Threatened Species Assessment

Rytidosperma nivicola
Snow Wallaby-grass

Taxonomy

Rytidosperma nivicola (Vickery) Connor & Edgar

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 A3ce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a tufted or rhizomatous perennial, commonly ascending through *Sphagnum* moss or other alpine bog vegetation. Culms to 30 cm high, rarely more. Leaves virtually glabrous; blade rather rigid, tightly inrolled, to 10 cm long and c. 0.5 mm diam. Panicle narrowly ovate or linear, often appearing racemose, 2-3 cm long. Spikelets usually strongly purplish, mostly 4-5-flowered; glumes subequal, acute, 5-7 mm long; lemma ovate in outline, 1.5-2.5 mm long, with hairs reduced to marginal and callus tufts, or rarely very sparsely scattered on the back; lateral lobes erect, 1-2 mm long, shortly awned at apex, ciliate along margins; central awn exceeding lateral lobes by 1-1.5 mm; palea obovate, exceeding sinus by c. 1 mm and approaching tips of lateral lobes. Flowers January to March (VicFlora 2017).

Generation Length

The generation length of *Rytidosperma nivicola* is estimated to be 15 to 25 years. This is based on a plausible longevity of 25-30 years and the likelihood that the taxon recruits opportunistically in response to small-scale episodic disturbance events. The taxon is unlikely to be dependent on fire for recruitment although rare fire events may promote an additional recruitment pulse.

Distribution

The taxon is restricted in Victoria to the Bogong High Plains, Baw Baw Plateau, Mt Buffalo and the Snowy Range area north of Licola, but is scattered and not common. It also occurs in New South Wales and Tasmania (VicFlora 2017).

Habitat

The taxon occurs in wet alpine heathland and mossbed communities where it commonly ascends through *Sphagnum* moss or other alpine bog vegetation.

Threats

The taxon is likely to have suffered significant historic decline as a consequence of habitat degradation by stock prior to the cancellation of alpine grazing licences throughout the Alpine National Park. Cattle degraded the habitat by browsing palatable vegetation, trampling and pugging bogs and through eutrophication from faeces resulting in exotic weed invasion.

Whilst the habitat and the taxon may have partially recovered following grazing exclusion, the impact of exotic herbivores on alpine bogs and other wetlands has continued with the increase in density of feral horses and, most recently, the explosive increase in Sambar Deer density across the Bogong High Plains in particular, and elsewhere throughout the Victorian range of the taxon.

In the longer term, the fragile wetland habitat of the taxon is threatened by climatic drying and warming and the decline in snow melt which feeds the headwater streams throughout the Victorian range of the taxon.

The taxon is also threatened by the increasing frequency and intensity of fire which, in concert with climatic drying, increases the risk of competition from shrubs encroaching on wetland margins and the risk of destruction of highly organic peat substrates supporting *Sphagnum* bogs.

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:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 45 to 75 years is projected to be 30 to 50%, based on (c) and (e) above.

This is based on historic impact of cattle and sheep grazing, particularly prior to the Second World War, and the continuing impact of feral horses and Sambar.

Eligible under Criterion A3 as Endangered

The population reduction over the next 45 to 75 years is projected to be 30 to 50%, based on (c) and (e) above.

This is based on the projected impact of the identified threats.

Eligible under Criterion A3 as Vulnerable

The population reduction over any 45 to 75 year period, including both past and future, is estimated to be 30 to 50%, based on (c) and (e) above.

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 160 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 subregional and landscape scales, with geographically isolated occurrences separated by distances typically exceeding the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal.

It is estimated to have 1 location based on the impact of the identified threats which are expected to operate consistently across the Victorian range of the taxon.

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:

Ineligible under Criterion C as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

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: *Rytidosperma nivicola*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/5e3e4d3a-2e66-433a-a73a-0ff964069afa