Threatened Species Assessment

Craspedia basaltica
Derrinallum Billy-buttons

Taxonomy

Craspedia basaltica J. Everett ex N.G.Walsh

This was previously known as *Craspedia* sp. 2 sensu Everett (1999)

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The plant is a Rosetted perennial with 1–several flowering scapes to 30 cm high; roots thick, spreading, woolly. Leaves mostly in a basal tuft, erect, oblanceolate to spathulate (cauline leaves almost linear), blades to 60 mm long, 5–10 mm wide, base attenuate, surfaces hoary with many multicellular hairs; petioles narrow, reddish, to 10 cm long. Inflorescence pale yellow, c. spherical, 15–22 mm diam, with 20–40 capitula on peduncles c. 2 mm long; scape straw-coloured to reddish, with some multiseptate hairs at the base but mainly with loose, fine woolly hairs upwards. Capitula with 5–8 florets; bract subtending capitulum broadly ovate, margins membranous, wide, colourless to brown, stereome small, triangular, typically less than half the length and width of the entire bract, finely woolly at base. Cypselas c. 2 mm long, 0.6–1 mm wide; pappus 3–6 mm long. Flowers late winter and spring. (VicFlora 2021).

The taxon is wind-dispersed with a relatively short dispersal range, estimated at 10-100 m.

Generation Length

The generation length of *Craspedia basaltica* is estimated to be 10 to 20 years. This is based on an estimated longevity of 15-50 years. It is also based on the likelihood that the taxon recruits more or less continuously in response to relaxed competition and good rainfall events, as for most *Craspedia* taxa. Longevity is likely to be shorter than for many congeners, based on observation of the now extinct Manor population which was propagated in the glasshouse at La Trobe University, and which flowered in pots within 12 months of seed germination.

Distribution

The taxon is endemic in Victoria, where it is rare on the Victorian Volcanic Plain west of Melbourne, in the Deer Park, Bannockburn, Shelford and Derrinallum areas (VicFlora 2021).

Habitat

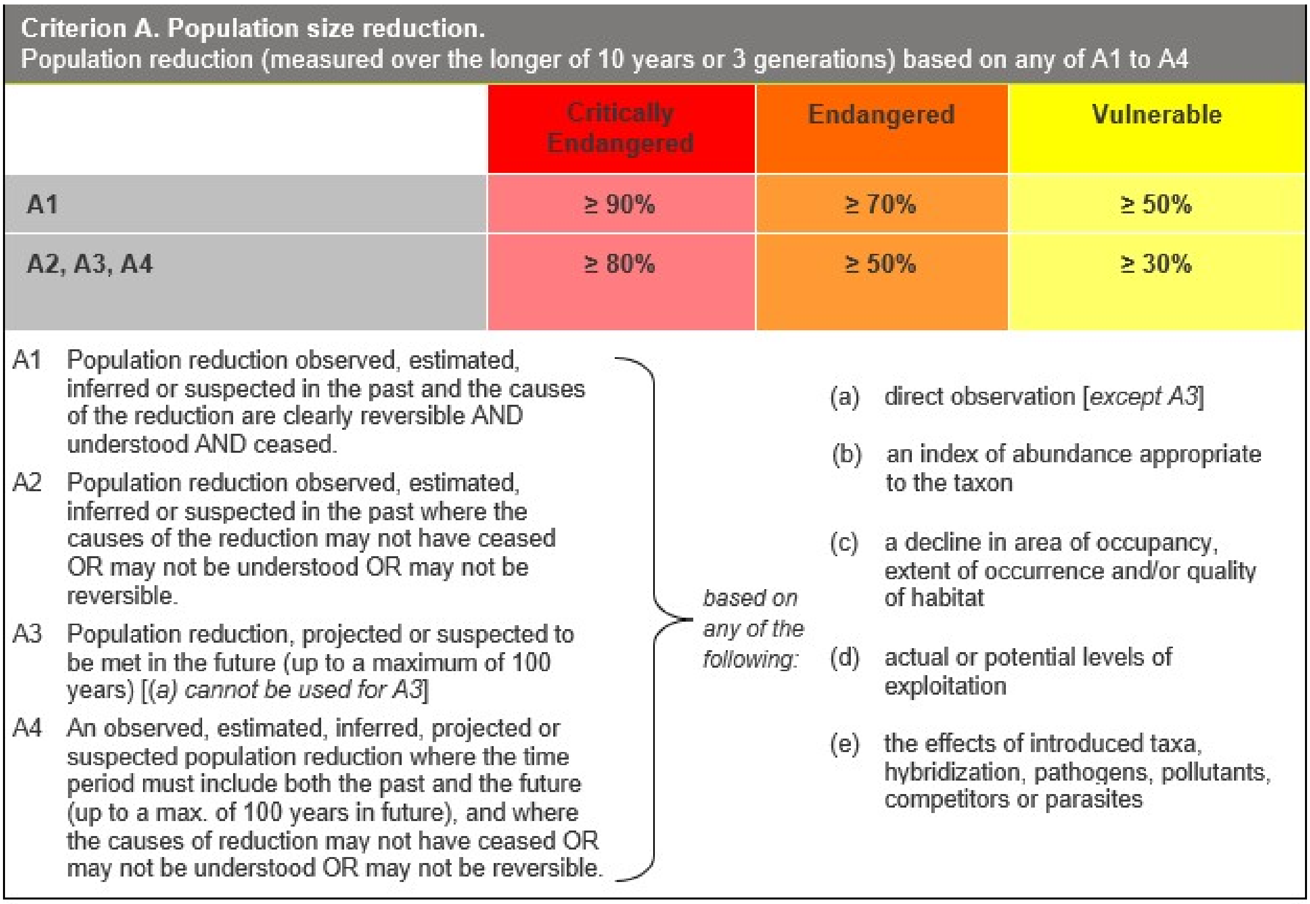
The taxon is apparently restricted to drier grasslands of the Victorian Volcanic Plain (VicFlora 2021). It tends to occupy shorter and sparse patches within *Themeda triandra* grassland where competition is lower and seed is more easily wind-dispersed.

