



Pultenaea luehmannii Thready Bush-pea

Taxonomy

Pultenaea luehmannii Maiden

P. luehmannii is unique amongst Victorian taxa of *Pultenaea* in having 4 ovules per ovary (VicFlora 2019).

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criteria B1ab(iii)+2ab(iii)

Species Information

Description and Life History

The taxon is a diffuse, semi-prostrate, dichotomously branched subshrub, branches often trailing or loosely mat-forming; stems terete, finely pubescent when young. Leaves opposite, narrowly elliptic, 5-17 mm long, 1-3 mm wide; apex acute but not pungent; upper surface glabrous, paler than lower; lower surface with scattered appressed hairs; margin incurved; stipules 1.5-1.75 mm long, closely appressed to stem, inconspicuous. Inflorescence a head of 3-6 flowers; bracts absent but enlarged stipules present at base of pedicels; calyx 4-5 mm long, covered with pale, appressed hairs; bracteoles attached at base of calyx tube, 2 mm long, covered with pale hairs; standard 7-8 mm wide; ovary densely hairy. Pod ovate, sparsely hairy, with a long beak. The taxon flowers from October to November (VicFlora 2019).

Generation Length

The generation length of *Pultenaea luehmannii* is estimated to be 45 to 75 years. This is based on a plausible longevity of 25-45 years, and an inferred pre-settlement fire interval of 70-100 years. The taxon is likely to recruit episodically following very rare fire events, supplemented by continuous trickle recruitment in response to localised site disturbance events and seasonal conditions. The taxon is likely to be a fire-sensitive obligate seed regenerator and is unlikely to resprout following fire. Like all members of the genus, soil-stored seedbanks are expected to persist indefinitely in the absence of fire.

Distribution

The taxon is endemic to the Grampians in western Victoria, where it is apparently confined to the southern Victoria Range and Victoria Valley (VicFlora 2019).

Habitat

The taxon is confined to wet heathland and margins of swamps and streams (VicFlora 2019).

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Threats

The taxon is a habitat specialist which is highly dependent on the hydrological stability of its riparian and peaty wet heathland habitat. It is therefore highly susceptible to the impact of climatic drying and warming, which are projected to result in a progressive incremental contraction in the area and extent of its habitat.

The taxon is also at an increasing long-term risk of seedbank depletion and exhaustion in response to repeat fire events at intervals approaching or below the tolerable fire interval for the taxon, which is likely to be 5-10 years. The increasing frequency, duration and intensity of extreme drought events also increases the risk of adult mortality and, particularly, recruitment failure during the vulnerable early stages of post-fire recruitment.

The taxon may also be susceptible to targeted browsing by native and exotic herbivores, particularly during the 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 style="text-align: center;"><i>based on any of the following:</i></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>			

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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 233 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented naturally at the landscape scale. Most occurrences are isolated at separations exceeding the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal. This precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have 1 location, and has a continuing decline in (iii) above due to the identified threats, including climatic drying and warming, repeat fire events, extreme drought events, and targeted browsing by native and exotic herbivores.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 36 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 as Data Deficient

There is no available estimate of population size for the taxon.

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



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VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Pultenaea luehmannii*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/b899ac67-c80f-456b-8e52-fe7183d9e5e3>