

Threatened Species Assessment

Acacia penninervis var. *penninervis* Hickory Wattle

Taxonomy

Acacia penninervis var. *penninervis* Sieber ex DC.

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion A2bc

Species Information

Description and Life History

Shrub or small tree, to 8 m high; branchlets glabrous. Phyllodes variable, oblanceolate to narrowly elliptic, narrowed at base, 5-13 cm long, 5-30 mm wide, usually more or less straight, rarely falcate, glabrous, green, infrequently glaucous, obtuse or acute; finely and pinnately veined, midrib and marginal veins prominent; gland 0.5-3 cm above pulvinus, margin often shallowly indented at gland which is connected to midrib by a fine oblique vein. Racemes sometimes in panicles; rachis 3-12 cm long, glabrous; peduncles 4-8 mm long, glabrous; heads globular, 15-30-flowered, cream to whitish. Flowers 5-merous; sepals united. Pods to 20 cm long, 10-17 mm wide, thinly coriaceous to firmly chartaceous; seeds longitudinal, oblong to elliptic, 6-7 mm long, slightly shiny, black, funicle dark red, aril clavate. Flowers Nov.-Feb. (VicFlora 2019). Usually characterized by the indented gland connected to the midrib by a fine oblique vein. It is often confused with *Acacia falciformis* which is usually a larger plant distinguished especially by the usually golden, appressed-hairy peduncles and raceme axes and larger flowers (VicFlora, 2019).

There is apparently no record of this taxon suckering. Single age class stands have been observed at both Tingaringy and Avenal locations (D. Cameron pers. comm.).

Generation Length

The generation length of *Acacia penninervis* var. *penninervis* is inferred to be 15 to 30 years. Maturity of similar species occurs well within 5 years, with longevity considered likely to be in the range of 15 - 25 years. Recruitment appears to be more episodic than continuous, based on the age structure of the larger population in the vicinity of Mt Teneriffe. Given the presumed time since fire and the presence of the plant in open rocky areas, recruitment events may be a response to drought and subsequent high rainfall years (possibly on approximately 20 year cycles) as much as infrequent fire events, even if fire would presumably stimulate mass regeneration. Integrating these interpretations, generation time is inferred to be in the range of 10-25 years. D. Tonkinson and D. Cameron (pers. comms.) suspected a substantially longer generation time (25-75 years), but this is not considered consistent with continuous occupation of the habitat.

Distribution

The taxon is confined to mostly rocky habitats along the eastern highlands of Australia, extending southward into an area north-west of Mt Tingaringy in far East Gippsland, with a few outlying pockets further westward on and near the Strathbogie Ranges.



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Habitat

The taxon occurs in rocky outcrops and surrounding outwash slopes in dry grassy woodlands.

Threats

Populations persist in areas invaded by annual grasses, and the habitat is largely unsuitable for robust perennial introduced grasses. Grazing and browsing animals do not appear to be having a substantial impact, and the impact of deer in the future is unknown. Likewise, the potential impacts of extreme climate change are uncertain.

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:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 45 to 90 years is inferred to be 20 to 30%, based on (b) and (c) above.

Much of the relevant habitat is unlikely to have been extensively cleared and even if it was cleared then it is sufficiently marginal to retain a seed bank for future re-establishment. Some remnant plants occur along roadsides in cleared, suggesting that the taxon was previously more widespread.

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

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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 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 across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 23,385 km² which exceeds the threshold for criterion B.

The Area of Occupancy across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA is estimated to be 90 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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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

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It is suspected that there are 7,500 to 30,000 mature individuals, but other thresholds under this criterion have not been met.

Criterion D - Very small or restricted population ^a			
	Critically-Endangered ^b	Endangered ^b	Vulnerable ^b
Number of mature individuals (observed or estimated) ^a	<50 ^a	<250 ^a	<1,000 ^a
D2 - Only applies to the VU category ^f 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. ^a	- ^a	- ^a	D2 - Typically: ^f AoO < 20 km ² or number of locations ≤ 5 ^a

Evidence:

Ineligible under Criterion D

It is suspected that there are 7,500 to 30,000 mature individuals.

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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Acacia penninervis* var. *penninervis*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/adb196bf-6fcf-4c56-8a73-5f35b02e0d72>