



Boronia filifolia Slender Boronia

Taxonomy

Boronia filifolia F. Muell.

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,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a slender shrub to c. 50 cm high, glabrous; branchlets not glandular-warty. Leaves simple or pinnate with 3(-5) leaflets; simple leaves linear to narrow-obovate, 3-30 mm long, 1-1.5 mm wide, petioles to 0.5 mm long; pinnate leaves with leaflets narrow-obovate, c. equal, 3-10 mm long, 1-1.5 mm wide, petioles 2-8 mm long; lamina of both types terete or subterete, slightly discolorous; margins entire. Inflorescence terminal on short branches and axillary in upper nodes of branches, 1(-3)-flowered; peduncle 8-15 mm long; pedicel 2-13 mm long. Sepals ovate-deltoid, imbricate, 1-3 mm long; petals 4-12 mm long, pale to deep pink, imbricate, midrib not raised, deciduous; filaments sparsely pilose; style hairy, shorter than globular stigma. Follicles 3-4 mm long; seed c. 2 mm long, black, shiny. The taxon flowers in spring (VicFlora 2019).

Generation Length

The generation length of *Boronia filifolia* is estimated to be 20 to 40 years. The taxon is an obligate seeder and will be killed by fire. In the Big Desert and other similar dry sclerophyll forest in Victoria, fires may be expected every 20 to 40 years (Wellington & Noble 1985).

Distribution

In Victoria, the taxon occurs in the southwestern part of Big Desert south to the western part of Little Desert and in Cooboboonee National Park and Mount Richmond National Park in the southwest.

Habitat

The taxon occurs in mallee and heath on deep sand.

Threats

While the amount of decline is uncertain, the number of mature individuals of the taxon appear to be declining based on the surveying of known sites of occurrence in Little Desert National Park, wherein the same surveyors detect lower numbers of mature individuals in more recent visits than in their previous visits.

The threats to the taxon include disturbance by road maintenance in roadside populations, inappropriate fire regimes (most likely too frequent causing death of current plants before maturity) and climatic drying, especially if the drought coincides with the time after fire when moisture is most needed for seedling growth. Subpopulations

that are comprised of single mature individuals are also expected to disappear due to senescence of mature plants and lack of recruitment due to disturbance at sites (e.g. roadsides).

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> <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			

Evidence:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,522 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. Most subpopulations are likely to be small (i.e. some have been reported to comprise less than 10 plants) and many are widely separated from other subpopulations by unfavourable habitat. The seeds are expected to have limited dispersal capability and not able to disperse to recolonise disjunct subpopulations should they go extinct because the main vector for seed dispersal is thought to be ants (Berg 1975).

It is estimated to have three locations: the Big Desert and Little Desert National Parks; roadsides between these national parks; and southwest Victoria near Portland. Different sets of threats act at these sites e.g. lack of rainfall may be an issue for inland locations, but the Portland area with higher rainfall and strong maritime influence may not be subject to threatening low moisture levels and roadside disturbance affects roadside plants but not those that are reserved.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats, including inappropriate fire regimes, prolonged drought and disturbance along roadways.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 48 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 3 locations, and has a continuing decline in (i), (ii), (iii), (iv) 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. Several of the estimates of number of individuals in subpopulations are from observations made over 20 years ago. The assessor visited subpopulations in the southwest in 2018 and it is difficult to provide precise estimates for the number of individuals in these subpopulations due to the difficulty at sighting plants in dense heath, and the scattered occurrence of the plants which makes finding all plants difficult.

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: AaO < 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

Berg, R.Y. (1975). Myrmecochorous plants in Australia and their dispersal by ants. *Australian Journal of Botany*, 23, 475-508.



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