Department of
Sustainability and
Environment

# National Recovery Plan for the Wellington Mint-bush *Prostanthera galbraithiae*

**Oberon Carter and Neville Walsh**

Australian Government

Victoria
The Place To Be

Prepared by Oberon Carter (Department of Sustainability and Environment, Victoria) and Neville Walsh (Royal Botanic Gardens, Melbourne).

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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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**Cover photograph:** Wellington Mint-bush *Prostanthera galbraithiae*, by John Eichler.

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## Summary

The Wellington Mint-bush *Prostanthera galbraithiae* is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. The species is endemic to the central Gippsland region of Victoria, where there are about 11 populations containing about 850 plants. Major threats to populations include weed invasion and altered fire regimes. This national Recovery Plan for *P. galbraithiae* 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 Wellington Mint-bush *Prostanthera galbraithiae* is an erect to spreading small shrub that grows from 0.3–2 m high. Some branches have a square-shaped cross-section and are densely hairy between two faint lateral-running ridges and on nodes while the rest of the branch is hairless. Ridges are mainly found on young branchlets. Leaves are mid-green, typically hairless, to 15 mm x 2 mm, grow stalkless from nodes on branches in opposite pairs, and appear linear as the entire margins are strongly folded back but are actually narrowly ovate or oblong. They have a slight aroma when crushed. Eight to 24 deep mauve to purple flowers with darker spots on the petals are arranged in a leafy, branched panicle-like but partly racemose inflorescence. Petals are 7–10 mm long, the two upper petals form a hood and the three lower petals are spread fan-shape, the middle petal the broadest and longest. Stamens have anthers that lack a basal appendage. The surrounding calyx is divided into two lips, the upper lip curved backwards and 6 mm in length. Flowers appear in September and October (description from Walsh & Entwisle 1999). *Prostanthera galbraithiae* is distinguished from other species of *Prostanthera* in having stalkless linear leaves and the lower middle petal broader and longer than each of the two upper petals (Conn 1998). *Prostanthera galbraithiae* appears to be strongly fire-dependent for germination, with plants appearing to decline in vigour and become senescent after about 10 years.

### Distribution

*Prostanthera galbraithiae* is endemic to Victoria, where it is apparently restricted to the central Gippsland plains in the vicinity of Sale (Conn 1998), in the South East Coastal Plain IBRA Bioregion (DEH 2000).

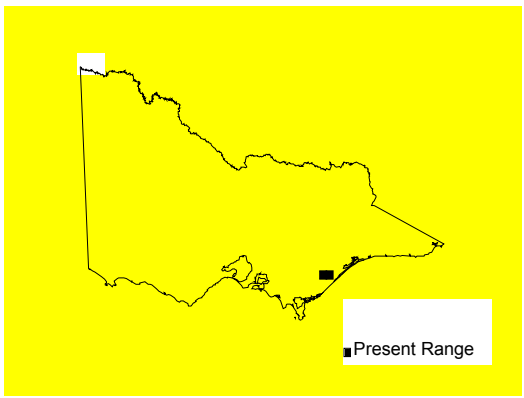


**Figure 1.** Distribution of *Prostanthera galbraithiae* in Victoria

Maps showing the detailed distribution of *P. galbraithiae* are available from the Department of Sustainability and Environment Flora Information System (DSE-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

Eleven current or recent populations of *P. galbraithiae* are known, 10 occurring in Holey Plains State Park, with a single population known from Dutson Downs. About 850 plants have been recorded in the last 20 years. Some known populations may be absent at certain times, depending on the period since the last fire. Populations occur in the following locations:

Holey Plains State Park (managed by Parks Victoria)

- Red Hill Track, 'Berlin Wall': about 540 plants.
- Red Hill Track, 3 km east of Kellys Track: about 100 plants:
- Kellys Track: about 20 plants.
- Berminghams Road: about 150 plants.
- Springs Track: about 25 plants.
- Between Kellys Track, Seldom Seen Track and South Boundary Track: 1 plant recorded in 1986, none seen since.
- South Boundary Track: 10–20 plants recorded in 1992.
- Holey Hill: 1 plant recorded in 1986, none seen since.
- Chessum Rd 1: 4 plants recorded in 1986, none seen since.
- Chessum Rd 2: 1 plant recorded in 1986 and 2002.

