Threatened Species Assessment

Zieria littoralis
Dwarf Zieria

Taxonomy

Zieria littoralis J.A. Armstr.

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 spreading shrub to c. 1m high, stellate-velvety throughout. Leaves trifoliolate; leaflets obovate to broad-elliptic, 4-20 mm long, 2-9 mm wide, apex rounded, warted, upper surface dark green, lower surface grey-green, margins entire and recurved to revolute; petiole 1-3.5 mm long. Inflorescence usually not exceeding leaves, 3-30-flowered. Sepals triangular, c. 2.5 mm long, tomentose, smooth; petals 3-4.5 mm long, white, imbricate, stellate-pubescent; ovary glabrous. Follicles stellate-pubescent, lacking an appendage; seed 2-2.5 mm long, black to red-brown, striated. Flowers winter-early summer (VicFlora 2019).

Generation Length

The generation length of *Zieria littoralis* is inferred to be 30 to 40 years. This is based on the pre-European settlement frequency of fire events in its habitat, ca. 30-40 years, which is not fire prone. The taxon is a long-lived shrub with long-persistent soil-stored seeds.

Distribution

In Victoria the taxon is known from the far east near Mt Carlyle in the Howe Ranges, and on Gabo Island. It also occurs in New South Wales and Tasmania (VicFlora 2019).

Habitat

The taxon typically grows among rocks and boulders. It grows in shallow soil over granite in low closed heathland on the east side of the summit near Mt Carlyle in the Howe Ranges, with the dominant taxa being *Calytrix tetragona, Epacris microphylla,* and *Pseudanthus divaricatissima*.

On Gabo Island the taxon grows among granite slabs and boulders with *Carpobrotus rossii, Disphyma crassifolium subsp. clavellatum, Pelargonium australe,* and *Rhagodia candolleana.*

In New South Wales, the taxon grows in low heath on exposed rocky coastal headlands.

Threats

The taxon is potentially threatened by more frequent fire events and climatic warming and drying which, synergistically, increases the risk of recruitment failure in response to repeat fire events and extreme drought stress.

Damage by deer near Mt Carlyle is another potential problem, particularly to the younger plants. On Gabo Island cattle are used as part of weed management, and trampling of habitat and soil compaction was noted at one of the stands. Habitat is continuing to decline at Gabo Island particularly due to weed invasion, notably *Cenchrus clandestinus,* which is dominant over parts of the island, especially the northern end (V. Stajsic pers. obs. 2016).

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. There is insufficient evidence to determine whether will be a future reduction in population size (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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 6.4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the Area of Occupancy (AoO) to ensure consistency with the definition of AoO as an area within EoO.

The taxon is inferred to be 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.

It is estimated to have a continuing decline in (iii) above based on the current and projected impact of the identified threats, such as more frequent fire events, climatic warming and drying, drought stress, and weed invasion.

Eligible under Criterion B2 as Critically Endangered

The AoO across the taxon's range is estimated to be 6.4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is inferred to be severely fragmented, and has a continuing decline in (iii) 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 800 to 2,000 mature individuals in the population, but other thresholds under this criterion have not been met.

There are plausibly at least 500 or more plants at Gabo Island (V. Stajsic pers. obs. 2016), and the notes on the collection from near Mt Carlyle indicate that the taxon was common. The label on the 1969 collection from Wau Wauka Spur of Howe Range does not provide any indication of subpopulation size. The upper range of the total population is plausibly as high as 1,500, and probably does not exceed 2,000.

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 inferred 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

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Zieria littoralis.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/8a140ba7-67a6-4fa2-88fd-19b5789a5722

PlantNET (2021). New South Wales Flora Online: *Zieria littoralis.* Retrieved from: http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Zieria~littoralis