Threatened Species Assessment

Olearia passerinoides subsp. *glutescens*
Shiny Daisy-bush

Taxonomy

Olearia passerinoides subsp. *glutescens* (Sond.) D.A. Cooke

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2015).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2c+3c+4c; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C2a(i); D

Species Information

Description and Life History

The taxon is a suckering shrub to 1.5 m high, producing many stems. Leaves spreading, 7-20(-25) mm long. Capitula solitary or in corymbs of 2-8; ray florets 8-15, ligules 5-10 mm long. Flowers February-May (VicFlora 2016).

Generation Length

The generation length of *Olearia passerinoides* subsp. *glutescens* is estimated to be 20 to 50 years. This is based on the taxon's life form and asexual reproduction.

Distribution

The taxon is restricted in Victoria to a single population near Inglewood. It is also found in South Australia (VicFlora 2016).

Habitat

The taxon is found growing at the edges of Box-Ironbark forest dominated by *Eucalyptus leucoxylon* and *E. microcarpa*, bordering on, but in lower lying areas than, the Sandstone Ridge Shrubland Ecological Vegetation Class.

Threats

The taxon has low genetic diversity in Victoria, as there are only 6 clones. While the taxon is known to produce pollen, it is possible that the clones are too closely related in Victoria to reproduce sexually, although plants in South Australian populations are capable of sexual reproduction.

There is also a high risk of drought stress due to clearing of the surrounding forest.

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 Critically Endangered

The population reduction over the past 60 to 150 years is inferred to be 70 to 90%, based on (c) above.

Past decline is based on the loss of potential habitat, and very low current numbers of genetic individuals. It is unlikely that it has historically been as small and genetically restricted as it is currently.

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

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 60 to 100 years is projected to be 0 to 100%, based on (c) above.

It is uncertain if future reduction will occur in next 100 years, but given its low numbers, it is likely that any reduction, for example due to changes in fire regimes or extended drought, will lead to the loss of all individuals.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 60 to 150 year period, including both past and future (up to 100 years in the future), is inferred to be 70 to 90%, based on (c) 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 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 taxon is estimated to be severely fragmented considering its limited dispersal ability, the barriers to dispersal, and lack of habitat separating the subpopulations.

It is estimated to have 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on drought stress due to clearing and past mining in the area.

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, 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:

Eligible under Criterion C2 as Critically Endangered

It is estimated that there are 6 mature individuals. Each population consists of 100s of stems (ramets), but all are from 1 or 2 individuals at each subpopulation. Genetic studies found that there are 6 clones.

The number of mature individuals is projected to continue to decline, as the taxon's low genetic diversity leaves it vulnerable to future events which may cause loss of plants. There is also likely to be reduced fitness into the future, with populations unlikely to be maintained from asexual reproduction alone.

The number of mature individuals in each subpopulation is 50 or fewer.

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 Critically Endangered

The taxon is estimated to have 6 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 (2015). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 863 *Olearia passerinoides* subsp. *glutescens.*

VicFlora (2016). Flora of Victoria, Royal Botanic Gardens Victoria: *Olearia passerinoides* subsp. *glutescens.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/40d6f430-6067-4a8a-b653-ea16715038f6