

Malacocera tricornis Goat Head

Taxonomy

Malacocera tricornis (Benth.) R.H. Anderson

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion A2bce

Species Information

Description and Life History

The taxon is a weak, decumbent to erect shrub, to c. 60 cm high. Leaves 5-17 mm long, usually ascending with slightly recurved tips, covered with white to tawny, semi-appressed silky hairs. Flowers solitary. Fruiting perianth Y-shaped, the processes 4-8 mm long. The taxon fruits from August to November (VicFlora 2019).

Generation Length

The generation length of *Malacocera tricornis* is inferred to be 10 to 20 years. The longevity is plausibly 5-20 years. Since recruitment is likely to be cued by flood as well as good winter rain, a notional generation time of 20 years is suggested based on an estimated pre-European settlement flood interval. This interval is here placed within a slightly broader band to allow for a continuous presence of floodwater across the habitat range, including shallow depressions on the higher floodplain of the far north-west of Victoria.

Distribution

The taxon is occasional on the Murray River floodplain from Boundary Bend downstream to the South Australian border. It also occurs on inland parts of all mainland states (VicFlora 2019).

Habitat

The taxon occurs on clay pans and heavy soils of alluvial flats (VicFlora 2019).

Threats

Cunningham et al. (1992) notes that the taxon is "not keenly selected by stock but generally regarded as a useful forage species". This indicates that the taxon is palatable to stock and plausibly subject to historic decline in population density across its Victorian range, although it is likely to have recovered successfully following removal of livestock in the last 25 years west of Kullnine.

The relevant habitats are not subject to fire but are threatened by modified hydrological regimes. Elevated parts of the floodplain are no longer subject to flooding and aquifer fluctuations, therefore they are less reliable as sources of water for promoting seed germination, seedling recruitment success and survivorship of adults. The taxon is potentially threatened by reduced reliability of winter rains, although post-Millennium Drought recovery suggests

that the taxon is resilient under current climatic conditions. There is less confidence that the taxon is adapted to future climatic drying and changing seasonality of rainfall, that is, change from winter to summer rain.

Weed invasion, specifically by the native *Dissocarpus biflorus* (Twin-flower Saltbush), is regarded as a relatively low threat. Representative quadrats suggest that numerous weeds are present at many sites, most of low cover and abundance, although some within higher cover and abundance. The taxon is still threatened by livestock grazing from Mildura west to Lake Cullullaraine.

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 style="text-align: center;">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:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 30 to 60 years is estimated to be 10 to 30%, based on (b), (c) and (e) above.

Historic decline resulting from land clearance is confidently believed to exceed 30%. The proportion of decline in the last 60 years is less. The taxon appears to have a reasonable capacity to recover following the removal of grazing pressure.

The causes of the reduction may not have ceased, be understood or be reversible.

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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 9,468 km² and the Area of Occupancy (AoO) is estimated to be 317 km², but other thresholds under this criterion have not been met.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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 km ² 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

Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. and Leigh, J.H. (1981). *Plants of Western New South Wales*. Soil Conservation Service of N.S.W.

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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Malacocera tricornis*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/fe75b2d5-06ad-4149-9ba1-87afa2b1e2ab>