Threatened Species Assessment

Eucalyptus bosistoana
Coast Grey-box

Taxonomy

Eucalyptus bosistoana F. Muell.

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 A2bce+4bce

Species Information

Description and Life History

Tree to 60 m tall; bark rough over part or most of trunk, box-type, usually thin. Juvenile leaves petiolate, opposite for a few pairs then alternate, orbicular to ovate, to 10 cm long, 9.5 cm wide, pale green; adult leaves petiolate, alternate, lanceolate to narrowly lanceolate, 10–20 cm long, 0.7–2 cm wide, concolorous, dull to slightly glossy, green; intramarginal vein remote from edge; reticulation dense, partly obscured, with numerous island and intersectional oil glands. Inflorescences mostly axillary, unbranched; peduncles to 1.5 cm long, 7-flowered; buds pedicellate, clavate to ovoid, to 0.9 cm long, 0.4 cm diam., no scar; operculum conical or hemispherical; stamens irregularly flexed; anthers adnate, globoid; ovules in 4 vertical rows; flowers white. Fruit pedicellate, cupular or barrel-shaped, to 0.7 cm long, 0.7 cm diam.; disc descending; valves 5 or 6, rim level. Seed brown, irregularly ovoid and slightly flattened, surface shallowly reticulate, hilum ventral. Flowers November–March (VicFlora 2018).

Generation Length

The generation length of *Eucalyptus bosistoana* is inferred to be 70 to 350 years (midpoint 200 years). When mature, the taxon is long-lived and able to coppice post-fire, so trees are usually considerably older than the age of the current stems. The forest types in which it grows usually have an open shrub layer and, as a result, it is able to germinate and establish in the absence of fires, or between fires, although rarely. It is not a fast-growing taxon and thus germinants may take 20 years or more to restore any pre-fire seed bank, although resprouting individuals may take half this time lag.

Distribution

E. bosistoana occurs scattered east from Woodside in South Gippsland to the NSW border, and between the foothills and the coast. An isolated occurrence near Buchan could reasonably be described as in the foothills. Its distribution is not continuous but restricted to broad valley bottoms on relatively fertile clay loams.

Habitat

The taxon is restricted to broad valley bottoms supporting relatively fertile, fine-grained clay loams that retain moisture well into summer. Shrubs are uncommon to rare in these forest types and thus fires are, or were (pre-settlement), relatively infrequent. The field layer, in pre-settlement condition, is assumed to have been a taxa-rich assemblage of herbaceous perennials, including renascent perennials. Post-settlement the shrub component has

significantly increased. This forest type is the Lowland Herb-rich Forest of Cheal *et al*. (2011) and Molnar *et al*. (1999). Pre-settlement, fires were relatively rare and of relatively low intensity and severity.

Threats

Former clearing on private land was extensive, as the typical valley bottoms of this taxon were favoured for agriculture. Such clearing remains a threat, although at a reduced level. Native vegetation clearance remains a low level threat.

All forested land, including reserves and parks, are subject to current fire frequencies which have increased in the last 100 years. Whilst not a dramatic direct threat to the taxon, this heightened fire frequency advantages other eucalypts, such as *E. sieberi,* and *E. globoidea,* over *E. bosistoana*, leading to reduction in the latter taxon and its replacement by other more fire tolerant eucalypts. Frequent fires increase habitat shrubbiness and thus exacerbate the likelihood of bushfires.

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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 210 to 1,050 years is suspected to be 40 to 85% (midpoint 70%), based on (b), (c) and (e) above.

The taxon's habitat was preferentially selected and cleared, and fire frequency has greatly increased to the detriment of this taxon, both directly and in reducing competitiveness with other eucalypt taxa.

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

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 100 years is projected to be 20 to 50% (midpoint 30%), based on (b), (c) and (e) above.

Future decline is based on the current fire frequency including planned burning, and the clearing of private and local government land.

Eligible under Criterion A4 as Endangered

The population reduction over any 210 to 1,050 year period, including both past and future (up to 100 years in the future), is inferred to be 50 to 75%, based on (b), (c) and (e) above. The causes of the 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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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) is estimated to be 11,852 km^2, and the Area of Occupancy (AoO) is estimated to be 427 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

It is suspected that there are 8,000 to 80,000 (midpoint 20,000) mature individuals, which exceeds the thresholds for criterion C.

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 km2 or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Endangered

The taxon is suspected to have 8,000 to 80,000 (midpoint 20,000) mature individuals, which exceeds the thresholds for criterion D.

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

References

Cheal D, White M, Machunter J, and Kohout M. (2011) The Vegetation of East Gippsland - III. *ARI Tech. Report Series No.* 220. Dept. Sustainability and Environment, Victoria.

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne.

Molnar C, Oates A, Muir A. (1999) Gippsland Comprehensive Regional Assessment. Commonwealth and Victorian Regional Assessment, Regional Forest Agreement Steering Committee, Barton, ACT

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VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Eucalyptus bosistoana*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/ef5731d8-9dec-47ea-b9de-9d72d7d4fc47