



Pimelea hewardiana Forked Rice-flower

Taxonomy

Pimelea hewardiana Meisn.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a shrub usually 40–70 cm high; young stems with short antrorse hairs. Leaves opposite, shortly petiolate, usually narrowly elliptic, smaller leaves sometimes broadly elliptic, 3–12 mm long, 1–3 mm wide, medium to dark green on upper surface, paler beneath, glabrous; margins sometimes recurved. Inflorescence terminal (often in fork between 2 branches), a compact head of 7–34 flowers; involucre bracts 4 or rarely 2, petiolate, similar in shape and colour to leaves, 5–11 mm long, 1–3 mm wide, larger than subtending leaves, glabrous. Flowers unisexual, yellow, hairy outside except at base, glabrous inside; floral tube c. 1–2.5 mm long, style-portion of female flowers shorter than ovary-portion; sepals c. 0.5–1.5 mm long, glabrous inside; pedicel hairy; stamens shorter than sepals; anthers opening laterally or somewhat laterally. Fruit dry, enclosed. Flowers mainly winter–spring (VicFlora 2018).

The taxon is monoecious, but flowers are either male or female. Its response to fire is unknown, but it is probably a resprouter. Reproduction is by seed only with recruitment assumed to be continuous, with a pulse after fire. The longevity of the soil-stored seedbank is unknown, but it is probably long-lived. The breeding system is unknown, i.e. whether self-fertile or an obligate outcrosser. It is pollinated by insects, probably predominantly by Lepidoptera (moths). Seeds/fruits appear to be passively dispersed but are likely to be aided by wind at a localised scale. Overall gene-flow would be to a markedly short-distance.

Generation Length

The generation length of *Pimelea hewardiana* is suspected to be 20 to 40 years. This is based on its longevity and continuous recruitment.

Distribution

P. hewardiana occurs in south-western Victoria, from the coast to Mt Arapiles.

Habitat

The taxon occurs in woodland and mallee shrubland, usually on rocky sites including rock outcrops and rocky slopes of gullies. Geology at these sites can be calcarenite, sandstone, and perhaps basalt.

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Threats

Threats to the taxon include the effects of climate change such as decreased rainfall, increased evaporation, and extreme temperatures, increased frequency and intensity of fire, soil loss on bare, post-fire substrates, weed invasion, browsing by deer, particularly Sambar Deer (*Rusa unicolor*), and rabbit grazing.

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>based on any of the following:</p> <ul style="list-style-type: none"> (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 Vulnerable

The population reduction over the past 60 to 120 years is suspected to be 30%, based on (c) above. The causes of reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Vulnerable

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

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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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 124 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is observed to be severely fragmented naturally at the subregional scale and anthropogenically at the landscape scale, at separations that are likely to exceed the dispersal range of the taxon.

It is inferred to have 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the impacts of the identified threats, such as climate change, increased fire, soil loss, weed invasion, and browsing by deer and rabbits.

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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 population information for this taxon as there have been no dedicated surveys undertaken.

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 D2 as Vulnerable

The taxon is inferred 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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