Threatened Species Assessment

Sticherus tener
Tasman Fan-fern

Taxonomy

Sticherus tener (R. Br.) Ching

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria B2ab(iii,v); C2a(i)

Species Information

Description and Life History

The taxon has fronds spaced along rhizome, erect, with spreading fan-shaped lamina, up to four tiers (first and sometimes second branches very short), first branches with oblong pinnae, occasionally lobed; angle between first branches 45-75°. Stipe 12-80 cm long, brown, smooth, shiny, with a few scales near base. Pinnules on ultimate rachis 75-80° to axis, linear to narrowly lanceolate, 8-15(-20) mm long, upper surface bright green, lower surface paler, with silky simple and branched hair-like scales along veins; pinnule base slightly widened; margins entire or rarely shallowly crenate to serrate (particularly towards apex); apex acuminate. Sori with 3-5 yellow sporangia (VicFlora 2014).

Generation Length

The generation length of *Sticherus tener* is estimated to be 20 to 40 years. The taxon is a member of the Gleicheniaceae, and *Gleichenia* plants have been observed to live for at least 10 years by D. Ohlsen (RBG). As these plants were already large plants and did not appear to be senescing, this suggests that the generation length of most Gleicheniaceae is probably fairly long, perhaps between 20 and 40 years.

Distribution

In Victoria the taxon is confined to the Otway and Yarra Ranges.

Habitat

The taxon is found mostly along creeks and poorly-drained waterways in wet sclerophyll and cool-temperate rainforest, but also at disturbed sites such as roadside clearings in these vegetation types.

Threats

The taxon is reliant on moist humid conditions, so drought, which may be expected to become more severe as a result of climate change, is a major theat. Increased severity and frequency of fire is also a threat as this taxon and the habitat that it relies on dies once burnt, and does not depend on fire for its recruitment.

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 60 to 120 years is estimated to be 30 to 45%, based on (b) and (c) above.

This taxon has probably undergone a population decline as a result of clearing, especially in the Otways. At least a third of the area that may have been suitable habitat for this taxon has been cleared and so it is likely that the number of mature individuals of this taxon may have been more than 30% larger in the past.

The causes of reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 60 to 120-year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 45%, based on (b) and (c).

Provided that sites where this taxon occurs at are not completely cleared, which is unlikely given that most are within reserves, it is possible that it will remain with a similar number of mature individuals into the future. It is resilient to some disturbance having been recorded from roadside cuttings. However, some reduction may occur as a result of fire or lack of moisture particularly in non-rainforest sites that are more exposed, such as on roadsides in sclerophyll forest.

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) across the taxon's range is estimated to be 8,917 km², based accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

It is observed to have fewer than five locations, considered here to be the Otways and several sites in and around the Yarra Ranges. These are highly disjunct and are separated by over 200 km of unsuitable habitat.

It has a continuing decline in (iii) and (v) above based on the identified threats, such as such as drought and an increase in fire intensity and frequency.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 68 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon has fewer than five locations, and has a continuing decline in (iii) 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 C2 as Endangered

It is estimated that there are 320 to 900 mature individuals. There are 16 to possibly 18 subpopulations of this fern, based on the number of records from the Yarra Ranges and Otways. The taxon is similar to *S. urceolatus,* and all records from outside the Yarra Ranges and Otways are most likely *S. urceolatus*. The taxon generally occurs as several clumps along waterways with an average of 20 to 50 clumps, each being treated as a single individual. Multiplying the number of clumps by the number of subpopulations gives the estimate given.

The number of mature individuals is estimated to continue to decline due to the identified threats, 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 Vulnerable

It is estimated that there are 320 to 900 individuals, and 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. 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

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