

Lepidium aschersonii Spiny Peppercross

Taxonomy

Lepidium aschersonii Thell.

Current conservation status

Listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1992).

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

Proposed conservation status

Endangered in Victoria

Criterion A2bce; B2ab(i,ii,iii,iv)c(iv)

Species Information

Description and Life History

The taxon is a perennial herb to 30 cm high; stems erect, tangled, small branches spinescent, covered with spreading or deflexed hairs. Basal leaves pinnately lobed, to 12 cm long; stem leaves becoming smaller, lanceolate to narrowly tapering, toothed or entire, auriculate, hairy. Inflorescence a raceme terminated by a spine. Sepals c. 0.8 mm long; petals reduced, linear; stamens 2; stigma subsessile. Fruit ovate, elliptic or obovate, 3.5-4.5 mm long, 2.5-3 mm wide, glabrous, wings narrow, forming small apical notch; pedicels 2-4 mm long, hairy above, less so below. The taxon flowers from spring to autumn (VicFlora 2018).

Generation Length

The generation length of *Lepidium aschersonii* is inferred to be 5 to 15 years. It has been noted that the longevity of this herb is plausibly 5 to 15 years. It has also been commented that the generation time is highly variable depending on whether the plants are subject to annual or seasonal waterlogging or flooding in the western district, or far less frequent and less reliable lakebed inundation and drying with recruitment from mud banks, which is possibly enhanced by continuing drought, in which case the generation time is plausibly 10 to 15 years at settlement.

Distribution

The taxon is primarily associated with saline lakes on volcanic plains, but with outlying records from near Lake Omeo (in 1940 & 1981) and the Grampians (in 1893). The taxon also occurs in Western Australia, where it is possibly introduced, and New South Wales (VicFlora 2018).

Habitat

The taxon mostly occurs on heavy clay soils near saline lakes, or somewhat salinized flats on volcanic plains (VicFlora 2018).

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Threats

Carter (2010) describes the major threats to this taxon as weed invasion (notably perennial pasture grasses), and grazing by domestic stock, rabbits, and pigs, but notes that occasional light grazing by domestic stock, preferably in winter, may assist in keeping the field layer open and allowing seedling regeneration. Carter (2010) also notes other threats to include altered hydrology, both wetland drainage and sustained inundation, direct habitat destruction for agriculture, and disturbance to road reserves such as earthworks and firebreak construction. Tall Wheat-grass (*Lophopyrum ponticum*) is an additional high threat weed taxon that can present serious threats to Spiny Peppercross.

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 style="text-align: center;"><i>based on any of the following:</i></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>			

Evidence:

Eligible under Criterion A2 as Endangered

The population reduction over the past 15 to 45 years is suspected to be 45 to 75%, based on (b), (c) and (e) above.

Past decline is based on the effects of the identified historic threats, notably weed invasion, over grazing, altered hydrology, habitat destruction, and disturbance to roadside reserves.

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

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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 B as Endangered

The Area of Occupancy (AoO) is estimated to be 148 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. The taxon is restricted to localised areas of suitable habitat which are dispersed over a wide area. It is known to have been displaced from many patches of potential habitat due to land-use practices and other modifications.

It has been indicated that, of known occurrences in Victoria, two are in Wildlife Reserves and four are on public land, with the remaining stands on private land or linear reserves (roadside and rail reserve). Therefore, three locations are tentatively proposed on the basis of threats and the potential to manage them: these differ for the very disjunct population at Lake Omeo, the public land sites associated with saline lakes in western Victoria, and the remaining private land and linear reserve sites where management options are more restricted.

It has a continuing decline in (i), (ii), (iii), and (iv), and extreme fluctuations in (iv) above. Population counts at individual sites can vary greatly between years. These observations reflect either extreme fluctuations (if reversible) or rapid declines in population size.

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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 insufficient evidence to determine the number of mature individuals.

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 estimated to be very restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Carter, O. (2010). *National Recovery Plan for the Spiny Peppercross Lepidium aschersonii*. Department of Sustainability and Environment, Melbourne. Retrieved from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-spiny-peppercross-lepidium-aschersonii>.



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