

Pultenaea subalpina Rosy Bush-pea

Taxonomy

Pultenaea subalpina (F. Muell.) Druce

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 rigid, spreading shrub to 1.5 m high; stems terete, silky-pubescent when very young, older stems conspicuously scarred with old leaf-bases and broken stipules. Leaves alternate, 6-12 mm long, 0.75-1 mm wide, spreading and slightly curved upwards; apex acute, rigid but not pungent; lower surface scabrous; upper surface (if visible) glabrous; margin tightly inrolled; stipules lanceolate, 2-3 mm long, apex slender, fragile, usually broken on older leaves. Inflorescence a tight head-like cluster of 4-12 flowers; bracts absent; stipules of floral leaves slightly enlarged, leaf subtending innermost flowers reduced; calyx 5-6 mm long, densely hirsute, hairs on apex of lobes grey; bracteoles attached below calyx tube, linear, 2-3 mm long, base with white hairs, apex with a dense tuft of grey hairs; standard 7-9 mm wide; ovary and base of style densely covered with white hairs. Pod ovate, turgid, hairy. The taxon flowers from November to December (VicFlora 2019).

Generation Length

The generation length of *Pultenaea subalpina* is estimated to be 20 to 40 years. This is based on a longevity of plausibly 30 years, a pre-settlement fire interval plausibly in the 20-40 year range, and the likelihood that episodic fire-induced mass recruitment greatly exceeds the proportion of recruitment responding continuously to small scale soil disturbances.

Distribution

The taxon is endemic to Victoria, where it is restricted to the Mt William Range and northern Serra Range in the Grampians, particularly the upper rocky slopes of Mt William, and heathlands of the Major Mitchell Plateau and Mt Rosea (VicFlora 2019).

Habitat

The taxon grows in subalpine heathland which is occasionally covered in snow or ice, in skeletal soils (Reiter et al. 2004).

Threats

This taxon is known to be highly susceptible to infection by *Phytophthora cinnamomi* (Reiter et al. 2004). It may also be potentially threatened by imposed anthropogenic fire regimes and climatic warming and drying which,

Pultenaea subalpina

Rosy Bush-pea

synergistically, increase the risk of recruitment failure in response to repeat fire events and extreme drought stress. *Phytophthora* infection may make the plants more susceptible to mortality due to drought stress.

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>(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> <p><i>based on any of the following:</i></p>			

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 under criterion A3.

Pultenaea subalpina Rosy Bush-pea

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 20 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 have two locations as it occurs in two geographically or ecologically distinct areas in which a single threatening event can rapidly affect all individuals of the taxon present, specifically, infection by *Phytophthora*.

It has a continuing decline in (iii) above as a result of the presence and spread of *Phytophthora*, as well as the potential impacts of climatic drying and increased fire frequency.

Eligible under Criterion B2 as Endangered

The AoO across the taxon's range is estimated to be 20 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon has two locations, and has a continuing decline in (iii) above.

Pultenaea subalpina

Rosy Bush-pea

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

It is estimated that there are 500 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 Vulnerable

It is estimated that there are 500 to 1,000 individuals, based on herbarium specimens indicating that plants are occasional or common, with 'hundreds of plants over about one hectare' (MEL 2296563).

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:



Pultenaea subalpina Rosy Bush-pea

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

Reiter, N., Weste, G., and Guest, D. (2004). The risk of extinction resulting from disease caused by *Phytophthora cinnamomi* to endangered, vulnerable or rare plant species endemic to the Grampians, Western Victoria. *Australian Journal of Botany*, 52, 425-433.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Pultenaea subalpina*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/b8e4ad27-c417-49fb-8ac4-d4f0ea11e5bd>