

National Recovery Plan for Forrester's Bottlebrush *Callistemon forresterae*

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Summary

Forrester's Bottlebrush *Callistemon forresterae* is a small shrub known from a single population of 1–3,000 plants occurring on the banks of the Genoa River in eastern Victoria. Little is known of its ecology or threats. The species is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This national Recovery Plan for Forrester's Bottlebrush is the first recovery plan for the species, and details its distribution, habitat, threats and recovery objectives and actions necessary to ensure its long-term survival.

Species Information

Description

Callistemon forresterae (Forrester's Bottlebrush) of the Family Myrtaceae:

Habit: Erect shrub, to 1.2 m high, with grey papery stems.

Leaves: Alternate, sessile; linear to linear-lanceolate, mucronate, often slightly falcate, 33–43 mm long, 3–4 mm wide, with a raised mid-vein on both surfaces, glabrous, oil glands visible on both leaf surfaces.

Flowers: flower spikes usually with leaf-like bracts at the tip, 9–12 cm long, 42–46 mm wide, axis hairy, hypanthium hairy, stamens 13–15 mm long, filaments mauve, anthers purple; capsule 4–6 mm long, 5–8 mm wide.

Similar species: *Callistemon subulatus* is similar, but has crimson-coloured flowers and capsules mostly less than 5 mm wide.

Source: Molyneux (1993); Spencer (1996)

Distribution and Populations

Forrester's Bottlebrush is known from a single population of 1–3,000 plants that occurs along the banks of the Genoa River in eastern Victoria (Figure 1), in the South East Corner IBRA bioregion (sensu DEH 2000). There are considered to be five sub-populations: three sub-populations in the Coopracambra National Park, one sub-population in the Maramingo Forest Block within a Special Protection Zone and one sub-population on unreserved crown land at Wangarabell near Genoa. There is also a putative record from New South Wales at Imlay Creek, below the Wallagaraugh River Track, where there was a population of about 50 plants (Molyneux 1997). This record has not been substantiated, and there are doubts as to its occurrence in NSW. A proposed recovery action is to verify its occurrence in NSW. Maps showing the distribution of Forrester's Bottlebrush are available from the Department of Sustainability and Environment Victoria.

Habitat

Virtually nothing is known of the habitat of Forrester's Bottlebrush, other than it occurs on rock bars or in sand over rock adjacent to streams (Molyneux 1995). A proposed recovery action is to determine habitat critical to survival of the species.

Decline and Threats

Nothing is known of the previous distribution and abundance of Forrester's Bottlebrush, so it is not possible to determine if there has been a decline, or if the species is naturally rare and restricted. Weed invasion, especially from Blackberry *Rubus fruticosus* spp. agg., willow *Salix* spp. and Sweet Briar *Rosa rubiginosa*, is a potential threat to part of the population of *C. forresterae*. Removal and control of willows has occurred along sections of the Genoa River adjacent to areas where *C. forresterae* grows. At the Wangarabell site, domestic stock from the adjoining private property have access to the Genoa River, and plants are at risk from trampling or grazing as stock go to the river to drink. The feral pig population is apparently increasing in the area, which could cause damage by digging and uprooting vegetation or creating wallows along the river bank, although no damage to *C. forresterae* has yet been observed. Response

to fire, especially the ability to resprout after fire, is unknown. The riparian habitat in which *C. forresterae* occurs suggests that the species relies on a higher moisture supply regime than surrounding habitats. It is difficult to say what effect climate change with the projected drier conditions could have on *C. forresterae*. If the projections eventuate, micro-habitat locations where a suitable moisture supply regime persists may become even more limited than at present. A proposed recovery action is to determine and manage any threats to the species.

