Threatened Species Assessment

Platylobium rotundum
Penny-leaf Flat-pea

Taxonomy

Platylobium rotundum I. Thomps.

This was previously included in a broadly defined *P. formosum*. It is often confused with *P. alternifolium* due to its alternate leaves. However, it is easily distinguished from *P. alternifolium* as the calyces and young pods are pubescent throughout and peduncles are exserted from the basal bracts and scales (VicFlora 2019).

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criteria A2c+4c; B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)

Species Information

Description and Life History

Prostrate, often mat-forming shrubs, rooting at nodes; stems glabrous to densely pubescent. Leaves alternate, unifoliolate; petiole 8-25 mm long; lamina broadly ovate, broadly elliptic or orbicular, 1-4 cm long, 0.8-3.5 cm wide, base broadly rounded or truncate, sometimes slightly cordate, apex usually obtuse or rounded, apiculate. Flowers 1-2 per axil; pedicles distinct, exserted from basal bracts and scales; bracteoles flat or convex, 2-6 mm long, not overlapping the calyx, brown or orange-brown, striate, glabrous or sparsely hairy; calyx with sparse appressed hairs, upper lobes 5-7.5 mm long (including tube), lower lobes 2.5-3.5 mm long; ovary pubescent. Pod with a thin wing 0.8-1 mm wide beyond the upper sutural nerve, pubescent or at least the sutures hairy. Flowers from September to December (VicFlora 2019).

P. rotundum is a distinctive taxon recognisable by its prostrate habit, entirely alternate, long-petiolate leaves, very long pedicels and the bracteoles inserted remotely from the calyx. The often almost circular lamina of the leaflet is also reasonably distinctive. It rarely produces fruit, and the descriptions of pods and seeds are based on two separate collections from near Malmsbury, in south-central Victoria, the only locality where these have been collected (Thompson 2011).

Generation Length

The generation length of *Platylobium rotundum* is inferred to be 150 to 300 years. This is based on field observation suggesting all stands are clonal and the observation that the taxon rarely produces fruit, reportedly having been collected in fruit only near Malmsbury.

Distribution

Platylobium rotundum is endemic to Victoria. It occurs in central and central-western Victoria from Mt Buangor to Blackwood (VicFlora 2019).

Habitat

The taxon grows in open forest on mountain ranges (VicFlora 2019).

Threats

Threats include the impacts of both natural and planned intense fire, and the increasing risk of both vegetative and seed-based recruitment failure due to severe drought stress. Threats also include the potential impact of herbivory from deer, wallabies and rabbits, particularly during early recruitment, and the impact on some stands of road-based disturbance including road maintenance and off-road vehicle use.

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 A2 as Endangered

The population reduction over the past 450 to 900 years is inferred to be 50 to 75%, based on (c) above.

Past decline is based on habitat loss to agriculture across the range of the taxon.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 100 years is inferred to be 25 to 60% (interval 30%), based on (c) above.

Future decline is based on the impact of the identified threats.

Eligible under Criterion A4 as Endangered

The population reduction over any 450 to 900 year period, including both past and future (up to 100 years in the future), is inferred to be 65 to 75%, based on (c) above. The causes of reduction may not have ceased, be understood or be reversible.

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 950 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO estimate is based on current records which show an extent of occurrence of 240 km² and unreleased findings which could potentially increase the EoO to 950km².

The taxon is estimated to be severely fragmented naturally and anthropogenically at both subregional and landscape scales. It should be noted that the taxon rarely produces fruit or viable seed and the capacity to recolonise following the local extinction of individual subpopulations is negligible with no known vectors for long-distance dispersal

It is estimated to have 1 location. It has a continuing decline in (ii), (iii), (iv) and (v) above, based on the ongoing impacts of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (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, it is severely fragmented, has 1 location 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

It is suspected that there are 10 to 100 (midpoint 50) 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

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

Thompson, I.R. (2011), A revision of *Platylobium* (Fabaceae: Bossiaeeae). *Muelleria* 29(2): 171-172.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Platylobium rotundum*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/211aebd4-f995-4639-924c-48226b47497a