Threatened Species Assessment

Acacia deanei subsp. *deanei*
Deane's wattle

Taxonomy

Acacia deanei subsp. *deanei* (R.T. Baker) M.B.Welch, Coombs & McGlynn

The number of glands on the rachis between pinnae-pairs seemed variable within and between the subspecies and could not be used to distinguish the 2 taxa. Fruiting material from the Victorian plants has not been examined, but the fruits of subsp. *deanei* apparently have a less prominent margin than those of subsp. *paucijuga* and the funicle of the seed is not expanded towards the seed (VicFlora 2018).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1996)

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

Proposed conservation status

Endangered in Victoria

Criteria A2ace; B2ab(i,ii,iii,iv); C1; D

Species Information

Description and Life History

Acacia deanei 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, 3.5-10 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. 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 (VicFlora 2018a).

Subspecies *deanei* is distinguished from subsp. *paucijuga* by having pinnules on mature leaves 4-5.5 mm long; petals hairy near tip; sepals with hairy margins and usually hairs on the outer surface in contrast to subsp. *paucijuga* which has pinnules on mature leaves 4.5-10 mm long; petals glabrous; sepals with hairy margins but glabrous on the outer surface (VicFlora 2018b).

Generation Length

The generation length of *Acacia deanei* subsp. *deanei* is estimated to be 35 to 50 years. The taxon is a fire-sensitive obligate seed regenerator (OSR), which recruits episodically following intense fire at plausible pre-settlement intervals of 45-90 years or more. This is supplemented by some continuous to episodic recruitment in response to extreme drought and small-scale scarification of seed by animal activity. The taxon is fast growing, relatively drought and frost tolerant, killed by severe fires, regenerates from seed and is unlikely to resprout, coppice from the base or sucker from the root system. However, the taxon is sometimes multi-stemmed near ground level, with at least one stand on Cemetery Road confidently suckering to form a clonal copse (Eileen Collins pers. comm.). The longevity is likely to be at least 30-40 years, although it may be only 15 years in harsh conditions. Seedbanks are expected to persist for many decades.

Distribution

The taxon is restricted in Victoria to a few small populations in the Chiltern area in the North East. It also occurs in NSW and Qld (VicFlora 2018).

Habitat

The taxon is restricted in Victoria to forests dominated by *Eucalyptus sideroxylon* subsp. *sideroxylon* (Mugga), often in association with *E. albens* (White Box), *E. blakelyi* (Blakely's Red-gum), *E. bridgesiana* (But But), *E. blakelyi* (Blakely's Red-gum), *E. goniocalyx* subsp. *goniocalyx* (Bundy), *E. macrorhyncha* (Red Stringybark), *E. microcarpa* (Grey Box) or *E. polyanthemos* subsp. *vestita* (Red Box). Soils are often skeletal with outcropping rock.

Threats

The taxon is likely to have suffered significant historic decline through habitat loss and degradation as a result of agricultural activity and forestry operations. Current threats include targeted browsing by native and exotic herbivores including kangaroos, rabbits, domestic stock and Sambar, particularly during early stages of recruitment. The taxon may be threatened by competition from exotic weeds, particularly during early stages of recruitment. The taxon may also be threatened in the longer term by extreme and protracted drought stress, potentially resulting in adult mortality and recruitment failure.

Spatial analysis of likely habitat on all land tenures for Deane's Wattle indicates that 21% occurs within the Comprehensive, Adequate and Representative (CAR) reserve system, including parks and reserves, special protection zones and areas excluded from harvesting by prescription under the Victorian Code of Practice for Timber Production 2014 (the Code) in State forest. Species-specific protections for Deane's Wattle are included in the Code. The majority of the likely habitat for this taxon occurs on private land; it should be noted that the Victorian Planning Provisions regulate the clearing of native vegetation on private land in Victoria and include tighter restrictions in cases involving the habitat of threatened species.

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 105 to 150 years is estimated to be 50 to 70% (midpoint 60%), based on (a), (c) and (e) above.

This is based on historic habitat loss to agriculture, and a historical (?)decline within public land due to declining population density and suspected local subpopulation loss as a result of past gold mining and forestry activity. It is important to note that the Chiltern-Mt Pilot National Park included the stronghold of the taxon at the time of European settlement.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 105 to 150 year period, including both past and future (up to 100 years in the future), is projected to be 30 to 50% (midpoint 40%), based on (a), (c) and (e) above.

Noting the conservation dependence of nearly all extant populations, future decline is unlikely to exceed 20% given the moderate drought tolerance and recruitment potential from seedbank. There is a significantly deferred impact of climatic drying and both climatic and anthropogenic intensification of fire regime, buffered by rocky habitat and shallow to skeletal soils. Competition from exotic grasses and other invasive exotics is potentially stable or even ameliorated by climate change. The contribution of exotic grasses to fuel loads is similarly potentially ameliorated.

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 103 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally and anthropogenically at the landscape scale with seed likely to be dispersed by ants (myrmecochory) at the metre scale, noting also the ability of parrots to disperse fruit at short range (hundreds of metres) when disturbed.

It has a continuing decline in (i), (ii), (iii) and (iv) above, based on the high risk of local extinction of individual occurrences, notably the roadside occurrence at Baranduda, in response to the 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 32 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is estimated to be severely fragmented and has a continuing decline in (i), (ii), (iii) and (iv).

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:

Eligible under Criterion C as Endangered

It is estimated that there are 50 to 250 (midpoint 100) mature individuals. This is based on field observations at population monitoring sites (Eileen Collins pers. comm.).

There is estimated to be a continuing decline of 10 to 20% within two generations.

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 D as Endangered

It is estimated that there are 50 to 250 (midpoint 100) 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.

SAC (1996). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 395 *Acacia deanei* subsp. *deanei*

VicFlora (2018a). Flora of Victoria. Flora of Victoria, Royal Botanic Gardens Victoria: *Acacia deanei*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/9ea8dce7-a5ee-4ea5-bf33-6393a08e8fb0

VicFlora (2018b). Flora of Victoria, Royal Botanic Gardens Victoria: *Acacia deanei* subsp. *deanei*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/282adacf-5e8e-4967-be30-58fbaf3af753