



## *Sticherus flabellatus* var. *flabellatus* Shiny Fan-fern

### Taxonomy

*Sticherus flabellatus* var. *flabellatus* (R. Br.) H. St. John

### 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 B1ab(i,ii,iii)+2ab(i,ii,iii)

### Species Information

#### Description and Life History

The taxon is a long creeping rhizomatous perennial fern, with fronds spaced along rhizome, erect, with spreading fan-shaped lamina, up to 4 tiers (first and second branches very short), first branches generally without pinnae; angles between branches small, less than 45° in first fork. Stipe 40-75 cm long, brown, smooth, shiny. Pinnules angled at 45-50° to axis, oblong-linear, 30-55 mm long, upper surface dark green and shiny, lower surface lighter green, glabrous or sometimes with a few hair-like scales; margins serrate; apex slightly pointed. Sori with 3-6 yellow sporangia (VicFlora 2017).

#### Generation Length

The generation length of *Sticherus flabellatus* var. *flabellatus* is estimated to be 20 to 40 years. *Gleichenia* plants have been observed to live for at least 10 years by the assessor and these plants were already large plants and did not appear to be senescing, suggesting 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 east Gippsland, east of Tamboon Inlet.

#### Habitat

The taxon is found beside creeks and in poorly drained areas in warm temperate rainforest.

#### 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. Although the degree of damage is yet to be determined, such a loss of habitat is likely to lead to a similar decline in population. The taxon is a rainforest species that does not require fire for regeneration and is likely to be killed by fire.

Being reliant on moist humid conditions, drought that may be expected to become more severe as a result of climate change is a major threat. 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.

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### 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%

  

<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>	<p>based on any of the following:</p>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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### Evidence:

#### Ineligible under Criterion A

The population reduction for this taxon is below the threshold for eligibility under criterion A.

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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 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 713 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to have 2 locations, and are here considered to be west of Mallacoota Inlet and east of Mallacoota Inlet. It has a continuing decline in (i), (ii) and (iii) above due to future lack of rainfall and increased occurrence and severity of fire.

#### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 63 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is estimated to have 2 locations, and has a continuing decline in (i), (ii) and (iii) above.

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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 280 to 900 mature individuals, but other thresholds under this criterion have not been met.

Criterion D. Very small or restricted populations		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 km <sup>2</sup> or number of locations ≤ 5

## Evidence:

### Eligible under criterion D as Vulnerable

It is estimated that there are 280 to 900 individuals, based on records in the Atlas of Living Australia that show that there are between 14 and 18 subpopulations of this taxon in Victoria. From the assessors experience, it 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 taxon is estimated to be very restricted.



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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](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Sticherus flabellatus* var. *flabellatus*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/6bd2b9fc-758c-414a-ac0a-4a7186cd3754>