



Atriplex angulata Angular Saltbush

Taxonomy

Atriplex angulata Benth.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2003).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); D

Species Information

Description and Life History

The taxon is an annual or short-lived perennial subshrub to c. 50 cm high, monoecious. Leaves petiolate, obovate to rhombic, tapered gradually toward the base, widest above midway, 15-40 mm long, 10-25 mm wide, usually sinuate-dentate in upper half, mealy or shining grey on both surfaces. Male flowers in small clusters forming short terminal spikes, female flowers clustered in axils. Fruiting bracteoles free and fan-shaped or reniform in upper third or half with raised radiating nerves, fused and narrowly cylindrical below, to c. 10 mm long, 8 mm wide at maturity. The taxon flowers in May and September (2 records) (VicFlora 2019).

Generation Length

The generation length of *Atriplex angulata* is estimated to be 5 to 25 years. The taxon is an annual with a short-lived perennial habit. The taxon has a likely dependence on reliable seasonal rainfall events for successful recruitment, at frequencies determined by El Niño and La Niña cycles.

Distribution

The taxon is known in Victoria by collections beside the Murray River at Boundary Bend in (1955), where its persistence has not been confirmed since suggesting this occurrence is likely to have become locally extinct. It is also known from the margin of an ephemeral lake between Swan Hill and Kerang (2013) (VicFlora 2019).

Specifically, the taxon occurs at Lake Kelly near the southern/south-eastern shore, 9.2 km east-north-east of Mystic Park settlement. It was also reported in 2013 from Lake Tutchewop, 7 km west-north-west of Lake Kelly.

Habitat

The taxon is recorded from mallee sandhill country and from the margin of an ephemeral lake (VicFlora 2019).

Threats

The taxon is inferred to be threatened by a wide range of stochastic anthropogenic threats, including agricultural activity and inadvertent land management activity. These threats are inferred from the taxon's occurrence on freehold land and on unreserved public land (e.g. Lake Tutchewop Wildlife Reserve, which is managed for game hunting), in a highly fragmented agricultural landscape.

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.

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to be severely fragmented anthropogenically at the landscape scale and potentially, if extant at Boundary Bend, naturally at the subregional scale. These sites occur at separations which greatly exceed the dispersal range of the taxon, which precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats, including agricultural activity and inadvertent land management activity.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

Atriplex angulata

Angular Saltbush

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

It is estimated that there are 5 to 20 mature individuals, but other thresholds under this criterion have not been met.

Criterion D. Very small or restricted population ^a		Critically Endangered ^a	Endangered ^a	Vulnerable ^a
Number of mature individuals (observed or estimated) ^a		< 50 ^a	< 250 ^a	< 1,000 ^a
D2. Only applies to the VU category ^b 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. ^a		- ^a	- ^a	D2. Typically: ^b AoO < 20 km ² or number of locations ≤ 5 ^a

Evidence:

Eligible under Criterion D as Critically Endangered

The taxon is estimated to have 5 to 20 mature individuals, based on field observations.

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 (2003). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 634 *Atriplex angulata*.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Atriplex angulata*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/496b1170-8ffa-4f67-8cd5-cec133175964>