Threatened Species Assessment

Acacia subtilinervis
Net-veined Wattle

Taxonomy

Acacia subtilinervis F. Muell.

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 B1ab(iii,v)

Species Information

Description and Life History

The taxon is an erect shrub, to 4 m tall. Phyllodes narrowly elliptic to oblong, 5-11 cm long, 6-12 mm wide, straight to slightly curved, flat, coriaceous, obtuse to acute with sometimes hooked, knob-like mucro, margins often translucent; midrib prominent with numerous, often translucent, longitudinal secondary veins, none reticulate; gland small or obscure, basal. Spikes 1-2 per axil, 12-18(-27) mm long, bright to deep yellow; rachis glabrous; peduncle 4-10 mm long. Flowers 5-merous, more or less dense; sepals united, with coarse hairs. Pods linear, 4-6 cm long, 3-4 mm wide; seeds with funicle folded, aril fleshy. The taxon flowers from Aug.-Sep. (VicFlora 2017).

Generation Length

The generation length of *Acacia subtilinervis* is estimated to be 50 years. This is inferred from likely post-fire episodic recruitment at pre-settlement frequencies of 10 - 80 years with some continuous recruitment in response to small-scale localised disturbances. *Acacias* are perennial and have varying generation lengths, from long-lived to short-lived. In this taxon, the longevity is plausibly 10 - 80 years and recruitment is typically cued by fires at mean pre-settlement frequencies ranging from 10 - 60 years depending on rainfall and landscape context.

Distribution

In Victoria, the taxon is confined to steep rocky slopes in the Snowy Gorge tract of the Snowy River, east of W Tree. Most recent collections are in Museum Spur Track area.

Habitat

The habitat of this taxon is restricted to dry forests, rocky cliffs and rocky slopes, amongst rocks on bluffs above the Snowy River.

Threats

Due to the restricted distribution of this taxon in Victoria, it is potentially threatened by inappropriate fire regimes and stochastic events. If fires are too infrequent, thereby not allowing fire promoting dormant soil-stored seeds to germinate, there may be lack of recruitment. Alternatively, too frequent fires potentially prevent plants from reproducing via seed production. The latter threat is potentially more likely due to climate change and climatic warming and drying increasing the frequency and severity of fires and extreme drought stress. Extreme weather

events may become more severe in the future due to climate change and this may threaten this taxon in the rocky habitat. It is unclear if browsing pressure by native or feral animals is a potential threat.

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 Endangered

The population reduction over the past 150 years is suspected to be 30 to 50%, based on (b), (c) and (e) above.

It is believed that 82% of the taxon's modelled habitat was within the footprint of the 2019/20 fires, and 37% was impacted by high severity fire (DELWP 2020). Although the impacts are yet to be determined, it is likely that there was some plant mortality, which may have been exacerbated by post-fire impacts.

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is suspected to be 20 to 40%, based on (c) and (e) above.

The taxon may recover from the fires, but any recruitment is at risk from feral herbivores and the risk of future fires outside the taxon's tolerable fire intervals.

Eligible under Criterion A4 as Endangered

The population reduction over any 150 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 50%, based on (c) and (e) above.

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 16 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the Area of Occupancy (AoO) to ensure consistency with the definition of AoO as an area within EoO. The collections (including historic collections) are linearly located along bluffs, so the EoO is estimated on that basis.

The taxon can be considered to occur in one location because it occurs in a geographically or ecologically distinct area in which a single threatening event, such as another major bushfire, can rapidly affect all individuals of the taxon present.

It has a continuing decline in (iii) and (v) above, based on the current and projected impact of the identified threats, including the loss of habitat and too frequent fires.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 16 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has one location and has a continuing decline in (iii) and (v).

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 suspected that there are 1,000 to 2,000 mature individuals. This taxon is noted as being locally abundant but is restricted in its habitat to rocky bluffs. It is therefore difficult to estimate the numbers of individuals present and there is limited information available on herbarium records. This estimate is based on the extent of habitat and number of past collections.

There is an inferred continuing decline and the percentage of mature individuals in each subpopulation is 100%

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 1,000 to 2,000 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

DELWP (2020) *Victoria's bushfire emergency: biodiversity response and recovery. Preliminary report - Version 2*. Department of Environment, Land, Water and Planning. East Melbourne

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Acacia subtilinervis.* Retrieved from https://vicflora.rbg.vic.gov.au/flora/taxon/587fbbac-7c24-456a-83b3-4aa3726a3ab3