Dutson Downs (private Land managed by Gippsland Water as a waste disposal and treatment site): 5 plants recorded in 1986, none seen since. This is a geographically disjunct population some 20 km east of the nearest Holey Plains population.

## Habitat

*Prostanthera galbraithiae* occurs in heathy open forest, heathland and heathy woodland, usually on gravelly sand (Walsh & Entwisle 1999). Commonly associated species include *Acacia oxycedrus*, *Acacia suaveolens*, *Banksia marginata*, *Boronia anemonifolia*, *Caustis pentandra*, *Dillwynia sericea*, *Kunzea ericoides*, *Lepidosperma concavum*, *Leptospermum continentale* and *Leptospermum myrsinoides*. 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 Wellington Mint-bush was probably always highly localised, but was almost certainly more widespread and abundant between Holey Plains and Dutson Downs. Populations have most likely been fragmented and depleted historically by land clearance for settlement, agriculture and pine plantations. This decline may be continuing, with several populations not being relocated in recent years. However, the species appears to be strongly fire-dependent for germination, and appears to decline in vigour after about 10 years, so 'lost' populations may still be present as seed in the soil seed bank, waiting for the next fire to germinate. The main threats to the species are summarised as follows:

**Inappropriate fire regimes:** Appropriate fire interval for *P. galbraithiae* is expected to be about 15 years, as plants begin to senesce about 10 years after fire. However, fire intervals of less than about 10 years may be detrimental, as plants may not have reached maturity and set seed. Frequent fire at 1–3 year intervals has apparently caused the extinction of the Dutson Downs population.

**Firebreak works:** Further firebreak works threaten some sites, as slashing appears not to encourage recruitment.

**Herbicide use:** Drift from aerial herbicides used in nearby pine plantations appears to be damaging some populations of *P. galbraithiae*.

**Browsing:** Pine plantations in the area appear to have promoted increased Wallaby numbers and a concomitant increase in browsing.

**Competition:** The Holey Hill population is threatened by competitive exclusion from Bracken Fern *Pteridium esculentum*.

# Recovery Information

## Overall Objective

The **overall objective** of recovery is to minimise the probability of extinction of *Prostanthera galbraithiae* 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** for recovery of *Prostanthera galbraithiae* 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.
- Establish cultivated plants in the wild.
- 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** | | |
| 1.1 | 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.<br>**Responsibility: DSE** | • Determination or update of conservation status for inclusion on state and national threatened species lists.<br>• 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.<br>**Responsibility: DSE** | • Requirements for completion of essential life history stages, recruitment and dispersal identified at known sites.<br>• 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.<br>**Responsibility: DSE** | • Predictive model for potential habitat developed and tested. |
| **Specific objective 3** | | |
| **Ensure that all populations and their habitat are legally protected** | | |
| 3.1 | Protect populations on private property.<br>**Responsibility: DSE** | • Initiate private land management agreements in consultation with private land owners under the *Victorian Conservation Trust Act* 1972, *The Conservation, Forests and Lands Act* 1987 and the *Wildlife Act* 1975 at Dutson Downs site. |

