Threatened Species Assessment

Acacia deanei subsp. paucijuga
Deane's Wattle

Taxonomy

Acacia deanei subsp. paucijuga (F. Muell. ex N.A. Wakef.) Tindale

Specimens from the Warby Ranges apparently belong to this subspecies, but more material is needed to confirm their placement (VicFlora 2018).

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criteria A2ce; D2

Species Information

Description and Life History

The taxon is a shrub or small tree, to c. 7 m tall; bark smooth, grey-brown; branchlets angular or flattened, glabrous or with appressed hairs; new growth yellow. Leaves bipinnate, dull green; rachis 1-4 cm long, with short, appressed hairs, glands at the junction of each pinna pair and sometimes 1 or more between successive pairs; pinnae in 2-8 pairs, with gland at base; pinnules in 10-30 pairs, crowded to well-spaced, linear to oblong, 4.5-10 mm long, 0.5-1 mm wide, within a single pinna more or less equal in length, hairy or glabrous, apex mostly obtuse to truncate. Inflorescence a raceme or panicle; heads globular, 15-30-flowered, pale yellow, peduncles c. 5 mm long, hairy, petals glabrous; sepals with hairy margins but glabrous outer surface. Pod more or less straight, flatfish, 6-13 cm long, 6-9 mm wide, usually constricted between seeds, dark brown to blackish, hairy at least when young. Flowers year-round (mostly in summer) (VicFlora 2018).

Generation Length

The generation length of *Acacia deanei subsp. paucijuga* is estimated to be 30 to 50 years. This is based on an inference from field observations that the taxon recruits episodically following fire or drought events, supplemented by some continuous trickle recruitment through mechanical abrasion of seed in rocky sites. Pre-settlement fire intervals are likely to have been 50-100 years or more and drought is likely to have occurred at intervals of 20-50 years. The taxon is inferred to be a fire-sensitive obligate seed regenerator (OSR) with no obvious evidence of post-fire suckering and with most stands appearing even-aged following fire or drought. The taxon may even be cued by release from grazing pressure on the Northern Plains. Although the average life span may only be 20 years, a longevity of at least 100 years is based on veterans in fire-protected rocky sites at Terrick Terrick . These plans were last burnt more than a century ago, with plants surviving unburnt through the 1909 fire.

Distribution

The taxon is common in north-central Victoria and in the Suggan Buggan area of East Gippsland. It also occurs in Qld and NSW (VicFlora 2018).

Habitat

The taxon is common in dry forest, often on stony slopes and rocky outcrops (VicFlora 2018).

Threats

Suitable habitat is still reasonably intact in the Upper Snowy district, at Mt Hope and the Terricks Ridge connecting Terrick Terrick National Park to Mt Hope, where granite hills have not been subject to historic clearance. Historic habitat loss has been largely concentrated in the Wychitella-Inglewood-Kooyoora district. The extent of historic decline in the Buangor-Mt Cole, Clunes, Euroa, Benalla and Wangaratta districts is less clear, based on site records of *Acacia deanei* or of subsp. *paucijuga*.

Although there is no clear evidence of great drought sensitivity or susceptibility to increased fire frequency or intensity, the taxon is likely to be threatened in the long-term by climatic drying and increased fire risk which, acting in concert, increase the risk of adult mortality, recruitment failure, seedbank depletion and local extinction. Repeat fire events at intervals approaching the tolerable fire interval (TFI) for the taxon reduce the capacity of the taxon to replenish seedbanks, which will potentially result in seedbank depletion and local extinction.

The local abundance of the taxon in the Terrick Terrick-Mt Hope granite area suggests that the taxon is reasonably tolerant of rabbit browsing of juveniles since rabbits are extremely abundant in the area. The taxon's susceptibility to sheep and cattle browsing is also unclear.

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 Vulnerable

The population reduction over the past 90 to 150 years is estimated to be 20 to 30%, based on (c) and (e) above.

This is based on historic habitat loss to agriculture, particularly in the Wychitella - Inglewood - Kooyoora district.

The causes of the 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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 50,307 km² which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA, is estimated to be 275 km² but other thresholds under this criterion have not been met.

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. There is no available estimate of population size for the taxon in Victoria.

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. It has a restricted distribution, with two locations, such that this restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time period of one or two generations in response to the identified threats, notably climatic drying and increased fire risk and repeat fire events at intervals approaching the TFI.

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 deanei* subsp. *paucijuga*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/a13c34fc-7b81-434c-ad04-91e5a9b60754