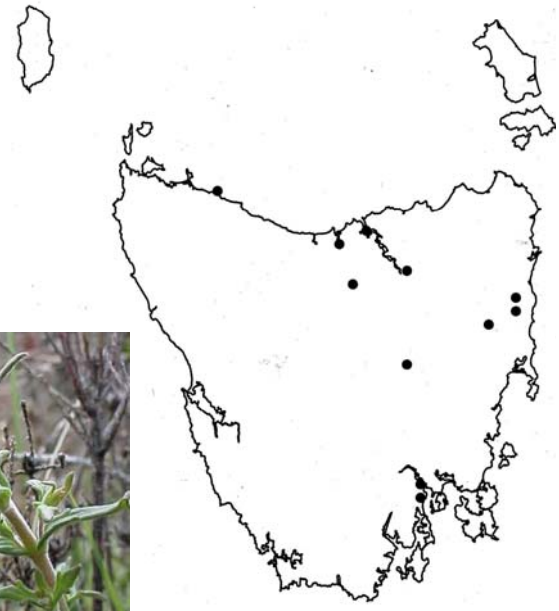
THREATENED SPECIES LISTING STATEMENT

Yellow eyebright, *Euphrasia scabra*
R.Br. 1810

Status
Tasmanian *Threatened Species Protection Act 1995*
……..……..……..……endangered
Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*……..…….....…...Not listed

Wendy Potts



Description
Yellow eyebright is an annual herb. Populations may be transient and dependent on gap creating disturbance such as fire to stimulate germination of soil stored seed. Yellow eyebright is difficult to find unless in flower, with peak flowering occurring from mid-December to February. Eyebrights are semi-parasitic, forming attachments to roots of surrounding vegetation.

Yellow eyebright has an erect stem that can be unbranched though in good growing conditions branches will develop from the base up. Plants are generally 15 to 35 cm high, sometimes reaching up to 50 cm. The stems are reddish-brown to yellow-brown and are usually covered by short white hairs, particularly in the upper parts. The leaves are green, sometimes reddened in parts, 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 generally 7.5 to 14 mm long and 2.5 to 6.5 mm wide, with usually no more than 3 teeth along each margin. The leaves appear semi-succulent. Dense scabrous hairs cover the upper side of leaves and the underside has characteristic patches of glands typical of most eyebrights.

The branches terminate in an inflorescence generally consisting of up to 16 pairs of flowers, sometimes more, with the 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 creamy yellow. Yellow eyebright flowers are relatively small and squat for Tasmanian eyebrights, being about 9 to 12 mm long and 8 mm wide.

Yellow eyebright belongs to the family Scrophulariaceae and is the only annual and the only yellow flowered eyebright in Tasmania. It looks similar to sticky bartsia (*Parentucellia viscosa*), an introduced plant from the same family, which is common on roadsides and pastures. However, yellow eyebright has smaller, paler flowers and smaller leaves.

Distribution and Habitat

In Tasmania, yellow eyebright is known to occur in the Eastern Tiers near Fingal, near Lake Sorell and near Hobart, occupying approximately 5 hectares in total. Populations in the north from St Marys to Rocky Cape are now believed to be extinct. Yellow eyebright is a lowland eyebright found in moist herb/sedge communities in grassy leads in marshes or in drier open grassy areas on hills at the headwaters of creeks. It also occurs in Victoria and Western Australia and was previously recorded but now thought to be extinct in South Australia and New South Wales.

Important Locations

	Locality	1:25,000 mapsheet	Year last seen	Area (ha)	Number of mature plants
1	**Dukes Marshes** State Forest	Fingal	2002	4	~200 (2000+ in good years)
2	**Hockeys Marsh** State Forest	St Pauls Dome	2002	0.006	up to 80
3	**Black Marsh** Douglas-Apsley National Park	Fingal	1996	0	0 (25 seen in 1994)
4	**North of Lake Sorell** State Forest	Penny	1981		locally abundant in 1981
5	**Lenah Valley, above New Town Rivulet** Private land	Hobart	1998	0.09	up to 200
6	**Albion Heights** Private land	Taroona	2002	0.006	150
	Other sites near Hobart *Hill opposite Shot Tower* *Mt Nelson, near Signal Station lookout* *Mt Nelson, Proctors Road* *Mt Wellington, near Ridgeway* *Waterworks*	 Taroona Taroona Taroona Taroona Taroona	 1940s 1960 1946 1973 1937	 probably extinct probably extinct probably extinct extinct probably extinct	 0
	St Marys	St Marys	1933	probably extinct	
	Near Launceston	Launceston	1887	extinct	0
	Near Deloraine	Deloraine	1849	extinct	0
	Near George Town	Bell Bay/Low Head	1804	extinct	0
	Port Sorell	Harford	1932	probably extinct	
	Valley west of Rocky Cape	Harford	1842	probably extinct	

Threats, Limiting Factors and Management Issues

Yellow eyebright has suffered a large decline in its distribution since European settlement. Habitat destruction for housing and agriculture is largely responsible for the decline, though inappropriate disturbance regimes and long term climate change are also believed to be significant factors. The decline is also apparent on the mainland with the species now believed to be extinct in South Australia and New South Wales. The species is considered to be threatened in Victoria and 'poorly known' in Western Australia with only one extant population known.

