

Lepidium foliosum Leafy Peppercross

Taxonomy

Lepidium foliosum Desv.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A3ce; B2ab(iii,v); C1

Species Information

Description and Life History

The taxon is a perennial shrub usually less than 30 cm high (but reputedly to 90 cm), without hairs, smooth (pedicels sometimes papillose); stems erect. Basal leaves bipinnately lobed; stem leaves spatulate, 0.5-4 cm long, 2-6 mm wide, lobed, broadly toothed or entire, thick to leathery. Inflorescence an elongating raceme (corymbose at first). Sepals c. 1.5 mm long; petals usually ovate, clawed and longer than sepals, white; stamens (5-)6. Fruit elliptic to rhombic, 4.5-6 mm long, 3-3.5 mm wide, wings narrow, forming narrow notch; style c. 0.5 mm long, included or slightly exerted; pedicels 4-6 mm long, sometimes papillose on upper surface. The taxon flowers mostly in summer (VicFlora 2019).

Generation Length

The generation length of *Lepidium foliosum* is estimated to be 20 to 30 years. The taxon is a perennial shrub and is potentially moderately long-lived, but data is not available to determine reasonable estimates of longevity and generation time. However, the generation time is unlikely to exceed 20 to 30 years.

Distribution

The taxon is found on coastal islands and rarely mainland coast. The taxon also occurs in Western Australia, South Australia, New South Wales, and Tasmania (including Bass Strait islands) (VicFlora 2019).

Habitat

The taxon is found on coastal islands and rarely on the mainland coast (VicFlora 2019), such as Loch Sport.

Threats

The bushfires of 2019/2020 are believed to have impacted around 15% of the taxon's modelled habitat, although the overall impacts of the fire are yet to be determined.

The taxon is likely to be impacted by climate change or extreme weather events, as well as plausibly coastal instability, affecting only a few sites such as Loch Sport and, potentially, Tullaberger Island. The taxon is also potentially threatened by the effects of weather events such as increased salt spray loads, high winds, high waves, and longer periods of desiccation. The taxon may also possibly be impacted by the effects of climate change on food availability for sea birds (e.g., Shearwaters, Penguins), since the taxon is a habitat specialist that is dependent

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on highly eutrophic microhabitats created by intense accumulation of guano deposition by seabirds. This is the most plausible contribution to future decline and, more tenuously, to continuing decline in habitat quality.

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 A3 as Endangered

The population reduction over the next 60 to 90 years is projected to be 30 to 65% (midpoint 50%), based on (c) and (e) above.

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

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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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 10,785 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to have 3 locations, based on island topography and geography, namely Julia Percy and Great Glennie islands, which share large size and elevations and support large persistent breeding colonies; and the other sites.

It is estimated to have a continuing decline in (iii) and (v) above, based on the possible impacts of climate change on food availability for sea birds that deposit guano on which the plants depend.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 24 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon has 2 to 3 locations, and a continuing decline in (iii) and (v) 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:

Eligible under Criterion C as Endangered

It is estimated that there are 250 to 2,500 mature individuals.

There is estimated to be a continuing decline of 20 to 50% (midpoint 40%) within two generations, based on the impacts of the identified threats.

Criterion D. Very small or restricted population ^a				
		Critically Endangered ^a	Endangered ^a	Vulnerable ^a
Number of mature individuals (observed or estimated) ^a		< 50 ^a	< 250 ^a	< 1,000 ^a
D2. Only applies to the VU category ^b 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. ^a		- ^a	- ^a	D2. Typically: ^b AaO < 20 km ² or number of locations ≤ 5 ^a

Evidence:

Eligible under criterion D as Vulnerable

It is estimated that there are 250 to 2,500 individuals, and 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.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Lepidium foliosum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/d8c66e45-598b-4a5f-bae5-8b5d4597758a>