Threats

The taxon is ubiquitously threatened by extreme habitat fragmentation, weed invasion and inadvertent and inappropriate human activity including roadside management. It is also threatened by the ploughing of fire breaks, escaping stock and intentional agistment of stock, as well as by interrupted pollination systems consequent on population and habitat fragmentation. The taxon is further threatened by slashing for fuel reduction, resulting in debris occupying inter-tussock spaces, rabbits, rodents, molluscs (both snails and slugs), and potentially also by Portuguese Millipede and Red-legged Earth-mite attack of seedlings and resprouting adults.

Many *Craspedia* spp. in fragmented landscapes have very low fertile seed set and germination success. This is a feature of many grassland Asteraceae in current remnant habitats, notably *Leptorhynchos squamatus* and allied taxa, which exhibited exceptionally low fertile seed counts per head. *Chrysocephalum* spp. were an order of magnitude greater, but still only 1-2%. *Craspedia* spp. are probably similar in most seasons, and a contrast to *Leucochrysum* taxa which have much higher rates of seed production and viability, as do *Xerochrysum* taxa. It may be concluded that successful recruitment is as dependent on pollination success as on any recruitment cues, and extreme population and habitat fragmentation are likely to greatly compromise the pollination system which is likely to be based on beetles or hover-flies.

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 30 to 60 years is estimated to be 20 to 35%, based on (a), (c) and (e) above.

Past decline is based on an estimated historic decline of 95-99% based on the almost complete clearance of grassland habitat throughout the Victorian Volcanic Plain, and an estimate of the proportion of this decline which has occurred within the last three generations.

