Threatened Species Assessment

Olearia curticoma
Billygoat Daisy-bush

Taxonomy

Olearia curticoma N.G. Walsh

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988*.

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

Proposed conservation status

Critically Endangered in Australia

Criteria B1ab(iii)+2ab(iii)

Species Information

Description and Life History

A perennial shrub to c. 3.5 m high, flowers summer to autumn. The flowers are relatively large (18-25 mm diam.), white 'daisy type' and the leaves are narrow (8-22 mm long, 0.8-1.5 mm wide) and sticky when young (Walsh 2014). The only known population is composed of mostly even-aged plants, suggesting that the bulk of recruitment is episodic, probably following bushfire (Neville Walsh pers. comm).

Generation Length

The generation length of *Olearia curticoma* is estimated to be 15 to 40 years. The taxon is inferred to have recruited episodically post-fire at pre-settlement frequencies of 30-60 years with some continuous recruitment in response to small-scale localised disturbances. Longevity is plausibly 15-40 years based on likely fire frequency and experience with related species of *Olearia,* but possibly longer.

Distribution

The taxon is endemic to Victoria and is only known from one population at Billygoat Bend within the Mitchell River National Park in Gippsland.

Habitat

The habitat is dry open forest dominated by *Eucalyptus sieberi* with other common components being *Cassinia longifolia, Dodonaea viscosa* subsp. s*patulata, Acacia terminalis, Stypandra glauca, Gahnia radula, Lepidosperma urophorum, Sannantha pluriflora, Pomax umbellata*.. Soils are shallow and sandy or gravelly, derived from Pleistocene alluvium overlying upper Devonian lower Carboniferous sandstones (Walsh 2014).

Threats

Sambar Deer (*Rusa unicolor*) are known in the area in high numbers with some evidence of damage to *O. curticoma*. Sambar browsing is mostly confined to routes through the forest, the browsing of *O. curticoma* being incidental rather than direct targeting (Neville Walsh pers. comm.). Sambar may indirectly affect the taxon by altering the associated vegetation.

The biology of related species suggests that fire is likely to kill all mature individuals in any population of fire-sensitive obligate seed regenerators, and promote mass recruitment from a soil-stored seedbank. However, recruitment success cannot be assured since Sambar are undergoing a population increase throughout the region, and extreme drought events are projected to increase in frequency and intensity.

Should recruitment failure occur in response to an extreme drought event or Sambar browsing, a significant population reduction could be envisaged.

The habitat of the only known occurrence appears to be relatively resistant to fire. The only known site is elevated, dry and rocky with skeletal soil, and supports a rather sparse understorey, unlikely to develop sufficient fuel loads to support repeat fire events at intervals below the tolerable fire interval for the taxon. If, however, repeat fire events were imposed by planned burning, then severe population decline and seed bank depletion or exhaustion may result.

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 A3 as Endangered

The population reduction over the next 45 to 100 years is projected to be 15 to 50%, based on (c) and (e) above.

This is based on the projected impact of Sambar browsing or alteration to associated vegetation and increasing fire frequency in response to fuel reduction burning and climatic drying and warming.

Eligible under Criterion A4 as Endangered

The population reduction over any 45 to 120 year period, including both past and future (up to 100 years in the future), is estimated to be 15 to 50%, based on (c) and (e) above.

There is no evidence to indicate whether the taxon has suffered a significant historic decline. Future decline is based on the impacts of the identified threats.

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of the AoO as an area within the EoO.

It is estimated to have 1 location, as the single population is potentially threatened by increased fires, and recruitment failure related to Sambar browsing.

It has a continuing decline in (iii) above, in response to the identified threats.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it 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:

Eligible under Criterion C1 as Endangered

It is estimated that there are 100 to 1,000 mature individuals. This is was based on a count while walking the entire population in June 2013 (Neville Walsh pers. comm.). A specimen at MEL (Jeanes 3033; MEL 2372880) notes population is of 'more than 100 plants scattered over 1 ha', but this seems very conservative.

There is estimated to be a continuing decline of 10 to 40% within two generations.

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 D as Vulnerable

It is estimated that there are 100 to 1,000 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.

SAC (2016). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 874 *Olearia curticoma.*

Walsh, N.G. (2014) Notes on Olearia (Asteraceae: Astereae) in south-east Australia: *O. tenuifolia, O. adenophora* and description of a new species endemic to eastern Victoria. *Muelleria* 32:34-38.