Threatened Species Assessment

Eucalyptus strzeleckii
Strzelecki Gum

Taxonomy

Eucalyptus strzeleckii Rule

Current conservation status

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

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2005).

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

Proposed conservation status

Critically Endangered in Australia

Criteria A2bc+4bce

Species Information

Description and Life History

The taxon is a tree to 40 m tall; bark smooth, whitish with red-brown mottling, usually with a short stocking of loose, semi-persistent rough bark. Juvenile leaves petiolate, soon alternate, lanceolate to ovate or elliptic, subcrenulate, to 8 cm long, 4 cm wide, discolorous, somewhat glossy, green or yellow-green, glandular; adult leaves petiolate, alternate, ovate to lanceolate, to 20 cm long, 3 cm wide, concolorous, glossy, green; new growth glaucous; reticulation dense, with numerous island and intersectional oil glands. Inflorescence axillary, unbranched, peduncle to 1.4 cm long, 7-flowered; buds pedicellate, diamond-shaped to slightly ovoid, to 0.8 cm long, 0.5 cm diam., scar present; operculum shortly beaked; stamens inflexed; ovules in 4 vertical rows; flowers white. Fruit pedicellate, obconical, to 0.6 cm long, 0.8 cm diam.; disc level to raised-annual; valves 3 or 4, rim level or slightly exserted; seed black, flattened-ellipsoid, usually somewhat cuneate, slightly lacunose, very shallowly reticulate, hilum ventral. The taxon flowers in spring. The taxon differs from *Eucalyptus brookeriana* most strikingly in the glaucous new leaf growth on the outside of the crown and to a lesser extent in the smaller buds and fruit and looser rough bark towards the base of the trunk, and in the flowering season (VicFlora 2018).

Generation Length

The generation length of *Eucalyptus strzeleckii* is inferred to be 80 to 200 years. This taxon presumably has a potential life span of up to several hundred years, provided it gains sufficiently secure purchase in the seepage-prone sites that comprise a portion of its habitat. It is likely to be relatively fire-sensitive. Regeneration has been observed to occur in the absence of fire. Trees are considered likely to reach reproductive maturity within ten years. On this basis an average generation length of 80-200 years is proposed.

Distribution

The taxon is largely restricted to the western section of the Strzelecki Range, from Neerim South in the north, south to Foster, and with a few isolated records from the Otway ranges. Records from western Victoria are unusually disjunct, and while apparently well placed in *E. strzeleckii*, further investigation into the affinities of these plants with *E. brookeriana* may be warranted (VicFlora, 2018).

Habitat

According to VicFlora (2018), the taxon favours ridges, slopes and stream banks and deep fertile soils. Field observations note it as a component of damp forest, particularly in moist soils of slopes, but usually in sites less prone to waterlogging than those that support *Eucalyptus ovata.*

Threats

Threat to populations of this taxon include those related to climate change (decreased rainfall and drying of springs and soaks), land clearing for urban/agricultural use, lack of recruitment due to grazing on agricultural land and incremental losses along roadsides due to works. Many occurrences of this species are small and fragmented, making them vulnerable due to limited genetic diversity as well as incremental losses and limitations on recruitment. Given the species occurs on relatively fertile soils, recruitment is also potentially subject to competition from introduced grasses.

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 Critically Endangered

The population reduction over the past 240 to 600 years is inferred to be 50 to 90%, based on (b) and (c) above.

Past decline has been confidently suggested to exceed 50% but not confidently exceeding 80%, although probably approaching 80%. Observations during field inspection of former habitat on the Tertiary volcanic soils in the Neerim-Drouin-Warragul area suggests these figures may be quite conservative.

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

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is suspected to be 30 to 70% (midpoint 50%), based on (b) and (c) above.

Estimates have suggested a plausible future decline of approximately 50%. Many small occurrences are likely to die without replacement or be impacted by development within the habitat.

Eligible under Criterion A4 as Critically 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 30 to 90%, based on (b), (c) and (e) above. The causes of 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:

Eligible under Criterion B2 as Vulnerable

The Area of Occupancy (AoO) is estimated to be 868 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. The occurrences generally comprise small numbers of trees in fragmented habitat and frequently include scattered paddock trees.

The threats outlined for this taxon are considered to apply generally across small and scattered occurrences in Gippsland. The very restricted Otway occurrences currently included within this taxon are considered to comprise a second population.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

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 inferred that there are 500 to 15,000 mature individuals, but other thresholds under this criterion have not been met.

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:

Ineligible under Criterion D

It is inferred that there are 500 to 15,000 mature individuals.

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

References

Carter, O. (2006). National Recovery Plan for the Strzelecki Gum *Eucalyptus strzeleckii.* Department of Sustainability and Environment, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-strzelecki-gum-eucalyptus-strzeleckii

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

SAC (2005). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 712 *Eucalyptus strzeleckii*

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Eucalyptus strzeleckii.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/f75ce232-ad2e-462b-a982-bddb40552221