

Marsdenia australis Doubah

Taxonomy

Marsdenia australis (R. Br.) Druce

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion A2bce+3ce+4bce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a slender climber with stems to c. 4 m long; stems finely hairy, particularly when young. Leaves linear to linear-lanceolate, 3–12 cm long, 2–8 mm wide, thick, slightly fleshy, apex acute, base cuneate, margins flat, both surfaces finely hairy, rarely glabrous, midvein prominent and channelled above, secondary veins obscure; glands 1–5 at base of midvein, minute, rarely absent; petiole 2–15 mm long. Inflorescences usually 6–19-flowered; peduncles mostly 3–15 mm long. Pedicels 3–15 mm long; sepals ovate, 2.5–4 mm long, free almost to base, pubescent; corolla 6–8 mm long, glabrous, white to yellow, tube glabrous inside, lobes obtuse, 3–4 mm long, erect or incurved. Follicles ovoid to obloid, 4–10 cm long, 2.5–3.5 cm wide, smooth, hoary, thick-walled; seeds 5–8 mm long, c. 4 mm wide, coma hairs 2–4 cm long. The taxon flowers in late spring–summer (VicFlora 2019).

The taxon is a slender, long-lived, monoecious perennial twining vine, often ascending trees and shrubs. The roots are tuberous with tubers to 16 cm diameter. It is a post-fire resprouter and reproduces only by seed. It is pollinated by insects for nectar as the floral reward. The taxon is self-fertile, and there are often very few plants in the landscape. The seeds, with a large comma, are wind-dispersed. Germination is rapid (two weeks) and evidently dependant on summer rain.

Generation Length

The generation length of *Marsdenia australis* is suspected to be 50 to 80 years. This is based on the age structure of subpopulations in New South Wales.

Distribution

The taxon occurs in far north-west Victoria, north of Walpeup, and west of Boundary Bend. It also occurs in Western Australia, the Northern Territory, South Australia, Queensland, and New South Wales (VicFlora 2019).

Habitat

The taxon occurs in mallee scrub and woodland on relatively fertile loamy sands and heavier clay soils.

Threats

Threats to the taxon include weed invasion, pigs eating tubers, and the effects of climate change including reduced rainfall, increased evaporation, and extreme temperatures.

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 A2 as Endangered

The population reduction over the past 150 to 240 years is suspected to be 60 to 80% (midpoint 70%), based on (c) above.

Past reduction is based on the opinion of D. Tonkinson in consultation with D. Cameron who consider that the taxon is restricted to heavier soil woodlands, and some more fertile sands with woodlands and scrublands, all in fragmented landscapes and often in degraded remnants that are frequently weedy. It sometimes occurs in roadsides in rural landscapes which have been extensively cleared for cropping and some irrigation, especially near Robinvale.

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 100 years is suspected to be 40 to 60% (midpoint 50%), based on (c) above.

Future reduction is based on the suite of threats identified, particularly climate change and weed invasion.

Eligible under Criterion A4 as Endangered

The population reduction over any 150 to 240-year period, including both past and future (up to 100 years in the future), is suspected to be 50 to 70% (midpoint 60%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 B1 as Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 9,589 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented as habitat loss in the region has been very extensive, and the distance between many subpopulations precludes genetic exchange via insect pollinators or seed dispersal.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the impacts of the identified threats, particularly climate change and weed invasion.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) is estimated to be 123 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, has 1 location, and 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			

Evidence:

Ineligible under Criterion C

It is suspected that there are 1,000 to 1,500 mature individuals, but the qualifier is too weak.

Criterion D. Very small or restricted populations				
		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 suspected that there are 1,000 to 1,500 mature individuals which exceeds the thresholds for criterion D.

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

References

Cunningham, G.M., Mulham, W.E., Milthorpe, P.L., and Leigh, J.H. (1992). *Plants of Western New South Wales*. (CSIRO publishing: Collingwood). (as *Leichardia australis*).

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne. Retrieved from:



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https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Marsdenia australis*. Retrieved from <https://vicflora.rbg.vic.gov.au/flora/taxon/6c879d6a-b598-46b8-abe0-7d6bd338333d>