Threatened Species Assessment

Poa fax
Scaly Poa

Taxonomy

Poa fax J.H. Willis & Court

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(ii,iii,iv,v)c(iv)

The criterion is based on arguably a single location for confirmed and extant subpopulations on gypseous substrates in north-west and potentially a second location for coastal dune sands in far south-west, if confirmed as extant and conspecific.

Species Information

Description and Life History

The taxon is a slender, erect annual, culms scabrous, to 40 cm high. Leaves glabrous, occasionally scabrous; sheath loose; blade flat, rather thin and weak, to c. 10 cm long and 2.5 mm wide; ligule obtuse, thinly membranous, 1-4 mm long. Inflorescence a narrow, interrupted or almost spike-like panicle, with short appressed branches, to 15 cm long. Spikelets strongly compressed, mostly 5-10-flowered, 5-13 mm long; glumes subequal or the upper slightly longer, mostly 3-5-nerved, 2-3 mm long; lemma very obtuse, 3.5-4.5 mm long, 9-11-nerved with prominent grooves between the nerves, densely silky-hairy on the margins and most of the nerves in the lower half; web absent or weakly developed. The taxon flowers from September to October (VicFlora 2017).

Generation Length

The generation length of *Poa fax* is inferred to be 1 to 5 years. This is based on a longevity of less than 2 years and a generation time of 1-5 years, depending on the frequency of good seasons for successful recruitment.

Distribution

The taxon is mostly confined to dune mallee and gypsum plains in the north-west, with a few occurrences from near-coastal sands around Nelson and Port Fairy in the far south-west (VicFlora 2017).

Habitat

The Flora Information System has 24 quadrats that confirm the narrow habitat range of the taxon around margins of saline discharge complexes. There is little support for the dune mallee habitat that is implied VicFlora (2017), which is likely to reflect large quadrat sampling across ecotones. There was no evidence of dune mallee association at any of the 13 1x1m subplots from within the 50m x 20m Raak Plain plot on North Meridian Road (Ian Sluiter pers. comm. 10/7/18).

Threats

A key threat to the core habitat of the taxon is rising ground water at all saline discharge complexes. Salt accumulates at the upper end of the soil profile, even when water table recedes in succeeding drought to background levels. This results in shrinking habitat availability for all taxa with a narrow tolerance range for salinity.

Weed invasion represents a lower level competitive threat to the taxon. It should be noted that quadrat data suggests that there are no exotics dominating the sites, since all have low projective cover with *Spergularia diandra* exceptionally approaching 20% cover.

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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

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.

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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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 5,996 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to be severely fragmented, based on its habitat specificity, the discontinuous occurrence of suitable habitat and the inferred short-range dispersal of seed. This precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have a continuing decline in (ii), (iii), (iv) and (v) above based on the current and projected impact of the identified threats, such as rising ground water at all saline discharge complexes, and weed invasion.

There is inferred to be extreme fluctuations in (iv) above, based on monitoring sites. There was a complete absence of *Poa fax* records in both 1000 m2 and 1 m2 plots at Raak Plain North monitoring sites from 2004. This suggests extreme fluctuations in population size between good seasons and drought seasons, given *P. fax* was recorded in 15 plots and commonly with projective foliage cover of less than 5%, and complete absence from all plots in poor years.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 76 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 a continuing decline in (ii), (iii), (iv) and (v) and extreme fluctuations in (iv) above.

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

Population size cannot be estimated with any confidence since individual subpopulation size fluctuates dramatically in response to seasonal rainfall events.

Criterion D. Very small or restricted population			
	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 km2 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

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

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Poa fax*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/2fb7829c-308a-4b4a-88f4-907e2378bc35