Threatened Species Assessment

Boronia ledifolia
Showy Boronia

Taxonomy

Boronia ledifolia (Vent.) J. Gay

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(iii,v)+2ab(iii,v)

Species Information

Description and Life History

The taxon is an erect shrub to 2.5 m high; branchlets densely stellate-pubescent without obvious glands. Leaves usually simple (rarely trifoliolate), elliptic to narrowly elliptic, 3-43 mm long, 1-7 mm wide, acute to obtuse, strongly discolorous, upper surface glabrous to sparsely stellate hairy, lower surface densely white tomentose, margins entire, plane to revolute, midrib raised abaxially; petiole 3-11 mm long. Inflorescence axillary, 1-3-flowered; peduncle 1-10 mm long; pedicel 6-11 mm long. Sepals ovate-deltoid to elliptic, valvate, 3-4.5 mm long, 1.5-2 mm wide; petals 8.5-12 mm long, pink or rarely white, valvate, abaxial surface with prominently raised midrib, persistent; stamen filaments pilose; style hirsute or glabrous, stigma minute. Follicles glabrous or densely hirsute, 4-5 mm long; seeds 3-4 mm long, black, shiny. The taxon flowers in spring and summer (VicFlora 2019).

Generation Length

The generation length of *Boronia ledifolia* is estimated to be 20 to 40 years. This is based on the lifeform (a medium shrub) and the habitat in dry foothill forest, which is likely to burn twice or three times a century.

Distribution

The taxon is rare in Victoria, fringing the Snowy, Tambo and Timbarra Rivers in Gippsland (VicFlora 2019).

Habitat

The taxon occurs in scrubby dry forest or shrubland, usually on poor soils shallowly overlying rock (VicFlora 2019).

