

Dissocarpus biflorus var. *biflorus* Twin-flower Saltbush

Taxonomy

Dissocarpus biflorus var. *biflorus* F. Muell.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2bce+3bce+4bce

Species Information

Description and Life History

Sprawling to erect subshrub to c. 60 cm high. Leaves linear, semi-terete, 5–12 mm long, appearing grey from a dense covering of simple, semi-appressed hairs. Flowers 2 or 3. Aggregate fruit woody, shortly pubescent, the lower part subglobular, 3–5 mm diam., hollow at base; cylindrical processes 1–3, woody, widely divergent, 2–3.5 mm long. Fruits mostly September–November (VicFlora 2019).

Generation Length

The generation length of *Dissocarpus biflorus* var. *biflorus* is estimated to be 15 to 35 years (midpoint 25 years). Despite it being a shrub and often growing in habitats not supporting similar chenopods, it is not prominent and is suspected to often be overlooked.

Distribution

In Victoria, the taxon is restricted to the upper flood limits along the lower Murray River and similar endorheic drainage lines near Lake Tyrrell, plus a few sites in the eastern Raak and near Pink Lakes.

There is a questionable record from saline marshland margins near Werribee. This is not unsuitable habitat and this record is imaginable (other often halophytic spp. share a similar distribution outlier), but this record is not presented by Vicflora online. This record may be a recent introduction, post-settlement.

Habitat

The taxon occurs in moderately saline to low saline habitats associated with heavy soils in areas prone to only occasional flooding. It is capable of regeneration in the absence of floods, but is believed to require an extended period (up to a year or more) of saturated barely-saline soil for successful germination and establishment.

This subshrub is largely restricted to barely-saline sites towards the upper limit of floods along the Murray River on fine-grained clay soils in open sites, and also to places high in the Raak catena which are subject to notable inflows of less saline soil water during winters, in the northern Mallee region. Once established, it is drought tolerant.

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Threats

The main threat to the taxon is river regulation, that means that peak floods can no longer occur in the riverine habitats. It can establish without flooding, but it is rare when compared with its response to peak floods.

It rarely occurs in large numbers, suggesting susceptibility to being browsed by rabbits, goats, and domestic stock. While it is not highly preferred fodder, it is moderately palatable. Unreserved occurrences are subject to extinction by domestic stock and other pests, and reserved occurrences are subject to feral goat and rabbit browsing, therefore its survival depends on effective control measures of these agencies.

It is possible that revegetation works on nearby dunes may provide a low-level threat by removing soil water that would otherwise seep into occupied sites for *D. biflorus*.

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>based on any of the following:</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>
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Evidence:

Eligible under Criterion A2 as Critically Endangered

The population reduction over the past 45 to 105 years is inferred to be 65 to 90% (midpoint 85%), based on (b), (c) and (e) above.

Past decline is based on palatability, past disturbance for firewood collection, and lack of peak floods.

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

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 45 to 100 years is suspected to be 85 to 95% (midpoint 95%), based on (b), (c) and (e) above.

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Future decline is based on the lack of peak floods, revegetation works, and the reduction in current controls of feral mammals.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 45 to 105 year period, including both past and future (up to 100 years in the future), is suspected to be 85 to 100% (midpoint 95%), based on (b), (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) is estimated to be 6,174.6 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to have 3 to 4 locations, based on disjunct regional concentrations with Murray Scroll Belt, or 2 locations based on the taxon's exposure to stock grazing.

It is projected to have a continuing decline in (iii) and (v) above, based on the lack of peak floods, and revegetation works that may reduce outflows to the lenses of suitable habitat.

Eligible under Criterion B as Endangered

The Area of Occupancy (AoO) is estimated to be 96 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon has 3 to 4 locations, and a continuing decline in (iii) and (v) above.

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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 estimated that there are 500 to 10,000 (midpoint 3,000) mature individuals, but other thresholds under this criterion have not been met.

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 estimated that there are 500 to 10,000 (midpoint 3,000) 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., Leigh J.H. (1981). *Plants of Western New South Wales* Soil Conservation Service NSW



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

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