

## *Tetratheca procumbens* Mountain Pink-bells

### Taxonomy

*Tetratheca procumbens* Gunn ex Hook. f.

### Current conservation status

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

### Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(iii)+2ab(iii)

### Species Information

#### Description and Life History

The taxon is a procumbent to weakly ascending subshrub, branching mostly from base; stems slender, 5-20(-30) cm long; stems scabrous, virtually glabrous, sometimes with a few short, tubercle-based hairs and glandular hairs, particularly on young growth. Leaves alternate, subopposite or in irregular whorls of 3, linear to linear-lanceolate, 2-8 mm long, 0.5-1.5(-2) mm wide, apex usually acute, mucronate, margins mostly revolute to midvein, both surfaces usually scabrous, lower surface with hairs along midvein and near margins. Flowers solitary in leaf axils; peduncles 1-3 mm long, elongating to c. 4 mm in fruit, glabrous. Sepals ovate, c. 1 mm long, deciduous. Petals obovate to ovate, 3-4.5(-5) mm long, lilac-pink or white, deciduous. Ovary 2- or less often 4-celled, hairy; ovules 1 per cell. Fruit obovate to obcordate, 2-4 mm long; seeds more or less oblong, 1.5-2.5 mm long. Flowers October-December (VicFlora 2019).

Its seeds are most likely ant dispersed due to *Tetratheca* having an elaiosome on the seed (Boesewinkel 1999).

#### Generation Length

The generation length of *Tetratheca procumbens* is estimated to be 10 to 20 years. Longevity of *Tetratheca* taxa at lower altitudes with expected higher fire frequency is around 10 years (Potts and Barker 1999). It is expected that in alpine landscapes where fire is historically rare, occurring perhaps once or twice a century on average, that taxon will evolve to become longer lived. Seed of *Tetratheca* is also known to persist for at least 20 years at lower altitude (Potts and Barker 1999).

#### Distribution

In Victoria, the taxon is known from two sites: South Bryce Plain and 3.2 km NE of Lamb Gap in the Moroka Range. It also occurs in Tasmania.

#### Habitat

The taxon occurs between 1,070 and 1,500 m in mountain country north of Heyfield, in low closed subalpine heathland on peaty soils or *Sphagnum* near bogs and streams.

# Tetratheca procumbens

## Mountain Pink-bells

### 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 feral horses and deer might be countered in some areas by recovery from cattle grazing.

### 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>based on any of the following:</p> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>			

### Evidence:

#### Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

# Tetratheca procumbens

## Mountain Pink-bells

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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to be severely fragmented as the two *T. procumbens* sites in Victoria are nearly 30 kilometres apart making recolonisation unlikely in the event of extinction, given that it is ant dispersed.

It is estimated to have 1 location, and has a continuing decline in (iii) above based on the current and projected impact of the identified threats, such as increases in temperature and fire frequency in response to climate change.

#### Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 km<sup>2</sup>, 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, has 1 location, and has a continuing decline in (iii) above.

# Tetratheca procumbens

## Mountain Pink-bells

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 as no indication of abundance was given on both occasions that *T. procumbens* was collected in Victoria. Both occasions were over 35 years ago and this taxon has not been collected since, so there is no current indication of how many individuals there are in Victoria.

Criterion D. Very small or restricted populations		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 <sup>2</sup> 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

Boesewinkel, F.D. (1999). Ovules and seeds of Tremandraceae. *Australian Journal of Botany* 47: 769-781.



# *Tetratheca procumbens* Mountain Pink-bells

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Potts, W. and Barker, P. (1999). *Tetratheca gunnii* Recovery Plan 2001-2005. (Department of Primary Industries, Water and Environment: Hobart).

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Tetratheca procumbens*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/78f14d46-32e7-4920-a835-029988da95d3>