



Triglochin hexagona Six-point Arrowgrass

Taxonomy

Triglochin hexagona J.M. Black

Current conservation status

Categorised as Vulnerable 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 a slender annual herb, 2.5-7.5 cm high. Leaves flat and thread-like, (2-)2.5-7.5 cm long, usually equal to or exceeding inflorescence. Scape at fruiting erect or ascending, 1.3-5.2 cm long; fruiting part 0.4-1.3 cm long, with 10-20(-25) fruits. Fruits angular-oblong, 1-1.2 mm long, 0.8-1 mm wide, sessile (pedicel up to 0.2 mm long); carpels 6, 3 fertile carpels alternating with 3 undeveloped sterile ones; fertile carpels flat to slightly convex dorsally when dry, distally and basally with 4 lateral wings c. 0.1-0.3 mm long, such that each carpel appears 6-angled when viewed dorsally; sterile carpels remaining attached to pedicel. The taxon fruits mostly from September to January (VicFlora 2019).

Generation Length

The generation length of *Triglochin hexagona* is estimated to be 5 to 25 years, based on the plausible pre-settlement frequency of flood events or exceptional rainfall events. The taxon is inferred to recruit episodically in response to flood events or exceptional rainfall events.

Distribution

The taxon is apparently restricted in Victoria to the western Wimmera with an outlying concentration of records on the lower flood plain of the Avoca River. The taxon occurs also occurs in Western Australia, Northern Territory, South Australia, Queensland, and New South Wales (VicFlora 2019).

Habitat

The taxon occurs in slightly saline areas, in sandy to clayey soils (VicFlora 2019).

Threats

The taxon has suffered severe historic decline in response to the reduced reliability of flood events, notably in the frequency of floods traversing the Wimmera River as far as Lake Hindmarsh as a consequence of water diversion for irrigation and town water supplies. The taxon may also have been eliminated from some sites by habitat loss or modification in response to agricultural activity. The taxon continues to be threatened by reducing reliability of both flood events and rainfall events in response to climatic drying.

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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.

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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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 32 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented naturally at the regional and landscape scales and anthropogenically at the landscape scale. Geographically discrete occurrences are separated at distances likely to exceed the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal.

It is estimated to have 3 locations. It has a continuing decline in (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats

It is estimated to have extreme fluctuations in (iv) above, following successive recruitment events in response to fluctuating seasonal conditions.

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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

There is no available estimate of population size which is, in any case, subject to extreme fluctuation between successive recruitment events.

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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Triglochin hexagona*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/c1834e2f-3187-4ecb-8670-b8aae4a66806>