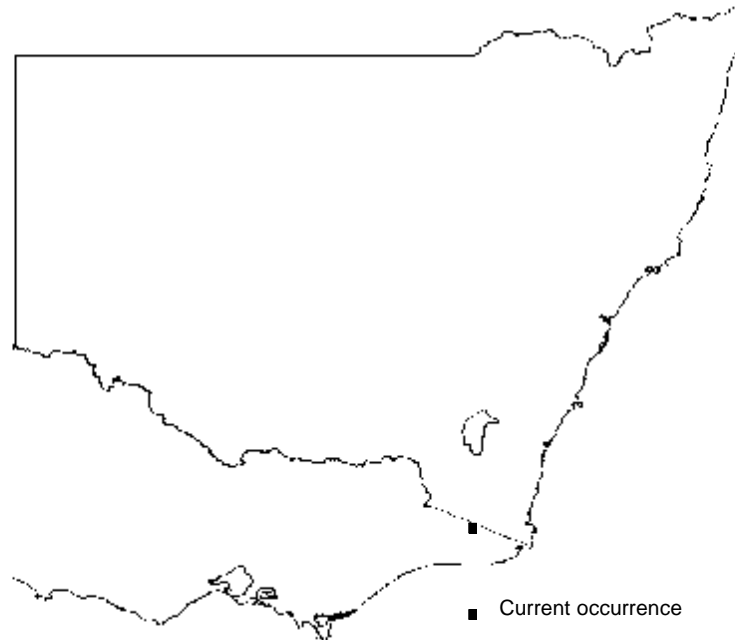


Figure 1. Distribution of *Callistemon forresterae*

Recovery Information

Recovery Objectives

The overall objective of recovery is to minimise the probability of extinction of Forrester's Bottlebrush 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 (5 years), the specific objectives of recovery for Forrester's Bottlebrush are to:

1. Determine distribution, abundance and population structure
2. Determine habitat requirements
3. Manage threats to populations
4. Identify key biological functions
5. Determine growth rates and viability of populations
6. Establish a population in cultivation
7. Build community support for conservation

Program Implementation and Evaluation

This Recovery Plan guides recovery actions for Forrester's Bottlebrush and will be managed by the Victorian Department of Sustainability and Environment. A Threatened Flora Recovery Team, consisting of scientists, land managers and field naturalists has been 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. The Recovery Plan will run for a maximum of five years from the date of its adoption under the EPBC Act, and will be reviewed and revised within five years of its adoption.

Recovery Actions and Performance Criteria

Action	Description	Performance Criteria
Specific Objective 1: Determine distribution, abundance and population structure		
1.1	Undertake surveys to determine the area and extent of populations, the number, size and structure of populations, and inference or estimation of population change. Responsibility: DSE, PV, DECC	<ul style="list-style-type: none"> All sub-population sites searched and mapped for population size, condition and habitat. Imlay Ck NSW site searched to verify occurrence of <i>C. forresterae</i>.
Specific Objective 2: Determine habitat requirements		
2.1	Survey known habitat and collect floristic and environmental information relevant to community ecology and condition. Responsibility: DSE, PV	<ul style="list-style-type: none"> Species/habitat specific survey design prepared. Habitat critical to survival mapped for any extant populations.
2.2	Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference. Responsibility: DSE, PV	<ul style="list-style-type: none"> Survey potential habitat along Genoa River. Predictive model for potential habitat developed & tested at two sites.
Specific Objective 3: Manage threats to populations		
3.1	Control threats from pest plants. Responsibility: DSE, PV	<ul style="list-style-type: none"> Reduction in cover of weeds (notably willows, blackberries and briar) at and near all sites.
3.2	Control threats from domestic stock. Responsibility: DSE	<ul style="list-style-type: none"> Fencing of crown land along Genoa River as part of alternative stock watering plan.
3.3	Identify and control other threats. Responsibility: DSE, PV	<ul style="list-style-type: none"> Impact of feral pigs monitored and reduced if required.
Specific Objective 4: Identify key biological functions		
4.1	Evaluate current reproductive status, seed bank status, longevity, fecundity and recruitment levels. Responsibility: DSE	<ul style="list-style-type: none"> Reproductive ecology and regenerative potential quantified for four representative sites. Seed bank potential quantified.
4.2	Identify key stimuli for seed germination requirements. Responsibility: DSE	<ul style="list-style-type: none"> Stimuli for recruitment 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, PV	<ul style="list-style-type: none"> Techniques for monitoring developed and implemented. Population growth rates determined and Population Viability Analysis completed.
Specific Objective 6: Establish a population in cultivation		
6.1	Establish plants in cultivation to provide a research population and potentially for reintroductions. Responsibility: DSE, RBG	<ul style="list-style-type: none"> Development of effective propagation and cultivation techniques. At least 30 healthy, genetically diverse, mature plants in cultivation.
6.2	Establish a seed bank and determine seed viability. Responsibility: DSE, RBG	<ul style="list-style-type: none"> Seed from all sub- populations in storage.
Specific Objective 7: Build community support for conservation		
7.1	Identify opportunities for community involvement in the conservation of the <i>C. forresterae</i> . Responsibility: DSE, PV	Community nature conservation and Landcare groups aware of the species and support its conservation.

