



Microlepidium pilosulum Hairy Shepherd's Purse

Taxonomy

Microlepidium pilosulum F. Muell.

M. pilosulum differs from the South Australian *M. alatum* in being hairy, having petals, and with fruit winged only in the distal third. It has been at times included in the genus *Capsella*, but *C. bursa-pastoris* has pinnately lobed basal leaves and pedicels longer than the relatively broad (4 mm or more wide) fruits (VicFlora 2014).

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(iii)c(iv)+2ab(iii)c(iv)

Species Information

Description and Life History

The taxon is a plant to 20 cm high, spreading to erect, with simple and stellate hairs; branches often inter-twined. Leaves obovate with tapering bases, with few blunt teeth or entire. Inflorescence dense, elongating from a corymb. Sepals c. 1 mm long, often hooded; petals about equal to sepals, notched or trilobed, white. Fruit wedge-shaped to obcordate, 3-5 mm long, c. 2 mm wide, apex broadly notched; valves winged in distal third; pedicels c. 2(-4) mm long. The taxon flowers in spring (VicFlora 2014).

Generation Length

The generation length of *Microlepidium pilosulum* is inferred to be one to five years. The taxon is an annual herb and is assumed to recruit reliably annually, or no less frequently than once in any five-year interval.

Distribution

The taxon is rare and primarily found in near-coastal sites west of Cape Otway (VicFlora 2014). It is known from one site 1.6 km due east of the mouth of the Aire River estuary, 100 m south-east of the bridge over the Aire River, in the Otway region.

Habitat

The taxon is usually associated with saltmarsh vegetation (VicFlora 2014). However, the habitat of the only confirmed extant population at the Aire River Estuary is secondary dune vegetation and not saltmarsh as suggested by VicFlora (2014). The habitat at the mouth of the Aire River Estuary is Coastal Scrubland on coarse yellow calcareous sand over calcarenite at an elevation of 29 m.

Threats

Threats to the taxon include stochastic climate and weather-related events, biotic threats such as feral or native animals, pests, disease, and misguided management activity including herbicide application and recreational activity.

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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:

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.

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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 B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). This is based on a single extant subpopulation near the mouth of the Aire River Estuary. The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to have one location as the key identified threats apply across the range of the taxon and can rapidly affect all individuals present.

It has a continuing decline in (iii) based on the key identified stochastic threats, and extreme fluctuations in (iv) above, as population monitoring indicates that the population size can fluctuate significantly between 0 and 750 mature individuals in different seasons.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon has one location, and has a continuing decline in (iii) and extreme fluctuations in (iv) above.

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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

It is estimated that there are 0 to 750 (midpoint 50) mature individuals, but other thresholds under this criterion have not been met.

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 D as Endangered

It is estimated that there are 0 to 750 (midpoint 50) mature individuals. These numbers are based on population monitoring over many decades, with records of population size of 0-750. The most recent record suggests that the population is likely to exceed 50 mature individuals.

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:



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https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

Entwisle, T.J. (1996). *Brassicaceae*. In N.G. Walsh and T.J. Entwisle (Eds.), *Flora of Victoria Vol. 3, Dicotyledons: Winteraceae to Myrtaceae*. Inkata Press, Melbourne.

VicFlora (2014). Flora of Victoria, Royal Botanic Gardens Victoria: *Microlepidium pilosulum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/3527a246-498d-47a2-9cc5-2da2a8148460>