Threatened Species Assessment

Pultenaea weindorferi
Swamp Bush-pea

Taxonomy

Pultenaea weindorferi Reader

Current conservation status

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

Proposed conservation status

Endangered in Victoria

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

Species Information

Description and Life History

The taxon is a slender, erect shrub to 2 m high; stems terete, glabrous. Leaves alternate, linear to very narrowly obovate, 6-15 mm long, 0.75-1.5 mm wide; apex obtuse; surfaces usually glabrous; margin incurved; stipules 3-4 mm long, partially united, often overlapping and obscuring stem, midrib prominent, tips recurved. Inflorescence a head-like cluster of more than 6 flowers subtended by floral leaves, the enlarged stipules of which show a gradation to floral bracts with only a small, vestigial leaf under innermost or youngest flowers; calyx 5-6 mm long, usually glabrous except for shortly ciliate margins of lobes; bracteoles attached at base of calyx tube, slender, lanceolate or linear, 4-5 mm long, concave; standard 6-7 mm wide; ovary and style usually glabrous. Pod turgid, glabrous. Flowers October-November. A distinctive variant with soft, long hairs on the calyx and leaves and a tuft of hairs on the summit of the ovary occurs in the Kinglake National Park (VicFlora 2019).

Generation Length

The generation length of *Pultenaea weindorferi* is inferred to be 15 to 50 years (midpoint 25 years). This is based on the life span of other taxa within this genus having been estimated at around 20 years. Some level of reproductive maturity can be reached within the first two years. Fire stimulates mass regeneration of the plant, however local disturbance can also trigger some germination. A generation length of 15-50 years is proposed to accommodate a range of potential fire frequency.

Distribution

The taxon occurs in scattered localities of southern central and eastern Victoria from near Castlemaine, Kinglake, and the Mornington Peninsula east to Mallacoota.

Habitat

The taxon is confined to swamps, seepage areas, and drainage lines on a range of sites from around low-lying areas to sandplains and low ridges and slopes, always on poor soil. It is often associated with Mealy Stringybark *Eucalyptus cephalocarpa.*

Threats

Threats to the taxon include the effects of climate change such as decreased rainfall and drying of springs and soaks, altered fire regimes, failed recruitment/reproduction due to drought conditions, browsing and soil

disturbance by feral animals such as goats, deer, and pigs, as well as domestic stock, draining and clearing of habitat for urban/agricultural use, dam construction in habitat, eutrophication, weed invasion, and pathogens such as Cinnamon Root-rot Fungus (*Phytophthora cinnamomi*). The taxon appears to decline with competition from post-fire recovery of other taxa (Tolsma et al. 2012). Native marsupials, notably wallabies and wombats, can also impact populations, particularly during drought conditions.

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:

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 45 to 100 years is suspected to be 10 to 30%, based on (b), (c) and (e) above.

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:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4,290 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally and anthropogenically, and is restricted to localised areas of suitable habitat.

It is estimated to have a continuing decline in (ii), (iii), (iv) and (v) above based on the impacts of the identified threats, such as the effects of climate change, drought, browsing and soil disturbance by herbivores, clearing and draining of habitat, dam construction, eutrophication, weed invasion, and Cinnamon Root-rot Fungus.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 144 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented and has a continuing decline in (ii), (iii), (iv) and (v) above.

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 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.

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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Fraser, M., Simmons, D., and Adams, R. (2004). Population decline and potential for extinction in a population of *Pultenaea glabra* (Fabaceae) in Victoria. *Cunninghamia* 8:4 431-438.

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