Threatened Species Assessment

Commersonia breviseta
Hairy Kerrawang

Taxonomy

Commersonia breviseta C.F. Wilkins & L.M. Copel.

Commersonia breviseta resembles *C. dasyphylla*. The latter typically has acute leaves c. 5 cm long with regularly toothed margins, and capsules that are sparsely hairy with setae > 2 mm long, whereas leaves of *C. breviseta* are typically blunt, less than 3 cm long, with sinuate or hardly toothed margins, and capsules are moderately hairy with very short setae (c. 0.1 mm long).

Current conservation status

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

Proposed conservation status

Critically Endangered in Australia

Criteria B1ac(iv)+2ac(iv)

Species Information

Description and Life History

The taxon is a decumbent or erect shrub to 3 m high. Leaves narrow-elliptic to narrowly ovate, 0.8-2.4 cm long, 0.1-0.6 cm wide, irregularly toothed, upper surface green, densely stellate-tomentose, undersurface pale green, densely stellate-tomentose, with long and short hairs; petioles 1-6 mm long. Inflorescence 4-16-flowered. Calyx segments 3.4-6.4 mm long, 1.3-2.7 mm wide, stellate-hairy on both surfaces; petals usually c. half the length of calyx segments, usually somewhat stellate-hairy; staminodes 5, stellate-hairy. Capsule 4.5-5.5 mm diam. This species is thought to be an obligate seeder, recruiting abundantly following fire (VicFlora 2017). The taxon is likely to reach reproductive maturity at five years of age, and longevity is unlikely to exceed 10 years.

Generation Length

The generation length of *Commersonia breviseta* is estimated to be 25 to 45 years. Whilst the taxon has an estimated longevity of 10 years and time to reproductive maturity of 5 years, it is regarded as an obligate seed regenerator (OSR). As an OSR, the taxon recruits episodically post-fire from long-persistent soil-stored seedbanks at an estimated pre-European settlement fire interval of 25-45 years.

Distribution

The only known Victorian occurrence of the taxon is about 1.5 km west of Genoa Peak Road on Roger Track in the Genoa district in Far East Gippsland.

Habitat

This taxon occurs in rocky areas in dry open forest (VicFlora 2017). In 1989, R.K. Humphries recorded that the taxon occurs at an aspect of 40° on a gentle slope at an elevation of 240 m in classic Lowland Forest dominated by *Pultenaea daphnoides, Allocasuarina littoralis, Corymbia gummifera, Eucalyptus sieberi, Tetrarrhena juncea, Acacia myrtifolia, A. terminalis, Banksia serrata* and *Lomatia ilicifolia.* The taxon was in flower at the time and the site had been burnt five years earlier in 1983 (MEL Accession no.1564427A).

Threats

The taxon may eventually become threatened by the increasing risk of repeat fire events at an interval below its likely tolerable fire interval of five years. Repeat fires lead to depletion and ultimate exhaustion of the seedbank resulting in local extinction. The risk of repeat fire events is projected to increase in response to planned burning, and climatic drying and warming.

There is also a long-term risk of recruitment failure in response to extreme drought stress and targeted browsing by Sambar Deer (*Rusa unicolor*) which are currently increasing in population in the region.

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:

Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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 B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to be severely fragmented, as the only Victorian occurrence is highly disjunct from all interstate occurrences, and therefore the probability of recolonisation in the event of local extinction is remote.

It is estimated to have 1 location, and has extreme fluctuations in (iv) above, as the taxon is regarded as an OSR which recruits episodically post-fire from long-persistent soil-stored seedbanks. Successive cohorts are likely to vary in population size at an order of magnitude in response to fire intensity and recruitment success.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, has 1 location, and has extreme fluctuations in (iv) 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			
	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-Plants-in-Victoria-2014.pdf

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria. *Commersonia breviseta.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/5a49c818-c1f0-41c3-8cff-2e20b337b7f7