

# Threatened Species Assessment

## *Eucalyptus serraensis* Grampians Stringybark

### Taxonomy

*Eucalyptus serraensis* Ladiges & Whiffin

It is part of the taxon formerly known as *E. alpina*, the type specimen of which is considered to be *E. baxteri* (VicFlora 2016).

### Current conservation status

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

### Proposed conservation status

Vulnerable in Australia

Criterion D2

### Species Information

#### Description and Life History

The taxon is a small tree or mallee; bark flaky on part of trunk or stems, smooth above. Juvenile leaves sessile, opposite, discolourous and scabrous for few pairs, then alternate, shortly petiolate, concolourous, ovate to obovate, often emarginate, to 6.5 cm long, 4.5 cm wide, glabrous, glossy, thick and green; adult leaves petiolate, alternate, ovate to broadly lanceolate, thick, 6-11 cm long, 3-5 cm wide, concolourous, glossy, green; reticulation sparse to obscure, with often obscure, irregular, island oil glands. Inflorescences axillary, unbranched; peduncles 0.1-0.2 cm long, 3- or 7-flowered; buds sessile, clavate, very warty, to 1 cm long, 1 cm diam., no scar (single operculum); operculum hemispherical; stamens irregularly flexed; anthers dorsifixed, reniform; ovules in 2 vertical rows; flowers white. Fruit sessile, hemispherical, to 1.7 cm long, 2 cm diam.; disc ascending; valves 4 or 5, exserted; seed dark brown to almost black, glossy, smooth, pyramidal but distorted by one curved face, hilum terminal. The taxon flowers from April to November (VicFlora 2018).

#### Generation Length

The generation length of *Eucalyptus serraensis* is inferred to be 100 to 300 years. This is based on a longevity exceeding 200 years and potentially 1000 years. It is also based on the capacity of the taxon to resprout repeatedly from the lignotuber, thereby extending the life of the individual well beyond the pre-settlement fire interval, which is likely to have been in the range of 50-150 years.

#### Distribution

The taxon is endemic to Victoria. It can be found on rocky sites on the Wonderland Range (with a restricted distribution) and northern Serra Range, extending south to Teddy Bear's Gap. It was possibly once located on the Mt William Range (Ladiges and Whiffin 1993).

#### Habitat

The taxon occurs on rocky sites on the Wonderland Range and northern Serra Range, extending south to Teddy Bear's Gap.

### Threats

The taxon is likely to be pre-adapted to the increasing risk of extreme drought, and the habitat is inherently resistant to the full impact of increasing fire risk in the Grampians region. However, as the combined impacts of climatic drying and warming and imposed fire regime increase, the risk of recruitment failure may become significant. Recruiting stands are at particular risk from extreme drought and targeted herbivory by native and exotic herbivores including wallabies, goats, rabbits, and deer.

### 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> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>			

### Evidence:

#### Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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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 169 km<sup>2</sup> and the Area of Occupancy (AoO) is estimated to be 32 km<sup>2</sup>, 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>	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

There is insufficient evidence to support an estimate of the total population size.

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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 <sup>2</sup> 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 a single location, such that this restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations. This is in response to the impact of the identified long-term threats, notably climatic drying and warming, imposed fire regimes, extreme drought, and targeted herbivory by native and exotic herbivores

**Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.**

## References

Brooker, M.I.H., and Slee, A.V. (1996). Eucalyptus. In N.G. Walsh and T.J. Entwisle (Eds.), *Flora of Victoria Vol. 3, Dicotyledons Winteraceae to Myrtaceae*. Melbourne: Inkata Press.

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Ladiges, P.Y., and Whiffin, T.P. (1993). Taxonomic revision of *Eucalyptus alpine* s.l. and recognition of three new species, *E. Victoriana*, *E. serraensis* and *E. verrucosa*. *Australian Systematic Botany*, 6(4), 265-370.

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