Threatened Species Assessment

Neobassia proceriflora
Soda Bush

Taxonomy

Neobassia proceriflora (F. Muell.) A.J. Scott

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ac(iv)+2ac(iv)

Species Information

Description and Life History

The taxon is an annual or short-lived perennial, decumbent to erect glaucous subshrub to 40 cm high, glabrous, pilose or villous with fine hairs to c. 5 mm long; branchlets brittle. Leaves linear, fleshy, flattened-terete, 10-20 mm long, c. 1 mm diam. Fruiting perianth appressed to stem, slightly woody, ridged-striate, tubular to bluntly ellpisoid, 5-8 mm long, 1.5-2 mm diam., oblique basally, apex shortly 5-toothed or 5-spined from an oblique, membranous cup-like structure. Fruits November-March (VicFlora 2021).

Generation Length

The generation length of *Neobassia proceriflora* is inferred to be 1 to 8 years. This is based on the likelihood that average summer rainfall events are adequate to induce germination and for the progeny to survive. This likelihood is based on the collecting notes on Victorian specimens, indicating that this rather cryptic taxon is seemingly abundant only following summer rains (VicFlora 2021) and observations by Cunningham *et al.* (1981) that dense populations can be found even in areas weakened by drought or overgrazing, and hence may not be dependent on flooding events.

Distribution

In Victoria, the taxon is known only from 2 sites ca. 10 km apart at Walpolla and Linsday Islands, in the far north-west of the State. The taxon also occurs in the Northern Territory, South Australia, Queensland and New South Wales.

Habitat

The taxon is apparently restricted in Victoria to chenopod shrublands and *Eucalyptus largiflorens* woodlands, often slightly saline, on the Murray River floodplain in the far north-west (e.g. Walpolla and Lindsay Islands) (VicFlora 2021).

Outside Victoria, the taxon grows usually on clay soils, often in slightly saline situations.

Cunningham *et al.* (1981) notes that in western New South Wales the taxon is rarely abundant in strong natural pastures, but more frequent in areas in which the pasture has been weakened by drought or overgrazing, often abundant around sheep yards, well used stock-routes, and watering points (VicFlora 2021).

Threats

Given that the taxon seems to behave like an annual at times, it is likely that extended dry periods would result in less seed germination, and subsequently impact the survival of the taxon. Whilst hydrological modification that results in a lack of flooding poses a threat, frequent flooding is not considered a threat as *Neobassia* occurs on grey clay on elevated terraces that are much less frequently flooded naturally.

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

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.

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 34 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented based on its limited dispersal ability, the barriers to dispersal and/or the lack of habitat separating them. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have one location. Walpolla Island is treated a single location because of the relatively close distance between the two subpopulations, similar habitat, and because a single catastrophic event could cause the taxon to become extinct.

It is inferred to have extreme fluctuations in (iv) above. One of the known sites at Walpolla Island was visited during a good season, but the taxon was not seen. This suggests that it can be absent from known sites for certain periods of time, and that factors other than rainfall or flooding play a role in its ecology.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is severely fragmented, has 1 location, and has extreme fluctuations in (iv) 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

It is estimated that there are 700 to 2,000 mature individuals, but other thresholds under this criterion have not been met.

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 D 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

Cunningham, G.M., Mulham, W.E., Milthorpe, P.L., and Leigh, J.H. (1981). *Plants of western New South Wales. Soil* Conservation Service of New South Wales.

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

VicFlora (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Neobassia proceriflora*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/9d209f7a-d70f-4820-8f84-4cd9ae06a89e