



Gleichenia rupestris Rock Coral-fern

Taxonomy

Gleichenia rupestris R. Br.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criterion D

Species Information

Description and Life History

Rachis of major branches glabrous, with occasional, scattered fringed scales. Ultimate branches linear, 3-5 cm long, with close-set pinnules; undersurface of pinna-rachis without hairs or scales, usually glaucous; uncoiling tips (and young rachises) glaucous, with scattered fringed scales. Pinnules c. 1-2 mm long, oblong-ovate to semicircular, blunt, lower surface glaucous, flat or slightly concave (not inrolled on all edges to make a pocket). Sori with 3-4 sporangia grouped around the central projection; sporangia dull, yellow-brown (VicFlora 2017).

The glaucous ultimate rachises and pinnule undersurface are distinctive, although the degree of glaucousness is variable. The more or less glabrous rachises and branches are diagnostic.

Generation Length

The generation length of *Gleichenia rupestris* is estimated to be 20 to 40 years. Plants have been observed to live for at least 10 years (D. Ohlsen pers. comm.), and these plants were already large and did not appear to be senescing, suggesting that the generation length of most Gleicheniaceae is probably fairly long.

Distribution

The taxon occurs within Croajingolong National Park, on Rame Head and between Sandpatch Point and the mouth of the Benedore River, around where the Sandpatch Walking Track emerges onto the beach.

Habitat

The taxon occurs mostly in freshwater soaks where the vegetation meets the rocks lining the ocean edge.

Threats

Sea-level rise will inundate some plants killing them. Drought may cause cessation of freshwater seeps on which the taxon relies. Fire is a threat because it can kill plants and is not required for 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%
<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> <ul style="list-style-type: none"> (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 suspected to be 15 to 30%, based on (b) and (c) above.

The bushfires of 2019/2020 are believed to have potentially impacted between 50 to 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.

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 (EEO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km² and the Area of Occupancy (AoO) is estimated to be 8 km², but other thresholds under this criterion have not been met.

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

The taxon is estimated to have 4 to 55 mature individuals, but other thresholds under this criterion have not been met.

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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 km ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Critically Endangered

The taxon is estimated to have 4 to 55 mature individuals.

The plants are long-creeping via an underground rhizome. Consequently, it is hard to determine with certainty what constitutes a single individual. Four colonies equivalent to subpopulations are known (one colony is 7m x 3m, another 15m x 4m, another 10 m x 2 m and the largest 50 m x 20 m), each which could be the result of a single individual but may also be the result of several plants growing together. If the smallest colony is one plant then it is possible that the combined areas of all known subpopulations could be composed of 55 plants. It is also possible that other subpopulations near to the largest subpopulation may exist because of likely suitable habitat in this area.

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

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Gleichenia rupestris* Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/90262e76-88bc-4585-980b-1c6c0fc1a80c>