Threatened Species Assessment

Poa clivicola
Fine-leaf Snow-grass

Taxonomy

Poa clivicola Vickery

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,v)

Species Information

Description and Life History

The taxon is a tufted glabrous perennial, culms erect, to c. 60 cm high, sometimes slightly glaucous. Leaves lightly to strongly scabrous, rarely almost smooth; sheath pale; blade inrolled, terete or slightly angular, to c. 15 cm long and 0.5 mm diam., often expanded into a small knob-like swelling at the base; ligule truncate, firmly membranous, 0.5-1.5 mm long. Inflorescence mostly c. 9 cm long, to 7 cm wide at maturity. Spikelets 2-7-flowered, 3-6 mm long, green or purplish; glumes 3-nerved, 2.5-4 mm long, sub-equal, or the lower shorter by up to 0.5 mm; lemma 5-nerved, 3-4.5 mm long, entirely glabrous or sparsely hairy along the keel near its base; web absent or reduced to a few short, weak hairs. Flowers December-February (Vic Flora 2019).

Generation Length

The generation length of *Poa clivicola* is estimated to be 10 to 30 years. This is based on field survey observations of alpine tussock grasslands over many years, noting that tussock death is a relatively rare phenomenon and most taxa (*Poa clivicola* included) resprout following fires (N.Walsh pers. obs.). Seedling recruitment is relatively rare, usually following a local disturbance, and plants are likely to commence flowering/fruiting in their second or third season (delayed due to short growing season for alpine taxa).

Distribution

Poa clivicola occurs through the Victorian high country from near Mt Wellington east to the NSW border: e.g., between Mt Wellington and Mt Howitt, Dargo High Plains, Dinner Plain, Nunniong Plateau, the Mt Wombargo-Cobberas area, and higher mountains near Bendoc (VicFlora 2019). It also occurs in New South Wales and Tasmania.

Habitat

Poa clivicola occurs in damp alpine and subalpine grassland or grassy woodland communities, particularly (but not exclusively) those developed on basaltic soils (VicFlora 2019), mostly at altitudes between 1,100 and 1,600m.

Threats

Alpine taxa are prone to range contraction due to climate change, of which the impacts are likely to be seen first in marginal, lower-elevation sub-populations as more generalist taxa from lower altitudes expand their altitudinal range. *Poa clivicola* resprouts following fire (N.Walsh, pers. obs.), and it is unlikely that fires would occur in such

close succession as to deplete root carbohydrate reserves. Those of similar alpine taxon *P. fawcettiae* had returned to post-fire levels after about 9 months in a study by Tolsma *et al*. (2010). Sambar Deer (*Rusa unicolor*), horses and cattle (on the Nunniong Plain where grazing licenses persist) are likely to graze the taxon, but it has been observed to persist under fairly high grazing regimes on the Dargo High Plains where it is locally common (N.Walsh, pers. obs.).

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 a reduction in population (criterion A2). 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 B1 as Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 10,848 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is projected to be severely fragmented based on the taxon's limited dispersal ability, the barriers to dispersal, and/or the lack of habitat separating the individuals. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

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

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 265 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 1 location and has a continuing decline in (i), (ii), (iii) and (v).

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 are no estimates of populations at any of the taxon's occurrence. It can be dominant over some hectares and the number is likely to be >10,000, but no certainty exists around this.

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:

Ineligible under Criterion D

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

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

Tolsma, A.D., Tolhurst, K.G., Read, S.M. (2010). Effects of fire, post-fire defoliation, drought and season on regrowth and carbohydrate reserves of alpine snowgrass *Poa fawcettiae* (Poaceae). *Australian Journal of Botany,* 58, 157-168 (2010).

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Poa clivicola.* https://vicflora.rbg.vic.gov.au/flora/taxon/b91fdf5f-17fc-4e67-b8f1-cd22dbbd12e4