

Wahlenbergia tumidifructa Mallee Annual-bluebell

Taxonomy

Wahlenbergia tumidifructa P.J. Sm.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(iii)c(iv)

Species Information

Description and Life History

The taxon is a single- or few-stemmed annual (rarely perennial), commonly glabrous, or with scattered coarse hairs near base; stems ascending to erect, 5-40 cm long, simple or few-branched, often leafless in upper half; leaves alternate (or basal 1-2 pairs opposite) obovate to narrow-elliptic near base, to linear above, 2-50 mm long, 0.5-10 mm wide; margins entire or weakly callus-toothed. Hypanthium globose to obovoid, 1-3 mm long, glabrous; calyx-lobes erect, narrow-triangular, 1-4 mm long, glabrous; corolla campanulate, pale blue, tube 1-5 mm long, from shorter to longer than calyx-lobes, lobes elliptic to obovate, 2-5(-6.5) mm long, 1-3.5 mm wide, acute; style 2.5-6 mm long, not or indistinctly constricted near midway, lobes 3, linear. Capsule plump, globose to obovoid, 2.5-9 mm long, 2-4.5 mm wide. The taxon flowers mostly September to October (VicFlora 2019).

Generation Length

The generation length of *Wahlenbergia tumidifructa* is estimated to be 2 to 7 years. This is based on the frequency of adequate water for recruitment, as the taxon's longevity rarely exceeds one year and it relies on flood or major rainfall events for successful recruitment. Prior to water extraction from the Murray-Darling river system for agriculture, the frequency and intensity of flood events were dependent on La Niña events which, historically, occurred at 2-7 year intervals.

Distribution

In 2012 the taxon was collected at Neds Corner Station in far north-west Victoria. The taxon has been recorded from the Big Desert and Hattah-Kulkyne area and the Murray River floodplain between Barmah and Strathmerton. It also occurs in Western Australia, the Northern Territory, South Australia, Queensland, and New South Wales (VicFlora 2019).

Habitat

The taxon is recorded from sandy flats and shallow depressions in the Big Desert and Hattah-Kulkyne area, and on black soils of the floodplain of the Murray River between Barmah and Strathmerton (VicFlora 2019).

Threats

The taxon is threatened by reductions in the frequency and reliability of flood events and major rainfall events in response to climatic drying, and water extraction and diversion.

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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> <ul style="list-style-type: none"> (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:

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 116 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 naturally at the regional and landscape scales and anthropogenically at the landscape scale, with geographically isolated occurrences separated at distances exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal.

It is estimated to have 2 locations, and has a continuing decline in (iii) above based on the current and projected impact of the identified threats, such as reductions in flood and rainfall events, climatic drying, and water extraction and diversion.

It is estimated to have extreme fluctuations in (iv) above under pre-European settlement conditions, in response to flood and rainfall events.

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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 as Data Deficient

The population size of the taxon cannot be meaningfully estimated since the taxon is subject to extreme fluctuation in population size.

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

There is insufficient evidence to determine the number of mature individuals and it is not 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. 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



Wahlenbergia tumidifruca
Mallee Annual-bluebell

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria. *Wahlenbergia tumidifruca*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/7af645e8-372a-4520-a34c-59ce76ca793c>