Threatened Species Assessment

Richea victoriana
Serpent Heath

Taxonomy

Richea victoriana Menadue

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 A2ce; B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a narrowly erect shrub 0.7–2 m high; older branches with prominent annular scars. Leaves usually persisting only on the upper 5–40 cm of stem, spreading, sometimes slightly twisted, ovate-lanceolate to triangular, 3–10 cm long, 5–11 mm wide, flat to concave; apex straight or decurved, shortly pungent-pointed; margins serrulate. Flowers in dense narrow spike-like panicles to c. 12 cm long; peduncle not or only slightly exserted from leaf-sheaths; inflorescence axis glabrous; lateral branches to 18 mm long; sepals 4 or 5, broadly ovate, 1.2–1.5 mm long, obtuse to subacute; corolla white, 3.5–4 mm long; anthers narrowly oblong; filaments 3–3.5 mm long; nectary absent, style c. 1.5–1.7 mm long. Fruit c. 2 mm long; seeds 0.8–1.1 mm long. Flowers November-January (VicFlora no date).

Generation Length

The generation length of *Richea victoriana* is estimated to be 40 to 80 years. It is assumed to be similar to *R. continentis* which regenerates from long-lived seed after fire. Adults are killed by fire, and seedlings are not observed until 14-15 months post-fire and are barely 3 cm tall after two years. Lightly scorched plants appear to have some capacity to regenerate vegetatively. Time to reproductive maturity is estimated to be at least 10 years (Tolsma et al. 2012), and longevity of reproduction is estimated as 100 years. It is assumed that there are older age cohorts in long-undisturbed vegetation.

Distribution

The taxon is endemic to Victoria and is restricted to montane and subalpine sites on and near the Baw Baw Plateau and the Blue Range, between Marysville and Taggerty (VicFlora no date).

Habitat

The taxon is locally abundant in sub-alpine sites, in wet heathland, wet scrub, or margins of cool-temperate rainforest near streams and bogs (Menadue and Crowden 2000). It is associated with *Epacris microphylla* var. *rhombifolia* and *E. paludosa.*

Threats

Alpine taxa are prone to range contraction due to climate change, of which the impacts are likely to be seen first in marginal, lower-elevation sub-populations. Large fires are becoming more frequent and two fires at a short interval

will be particularly detrimental. Increasing impacts of deer are being seen in bog habitat, which could be a threat to the taxon.

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 Endangered

The population reduction over the past 120 to 240 years is estimated to be 40 to 60%, based on (c) and (e) above.

Shannon and Morgan (2007) state that the taxon is notably absent from montane areas with historically high fire frequency, suggesting substantial past decline.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 100 years is projected to be 30 to 40%, based on (c) and (e) above.

Future reduction is based on the habitat continuing to be threatened by the impacts of climate change, frequent fires, and the increasing impacts of deer in bog habitats. However much of the marginal habitat is assumed to have been lost in the past, and future decreases might be conservatively 30%.

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 600 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is estimated to have 2 locations as alpine taxa tend to exist in variable-sized 'islands' of habitat within a matrix of lower-altitude forest. This tends to isolate sub-populations reproductively but not in terms of fire impact.

It has a continuing decline in (ii), (iii), (iv) and (v) above based on the impacts of the identified threats, such climate change, frequent fires, and the increasing impacts of deer in bog habitats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 72 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon has 2 locations and has a continuing decline in (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 3,000 to 10,000 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 D 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

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