Threatened Species Assessment

Pultenaea daltonii
Hoary Bush-pea

Taxonomy

Pultenaea daltonii H.B. Will.

Current conservation status

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

Proposed conservation status

Vulnerable in Australia

Criterion D2

Species Information

Description and Life History

The taxon is an erect shrub to 1.5 m high; stems terete, hairy with a mixture of short curled and long spreading hairs. Leaves alternate, terete, grooved above, 5-10 mm long; apex obtuse; lower surface scabrous with tubercle-based hairs; upper surface, if visible, slightly hairy; margin tightly inrolled; stipules triangular to lanceolate, 1.5-3 mm long, apex slender, recurved. Inflorescence a head-like cluster of 8-16 axillary flowers terminating short, lateral shoots; bracts absent, stipules of floral leaves slightly enlarged; calyx 6-7 mm long, covered with pale hairs, lobes long-acuminate; bracteoles attached at base of calyx tube, trifid, leaf-like, 5-6 mm long, centre lobe green with dense pale hairs, outer stipular lobes papery, slighly hairy; standard 8-10 mm wide; ovary and most of style covered with long, pale hairs. Pod ovate, turgid, very hairy, more than half enclosed by calyx. The taxon flowers from September to October (VicFlora 2019).

Generation Length

The generation length of *Pultenaea daltonii* is estimated to be 35 to 75 years. This is based on a plausible longevity of 25-45 years, and an inferred dependence on fire for mass episodic recruitment at pre-settlement intervals of 35-75 years. The taxon is likely to be a fire-sensitive obligate seed regenerator, recruiting predominantly post-fire, with some continuous recruitment in response to localised site disturbance events and seasonal conditions. The taxon is unlikely to resprout following fire, and soil-stored seedbanks are expected to persist indefinitely in the absence of fire.

Distribution

The taxon has a disjunct distribution over a wide geographic area, with localised concentrations in the Lawloit Range, Little Desert, Nurcoung, Jilpanger, and Youngs Scrub in the western Wimmera, Black Range, Mt Difficult Range in the northern Grampians, Digby, Crawford River Regional Park, Hotspur State Forest, and Cape Nelson in the far South West. The taxon also has a highly disjunct eastern outlier in the Brisbane Ranges. In the absence of more recent collections, a single, very old record from the Otway Forest must be regarded as doubtful (VicFlora 2019).

Habitat

The taxon occurs usually in dry forest, associated with *Eucalyptus obliqua* and *E. baxteri* (VicFlora 2019).

VICTORIA State Government | Environment, Land, Water and Planning

Threats

The identified habitat range suggests that the taxon is ecologically adaptable and is likely to be at least moderately resilient in the face of individual threats, such as climate change and imposed fire regimes. The key threat to the taxon in the medium to longer term, however, is the combined impact of these threats operating synergistically. Climatic drying and warming, coupled with increasing frequency and landscape scale of natural and anthropogenic fire, increases the risk of recruitment failure and adult mortality. This results in seedbank depletion, ultimate seedbank exhaustion, and local extinction. The increasing risk of repeat fire events at intervals approaching or below the tolerable fire interval for the taxon, which is likely to be 5-10 years, increases the risk of seedbank depletion and exhaustion. Further, the increasing frequency, duration and intensity of extreme drought events increases the risk of adult mortality and, particularly, recruitment failure during the early, vulnerable 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. A proportion of occurrences occur in highly fragmented rural landscapes, or at the exposed margins of remnant stands of native vegetation. Such occurrences are at site-specific risk from edge effects, such as stock agistment, weed invasion, or land management activities.

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 33,500 km² which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 128 km² but other thresholds under this criterion have not been met.

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 population			
	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 km2 or number of locations ≤ 5

Evidence:

Eligible under Criterion D2 as Vulnerable

The taxon is estimated to be very restricted. This restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations. This is in response to the impact of the identified long-term threats, notably climatic drying and warming coupled with increasing frequency and landscape scale of natural and anthropogenic fire, extreme drought events, targeted browsing by native and exotic herbivores, and edge effects.

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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Pultenaea daltonii*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/43a8b0b7-7a6f-4ec0-8e7c-bd0586a79494