



Euphrasia lasianthera Hairy Eyebright

Taxonomy

Euphrasia lasianthera W.R. Barker

Hybrids with *Euphrasia collina* subsp. *paludosa* occur in disturbed habitats around the Macalister River headwaters (VicFlora no date).

Current conservation status

Categorised as Rare in the 2014 Advisory list of rare or threatened flora (DEPI 2014).

Proposed conservation status

Endangered in Australia

Criteria B1ab(v)+2ab(v)

Species Information

Description and Life History

The taxon is a perennial herb or subshrub, 10-35 cm high; branches erect, ascending or decumbent, arising from ground-level, unbranched above; glandular hairs moderately dense to dense on branches, leaves, bracts and calyx teeth. Upper leaves with 1-7 pairs of teeth, base truncate to rounded-cuneate, with margins somewhat amplexicaul. Calyx 5.5-9 mm long; corolla 10-15 mm long along upper side, white to pale lilac to deep pink, with yellow blotch absent from lower lip, but two prominent yellow patches in open mouth at base of anterior filaments, and 3-5 usually conspicuous red-purple longitudinal striations on each lobe; anthers 1.9-2.7 mm long, the area about the connectives densely eglandular hairy. Capsule 7.5-13 mm long, with setae restricted or extensive around apex.

Flowering apparently begins in late November and continues until early February. Mature capsules are increasingly apparent after the start of January (Barker 1982).

Generation Length

The generation length of *Euphrasia lasianthera* is unknown. There are insufficient field observations to support a reliable estimate of generation time, although the taxon is assumed to be a long-lived perennial.

Distribution

The taxon occurs in the western part of Victoria's eastern highlands. It is endemic to a small dissected highland region of interconnected ranges and small plateaus, bounded to the west, north and south by Mts Buller, Speculation and Arbuckle, respectively. Altitude, c. 1500-1800m (Barker 1982; VicFlora no date).

Habitat

The taxon as far as is known, occurs on mountain sides, on plateau areas and on rocky summits. It occurs in dense local populations in grassy areas in a variety of habitats, namely alpine herbfield, alpine grassland, alpine heath, subalpine Snowgum (*Eucalyptus pauciflora*) woodland in glades or under overhanging trees, and sclerophyll forest. It occasionally occupies disturbed situations such as roadsides (Barker 1982; (VicFlora no date).

A few collector's notes suggest that the habitat range extends to bogs or streambanks, but these are the exception. This supports the inference that the taxon is adapted to a range of soil moisture regimes such as wet to very dry,

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skeletal and rocky and also grassland, herbfield and heathland to at least moderate densities of *E. pauciflora* in Snow Gum Woodland.

Threats

The taxon is at long-term risk of population decline and location extinction, in response to severe drought stress leading to recruitment failure and the risk of woody invasion of open grassland habitats. This is in response to climatic drying and warming, which operates synergistically with the increasing frequency, intensity and landscape scale of fire. The taxon may also be threatened by browsing and trampling from Sambar and feral horses.

IUCN Criteria

Criterion A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p style="text-align: center;"><i>based on any of the following:</i></p> <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>			

Evidence:

Ineligible under Criterion A

Without a generation time this criterion cannot be considered.

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Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 1,192 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented, and is estimated to have 1 location. It has a continuing decline in (v) above, as a result of the impacts of the identified threats.

The taxon is severely fragmented naturally at the landscape scale, with most occurrences at separations exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 76 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to be severely fragmented, to have 1 location, and has a continuing decline in (v) above.

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Criterion C. Small Population size and decline				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b)	Extreme fluctuations in the number of mature individuals			

Evidence:

Ineligible under Criterion C

It is suspected that there are 1,000 to 2,000 mature individuals, but this qualifier is too weak.

Criterion D. Very small or restricted populations				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)		< 50	< 250	< 1,000
D2. Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.		-	-	D2. Typically: AoO < 20 km ² or number of locations ≤ 5

Evidence:

Eligible under criterion D2 as Vulnerable

The taxon is projected to be very restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Barker, W.R. (1982). Taxonomic studies in *Euphrasia* L. (Scrophulariaceae). A revised infrageneric classification and a revision of the genus in Australia. *Journal of the Adelaide Botanic Gardens*, 5, 1-304.

Barker, W.R. (1999). Scrophulariaceae. In N.G. Walsh and T.J. Entwisle (Eds.), *Flora of Victoria Vol. 4, Cornaceae to Asteraceae*. Melbourne: Inkata Press.



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DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne. Retrieved from:

https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

VicFlora (no date). Flora of Victoria, Royal Botanic Gardens Victoria: *Euphrasia crassiuscula* subsp. *eglandosa*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/70b3937d-dba1-4757-b0f1-6bd7fc179de1>