Threatened Species Assessment

Dinckleria pleurata
Delicate Featherwort

Taxonomy

Dinckleria pleurata (Hook. f. & Taylor) Trevis.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988,* as *Plagiochila pleurata*. (Tayl.) Hook.f. and Wilson (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 A3c; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1+2a(i,ii); D

Species Information

Description and Life History

This is a leafy liverwort that forms dull green open mats on the bark of trees in *Nothofagus* rainforest and mixed forest. Sporophhytes have not been found in the Victorian population.

Generation Length

The generation length of *Dinckleria pleurata* is estimated to be 11 to 25 years, as proposed by Hallingbäck et al. (2000) for taxa that have not been found with sporophytes.

Distribution

In Victoria the taxon is known only from one site on the south face of the Baw Baw Plateau.

Habitat

The taxon is found in temperate to tropical rainforest and mixed forest on twigs, branches or trunks of trees; rarely on rocks. In Victoria, it is known only from cool temperate mixed forest on *Nothofagus cunninghamii*.

Threats

The forests of the Central Highlands are among the most fire-prone in the world because of the mountainous terrain, flammable vegetation and hot summer winds (NRE 1998). Elevated bushfire intensity and frequency is a threat to this taxon and its Cool Temperate Mixed Forest habitat, particularly under the drier conditions predicted to occur as a result of climate change.

The only known location is within the Tanjil State Forest within a special protection zone set aside primarily for the Baw Baw Frog. Further populations may occur in the general area, potentially in areas available for forestry operations. All Cool Temperate Mixed Forest is protected from harvesting and buffers are applied.

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 A3 as Critically Endangered

The population reduction over the next 33 to 75 years is suspected to be 80 to 100 %, based on (c) above.

Elevated bushfire intensity and frequency is a threat to this taxon and its Cool Temperate Mixed Forest habitat, particularly under the drier conditions predicted to occur as a result of climate change.

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 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).

It is estimated to have one location, as there is only one subpopulation, so all individuals are exposed to the same threats. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the impacts of the identified threats.

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 VBA. As above, it has one location and a continuing decline in (i), (ii), (iii), (iv) and (v).

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 C1 as Critically Endangered

It is observed that there are 10 to 50 mature individuals. Numbers are from direct observation by D. Meagher at the only known locality in Victoria.

A continuing decline of 20 to 30% is estimated to occur within one generation.

Eligible under Criterion C2 as Critically Endangered

The number of mature individuals is projected 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 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 km2 or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Critically Endangered

The taxon is observed to have 10 to 50 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. 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

Meagher D. (2008). Bryological miscellanies from MELU. *Australasian Bryological Newsletter* 55: 9-10.

Meagher D.A. (2009). The Baw Baw South Face Bryophyte Survey. Final report for the Department of Sustainabiity and Environment, Victoria. Zymurgy Consulting: Surrey Hills, Victoria (unpublished).

NRE (1998). Forest Management Plan for the Central Highlands. Department of Natural Resources and Environment, East Melbourne.

SAC (2009). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 801 *Plagiochila pleurata.*