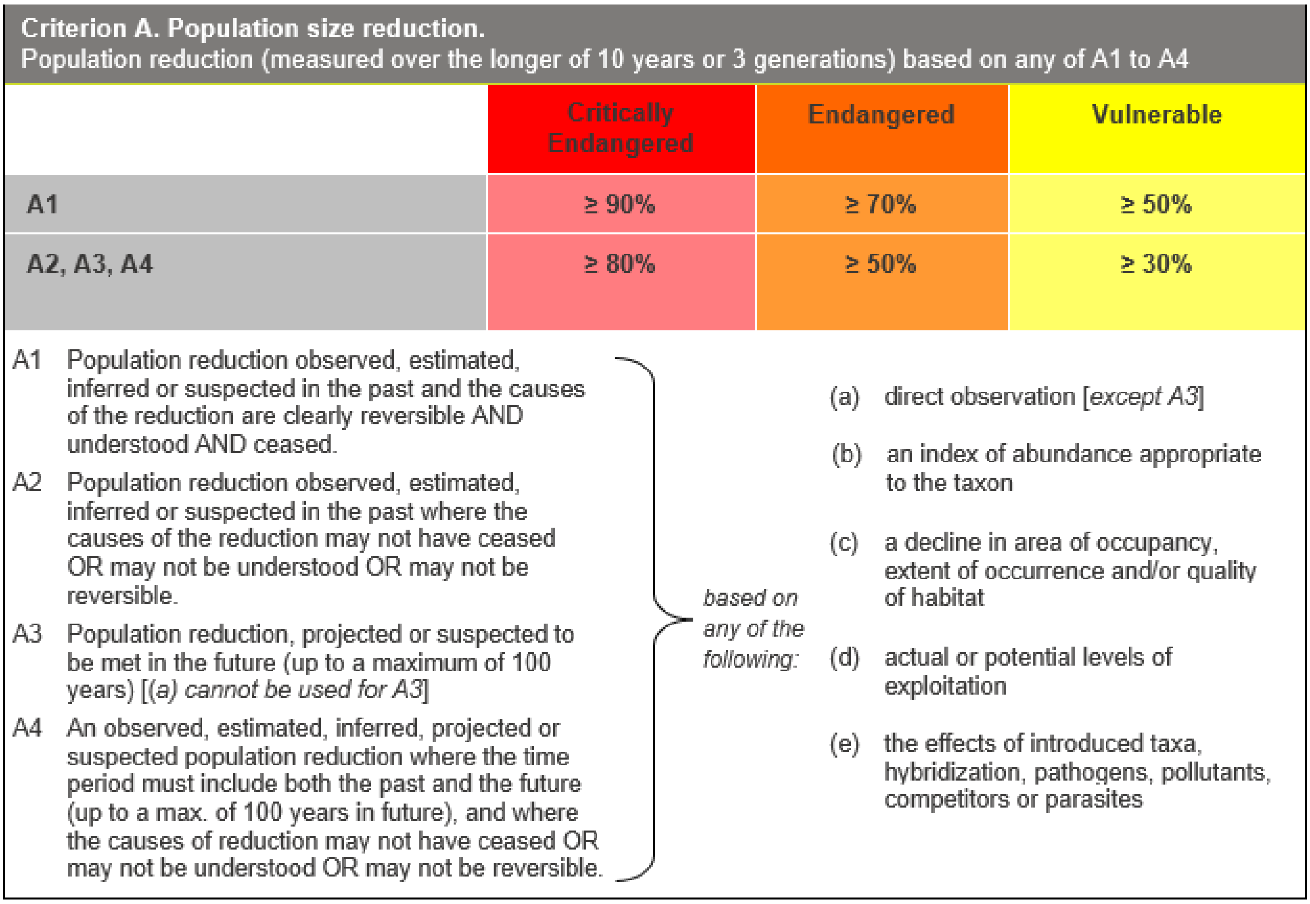
Threats

The taxon is potentially threatened by inappropriate fire regimes and climatic warming and drying which, synergistically, increase the risk of recruitment failure in response to repeat fire events and extreme drought stress. Small and isolated stands may also be threatened by targeted browsing by deer, during the early stages of post-fire recruitment.

The 2019-20 bushfires are believed to have impacted around 68% of the taxon's likely habitat. The overall impacts of the fire are yet to be determined, and drought, hot weather and repeat fires have the potential to damage or destroy recovering plants and/or seedlings.

Spatial analysis of likely habitat for Showy Boronia on all land tenures, indicates that 71% occurs within the CAR reserve system, including parks and reserves, special protection zones and areas excluded from harvesting by prescription under the Victorian Code of Practice for Timber Production 2014 (the Code).

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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:

Eligible under Criterion A2 as Vulnerable

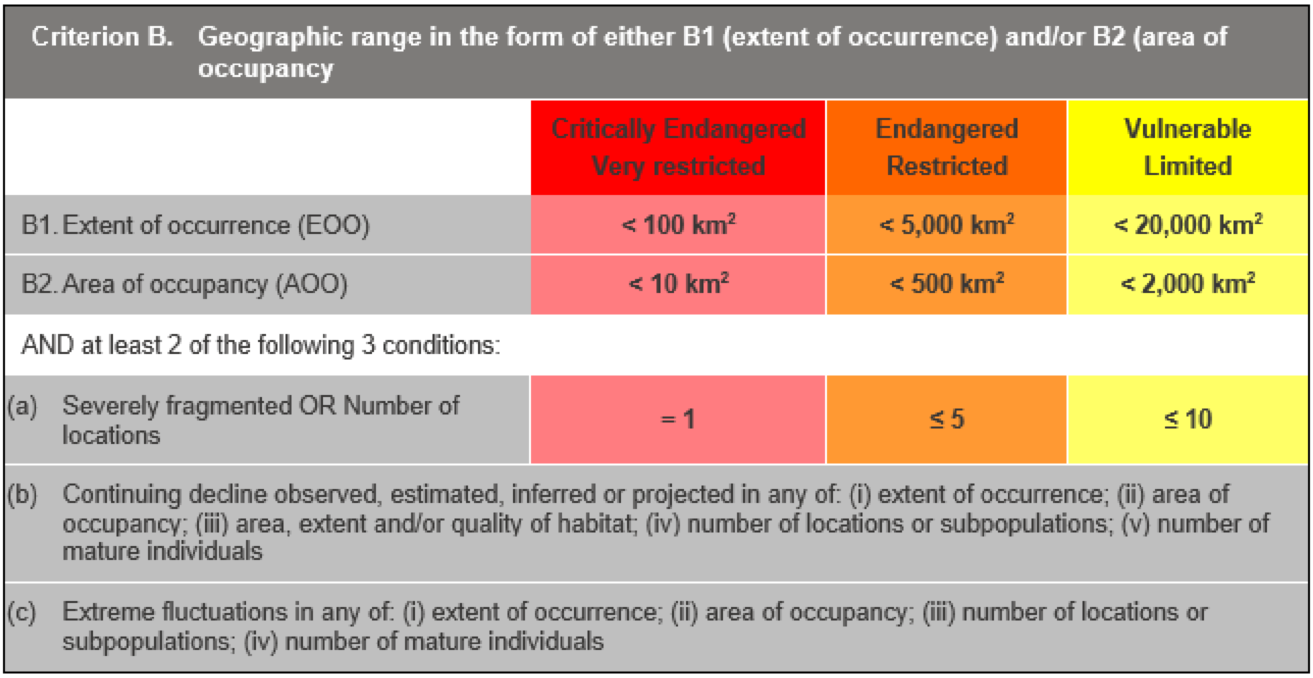
The population reduction over the past 60 to 120 years is suspected to be 30%, based on (c) above.

Past decline is based on a reduction of potential habitat, tentatively attributed to historical forestry operations that have occurred in areas north-east of Mt Elizabeth. However, there is no clear evidence for this and, based on the taxon's habitat preferences, it is unlikely that these areas were targeted for timber. It is highly likely that plants also occurred in other tributaries of the Timbarra River.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 60 to 120 year period, including both past and future (up to 100 years in the future), is suspected to be 30%, based on (c) above.

The magnitude of future decline cannot be estimated with confidence since the identified threats act stochastically and with unpredictable magnitude, so this is based on the past decline.



