

## *Choretrum glomeratum* var. *chrysanthum* Golden Sour-bush

### Taxonomy

*Choretrum glomeratum* var. *chrysanthum* (F. Muell.) Benth.

The two varieties of *Choretrum glomeratum* are treated as distinct taxa by some authors, but further study is required to be certain of their relationship. They are extremely difficult to distinguish using herbarium material, with accompanying notes on flower colour often providing the only strong clue to their identity (VicFlora 2019).

The taxon is also known as *C. chrysanthum*.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criteria A2c+3c+4c; D

### Species Information

#### Description and Life History

Erect virgate shrub to c. 3 m high; branchlets many, terete or angular, striate, glabrous; flowering branchlets 0.5-1.5 mm diam. Leaves alternate, subulate, c. 1 mm long, appressed or slightly spreading, sessile, caducous. Inflorescences 2-5-flowered axillary clusters; peduncle 1-3 mm long; bracts leaf-like, usually 1-3; bracteoles 3 per flower, dentate or fimbriate. Flowers cylindrical; tepals 5, ovate, 1-1.5 mm long, obtuse, white or yellowish, appressed when dry, persistent; stamens without appendages, anthers subsessile, lobes more or less equal. Drupe globose, 4-6 mm long, green or yellowish, usually only 1 develops per flower cluster (VicFlora 2019).

The taxon is distinguished from the type variety by its tepals which are yellowish, smooth outside at base; stems slightly striate, more or less terete; young branches ridged or angled. The taxon flowers mostly in Spring and Summer (VicFlora 2019).

#### Generation Length

The generation length of *Choretrum glomeratum* var. *chrysanthum* is estimated to be 50 years. This is based on a plausible longevity of 50 years or more. It is also based on an inference, from the consistently low population density and extreme rarity of adult plants, that the taxon is likely to recruit sporadically and opportunistically from bird-dispersed seed in response to rare fire or other localised site disturbance events. The implied very low density of seed in the soil-stored seedbank supports an inference of very infrequent, but more-or-less continuous, rather than episodic mass, recruitment. On this basis, a nominal generation time of 50 years is inferred.

#### Distribution

The taxon is scattered across north-western and north-central Victoria within the Goldfields, Lowan Mallee, Murray Mallee, and Victorian Riverina bioregions. It is largely co-extensive with, but not as common as, var. *glomeratum*. The taxon is also found in Western and South Australia (VicFlora 2019).

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## Habitat

The taxon is uncommon to rare, and is scattered in woodlands and mallee scrubs (VicFlora 2019).

## Threats

Specimen records and scant quadrat or monitoring data indicate that the taxon is consistently rare at any one site, often in more fertile soils and with little evidence that the taxon extends into larger blocks of public land. Circumstantial evidence suggests that the taxon is either peripheral to or just outside many public land blocks or reserves. From this, it is inferred that the taxon has experienced significant historic decline through habitat loss to agriculture.

Convincing current and future threats across the habitat range of the taxon are difficult to identify, with most threats speculative. Likely bird vectors include Honeyeaters, Currawongs, and Silvereyes, however it is unclear whether potential vectors are necessarily in decline, although their behaviour may have altered.

Plausible threats include modified fire regime, although there is no clear evidence to support this implied threat, and climatic drying may not necessarily be a threat given the wide geographic and ecological range of the taxon in Victoria.

Like other Santalaceae, consistently low density is likely to be a characteristic of the taxon, correlated with implied pollination, dispersal, and recruitment mechanisms. Soil-stored seedbanks are likely to be long-persistent, therefore the impact of the above threats may not become evident for some decades.

One clear risk, implied by all records which suggest only one or very few individuals comprise any one subpopulation, is vulnerability to stochastic events, both natural or anthropogenic.

## 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 Endangered

The population reduction over the past 150 years is estimated to be 30 to 80% (midpoint 50%), based on (c) above.

Past decline is based on historic habitat loss to agriculture, implied by a majority of records in fragmented landscapes, with few records in larger blocks of public land.

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

### Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is suspected to be 30 to 80% (midpoint 50%), based on (c) above.

Future decline cannot be estimated with any confidence since most threats are speculative and may take decades to result in seedbank depletion and local extinction.

### Eligible under Criterion A4 as Endangered

The population reduction over any 150 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 80% (midpoint 50%), 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 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 39,165 km<sup>2</sup> which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range is estimated to be 28 km<sup>2</sup>, but other thresholds under this criterion have not been met.

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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 estimated that there are 50 to 250 (midpoint 100) mature individuals, but other thresholds under this criterion have not been met.

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 <sup>2</sup> or number of locations ≤ 5

## Evidence:

### Eligible under Criterion D as Endangered

The taxon is estimated to have 50 to 250 (midpoint 100) mature individuals. Current population size is based on site and specimen records, which suggest that individual occurrences comprise one or very few 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.



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VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Choretrum glomeratum* var. *chrysanthum*.  
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