Threatened Species Assessment

Christella dentata
Binung

Taxonomy

Christella dentata (Forssk.) Brownsey & Jermy

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1996).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(ii,iii)+2ab(ii,iii)

Species Information

Description and Life History

Rhizome short and erect or very shortly creeping, sparsely covered in narrow brown scales. Fronds tufted, erect, 60-100 cm tall; stipe variable in length, almost succulent, densely hairy (giving young stipes a whitish bloom), flattened above, shallowly grooved, dark and scaly towards base. Lamina oblong-lanceolate, almost 2-pinnate, dark green to yellow-green, herbaceous, densely coated with short, pointed, multicellular hairs; rachis and pinna mid-rib deeply grooved (grooves not connecting), with numerous long, sometimes curved hairs. Pinnae narrow, tapering from base to acuminate apex; lobes short, oblong and slightly falcate, margins entire; lower pinnae well separated and progressively decreasing in length to become less than half as long as middle pinnae, basal lobes unequal; veins free except for lowest veins in adjacent lobes which join to form single excurrent vein. Sori copious, round; indusium kidney-shaped, covered with fine, pointed hairs; spores black.

Generation Length

The generation length of *Christella dentata* is estimated to be 4 to 20 years. Other species of Thelypteridaceae are reasonably short-lived (Herbert 2006). It is expected that *C. dentata* could attain maximum size within a short period of time, perhaps around four years based on observation of cultivated plants and glasshouse weeds of this species and may live for up to around 20 years.

Distribution

The taxon occurs in Scrubby Creek near Buchan.

Habitat

The taxon occurs in riparian vegetation in limestone-derived soils.

Threats

C. dentata occurs beside creeks and is reliant on moist sites for survival and reproduction. As a result fire that kills plants, and drought are threats. The bushfires of 2019/2020 are believed to have impacted more than 80% of the taxon's habitat. The taxon is sensitive to fire and is likely to have been significantly impacted. The taxon is a wet forest species that do not require fire for regeneration and are likely to be killed by fire. Weed invasion by

blackberries, and potential severe weather may also be threats. Flood events may also be a threat given that they have the potential to erode streamside habitat.

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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. The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

It is estimated to have 1 location, as all individuals have been recorded on Scrubby Creek and are subject to the same suite of threats, notably increased fires and droughts.

It has a continuing decline in (iii) above, due to 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. It is estimated to have 1 location and It has a continuing decline in (iii) 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:

Ineligible under Criterion C as Data Deficient

It is estimated that there are 650 to 750 individuals but other thresholds under this criterion have not been met.

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 D1 and D2 as Vulnerable

It is estimated that there are 650 to 750 individuals. Numbers are based on estimates made in a VROTPop survey in 1999, of 692 to 750. Given that the site is threatened by blackberry invasion and is not reserved, it is likely that there are fewer now, hence the lower estimate of 650.

The taxon is estimated to be very restricted.

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.

Herbert, J. (2006). National recovery plan for the fern *Chingia australis*. Report to Department of the Environment and Water Resources, Canberra. Queensland Parks and Wildlife Service, Brisbane.

SAC (1996). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 369 *Christella dentata*.

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Christella dentata*. Retrieved from: hhttps://vicflora.rbg.vic.gov.au/flora/taxon/74a7d910-5042-4bc0-809c-ff34c3daab93