Threatened Species Assessment

Wurmbea uniflora
One-flower Early Nancy

Taxonomy

Wurmbea uniflora (R. Br.) T.D. Macfarl.

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criteria A2ce+3ce+4ce

Species Information

Description and Life History

Wurmbea uniflora is a perennial summer-dormant, cormous geophyte to 17 cm high, with an annually renewed corm (the 'mother' corm assumed to die and the 'daughter' corm enters dormancy, to renew growth next autumn). A post-fire resprouter. Reproduction by seed only, recruitment continuous from a soil-stored seedbank of unknown longevity; fire stimulates a pulse of germination and plants are post-fire resprouters and fire stimulates post-fire flowering. Flowers hermaphrodyte (bisexual), one rarely two per inflorescence. Flowers perhaps self-pollinating (hence self-fertile) or outbreeding; if flowers are not self-pollinating, they are pollinated by insects for a nectar floral reward. Pollination is assumed to be mostly by flies (in *Wurmbea*). Seeds are passively dispersed from the capsules by the censer mechanism (i.e. by wind or animal interference etc.) from the upright dehisced capsules. Dispersal distance likely to be only a few metres, and combined with pollination movement distances, gene-flow is likely to be not more than a few tens of metres.

Generation Length

The generation length of *Wurmbea uniflora* is suspected to be 15 to 30 years, based on the taxon's assumed longevity and continuous recruitment.

Distribution

Wurmbea uniflora is widespread across southern lowland Victoria from the far south-west to far East Gippsland.

Habitat

The taxon occurs on a variety of well-drained substrates derived from diverse geologies, in grassy and heathy woodland, open forest and coastal scrub in lowlands below c. 450 m above sea level.

Threats

Threats include: climate change (decreased rainfall, increased evaporation, extreme temperatures); increased frequency and intensity of fire; inappropriate timing of prescribed fire (winter-spring); impacts of fire control activities; elevated fuel loads of invasive plants (notably *Acacia longifolia* s.l.) causing the sterilisation of the soil and destruction of seedbanks when burnt; soil loss on bare post-fire substrates resulting from severe rainfall events; drying/destruction of wetland margins by forest plantations (softwood, hardwood) use of ground water and canopy interception of precipitation; weed invasion; and grazing and environmental damage by cattle.

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:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 45 to 90 years is inferred to be 30 to 50% (midpoint 40%), based on (c) and (e) above.

Past reduction of the taxon's population is based on historic land clearing for agriculture and forestry, grazing of forests/woodlands, weed invasions, and provision of infrastructure.

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

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 45 to 90 years is inferred to be 30 to 50% (midpoint 40%), based on (c) and (e) above.

Future reduction of the taxon's population is based on the projected impacts of the suite of threats, particularly climate change, weed invasion and altered fire regimes.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 45 to 90-year period, including both past and future, is is inferred to be 30 to 50% (midpoint 40%), 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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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 Area of Occupancy (AoO) is estimated to be 182 km², 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 insufficient evidence to determine the number of mature individuals.

Criterion D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 50	< 250	D1 < 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 km2 or number of locations ≤ 5

Evidence:

Ineligible under Criterion D

There is insufficient evidence to determine the number of mature individuals.

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

References

Bates, R.J. (1995). The species of Wurmbea (Liliaceae) in South Australia. *Journal of the Adelaide Botanic Gardens*. 16: 33-53

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