

## *Eucalyptus fasciculosa* Pink Gum

### Taxonomy

*Eucalyptus fasciculosa* F. Muell.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criteria A2ce+4ce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

### Species Information

#### Description and Life History

The taxon is a small, crooked, pale smooth-barked tree to 10 m tall; the bark is often loose and rough near base, mostly smooth light grey to pinkish-grey. Juvenile leaves petiolate, opposite for few pairs then alternate, ovate, to 12 cm long, 6 cm wide, green; adult leaves petiolate, alternate, broadly lanceolate to lanceolate, 8.5-15 cm long, 1.3-2 cm wide, concolorous, dull to slightly glossy; reticulation dense, apparently glandless. Inflorescences terminal panicles; peduncles to 1 cm long, 7-flowered; buds pedicellate, clavate, to 0.8 cm long, 0.4 cm diam., scar present; operculum hemispherical to conical; stamens inflexed with outer staminodes; anthers adnate, cuboid; ovules in 4 vertical rows; flowers white. Fruit pedicellate, obconical to barrel-shaped, to 0.9 cm long, 0.6 cm diam.; disc descending; valves 3 or 4, below thin, often split rim; seed brown, irregularly ovoid and slightly flattened, surface shallowly reticulate, hilum ventral. The taxon flowers from May to December (VicFlora 2019).

#### Generation Length

The generation length of *Eucalyptus fasciculosa* is estimated to be 80 to 120 years. This is based on a plausible longevity of 150-200 years and the inference that the taxon recruits both episodically and opportunistically in response to fire or other disturbance events. South Australian evidence of scattered paddock trees in areas previously rolled for agriculture, for example in the Dark Heath - Naracoorte districts, suggests at least a moderate lignotuberous resprouting capacity. This implies that lignotuberous resprouting or epicormic regeneration from surviving stems can extend the life of established individuals beyond the pre-settlement fire interval estimated at 45-90 years or more.

Like most eucalypts in fire-prone dryland habitats, the taxon recruits episodically, from an elevated or soil-stored seedbank, following intense wildfire events, with only a proportion of adults killed by fire, a majority resprouting 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

In Victoria, the taxon is restricted to the Dergholm and Langkoop area, close to the South Australian border, in the far south-west of the state. It also occurs in SA (VicFlora 2019).

## Habitat

The taxon is associated with well-watered but impoverished sandy loams (VicFlora 2019). It is frequently associated with *Eucalyptus camaldulensis* (River Red-gum) or *E. leucoxylon* (Yellow Gum) and can be the dominant eucalypt at a site. Common understorey taxa include *Apodasmia brownii* (Coarse Twine-rush), *Baumea juncea* (Bare Twig-sedge), *Chorizandra enodis* (Black Bristle-sedge), *Lepidosperma congestum* (Clustered Sword-sedge), *Leptospermum continentale* Prickly Tea-tree, *Schoenus apogon* (Common Bog-sedge) and *Xanthorrhoea minor* (Small Grass-tree).

The taxon is often associated with Seasonally Inundated Shrubby Woodland or Ecological Vegetation Class (EVC) 195. Whilst of Least Concern (LC) in the Wimmera bioregion, EVC 195 is depleted in the Dundas Tablelands bioregion and Endangered (EN) in the Glenelg Plain bioregion, which is the most relevant bioregion to the taxon. EVC 195 often occurs in a mosaic with Shallow Sands Woodland and Plains Sedgy Woodland EVCs.

## Threats

The taxon survives mostly as scattered paddock trees or small clumps mostly on freehold land, some on land converted to Blue Gum plantations, but mostly retained within plantations or within unplantable zones within plantation estates. The taxon extends only marginally into public land blocks and is therefore inferred to have suffered significant historic decline through habitat loss to agriculture and plantation establishment, and habitat degradation in response to land management activities, habitat fragmentation and a wide range of localised edge effects including weed invasion, fire prevention activity and road construction and maintenance.

Occurrences in fragmented rural landscapes continue to be subject to incremental habitat loss and modification in response to agricultural intensification, including illegal roadside clearing and freehold cropping, and to fire management activity on both road reserves and freehold, as well as throughout all public land including parks and other reserves.

Many extant stands are now confined to roadsides or freehold where they are at risk from recruitment failure, spray drift, illegal cropping, rabbit browsing and stock grazing and illegal clearing for fire management purposes.

Current and future threats include climatic drying and warming and 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, kangaroos, rabbits and stock.

### 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 style="text-align: center;"><i>based on any of the following:</i></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>			

### Evidence:

#### Eligible under Criterion A2 as Endangered

The population reduction over the past 240 to 360 years is estimated to be 50 to 80% (midpoint 65%), based on (c) and (e) above.

Past decline is based largely on habitat loss to agriculture and plantation establishment, as well as habitat degradation in response to land management activities, habitat fragmentation and a wide range of localised edge effects including weed invasion, fire management activity and road construction and maintenance.

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

#### Eligible under Criterion A3 as Vulnerable

The population reduction over next 100 years is estimated to be 30%, based on (c) and (e) above.

Future decline is based on the projected impact of the identified current and future threats.

#### Eligible under Criterion A4 as Endangered

The population reduction over any 240 to 360 year period, including both past and future (up to 100 years in the future), is estimated to be 60 to 80% (midpoint 70%), based on (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 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 400 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally and anthropogenically at the landscape scale. All geographically isolated stands occur at spacings that exceed the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal and is likely to be dispersed by ants (myrmecochory) at the metre scale only.

It is estimated to have two locations based on landscape context and tenure: one for occurrences within the reserve system and one for occurrences in fragmented rural landscapes subject to a range of site-specific threats not likely to operate within larger stands of remnant vegetation within reserved public land.

The taxon is severely fragmented

**Eligible under Criterion B2 as Endangered**

The Area of Occupancy (AoO) across the taxon's range is estimated to be 76 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 2 locations and 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 as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

Criterion D. Very small or restricted population <sup>α</sup>		Critically Endangered <sup>α</sup>	Endangered <sup>α</sup>	Vulnerable <sup>α</sup>
Number of mature individuals (observed or estimated) <sup>α</sup>		< 50 <sup>α</sup>	< 250 <sup>α</sup>	< 1,000 <sup>α</sup>
D2. Only applies to the VU category <sup>¶</sup> 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. <sup>α</sup>		- <sup>α</sup>	- <sup>α</sup>	D2. Typically: <sup>¶</sup> AoO < 20 km <sup>2</sup> or number of locations ≤ 5 <sup>α</sup>

### Evidence:

#### Eligible under criterion D2 as Vulnerable

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: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf](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 fasciculosa*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/9a3ab3b0-53cf-4f6d-a32e-6e9287883d66>