



Calotis cuneifolia Blue Burr-daisy

Taxonomy

Calotis cuneifolia 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

Criteria A2bce+3bce+4bce

Species Information

Description and Life History

The taxon is an erect, ascending, or procumbent, freely branching perennial; stems glabrescent to pubescent. Leaves spatulate to cuneate, 6-35 mm long, 3-20 mm wide, distally 3-9-lobed, usually abruptly narrowed in lower half, but the base often dilated and stem-clasping. Capitula 1-3 cm diam.; involucre bracts oblong to narrow-elliptic, c. 4 mm long; ray florets 25-55, c. twice as long as bracts, mauve to blue, rarely white; disc florets sterile. Cypsela body 1.5-2.5 mm long, reddish-brown, usually tuberculate; awns 2 (rarely to 4), 1.5-3.5 mm long, divergent, c. continuous with the slightly thickened cypsela margins, barbed near apex, separated at the base by 2(4) outgrowths of the cypsela body, c. 1 mm high. Flowers Aug.-Feb (VicFlora 2018).

Generation Length

The generation length of *Calotis cuneifolia* is inferred to be 50 to 150 years. This taxon is a perennial which largely reproduces asexually via ramets. Few if any regeneration events occur for this taxon and it is likely that most extant subpopulations are either from single plant origin (genet) or a small number of individuals with a low level of genetic diversity.

Distribution

The taxon is scattered along the Murray River and its floodplain downstream from near Barmah, with occurrences away from the river at Kamarooka and Chiltern. It also occurs in the Northern Territory, South Australia, Queensland, New South Wales and the Australian Capital Territory.

Habitat

The taxon occurs in riparian floodplains and wet grasslands that are associated with Redgum (*Eucalyptus camaldulensis*), chiefly on heavy soils prone to waterlogging (alluvial loam or clay) (VicFlora 2018; Walsh 1999; Wong pers comm).

Threats

The taxon has been historically threatened by agricultural practices including the large scale cultivation of land for cereal crop production.

The main ongoing threat is grazing by introduced ungulates. In protected areas there is an ongoing threat from the use of domestic stock to reduce biomass in preference to fuel reduction, or from feral horses such as in Barmah National Park.

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>based on any of the following:</p>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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Evidence:

Eligible under Criterion A2 as Endangered

The population reduction over the past 150 to 450 years is inferred to be 60 to 80% (midpoint 70%), based on (b), (c) and (e) above.

Most of the historical reduction of this taxon population has been largely due to habitat conversion to European based cropping and irrigation systems. This loss has resulted in a conservative estimate of perhaps 80% of the area of occupancy of the taxon and as a result the population size of this taxon is inferred to reflect these changes.

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

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is projected to be 50 to 70%, based on (b), (c) and (e) above.

The loss of population extent due to conversion of floodplain ecosystems to irrigation and crop lands has largely ceased although it does continue at a slowed rate. The main ongoing threat is the impacts of grazing by introduced ungulates which has not been halted and in many situations is lacking control due to community concerns (i.e., horses in Barmah National Park).

Eligible under Criterion A4 as Endangered

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The population reduction over any 150 to 450 year period, including both past and future (up to 100 years in the future), is inferred to be 60 to 80% (midpoint 70%), based on (b), (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 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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 86,031 km² which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA, is estimated to be 282 km² but other thresholds under this criterion have not been met.

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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

It is inferred that there are 200 to 10,000 (midpoint 7,500) mature individuals, but other thresholds under this criterion have not been met.

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

It is inferred that there are 200 to 10,000 (midpoint 7,500) 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. 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



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