Threatened Species Assessment

Acacia rupicola
Rock Wattle

Taxonomy

Acacia rupicola F. Muell. ex Benth.

Acacia ulicifolia has somewhat similar phyllodes and heads to ***Acacia rupicola,*** but it is a non-resinous shrub with 5-merous flowers and non-arillate seeds. *Acacia oxycedrus* has similar phyllodes except that they are multiveined, and it has spicate inflorescences (VicFlora 2019).

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 A2bce+4ce; B2ab(iii)

Species Information

Description and Life History

The taxon is a somewhat diffuse, glabrous, viscid shrub, 1-2.5 m high; branchlets ribbed. Phyllodes patent, sessile, narrowly triangular to linear-triangular, 0.5-2.5 cm long, 1.5-3 mm wide, straight or slightly curved, rigid, green, pungent, cusp slender; midrib prominent; gland 0.5-2 mm above base; stipules apparently absent. Peduncles 1 per axil, 5-15 mm long, basal bracts 2; heads globular, 20-25-flowered, cream to pale yellow. Flowers 4-merous; sepals more or less free. Pods linear, to 7 cm long, 3-4.5 mm wide, thinly coriaceous, straight to curved, finely longitudinally and openly reticulate, light brown; seeds longitudinal, oblong to narrowly elliptic, 4.5-5.5 mm long, dark brown, aril terminal. The taxon usually flowers from Nov.- Mar. (VicFlora 2019).

Generation Length

The generation length of *Acacia rupicola* is estimated to be 60 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, especially via suckering. *Acacias* are perennial and have varying generation lengths, from long-lived to short-lived. In this taxon, longevity is plausibly 10 - 80 years and recruitment is typically cued by fires at mean pre-settlement frequencies ranging from 10 - 100 years depending on rainfall and landscape context.

Distribution

The taxon is restricted in Victoria to rocky areas around Mt Arapiles, and apparently the northern parts of the Grampians (but the latter localities are not represented in MEL). A record of this taxon from the Little River Gorge in East Gippsland requires further confirmation. Herbarium collections do not represent the full range of sites where this taxon is recorded (e.g. VBA) and further surveys are necessary to verify collections, particularly in the areas west of the Grampians and Mount Arapiles in Victoria. The taxon also occurs in SA (VicFlora 2019).

Habitat

The taxon is found in rocky or sandy areas in open eucalypt woodland and mallee (VicFlora 2019).

Threats

The taxon is largely restricted to reserves such as the Grampians and Mt Arapiles National Parks, however some occurrences of this taxon, especially those outside reserves along roadsides, are potentially threatened by management activities, weed invasion, and possible nutrient profile changes from adjacent land management activities. All subpopulations of this taxon are potentially threatened by inappropriate fire regimes. This could result in lack of recruitment if fires are too infrequent, thereby not allowing fire promoting dormant soil-stored seeds to germinate, or too frequent fires potentially preventing plants from reproducing via seed. 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 generally occurs in, due to erosion.

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 180 years is inferred to be 30 to 50%, based on (b) and (c) above.

It is extremely difficult to estimate the past extent of this taxon. Given the sparsity and widespread nature of historic collections in Western and Northern Victoria, it is likely this taxon was more widespread and that populations have been lost due to extensive land use changes and land clearing in the area it currently occurs.

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

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 100 years is inferred to be 10 to 50% (midpoint 30%), based on (c) and (e) above.

Predicting the potential of future reduction in this taxon is difficult, as stochastic events or new population discoveries may alter any estimates. However, given current evidence of low numbers of individuals and no recruitment, it is possible that a single event may cause the loss of individuals.

Eligible under Criterion A4 as Endangered

The population reduction over any 180 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 50%,(based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 96 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to have three locations, based on the discontinuous distribution across a range of habitats and management regimes i.e. national park, roadsides, and private land, where different threats act at different intensities and timing.

It has a continuing decline in (iii) above, based on the current and projected impact of the identified threats.

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

It is inferred that there are 1,000 to 2,000 mature individuals, but other thresholds under this criterion have not been met.

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 D2 as Vulnerable

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

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Acacia rupicola.* Retrieved from https://vicflora.rbg.vic.gov.au/flora/taxon/f340e887-251f-4256-91eb-6c2abad3b388

World Wide Wattle (2018). *Acacia rupicola.* Retrieved from: http://worldwidewattle.com/speciesgallery/rupicola.php