



## THREATENED SPECIES LISTING STATEMENT

Swamp eyebright, *Euphrasia gibbsiae* spp. *psilantherea*  
(F.Muell.) W.R.Barker 1982

### Status

Tasmanian *Threatened Species Protection Act 1995*

.....endangered

Commonwealth *Environment Protection and Biodiversity*

*Conservation Act 1999*.....Critically Endangered



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### Description

Swamp eyebright is a short lived perennial herb surviving up to 3 to 5 years and is reliant on recruitment from seed in gaps. The species has two main flowering seasons in September/October and March/April. Eyebrights are semi-parasitic, forming attachments to roots of surrounding vegetation.

Swamp eyebright has a single erect stem branching above ground level. There are up to about 20 to 30 branches that grow up through associated vegetation and are generally no more than 30 to 40 cm long. Leaves occur in opposite pairs with alternate pairs arising from the stem at right angles to each other. The leaves just below the first flower are about 5 to 8 mm long and 2.5 to 4.5 mm wide, with 3 to 5 teeth on the distal half. The leaves appear semi-succulent and the underside has characteristic patches of glands typical of most eyebrights.

The branches terminate in an inflorescence consisting of up to about 12 pairs of flowers arranged similarly to the leaves. The flowers consist of a hood of two fused petals and a skirt of three fused petals. The petals are white with prominent purple lines extending from the throat. A yellow spot can often be found just beneath the anthers.

Swamp eyebright belongs to the family Scrophulariaceae and is in the group of eyebrights with glandular hairs on at least some above ground parts but lacking hairs about the point of attachment of the anthers. *Euphrasia gibbsiae* ssp. *psilantherea* can be distinguished from the other 8 subspecies of *Euphrasia gibbsiae* by the presence of glandular hairs on most above ground parts and by branching well above ground level. It is one of only two subspecies of *Euphrasia gibbsiae* that grow at low altitudes.

## Distribution and Habitat

Swamp eyebright is endemic to Tasmania and is known only from a 0.25 hectare site near Blackswan Lagoon in the south of the state. It is a lowland eyebright, found amongst low sedges in

open wet coastal heathland that is frequently waterlogged in winter. The species was originally collected in the 1850s and was presumed to be extinct until its rediscovery in 1985.

## Important Locations

Locality	1:25,000 mapsheet	Year last seen	Area (ha)	Number of mature plants
Near Blackswan Lagoon Southport Lagoon Conservation Area	Leprena	2001	0.25	up to 40

## Threats, Limiting Factors and Management Issues

Swamp eyebright, being a relatively short-lived species (up to 3 to 5 years), is reliant on recruitment from seed for population persistence. Due to a requirement for light for germination, recruitment from seed is dependent on open habitat with patches of bare ground. It also requires relatively high moisture levels in spring to allow seedlings to establish and form parasitic root attachments with surrounding vegetation. Unless in very exposed areas, openness in lowland eyebright habitats is generally dependent on disturbance such as fire or vehicle or animal tracks. Such disturbance dependent species are prone to large fluctuations in numbers due to variation in openness in their habitat. Populations can be transient, surviving only as seed in the soil. However, when confined to the soil seed bank, species have an increased risk of extinction as they rely on conditions suitable for germination as well as conditions favourable for seedling survival. Soil stored seed may require specific germination cues compared with freshly shed seed and it is possible that new populations will emerge after fire.

Swamp eyebright is now confined to one 50 x 50 m area. Occurring in such a small area, the risk of the species being exterminated by chance events is very high. While 4WD activity in the area may have had some benefits in maintaining habitat openness, the population is at high risk of being destroyed by excessive track braiding that is common in the Southport Lagoon Conservation Area.

Controlling 4WD access in the Conservation Area is difficult because the only access road (the Leprena Track) also provides access to private land. A draft management plan for the Southport Lagoon Conservation Area has recommended the closure of tracks south of Southport Lagoon, though the poor state of the Leprena Track will make this difficult to enforce. However, a logging road proposed through the Conservation Area to private land with no other viable access will provide an alternative entry point to the area south of Southport Lagoon. Even though

recreational 4WD vehicles will be prohibited from using this access, it is still likely to attract significant illegal use. Worse still, the lay of the land will actually channel traffic from the proposed road through the swamp eyebright population as vehicles attempt to keep to the less boggy high ground. The population occurs in the saddle between two high points and traffic will need to pass this area to access two popular recreational areas to the south of Southport Lagoon.

Apart from the risk of destruction of the only population of swamp eyebright by track braiding, 4WD use in the area is also likely to spread the root rot pathogen, *Phytophthora cinnamomi*. While swamp eyebright is unlikely to be directly affected by *Phytophthora cinnamomi*, vegetation in the habitat is likely to be severely affected due to a large proportion of susceptible species. This is likely to impact on numbers of swamp eyebright as many will die if their hosts are affected. Given that there are so few individuals, the population may not be able to sustain such a decline and ongoing threat to emerging seedlings. *Phytophthora cinnamomi* has been found in soil samples collected only 2.5 km away from the swamp eyebright population at a severely braided area near the Pigsty Bridge and symptoms have been observed 2 km away at one of the turnoffs to the spit at Southport Lagoon.

