Threatened Species Assessment

Brachyscome readeri
Reader's Daisy

Taxonomy

Brachyscome readeri G.L.R. Davis

According to VicFlora (2016) 'Populations in northern Victoria differ from those in the south-west by often becoming larger in stature (3-23 cm high), with larger (0.5-9 cm long and 1-15 mm wide) and often more dissected (entire or once or twice pinnatisect with 1 or 3-20 lobes) leaves. Populations from the south-west are 3-13 cm high, with leaves that are 0.5-5 cm long and 0.5-7 mm wide and are usually entire or at most pinnatisect with 1-4 lobes. However, recognition of northern and south-west plants as separate taxa seems untenable given that occasional plants are found with variable leaf form (Short 2014). The same chromosome number, 2n=10, has been recorded in both northern and south-west populations (Watanabe and Short 1992; Watanabe *et al*. 1996). Populations from northern Victoria are vegetatively similar to *B. gracilis* but differ in cypsela morphology.'

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

Brachyscome readeri is an erect annual, 3-23 cm high, with scattered eglandular hairs. Leaves basal and cauline, mainly linear or narrowly obovate, 0.5-9 cm long, 0.5-15 mm wide, entire or c. the upper half 1- or 2-pinnatisect, dilated basally. Bracts 8-15, c. 1-seriate, c. equal, 2.5-4.5 mm long, 1-2 mm wide, thin, mainly herbaceous but with scarious, sometimes purplish margins, glabrous; ligules to c. 8 mm long, white or mauve. Cypselas c. cuneate to obdeltoid, straight, 1-1.8 mm long, 0.9-1.3 mm wide, greenish or dark brown, glandular hairs sometimes present, eglandular hairs occasionally present on tubercles; ridges 2 per face, smooth to tuberculate; marginal ribs smooth; pappus 0.2-0.6 mm long. Flowers September-November (VicFlora, 2016).

Generation Length

The generation length of *B. readeri* is estimated to be 1 to 5 years (midpoint 3 years). This is notionally estimated at 3 years based on the assumption that the taxon is likely to recruit from seed in most seasons, with the suggestion being that most occurrences are not strongly flood dependent and may potentially be constrained by flooding (Dale Tonkinson pers. comm.).

Distribution

The two *B. readeri* entities have disjunct distributions in Victoria, one of which occurs in southwestern Victoria and extends into South Australia, whilst the other occurs in northern Victoria and extends in southern New South Wales. The northern entity has subpopulations near the Murray River, between Swan Hill and Ulupna Island (VicFlora, 2016).

Habitat

The southwestern entity of this taxon has been recorded on black clay in *Casuarina luehmannii* woodland, and throughout much of its range it is found in *Eucalyptus camaldulensis/E. leucoxulon* woodlands on the margins of swamp areas, often in small localised gaps and openings between shrubs and sedges on bare ground i.e. herb-rich sedge-land rather than strongly sedge-dominated wetland. It is always associated with a heavy faction in the soil, but often also with sand components. Subpopulations of the northern entity near Kerang occur in grassland, while in NSW it is common in open Black Box (*E. largiflorens*) communities.

Threats

The northern entity of this taxon is threatened by invasion of the weed *Avena fatua*, as well as changes in salinity and possibly hydrology. Grazing by domestic stock and the use of fire as the primary management tool are also threats.

The habitat of the southwestern entity doesn't appear to be particularly prone to weed invasion, except where cattle and kangaroos camp under large trees. The Kanagulk occurrences are heavily weed invaded by *Isolepis hystrix* and *Trifolium dubium,* due to heavy recreational disturbance from campers and 4WD activity. Other threats to the southwestern entity are difficult to identify with confidence, noting that pigs are an emerging threat in wetlands further south, but apparently not from Dergholm north to Little Desert.

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 112 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 anthropogenically at the landscape scale, at separations that are likely to exceed the dispersal range of the taxon. It is estimated to have three locations, and has a continuing decline in (iii) above because processes leading to past losses are likely to be ongoing in the taxon's highly fragmented and degraded landscapes.

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 2,350 to 43,500 mature individuals, but this qualifier is too weak and other thresholds under this criterion have not been met. The current population is based on an estimate of the number of individuals in the various subpopulations.

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:

Ineligible under Criterion D

It is estimated that there are 2,350 to 43,500 mature individuals.

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.

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VicFlora (2016). Flora of Victoria, Royal Botanic Gardens Victoria: *Brachyscome readeri*. Reader's Daisy. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/e9045050-935f-404a-9175-6be61cfdc7d2

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