Threatened Species Assessment

Leptospermum emarginatum
Twin-flower Tea-tree

Taxonomy

Leptospermum emarginatum H.L. Wendl. ex Link

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(iii)

Species Information

Description and Life History

The taxon is a shrub to 1.5 m high; bark on smaller stems becoming rough, occasionally shedding in stringy strips. Young stems with a broad flange near base of petiole. Leaves narrowly obovate to obovate, 15-35 mm long, 3-7 mm wide, glabrous (although usually with a tuft of hairs at the apex); apex emarginate, incurved; margins flat to incurved. Flowers c. 9 mm diam.; hypanthium 2-2.5 mm long, glabrous; pedicel 3-5 mm long; sepals triangular, c. 1.5 mm long, glabrous on outer surface (occasionally with ciliate margins), deciduous; petals c. 3 mm long, white; ovary 5-locular, apex glabrous. Fruit deciduous, broadly hemispherical, 4.5-6 mm diam., surface glabrous and wrinkled, valves somewhat woody; seeds c. 1.5 mm long, with a linear-striate surface pattern. Flowers December-January (VicFlora 2017).

Generation Length

The generation length of *Leptospermum emarginatum* is estimated to be 45 to 90 years. The taxon is a long-lived perineal that is likely to recruit sporadically and opportunistically in response to flood events, landslips, and occasional intrusion of fire into its riparian habitat.

Distribution

The taxon occurs in lowlands and foothills east from Heyfield area. It is also found in NSW (VicFlora 2017).

Habitat

The taxon is occasional along rocky verges of watercourses in lowlands and foothills (VicFlora 2017).

Threats

The taxon is at long-term risk from climatic drying which is projected to reduce the extent of suitable habitat. The taxon may also be threatened by fire which has the potential to reduce streamflow during the early stages of forest regeneration.

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2. There is insufficient evidence to determine whether will be a future reduction in population size under criterion A3.

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 B1 as Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8,197 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the subregional and landscape scales, with seed likely to be dispersed by flood waters within localised catchment units.

It is estimated to have 3 locations, and has a continuing decline in (iii) above based on the current and projected impact of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 72 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, has 3 locations, and has a continuing decline in (iii) 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.

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:

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

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014.* Department of Environment and Primary Industries, Melbourne.

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Leptospermum emarginatum*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/f3639508-c4cc-4aee-874f-6bcd4ffbc46a