

Eucalyptus saxatilis Rock Mallee

Taxonomy

Eucalyptus saxatilis J.B. Kirkp. & Brooker

This was previously regarded as a hybrid between *E. glaucescens* and *E. globulus* subsp. *pseudoglobulus* (VicFlora, 2019).

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Species Information

Description and Life History

The taxon is a mallee or small tree; bark smooth, slightly powdery, shedding in long ribbons. Juvenile leaves sessile, opposite for many pairs, ovate to orbicular, to 4 cm long, 4 cm wide, glaucous; adult leaves petiolate, alternate, lanceolate to falcate, 10-15 cm long, 1-2 cm wide, concolorous, dull, bluish-grey; reticulation dense, with numerous, large, island oil glands. Inflorescences axillary, unbranched; peduncles stout, to 0.5 cm long, 3-flowered; buds glaucous, with short, stout pedicels, hypanthium obconical; operculum flattened and beaked, to 1.2 cm long, 0.8 cm diam., scar present; stamens inflexed; anthers dorsifixed, cuneate; ovules in 4 vertical rows; flowers cream. Fruit sessile or central fruit shortly pedicellate, campanulate, to 1.2 cm long, 1.4 cm diam.; disc broad, ascending; valves 3-5, slightly exerted; seed brown-black, flattened-ellipsoid, lacunose, hilum ventral. The taxon flowers in August (VicFlora, 2019).

Generation Length

The generation length of *Eucalyptus saxatilis* is estimated to be 90 to 250 years. This is based on a plausible longevity of 90-250 years. It is also based on the ability of the taxon to resprout from the lignotuber and larger stems, thereby extending the life of the individual beyond the pre-settlement fire interval estimated at 45-90 years.

Like most eucalypts in fire-prone dryland habitats, the taxon recruits episodically from an elevated or soil-stored seedbank following intense bushfire events. With only a proportion of adults killed by fire, a majority resprout successfully following each successive fire event. In addition, there may be a low level of opportunistic trickle recruitment in response to outstanding seasonal conditions or localised site disturbance events.

Distribution

The taxon is known from few localities in the Upper Snowy district in far East Gippsland, namely Stradbroke Chasm, Mt Wheeler, and Little River Gorge. It also occurs on the summit of Mt Bulla Bulla east of the Snowy River and north of the Deddick River confluence. The taxon is also located in New South Wales (VicFlora, 2019).

Habitat

The taxon always occurs on very rocky sites (VicFlora, 2019). It is a habitat specialist restricted to skeletal soils on rocky mountain summits, spurs or steep rocky slopes of gorges and chasms, where it is often associated with other mallee eucalypts including mallee forms of *E. albens*, *E. dives*, *E. goniocalyx*, *E. macrorhyncha*, *E. mannifera*, *E. sieberi* and, most notably, distinctive mallee forms of *E. elata* and *E. smithii*. Other associated taxa include *Acacia falciformis*, *A. kettlewelliae*, *A. kybeanensis*, *A. silvestris*, *Boronia anemonifolia*, *Dodonaea viscosa* subsp. *cuneata*, *Kunzea peduncularis*, *Leionema lamprophyllum*, *Olearia iodochroa*, *Ozothamnus obcordatus*, *Philotheca trachyphylla*, *Podolobium alpestre*, *Veronica perfoliata* and *Westringia eremicola*.

Threats

The taxon is likely to have suffered only minor historic decline since all known Victorian occurrences are in the Alpine or Snowy River National Parks.

Current and future threats include climatic drying and warming, imposed anthropogenic fire regimes which act synergistically to increase fire risk, repeat fire events, and extreme drought stress. Recruiting stands may also be threatened by targeted browsing by native and exotic herbivores including wallabies, rabbits, Sambar Deer (*Rusa unicorn*), and stock.

Although the taxon is assumed to be well adapted to exceedingly dry, rocky, skeletal sites routinely exposed to extreme temperatures and drought stress, field observations were taken of adult mortality of numerous taxa of trees and shrubs in similar habitats in the Upper Snowy district and elsewhere in the region. They provided circumstantial evidence of the increasing risk of adult mortality and recruitment failure in response to extreme drought events, for even the most drought-adapted taxa such as *E. albens* (White Box). Field observations also demonstrated the risk of recruitment failure and local extinction of trees such as *Brachychiton populneus* (Kurrajong), another drought-adapted taxon in the district, in response to targeted browsing by Sambar, which are currently increasing in population throughout the region.

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2. There is insufficient evidence to determine whether will be a future reduction in population size (criterion A3).

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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 99 km² and the Area of Occupancy (AoO) is estimated to be 28 km², 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 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 as Data Deficient

is no available estimate of total population size.

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 ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D2 as Vulnerable

The taxon is estimated to be very restricted. It 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, in response to identified threats, notably imposed anthropogenic fire regimes, repeat fire events, and extreme drought stress.

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. Retrieved from:



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https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Eucalyptus saxatilis*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/525a303f-3681-46cc-94ca-5ae6ca9c8848>