

# Action Statement

Flora and Fauna Guarantee Act 1988

No. 210

## Bogong Eyebright *Euphrasia eichleri*

*This Action Statement is based on a draft Recovery Plan prepared for this species by DSE under contract to the Australian Government Department of the Environment, Water, Heritage and the Arts.*

### Description

Bogong Eyebright (*Euphrasia eichleri*) is an annual semiparasitic herb to about 15 cm tall (Barker 1982; DNRE 2001). Dense glandular hairs are present on the branches, leaves, rachis, bracts and calyces (Walsh & Entwisle 1999). The leaves are broadly oblong or wedge-shaped, to about 16 x 7 mm (Barker 1982). The leaf margins have several pairs of long, narrow teeth (Walsh & Entwisle 1999). Flowers appear in summer, and are tubular, to 15 mm long and wide, and white or very pale purple with 3 - 5 fine purple stripes. The lower lobes also have yellow markings (Walsh & Entwisle 1999). The fruit is an ovoid capsule which is densely bristly in apical parts (Walsh & Entwisle 1999).

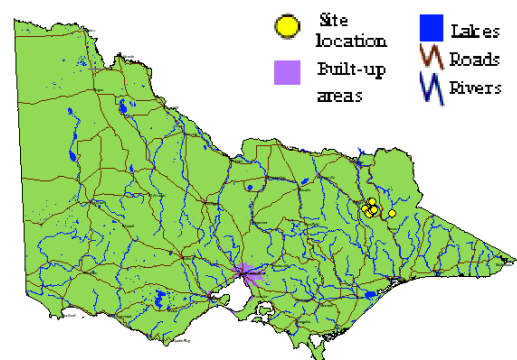


**Bogong Eyebright *Euphrasia eichleri***  
(Photo:DSE/McCann)

*Oreomyrrhis eriopoda, Pentachondra pumila,*

### Distribution

Bogong Eyebright is a Victorian endemic species, restricted to alpine and subalpine vegetation between the Bogong High Plains and Mt Bogong, and on the Dargo High Plains (it has not been seen at the latter locality, however, for nearly a century; Walsh & Entwisle 1999). The species' known altitudinal range is approximately 1,630 - 1,860 m above sea level.



### Distribution in Victoria

(Flora Information System DSE 2007)

### Habitat

Bogong Eyebright occurs in low open heath and grassland (Walsh & Entwisle 1999). Associated species include Mountain Woodruff (*Asperula gunnii*), Alpine Star-bush (*Asterolasia trymalioides*), Common Grass-sedge (*Carex breviculmis*), Silver Daisy (*Celmisia asteliifolia* spp. agg.), Keeled Bent-grass (*Deyeuxia brachyathera*), Spreading Rope-rush (*Empodisma minus*), Burgan (*Kunzea ericoides*), Scaly Buttons (*Leptorhynchos squamatus* subsp. *alpinus*), Snow Beard-heath (*Leucopogon montanus*), Southern Woodrush (*Luzula modesta*),

Alpine Rice-flower (*Pimelea alpina*), Bog Snow-grass (*Poa costiniana*), Soft Snow-grass (*Poa hiemata*), High-plain Podolepis (*Podolepis robusta*), Victorian Buttercup (*Ranunculus victoriensis*) and Alpine Trachymene (*Trachymene humilis*). Bogong Eyebright has also been recorded from "low open shrubland dominated by *Orites lancifolia*" (Barker 1982).

### Abundance

A total of 1134 Bogong Eyebright individuals were counted in 1998, from seven populations. These were monitored in February 2004 after the 2003 fires during searches by DSE (Coates *et al.* 2004). Fourteen populations were recorded: 11 burnt (Mt Nelse, Whiterocks Creek, Big River Fire Track, Watchbed Creek and Quartz Ridge) and three unburnt; all populations were regenerating well. The extent of range and abundance of Bogong Eyebright prior to European settlement is unknown, but its distribution is likely to have been restricted to suitable habitat within alpine areas.

