Threatened Species Assessment

Austrobryonia micrantha
Mallee Cucumber

Taxonomy

Austrobryonia micrantha (F. Muell.) I. Telford

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(ii,iii,iv,v)c(iv)

Species Information

Description and Life History

The taxon is an annual from a perennial rootstock; stems ribbed and scabrous. Leaves broadly ovate to palmate, 1.5-4.5 cm long, 1-5 cm wide, dentate to 5-7-lobed, cordate at base, sparsely scabrous on both surfaces; petiole 0.5-5 cm long, scabrous, ribbed. Male and female flowers in 2-5-flowered clusters on pedicels 2-8 mm long; petals 1-2 mm long, yellow-green. Fruit 1-1.5 cm diam., globose, glabrous, green with faint yellow stripes, on pedicels to 1.5 cm long; seeds c. 5 mm long, compressed, smooth, white-yellow, margin slightly thickened. The taxon flowers from November to April (VicFlora 2017).

Generation Length

The generation length of *Austrobryonia micrantha* is estimated to be 3 to 7 years. The taxon is observed to germinate and reach maturity within a few months following drawdown of its lagoon or lakebed habitat. On the basis of interpretation of likely water regimes of the relevant habitats, it is estimated that, on average, suitable conditions for growth would have been available at a frequency of around one in three to one in seven years. Observations of a post-watering response at Little Lake Heywood suggest that the seed is capable of retaining viability over very prolonged dry periods.

Distribution

In Victoria, the taxon occurs on the floodplain of the Murray River in the far north-west, with southerly occurrences (e.g. at Lake Tyrrell, Wyperfeld National Park) (VicFlora 2017).

Habitat

The taxon occurs on drying or dried clay soils, for example, lake-beds, ephemeral watercourses and lagoons (VicFlora 2017).

Threats

Potential threats to the taxon include impacts related to climate change, for example, decreased rainfall and decreased frequency and amplitude and duration of flooding. Another important threat is altered hydrology due to inappropriate water regimes. This can lead to, for example, unsuitable delivery of environmental water leading to failed recruitment, scalding or drowning of plants prior to seed production or ecological shifts to other vegetation assemblages; and sustained inundation for recreational or irrigation purposes, as well as the salinisation of wetland

habitat. Other potential threats include soil disturbance due to rooting by pigs and pugging of wetlands by cattle and other stock, and, on occasion, competition from weeds.

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 or will be a reduction in population sufficient to meet any threshold for Criterion A.

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 28 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented, as it is restricted to very localised patches of suitable wetland habitat, including a number of sites which are widely disjunct.

It is inferred to have 1 location as the range of relevant threats applies across the entire distribution of the relevant wetland habitat.

T has a continuing decline in (ii), (iii), (iv) and (v), based on the current and projected impact of the identified threats.

It is estimated to have extreme fluctuations in (iv) above. The taxon germinates on the mud floors of drying wetlands, and populations can be absent for long periods between suitable conditions for growth. Therefore, the population sizes can vary substantially between different drawdown events.

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

Relevant population data are unavailable and the populations are subject to extreme fluctuations.

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. 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 (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Austrobryonia micrantha*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/ce6930e7-c068-4b7e-8e3f-533701004430