Threatened Species Assessment

Bazzania hochstetteri
Caducous Whipwort

Taxonomy

Bazzania hochstetteri (Reichardt) E.A. Hodgs.

The *Flora and Fauna Guarantee Act 1988* nomination stated that the illegitimate name *Mastigobryum affine* Mitt. is a synonym. This has now been shown to be incorrect (Meagher 2011). *M. affine* Mitt. is a synonym of *Bazzania mittenii* (Steph.) Steph.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2005).

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

Proposed conservation status

Endangered in Victoria

Criteria A3c+4c; B2ab(i,ii,iii,iv,v); C1+2a(i)

Species Information

Description and Life History

This is a small *Bazzania* that grows as an epiphyte in wet forest and rainforest (Meagher 2019).

Generation Length

The generation length of *Bazzania hochstetteri* is estimated to be 11 to 25 years based on Hallingbäck *et al*. (2000) for taxa for which sporophytes have not been found. Androecia and gynoecia are not known in Australian collections (Meagher 2009a).

Distribution

Bazzania hochstetteri is known in Victoria from five widely separated localities, ranging from Wilsons Promontory to far East Gippsland (Meagher 2009a,b).

Habitat

In Victoria all subpopulations occur in cool temperate rainforest.

Threats

Bushfire and mechanical disturbance are significant threats to the Wilsons Promontory population. The site is in a very small pocket of rainforest surrounded by dry sclerophyll forest and woodland, and a management road runs through the centre of the site.

The Tarra-Bulga location appears to be well protected from fire, but it is next to a major walking track and there is a risk of mechanical damage to the one known subpopulation, especially from track maintenance or other works.

The Errinundra subpopulation (found in 1986) is in an area that has since been logged. Although the habitat should not have been disturbed, the current status of the taxon there is not known.

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 Endangered

The population reduction over the next 33 to 75 years is projected to be 30 to 50%, based on (c) above.

The continuing decline of cool temperate rainforest (DSE 2009) and the increasing dryness associated with climate change is likely to penetrate into some very wet habitats in CTRF. The Wilsons Promontory subpopulation in particular is very vulnerable because it occurs in a very small patch of CTRF, and a major fire burnt to the edge of the site in 2009 (DSE 2009b).

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 Vulnerable

The Extent of Occurrence (EoO) is estimated to be 19,850 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented, as the five subpopulations are widely spaced across Victoria and are reproductively isolated.

It is estimated to have 1 to 5 locations, and has a continuing decline in (i), (ii), (iii), (iv), (v) above, as the taxon's cool temperate rainforest habitat declines, along with the increasing dryness associated with climate change that is likely to penetrate into some very wet habitats.

Eligible under Criterion B1 as Endangered

The Area of Occupancy (AoO) is estimated to be 20 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has up to 5 locations, and has a continuing decline in (i), (ii), (iii), (iv), (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 Endangered

It is estimated that there are 100 to 500 mature individuals. The Wilsons Promontory subpopulation consists of a few small colonies growing on *Acmena smithii* in a small pocket of warm temperate rainforest on Chinaman Creek. D. Meagher searched this location thoroughly in 2002 but failed to find additional plants. The other subpopulations were found on Soft Tree-ferns *Dicksonia antarctica* in small patches of cool temperate rainforest.

There is estimated to be a continuing decline of 15 to 40% within two generations.

Eligible under Criterion C2 as Endangered

It is estimated that there are 100 to 500 mature individuals. All subpopulations of *B. hochstetteri* seen by D. Meagher are small and are mixed with other bryophytes. Although it is difficult to estimate the number of mature individuals present in each subpopulation, it is unlikely to exceed 100 (D. Meagher pers. op.).

The number of mature individuals is projected to continue to decline, and the number of mature individuals in each subpopulation is fewer than 250.

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 100 to 500 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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