

Austrostipa puberula Fine-hairy Spear-grass

Taxonomy

Austrostipa puberula (Steud.) S.W.L. Jacobs & J. Everett

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a tufted perennial, culms erect, to 80 cm high, nodes glabrous to pubescent. Leaves glabrous to shortly pubescent, blade inrolled, to 25 cm long and 1-2 mm wide when flattened; ligule ciliate, to 0.5 mm long, auricles with hair-tufts to 3 mm long. Inflorescence a loosely contracted panicle 15-30 cm long. Glumes 8-14 mm long, green or slightly purplish, acuminate, membranous, the lower 1-3 mm longer than upper; lemma 4-6 mm long, maturing to dark brown, smooth except for the scabrous neck, lightly to densely covered with appressed coppery hairs; coma erect, sparse, the hairs hardly longer than those of the body of the lemma; callus 0.7-1.5 mm long; awn twice bent, 30-55 mm long, 8-10 mm to the first bend, scabrous; palea about equal to lemma, with a line of silky hairs down the centre. Flowers Sep (VicFlora 2017). The taxon is often associated with calcareous soils.

Generation Length

The generation length of *Austrostipa puberula* is estimated to be 5 to 10 years. The generation length estimate is based on plant size, life form and genus.

Distribution

The taxon is mostly confined to sandy tracts in the far north-west of the State, with isolated occurrences near Ararat, Horsham, Lake Bolac and Dartmoor. The taxon is often associated with calcareous soils. It is apparently rare, but possibly overlooked in error for the similar, more widespread *Austrostipa eremophila*. (VicFlora 2019).

Habitat

The taxon is often associated with calcareous soils on lighter textured soils (often of aeolian origin) mostly in the Wimmera and southern Mallee (but it is also associated with similar terrain in the south west); it typically occurs in grassy woodland dominated by Buloke, Native Pine or Eucalypts (such as Grey Box, Yellow box and Black box).

Threats

Threats to the taxon are likely to include land clearing, cultivation, irrigation (centre pivot), grazing, weeds, super/chemicals based on a strong association with highly fragmented landscapes on freehold land with little public land (reserves). In addition, the taxon is threatened by climate change.

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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> <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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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			

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Evidence:

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 212 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented, as it mostly occurs in the Wimmera and southern Mallee, where the habitat has been mostly cleared and the remnants are now highly fragmented small parcels scattered across the landscape.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

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 C1 as Vulnerable

It is estimated that there are 5,500 to 27,500 mature individuals. The current population estimate is extrapolated from details from some of the sites.

There is estimated to be a continuing decline of 25% within three generations.

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



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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

Jacobs, S.W.L. and Everett, J. (1996), *Austrostipa*, a new genus, and new names for Australasian species formerly included in *Stipa* (Gramineae). *Telopea* 6(4): 588

Strudel, E.G. von (1854), *Synopsis Plantarum Glumaceum* 1(2): 128 (*Stipa puberula*)

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Austrostipa puberula*. Retrieved from:
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