

Cassinia monticola Mountain Cassinia

Taxonomy

Cassinia monticola Orchard

In the Mt Kosciuszko region *C. monticola* is a very uniform taxon. In Victoria, collections from the Nunniong Plateau closely match the Kosciuszko plants and are undoubtedly conspecific. Further collections from the Snowy Range north of Heyfield are tentatively referred to this taxon, but differ in having generally shorter capitula (with proportionately smaller florets) and leaves which are longer and narrower with more tightly revolute margins than the more northerly populations. These plants also tend to be more cottony-woolly than those from New South Wales. The woolliness is particularly noticeable in the specimen collected by Froud from Hellfire Creek, which closely resembles *C. ozothamnoides* in this respect, but is distinguished by its shorter, broader leaves, and significantly larger capitula, flowers and achenes, and its pappus of up to 25 bristles. Further study of the Victorian populations may reveal taxa worthy of recognition at infraspecific rank (Orchard 2004).

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Species Information

Description and Life History

Spreading shrub (30-)50-100(-200) cm high; branchlets usually reddish-purple with a moderate to sparse indumentum of loose white cottony crisped hairs, typically also with sparse to moderately dense emergent glandular hairs, sometimes also occasional sessile glandular hairs. Leaves spreading to suberect, sessile, narrowly linear or linear to narrowly lanceolate, (10-)15-30(-40) mm long, (1.0-)1.5-3.5(-4.0) mm wide; upper surface \pm viscid, usually with dense sessile glandular hairs and sparse white cottony crisped hairs when young, with sparse to moderately dense cottony hairs when older; lower surface with dense mat of cottony crisped hairs except on \pm glabrous midrib; apex acute, slightly reflexed; margins revolute but usually not to midrib. Inflorescences hemispherical, 1-8.5 cm diam. Capitula several hundred, bronze aging to pale straw-coloured to greenish cream, fusiform to cylindrical, (4-)5-6 mm long, 1.5-2 mm wide; involucral bracts 16-20, innermost oblong, 4.5-5.3 mm long, erect but spreading at apex when dry, creamy white at tip, clear hyaline at margin, otherwise pale yellow-brown; margin entire; receptacular bracts 2-4; florets (4-)5-6. Cypsela \pm square in cross-section, (1.2-)1.4-1.5 mm long, weakly longitudinally ridged or wrinkled, glabrous or with occasional sessile globular hairs; pappus bristles 2-3 mm long. Flowers February-March (VicFlora 2018).

Generation Length

The generation length of *Cassinia monticola* is estimated to be 45 to 90 years. This is based on an estimate of pre-settlement fire intervals across the ecological range of the taxon in Victoria. Circumstantial field observations and collectors' notes suggest the taxon recruits episodically post-fire from long-persistent soil-stored seedbanks with only minor continuous trickle recruitment in response to localised soil disturbance events. The taxon is likely to be a fire-sensitive obligate seed recruiter, with a longevity plausibly in the 15-45 year range.

Distribution

The taxon is restricted to the high mountains of the Kosciuszko region and East Gippsland. In Victoria, it is rare on the Nunniong Plateau of East Gippsland, with another slightly anomalous outlier in the Snowy Range, in the Alpine National Park area of Central Gippsland. In New South Wales, in the southern Tablelands, it is confined to a small area of the Snowy Mountains from Thredbo to Kiandra and Happy Jacks Plain (Orchard 2004).

Habitat

The taxon is found in alpine or subalpine herbfield, grassland or shrubbery, or on the margins or in the understorey of subalpine woodland of snowgums (*Eucalyptus nitens* and *E. pauciflora*), in soils ranging from well-drained granitic alpine humus to swampy creek flats, at altitudes of 1270-1900m (1100-1600 m in Victoria). Although restricted in some areas, the taxon is often locally very abundant to dominant (Orchard 2004).

Site and specimen records indicate that Victorian occurrences, particularly in the Snowy Range, extent to lower elevations and drier forest vegetation than circumscribed by Orchard (2004) and VicFlora (2018). For example, at the south-west end of the Snowy Range, Walsh collected the taxon on a rocky knoll 1.6 km south of Mount Ligar, that was growing in low open heathy woodland of *E. goniocalyx* and *E. macrorhyncha* at 900 m elevation, in an area burnt about 18 months earlier.

Threats

Threats to the taxon as currently circumscribed are difficult to identify since threats which apply to habitats described by Orchard (2004) do not apply with comparable intensity to the habitat range of Victorian occurrences. This has been inferred from all available site and specimen data.

Swampy creekflats, frost hollows, river flood plains and boggy hollows being unambiguously threatened by climatic warming and drying pose potential risk of recruitment failure of the taxon. Other threats include the increased frequency and intensity of bushfires, Sambar Deer (*Rusa unicolor*) and feral horse activity, and woody invasion of open habitats. These threats apply with reduced intensity to the drier herbfield, grassland, shrubland, and woodland communities on well-drained, often alpine granitic humus soils, with which most Victorian occurrences are associated.

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:

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 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 is estimated to be 3,636 km² and the Area of Occupancy (AoO) is estimated to be 96 km², but other thresholds under this criterion have not been met.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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

Cassinia monticola

Mountain Cassinia

There is no available estimate of population size for the taxon, although collectors record the taxon as locally abundant or locally common or subdominant in drier open areas, particularly following intense bushfire.

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 km ² or number of locations ≤ 5 [Ⓜ]

Evidence:

Eligible under Criterion D2 as Vulnerable

The taxon is estimated to be very restricted. The taxon has a restricted distribution, occurring in 2 locations, such that this restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations, in response to the identified threats, notably climate-change-induced warming and drying that lead to recruitment failure.

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.
- Orchard, A.E. (2004), A revision of *Cassinia* (Asteraceae: Gnaphalieae) in Australia. 2. Sections *Complanatae* and *Venustae*. *Australian Systematic Botany* 17(6): 526-530.
- VicFlora (2018) Flora of Victoria, Royal Botanic Gardens Victoria: *Cassinia monticola*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/7b4b2429-f54d-42f7-b74c-985e4aecef30>