Threatened Species Assessment

Ptilotus polystachyus
Long Tails

Taxonomy

Ptilotus polystachyus (Gaudich.) F. Muell.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria B1ac(iv)+2ac(iv)

Species Information

Description and Life History

The taxon is an erect or straggling, several-branched herb, to c. 1 m high. Stems finely pubescent in upper part. Leaves linear to (ob)lanceolate, c. 4-12 cm long, 2.5-15 mm wide, pubescent with septate, minutely barbed hairs; margins commonly finely undulate. Basal rosette not developed. Spike erect, cylindric, 3-12 cm long, c. 3 cm diam., moderately dense, pale green to straw-coloured; bract ovate, 3-4.5 mm long, acute, straw-coloured, transluscent; bracteoles orbicular to broadly elliptic, equal to or slightly longer than bract, virtually transparent; perianth 13-16 mm long; tepals free to base, outer surface fairly densely covered with long, silky, septate hairs to within 1-2 mm of apex, inner surface glabrous; fertile stamens 3 or 4; ovary subsessile, with a few long hairs at the summit, style very eccentric. The taxon flowers most of year (conditions permitting) but mainly May to November (VicFlora 2018).

The taxon is a perennial forb which may be abundant in favourable situations, developing into sprawling plants of considerable size. Although classed as a perennial, it more often behaves as an annual and dies off in summer. In some cases the top growth may dry off, with new growth appearing from near the base when cooler moister conditions prevail. It is commonly seen with the flower-head quite devoid of flowers near the base with only those near the tip persisting (Cunningham *et al.*1992).

Generation Length

The generation length of *Ptilotus polystachyus* is estimated to be 2 to 5 years. The taxon is a short-lived perennial which can resprout if sustained by summer rainfall but will die in drought. The longevity is 2-4 years. The taxon recruits in response to summer rain, which occurred less frequently than annually at the time of European settlement, and the interval between successive recruitment pulses, depending on the frequency of favourable seasons.

Distribution

The taxon is rare in Victoria, confined to the far north-west (e.g. Mildura, Boundary Bend areas). The taxon is possibly extinct from Lorquon (near Lake Hindmarsh) where it was collected in 1919. The taxon also occurs in all mainland states (VicFlora, 2018).

Habitat

The taxon occurs on red sandy loams on low dunes and heavier soils on the Murray River floodplain (VicFlora, 2018), usually in well-drained situations. It is found in a wide range of vegetation types (Cunningham *et al.* 1992).

Threats

The taxon has suffered significant historic decline through habitat loss and degradation due to agricultural activity and urban development, particularly in the Mildura and Cardross districts. However, agricultural activity in these areas is no longer regarded as a significant cause of local extinction. The taxon is edaphically restricted to loamy sands that are not greatly targeted for agriculture.

It is unclear whether the taxon is currently at risk since it is resilient to disturbance, and the replacement of winter rains by summer rainfall may actually favour seed recruitment. Although the soil-stored seedbank is of unknown persistence, there is no evidence that the taxon is at current risk from seedbank decline or exhaustion. The most plausible long-term risk to this taxon is the changing seasonality and reliability of rainfall events. Another risk is the increasing frequency, duration and intensity of drought events, which may result in recruitment failure, seedbank depletion or exhaustion.

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:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 867 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented both naturally and anthropogenically at the landscape scale. Geographically discrete occurrences are isolated from each other at spacings likely to exceed the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal

It is estimated to have 1 location. It has extreme fluctuations in (iv) above, which are at least tenfold in magnitude, in response to seasonal conditions.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 72 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is estimated to be severely fragmented, has one location, and has extreme fluctuations in (iv) above, in response to seasonal conditions.

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 suspected that there are 200 to 5,000 (midpoint 3,000) mature individuals, but this qualifier is too weak and other thresholds under this criterion have not been met.

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

Cunningham, G.L., Mulham, W.E., Milthorpe P.L., & Leigh, J.H. (1992). Plants of Western New South Wales. Inkata Press.

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014.* Department of Environment and Primary Industries, Melbourne.

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Ptilotus polystachyus*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/c57b9eec-52b6-4acf-9dc7-45449e3a717b