| Action | Description | Performance Criteria |
|---|---|---|
| **Specific objective 4**<br>**Manage threats to populations** | | |
| 4.1 | Identify disturbance regimes to maintain habitat.<br>**Responsibility: DSE, PV** | • Preparation of management prescriptions for ecological burning at the ten known populations within Holey Plains State Park. |
| 4.2 | Control threats from pest animals works by erecting fencing to exclude native herbivores; reduce herbicide drift by negotiating alternative herbicide spraying practices with local Pine Plantation managers; control damage resulting from firebreak slashing by installing appropriate conservation signage.<br>**Responsibility: DSE, PV** | • Measurable seedling recruitment/vegetative regeneration and a reduction in plant mortality at all sites.<br>• Monitor Wallaby abundances at Holey Plains populations and implement measures to reduce browsing if required.<br>• Negotiate alternative herbicide-spraying practices with plantation managers, to minimise drift to Holey Plains populations.<br>• Erect signs at the 'Berlin Wall', Red Hill Track and Red Hill Track to inform firebreak contractors / workers of population presence. |
| **Specific objective 5**<br>**Identify key biological functions** | | |
| 5.1 | Evaluate current reproductive/regenerative status, seed bank status and longevity by determining fecundity and recruitment levels.<br>**Responsibility: DSE** | • Seed bank/regenerative potential quantified for each population. |
| 5.2 | Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli and determine stimuli for vegetative regeneration.<br>**Responsibility: DSE** | • Stimuli for recruitment/regeneration identified.<br>• Management strategies identified to maintain, enhance or restore processes fundamental to reproduction and survival. |
| **Specific objective 6**<br>**Determine the growth rates and viability of populations** | | |
| 6.1 | Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data.<br>**Responsibility: DSE** | • Techniques for monitoring developed and implemented.<br>• Annual census data. |
| 6.2 | Collate, analyse and report on census data and compare with management histories.<br>**Responsibility: DSE** | • Population growth rates determined and Population Viability Analysis completed for important populations. |

| Action | Description | Performance Criteria |
|---|---|---|
| **Specific objective 7** | | |
| **Establish populations in cultivation** | | |
| 7.1 | Establish cultivated plants *ex situ* for inclusion in living collections to safeguard against any unforeseen destruction of wild populations.<br>**Responsibility: DSE, RBG** | • Development of effective propagation and cultivation techniques.<br>• At least 25 mature plants in cultivation. |
| 7.2 | Establish a seed bank and determine seed viability.<br>**Responsibility: DSE** | • Seed from important populations in storage. |
| **Specific objective 8** | | |
| **Establish cultivated plants in the wild** | | |
| 8.1 | Select and evaluate suitable translocation site that is ecologically and biologically suitable, has secure land tenure and are managed appropriately.<br>**Responsibility: DSE** | • Criteria for site suitability identified and site(s) selected. The Dutson Downs site may be an appropriate site for reintroduction/translocation of Holey Plains stock.<br>• Preparation of translocation plan. |
| 8.2 | Establish a minimum population size of cultivated plants.<br>**Responsibility: DSE, RBG** | • An additional 200 number of plants in cultivation that are disease free, vigorous and suitable for translocation. |
| 8.3 | Prepare site(s) and implement translocation plan.<br>**Responsibility: DSE** | • Development of successful translocation techniques. |
| 8.4 | Maintain and monitor translocated plants.<br>**Responsibility: DSE** | • At least 30% survival of translocated plants. |
| **Specific objective 9** | | |
| **Build community support for conservation** | | |
| 9.1 | Identify opportunities for community involvement in conservation of *P. galbraithiaae.*<br>**Responsibility: DSE** | • Presentation to community nature conservation groups. |

**Abbreviations:** DSE - Department of Sustainability and Environment; 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 *Prostanthera galbraithiae*. 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, competition from pest plants, inappropriate fire regimes and grazing by pest animals. A range of strategies will be necessary to alleviate these threats including weed control, fire management, fencing, and control of pest animals.

Broadscale 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 *Prostanthera galbraithiae* 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. Translocation of cultivated plants will be considered as there is a high chance of success and secure site(s) exist.

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

To reduce the likelihood of unforseen development activities negatively impacting upon *Prostanthera galbraithiae*, the threatened flora team should seek relevant information on it's distribution, ecology and/or habitat to relevant land managers. Such increased awareness should allow new populations to be found if they exist, and improve the likelihood of adequate searches being made during environmental impact assessments.

