Threatened Species Assessment

Coopernookia barbata
Purple Coopernookia

Taxonomy

Coopernookia barbata (R. Br.) Carolin

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Species Information

Description and Life History

The taxon is a procumbent to erect subshrub, to 1 m high; stems c. terete, ribbed, glandular-hairy, somewhat viscid, becoming scabrous. Leaves sessile, linear, 10-40 mm long, 1-6 mm wide, both surfaces with scattered glandular and stellate hairs, becoming scabrous, margins entire or obscurely toothed, recurved to narrowly revolute. Pedicels to 30 mm long; bracteoles 2, leaf-like, above middle of pedicel. Sepals 3-8 mm long; corolla 10-20 mm long, blue to mauve, glandular- and stellate-hairy outside, wings 1-3 mm wide; ovules usually 2. Capsule 5-7 mm long, valves entire; seeds ellipsoidal, 4-5 mm long. The taxon flowers throughout the year (VicFlora, 2019).

Generation Length

The generation length of *Coopernookia barbata* is estimated to be 20 to 40 years. Longevity of this taxon is plausibly in 5-20 year range, but generation time arguably exceeds the mean longevity. It is based in part on the soil seed bank, depending on the balance between post fire recruitment at pre-settlement frequency of 25- 70 years, and continuous localised recruitment.

Distribution

In Victoria, the taxon is confined to East Gippsland (e.g., Tulach Ard, Cann River and Genoa areas). It also occurs in New South Wales and Tasmania (VicFlora, 2019).

Habitat

The taxon usually occurs on dry, rocky, open-forests and shrublands, usually under *Eucalyptus sieberi* and *E. consideniana* (VicFlora, 2019).

Threats

The taxon occurs in relatively intact habitat, although it is likely that some areas have been subject to historic forestry operations. It is unclear what effect these operations have had on the taxon's ability to recruit.

The taxon is threatened in the long-term by climatic drying and warming, risking elevated mortality and changes in vegetation structure. Any impacts are likely to be exacerbated by altered fire regimes, increasing the risk of repeat fire and recruitment failure.

The bushfires of 2019-2020 are believed to have impacted around 76% of the taxon's modelled habitat. The overall impacts of the fire are yet to be determined. The taxon is likely to be threatened by feral herbivores, notably Sambar Deer *Rusa unicolor*. Drought, hot weather and repeat fires have the potential to damage or destroy recovering plants and/or seedlings. The taxon's recovery depends on the effective control of the impacts of herbivores and by preventing soil disturbance following fire recovery.

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

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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) across the taxon's range is estimated to be 2,802 km² and the Area of Occupancy (AoO) is estimated to be 144 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 estimated that there are 7,000 to 18,000 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:

Eligible under Criterion D2 as Vulnerable

The taxon is estimated to be very restricted. It has a restricted distribution, with one location, such that this restriction makes it possible that the taxon could become Critically Endangered or Extinct within a period of one or two generations in response to the identified threats, notably threats, notably climatic drying and warming,

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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Coopernookia barbata.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/a3a6bd88-6fdc-4070-b6d5-57f3d912520a