Threatened Species Assessment

Acrothamnus montanus
Snow Beard-heath

Taxonomy

Acrothamnus montanus (R. Br.) Quinn

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criteria B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is an erect shrub, to c. 50 cm high, vegetatively resembling *Acrothamnus hookeri* but leaves flat to slightly concave toward apex, rarely slightly convex toward base. Flowers as *A. hookeri*, but bracteoles 1-1.6 mm long; sepals 1.5-1.9 mm long; corolla 2.5-3.5 mm long, lobes subequal to tube, glabrous, or sometimes papillose on inner face, style 0.5-0.6 mm long. Fruit ± spherical, c. 3-4 mm diam., red when ripe. The taxon flowers from December to January (VicFlora 2019).

Generation Length

The generation length of *Acrothamnus montanus* is estimated to be 20 to 60 years. The reproductive period extends from 5 to 45 years and senescence is around 50 years (McCarthy et al. 2000), although DELWP's Vital Attribute database suggests a 100 year lifespan. The taxon reproduces from seed but may also resprout. It is assumed that the pre-European fire regime was perhaps once or twice per century, and adult plants may survive. The average age in undisturbed vegetation is probably quite mature, perhaps around 40 years.

Distribution

The taxon is confined to high-alpine areas on and near the Bogong High Plains (Mts Bogong, Nelse, Jim, Hotham, Loch etc.) (VicFlora 2019). There are Victorian Biodiversity Atlas (VBA) records from Mt Buller, Wonnangatta-Moroka, Bogong High Plains and Cobberas. However, only the Bogong High Plains records are supported by contemporary data.

Habitat

The taxon grows in high-alpine areas, specifically, heath, grassland and on rocky slopes above 1800 m where it is locally common and forming near-pure stands (VicFlora 2019).

Threats

Subpopulations and habitat are considered at risk from disturbance by introduced ungulates (deer and feral horses), weed invasion and increasingly dry conditions from declining rainfall due to climate change. Although mature plants can survive fire by resprouting, conferring some stability to population, an increase in the severity and intensity of bushfires poses a threat. Climate change is likely to lead to range contraction of marginal, lower-elevation occurrences.

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 a reduction in population (criterion A2). 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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 767 km², based on accepted, post-1970 records from the VBA.

The taxon is estimated to be severely fragmented, and is estimated to have 1 location. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, due to disturbance, weed invasion and increasingly dry conditions from declining rainfall, and consequently an increase in the severity and intensity of bushfires. Very small subpopulations are highly susceptible to stochastic events causing major decline or local extinction within a very short time frame. The impacts are likely to be seen first in marginal, lower-elevation subpopulations.

The taxon is severely fragmented naturally at the landscape scale. Geographically isolated stands occur at separations typically exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal. The taxon may be dispersed by birds, small mammals or ants, the most likely distance being by birds which is unlikely to operate at over a kilometre scale, far less that the separation between occurrences.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 104 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, to have 1 location 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

It is estimated that there are 50,000 to 150,000 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:

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

McCarthy G. J., Tolhurst K. G., and Chatto K. (2000). Determination of sustainable fire regimes in the Victorian alps using plant vital attributes. Research Report no. 54. Department of Natural Resources and Environment, Melbourne.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Acrothamnus montanus.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/4aad99d1-463b-4768-bba2-886e731c7b80