



Dodonaea boroniifolia Hairy Hop-bush

Taxonomy

Dodonaea boroniifolia G. Don

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 A3bce+4bce; B2ab(iii,v)

Species Information

Description and Life History

The taxon is a dioecious or rarely polygamodioecious, spreading to erect shrub to 2(-4) m high; branches terete or slightly angular, densely covered with simple, arched hairs. Leaves imparipinnate, 6-40 mm long (excluding petiole), with 6-16 lateral leaflets; leaflets narrowly angular-obovate to obovate, 2.5-10 mm long, 1.5-5.5 mm wide, apex 3-6-toothed or -lobed, the teeth broadly acute to obtuse, the central one often recurved, margins revolute or recurved, surfaces glandular-viscid, glabrous to pubescent; petiole 1-8 mm long. Flowers paired or in threes, axillary; pedicels 4-8(-12) mm long; sepals 4, lanceolate to ovate, 2-4 mm long, viscid, caducous; stamens 8-10, longer than sepals; ovary densely pilose. Capsule 4-winged, broadly elliptic in outline, 10-20 mm long, 12-18 mm wide, glabrous or sometimes pubescent, wings 2.5-5 mm wide, membranous. Seed lenticular, strongly compressed towards margin, 2.1-2.6 mm long, black, dull, exarillate. The taxon flowers from autumn and spring (VicFlora 2019).

Generation Length

The generation length of *Dodonaea boroniifolia* is estimated to be 35 to 65 years. The longevity is estimated to be in the range of 25-40 years or more, being a bit less than that of the more robust *D. viscosa* (designated as 40-150 years by EUFI (2019)). Reproductive maturity would be reached in well under 5 years. The taxon is likely to be fire-sensitive, with episodic recruitment from a soil-stored seedbank at an estimated pre-settlement fire interval of 35-70 years. This may be supplemented by some recruitment in response to outstanding rainfall events or localised site disturbance events.

Distribution

The taxon is occasional in north-central and north-east Victoria (Albury-Wangaratta-Myrtleford area, Strathbogie Ranges, Pyrenees-Bealiba Ranges, and Pine Mountain), and in Gippsland near Maffra (VicFlora 2019).

Habitat

The taxon grows on or near granite or sandstone outcrops in eucalypt woodland, shrubland and heath (VicFlora 2019).

Threats

Potential threats to the taxon include the effects of climate change including reduced rainfall reliability, failed recruitment and reproduction due to drought conditions, damage to plants and soils by off-road recreational

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vehicles, and weed invasions impacting regeneration. Heavy browsing of the plant by Sambar Deer (*Rusa unicolor*) has been observed in the Strathbogie Ranges. The plant may also be palatable to wallabies, and seedlings may be vulnerable to rabbit browsing. The taxon is likely to be vulnerable to increased frequency and intensity of fire, and some populations may be vulnerable to genetic effects associated with small numbers of individuals.

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 style="text-align: center;"><i>based on any of the following:</i></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>			

Evidence:

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is suspected to be 40 to 80% (midpoint 60%), based on (b), (c) and (e) above.

While future declines are likely, the extent of impact of the identified threats over this period is unclear and may range from minor to extreme.

Eligible under Criterion A4 as Endangered

The population reduction over any 105 to 195 year period, including both past and future (up to 100 years in the future), is suspected to be 50 to 90% (midpoint 60%), based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Past declines are likely to have occurred due to deer browsing and the effects of prescribed burning (especially during dry conditions). Future declines are likely.

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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 147 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented as it is known from widely dispersed general locations, and typically occurs within restricted patches of suitable habitat with no capacity for long-distance dispersal.

It is inferred to have 5 locations, and has a continuing decline in (iii) and (v) above as a result of inappropriate fire regimes, particularly too frequent fires, grazing by feral animals, and drought stress.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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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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 km ² 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.

UFEI (2019). UFEI - SelecTree: A Tree Selection Guide. *Dodonaea viscosa*. Retrieved from: <https://selecttree.calpoly.edu/tree-detail/dodonaea-viscosa>

VicFlora (2019) Flora of Victoria, Royal Botanic Gardens Victoria: *Dodonaea boroniifolia*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/1e5f830b-74a1-4907-9b70-d82c6858b4dc>