

Phebalium glandulosum subsp. *riparium* Snowy River Phebalium

Taxonomy

Phebalium glandulosum subsp. *riparium* R.L. Giles

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 has branchlets sparsely to densely glandular-verrucose. Leaves broadly oblong-cuneate, 9-20 mm long, 2-4 mm wide, apex retuse to obcordate, margins moderately to strongly recurved, usually sparsely glandular-verrucose; upper surface glossy, prominently glandular-verrucose, midrib deeply impressed; lower surface ferruginous-lepidote, midrib prominent, sparsely glandular-verrucose. Pedicels 2.4-6.6 mm long. Calyx narrowly hemispherical, 0.9-1.4 mm long, 1.6-2.1 mm wide, ferruginous-lepidote (VicFlora 2016).

The taxon is a shrub that is killed by fire and does not resprout, but produces seeds that are dependent on fire for germination.

Generation Length

The generation length of *Phebalium glandulosum* subsp. *riparium* is estimated to be 10 to 30 years. This is based on comparisons to the longevity determined for other closely related *Phebalium* taxa, including 20 to 40 years for *P. lowanense* by Carter (2010), and 12 years for *P. daviesii* as determined by Lynch and Appleby (1996), which also occurs in riparian habitats.

Distribution

In Victoria, the taxon is confined to the Snowy River and tributaries close by, from Long Point upstream to the New South Wales border. It also occurs in New South Wales (VicFlora 2016).

Habitat

The taxon occurs in riparian shrubland around cliffs and outcrops, or on rocky slopes and ledges close to the Snowy River (VicFlora 2016).

Threats

The most likely threats to the taxon are probably prolonged drought and increased intensity and frequency of fire. Individuals of the taxon have some resilience to drought conditions as they occur in exposed shallow soils in rain shadow areas, however, they may ultimately be vulnerable to prolonged drought. The sites of occurrence are protected from fires due to the cliffs and rocky outcrops that surround them so fires may not be a serious threat but there is a possibility that heat from severe fires nearby could kill plants.

Phebalium glandulosum subsp. riparium

Snowy River Phebalium

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%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>			
<p style="text-align: center;"><i>based on any of the following:</i></p> <ul style="list-style-type: none"> (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.

Phebalium glandulosum subsp. riparium

Snowy River Phebalium

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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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 357 km² and the Area of Occupancy (AoO) is estimated to be 40 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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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

Phebalium glandulosum subsp. riparium

Snowy River Phebalium

It is difficult to estimate the current number of mature individuals because there are long stretches of suitable but inaccessible habitat along the Snowy River that are likely to contain plants. In addition, the only counts that have been made were around 20 to 30 plants at a couple of the sites where this taxon has been recorded.

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 km ² or number of locations ≤ 5 [Ⓜ]

Evidence:

Eligible under Criterion D2 as Vulnerable

The taxon is estimated to be very restricted. The taxon has a restricted distribution, occurring in a single location, such that this restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations. This is in response to the impact of the identified long-term threats, notably prolonged drought and increased intensity and frequency of fire.

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

References

Berg, R. Y. (1975). Myrmecochorous plants in Australia and their dispersal by ants. *Australian Journal of Botany*, 23, 475-508.

Carter, O. (2010). National Recovery Plan for the Lowan Phebalium *Phebalium lowanense*. (Department of Sustainability and Environment: Melbourne).

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

Giles, R. L., Drinnan, A. N., and Walsh, N. G. (2008). Variation in *Phebalium glandulosum* subsp. *glandulosum*: Morphometric and anatomical evidence (Rutaceae). *Australian Systematic Botany*, 21, 271-288.

Lynch, A. J. J., and Appleby, M. W. A. (1996). *Phebalium daviesii* recovery plan 1996-2004. Department of Primary Industries, Water and Environment, Hobart.

VicFlora (2016). Flora of Victoria, Royal Botanic Gardens Victoria: *Phebalium glandulosum* subsp. *riparium*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/394244ec-6751-4576-a152-5819df5b5dde>