Threatened Species Assessment

Trochocarpa clarkei
Lilac Berry

Taxonomy

Trochocarpa clarkei (F. Muell.) F. Muell.

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criterion B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a dense, often decumbent shrub to c. 30 cm high, ± rooting at nodes; branchlets puberulent. Leaves mostly spreading, oblong-elliptic, 3-11 mm long, 1.2-3.5 mm wide, obtuse to subacute, glabrous, flat, lower surface paler with 3-7 subparallel veins; margins plane to slightly recurved, serrulate. Flowers bisexual, in dense c. 5-11-flowered spikes, mostly axillary on old wood, occasionally terminal; bracts, bracteoles and sepals obtuse; bracts 1-1.6 mm long; bracteoles 1-2 mm long; sepals ovate, 2-3 mm long; corolla urceolate-campanulate, with 5 dense tufts of spreading and deflexed hairs closing the throat of the tube; tube maroon in upper half, green below, 2.5-4 mm long, inflated; lobes maroon, 2-3 mm long, glabrous to minutely papillose; anthers much exserted; ovary usually 10-locular, style 2-2.5 mm long. Fruit depressed-globose, c. 7-8 mm long, bluish-purple, separating into 10 (rarely fewer) pyrenes. Flowers Nov.-Mar. (Albrecht 1996).

Being closely related to *Epacris* spp., the taxon is likely to be pollinated by bees (Armstrong 1979) and birds, especially honeyeaters (Ford *et al* 1979). There is no known mechanism for long-distance dispersal.

Generation Length

The generation length of *Trochocarpa clarkei* is estimated to be 30 to 60 years. Vital attribute data suggest that this taxon can resprout after fire (although the details of seedling recruitment are unknown), it is tolerant of establishment in mature vegetation, takes 5 years to reach reproductive viability, and as a medium-lived perennial lives for 10-50 years. Seeds persist in the soil for more than 50 years. In undisturbed habitat where fire is infrequent, plants are expected to live to old age, so generation length is likely to be at the older end of the lifespan range.

Distribution

The taxon is endemic to Victoria, and restricted to alpine and subalpine areas, and locally common in areas bounded by e.g., Lake Mountain, Baw Baws, Snowy Range, Mt Cobbler, Mt Wellington, The Pinnacles, but not extending into the higher, north-eastern ranges (e.g., Bogong High Plains, Cobberas mountains) (VicFlora 2019).

Habitat

The taxon usually grows near rocks or in sheltered areas under Snow-gums (Albrecht 1996). It is often found on the margins of *Sphagnum* bogs, especially on the Baw Baw plateau, which has a more maritime climate with higher summer precipitation than other alpine areas in Victoria (Shannon and Morgan 2007).

Threats

Physical impacts of grazing since settlement (and increased frequency of fire) have substantially reduced the area and quality of peatlands across the alps (Costin et al 1956; Wimbush 1970), and reductions in available habitat will surely have reduced populations since settlement, perhaps up to 25%.

It is not known whether this taxon is browsed by cattle or horses, and in any event most current populations would have little or no exposure to them. It is possibly browsed by deer which are common throughout its range, but there are no supporting data to confirm this. The taxon may be susceptible to the impacts of climate change as it is often associated with peatland margins and is most abundant in wetter regions such as the Baw Baw plateau (Shannon and Morgan 2007). Populations are therefore at risk from disturbance, weed invasion and increasingly dry conditions from declining rainfall and consequent increase in the severity and intensity of bushfires. Populations would be at most risk in dryer, lower-elevation areas that might already provide marginal habitat, or in areas already burnt multiple times in recent decades, such as around Mt Wellington.

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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:

Eligible under Criterion B1 as Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 6,820 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale. It has a patchy distribution with most occurrences isolated from other occurrences at separations exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal

and is estimated to have 5 locations. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 316 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 5 locations and has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

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 20,000 to 40,000 mature individuals, which exceeds the thresholds for criterion C.

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

The number of mature individuals exceeds the threshold for Criterion D and the taxon is not estimated to be restricted.

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

References

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