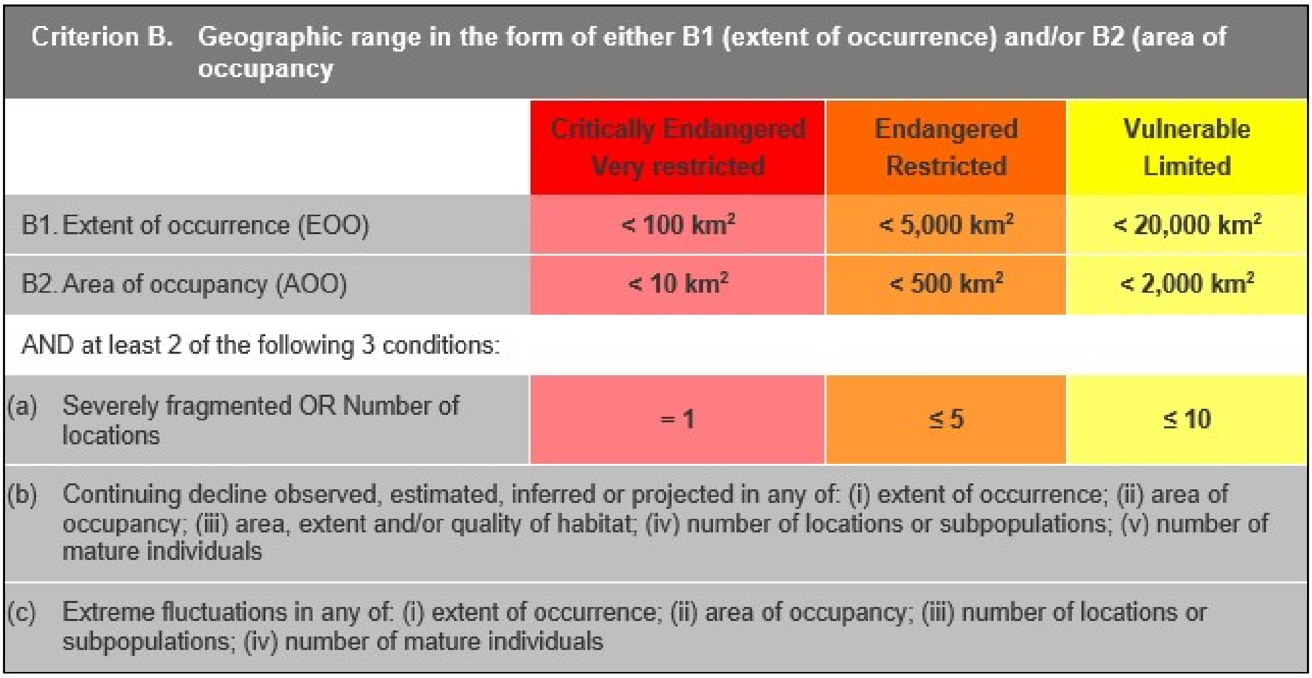
Eligible under Criterion A3 as Vulnerable

The population reduction over the next 30 to 60 years is projected to be 20 to 40%, based on (c) and (e) above.

Future decline in response to the identified threats is difficult to estimate with any confidence given the uncertain influence of positive management of remnant grassland. It is also difficult to estimate because of the possibility that climate change may reduce competition in some grassland communities and provide new opportunities for local recruitment.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 30 to 60 year period, including both past and future, is estimated to be 20 to 40%, based on (a), (c) and (e) above.



