

Pimelea linifolia subsp. *linoides* Slender Rice-flower

Taxonomy

Pimelea linifolia subsp. *linoides* (A. Cunn.) Threlfall

One of four subspecies of *P. linifolia*, three in Victoria

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 A3ce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a shrub 0.3–2.5 m high. Leaves usually more or less linear, sometimes narrowly oblong-elliptic or oblanceolate, dark bluish-green or dark green on upper surface, paler below, 6–40 mm long, 1–4 mm wide; margins recurved. Inflorescence erect or pendulous, many-flowered; involucral bracts lanceolate or rarely ovate, 10–15 mm long, 3–10 mm wide, green or reddish. Flowers not much longer than bracts, white; floral tube 10–14 mm long. Flowers September–November (VicFlora2018).

The taxon is long-lived, fire sensitive, and recovers from a soil-stored seedbank of unknown longevity (but probably long-lived). Plants are monoecious but flowers in inflorescence are either bisexual or female. Its breeding system is unknown, i.e. whether self-fertile or an obligate outcrosser. Seeds and fruits are passively dispersed, and are likely to be wind-dispersed locally. Flowers are pollinated by Lepidoptera (mostly moths) visiting for a nectar reward.

Generation Length

The generation length of *Pimelea linifolia* subsp. *linoides* is suspected to be 30 to 50 years. This is based on the recurrent fire interval for this fire-sensitive taxon.

Distribution

P. linifolia subsp. *linoides* occurs very disjunctly in the Grampians and at Wilsons Promontory, and is distant from localities in other states.

Habitat

The taxon occurs in heathy woodland on rocky sites, with soils derived from Siluro-devonian sandstone and Ordovician granite/granodiorite.

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, elevated fuel loads of invasive woody plants (e.g. *Acacia longifolia* sens. lat.) causing the sterilisation of the soil and destruction of seedbanks when burnt, soil loss on bare post-fire substrates resulting from severe rainfall events, and weed invasion.

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Impacts of exotic vertebrates, especially Sambar Deer (*Rusa unicolor*), are unknown. Wilsons Promontory populations face threats from invasion of habitats by the ecological-out-of-balance indigenous taxa *Kunzea ambigua* and *Leptospermum laevigatum*.

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>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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Evidence:

Eligible under Criterion A3 as Endangered

The population reduction over the next 90 to 100 years is suspected to be 50%, based on (c) and (e) above.

Future reduction is based on the projected impacts of severe threats, particularly weed invasion, climate change, and fire impacts.

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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 64 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is inferred to be severely fragmented considering its limited dispersal ability, the barriers to dispersal, and/or lack of habitat separating the individuals.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the impacts of the identified threats, such as climate change, elevated fuel loads, severe rainfall events, and weed invasion.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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				

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Evidence:

Ineligible under Criterion C as Data Deficient

No reliable estimate of the total population size for the taxon is available.

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 km ² 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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- Threlfall, S. (1983). The genus *Pimelea* (Thymelacaceae) in eastern mainland Australia. *Brunonia* 5(2), 113-202.
- VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Pimelea linifolia* subsp. *linoides*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/b08b3219-ba6a-4e41-83c3-04a5d963fb35>