Threatened Species Assessment

Najas tenuifolia
Water Nymph

Taxonomy

Najas tenuifolia R. Br.

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)

Species Information

Description and Life History

The taxon is a herb up to 1 m long; monoecious. Leaves 14-27(-50) × 0.2-1(-3) mm, length to width ratio 30-62; sheath with auricle triangular to narrowly triangular; lamina margin with teeth up to c. 0.1 mm long, dorsal surface without teeth; leaf-sheath scales narrowly triangular to linear-triangular. Flowers 1-3 together. Male flowers with outer cup-like structure 2-3.8 mm long. Female flowers (1-)1.5-3.5(-4) mm long; stigmas 2. The taxon flowers from January to March or irregularly (VicFlora 2021).

Generation Length

The generation length of *Najas tenuifolia* is unknown. It cannot be estimated with confidence since the taxon behaves as a warm season species, potentially behaving as an annual although it may resprout from perennating tuberoids like a *Potamogeton* or *Ruppia* which have turions as perennating organs. Helen Ashton (1973) describes the taxon as an annual but then queries this in her discussion.

Distribution

The taxon is apparently restricted in Victoria to the Murray River and its lower tributaries. The taxon occurs on all mainland states, Malesia and New Caledonia (VicFlora 2021).

Habitat

The taxon occurs in still or slowly moving fresh or occasionally brackish water of billabongs and tributaries of the Murray River (VicFlora 2021).

Threats

Historically, the taxon has been threatened by river regulation, water turbidity induced by the exotic fish *Cyprinus carpio* (Carp) and reduced flood frequency, particularly in isolated water bodies such as Reedy Lagoon. The lagoon has experienced a tenfold reduction in flood frequency from effectively annual winter flood to now only once in 10 years unless maintained by environmental water allocation. Each of these threats persists and may increase in intensity in response to climate change and river regulation, although the latter may be mitigated by environmental water allocation.

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:

Ineligible under Criterion A

Historic and future declines cannot be estimated with confidence since there is no reliable estimate of generation time.

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:

Eligible under Criterion B1 as Vulnerable

The Extent of Occurrence across the taxon's range is estimated to be 14,563 km², based on accepted, post-1970 records in the VBA.

The taxon is estimated to have fewer than ten locations based on the identified threats which operate across its Victorian range. It has a continuing decline in (iii) above, based on the impact of the current and projected identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy across the taxon's range is estimated to be 18 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has 1 and has a continuing decline in (iii) 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 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 (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 km2 or number of locations ≤ 5

Evidence:

Eligible under criterion D2 as Vulnerable

The taxon is estimated to be very restricted.

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

References

Aston, H. I. (1973). *Aquatic Plants of Australia*: 261-263

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

VicFlora (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Najas tenuifolia*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/07ae166e-56a0-4407-971f-d8611e52a986