

Eucalyptus crenulata Buxton Gum

Taxonomy

Eucalyptus crenulata Blakely & Beuzev.

Current conservation status

Listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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

Proposed conservation status

Endangered in Australia

Criteria A2bce+4bce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a tree to 10 m tall; bark rough, compact, over part or whole of trunk, grey; smooth yellowish, grey or grey-brown above. Juvenile leaves sessile, opposite, ovate, crenulate, amplexicaul, to 6 cm long, 5 cm wide, glaucous. Crown of mature tree of juvenile leaves, initially glaucous but maturing to glossy green inside crown. Inflorescences axillary, unbranched; peduncles to 0.8 cm long, 7-11-flowered; buds pedicellate, ovoid or clavate, glaucous, to 0.5 cm long, 0.3 cm diam., scar present; operculum beaked; stamens inflexed; anthers dorsifixed, cuneate; ovules in 4 vertical rows; flowers white. Fruit sessile or shortly pedicellate, crowded, cupular, to 0.4 cm long, 0.4 cm diam.; disc descending; valves 3 or 4, to rim level; seed brown, flattened-ellipsoid, reticulate, lacunose, hilum ventral. The taxon flowers from September to February (VicFlora 2018).

Generation Length

The generation length of *Eucalyptus crenulata* is inferred to be 80 to 200 years. This is based on the taxon presumably having a potential life span of up to several hundred years, surviving fire, and having trees reach reproductive maturity within ten years.

Distribution

The taxon is endemic in Victoria, confined to foothills just north and south of the Great Dividing Range near Buxton, Narbethong, and Yarra Glen. The taxon is also sparingly established at Traralgon in Victoria (VicFlora 2018).

Habitat

The taxon occurs on swampy sites on flats associated with streams (VicFlora 2018).

Threats

Threats to this taxon at Yering include modification of the hydrological regime on the floodplain, weed invasion, lack of natural recruitment, and introgression with *E. ovata*. Threats to freehold stands at Buxton include grazing and trampling by stock, lack of recruitment, and clearing for pasture. Threats at the reserved stand at Buxton include soil borne pathogens, and tree decline due to factors including parasitism by *Cassytha melantha*.

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"> (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 Endangered

The population reduction over the past 240 to 600 years is inferred to be 10 to 70% (midpoint 50%), based on (b), (c) and (e) above.

Past decline is based on a detailed investigation of the taxon.

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

Eligible under Criterion A4 as Endangered

The population reduction over any 240 to 600 year period, including both past and future (up to 100 years in the future), is suspected to be 10 to 70%, based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

According to a detailed investigation of the taxon, a future decline of 1-5% is anticipated for one generation, however substantial population losses of 20% are anticipated in the next two generations. Reductions in population size within the life span of the currently established trees in the main subpopulation are considered likely to be relatively minor, but will presumably increase in the longer term if recruitment is poor.

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:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 102 km², based on accepted, post-1970 records from the VBA.

The taxon is estimated to be severely fragmented, as three of the recorded subpopulations comprise of very small numbers of plants in fragmented habitat.

It is inferred to have 3 locations. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the threats at the smaller subpopulations remaining unabated.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 16 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 3 locations, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

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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:

Eligible under Criterion C as Vulnerable

It is estimated that there are 650 to 700 (midpoint 680) mature individuals. This is based on population data collated from a detailed investigation. It is unlikely that significant changes to population size have occurred over the intervening period, as most mature trees survived the Black Saturday fires, and subsequent recruitment is yet to reach maturity.

There is inferred to be a continuing decline, and the number of mature individuals in each subpopulation is fewer than 1,000.

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: AaO < 20 km ² or number of locations ≤ 5

Evidence:

Eligible under criterion D as Vulnerable

It is estimated that there are 650 to 700 (midpoint 680) individuals, and the taxon is estimated to be very restricted.

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 (1991). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 11 *Eucalyptus crenulata*.

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Eucalyptus crenulata*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/339f6258-d970-462f-94f9-c3a253caf4e2>