Seedlings tend to be associated with small openings in surrounding vegetation. Small patches adjacent to flowering plants have been slashed in the last three autumns in an attempt to increase recruitment from freshly shed seed. The patches were kept small (approximately 25 cm diameter) as larger patches would tend to dry out and increase grazing pressure from native species. Initial results suggest an increase in the number of seedlings associated with slashed patches although the total number of individuals has decreased due to abnormally hot and dry conditions over the last two summers. With only one small population, the species is at high risk of becoming extinct if current climate change trends (warmer and drier summers) continue.

## Conservation Assessment

### Population Estimate

There is only one known swamp eyebright population despite dedicated surveys at flowering time when plants are relatively easy to find. The population was discovered in 1985 and the number of mature individuals has not exceeded 40 in any of the 7 years that the population has been monitored. Likewise, the total number of individuals has not exceeded 100. The population size fluctuates due to variations in habitat openness and spring and summer rainfall. While the number of mature individuals has declined in the last two years due to drought, preliminary results indicate that the number of seedlings has increased due to the slashing of small patches near flowering plants to increase habitat openness.

### Reservation Status

Swamp eyebright is not represented in a secure reserve. It is afforded some protection by occurring in the Southport Lagoon Conservation Area.

### Assessment Criteria

Swamp eyebright meets the criteria for listing as endangered on the Tasmanian *Threatened Species Protection Act 1995* because

- there are less than 250 mature individuals in total
- it is severely restricted, extending over an area of less than 500 square kilometres and occupying less than 10 hectares
- it occurs in only one population
- there is a continuing decline
- there are extreme fluctuations in the number of mature individuals

It qualifies as Critically Endangered using the 1994 IUCN (World Conservation Union) Red List criteria.

## Recovery Program

### Objectives

- prevent the loss or degradation of known populations
- increase numbers through habitat management and survey

### Existing Management

Swamp eyebright is included in the Recovery Plan for threatened Tasmanian lowland *Euphrasia* species. Implementation of the plan commenced in 1997 and dedicated surveys for the species have been made. The only known population has been monitored regularly and small scale slashing is being used in the vicinity of seed producing plants in an attempt to increase population size. A draft

management plan has been prepared for the Southport Lagoon Conservation Area.

## Actions Needed

- finalise the management plan for the Southport Lagoon Conservation Area
- restrict 4WD access south of Southport Lagoon in order to prevent direct damage to the population and indirect damage via the spread of *Phytophthora cinnamomi*
- continue slashing of small patches near flowering plants to promote the recruitment of seedlings
- monitor known populations for threats, declines and results of habitat management actions
- establish a mechanism to ensure management intervention when required
- further survey, particularly in recently burnt areas

## Information Needed

- determine whether there are any more populations in existence through survey of suitable habitat

## Management Advice

### For the land owner/land manager

- prevent damage to the population from excessive 4WD activity by restricting access, or fencing if necessary to prohibit access
- prevent the spread of *Phytophthora cinnamomi* in the Conservation Area
- continue slashing small patches near flowering plants to encourage recruitment from seed

### For everyone

- search for new populations in September/October and March/April when the plants are in flower, particularly in recently burnt areas
- help us to monitor the known population, particularly at flowering time

## Further Information

**Contact details:** Threatened Species Unit, Department of Primary Industries, Water and Environment, GPO Box 44 Hobart Tasmania Australia 7001. Ph (03) 6233 6556 fax (03) 6233 3477.

**Specialist Advice:** Wendy Potts, Threatened Species Unit, Department of Primary Industries, Water and Environment

## Source Material

### References

Barker, W.R., 1982. Taxonomic studies in *Euphrasia* L. (Scrophulariaceae). A revised

infrageneric classification, and a revision of the genus in Australia *J. Adelaide Bot. Gard.* 5:1-304.

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Collier, P.A., 1990. Rare taxa in the genus *Euphrasia* L. from lowland south-eastern Tasmania. *The Tasmanian Naturalist.* 103:1-5.

Potts, W.C., 1997. *The conservation biology of threatened lowland Euphrasia taxa in south-eastern Tasmania.* Report to Environment Australia for Endangered Species Unit Project number 428. Parks and Wildlife Service, Department of Environment and Land Management, Hobart.

Potts, W.C., 2000. *Recovery Plan for Threatened Tasmanian Lowland Euphrasia Species.* Department of Primary Industries, Water and Environment, Hobart.

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**View:** <http://www.dpiwe.tas.gov.au>

& follow the links to Natural Environment, Threatened Species, then List of Threatened Species.

**Permit:** It is an offence to collect, possess or disturb this species unless under permit.