Threatened Species Assessment

Acacia melvillei
Yarran

Taxonomy

Acacia melvillei Pedley

This taxon includes records formerly attributed to *Acacia omalophylla.* These two species are very difficult to tell apart and may rely on the presence of mature legumes, which are not always present.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2015).

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

Proposed conservation status

Critically Endangered in Victoria

Criterion A4cde

Species Information

Description and Life History

Shrubs or trees, 2-15 m high; branchlets angular, glabrous. Phyllodes ascending, narrowly elliptic or oblong-elliptic, 5-10.5 cm long, 5-25 mm wide, straight to slightly curved, coriaceous, covered with minute hairs (some older leaves almost glabrous), acute, sometimes mucronate; veins numerous, closely parallel, obscure or 1-3 slightly raised. Racemes often 2 per axil, 1-5-headed, rachis 2-7 mm long, glabrous; peduncles 4-9 mm long, sparsely hairy or glabrous; heads globular, 4-5 mm diam., 25-50-flowered, golden; bracteoles spathulate. Flowers 5-merous; sepals half united. Pods oblong, to 9 cm long, 9-15 mm wide, flat, slightly raised over and irregularly constricted between seeds, thin-chartaceous, straight, coarsely reticulate, glabrous; seeds transverse, broadly elliptic, 3.5-5.5 mm long, glossy brown-black, aril small, apical. Flowers Sep.-Oct (VicFlora 2020).

Generation Length

The generation length of *Acacia melvillei* is projected to be 60 to 200 (midpoint 130) years. The taxon has very long-lived individuals, once mature. Seedling and root sucker regeneration appears common for such long-lived individuals and recently established plants are often common in suitable sites, regardless of obvious disturbances. It occurs in sites and ecological situations that are rarely (if ever) subject to fires or floods, but it can be reasonably expected that there is a soil seed store, which could be activated by fires. Individuals are very long-lived once mature (over time scales of centuries) and there may be heavy self-thinning as individuals mature beyond the small, multi-stemmed shrub stage to become monopodial, umbrageous trees.

Distribution

In Victoria, *A. melvillei* is restricted to sporadic localities in the eastern Mallee region, particularly close to the upper reaches of the Murray River floodplain and to the south-east bordering the Wimmera. There is a single record from the central western Wimmera and a single record from the Barmah forest, further upstream from the major occurrences.

Habitat

The taxon is largely restricted to solonized loamy soils on Mallee/Wimmera plains and is not found on the aeolian sands that characterise the wider region. In these sites it is rarely burnt, if ever, and usually occurs above the current flood level of the Murray River (although in some sites it may have been formerly affected by previous peak floods - which no longer occur). This is a winter rainfall zone with occasional summer storms.

Threats

The taxon is largely unreserved (apart from smaller, insecure bushland reserves and similar). As such, it is subject to inappropriate fire regimes, goat, rabbit and kangaroo browsing and the general disturbance associated with these small stands in a largely agricultural landscape e.g. trail bike use, firewood collection and planned burns. Mature plants in particular are decidedly drought tolerant.

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 to 600 years is suspected to be 50 to 85% (midpoint 65%), based on (c), (d) and (e) above.

Early records are scanty at best. These figures are based on the intensity of clearing for agriculture within the taxon's wider habitat.

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

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is suspected to be 50 to 90% (midpoint 65%), based on (c) and (e) above.

This is based on current management which does not necessarily address this taxon's occurrences.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 180 to 600 year period, including both past and future (up to 100 years in the future), is inferred to be 25 to 90% (midpoint 80%), based on (c), (d) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This is based on a consideration of the intensity and extent of clearance for agriculture in this taxon's wider Victorian habitat and in the dearth of early records/recognition of this taxon.

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 B as Endangered

The Area of Occupancy (AoO) is estimated to be 283 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is inferred to be severely fragmented. As it is assumed to have limited and low long-distance dispersal capacity and the matrix is largely cleared cropland, it is reasonable to assume that each site is isolated from all others and that huge areas of formerly suitable habitat, but now unsuitable habitat, separate each location.

It has a continuing decline in (i), (ii), (iii) and (v0 above.

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 estimated that there are 1,200 to 2,000 (midpoint 1,500) mature individuals, based on former VrotPop surveys. 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:

Ineligible under Criterion D

The taxon is estimated to have 1,200 to 2,000 (midpoint 1,500) mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

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