



Microcybe multiflora subsp. *multiflora* Red Microcybe

Taxonomy

Microcybe multiflora subsp. *multiflora* Turcz.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2ce+3ce+4ce; B2ab(i,ii,iii,iv,v); C2a(i)

Species Information

Description and Life History

The taxon is a shrub to c. 1 m high; branchlets glandular-verrucose, brown stellate-hairy to stellate-lepidote. Leaves spreading or appressed to stem, crowded, sessile, obtusely triangular to subterete, 2-4 mm long, c. 1 mm wide, apex rounded to subacute, adaxial surface glandular-verrucose, margins closely revolute. Inflorescence 10-20-flowered. Sepals free or united below, linear-spathulate to ovate, 0.5-1 mm long, stellate-pilose abaxially; petals ovate, c. 2 mm long, pale yellow to white, sparsely ciliate towards the base; stamen filaments glabrous. Follicles glabrous, 3-5 mm long; seed dull, striated, 2-3 mm long. Flowers spring (VicFlora no date).

Generation Length

The generation length of *Microcybe multiflora* subsp. *multiflora* is estimated to be 15 to 30 years. The average interval of fire in the Big Desert area where this taxon occurs is around 20 years (Wellington and Noble 1985), and other areas of habitat would probably have a similar fire interval. Such fires would kill mature plants and recruitment would occur in the post-fire period.

Distribution

In Victoria, the taxon occurs in the north-west from the Big Desert and Wathe Nature Conservation Reserve near Hopetoun, north to Murray-Sunset National Park and east to Annuello. It also occurs in Western Australia, South Australia, and New South Wales.

Habitat

The taxon can be found in open woodland, mallee, and heath communities on loamy or sandy soils (VicFlora no date).

Threats

The main threats to the taxon are drought following fire which would result in recruitment failure, and inappropriate fire regimes including a decrease in frequency of fire that would lead to a lack of recruitment, and an eventual loss of viability of seeds in the soil seed bank whilst mature plants would senesce. Alternatively, an increase in fire frequency could kill plants before they reach reproductive age. The subpopulation at Annuello has been disturbed by ploughing, which has eliminated part of the subpopulation, and the subpopulation at Murrayville has been disturbed by a quarry.

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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 A2 as Endangered

The population reduction over the last 150 years is estimated to be 60 to 85% (midpoint 70%), based on (c) and (e) above.

While some of the clearing of vegetation would have occurred before the 150 year period, the taxon would have undoubtedly declined in number since then as a result of clearing and modification of vegetation.

The causes of 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 projected to be 40 to 50%, based on (c) and (e) above.

Future reduction is based on the threats of inappropriate fire regimes and drought following fires, which would result in recruitment failure.

Eligible under Criterion A4 as Endangered

The population reduction over any 150 year period, including both past and future (up to 100 years in the future), is estimated to be 60 to 85% (midpoint 70%), based on (c) and (e) 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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 12,881 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented, as many subpopulations are in remnant patches of vegetation totally surrounded by cleared land and separated from other subpopulations by around 20 or more kilometres. Given that dispersal of seed is probably mostly by gravity or aided by ants (Groom and Lamont 2013), this degree of separation is expected to prevent recolonisation should a subpopulation go extinct.

It is estimated to have two locations. Environmental threats such as change in the frequency of fires and prolonged drought are expected to affect all subpopulations similarly between sites, but subpopulations outside of or on the margins of reserves are also subject to the additional threat of habitat modification through clearing or road maintenance. These sites are considered here to constitute a second location.

It has a continuing decline in (iii) and (v) above based on the impacts of the identified threats, such as clearing and modification of habitat, change in fire frequency, and prolonged droughts with consequential recruitment failure.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 88 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 two locations, and has a continuing decline in (iii) 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:

Eligible under Criterion C2 as Endangered

It is estimated that there are 700 to 1,100 mature individuals. The lower estimate is the sum of all counts made at sites where this taxon was located during surveys conducted in 1998 and 1999. A further five sites may not be accounted for and, based on an average subpopulation size of around 80 plants, may add another 400 plants to the total, which is given as an upper estimate.

The number of mature individuals is estimated to continue to decline, and the number of mature individuals in each subpopulation is between 51 and 250.

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: AaO < 20 km ² or number of locations ≤ 5

Evidence:

Eligible under criterion D as Vulnerable

It is estimated that there are 700 to 1,100 individuals, and 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.



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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 (no date). Flora of Victoria, Royal Botanic Gardens Victoria: *Microcybe multiflora* subsp. *multiflora*. Retrieved 2021, from: <https://vicflora.rbg.vic.gov.au/flora/taxon/29d51e3c-38c0-484a-a146-e5dd96105447>
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