



Callitriche brachycarpa Short Water-starwort

Taxonomy

Callitriche brachycarpa Hegelm.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2001).

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(i,ii,iii,iv,v)c(iv)

Species Information

Description and Life History

The taxon is mostly terrestrial, creeping. Leaves obovate, 1.6-7 mm long, 0.7-5 mm wide, 3-veined, petiolate; upper leaves not rosetted. Flowers regularly paired, a male and female together in 1 axil; bracteoles usually absent, rarely linear and deciduous; stamen 0.5-2.5 mm long, filament often longer than ripe fruit; styles erect, 1-1.5 mm long, persistent. Fruit subcordate, 0.6-1 mm long, 0.8-1.3 mm wide, sessile, not or slightly thickened at base, light brown; wing very narrow. Flowers and fruits recorded January and February (VicFlora, 2019).

Generation Length

The generation length of *Callitriche brachycarpa* is estimated to be 1 to 5 years. The taxon is typically ephemeral on seasonally wet substrates along streams or on mud of drying lagoon floors. The time range allows for the repeat of suitable conditions or circumstances where plants may persist longer, such as cooler habitats with more reliable moisture.

Distribution

In Victoria, the taxon is currently known only from the Otway Ranges and adjacent plains, and the northern outskirts of Melbourne (VicFlora, 2019).

Habitat

The taxon occurs on wet to damp soils on sites subject to inundation (VicFlora, 2019).

Threats

Threats to this taxon at various locations include the impacts of climate change (decreased rainfall, and drying of springs and soaks), decreased frequency, amplitude and duration of flooding, eutrophication, pollution, impacts of feral animals (notably deer and pigs), pugging of wetlands by cattle and other stock, weed invasions and modifications to habitat associated with changed land-use.

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>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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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.

Callistemon nyallingensis

Boggy Creek Bottlebrush

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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 9,047 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, based on being restricted to a very small number of very localised and disjunct patches of suitable habitat. It is suspected to have 3 locations, and has a continuing decline in (i), (ii), (iii), (iv) and (v) based on the identified threats.

It is estimated to have extreme fluctuations in (iv) above, based on the population size of this ephemeral herb fluctuating significantly between years, and it can apparently not be evident over a number of growth seasons between suitable drawdown conditions.

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 VBA.

As above, the taxon is severely fragmented, is suspected to have 3 locations, has a continuing decline in (i), (ii), (iii), (iv) and (v) and extreme fluctuations in (iv) above.

Callistemon nyallingensis

Boggy Creek Bottlebrush

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 is insufficient evidence to determine the number of mature individuals.

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.

SAC (2001) Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 568 *Callitriche brachycarpa*



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VicFlora (2019) Flora of Victoria, Royal Botanic Gardens Victoria: *Callitriche brachycarpa*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/e74702e3-27b4-484c-9406-d37766929b0a>