Threatened Species Assessment

Eucalyptus wimmerensis
Wimmera Mallee-box

Taxonomy

Eucalyptus wimmerensis Rule

As with some other box taxa, *E. wimmerensis* occurs in agricultural lands that have been much modified by clearing. Regrowth in these areas can be notoriously difficult to relate to the natural state, and some stands of *E. wimmerensis* appear to include hybrids, even with the distantly related mallees of the *E. dumosa* group (VicFlora, 2019).

Rule (2019) described four new subspecies of *E. wimmerensis*, all of which are endemic to the Wimmera region of Victoria. Only the type subspecies, described by Rule in 1990, extends into South Australia.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criterion A4abce

Species Information

Description and Life History

The taxon is a mallee differing from *E. viridis* in the mostly smooth bark, larger grey to blue-green juvenile leaves (to 1.8 cm wide) that are subsessile to shortly petoleate, larger olive-green to blue-green adult leaves (to 2 cm wide), larger buds and larger, slightly angled fruit (to 0.7 cm long and diam.). The taxon flowers from summer to late autumn (VicFlora 2019).

Generation Length

The generation length of *Eucalyptus wimmerensis* is estimated to be 150 to 300 years. This is based on a plausible longevity of 300 years or more. 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 or more.

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 and 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

The taxon is restricted in Victoria to the western Wimmera where it is scattered in the Dimboola, Nhill, and Kaniva areas (including the Little Desert) south to around Mt Arapiles. The taxon also occurs in South Australia (VicFlora 2019).

Habitat

The taxon is associated with moderately fertile soils of the Wimmera plains. It is commonly associated with lateritic rises, such as the Lawloit Range west of Nhill, and is often the dominant taxon in the mallee communities in which it grows (Rule 2019).

Threats

As with some other box taxa, *E. wimmerensis* occurs in agricultural lands that have been much modified by clearing (VicFlora, 2019). It has suffered significant historic decline through habitat loss and degradation in response to agricultural activity, habitat fragmentation, and a wide range of localised edge effects including weed invasion, fire prevention activity, and road construction and maintenance.

Occurrences in highly 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 land, as well as throughout all public land including national parks and other reserves.

The majority of extant stands outside the Little Desert National Park are now confined to roadsides or freehold land, where they are at risk from recruitment failure, spray drift, illegal cropping, rabbit 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%

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 last 450 to 900 years is estimated to be 50 to 80% (midpoint 65%), based on (a), (b), (c) and (e) above.

Past decline is based largely on habitat loss and degradation in response to agricultural activity, habitat fragmentation, and a wide range of localised edge effects.

The causes of 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 projected to be 50 to 75%, based on (c) and (e) above.

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

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 450 to 900 year period, including both past and future (up to 100 years in the future), is estimated to be 75 to 90% (midpoint 80%), based on (a), (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 B as Endangered

The Extent of Occurrence (EoO) is estimated to be 4,398 km², and the Area of Occupancy (AoO) is estimated to be 260 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, has 2 locations, and 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 as Data Deficient

There is no reliable estimate of total population size for the taxon, although Rule (2019) states that field observations suggest that there is in excess of 20,000 plants of *E. wimmerensis* subsp. *wimmerensis,* with estimates of 35, 40, 400 and 400-600 individuals of the other newly described subspecies.

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 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-

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Rule, K (2019). *Eucalyptus wimmerensis* revisited and notes on the morphologies and taxonomies of five Victorian mallee-boxes. *Muelleria*, 37, 39-64.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Eucalyptus wimmerensis*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/91cc5afa-bca3-413f-a2d2-949c5ae79652