

Dicranoloma diaphanoneuron Diaphanous Fork-moss

Taxonomy

Dicranoloma diaphanoneuron (Hampe) Paris

This is easily distinguished from other Australasian *Dicranoloma* species by its small size and strongly crisped leaf apices, as well as various microscopic characters (Klazenga 2003).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2009).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2c+3c+4c; B1ab(iii,v)+2ab(iii,v); C2a(i,ii); D

Species Information

Description and Life History

The taxon is a yellowish-brown moss that forms small, wispy turfs, mainly on rock or dead wood.

Generation Length

The generation length of *Dicranoloma diaphanoneuron* is estimated to be 11 to 25 years, as proposed by Hallingbäck et al. (2000) for 'long' life taxa ('long-lived shuttles - perennial stayers') that are known to produce sporophytes.

Distribution

Dicranoloma diaphanoneuron is endemic to Australia. The core of its distribution is the Karri forests of south-west Western Australia, where it appears to be common. However, it is also known from South Australia (one locality: Waterfall Gully, near Adelaide), Tasmania (one collection > 100 years ago from an unknown locality) and Victoria (one locality: Mount Ellery in East Gippsland). There is no evidence of a decline in populations.

The single specimen from Victoria was collected by Jim Willis in the 1970s (MEL-34054). The species was not recorded subsequently in pre-logging ecological surveys of the area (Horrocks et al. 1984, Earl et al. 1989) and was not found by N. Klazenga, J. Shevock, L. Cave and D. Meagher when they visited Mt Ellery in 2010. There is no knowledge of its abundance at this locality.

Habitat

The taxon occupies sclerophyll forest on rocks, logs, tree stumps and tree stems.

Threats

Bushfire is a continuing threat in the Mt Ellery area, particularly under the drier conditions predicted to occur as a result of climate change. Several major fires have burned in the area since European settlement, including in 2003

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and 2019/20. In these latter fires, the sole occurrence at Mt Ellery is likely to have been burnt so may it now be extinct.

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>based on any of the following:</p>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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Evidence:

Eligible under Criterion A2 as Critically Endangered

The population reduction over the past 33 to 75 years is inferred to be 10 to 100 %, based on (c) above.

Nothing is known about the history of the population. The single known Victorian population was discovered in 1951 but was not identified until 2002 (AVH data). The sole occurrence at Mt Ellery is likely to have been burnt by the fires of 2019/20, so may it now be extinct.

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

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 33 to 75 years is projected to be 90 to 100 %, based on (c) above.

Bushfire is a continuing threat in the Mount Ellery area. The taxon may already have been impacted by bushfire, but even if has not been destroyed, habitat deterioration as a result of climate change, or further bushfire in the next 75 years are near certainties, If destroyed, recruitment is unlikely since the nearest other population is more than 200 km away in NSW.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 33 to 75 year period, including both past and future, is suspected to be 90 to 100 %, 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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The taxon is known in Victoria only from a single collection.

It is estimated to have 1 location as it is known in Victoria only from a single collection and is subject to the threat of bushfires. It has a continuing decline in (iii) and (v) above.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the V/BA. It has 1 location and has a continuing decline in (iii) 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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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			

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Evidence:

Eligible under Criterion C2 as Critically Endangered

It is estimated that there are 10 to 100 mature individuals. The taxon is known in Victoria from a single collection, but nothing is known about the size of the population. However, single populations of epiphytic mosses rarely exceed 100 individuals.

The number of mature individuals is inferred to continue to decline, the number of mature individuals in each subpopulation is 50 or fewer and the percentage of mature individuals in one subpopulation is 90-100 %.

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 km ² or number of locations ≤ 5 [Ⓜ]

Evidence:

Eligible under Criterion D as Critically Endangered

The taxon is estimated to have 10 to 100 mature individuals.

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.

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