THREATENED SPECIES LISTING STATEMENT

Shiny cliff eyebright, *Euphrasia amphisysepala*

W.R.Barker 1987

Status

Tasmanian *Threatened Species Protection Act 1995*
…….rare

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*……..Vulnerable

Wendy Potts

Description

Shiny cliff eyebright is a short lived perennial herb or undershrub, generally surviving 3 to 5 years. It is reliant on recruitment from seed in gaps kept open by exposed conditions on cliff faces. Peak flowering occurs in November to December. The flowers are largely pollinated by native bees and self pollination can occur. Eyebrights are semi-parasitic, forming attachments to roots of surrounding vegetation.

Shiny cliff eyebright has an upright to straggling habit. Plants are usually no more than 25 cm in height and can occasionally grow to a large diameter with hundreds of branches though they are more commonly found with less than fifty. The leaves are hairless and shiny, and 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 5 to 15 mm long and 2 to 7 mm wide, with an apex and up to 2 small teeth towards the middle of either side. The leaves appear semi-succulent and the underside has characteristic darker patches of glands typical of most eyebrights.

The branches terminate in an inflorescence consisting of up to about 15 flowers arranged in pairs similarly to the leaves. The flowers consist of a hood of two fused petals and a skirt of three fused petals. The petals are creamy white, sometimes with a pink to purple tinge on the back, and they can have faint to very prominent purple lines extending from the throat. The flowers are relatively large for Tasmanian eyebrights, being about 18 to 20 mm along the back of the flower and 13 to 14 mm wide at the front.

Shiny cliff eyebright belongs to the family Scrophulariaceae and is in a group of eyebrights (*Euphrasia* Section *Phragmostomae*) with an extremely long pair of anther awns that protrude into the throat of the flower. Species of this group also differ from other eyebrights in that the flowers are scented, the scent being sweet and sweaty. The

group is now restricted to cliff faces on the Tasman Peninsula. *Euphrasia amphisysepala* can be distinguished from the other members, *Euphrasia phragmostoma* and *Euphrasia* sp. 'fabula', by a lack of hairs on the leaves, a lack of or reduced clefts on lobes on either side of the calyx and a relatively long and narrow apical tooth on the leaves.

Distribution and Habitat

Shiny cliff eyebright is endemic to Tasmania and is known only from two populations about 20 kilometres apart on the Tasman Peninsula. The largest population occurs along a 2.5 km stretch of south-west facing cliffs near Mt Raoul. The other population extends along a 2.5 kilometre stretch of south-east facing cliffs starting from the tip of Cape Hauy, and on the sides of a deep sinkhole near the tip. Shiny cliff eyebright is estimated to occupy about 1.3 hectares in total. It is restricted to coastal dolerite cliff faces and tends to be found on relatively moist and shady ledges, rock crevices and on patches of bare ground extending from the base to the tops of cliffs where the vegetation is not too dense. The species may extend away from the cliff edge after fire but will retreat to the cliff faces as the vegetation thickens.

Important Locations

Locality	1:25,000 mapsheet	Year last seen	Area (ha)	Number of mature plants
Near Mt Raoul Tasman National Park	Raoul	1995	1.28	2000
Cape Hauy Tasman National Park	Hippolyte	2000	0.02	60

Threats, Limiting Factors and Management Issues

Shiny cliff eyebright faces relatively few threats due to its coastal cliff face habitat and total occurrence in a National Park. Even though the species is short lived and the populations are dependent on continual recruitment from seed, the necessary gaps for recruitment are maintained by exposure to the elements. Population size is likely to be relatively stable though it may temporarily decrease with storm damage and drought and a temporary increase is likely as the population extends away from the cliff edge after fire. Management will be restricted to monitoring and prevention of cliff top activities that may impact adversely on the population or its habitat.

The primary reason for the rarity of the three cliff face eyebrights appears to be the lack of suitable continuous habitat and poor seed dispersal mechanisms. Hybridisation also appears to have played a role in the rarity of shiny cliff eyebright as it and one of the other two species occurring on cliff faces nearby appear to have arisen as a result of introduction of genetic variation through hybridisation. Barriers to hybridisation have been shown to be poor for the cliff face eyebrights and with other eyebrights occurring nearby allowing occasional hybridisation events, small populations and a high turnover of generations, conditions are conducive to rapid speciation. Hybridisation also helps to explain the differences in the appearance of plants between the two known populations even though they are only about 20 km apart. Flowers of the Cape Hauy population are heavily lined whereas flowers from near Mt Raoul are unlined or possess only faint striations. The Cape Hauy population appears to show some degree of genetic instability with some plants having malformed anthers and, in one season, a large percentage of flowers were malformed.

Conservation Assessment

Population Estimate

Only two populations of shiny cliff eyebright have been verified, despite dedicated survey at flowering time when plants are easier to find. Estimation of population size is difficult due to the cliff face habitat, a short life span and year to year variations in recruitment from seed. In 1995, approximately 2,000 mature individuals were estimated to occur near Mt Raoul and approximately 60 were seen at Cape Hauy. The full extent of the population at Cape Hauy in particular has not been assessed due to difficulty of access to the cliffs. The size of the populations is limited by the area of cliff face habitat available. As the openness of the habitat required for recruitment is maintained by exposure, the population size is likely to be relatively stable. A temporary decline is likely following storm damage or drought and a temporary increase is likely as the population extends away from the cliff edge after fire.

Reservation Status

Shiny cliff eyebright occurs in the Tasman National Park.

Assessment Criteria

Shiny cliff eyebright meets the criteria for listing as rare on the Tasmanian *Threatened Species Protection Act 1995* because

- there are less than 10,000 mature individuals in total
- it extends less than 2,000 square kilometres and occupies less than 50 hectares
- most individuals occur in less than 10 populations

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

Recovery Program

Objectives

- prevent the loss or degradation of known populations

Existing Management

Shiny cliff eyebright is included in the Recovery Plan for threatened Tasmanian lowland *Euphrasia* species. Implementation of the plan commenced in 1997. Due to a perceived lack of manageable threats, management will be restricted to monitoring and prevention of cliff top activities likely to adversely influence the species. A draft management plan has been prepared for the Tasman National Park.

Actions Needed

- verify reports of populations and search suitable areas for new populations
- determine change in population size and range following fire
- monitor known populations at intervals of 5 to 10 years for threats and declines

Information Needed

- determine whether there are any more populations in existence
- determine response to fire

Management Advice

For the land owner/land manager

- assess the need to fire cliff edge vegetation if the fire interval becomes greater than 20 years, taking the needs of other species into account

For everyone

- search for new populations in November to December when the plants are in full flower
- help us to monitor known populations, particularly at flowering time

Further Information

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

Source Material

References

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