Threatened Species Assessment

Riccardia eriocaula
Feather-fan Germanderwort

Taxonomy

Riccardia eriocaula (Hook.) Besch. and C.Massal., Mission Sci. Cap. Horn 5: 244 (1889)

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2002).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A3c+4c; B1ab(i,ii,iii,iv,v); C1

Species Information

Description and Life History

The taxon's upright habit and plumose fronds easily distinguishes it from all other *Riccardia* in Australia.

Generation Length

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

Distribution

This taxon is known on mainland Australia only from three sites in the Otway Ranges, based on Australasian Virtual Herbarium (AVH) data, however only the Maits Rest collections is mapped correctly in AVH and the Victorian Biodiversity Atlas (VBA) (D. Meagher pers. comm.). Potential habitat was widely surveyed in the early 1990s during a survey of Myrtle Wilt disease, but no other subpopulations were found (D. Cameron pers. comm.).

Habitat

R. eriocaula is a plant of the very wettest *Nothofagus* rainforest, where it grows only in perhumid conditions on the sides of rotting logs.

Threats

Threats to the taxon include the loss of cool temperate rainforest habitat as a result of climate change, local changes in habitat as a result of canopy loss, and Myrtle Wilt disease occurring in the vicinity of Maits Rest (D. Cameron, Arthur Rylah Institute, pers. comm. September 2001). This disease kills *Nothofagus cunninghamii*, resulting in substantial loss of canopy cover.

Bushfires are a continuing threat throughout the Otway Ranges, particularly in drier conditions predicted as a result of climate change.

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 A2 as Vulnerable

The population reduction over the past 33 to 75 years is estimated to be 0 to 33 %, based on (c) above.

Cool temperate rainforest has been in demonstrable decline in Victoria (DSE 2009), and there is no reason to believe that this will not continue. The Maits Rest site has been visited by numerous bryologists since the 1970s, but this species has not been found there. It might therefore be extinct at that site, which has suffered considerably from storm damage in the intervening years (D. Meagher pers. obs.).

Extensive surveys in the Otways in the 1990s failed to relocate the species. It is therefore possible that it is extinct at the other two sites.

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 33 to 75 years is suspected to be 50 to 100 %, based on (c) above.

Future reduction is based on cool temperate rainforest being in demonstrable decline in Victoria (DSE 2009). If the taxon still exists, it is likely to decline to extinction.

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 0 to 100%, based on (c) above. The causes of reduction may not have ceased, be understood or be reversible.

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 25 km², based on accepted, post-1970 records from the VBA.

The taxon is estimated to be severely fragmented, as the three Victorian sites are widely spaced and reproductively isolated (D. Meagher pers. op.). The nearest other sites are in northern Tasmania (AVH data).

It is inferred to have a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the decline of cool temperate rainforest in Victoria.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 12 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, and has a continuing decline in (i), (ii), (iii), (iv) 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 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 estimated that there are 0 to 150 (midpoint 100) mature individuals. This is based on the taxon in Tasmania typically forming small colonies covering less than half a square metre, often scattered among other bryophytes (D. Meagher pers. obs.). It is unlikely that the number of individual plants in such colonies exceeds 50 plants. There are three colonies/subpopulations.

There is estimated to be a continuing decline of 0 to 25 % within one generation.

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 Endangered

It is estimated that there are 0 to 150 (midpoint 100) mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

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