

# Threatened Species Assessment

## *Desmodium brachypodum* Large Tick-trefoil

### Taxonomy

*Desmodium brachypodum* A. Gray

### Current conservation status

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

### Proposed conservation status

Vulnerable in Victoria

Criterion A2bc

### Species Information

#### Description and Life History

Erect or climbing herb, to 60 cm tall; stems rigid, upright, with short spreading uncinuate or recurved hairs. Leaves trifoliolate, lower leaves sometimes 1-foliolate; leaflets ovate to elliptic, 1.5-7 cm long, 7-40 mm wide, upper surface more or less glabrous, lower surface with minute uncinuate hairs, apices obtuse to acute; petiole 20-55 mm long; stipules 4-8 mm long; stipellae to 5 mm long. Racemes terminal, 15-40 cm long, 8-20-flowered; pedicels 1-2 mm long, shorter than calyx in fruit. Flowers usually paired, close; petals c. 5 mm long, mauve to red or yellowish. Pod 20-40 mm long, densely covered with minute uncinuate hairs; articles 3-8, each 3-5 mm long. Flowers spring-autumn (VicFlora 2019).

#### Generation Length

The generation length of *Desmodium brachypodum* is suspected to be 30 to 40 years. The taxon appears to be reasonably long-lived, with a persistent seedbank. It has been suggested to have a pre-settlement fire frequency in the range of 50-80 years, but it also occurs in protected rocky areas which would appear to be very rarely burnt. It is not dependent on fire alone for recruitment, with some continuous recruitment in response to soil instability e.g. landslides, animal activity, possibly drought, and intense insolation and heating of rocky substrates.

#### Distribution

The taxon is confined to rain-shadow areas of eastern Victoria, in the Upper Snowy River and Tabberabbera area (VicFlora 2019).

#### Habitat

The taxon grows in open-forest and woodland on dry ridges and along river valleys. (VicFlora 2019).

#### Threats

There has been some prior stock grazing and weed invasion along the lower slopes near McKillops bridge, and clearing for grazing in the Deddick Valley. The activities of feral animals may affect the habitat in the long term.

The taxon has been observed to persist at Royals Creek despite high densities of rabbits and Eastern Grey Kangaroos (*Macropus giganteus*) (D. Tonkinson pers. comm.), indicating some degree of tolerance of continuous grazing. D. Frood (pers. comm.) noted browsing by deer at Deddick. Due to the drought tolerance of this taxon,

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climate change is not thought to be a major threat. The taxon is hard-seeded, more so than other Victoria *Desmodium* spp., attested to by germination on roadsides such as at Wheelers Saddle, so is not likely to be threatened by fire.

### 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 Vulnerable

The population reduction over the past 90 to 120 years is suspected to be 20 to 30%, based on (b) and (c) above.

This is based on impacts such as prior stock grazing and weed invasion along the lower slopes near McKillops bridge, and clearing for grazing in the Deddick Valley.

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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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 6,042 km<sup>2</sup>, and the Area of Occupancy (AoO) is estimated to be 80 km<sup>2</sup>, based on accepted, post-1970 records in the Victorian Biodiversity Atlas, 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 <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				

### Evidence:

#### Ineligible under Criterion C

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It is inferred that there are 1,000 to 10,000 mature individuals, but other thresholds under this criterion have not been met.

Criterion D - Very small or restricted population <sup>Ⓜ</sup>			
<sup>Ⓜ</sup>	Critically Endangered <sup>Ⓜ</sup>	Endangered <sup>Ⓜ</sup>	Vulnerable <sup>Ⓜ</sup>
Number of mature individuals (observed or estimated) <sup>Ⓜ</sup>	<50 <sup>Ⓜ</sup>	<250 <sup>Ⓜ</sup>	<1,000 <sup>Ⓜ</sup>
D2 - Only applies to the VU category <sup>¶</sup> 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. <sup>Ⓜ</sup>	- <sup>Ⓜ</sup>	- <sup>Ⓜ</sup>	D2 - Typically: <sup>¶</sup> AoO < 20 km <sup>2</sup> or number of locations ≤ 5 <sup>Ⓜ</sup>

### Evidence:

#### Ineligible under Criterion D

It is inferred that there are 1,000 to 10,000 mature individuals, which exceeds the thresholds for criterion C.

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.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Desmodium brachypodum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/fa23e8fa-5a2c-4bf1-bebf-376c9f8b9d9c>