Threatened Species Assessment

Lepidozia procera
Fingerwort

Taxonomy

Lepidozia procera Mitt.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A3bc+4c; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1+2a(i,ii)

Species Information

Description and Life History

Lepidozia procera is a leafy liverwort with an unusual upright habit. Branching is distinctly bipinnate.

Generation Length

The generation length of *Lepidozia procera* is estimated to be 11 to 25 years, as proposed by Hallingbäck et al. (2000) for bryophytes that are not ephemeral and show sexual reproduction.

Distribution

In Victoria the taxon is known only from two very close sites on the south face of the Baw Baw Range (Meagher 2009).

Habitat

The taxon occurs on soil and rock in Cool Temperate Rainforest.

Threats

Loss of specialised Cool Temperate Rainforest habitat as a result of climate change is a major threat, with the concomitant increased risk of fire and consequent recruitment failure. The only known Victorian site is threatened by forestry operations, road maintenance and landslip, and Myrtle Wilt disease (N. Scarlett, pers. comm. 2018).

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 50 to 100% (midpoint 80%), based on (b) and (c) above.

There are only two known sites for the taxon, both very close together. Bushfire on the south face of the Baw Baw Plateau could readily destroy one or both sites. Given the taxon's extremely narrow disitribution and its reliance on a highly threatened habitat, it is likely that the taxon will become extinct in the next 75 years.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 33 to 75 year period, including both past and future (up to 100 years in the future), is inferred to be 50 to 100% (midpoint 80%), based on (c) above. The causes of reduction may not have ceased, be understood or be reversible.

Cool Temperate Rainforest is in a demonstrable state of decline in Victoria and is listed as threatened under the Flora and Fauna Guarantee Act (DSE 2009).

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) and data from the Austrlian Virtual Herbarium (AVH).

It is estimated to have 1 location and has a continuing decline in (i), (ii), (iii), (iv) and (v) above. Cool temperate rainforest is in a demonstrable state of decline, and further loss of this habitat (and therefore numbers and range) for the taxon is likely as a result of climate change (DSE 2009).

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 and AVH. As above, the taxon has 1 location 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 50 to 100 mature individuals.

A continuing decline of 10 to 25% is estimated to occur within one generation.

Eligible under Criterion C2 as Critically Endangered

It is estimated that there are 50 to 100 mature individuals. The number of mature individuals is inferred to continue to decline 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 Endangered

It is estimated that there are 50 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. (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)

DSE (2009). Action Statement No. 238. Cool Temperate Rainforest, Dry Rainforest (Limestone), Warm Temperate Rainforest (Coastal East Gippsland), Warm Temperate Rainforest (Cool Temperate Overlap, Howe Range), Warm Temperate Rainforest (East Gippsland Alluvial Terraces), Warm Temperate Rainforest (Far East Gippsland), Human activity which results in artificially elevated levels of Myrtle Wilt within Nothofagus-dominated Cool Temperate Rainforest. Department of Sustainability and Environment: East Melbourne. https://www.environment.vic.gov.au/__data/assets/pdf_file/0016/32452/Human-activity.pdf

Hallingbäck T., Hodgetts N., Raeymaekers G., Schumacker R., Sérgio C., Söderström L., Stewart N. and Váòa L. (2000). Guidelines for application of the 1994 IUCN Red List categories of threats to bryophytes. Appendix 1 in Hallingbäck T. and Hodgetts N., *Mosses, Liverworts and Hornworts. Status Survey and Conservation Action Plan for Bryophytes*. IUCN: Gland, Switzerland.

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