

Posidonia australis Fibre-ball Weed

Taxonomy

Posidonia australis J.D.Hooker 1858.

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

Species Information

Description and Life History

Posidonia australis, commonly known as a seagrass, is a submerged, long-lived marine rhizomatous perennial forming extensive 'meadows'. Rhizomes are more or less horizontal buried in the substrate with erect leaf and flower-bearing stems at nodes; leaves to 50cm long and 1cm wide. Hermaphrodite flowers form at the top of a much-elongated peduncle. Rhizomes can also grow vertically and accumulate sediment. The several fruits on the peduncle result from fertilisation in the water column and pollen is long-filamentous. Ripe fruits are released from the parent plant and float; after a day or two they split open and release a seed in a membraneous envelope, which sinks to the substrate and commences germination. The taxon is dispersed by ocean currents and tides potentially over kilometres.

Generation Length

The generation length of *Posidonia australis* is suspected to be 50 to 100 years. This is based on extrapolation from *P. oceanica* with its documented longevity of 100 to 1000 years (Arnaud-Haond *et. al.* 2012); note however that many threats may cause 'premature' death of plants.

Distribution

Posidonia australis has been recorded in Victoria from Barwon Heads, Jack Smith Lake and Corner Inlet. The two former records are pre-1970.

Habitat

The taxon grows in clear tidal water from 1-15m deep on sand or muddy substrates where water movement (tides, currents) are suitable.

Threats

Threats in the marine environment include exposure to extreme temperatures (heat) at very low tides; sea-level rise increasing the depth of water; storm surge and extreme storms that tear up seagrass beds/meadows; smothering of leaves by the exotic bivalve *Electoma georgiana* which has killed extensive *Posidonia* beds in Corner Inlet, as well as smothering by other floral and faunal epiphytes; the 'top down' fishing effect (Kirkman and Kuo 2012) causing tropic chain disruption resulting in less predation of epiphytes by fish etc., leading to smothering; mechanical damage to seagrass by boat propellers, anchor drag and trawling of the seafloor; dredging by boating

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channels; increased silting (from land-based material) causing smothering of seagrasses; and pollution (e.g. hydrocarbons and other toxins) and eutrophication causing smothering epiphytes to flourish.

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 A3 as Vulnerable

The population reduction over the next 100 years is suspected to be 30%, based on (c) and (e) above.

This is based on the projected impacts of the complex suite of threats operating.

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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 B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 100 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is estimated to have 1 location as all key identified threats apply across its range and can rapidly affect all individuals of the taxon present.

It and has a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the current and projected identified threats, including extreme temperatures, sea-level rise, storms, smothering of leaves, the 'top down' fishing effect, mechanical damage to seagrass, dredging, silt, and pollution.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 40 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to have 1 location and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

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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 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

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