Threatened Species Assessment

Tripogonella loliiformis
Rye Beetle-grass

Taxonomy

Tripogonella loliiformis (F. Muell.) P.M. Peterson & Romasch.

The taxon was previous known as *Tripogon loliiformis* (VicFlora, 2017).

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)c(iv)

Species Information

Description and Life History

The taxon is a small, tufted annual or perennial to 35 cm (but often less than 15 cm high). Leaves sprinkled with fine hairs, or rarely, glabrous; sheath pale; blade closely folded to inrolled, to 5 cm long and 1.5 mm wide when flattened out; ligule ciliate at apex, c. 0.5 mm long. Inflorescence a very slender spike. Spikelets 6-14-flowered, 3-12 mm long, shallowly recessed, remaining erect, the lower ones often rather distant, the upper often overlapping, mostly purplish; glumes obtuse, the lower 1.5-2.2 mm, the upper 2.5-3.5 mm long; lemma ovate, 2-2.5 mm long (excluding awn), obtuse, notched at apex with the midvein exserted as an awn arising from the base of the notch and exceeding lemma by up to 1.5 mm, callus with a dense tuft of silky hairs c. 1 mm long. The taxon flowers most of year, mainly from October to March (VicFlora 2017).

This taxon is one of few 'resurrection plants' native to Victoria. The dry, apparently lifeless foliage has the capacity to rehydrate and become green following substantial rains (VicFlora 2017).

Generation Length

The generation length of *Tripogonella loliiformis* is estimated to be 3 to 6 years. Based on a plausible longevity of 3-10 years. The taxon is only facultatively annual, with a maximum lifespan of 15 years. Recruitment is likely to be cued by seasonal rainfall conditions.

Distribution

The taxon is an uncommon grass of scattered occurrence through drier areas of the state (e.g., Mt Arapiles, basalt plains just west of Melbourne, Strathbogie Ranges, Killawarra Forest near Wangaratta, Beechworth, Suggan Buggan). The taxon occurs in all mainland states (VicFlora 2017).

Habitat

The taxon usually occurs on shallow soils overlying rock (VicFlora 2017).

Threats

The taxon is likely to have suffered significant historic decline only a proportion of which, however, has occurred within the last 3 generations.

The taxon often occupies moss mats easily disrupted by stock, birds, invertebrate population explosions, almost always on highly skeletal soils with or without moss mats. The taxon is highly intolerant of any competition including the ubiquitous native moss *Hypnum cupressiforme* var. *lacunosum*.

Current and future threats include climatic drying and competition from exotic weeds, including *Briza maxima*, *B.minor*, *Hypochoeris glabra*, *Silene gallica*, *Petrorhagia dubia*, and other exotic annual competitors in wetter years. The taxon is also threatened by feral goats, rabbits, and house mouse.

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

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 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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 431 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 naturally at the regional and landscape scales and anthropogenically at the landscape scale. Geographically discrete occurrences are separated at distances likely to exceed the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal.

It is estimated to have 4 locations. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

The taxon is subject to extreme fluctuations in population size in response to seasonal conditions.

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

Whilst there is no available estimate of population size, any estimate would be difficult to interpret given seasonal fluctuations.

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.

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Tripogonella loliiformis.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/c1fcce25-80f9-46d2-a1a4-f88164b422ed