

Panicum queenslandicum var. *queenslandicum* Coolibah Grass

Taxonomy

Panicum queenslandicum var. *queenslandicum* Domin

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(iii)+2ab(iii)

Species Information

Description and Life History

The taxon is a tufted perennial. Culms erect, to 60(-80) cm high; nodes glabrous. Leaves glabrous; sheathes pale to purplish; blade loosely inrolled to flat, to 25 cm long and 4 mm wide; ligule 1-1.5 mm long, long-ciliate. Panicle 10-20 cm long and almost (or quite) as wide as long, fully exerted at maturity, primary and secondary branches finally widely spreading; lowest node of inflorescence with whorled branches. Pedicels flattened, their apices angular. Spikelets 3.5-5 mm long, often dark purplish; lower glume 3- or 5-nerved, acuminate, 2.5-3.5 mm long; rachilla exposed for c. 0.3 mm between glumes; upper glume 5- or 7-nerved, acuminate, 3.5-4.8 mm long; lemma of lower floret equal to upper glume or slightly shorter; palea of lower floret rudimentary or up to c. half as long as its lemma; fertile lemma obtuse to acute at maturity, 2.3-2.7 mm long, hard, shining, dorsally rounded; palea subequal to lemma, flat or slightly convex. The taxon flowers in February (1 record) (VicFlora 2016).

Generation Length

The generation length of *Panicum queenslandicum* var. *queenslandicum* is suspected to be 5 to 25 (midpoint 15) years, based on the tufted perennial habit of the taxon and the likelihood that it recruits episodically in response to seasonal conditions. Given that the taxon is inferred to be a C4 grass, it is also based on the likelihood that it recruits well following heavy summer rainfall events, which are projected to increase the frequency in response to climate change.

Distribution

The taxon is known from two collections in north-central Victoria (Nathalia and Numurkah areas) (VicFlora 2016).

Habitat

The taxon occurs remnant *Eucalyptus microcarpa* grassy woodland (VicFlora 2016). Quadrat data collected close to the Victorian border in the New South Wales Riverina suggests that the habitat of the taxon is moderately to exceedingly weedy and supports the inference that the taxon is associated with grassy woodland dominated by either *Eucalyptus microcarpa* or *E. camaldulensis*.

Threats

The taxon is very likely to have experienced significant historic decline in the extent of its habitat in response to agricultural land clearance. Since the taxon is likely to be advantaged by the increasing frequency of summer

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rainfall, it is also possible that population density has increased despite a long-term decline in available habitat. There is also a possibility that this taxon, which occurs at the limit of its known range, is potentially capable of colonising new habitats and extending its range southwards into Victoria. In addition, the habitat of the taxon is highly susceptible to current and ongoing weed invasion as evidenced by quadrat data collected close to the Victorian border in the New South Wales Riverina. These interstate sites are moderately to exceedingly weedy, suggesting that the Victorian occurrence is also highly susceptible to weed invasion. Any additional unprotected occurrences may also be threatened by stock grazing.

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

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.

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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			

Evidence:

Eligible under Criterion B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the Area of Occupancy (AoO) to ensure consistency with the definition of AoO as an area within EoO.

It is estimated to have a single location, based on the only known Victorian occurrence at Katamatite Bushland Reserve.

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

Eligible under Criterion B2 as Critically Endangered

The AoO across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon has 1 location and a continuing decline in (iii) above.

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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

The taxon is known in Victoria by a single specimen taken in 1995 in Katamatite Bushland Reserve with no record of population size.

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

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 (2016). Flora of Victoria, Royal Botanic Gardens Victoria: *Panicum queenslandicum* var. *queenslandicum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/bae65ddd-a842-4bb6-a24e-9146439eaf2c>