

Threatened Species Assessment

Eucalyptus conferta Fryers Range Scentbark

Taxonomy

Eucalyptus conferta Rule

A synonym for the taxon is *Eucalyptus* aff. *aromaphloia* (Castlemaine) (VicFlora 2018).

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criterion B1ab(iii,v)+2ab(iii,v)

Species Information

Description and Life History

The taxon is a slender tree to 15 m tall; bark rough to small branches, thick, furrowed longitudinally, often loosely attached in short strips, dark grey-brown; branchlets white to pale brown. Juvenile leaves sessile to shortly petiolate, opposite for several nodes, linear, falcate, to 8 cm long, 0.9 cm wide, dull glaucous, new growth pruinose, margins crenulate; adult leaves petiolate, alternate, narrowly lanceolate to lanceolate, sometimes falcate, 7-11(-13) cm long, 1.2-1.8 cm wide, concolorous, dull, green to bluish-green; reticulation dense, with numerous, mostly island oil glands. Inflorescences axillary, unbranched; peduncles 1.1 cm long, 7-flowered; buds pedicellate, ovoid or fusiform, to 0.7 cm long, 0.3 cm diam., scar present; operculum conical; stamens irregularly flexed; anthers dorsifixed, cuneate; ovules in 4 vertical rows; flowers white. Fruit pedicellate, hemispherical to slightly obconical, to 0.4 cm long, 0.4 cm diam.; disc slightly ascending; valves 3 or 4, slightly exerted; seed black, flattened-ellipsoid, shallowly reticulate, lacunose, hilum ventral. Flowers autumn (VicFlora 2018).

Generation Length

The generation length of *Eucalyptus conferta* is inferred to be 100 to 250 years. This is based on a combination of episodic post-fire recruitment at a plausible pre-settlement bushfire frequency in the range 35-80 years. It is also based on a likely minor contribution from continuous recruitment in response to small-scale localised canopy clearance and soil disturbance.

Distribution

The taxon occurs on Fryers Range, Vaughan Springs Road, c. 700 m south of intersection with Green Gully Road (Rule 2012). It is restricted to the Glenluce State Forest in the Fryers Range, about 17 km to the south of Chewton. The population is disjunct from other scentbarks, particularly *E. aromaphloia*, which is known to occur approximately 20 km to the south in the Daylesford area. It is possible that other stands of the taxon occur on similar sites in the district. Habitat

The taxon occurs on dry shallow soils (VicFlora 2018) on hilly terrain, and favours dry, shallow skeletal soils that are sedimentary in origin. The mean annual rainfall of nearby Castlemaine is approximately 550 mm, most of which falls in winter. *E. dives*, *E. melliodora*, *E. polyanthemos* subsp. *vestita*, *E. macrorhyncha* and *E. obliqua* all occur within the range of the taxon (Rule 2012).

Threats

The key threat to extant subpopulations within the state forest is a projected increase in fire frequency resulting from an imposed anthropogenic fire regime of frequent planned burning, and climatic drying and warming resulting in an increased risk of repeat fire at frequencies below the tolerable fire interval for the taxon. This threat is further exacerbated by the projected increase in extreme drought, which is likely to increase the risk of recruitment failure. There is also a plausible current and future threat of targeted browsing pressure from rabbits, deer, and macropods, particularly during early recruitment.

Future decline of the taxon is difficult to estimate with any confidence within the next 100 years given the uncertain contribution that the identified threats will have on the persistence of the current adult population, and the arguably compromised capacity for future seed recruitment. In particular, it is unclear at what point drought-induced adult mortality will force the extant subpopulations in forest settings to rely on successful seedling recruitment to maintain current population densities.

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 Vulnerable

The population reduction over the past 300 to 750 years is inferred to be 30 to 45%, based on (c) and (e) above.

Past decline is based on a plausible 30-40% habitat loss at the southern end of the known range, and a small but arguable potential decline in population density in response to comprehensive landscape disruption during the Gold Rush.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 300 to 750 year period, including both past and future (up to 100 years in the future), is inferred to be 30 to 55% (midpoint 40%), based on (c) and (e) above.

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Future decline difficult to estimate with any confidence within the next 100 years given the uncertain contribution that the identified threats will have on the persistence of the current adult population and the arguably compromised capacity for future seed recruitment. In particular, it is unclear at what point drought-induced adult mortality will force the extant subpopulations in forest settings to rely on successful seedling recruitment to maintain current population densities.

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 B as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 20 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) across the taxon's range is estimated to be 12 km², based on 2 x 2 km² grids derived from accepted, post-1970 records from the VBA.

It is inferred to have up to five locations. A major bushfire could impact all individual, but this is not the most plausible threat. The key threat is a projected increase in fire frequency resulting from an imposed anthropogenic fire regime of frequent planned burning, and climatic drying and warming resulting in an increased risk of repeat fire at frequencies below the tolerable fire interval for the taxon. This is unlikely to apply to all individuals at once.

It has a continuing decline in (iii) and (v) above based on the projected increase in fire frequency resulting from imposed an anthropogenic fire regime of frequent planned burning, and climatic drying and warming, resulting in an increased risk of repeat fire at frequencies below the tolerable fire interval for the taxon. This threat is further exacerbated by the projected increase in extreme drought. There is also a plausible current and future threat of targeted browsing pressure from rabbits, deer, and macropods.

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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 400 to 500 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 ² or number of locations ≤ 5

Evidence:

Eligible under criterion D as Vulnerable

It is estimated that there are 400 to 500 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. Retrieved from:

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