

Leptospermum turbinatum Shiny Tea-tree

Taxonomy

Leptospermum turbinatum Joy Thoms.

Leptospermum turbinatum has previously been confused with *L. nitidum*, a Tasmanian endemic. *Leptospermum turbinatum* is the largest-flowered, Victorian *Leptospermum* (VicFlora 2019).

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criteria A3c+4c; B1ab(iii)+2ab(iii)

Species Information

Description and Life History

The taxon is a shrub to 3 m high; bark on smaller stems smooth or becoming rough. Leaves elliptic to narrowly obovate, 10-25 mm long, 3-8 mm wide, flat, finally glabrous (rarely a few appressed silky hairs persisting); apex shortly acuminate to acuminate, flat to incurved; petiole 1-2 mm long. Flowers c. 25 mm diam.; hypanthium c. 5 mm long, silky to villous, sessile; sepals narrowly triangular, 4.5-6.5 mm long, acute, silky on outer surface, persisting on fruit; petals 8-10 mm long, white; ovary 5-locular, apex glabrous. Fruit persistent, obconical, 7-12 mm diam., surface ultimately shedding in papery flakes (and becoming gnarled), valves woody; seeds 3-3.5 mm long, with a linear-striate surface pattern. The taxon flowers from October to December (VicFlora 2019).

Generation Length

The generation length of *Leptospermum turbinatum* is estimated to be 80 to 100 years. The taxon has a longevity plausibly exceeding 100 years, although senescent individuals are rarely observed in the field. The generation time is based on intense fire events. The taxon readily recruits from seed post-fire and regularly resprouts post fire. Resprouting individuals typically outnumber seed recruits in stands recovering from intense fire events (Neil Marriott pers. comm. 17/01/2019).

Distribution

The taxon is a Victorian endemic. It is confined to the Grampians in western Victoria and nearby Mts Langi Ghiran, Buangor and Ben Nevis (VicFlora 2019; Thompson 1989).

Habitat

The taxon is known to occupy sandy, sandstone slopes and granitic outcrops (VicFlora 2019; Thompson 1989).

Threats

The taxon is potentially threatened by inappropriate fire regimes and climatic warming and drying which, synergistically, increase the risk of recruitment failure in response to repeat fire events and extreme drought stress.

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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:

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is projected to be 30 to 80 percent (midpoint 50%), based on (c) above.

Future decline is based on the projected impact of increased fire frequency, intensity and scale in conjunction with increased frequency and intensity of extreme drought events. This is likely to result in high levels of mortality within the next few decades and very confidently within the next 100 years (Neil Marriott pers. comm. 17/01/2019).

Eligible under Criterion A4 as Endangered

The population reduction over any 240 to 300 year period, including both past and future (up to 100 years in the future), is projected to be 30 to 80 percent (midpoint 50%), based on (c) above. The causes of reduction may not have ceased, be understood or be reversible.

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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 across the taxon's range is estimated to be 4,357 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the subregional and landscape scale based on its restricted, rocky, elevated-site habitat and is without a specialised mechanism for long-distance seed dispersal. Individual peaks, ridgelines and ranges within the Grampians are isolated from each other by deep valleys. The only known vectors for seed dispersal are ants. Biotic dispersal is thus likely to be at the metre scale, which is insufficient to cross large valleys.

It is estimated to have one location. It has a continuing decline in (iii) above, due to by imposed anthropogenic fire regimes and climatic warming and drying which increase the risk of repeat fire events and extreme drought stress..

Eligible under Criterion B2 as Endangered

The Area of Occupancy across the taxon's range is estimated to be 260 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is estimated to be severely fragmented, and is estimated to have one location. It has a continuing decline in (iii) 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

It is estimated that there are 5,000 to 20,000 mature individuals, but other thresholds under this criterion have not been met.

| 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 D 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. 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

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VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Leptospermum turbinatum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/c89bc95b-73a0-4115-b3ac-371e02dcdab6>