

Pultenaea microphylla Spreading Bush-pea

Taxonomy

Pultenaea microphylla Sieber ex DC.

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)+2ab(iii)

Species Information

Description and Life History

The taxon is an erect to prostrate shrub, sometimes mat-forming, mostly to 1 m high; stems terete, with sparse to dense cover of appressed hairs. Leaves alternate, linear to obovate, 2-15 mm long, 1-2(-3.5) mm wide; midrib terminating in a short, usually recurved mucro; upper surface glabrous to sparsely hairy, rarely tuberculate; lower surface sparsely to moderately hairy, with appressed, grooved hairs; midrib raised; margin recurved; stipules lanceolate, 0.5-3 mm long, appressed or slightly recurved at tip. Inflorescence a terminal or subterminal cluster of 2-4 flowers, or a solitary flower; bracts absent; floral leaves persistent; calyx 2.5-6 mm long sparsely to moderately hairy; bracteoles attached at or just above base of calyx, linear to triangular, c. 2 mm long, hairy; standard c. 7 mm wide; ovary and base of style hairy. Pod flat. The taxon flowers from September to December (VicFlora 2017).

Generation Length

The generation length of *Pultenaea microphylla* is estimated to be 35 to 50 years. This is based on an inference that the taxon is likely to recruit episodically following fire at a plausible pre-settlement interval of 35-50 years or more, potentially supplemented by a low level of trickle or opportunistic recruitment in response to localised site disturbance events or outstanding seasonal conditions.

Distribution

The taxon is currently known in Victoria from a single population near Tubbut in the Snowy River National Park in East Gippsland. The taxon also occurs in Queensland, Australian Capital Territory, and New South Wales (VicFlora 2017).

The only Victorian collection of the taxon was taken by James Turner on 24 October 1998 on Collings Track 1 km north of Bowen Track and 7.5 km south of the Deddick River Road, 6 km south-west of Tubbut. This occurrence is a highly disjunct outlier from a more continuous distribution throughout eastern NSW, the ACT and south-east Queensland, with the closest NSW collection in the Australian Virtual Herbarium (AVH) taken in 1908 at Cowra Creek, 15-20 miles north-east of Cooma. There is also a 1995 site record in NSW approximately 32 km north-east of the Victorian occurrence.

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Habitat

The habitat of the only known Victorian occurrence is a rocky hillside in dry open forest (VicFlora 2017). The occurrence extends at least 100 m along Collings Track on a north-facing slope on a rocky hillside in open *Eucalyptus sieberi*-*E. macrorhyncha* forest at an elevation of 790 m.

Threats

There is no evidence to suggest the taxon has experienced any significant historic decline since the only known Victorian occurrence is currently protected within the Snowy River National Park in a remote habitat unlikely to have been subjected to timber harvesting. The only past management activity is likely to have been fire control or planned burning.

The only identifiable current or future threats include targeted browsing by native or exotic herbivores, drought-induced recruitment failure, potentially exacerbated by targeted browsing, and the potential impact of repeat fire events at intervals approaching the tolerable fire interval for the taxon. The increasing density of Sambar Deer (*Rusa unicolor*) throughout the region poses a significant threat since Sambar have demonstrated their capacity to target other *Pultenaea* taxa such as *P. weindorferi*, particularly during the vulnerable early stages of post-fire recruitment.

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

The past population reduction does not meet the threshold for eligibility under criterion A2. There is insufficient evidence to determine whether will be a future reduction in population size (criterion A3).

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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 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to be severely fragmented since the only Victorian occurrence is highly disjunct from all interstate occurrences, and therefore the probability of recolonisation in the event of local extinction is remote.

It is estimated to have 1 location, and has a continuing decline in (iii) above based on the current and projected impact of the identified threats, such as targeted browsing by native or exotic herbivores, drought-induced recruitment failure, and repeat fire events at intervals approaching the tolerable fire interval for the taxon.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, has 1 location, and has a continuing decline in (iii) 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

It is estimated that there are 200 to 1,000 mature individuals, but other thresholds under this criterion have not been met.

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 D as Endangered

It is estimated that there are 200 to 1,000 mature individuals, based on field observation of the only known Victorian occurrence.

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:



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https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Pultenaea microphylla*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/7babaf14-c74c-4224-ae15-1992132d6b03>