

Heterozostera tasmanica Tasman Grass-wrack

Taxonomy

Heterozostera tasmanica (G. Martens ex Asch.) Hartog

Some authors regard *Heterozostera* as a subgenus of *Zostera*

Current conservation status

Categorised as Rare 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)

Species Information

Description and Life History

Heterozostera tasmanica is a submergent, shortly rhizomatous marine angiosperm to c. 50 cm tall, with erect stems and terminal leaf fans. Plants monoecious but with separate male and female inflorescences on the plant. Pollination occurs under water when the male flowers release the filamentous pollen which lodges on the stigma of female flowers (arranged in a spadix). Whether plants are self-fertile or obligatory outcrossing is unknown. Seeds are dispersed by tidal or ocean currents, and by waterfowl ingesting the fruit. It is unlikely that a seedbank accumulates and the longevity of seeds is unknown. It also reproduces vegetatively by fragmentation of stems with aerial roots. Plants are more or less deciduous in winter, producing often extensive deposits of detritus on beaches.

Generation Length

The generation length of *Heterozostera tasmanica* is suspected to be 20 to 30 years, based on the moderate longevity and natural turnover of plants in the population. Data however are very scant.

Distribution

Heterozostera tasmanica occurs in Port Phillip Bay (on western shoreline) eastwards to Wilsons Promontory and the Gippsland Lakes area (in the marine environment only).

Habitat

The taxon occurs in marine and estuarine habitats on sand and mud substrates, sublittoral, in water up to 35 m deep, although in Victoria it is usually much shallower. It grows sparsely without forming mass meadows (as in *H. nigricaulis*).

Threats

Threats include climate change, with potentially extreme temperatures at low tides when plants may be partially exposed, 'drowning' of seagrasses in deeper water as sea-levels rise, extreme storm events churning up the seafloor and destroying seagrasses, and coastal erosion. Other threats include pollution and eutrophication from land based impacts, decreased salinity from extreme on-land rainfall events, reduction of light in the water column from epiphytes (e.g. algae, invertebrates), sediment and siltation by excessive low-quality catchment runoff; altered

Heterozostera tasmanica

Tasman Grass-wrack

ecosystem processes/function by exotic organisms including algae and a wide range of invertebrates (this particularly applies to Port Phillip Bay). They may also be on-land drought-related effects on marine ecosystem function.

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> <ul style="list-style-type: none"> (a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites 			

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.

Heterozostera tasmanica

Tasman Grass-wrack

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 70 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

It is inferred to have 5 locations. The main threats to the taxon (i.e. fire, climatic drying and warming, habitat loss and fragmentation, weed invasion, fungal pathogens and extreme drought stress) have a non-reversible impact on the individuals of the taxon and occur in a stochastic manner, and have the potential over time to threaten the majority of individuals in the geographic area. There are considered to be five such areas (northern and southern Port Phillip Bay, Westernport, Wilsons Promontory and Gippsland Lakes area) where all the threats may operate but possibly at different time scales.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on current and projected impact of the identified threats.

Heterozostera tasmanica

Tasman Grass-wrack

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 inferred 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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Heterozostera tasmanica Tasman Grass-wrack

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