Threatened Species Assessment

Acacia cupularis
Cup Wattle

Taxonomy

Acacia cupularis Domin

Acacia cupularis was until recently considered conspecific with *A. ligulata*. It differs from that species in having red-brown, smooth branchlets; generally narrower (1-5 mm cf. 3-14 mm wide), thinner (therefore, not as coarsely wrinkled when dry) phyllodes which are never uncinate and have rounded-obtuse apices with a minute, more or less central mucro; and narrower (4-5 mm cf. 5-9 mm wide), crustaceous pods which break readily at constrictions between seeds (VicFlora 2018).

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2bce+4bce

Species Information

Description and Life History

The taxon is a glabrous, open to subdense shrub, 1-2.5 m high; branchlets commonly dark red-brown, often lightly pruinose, not ribbed. Phyllodes rather distant, narrowly linear, 3-7 cm long, 1-4 mm wide, moderately thick, finely wrinkled when dry, subglaucous to dark green, apex rounded-obtuse, mucro minute and more or less central; midrib not prominent; glands 2 or 3, lowermost 3-14 mm above pulvinus, distal glands smaller with one at base of mucro. Racemes with rachis 1-7 mm long, 2-3-headed; peduncles 2-6 mm long; heads globular, subdense, 16-22-flowered, golden. Flowers 5-merous; sepals united, more or less truncate. Pods submoniliform, to 7 cm long, 4-5 mm wide, crustaceous, breaking readily at constrictions, more or less erect, commonly dark brown; seeds longitudinal, oblong, 3-5 mm long, dull, light brown, aril orange to scarlet. The taxon flowers mostly September to October (VicFlora 2018).

Generation Length

The generation length of *Acacia cupularis* is estimated to be 25 to 50 years. This is based on a plausible pre-settlement fire interval of 25-70 years, potentially influenced in some sites by flood events at intervals of 20-35 years. The taxon is inferred to recruit episodically, from a long-persistent soil-stored seedbank, following intense wildfire events or, potentially, by infrequent flood events. This may be supplemented by sporadic recruitment in response to localised site disturbance events. In long unburnt sites the taxon is likely to persist undetected in the seedbank.

Distribution

Although mostly coastal or near-coastal throughout its range, the taxon it is known in Victoria only from Wyperfeld and Little Desert National Parks and near Dimboola. It also occurs in Western Australia and South Australia (VicFlora 2018).

There are no reliable extant records from Wyperfeld or Little Desert National Parks, although the taxon has been reliably collected from the lake bed near the southern shore of Lake Albacutya over many years, the most recent being 1985. It has recently been collected near the western shore of Lake Hindmarsh, but these occurrences are suspected naturalisations following earlier plantings. In 1949 the taxon was collected in the Little Desert south of Kaniva, although it is unclear whether this site is now within the Little Desert National Park or whether it is still extant 72 year later.

An 1892 collection suggests the taxon once occurred in the Nhill district, and other historic collections suggest that the taxon may once have occurred also near Dimboola. In 1986 it was collected at Natimuk Lake Reserve, although this occurrence may have been planted or naturalised since there are many amenity plantings at this location. It is also naturalised at Torquay, Ocean Grove, Queenscliff and Parkville, where it has escaped from cultivation.

It is unclear whether any indigenous occurrences of the taxon survive anywhere in Victoria, since all reliably determined collections of apparently indigenous occurrences were taken at least 50 years ago, with the exception of three collections from the lake bed or southern shores of Lake Albacutya taken in 1980, 1981 and 1985.

Habitat

The taxon grows in sand, sometimes on dunes, or in loam or sandy clay in mallee communities (VicFlora 2018). A significant proportion of reliable records are for the bed or shores of inland lakes (Lakes Albacutya and Hindmarsh) or the banks of the Wimmera River at Dimboola. These occurrences may have recruited episodically following flood events. If indigenous at Natimuk Lake then the taxon may have recruited following flood events at this site since numerous other woody and herbaceous plants, including the rare *Acacia farinosa* (Mealy Wattle), recruit prolifically across the lake bed following recurrent flood events. Other records are for dryland sites supporting mallee woodlands where the taxon is likely to recruit episodically following intense fire events.

Threats

The taxon has been severely depleted as a consequence of conversion of its former habitat to widespread cereal cropping (VicFlora 2020). Incremental habitat loss and habitat degradation continue to threaten any surviving occurrences, which are likely to be small and isolated in highly fragmented agricultural landscapes, most of which are restricted to highly degraded roadsides or freehold threatened by weed invasion, herbivory by native and exotic herbivores, road management and fire management activities. Inappropriate fire regimes are a major threat to this taxon. As fire frequency increases, young plants may not reach maturity before they are killed by fire, and the seedbank may become exhausted, leading to population decline and local extinction. All occurrences are threatened by extreme and prolonged drought stress, resulting in reduced flowering and seed production, adult mortality, recruitment failure, seedbank depletion and local extinction.

At least three of the reliably recorded occurrences are on the shores or bed of large inland lakes (Lakes Albacutya and Hindmarsh) or the banks of the Wimmera River, all of which become dry during every major drought. Since it is likely that the taxon recruits at these sites following intermittent flood events, the taxon is threatened at these sites by the reducing frequency and intensity of flood events in response to climatic drying and warming, and diversion of water for irrigation and domestic supply.

The taxon may also be threatened by the pathogenic gall fungus *Uromycladium* which has been recorded infecting plants observed at Lake Hindmarsh.

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 Critically Endangered

The population reduction over the past 75 to 150 years is estimated to be 90 to 95%, based on (b), (c) and (e) above.

It is conceivable that a very large proportion (90% or more) of the original extent of the taxon has been lost to agriculture or river management.

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

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 75 to 150 year period, including both past and future (up to 100 years in the future), is estimated to be 90 to 95%, based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Future decline cannot be estimated since it is unclear whether any reliably indigenous occurrences persist in Victoria.

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 as Data Deficient

Neither Extent of Occurrence (EoO) nor Area of Occupancy (AoO) can be reliably estimated, since it is unclear whether any reliably indigenous occurrences persist anywhere in Victoria.

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 no available estimate of current population size, since it is unclear whether any reliably indigenous occurrences persist anywhere in Victoria. All recent collections of the taxon are either known or suspected to be naturalised from cultivated amenity plantings.

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 cupularis*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/d9dacc5e-ba7b-4dcb-a9cc-f9f93292d4f0