Threatened Species Assessment

Acacia williamsonii
Whirrakee Wattle

Taxonomy

Acacia williamsonii Court

This is a variant from near Rushworth is characterized by very long racemes (to 9 cm), and linear legumes which are only slightly constricted between the seed. This is closely allied to *A. hakeoide*s which differs in its wider, green phyllodes, 20-27-flowered heads and 4-6 mm wide pods with dull seeds 5-6.5 mm long. Putative hybrids between *A. pycnantha* and *A. williamsonii* occur in the Whipstick Forest (VicFlora 2019).

Current conservation status

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

Proposed conservation status

Vulnerable in Australia

Criterion B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a bushy shrub to 2 m high; branchlets glabrous. Phyllodes inclined to ascending (often patent at ends of flowering branchlets), narrowly linear, 4-9 cm long, 1.5-3 mm wide, usually slightly curved, not rigid, glaucous (or green or sub-glaucous at ends of flowering branchlets), glabrous, narrowed at base; midrib not prominent, lateral veins absent; gland 7-27 mm above pulvinus, often absent. Racemes with rachis usually 1-3 cm long, glabrous, normally drying dark reddish-brown; peduncles 2-3 mm long, rather stout, glabrous, sometimes with appressed, minute hairs, drying dark reddish-brown to blackish; heads globular, subdensely 15-20-flowered, bright golden; bracteole lamina more or less circular, dark brown to blackish, white-fimbriate. Flowers 5-merous; sepals united. Pods usually more or less moniliform, to 9 cm long, 3-3.5 mm wide, firmly chartaceous to somewhat crustaceous, glabrous, black; seeds longitudinal, oblong to elliptic, 3.5-4 mm long, somewhat shiny, black, aril clavate. The taxon flowers from Aug.-Sep. (VicFlora 2019).

Generation Length

The generation length of *Acacia williamsonii* is estimated to be 5 to 15 years. The taxon is a medium lived shrub with recruitment linked to climate cycles and (less frequent) burning episodes. The mean longevity is estimated at 10 years. Mass germination has been observed after (infrequent) fires and recruitment success is linked to mild and wet warm season conditions.

Distribution

The taxon is endemic. It is restricted to north-central Victoria where occurring from Inglewood to Rushworth, and particularly common in the Whipstick Forest near Bendigo (VicFlora 2019).

Habitat

The taxon grows on stony gravel or clay-loam in open *Eucalyptus* forest and mallee open-scrub (VicFlora 2019).

Threats

The taxon is threatened by ongoing habitat destruction, including periurban and rural developments, and frequent fuel reduction burning (driving landscape degradation) in the context of a dying climate.

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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 Vulnerable

The Area of Occupancy (AoO) across the taxon's range is estimated to be 328 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

There is estimated to be nine locations, based on the variable stochastic threats, especially clearing. The taxon is estimated to be severely fragmented. The key habitat of dry sclerophyll (Box Ironbark Forest and Mallee shrubland) has been reduced by up to ~50% since European arrival, and has been dramatically fragmented by agriculture and more recently peri-urban and rural developments.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) 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 estimated that there are 101,720 to 112,450 mature individuals, which exceeds the thresholds for criterion C.

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

It is estimated that there are 101,720 to 112,450 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 williamsonii.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/68b0acb2-8539-45d2-9c38-ef5156fc5ebb