

Cyanothamnus anemonifolius subsp. *variabilis* Coast Boronia

Taxonomy

Cyanothamnus anemonifolius subsp. *variabilis* (Hook.) Duretto & Heslewood

This was previously known as *Boronia anemonifolia* subsp. *variabilis*.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(iii,v)c(iv)+2ab(iii,v)c(iv)

Species Information

Description and Life History

The taxon is a shrub to c. 1.2 m high; branches glabrous or hirsute between decurrent leaf-bases; leaves pinnate, 3-5(-7)-foliolate, 15-30 mm long (includes 7-13 mm long petiole), 1.5-2.5 mm wide (to 7 mm wide if leaflets further divided), glandular; leaflets flat, oblanceolate to cuneate, 4-10 mm long, 1-4 mm wide, entire, 3-toothed or pinnatifid with up to 5 lobes. Inflorescence (1-)2-4-flowered; peduncle 3-8 mm long; pedicel 1-4 mm long. Sepals 1.5-2 mm long, glabrous, 3-5 mm long, pale pink, glabrous. The taxon has been recorded flowering June and October. Victorian plants more closely resemble those from Tasmania in their relatively longer leaflets that are less frequently further divided (VicFlora 2021).

Generation Length

The generation length of Coast Boronia is inferred to be 10 to 15 years. This taxon is suspected to be short-lived, with a longevity that is unlikely to exceed 10 years and it is suspected to respond well to fire at a frequency of greater than three years. While the taxon regenerates abundantly following fire, there is also a trickle of germination associated with local disturbance. Therefore, an average generation length of 10-15 years is proposed to incorporate these considerations.

Distribution

The taxon is known only from Sunday and nearby Snake Islands near Wilsons Promontory. A pre-1900 specimen labelled 'Portarlington' suggests that the taxon was formerly more widespread (VicFlora 2021).

Habitat

The taxon occurs on heathland on near coastal sands (VicFlora 2021).

Threats

Potential threats to this taxon include climate change (i.e. decreased rainfall), fire (failed recruitment/reproduction due to drought conditions), weed invasion, vegetation closure, browsing by deer and wallabies, and possibly in the longer term, in some instances, coastal erosion.

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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>	<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:

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.

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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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). 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 taxon is estimated to be severely fragmented. The populations on the two Corner Inlet islands appear to be quite small and localised, and are quite disjunct from the populations on Bass Strait Islands to the south.

It is inferred to have two locations. The populations on the two in Corner Inlet occupy reasonably similar habitat and are subject to similar threats.

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

It is inferred to have extreme fluctuations in (iv) above. This is based on dual recruitment modes, that is, a more or less continuous trickle recruitment from isolated site-specific disturbance such as wombats, wind-throw of trees, pig rooting, tracks etc., alternating with infrequent mass recruitment following fire.

Eligible under Criterion B2 as Critically Endangered

The AoO across the taxon's range is estimated to be 8 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is estimated to be severely fragmented, has 1 location, and it has a continuing decline in (iii) and (v) and extreme fluctuations in (iv) 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. 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 (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Cyanothamnus anemonifolius* subsp. *variabilis*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/15033eef-23dd-46cd-9b83-3af0bf4cccd>