

Heliotropium asperrimum Rough Heliotrope

Taxonomy

Heliotropium asperrimum R. Br.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(i,ii,iii,v)+2ab(i,ii,iii,v)

Species Information

Description and Life History

Erect perennial, 30-60 cm high; indumentum of mixed simple and glandular hairs. Leaves oblong to obovate, mostly 1.5-8.5 cm long, 4-16 mm wide, apex acute or obtuse, base cuneate, margins revolute and slightly undulate, both surfaces hispid; petiole short, indistinct. Inflorescences usually branched. Sepals ovate, 3-4 mm long, acute, connate at base, not elongating with age; corolla 3-4 mm long, throat glabrous, hairy outside, white with a yellow throat, tube c. twice as long as lobes; anthers acute, apices free; style c. 1.5 mm long, stigma 0.5-2 mm long, glabrous. Mericarps 3 or 4, falling at maturity, glabrous, rugulose, brown. Flowers Oct.-Apr. (VicFlora 2019).

Generation Length

The generation length of *Heliotropium asperrimum* is suspected to be 10 to 20 years. The lifespan of perennial *Heliotropium* spp. is largely unknown. It is suspected that being a semi-woody perennial herb that it could live for over a decade, but given the expected frequent disturbance from road maintenance and weed invasion where it occurs, it may not survive longer than 20 years.

Distribution

In Victoria the taxon is known only from Robinvale on the Murray River in the northwest of the state. Otherwise it is widespread throughout inland Australia.

Habitat

In Victoria the taxon occurs in disturbed weedy roadsides and saltbush plain in sandy and clayey soils.

Threats

This species occurs in Victoria around Robinvale township and nearby roads, and as such the main threats are competition from weeds and disturbance from road maintenance activities, such as grading and roadside slashing. Both recent collections note that the sites are weedy, and for one of the sites (corner of Latje and Loy Roads) it mentions that the site is heavily slashed.

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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>based on any of the following:</p> <ul style="list-style-type: none"> (a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites 			

Evidence:

Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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			

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Evidence:

Eligible under Criterion B as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 6 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas. The EoO has been made equal to the Area of Occupancy (AoO) to ensure consistency with the definition of AoO as an area within EoO.

The AoO across the taxon's range is estimated to be 6 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

It is estimated to have two locations. All known observations of the taxon in Victoria have been around Robinvale, on roadsides. They are subject to the same threats (weed invasion, disturbance by road maintenance) but these could operate at different times on the two different roadsides.

It has a continuing decline in (i), (ii), (iii) and (v) above.

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 as Data Deficient

There is insufficient evidence to determine the number of mature individuals. Of the recent collections (during the past 20 years), at a railway line reserve 2 km south of Robinvale, the taxon was described as fairly common, while at the Latje and Loy Road intersection it comprised a single plant in 2008. Given that the taxon has not been recorded in the last 10 years and may occur over a large area of potentially suitable habitat in the Robinvale area it is too difficult to provide a reasonable estimate of the number of mature individuals.

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Criterion D - Very small or restricted population [Ⓜ]			
	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 estimated to be very restricted.

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

References

Craven, L.A. (1996). A taxonomic revision of *Heliotropium* (Boraginaceae) in Australia. Australian Systematic Botany 9: 521-657.

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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria *Heliotropium asperrimum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/4ef219a6-7a8f-4198-ad87-15301b7ef711>