Threatened Species Assessment

Melaleuca halmaturorum
Salt Paperbark

Taxonomy

Melaleuca halmaturorum F. Muell. ex Miq.

Melaleuca halmaturorum has been widely planted for amenity and shows a ready capacity to naturalise; some of the VBA records are of naturalised populations, e.g. on the Bellarine Peninsula, at Portland, and probably south-east of Rochester. The population on the Fitzroy River estuary, near Tyrendarra, western Victoria, could be naturalised but it is here given the benefit of the doubt.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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

Proposed conservation status

Endangered in Victoria

Criteria A2bce+3ce+4bce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a long-lived tree to 8 m high, usually with several trunks typically forming large monotypic stands. Severe fire kills plants and regeneration is from a long-lived canopy stored seedbank, often with massive episodic recruitment. Reproduction by seed only. Plants are probably predominantly outcrossing but are also self-fertile. Pollination is by insects, especially flies, wasps, bees and beetles for nectar and pollen reward. Seed dispersal is assumed to be mostly passive but water, wind, and birds (seeds adhering externally) are likely implicated.

Generation Length

The generation length of *Melaleuca halmaturorum* is inferred to be 50 to 100 years, based on the taxon's longevity and the low frequency of fires in this fire-sensitive species.

Distribution

The taxon is predominantly in north-west Victoria with one outlier on the coast near the mouth of the Fitzroy River, Tyrendarra.

Habitat

The taxon occurs on saline and subsaline soils, usually periodically waterlogged for several months, on margins of saline/brackish lakes and estuaries, typically with a suite of halophytes (e.g. *Salicornia quinqueflora*).

Threats

Threats include climate change (i.e. decreased rainfall, increased evaporation, extreme temperatures); sea level rise drowning coastal habitats (e.g. Fitzroy River estuary): increased soil salinity; lowering of watertables by intensification of centre pivot irrigation; weed invasion (especially *Lophopyrum ponticum)*; and stock grazing of *Melaleuca* stands (often illegal) on public lands. There is little natural recruitment as a result of grazing.

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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:

Eligible under Criterion A2 as Endangered

The population reduction over the past 150 to 300 years is suspected to be 60 to 80% (midpoint 70%), based on (b), (c) and (e) above.

The taxon has declined significantly since European settlement, as a result of historic destruction of habitat for agriculture.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is suspected to be 30 to 50%, based on (c) and (e) above.

This is based on the impacts of the suite of threatening processes (R. Robinson pers. comm.).

Eligible under Criterion A4 as Endangered

The population reduction over any 150 to 300 year period, including both past and future (up to 100 years in the future), is projected to be 50 to 70%, based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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 B as Endangered

The Area of Occupancy (AoO) is estimated to be 300 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. Subpopulations are scattered over a vast region in western/north-western Victoria, there is little natural recruitment, and many are extremely precarious.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

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. Data unavailable.

Criterion D. Very small or restricted population			
	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 km2 or number of locations ≤ 5

Evidence:

Ineligible under Criterion D

There is insufficient evidence to determine the number of mature individuals.

Data unavailable.

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.

Florabank *Melaleuca halmaturorum* (www.florabank.com.au)

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Melaleuca halmaturorum*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/5750a78a-d073-4e8f-9861-2b06a6ca8f7b

SAC (1991). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 24*Melaleuca halmaturorum*

Victorian Saltmarsh Study (2011) Mangroves and coastal saltmarsh of Victoria: distribution, condition, threats and management. Institute for Sustainability and Innovation, Victoria University, Melbourne.

Randall Robinson pers. comm. to D. Cameron 14/12/2007)