		
Manage threats to populations		
3.1	Identify disturbance regimes to maintain habitat. **Responsibility: DSE**	• Preparation of management prescriptions for ecological burning at Betka River (Stony Peak Rd and Roger Track) sites.
3.2	Control threats from accidental damage during road or bridge works using appropriate signage. **Responsibility: DSE**	• Measurable seedling recruitment/vegetative regeneration and/or maintenance of health and extent of current population and/or a measurable reduction in plant mortality at Betka River (Stony Peak Rd and Roger Track) sites. • Installation of appropriate signage at Betka River (Stony Peak Rd and Roger Track) sites.

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 each population.
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. • 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 important populations.
Specific objective 6 **Establish populations in cultivation**		
6.1	Establish cultivated plants *ex situ* for inclusion in living collections to safeguard against any unforeseen destruction of wild populations. **Responsibility: DSE/RBG**	• Development of effective propagation and cultivation techniques. • At least 30 mature plants in cultivation representing a range of genotypes from both populations.
6.2	Establish a seed bank and determine seed viability. **Responsibility: DSE/RBG**	• Long-term storage facility identified. • Seed from important populations in storage.

Action	Description	Performance Criteria
Specific objective 7		
Undertake community education and information		
7.1	Identify opportunities for community involvement in the conservation of *Callistemon kenmorrisonii*. **Responsibility: DSE**	• Presentation to community nature conservation groups.

Abbreviations

DSE Department of Sustainability and Environment, Victoria
RBG Royal Botanic Gardens, Melbourne

Management Practices

Management practices that will aid recovery

On-ground site management will aim to mitigate threatening processes to prevent declines and create conditions for maintenance or increase of population size. Threats requiring management include accidental destruction and inappropriate fire regimes. In addition, some *ex situ* conservation measures including seed storage and germination trails, will be required. Addressing major knowledge gaps is also required, especially determining the mechanisms underlying recruitment and regeneration. Successful *in situ* population management will be founded on understanding the relationships between *C. kenmorrisonii* 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. Surveys of known and potential habitat should continue to better define the distributions and size of populations. Providing information to land managers and the broader community in the region will increase awareness of the species, provide for increased protection of existing populations, an increased likelihood on new populations being found, and reducing the risk of inadvertent damage occurring.

Management practices that will avoid significant adverse impacts

Providing land managers with information on the location, distribution, habitat and ecology of *C. kenmorrisonii* will help to protect existing populations from inadvertent damage, and raising general awareness may result in the location of any new populations. The designation of sites where *C. kenmorrisonii* occurs as Special Protection Zones will significantly reduce the risk of inadvertent damage. Surveys in potential habitat likely to be impacted by any logging or roading proposals will be required to avoid damage to or destruction of any currently unknown populations.

Affected interests

All populations of *C. kenmorrisonii* fall under the jurisdiction of DSE. All divisions with an involvement in biodiversity conservation and forest management, and the Gippsland Region have been contacted and have approved the actions outlined in this Recovery Plan, subject to the availability of sufficient funding.

Role and interests of indigenous people

Indigenous communities on whose traditional lands *C. kenmorrisonii* 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 *C. kenmorrisonii*, 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 will not cause any significant adverse social and economic impacts. The species occurs entirely on public land designated as State Forest, which is under the jurisdiction of DSE, and the protection measures outlined in this Recovery Plan will have negligible (if any) impact on forest management activities in the area.

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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	2	100%	DSE	**$6,000**	**$0**	**$0**	**$0**	**$0**	**$6,000**
2	**Habitat requirements**									
2.1	Survey known habitat	1	100%	DSE	**$10,000**	**$0**	**$0**	**$0**	**$0**	**$10,000**
2.2	Identify, survey potential habitat	1	75%	DSE	**$10,000**	**$0**	**$0**	**$0**	**$0**	**$10,000**
3	**Manage threats**									
3.1	Identify disturbance regimes	2	75%	DSE	**$0**	**$15,000**	**$0**	**$0**	**$0**	**$15,000**
3.2	Control threats	1	75%	DSE	**$5,000**	**$10,000**	**$5,000**	**$5,000**	**$5,000**	**$30,000**
4	**Identify key biol. functions**									
4.1	Evaluate reproductive status	2	75%	DSE	**$0**	**$0**	**$10,000**	**$10,000**	**$0**	**$20,000**
4.2	Seed germination	2	75%	DSE	**$0**	**$0**	**$10,000**	**$10,000**	**$0**	**$20,000**
5	**Growth rates, pop. viability**									
5.1	Conduct censusing	2	100%	DSE	**$6,000**	**$6,000**	**$6,000**	**$6,000**	**$6,000**	**$30,000**
5.2	Collate, analyse and report	2	100%	DSE	**$4,000**	**$4,000**	**$4,000**	**$4,000**	**$10,000**	**$26,000**
6	**Establish pops. in cultivation**									
6.1	Establish cultivated plants	3	50%	DSE/RBG	**$0**	**$6,000**	**$6,000**	**$6,000**	**$6,000**	**$24,000**
6.2	Establish a seed bank	3	50%	DSE/RBG	**$0**	**$4,000**	**$4,000**	**$4,000**	**$4,000**	**$16,000**
7	**Education, communication**									
7.1	Community extension	2	100%	DSE	**$6,000**	**$6,000**	**$6,000**	**$6,000**	**$6,000**	**$30,000**
				Totals	**$52,000**	**$61,000**	**$56,000**	**$51,000**	**$37,000**	**$245,000**