



Craspedia lamicola Bog Billy-buttons

Taxonomy

Craspedia lamicola J. Everett & Joy Thomps.

This taxon putatively hybridises with other *Craspedia* taxa. Putative hybrids with *C. aurantia* have somewhat orange flowers (McDougall and Walsh 2008).

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A3ce+4ce; B1ab(iii)+2ab(iii)

Species Information

Description and Life History

Stout flaccid-leaved herb with a single flowering scape 20-50 cm high; roots thick, tomentose. Leaves basal and cauline, decreasing in size up the scape, broadly spatulate, 4-25 cm long, 1-4 cm wide, obtuse, attenuate at base, broadly stem-clasping, obtuse, midrib and 2 longitudinal veins evident, with a few multi-septate hairs and long fine hairs sparsely scattered over the surface (sometimes denser on margins); margins of upper leaves often undulate. Inflorescence yellow, globose, 1.5-3.5 cm diam. with up to 90 capitula; scape often tinged red, densely woolly especially just below the head. Capitula with 7-11 florets; bract subtending capitulum broadly triangular to ovate, margins membranous, brown or colourless, stereome ovate, glandular, with silky hairs. Cypselas 1-2.5 mm long; pappus 4-6 mm long. The taxon flowers in the Summer (VicFlora 2019).

Generation Length

The generation length of *Craspedia lamicola* is estimated to be 30 to 60 years. This is based on an estimated longevity of at least 3 decades, and plausibly exceeding 50 years. It is also based on a low rate of continuous recruitment in response to localised disturbances, such as Case Moth attack of *Poa hiemata* and possibly *P. costiniana* tussocks, resulting in gap creation. Rare fire events also create gaps, potentially promoting some episodic recruitment, although most *Craspedias* resprout readily post-fire. Pre-settlement fire intervals are likely to have been in the 60-150 year range.

Distribution

The taxon is restricted in Victoria to the Bogong High Plains, and a few alpine sites further west, at Mt Buller and Lake Mountain. The taxon is also found in New South Wales (NSW) (VicFlora 2019).

Plants matching the description of the taxon occur near Mt Cope and Mt Loch but are rare in both these localities (McDougall and Walsh 2008).

Habitat

The taxon is rare in alpine bogs and wet heathlands (VicFlora 2019; McDougall and Walsh 2008).

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Threats

The taxon undoubtedly suffered significant historic decline in response to high rates of stock grazing, sustained over the period 1890-1950. This is demonstrated for *Craspedia* spp. in general, in stock exclusion plots established on the Bogong High Plains.

Craspedia taxa are palatable to cattle, and are much more common within cattle grazing exclosures established on the Bogong High Plains than outside. It is possible that the scarcity of *C. lamicola* on the Bogong High Plains is related to past grazing practices. Nationally, the taxon is rare but not obviously threatened. The known Victorian population, however, is very small. The recent removal of grazing from the Victorian high country will possibly facilitate its recovery, which appears to have occurred in Kosciuszko National Park (McDougall and Walsh 2008).

The taxon is threatened with contraction of its bog habitat in response to climatic drying and warming. Some stands, such as at Mt Loch, may be subjected to the impact of ski field management activities.

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 Vulnerable

The population reduction over the past 90 to 180 years is estimated to be 30 to 50% (midpoint 40%), based on (c) and (e) above.

Past decline is difficult to estimate with confidence, but it is unlikely to exceed 50%. Whilst the taxon undoubtedly suffered significant historic decline in response to high rates of stock grazing sustained over the period 1890-1950, the extent of population recovery following the cancellation of stock grazing licences within the Alpine National Park is unclear. Prior to stock exclusion, the taxon is likely to have declined by at least 30-50%, and plausibly exceeding 50%. Stock were excluded from the Mt Loch area in the late 1950s-1960s. Sites east and north of the Rocky Valley

storage, such as Watchbed Creek and Heathy Spur, were excluded from stock grazing in 1991-1992. Other sites on the Bogong High Plains were released from grazing in 2003. The net impact of past decline and subsequent recovery is unknown.

Some stands may have been affected by ski field development and infrastructure maintenance, although the net impact of slashing and grooming is unclear.

Eligible under Criterion A3 as Endangered

The population reduction over the next 90 to 100 years is projected to be 50 to 80% (midpoint 65%), based on (c) and (e) above.

Future decline is based on the projected impact of climatic drying on the extent of bog habitat.

Eligible under Criterion A4 as Endangered

The population reduction over any 90 to 180 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 75% (midpoint 50%), based on (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:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,515 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). EoO is based on all reliable site and specimen records in the VBA and Australian Virtual Herbarium (AVH). It also includes specimens at interstate herbaria from Lake Mountain and Mt Buller not incorporated into the VBA.

The taxon is estimated to be severely fragmented naturally at the subregional and landscape scales. Geographically isolated stands occur at spacings likely to exceed the dispersal range of the taxon, which is likely to be wind-dispersed at the 100m-1km scale. This precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have 1 location, and has a continuing decline in (iii) above based on the identified threats.

Eligible under Criterion B2 as Endangered

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The Area of Occupancy (AoO) across the taxon's range is estimated to be 60 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 (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 no available estimate of population size for the taxon in Victoria.

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:

Eligible under criterion D2 as Vulnerable

The taxon is estimated to be very restricted.



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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.

McDougall, K.L., and Walsh, N.G. (2008). A conspectus of high-country *Craspedia* (Asteraceae: Gnaphalieae) of mainland south-eastern Australia. *Muelleria*, 26(2), 3-10.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Craspedia lamicola*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/94599cbe-a8f7-415f-9cd1-a500de29dbb1>