Yellow eyebright, being annual, 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 or very shortly cropped

grassy areas. 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, lowland eyebright habitat requires openness, which is generally dependent on disturbance such as fire or vehicle or animal tracks and grazing. Such disturbance dependent species are prone to large fluctuations in numbers due to fluctuations in openness and moisture levels 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 subsequent conditions favourable for seedling survival. Soil stored seed may require specific germination cues compared with freshly shed seed and it is possible that currently unknown populations will emerge after fire. However, populations will diminish quickly with a succession of fires that kill plants prior to seeding.

The largest population of yellow eyebright occurs on Dukes Marshes. The marsh is currently kept free from encroaching bush cover by wombat and wallaby grazing and occasional flooding. While numbers of plants are generally in the low hundreds, numbers have been observed to increase to the low thousands on two occasions in the last decade, in 1996 and 2002. The summers for both these years were abnormally wet and cool. The marsh was last flooded in early 2001 and flooding may be important for seed dispersal. The small population at Hockeys Marsh occurs where an old 4WD track intersects a small creek on the edge of the marsh. An ecological burn was conducted in spring 1998, as the marsh had become overgrown. While the population has emerged every year since, the size and extent of the population has not increased to date and yellow eyebright has not emerged in another area of the marsh in which it was last seen in 1982. The three summers following the fire were abnormally hot and dry and may not have favoured the emergence and survival of soil stored seed. There were only 25 plants in the Black Marsh population when it was first discovered in 1994. The population gradually decreased to only 1 plant in 1996 and has not emerged since. This marsh is now overgrown and an attempt to burn the marsh in 1998 was not successful.

The exact location of the yellow eyebright population north of Lake Sorell is not known and searches in 1992 and 2002 were not successful. However, there are a number of open marshes in the area with suitable habitat for the species and further searching may relocate the species. The two extant populations in the Hobart area are on private land and both are found in open grassy areas adjacent to 4WD tracks. The population near Ridgeway has been destroyed by housing. An attempt to reintroduce the species into three sites in the Waterworks Reserve in Hobart in 1992 was followed by several dry years and was unsuccessful.

Being an annual with a reliance on high moisture levels for seedling establishment, the species is at risk of becoming extinct if current climate change trends (warmer and drier summers) continue.

Conservation Assessment

Population Estimate

Only 6 populations of yellow eyebright have been found since 1980, despite dedicated surveys at flowering time when plants are relatively easy to find. The two populations near Hobart have only been discovered in recent years and it may be that the species has been overlooked as it is generally confined to small areas and looks similar to a weed species from the same family, (sticky bartsia, *Parentucellia viscosa*), that is common on degraded pastures and roadsides. The largest population on Dukes Marshes varies from about two hundred to about two thousand mature individuals, depending on spring/summer rainfall. All other populations are localised, occupying small areas.

Reservation Status

Yellow eyebright is poorly reserved. A small population was known from Black Marsh in the Douglas-Apsley National Park although it has not emerged since 1996 as the habitat has become overgrown.

Assessment Criteria

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

- it is severely restricted occupying less than 10 hectares and extending over an area of less than 5000 square kilometres
- there is a continuing decline
- there are extreme fluctuations in the number of mature individuals

Recovery Program

Objectives

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

Existing Management

Yellow eyebright is included in the Recovery Plan for threatened Tasmanian lowland *Euphrasia* species. Implementation of the plan commenced in 1997. A management plan and a draft fire

management plan have been prepared for the Douglas-Apsley National Park. Forestry Tasmania has conducted ecological burns on marshes in State forest in the Eastern Tiers in order to maintain openness.

Actions Needed

- pursue management options with landowners/managers to protect populations against possible changes in land use that would be detrimental to the species
- verify reports of populations (particularly north of Lake Sorell) and search suitable areas for new populations, particularly in recently burnt areas
- further investigate fire ecology and conduct an ecological burn on Black Marsh in order to recover the population
- monitor known populations for threats, declines and results of habitat management actions
- establish a mechanism to ensure management intervention when required

Information Needed

- determine whether there are any more populations in existence
- investigate the role of fire in stimulating germination from soil stored seed

Management Advice

For the land owner/land manager

- consider burning if vegetation is becoming overgrown, taking care to allow plants to seed before taking action
- if you own land on which yellow eyebright grows, consider some form of long-term protection, e.g. private nature reserve, management agreement, covenant, etc

For everyone

- search for new populations from mid-December to February when the plants are in full flower, particularly in areas burnt up to 4 years previously
- help us to monitor known populations, 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

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

Thompson, B. 1992. *Rough eyebright* Euphrasia scabra. *Action Statement No. 10.* Flora and Fauna Guarantee Unit, Department of Conservation and Environment, Victoria.

Statement Prepared: March 2002

Prepared by: Wendy Potts

Review Date: 2007 or as new information is received.

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& 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.