## Affected interests

Most populations of *Prostanthera galbraithiae* occur in Holey Plains State Park, which is managed by Parks Victoria. The Dutson Downs location is managed by Gippsland Water as a waste water, soil and organic material disposal and treatment facility. Both organisations 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 *Prostanthera galbraithiae* 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 *Prostanthera galbraithiae*, 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. Almost all populations occur within the Holey Plains State Park, and protection measures will have minimal impact on current recreational activties. Protection measures for any populations that might still be extant at Dutson Downs will have minimal if any interference with its operation as a waste disposal and treatment site.

## Acknowledgments

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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 | $15,000 | $0 | $0 | $0 | $0 | **$15,000** |
| **2** | **Habitat requirements** | | | | | | | | | |
| 2.1 | Survey known habitat | 1 | 100% | DSE | $20,000 | $0 | $0 | $0 | $0 | **$20,000** |
| 2.2 | Identify, survey potential habitat | 1 | 75% | DSE | $20,000 | $0 | $0 | $0 | $0 | **$20,000** |
| **3** | **Legal protection of habitat** | | | | | | | | | |
| 3.1 | Protect private land habitat | 3 | 50% | DSE | $0 | $10,000 | $6,000 | $0 | $0 | **$16,000** |
| **4** | **Manage threats** | | | | | | | | | |
| 4.1 | Identify disturbance regimes | 1 | 75% | DSE, PV | $0 | $8,000 | $0 | $0 | $0 | **$8,000** |
| 4.2 | Control threats | 2 | 75% | DSE, PV | $10,000 | $10,000 | $6,000 | $2,000 | $2,000 | **$30,000** |
| **5** | **Identify key biol. functions** | | | | | | | | | |
| 5.1 | Evaluate reproductive status | 3 | 75% | DSE | $0 | $12,000 | $12,000 | $0 | $0 | **$24,000** |
| 5.2 | Seed germination | 3 | 75% | DSE | $0 | $10,000 | $10,000 | $0 | $0 | **$20,000** |
| **6** | **Growth rates, pop. viability** | | | | | | | | | |
| 6.1 | Conduct censusing | 3 | 100% | DSE | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | **$75,000** |
| 6.2 | Collate, analyse and report | 3 | 100% | DSE | $1,000 | $1,000 | $1,000 | $1,000 | $5,000 | **$9,000** |
| **7** | **Establish pops. in cultivation** | | | | | | | | | |
| 7.1 | Establish cultivated plants | 3 | 50% | DSE, RBG | $0 | $6,000 | $6,000 | $6,000 | $6,000 | **$24,000** |
| 7.2 | Establish a seed bank | 2 | 50% | DSE | $0 | $4,000 | $4,000 | $4,000 | $4,000 | **$16,000** |
| **8** | **Establish pops. in the wild** | | | | | | | | | |
| 8.1 | Select sites | 3 | 100% | DSE | $0 | $8,000 | $0 | $0 | $0 | **$8,000** |
| 8.2 | Cultivate plants for translocation | 3 | 50% | DSE, RBG | $0 | $10,000 | $10,000 | $10,000 | $10,000 | **$40,000** |
| 8.3 | Prepare site, implement plan | 3 | 50% | DSE | $0 | $10,000 | $10,000 | $10,000 | $0 | **$30,000** |
| 8.4 | Maintain and monitor | 3 | 50% | DSE | $0 | $0 | $10,000 | $10,000 | $10,000 | **$30,000** |
| **9** | **Education, communication** | | | | | | | | | |
| 9.1 | Community extension | 3 | 100% | DSE | $6,000 | $6,000 | $6,000 | $6,000 | $6,000 | **$30,000** |
| | | | | **TOTAL** | **$87,000** | **$110,000** | **$96,000** | **$64,000** | **$58,000** | **$415,000** |