### Important populations

Important populations necessary to the long term survival and recovery of Bogong Eyebright occur in the following locations in the Alpine National Park:

- Upper Cope Creek (272 plants counted prior to January 2003 fires)
- Cope Saddle Road (114 plants counted prior to January 2003 fires)
- Mount Nelse - Nelse Saddle (site partly burnt in January 2003)
- Mount Nelse South (site partly burnt in January 2003)
- Upper Watchbed Creek (29 plants prior to January 2003 fires)
- Lower Watchbed Creek (~430 plants recorded after January 2003 fires)
- Upper Whiterock Creek (21 plants)
- Quartz Ridge, Mount Bogong (~200 plants recorded after January 2003 fires)

### Life history and ecology

There have been no specific biological or ecological studies of Bogong Eyebright.

### Conservation status

#### National conservation status

Bogong Eyebright is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

#### Victorian conservation status

Bogong Eyebright has been listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*.

It is considered vulnerable in Victoria according to DSE's *Advisory List of Rare or Threatened Plants in Victoria - 2005* (DSE 2005).

### Potentially threatening processes

#### Inappropriate biomass reduction / fire regimes

The effects of fire on high altitude *Euphrasia* species are not well known, but plants appeared to regenerate well after the 2003 fires (Coates *et al.* 2004). Some lowland *Euphrasia* species may need fire for seed germination or maintenance of open habitat (Potts 1999).

#### Recreational Damage

The impacts of recreational activities such as cross country skiing and bushwalking are unknown but are presumed to be low.

#### Small population size

Searches in 2002 by N. Walsh at all seven VROTPop recorded sites found no plants. Non-appearance in 2002 may be due to drought causing early flowering, stunted growth (making plants less conspicuous), or germination followed by inadequate/late spring rains. The species appears to be locally common in some years, but may then be absent the following year. Fourteen populations were noted in 2004 (Coates *et al.* 2004) but all were small.

#### Climate Change / Drought

Drought conditions such as those experienced in recent years may cause plants to become short-stemmed or stimulate early flowering. Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases is listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999*.

### Previous management action

- Post-fire assessment and monitoring of priority populations of threatened flora was conducted after the 2003 wildfire in the Victorian Alps. This including mapping of populations in conjunction with the fire boundary using existing information, site visits, and data collection describing habitat condition, threats, population demography and vital attributes.
- In May 2005, the Victorian Government announced that licences to graze cattle in the Alpine National Park would not be renewed.

## Conservation objectives, actions and targets

### Long term objective

To ensure that the Bogong Eyebright can survive, flourish and retain its potential for evolutionary development in the wild.

### Specific Objectives, Actions and Targets

*The intended management actions listed below are further elaborated in DSE's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.*

