



Lepidosperma limicola Razor Sword-sedge

Taxonomy

Lepidosperma limicola N.A. Wakef.

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 B1ab(ii,iii,v)+2ab(ii,iii,v)

Species Information

Description and Life History

The taxon is a tufted perennial with short vertical rhizome. Culms rigid, erect, biconvex, striate, glabrous, smooth, 60-150 cm high, 3-6 mm wide; margins very scabrous and cutting, yellowish. Leaf-blades similar in form to culms (or rounded on one edge) but shorter, 2.5-5 mm wide; sheaths yellowish near apex, dark grey-brown or blackish at base, not viscid, shining. Inflorescence oblong in outline, narrow, erect, dense, 5-15 cm long, 1-2(-3) cm diam.; involucre shorter than inflorescence. Spikelets numerous, 5-9 mm long; glumes 5-7, glabrous, red-brown to grey-brown, the 3 lowest empty, shorter than fertile glumes, acute, mucronate; fertile glumes 5.0-7.0 mm long, long-acute to acute; hypogynous scales 5 or 6, yellowish, from one-quarter to one-half length of nut. Nut narrow-ellipsoid to ellipsoid, pale brown to greyish brown, ± smooth (faintly and minutely trabeculate under the surface), shining, 2.5-3.5 mm long, 1.0-1.5 mm diam. Flowers spring-summer (VicFlora 2019). Based on congeners, it is probably medium-lived perennial with 5-year juvenile period (VicFlora 2016).

Generation Length

The generation length of *Lepidosperma limicola* is inferred to be 35 to 50 years. The taxon resprouts from rhizomes which can persist for decades. On rare occasions, fires can be serious enough to impact the substrate and cause rhizome damage and death. The generation length reflects the likely fire interval.

Distribution

The taxon is uncommon and confined to near-coastal areas eastward from about Cape Conran (VicFlora 2016).

Habitat

The taxon occurs in near-coastal swamps and wet heathlands (VicFlora 2016).

Threats

The primary threat to the taxon is habitat contraction because of climate change-induced drying and warming. The bushfires of 2019/20 are likely to have overlapped the areas in which the Razor Sword-sedge occurs, but any impacts are yet to be determined. Plants are tolerant of fire, except when extreme fires burn into the peat layer. Peat fires are now an increasing risk. The taxon's habitat is further threatened from pugging and wallowing by Sambar Deer (*Rusa unicorn*) and excavation of wet soils in swampy areas by feral Pigs.

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Despite occurring swampy areas, recruitment failure due to drought is not a high risk, as the rhizomes are hardy.

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> <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 Vulnerable

The population reduction over the next 100 years is projected to be 15 to 40%, based on (b), (c) and (e) above.

This is based primarily on contraction of habitat, and in the longer future, increased drying of habitat and the risk of fires in the peaty substrate.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 105 to 150 year period, including both past and future (up to 100 years in the future), is suspected to be 10 to 30%, based on (b), (c) and (e) above.

Both past and future reduction are likely because of habitat contraction, and other 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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,348 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale. It has a patchy distribution with most occurrences isolated from each other at separations exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal. Some propagules may be spread by ants, or water, but with a dispersal range at the 10-100m scale. This precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have 1 location, and has a continuing decline in (ii), (iii) and (v) above based on the current and projected impact of the identified threats, particularly climate change-induced drying and warming.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 80 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is severely fragmented, has 1 location and has a continuing decline in (ii), (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:

Ineligible under Criterion C

It is suspected that there are 1,000 to 10,000 mature individuals, but this qualifier is too weak to meet this criterion.

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:


Ineligible under Criterion D

It is suspected that there are 1,000 to 10,000 mature individuals which exceeds the thresholds for criterion D.

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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VicFlora (2016). Flora of Victoria, Royal Botanic Gardens Victoria: *Lepidosperma limicola*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/7616bc51-4b41-4c13-a1f7-7c2ed47fbf53>