

## *Atriplex paludosa* subsp. *paludosa* Marsh Saltbush

### Taxonomy

*Atriplex paludosa* subsp. *paludosa* R. Br.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criteria A2bc; B2ab(ii,iii,v)

### Species Information

#### Description and Life History

The taxon is a decumbent or sprawling shrub, to c. 1.6 m high, chiefly dioecious. Leaves narrowly elliptic to oblong, 12-40 mm long, 2-8 mm wide, margins entire, rarely coarsely toothed, upper surface green and glabrous, lower surface densely mealy and whitish. Male flowers in dense distinct or continuous globose clusters within simple or branched spikes. Female flowers few in upper axils or clusters along terminal leafless spikes to c. 15 cm long. Fruiting bracteoles sessile, fused and often slightly fleshy near base, green or somewhat mealy, triangular or broadly ovate, truncate or slightly cordate at base, entire or with a few teeth above midway, mostly 7-10 mm long and wide, dorsal appendages absent. The taxon fruits most of year (VicFlora 2018).

#### Generation Length

The generation length of *Atriplex paludosa* subsp. *paludosa* is estimated to be 20 to 40 years. The recruitment cues are unknown for this taxon, and the seedlings are generally not observed in the wild. Therefore, the generation length is based on the potential longevity of plants, which is estimated to be between 20 and 40 years.

#### Distribution

The taxon occurs west from Wilsons Promontory (where it is apparently absent), including, for example, French Island, Tooradin, Werribee, Queenscliff, and Port Fairy. It also occurs in SA and Tasmania.

It should be noted that records from north-western Victoria are excluded from this assessment as there is doubt over the identification and occurrence status of plants. These occur in a very atypical habitat (i.e. mallee rather than coastal mangrove) and do not display all features for subsp. *paludosa*. It is quite possible they are subsp. *cordata*, which also occurs in inland sites in SA. Records also indicate that only single plants occur at these sites, therefore, these may represent naturalised or planted occurrences.

#### Habitat

The taxon is locally common on the fringes of coastal and near-coastal saltmarshes (VicFlora 2018).

#### Threats

This taxon is threatened by land clearing and development, particularly near industrial areas in Port Philip Bay and Western Port. Much of the habitat of this taxon has been developed or damaged for industry and, increasingly, for

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housing developments in the Altona area. Sea level rise may threaten this taxon with saltmarshes inundated. Many areas immediately inland of marshes has been cleared or developed, meaning that there is no potential for this community type to move inland as sea level rises. Weed invasion, particularly by aggressive coastal grasses, may impact this taxon, in particular seedling recruitment, which is likely to be smothered by these fast growing grasses.

## 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> <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>			

## Evidence:

### Eligible under Criterion A2 as Endangered

The population reduction over the past 60 to 120 years is estimated to be 30 to 50%, based on (b) and (c) above. The causes of the reduction may not have ceased, be understood or be reversible.

Past decline is based on the high levels of modification and clearing of coastal areas since European settlement in Victoria. It is estimated that over the past 120 years up to 50% of the habitat of this taxon has been removed for industry and shipping etc.

### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 60 to 10 years is projected to be 30%, based on (b), (c) and (e) above.

The projected reduction is based on potential loss of habitat particularly in the Port Philip area due to sea level rise and continued development.

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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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 300 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

It is estimated to have two locations. Compared to subpopulations in agricultural landscapes, subpopulations in developed/industrialised landscapes are likely to be at greater risk of habitat loss and lack the ability to move inland following sea level rise. As such these are treated as different locations.

It has a continuing decline in (ii), (iii) and (v) above, based on the current and projected impact of the identified threats, including the ongoing development of marshy areas and weed invasion.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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				

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## Evidence:

### Ineligible under Criterion C

It is estimated that there are 20,000 to 80,000 mature individuals, which exceeds the thresholds for criterion C.

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

## Evidence:

### Ineligible under Criterion D

It is estimated that there are 20,000 to 80,000 mature individuals.

**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](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Atriplex paludosa* subsp. *paludosa*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/7dcbf312-8cb6-4530-8048-7c2c93ceabaa>