Abbreviations: DECC – Department of Environment and Climate Change (NSW); 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 Forrester's Bottlebrush. 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) engage the community in recovery actions.

On-ground site management will aim to mitigate threatening processes and thereby insure against extinction. Major threats requiring management include accidental destruction, competition from pest plants and animals, and inappropriate fire regimes. A range of strategies will be necessary to alleviate these threats including feral animal control, weed control, and fire management. 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 Forrester's Bottlebrush 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. Community participation in recovery actions will be sought, particularly in regard to recovery team membership and implementation of on-ground works.

Affected Interests

All sites occur on public land managed by Parks Victoria and the Department of Sustainability and Environment.

Role and Interests of Indigenous People

Indigenous communities on whose traditional lands Forrester's Bottlebrush occurs are being advised, through the relevant regional Indigenous facilitator, of the preparation of this Recovery Plan and will be invited to provide comments and be involved in the implementation of the plan.

Biodiversity Benefits

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 Forrester's Bottlebrush, 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. Most populations occur on public land, either crown land reserved for various public purposes, or on road reserves, managed by a variety of local and State government agencies. Any protection measures required at these sites (eg. fencing, signage, track closures) will have minimal impact on current recreational and commercial activities. Protection of these populations has been negotiated with the relevant land manager. Protection of the few populations on private land or on land managed by other authorities will be achieved through voluntary agreements with landowners and managers.

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Priority, Feasibility and Estimated Costs of Recovery Actions

Action	Description	Priority	Feasibility	Responsibility	Cost estimate					Total
					Year 1	Year 2	Year 3	Year 4	Year 5	
1	Distribution, abundance									
1.1	Surveys	1	100%	DSE, PV, DECC	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
2	Habitat requirements									
2.1	Known habitat	1	100%	DSE, PV	\$0	\$8,000	\$8,000	\$0	\$0	\$16,000
2.2	Potential habitat	2	75%	DSE, PV	\$0	\$0	\$8,000	\$8,000	\$8,000	\$24,000
3	Threat management									
3.1	Pest plants	1	75%	DSE, PV	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
3.2	Grazing	2	75%	DSE	\$3,000	\$0	\$0	\$0	\$0	\$3,000
3.3	Other threats	2	75%	DSE, PV	\$5,000	\$5,000	\$2,000	\$2,000	\$2,000	\$16,000
4	Biological functions									
4.1	Reproductive status	3	75%	DSE	\$0	\$3,000	\$3,000	\$3,000	\$0	\$9,000
4.2	Seed germination	2	100%	DSE	\$0	\$0	\$5,000	\$5,000	\$0	\$10,000
5	Population viability									
5.1	Censusing	1	100%	DSE, PV	\$10,000	\$10,000	\$10,000	\$8,000	\$8,000	\$46,000
6	Cultivation									
6.1	Cultivated plants	2	100%	DSE, RBG	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
6.2	Seed bank	2	100%	DSE, RBG	\$2,000	\$2,000	\$1,000	\$1,000	\$1,000	\$7,000
7	Community support									
7.1	Community extension	3	75%	DSE, PV	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000
TOTALS					\$33,000	\$41,000	\$50,000	\$40,000	\$32,000	\$196,000