Threatened Species Assessment

Acrotriche leucocarpa
Tall Acrotriche

Taxonomy

Acrotriche leucocarpa P. Jobson & Whiffin

This taxon closely resembles the red-fruited taxon *Acrotriche divaricata* R. Br. (New South Wales) and *A. aggregata* R. Br. (New South Wales and Queensland). It further differs from the former in having leaves with a glaucous under-surface, and from the latter in the tendency for the leaves to be shorter and more lanceolate (VicFlora 2017).

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(iii)+2ab(iii)

Species Information

Description and Life History

The taxon is a spreading shrub c. 30-130 cm high; branchlets finely pubescent when young. Leaves widely spreading, often ± horizontal, lanceolate or rarely elliptic, 5.5-14 mm long, 1.5-3.5 mm wide, mucronate, ± flat, glabrous above, lower surface glaucous with branching subparallel-palmate veins; margins plane to slightly recurved, smooth. Flowers in compact 3-6-flowered spikes, on previous season's wood; spike 2.5-5 mm long; bracteoles 0.8-1 mm long; sepals 1.4-1.6 mm long; corolla pale green; tube (1.6-)2-2.5 mm long; lobes 1-1.2 mm long; ovary 4- or 5-locular, style 0.5-0.7 mm long. Fruit ovoid-globose, c. 3 mm long, pearly white, glabrous. The taxon flowers from August to December (VicFlora 2017).

Generation Length

The generation length of *Acrotriche leucocarpa* is estimated to be 45 to 90 years. This is based on a plausible longevity of 20-50 years, and a pre-settlement fire interval of 45-90 years or more. The taxon is likely to be a fire-sensitive obligate seed regenerator (OSR), recruiting episodically post-fire with some continuous trickle recruitment in response to localised site disturbance events and seasonal conditions. There are no field observations to support root suckering or resprouting. The taxon is likely to be bird-dispersed at short range, recruiting also from highly localised soil-stored and elevated seedbanks. Rocky sites mitigate against the risk of complete stand mortality through incineration.

Distribution

The taxon is restricted in Victoria to East Gippsland, occurring disjunctly east from Mt Elizabeth near Ensay, but it is locally frequent in the upper catchment of the Snowy River (VicFlora 2017). The taxon has a regional stronghold in the headwaters of the Yalmy and Rodger Rivers, with an isolated eastern occurrence at Mt Coopracambra in the Upper Genoa district. It also occurs in New South Wales and the ACT.

Habitat

The taxon is a generally uncommon plant of montane open-forest, woodland or shrubland often on rocky summits or slopes of mountain ranges (VicFlora 2017).

Threats

Although there is no clear evidence of fire sensitivity or vulnerability to drought stress or desiccation, the taxon is at an increasing risk of adult mortality and recruitment failure in response to repeat fire events at intervals approaching or below the tolerable fire interval (TFI) for the taxon, which is likely to be in the 5-10 year range. Fires at such intervals are increasingly likely in response to climatic drying and warming, and the imposition of both fuel reduction burns and post-logging regeneration slash burns. The increasing frequency, intensity and duration of extreme drought events is also likely to increase the risk of adult mortality and recruitment failure.

The taxon may also be threatened by targeted browsing by native and exotic herbivores, including Sambar Deer, which are currently undergoing a population explosion across the restricted Victorian range of the taxon. Browsing pressure is also likely to exacerbate the risk of recruitment failure following fire events.

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 Vulnerable

The population reduction over the past 135 to 270 years is suspected to be 20 to 40%, based on (c) and (e) above.

Habitat loss to agriculture is unlikely to have been significant, but the effects of the 2019/20 bushfires, although yet to be determined, are likely to have resulted in a decline. The taxon is believed to have 79% of its 42 Victorian sites occurring within the footprints of the 2019/20 fires. There is currently some uncertainty whether the taxon is fire sensitive or fire tolerant in the context of these fires.

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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4,508 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the subregional and landscape scales, with most stands occurring at separations that are likely to exceed the dispersal range of the taxon. The dispersal range is likely to be at the kilometre scale, since the fruit are likely to be locally dispersed by birds.

It is estimated to have a continuing decline in (iii) above, based on the effects of fire, post-fire activities, the impacts of feral herbivores and the risk of future fires.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 164 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is estimated to be severely fragmented and has a continuing decline in (iii) 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: *Acrotriche leucocarpa*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/a831aebe-efa9-4c53-b968-c2f6be6feaf6