

Dodonaea viscosa subsp. *angustifolia* Giant Hop-bush

Taxonomy

Dodonaea viscosa subsp. *angustifolia* (L. f.) J.G. West

Dodonaea viscosa comprises of 7 subspecies, 4 of which occur in Victoria. Generally, these subspecies are readily distinguishable, but many intermediates exist where two or more subspecies are sympatric, e.g. western and eastern Victoria. Owing to the difficulty of assignation of old records of *D. viscosa*, and the numerous specimens of unclear subspecific affinity, only general distribution information is available for the subspecies (VicFlora, 2017).

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Species Information

Description and Life History

The taxon is a dioecious or polygamodioecious, compact shrub to 5 m; branchlets angled to flattened, usually slightly ribbed, puberulent to glabrous. Leaves simple, petiolate, linear-lanceolate, 5.5-10 (-14) cm long, 5-10 mm wide, acute to acuminate; margins usually entire, rarely somewhat sinuate; lateral venation conspicuous; glabrous, viscid; petiole 6.5-18 mm long. Flowers in terminal panicles; pedicels 3-9 mm long; sepals 3-4, lanceolate to ovate, 1.3-3 mm long, viscid, caducous; stamens 6-10, usually 8, usually longer than the sepals; ovary glabrous to pubescent. Capsule 3-4-winged, broadly elliptic to transversely elliptic in outline, 8.5-22(-28) mm long, 11-22 (-28) mm wide, glabrous, wings 2-6 (-10) mm wide, membranous or sometimes coriaceous; seed lenticular, 2-3.1 mm long, black, dull, exarillate. The taxon flowers mostly in spring and summer (VicFlora, 2017).

Generation Length

The generation length of *Dodonaea viscosa* subsp. *angustifolia* is estimated to be 45 to 90 years. This is based on a plausible pre-settlement fire interval of 45-90 years, depending on habitat range, and the likelihood that the taxon is a fire-sensitive obligate seed regenerator which recruits episodically following intense fire events with only minor opportunist recruitment in response to localised site disturbance events or outstanding seasonal conditions. The longevity is plausibly also 45-70 years, or potentially up to 90 years, depending on the habitat range of the taxon.

Distribution

The taxon is confined to far eastern Victoria, in the Orbost, Suggan Buggan, Cann River, Genoa, and Mallacoota areas, and is rather rare. It also occurs in New South Wales, Queensland, the Pacific region, Asia, Africa and the Americas (VicFlora, 2017).

Unvouchered site records in the Victorian Biodiversity Atlas (VBA) are likely to overestimate the true geographic range of the taxon, through inadvertent data entry errors and confusion between subsp. *angustifolia* and subsp. *angustissima*. This is particularly problematic in drier districts of eastern Victoria where both subspecies have apparently been reliably recorded on the basis of specimen records in the Australian Virtual Herbarium (AVH).

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Even some of these records may be susceptible to misidentification given the propensity for the subspecies of *D. viscosa* to hybridise or intergrade in areas of sympatry (VicFlora, 2017).

Habitat

The taxon occurs in mainly dry sclerophyll forest and woodland, often in rocky areas (VicFlora, 2017).

Threats

Historic decline through habitat loss due to agriculture is difficult to estimate, given the uncertainty regarding the distribution of the taxon. In any case, historic decline is likely to be relatively insignificant since the taxon appears to favour sites of low fertility, or shallow and often skeletal soils not targeted for agricultural clearance.

Current threats are equally difficult to identify given some uncertainty regarding the reliability of both historic and recent site and specimen records of the taxon. In the longer term, however, the taxon may be at risk of adult mortality and recruitment failure in response to repeat fire events, extreme drought stress, and targeted or casual browsing by native or exotic herbivores including Sambar Deer (*Rusa unicolor*), feral horses, goats, rabbits, sheep, cattle, and macropods.

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:

Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 49 km² and the Area of Occupancy (AoO) is estimated to be 16 km², based on accepted, post 1970 records from the VBA, 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 no available estimate of current population size for Victoria.

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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.	1	1	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. It has a restricted distribution, with an AoO of 16 km² and fewer than five locations, such that this restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations, in response to the identified threats, notably repeat fire events, extreme drought stress, and targeted or casual browsing by native or exotic herbivores

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 (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Dodonaea viscosa* subsp. *angustifolia*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/469f892b-b0c7-4aab-b0ba-ec5e2b86d84f>