Threatened Species Assessment

Acacia simmonsiana
Desert Manna Wattle

Taxonomy

Acacia simmonsiana O'Leary & Maslin

The taxon was previously regarded as a variant of *A. microcarpa*. *Acacia simmonsiana* may be distinguished from that species by the glabrous branchlets, smaller phyllodes and heads, and terete pods that are not clearly constricted between seeds. It may also resemble *A.* X*grayana*, which is distinguished by its hairy new shoots and peduncles, and caducous stipules (VicFlora 2018).

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 A2ce+3ce+4ce; B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a bushy, spreading shrub to 2 m high; branchlets angled or flattened apically, glabrous. Phyllodes oblanceolate, sometimes narrowly elliptic, mostly 1.5-5 cm long, 2-9 mm wide, slightly curved, sometimes straight, glabrous, obliquely apiculate-mucronate, sometimes pungent; 1-veined; stipules 2-4(-5) mm long, persistent; gland mostly 5-16 mm above pulvinus. Peduncles (2-)4-10 mm long, commonly 2 per node or sometimes on rachis to 1 mm long, glabrous; heads globular, c. 4 mm diam. and (16-)24-36-flowered, golden. Flowers 5-merous; sepals free. Pods terete, not or hardly constricted, strongly curved, to 7 cm long, 2.5-4 mm wide, firmly chartaceous to thinly crustaceous, black; seeds longitudinal, 3-4 mm long; aril terminal, conical and creamy white. The taxon flowers from September to October (VicFlora 2018).

Generation Length

The generation length of *Acacia simmonsiana* is estimated to be 30 to 50 years. This is based on a plausible longevity of 35-70 years, a lack of evidence that the taxon is capable of root suckering, an inference that the taxon is a fire-sensitive obligate seed regenerator (OSR) recruiting episodically post-fire at an estimated pre-settlement fire interval of 40-70 years and the likelihood that the taxon also recruits opportunistically in response to localised site disturbance events (i.e. trickle recruitment).

Distribution

The taxon is restricted in Victoria to the western Wimmera and Big Desert. The taxon also occurs in New South Wales and South Australia (VicFlora 2018).

Habitat

The taxon has been recorded on a track in Wyperfeld National Park, where the most relevant Ecological Vegetation Class (EVC) is semi-arid woodlands and loamy sands mallee. It has been recorded on sands woodland, but it was probably a mallee community prior to clearing. VicFlora (2018) reported that the taxon grows in mallee communities.

Threats

The taxon is likely to have suffered significant historic decline through habitat loss to agriculture in most districts where the taxon has been reliably recorded. The few reliable records of the taxon suggest that it occurs on moderately fertile sandy or loamy profiles which have been extensively cleared in the western Wimmera.

Current and future threats are likely to include incremental habitat loss or habitat modification in response to agricultural intensification, roadside management activity including fuel reduction, targeted browsing, particularly of young recruits, by rabbits, sheep, cattle and, potentially, by goats. In the longer term, the taxon may also be threatened by climatic drying and warming and by the increasing risk of repeat fire events which, operating in concert, increase the risk of adult mortality, recruitment failure, seedbank depletion and local extinction.

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 90 to 150 years is estimated to be 50 to 80% (midpoint 65%), based on (c) and (e) above.

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

The taxon is likely to have suffered significant historic decline through habitat loss to agriculture in most districts where the taxon has been reliably recorded. The few reliable records of the taxon suggest it occurs on moderately fertile sandy or loamy profiles which have been extensively cleared in the western Wimmera.

Eligible under Criterion A3 as Endangered

The population reduction over the next 90 to 100 years is projected to be 30 to 50%, based on (c) and (e) above.

Future decline is based on the current and projected impact of the identified threats.

Eligible under Criterion A4 as Endangered

The population reduction over any 90 to 150 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 80% (midpoint 50%), based on (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 B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 3,210 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally and anthropogenically at the landscape scales. Geographically discrete occurrences are separated at distances likely to exceed the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal. The only plausible dispersal mechanism is myrmecochory (dispersal by ants), which operates at the metre scale only.

Two locations can be identified based on landscape context with occurrences in highly fragmented agricultural landscapes subject to a wide range of site-specific threats which are unlikely to operate within parks and reserves.

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

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 100 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

The upper bound acknowledges that a proportion of site records of *Acacia microcarpa*, *A. halliana* and *A.* X *grayana* are likely to be referable to *A. simmonsiana.*

As above, the taxon is severely fragmented, has 2 locations and has a continuing decline in (ii), (iii), (iv) and (v) 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 as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

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 (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Acacia simmonsiana*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/c6b59aad-e3e6-4309-ade2-b2309f536040