Threatened Species Assessment

Epacris glacialis
Reddish Bog-heath

Taxonomy

Epacris glacialis (F. Muell.) M. Gray

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,v)+2ab(iii,v)

Species Information

Description and Life History

E. glacialis is a prostrate to decumbent shrub to c. 30 cm high, sometimes rooting from lower branches; branchlets glabrous or occasionally minutely pubescent. Leaves suberect to widely spreading, rhombic to broadly obovate, 1.8-3.5 mm long, 1.5-2.5 mm wide, glabrous, shallowly plano-convex, obscurely keeled beneath, venation obscure; apex obtuse, slightly incurved; margins smooth to minutely serrulate, ± thickened; base usually cuneate; petiole indistinct or to c. 0.3 mm long. Flowers sessile to subsessile, forming small terminal clusters to c. 1 cm long; bracts 10-16; sepals ovate, 2.8-5 mm long, obtuse; corolla white, campanulate, tube 2-3 mm long, slightly shorter than the calyx, lobes spreading, 2.5-3.5 mm long, obtuse; anthers enclosed or partly exserted; ovary glabrous, nectary scales truncate, style straight-sided, 0.8-1.3 mm long, glabrous. Flowers Dec.-Feb. (VicFlora 2019). Vital attribute data suggests that *E. glacialis* resprouts after fire, is able to establish in mature vegetation, takes 5 years to reach reproductive maturity, lives longer than 50 years, and has seeds that survive in the soil to around 100 years.

Generation Length

The generation length of *Epacris glacialis* is estimated to be 30 to 50 years. The taxon is a long-lived perennial that, under a pre-settlement disturbance regime of fire once or twice per century, would generally live to end of reproductive age of up to 50 years.

Distribution

E. glacialis is restricted to the Bogong High Plains (VicFlora 2019).

Habitat

E. glacialis is sometimes locally plentiful in and around the margins of subalpine-alpine bogs, along creeks through moss beds, and in gravelly soakages (VicFlora 2019). It is the most common shrub in low open heath (Wahren *et al* 1999). It is locally abundant in Pretty Valley and Cope Creek, where it is the most abundant shrub in low wet heath with *Poa costiniana, Empodisma,* and *Oreobolus distichus.*

Threats

E. glacialis is not tolerant of inundation (Wahren *et a*l 1999), hence the recovery of some bogs from fire and a long history of grazing could reduce population numbers as substrate gets too wet. However, this may be countered by drying of margins allowing establishment in other areas, making future trends unclear. For example, there were

some changes from wetland to dryer vegetation types, and vice versa, on the Bogong High Plains between 1936 and 1980 (McDougall 2003). In lower-altitude areas where habitat is likely to be already marginal, climate change impacts, including successive fires, and disturbance by deer and feral horses may eventually eliminate the smallest populations. The taxon may also be vulnerable to physical damage, being found in intact native vegetation rather than on track verges (Hill and Pickering 2006).

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

The past population reduction does not meet the threshold for eligibility under criterion A2, and 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 280 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is estimated to have 1 location, given that fire can burn large areas, and that the effects of climate change and introduced ungulates can also span considerable distances.

It has a continuing decline in (iii) and (v) above based on the identified threats, notably the effects of climate change, more frequent fires, and marginal areas of bog being dried out and lost.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 112 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon has 1 location, and has a continuing decline in (iii) 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 20,000 to 40,000 (midpoint 30,000) 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:

Ineligible under Criterion D

It is estimated that there are 20,000 to 40,000 (midpoint 30,000) mature individuals, which exceeds the threshold for criterion D.

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.

Hill, W., Pickering, C. M. (2006) Vegetation associated with different walking track types in the Kosciuszko alpine area, Australia. *Journal of Environmental Management 78*, 24-34

McDougall, K. L. (2003). Aerial photographic interpretation of vegetation changes on the Bogong High Plains, Victoria, between 1936 and 1980. *Australian Journal of Botany 51*: 251-256.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Epacris glacialis.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/ea6042a7-4bf3-4f54-bcc2-a4f62a723d52

Wahren, C-H and J. Williams, R and A. Papst, W. (1999). Alpine and subalpine wetland vegetation on the Bogong High Plains, south-eastern Australia. *Australian Journal of Botany 47:*(2): 165-188.