

Lobelia purpurascens Whiteroot

Taxonomy

Lobelia purpurascens R. Br.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A3ce+4ce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a prostrate to ascending, dioecious perennial herb; stems sometimes zigzagged, occasionally rooting at nodes. Leaves lanceolate to ovate, 4-28 mm long, 2.5-12 mm wide, usually minutely pubescent above, often purplish beneath, margins toothed, base obtuse; petiole to 2 mm long. Flowers irregularly spaced; pedicels 10-70 mm long, usually longer than leaves, glabrous or rarely minutely pubescent. Calyx-lobes 1.5-3.2 mm long, at least some toothed at base; corolla zygomorphic, (6-)8-12 mm long, white tinged pink or purplish on outside of the tube and lobes; upper 2 lobes linear-oblongate to linear-lanceolate, 3-4.5 mm long, 0.4-1 mm wide, falcate, lower 3 lobes oblongate, (2.5-)4-6 mm long, (1-)1.2-3.5 mm wide, tube 4-7 mm long, split to within c. 0.5 mm of base, with fine retrorse hairs internally; filaments 3.5-5 mm long, anther tube 1.2-1.6 mm long in male flowers, 0.9-1.2 mm long in females, seta of 2 lower anthers 0.2-0.4 mm long. Fruit broadly ellipsoid to globose, (3-)5-10 mm long; seeds ellipsoid, slightly compressed, 0.8-0.9 mm long, brown, alveoles c. isodiametric (appearing pitted). The taxon flowers from November to June (VicFlora 2018).

Generation Length

The generation length of *Lobelia purpurascens* is estimated to be 15 to 50 (midpoint 35) years. The taxon is a prostrate perennial which may persist for decades in the absence of fire or localised site disturbances. However, the typical habitat of the taxon was subjected to a range of biotic and environmental disturbances under pre-settlement conditions such as flood, wallaby browsing or encampment which increased population turnover.

Distribution

The taxon is uncommon in Victoria where it is restricted to East Gippsland. It occurs discontinuously from Calulu near Bairnsdale to the New South Wales border, with local concentrations in the Genoa and Mallacoota districts. The taxon is also found in Queensland and New South Wales (VicFlora 2018).

Habitat

The taxon is restricted to eucalypt forest, woodland and unimproved pastures. It is apparently more tolerant of drier soil conditions than most other species of *Lobelia* (VicFlora 2018). Although the taxon is more tolerant of drier soil conditions than some other perennial species of *Lobelia* (VicFlora 2018), it is nevertheless typically confined to moist and often protected habitats such as the margins of Warm Temperate Rainforest.

Threats

A significant proportion of the Victorian occurrences of *L. purpurascens* were severely burnt in early 2020. Intense fire is likely to exacerbate the effect of the identified threats, including the effect of Sambar Deer (*Rusa unicolor*), Sambar flee to damp riparian habitats as refuge during fire and seek out and congregate in these areas which provide an early post-fire source of food.

The taxon is highly susceptible to climatic warming and drying, resulting in contraction of available habitat. Pugging, wallowing and excavation by Sambar, feral pigs and domestic stock is a threat, and the taxon is reported to decrease under grazing. Weed invasion, in freehold and other disturbed sites, could affect it.

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>	<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>
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Evidence:

Eligible under Criterion A3 as Endangered

The population reduction over the next 45 to 100 years is projected to be 30 to 60%, based on (c) and (e) above.

This estimate is based on the projected impact of the identified threats.

Eligible under Criterion A4 as Endangered

The population reduction over any 45 to 150 year period, including both past and future (up to 100 years in the future), is estimated to be 50 to 80% (midpoint 65%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This estimate is based on the historic and projected impact of the identified threats.

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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 21 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the sub-regional and landscape scales. Given the taxon's prostrate habit and typically sheltered habitat, which is often in a riparian setting, the taxon is likely to be dispersed by wind, water or ants at the 10-100 metre scale.

It is estimated to have three locations. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 148 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has three locations and has a continuing decline in (i), (ii), (iii), (iv) and (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 as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

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 estimated to be very restricted.

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

References

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

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Lobelia purpurascens*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/e39429dc-cbce-48a9-9a98-04d685967910>