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:

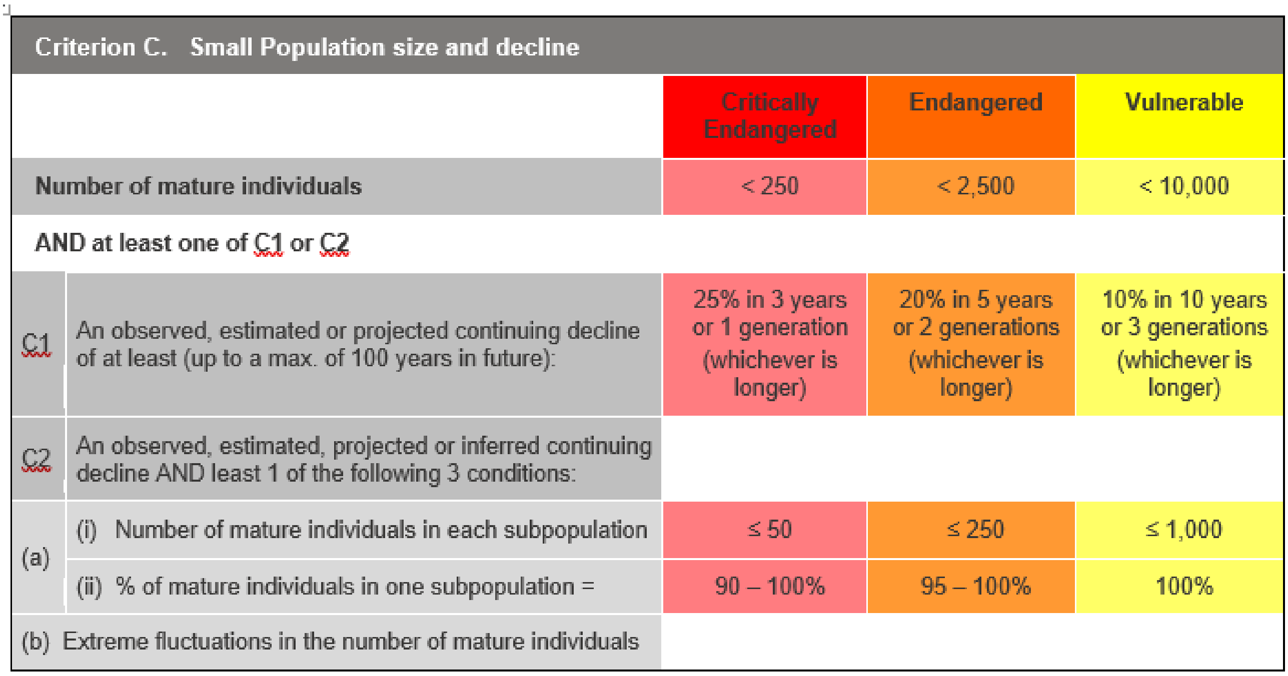
Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 544 km^2, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) across the taxon's range is estimated to be 52 km^2, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

The taxon is estimated to have two locations, as the key identified threats apply across its range and can rapidly affect all individuals of the taxon present in each of the two subpopulations.

It has a continuing decline in (iii) and (v) above, based on the current and projected impact of the identified threats.

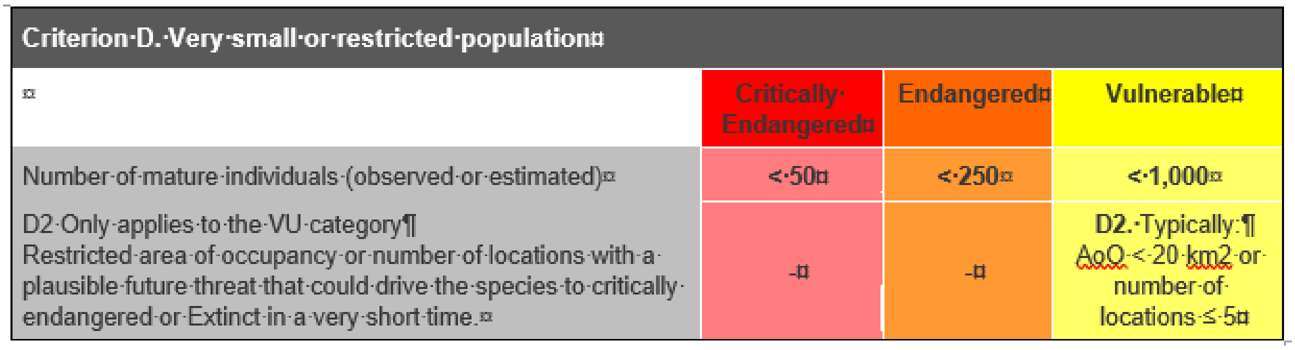


Criterion C. Small Population size and decline		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years 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 estimated that there are 2,500 to 4,000 mature individuals, but other thresholds under this criterion have not been met.



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 km2 or number of locations ≤ 5

Evidence:

Ineligible under Criterion D

It is estimated that there are 2,500 to 4,000 mature individuals.

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. 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: *Boronia ledifolia*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/d826be4e-8f0e-4109-bc49-659a097a0663