

Acacia glandulicarpa Hairy-pod Wattle

Taxonomy

Acacia glandulicarpa Reader

Current conservation status

Listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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

Proposed conservation status

Endangered in Victoria

Criteria A2ace+3bce+4ac; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a dense, spreading, somewhat viscid shrub, 1-2 m high; branchlets minutely pubescent. Phyllodes erect, on short stem projections, asymmetrically ovate to ovate-elliptic, adaxial margin more or less straight and parallel to branchlet, abaxial margin obviously convex and normally undulate, 0.5-1.3 cm long, 3-8 mm wide, glabrous; veins 2, midrib the more prominent, lateral veins few and obscure. Peduncles 1 or 2 per axil, 4-10 mm long, slender, glabrous, basal bract persistent; heads prolific, globular, 8-20-flowered, bright golden. Flowers 5-merous; sepals united. Pods narrowly oblong, to 3 cm long, c. 5 mm wide, thinly coriaceous, densely pilose with straight, slightly inflated, gland-tipped hairs; seeds oblique, oblong-elliptic, c. 3 mm long, slightly shiny, brown, aril curved over end of seed. Flowers July-October (VicFlora 2018).

Although populations of *A. ganadulicarpa* in SA have been reported as somewhat clonal, this feature is not evident in the Victorian occurrences, which consist of individuals deriving from seed regeneration. The taxon is disturbance responsive, whether from physical disturbance (e.g. soil scouring, mechanical grading, firebreak institution) or immediately post-fire from a soil seed bank. Flowering is relatively heavy by 2-3 years post-germination, with seed set immediately following.

Generation Length

The generation length of *Acacia glandulicarpa* is estimated to be 20 to 40 (midpoint 30) years. The taxon is considered to have a maximum longevity of 30-40 years, with most populations dying out before the next fire, both now and under pre-settlement conditions. The generation length is likely to be the same.

Distribution

The Hairy-pod Wattle is endemic to south-eastern Australia, where it occurs predominantly in the Wimmera region of western Victoria, in the Murray Darling Depression IBRA bioregion. It also occurs in SA in a smaller total population and considerably fewer sites. The Victorian population is scattered in about 100 woodland sites in the southern Wimmera, from south-west of Horsham to north of Nhill, with a disjunct occurrence in the Big Desert, approximately 31 km south-west from Rainbow.

Habitat

The Hairy-pod Wattle occurs in semi-arid environments with a mean annual rainfall of 400 - 500 mm, in the winter dominant rainfall zone. Many sites coincide with gentle slopes at the transition zone between heavy clay/gravel soils on the flats and sandy soils on the rises. The taxon is generally uncommon, where Buloke is the dominant canopy tree, and is sparse to absent where Broombush dominates the shrub layer.

Threats

The taxon has suffered from considerable past land clearing. Carter (2011) and DSE (2003) note that the main current and future threats are weed invasion, pathogens, roadside disturbance, grazing by introduced livestock and herbicide use. Inappropriate fire regimes that exceed the tolerable fire interval for the taxon may also be a threat.

Many sites where the hairy-pod wattle occurs are small and surrounded by agricultural land, from which pasture grasses and other weed species readily invade. Problematic weed species include Bridal Creeper *Asparagus asparagoides*, Cape Weed *Arctotheca calendula*, Patterson's Curse *Echium plantagineum* and pasture grasses such as *Avena* spp., *Bromus* spp., *Ehrharta calycina* and *Lolium* spp. High post-fire cover of introduced grasses at Gerang Gerung may have restricted establishment of new individuals. Weed invasion in degraded sites, notably narrow roadsides, is likely to be inhibiting regeneration of new individuals. The taxon may also be mistaken for Hedge Wattle *A. paradoxa*, and has sometimes been sprayed with herbicide during weed control programs. Many roadside stands occur adjacent to cropping country and may be damaged by aerial drift from agricultural herbicides.

In the late 1990s, extensive galling, thought to be produced by a rust fungus similar to that known to infect *A. enterocarpa*, was observed on plants in the largest population at Kiata. Some plants apparently died (although whether from galling or other environmental stress was not known), and there was concern that whole populations could be lost. However, by 2003, there was no obvious sign of galling on any populations surveyed, and plants in the Kiata population had apparently recovered, perhaps as a result of better rainfall that year. Galling might be initiated by plants suffering environmental stress, especially during extended drought. In larger populations, galling may be just part of natural cycle, but could be especially detrimental to the many roadside populations where just a few plants remain. The individuals are not long-lived and succumb to borers, browsing or other pathogenic processes.

Disturbance to or destruction of roadside stands and habitats is a major ongoing threat. Road works, construction and maintenance of fire breaks and installation or maintenance of services along roadsides threaten roadside remnants containing the species and has damaged or destroyed several stands. Some seedling regeneration has been observed following these activities, possibly through scarifying the hard seed coat and priming the seed for germination following suitable rainfall and/or temperatures. The taxon disappeared from at least two sites (railway line and cemetery) prior to 1996, as a result of physical disturbance. The Kiata Lowan Picnic Ground is a popular recreation location, and some trampling of vegetation and habitat may occur.

Grazing by introduced livestock may compact soil, increase weed spread and inhibit regeneration via removal of shoots and buds, particularly in drought years. Livestock grazing is formally excluded from important populations on Flora Reserves, however some farmers may run their stock through reserves during dry seasons (e.g. Sheepwash Flora Reserve). Browsing by rabbits (and ripping activities to control them) may also damage individuals and stands.

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%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>			
<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p> <p><i>based on any of the following:</i></p>			

Evidence:

Eligible under Criterion A2 as Endangered

The population reduction over the past 60 to 120 years is inferred to be 60 to 80 (midpoint 75)%, based on (a), (c) and (e) above.

This is based on existing records, habitat, past clearing and the impacts of the identified threats.

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

Eligible under Criterion A3 as Endangered

The population reduction over the next 60 to 100 years is suspected to be 20 to 70 (midpoint 30)%, based on (b), (c) and (e) above.

This is based on inappropriate fire regimes, including from planned burning, site specific disturbances and fragmentation.

Eligible under Criterion A4 as Endangered

The population reduction over any 60 to 120 year period, including both past and future (up to 100 years in the future), is inferred to be 40 to 80 (midpoint 60)%, based on (a) and (c) above. The causes of reduction may not have ceased, be understood or be reversible.

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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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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 Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 160 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas. The large discrepancy between EoO and AoO is attributable to the scattering of isolated stands of *A. glandulicarpa* in a sea of cleared croplands.

The taxon is suspected to be severely fragmented naturally at the regional and landscape scales. It is suspected to have 3 locations. It has a continuing decline in (i), (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				

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Eligible under Criterion C as Vulnerable

It is estimated that there are 6,000 to 12,000 (midpoint 8,000) mature individuals. Targeted surveys have counted numbers of individuals. The taxon is not clonal and does not reproduce asexually.

There is estimated to be a continuing decline of 20 to 70% within three 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 km ² or number of locations ≤ 5 [Ⓜ]

Evidence:

Ineligible under Criterion D

It is estimated that there are 6,000 to 12,000 (midpoint 8,000) mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

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