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 Endangered

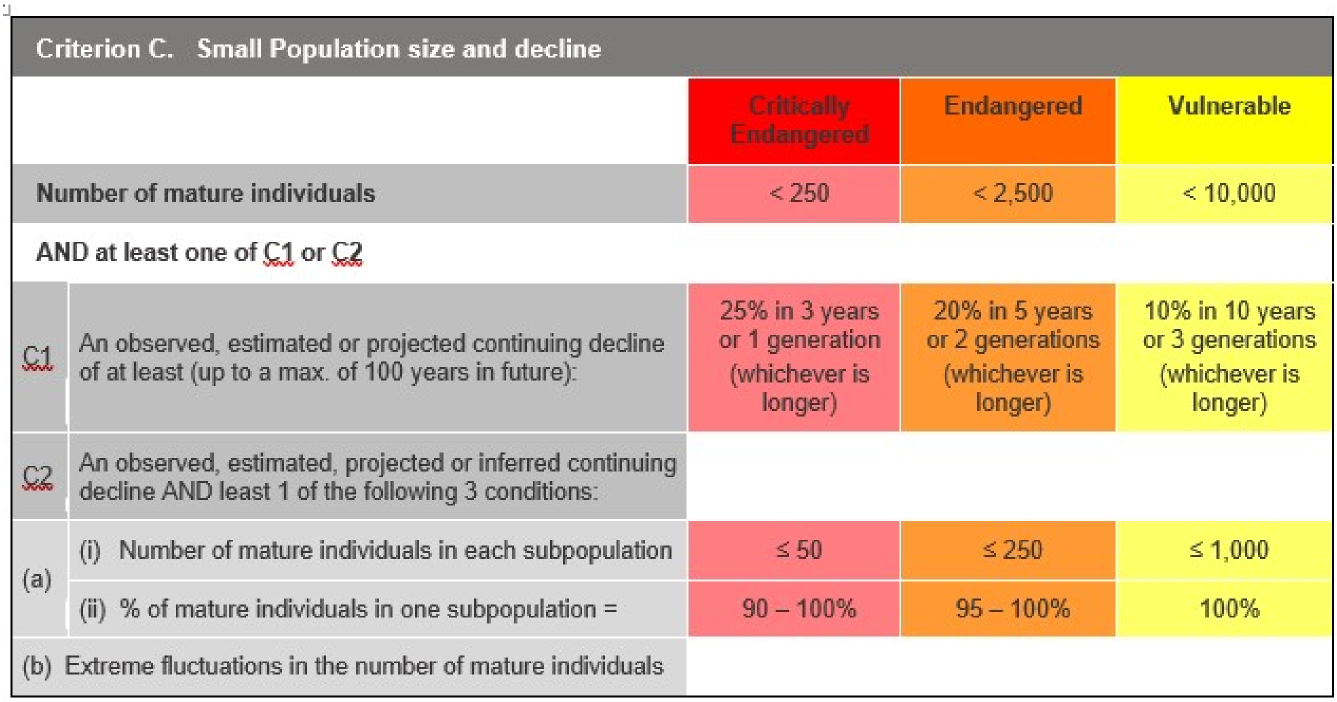
The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,495 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented at the landscape scale and may have also been severely fragmented at the landscape or subregional scale at the time of European settlement. All occurrences are situated at separations exceeding 100m, and wind dispersal of seed is likely to have a relatively short range of 10-100 m at the most. Therefore, the probability of recolonisation in the event of local extinction is remote.

It is estimated to have 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on extreme habitat fragmentation, weed invasion, ploughing of fire breaks, stock impacts, rabbits, rodents, molluscs and potentially also by exotic invertebrates.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 36 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 a continuing decline in (i), (ii), (iii), (iv) and (v) above.

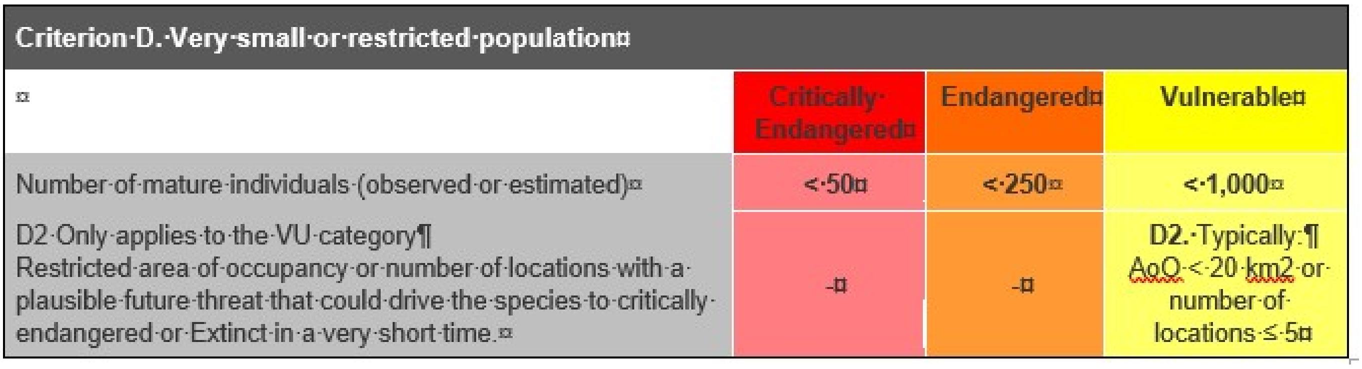


Criterion C. Small Population size and decline				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 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 inferred that there are 50 to 2,500 (midpoint 250) mature individuals, but this qualifier is too weak and 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 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

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: *Craspedia basaltica*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/26ec2030-b978-4ff0-8b75-a81b79bd0c57