<b>Objective I To increase knowledge of biology, ecology and management requirements</b>		
<b>Action</b>	<b>Targets</b>	<b>Responsible</b>
1. Acquire baseline population data. Identify the area and extent of the population; estimate the number, size and structure of the population; and infer or estimate population change.	<ul style="list-style-type: none"> <li>▪ Determination or update of conservation status and other records on all state databases (Flora Information System, VROTPop and Herbarium).</li> <li>▪ Populations accurately mapped.</li> </ul>	DSE
2. Assess habitat characteristics and/or condition. Accurately survey known habitat and collect floristic and environmental information relevant to community ecology and condition.	<ul style="list-style-type: none"> <li>▪ Core habitat mapped.</li> <li>▪ Ecological requirements for the completion of essential life history stages, recruitment and dispersal identified at known sites.</li> </ul>	DSE
3. Conduct surveys to locate suitable habitat. Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference.	<ul style="list-style-type: none"> <li>▪ Predictive model for potential habitat developed and tested.</li> </ul>	DSE
4. Identify disturbance regimes to maintain habitat or promote regeneration and recruitment.	<ul style="list-style-type: none"> <li>▪ Ongoing assessment of ecological impacts of 2003 fires at relevant sites.</li> <li>▪ Preparation of management prescriptions for ecological burning (or protection from burning) at relevant sites.</li> </ul>	DSE
5. Undertake research to identify key biological functions. Evaluate current reproductive/regenerative status, seed bank status and longevity, fecundity and recruitment levels by conducting field based experimental trials. Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli.	<ul style="list-style-type: none"> <li>▪ Seed bank/regenerative potential quantified for target populations.</li> <li>▪ Stimuli for recruitment/regeneration identified.</li> <li>▪ Management strategies identified to maintain, enhance or restore regenerative processes fundamental to reproduction and survival.</li> </ul>	DSE, Royal Botanic Gardens
6. Analyse population trends. Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. Collate, analyse and report on census data and compare with management histories	<ul style="list-style-type: none"> <li>▪ Techniques for monitoring developed and implemented.</li> <li>▪ Census data for target populations collected.</li> <li>▪ Population growth rates determined.</li> <li>▪ Population Viability Analysis completed for targeted populations.</li> </ul>	DSE, Parks Victoria
<b>Objective II To improve the condition of habitat</b>		
<b>Action</b>	<b>Targets</b>	<b>Responsible</b>

7. Realign tracks and roads. Control threats from high visitor numbers, where necessary, by re-routing tracks.	<ul style="list-style-type: none"> <li>Measurable seedling recruitment/vegetative regeneration and measurable reduction in plant mortality at important sites. [Note that Bogong Eyebright may be naturally rare and control of threats may not necessarily result in an increase in population sizes or recruitment.]</li> </ul>	DSE, Parks Victoria
8. Erect/maintain fence to exclude domestic stock. Control threats from grazing. Fencing should only be erected at sites where licensed grazing occurs	<ul style="list-style-type: none"> <li>Measurable seedling recruitment/vegetative regeneration and measurable reduction in plant mortality at important sites.</li> </ul>	DSE, Parks Victoria

**Objective III To secure populations or habitat from potentially incompatible land use or catastrophic loss.**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
9. Erect/maintain structures to restrict or control access. Control threats from high visitor numbers where necessary, by fencing sites and installation of appropriate signage.	<ul style="list-style-type: none"> <li>Measurable seedling recruitment/vegetative regeneration and measurable reduction in plant mortality at important sites.</li> </ul>	DSE, Parks Victoria
10. Store reproductive material as a safeguard against catastrophic loss. Establish protocols for successfully germinating and cultivating plants <i>ex situ</i> for potential translocation actions in the event of unforeseen destruction of wild populations. Maintenance of a living <i>ex situ</i> collection is not seen as appropriate for this annual species	<ul style="list-style-type: none"> <li>Seed from target populations in storage.</li> <li>Effective propagation and cultivation techniques developed.</li> </ul>	Royal Botanic Gardens

**Objective IV To increase the number of populations or individuals**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
11. Store reproductive material. Establish a seed bank	<ul style="list-style-type: none"> <li>Long-term storage facility identified.</li> <li>Seed from target populations in storage.</li> </ul>	DSE, Royal Botanic Gardens
12. Determine seed viability.	<ul style="list-style-type: none"> <li>Seed viability determined.</li> </ul>	Royal Botanic Gardens

**Objective V To increase community awareness and support**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
13. Involve community groups and volunteers in recovery activities.	<ul style="list-style-type: none"> <li>Opportunities for involvement identified, promoted and supported.</li> </ul>	DSE

## References

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This Action Statement has been prepared under section 19 of the Flora and Fauna Guarantee Act 1988 under delegation from Mr Peter Harris, Secretary, Department of Sustainability and Environment, July 2008.

Published by the Victorian Government Department of Sustainability and Environment

Melbourne, July 2009

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ISSN 1448-9902

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