

Gynatrix macrophylla Gippsland Hemp Bush

Taxonomy

Gynatrix macrophylla N.G. Walsh

Synonymn *Gynatrix* sp. (Eastern Victoria)

Current conservation status

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

Proposed conservation status

Vulnerable in Australia

Criteria A3ce+4ce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1

Species Information

Description and Life History

The taxon is a shrub or small tree to c. 5 m high. Leaves ovate to broad-ovate, 4-18 cm long, 2.5-14 cm wide, cordate at base, margins crenate, lower or both surfaces obscured, grey or whitish from a dense layer of stellate hairs. Calyx 5-6 mm long, densely stellate-pubescent; petals of male flowers elliptic, 6-10 mm long; female flowers with petals oblong, barely exceeding calyx. The fruit and seeds are as for *Gynatrix pulchella*. Flowers most of year (Walsh 1996).

Generation Length

The generation length of *Gynatrix macrophylla* is estimated to be 30 to 50 years. The similar, more common *G. pulchella* resprouts after fire and recruits from long-lived soil-stored seed, is tolerant of establishment in mature vegetation, takes 5 years to reach reproductive maturity, and lives for around 20 years. Given the infrequency of historic disturbance, individuals are likely to live to full age and replenish the soil seed bank.

Distribution

The taxon is endemic in Victoria, where it is largely confined to areas on and south of the Dividing Range in the east (e.g. Howqua, Rose and Kiewa Rivers north of the Divide and Macalister, Buchan, Mitchell and Murrindal Rivers and their tributaries south of the Divide), and rather rare (VicFlora 2017).

Habitat

The taxon is largely confined to rocky streamsidess and gullies on and south of the Dividing Range.

Threats

The taxon is preferentially browsed by deer, especially Sambar Deer (*Rusa unicolor*) (SAC 2007) which are in large numbers, and it can be thrashed by antlers. Deer activity is worse in drought years when deer congregate preferentially in the taxon's habitat. It may also be browsed by goats in some areas. The preferred habitat of streamsidess and gullies is subject to blackberry invasion, leading to loss of habitat.

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;"><i>based on any of the following:</i></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 A3 as Endangered

The population reduction over the next 90 to 100 years is projected to be 40 to 60%, based on (c) and (e) above, due to major increases in Sambar deer numbers and blackberry infestations.

Eligible under Criterion A4 as Endangered

The population reduction over any 90 to 150 year period, including both past and future (up to 100 years in the future), is observed to be 40 to 60%, based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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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 and B2 as Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 13,554 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) across the taxon's range is estimated to be 128 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

Mapping suggests that there are six locations, each generally separated from others by 30 km or more. The type and intensity of threats are likely to vary in these locations.

It is estimated to have a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the impacts of the identified threats, such as browsing by herbivores and blackberry invasion.

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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:

Eligible under Criterion C1 as Vulnerable

It is estimated that there are 3,000 to 5,000 mature individuals. There are only 34 records in the VBA, most of which are of individual scattered plants, with quadrat cover less than 1%. Assuming that each record is associated with only 20 scattered plants, and that the 34 records represent less than a quarter of the total population, then the overall population is likely to be at least 2,700 plants, albeit with considerable uncertainty.

There is projected to be a continuing decline of 40 to 60% within three generations.

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:

Ineligible under Criterion D

It is estimated that there are 3,000 to 5,000 mature individuals which exceeds the thresholds for criterion D.

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:

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SAC (2007) Final recommendation on a nomination for listing: 'Reduction in biodiversity of native vegetation by Sambar (Cervus unicolor)'. Flora and Fauna Guarantee Act Scientific Advisory Committee. Department of Sustainability and Environment, Melbourne.

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Gynatrix macrophylla*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/f5c79466-fc57-4fd8-8bb5-20868a1c08c6>

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