

Stylidium armeria subsp. *pilosifolium* Hairy-leaf Triggerplant

Taxonomy

Stylidium armeria subsp. *pilosifolium* R.J. Best, D.E. Francis & N.G. Walsh

A single hybrid between *S. armeria* subsp. *armeria* and *S. armeria* subsp. *pilosifolium* was recorded at Riddells Creek. Arguments could be made to elevate the taxon to specific rank.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988*.

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

Proposed conservation status

Critically Endangered in Australia

Criterion B1ab(i,ii,iii,iv,v)

Species Information

Description and Life History

Plants solitary or in clumps of 2–5 clumps. Leaves typically 5–11 cm long, 4–8 mm wide (rarely smaller), leaf length:width less than 18, both surfaces and margins pilose, especially margins and midrib on undersurface; hairs glandular and eglandular to c. 1 mm long with unicellular papillae abundant on adaxial surface and abaxial midrib; inflorescences 5–15 cm long, with 5–30 flowers; corolla 8–10(–12) mm diam., white or pale pink. Flowers spring (VicFlora 2016).

The taxon is a moderately long-lived perennial herb reproducing only by seed; probably killed by fire of moderate to high intensity. Recruitment is continuous but is likely to be pulsed after fire. The breeding system is unknown but is probably wholly or substantially outbreeding. Fire stimulates flowering in the second season. Pollination is by insects, particularly solitary bees, hoverflies and butterflies. Seeds are dispersed passively from the capsules by wind after they fall from the open capsules, at short distances only, at maximum a few metres.

Generation Length

The generation length of *S. armeria* subsp. *pilosifolium* is suspected to be 10 to 20 years, based on its longevity and continuous recruitment.

Distribution

The taxon is endemic in the south-eastern Macedon Range and Fryers Range in central western Victoria.

Habitat

The taxon occurs in grassy dry forest and heathy dry forest of foothills on shallow to skeletal soils derived from metamorphosed Ordovician sandstones.

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Threats

Threats include climate change (decreased rainfall, increased evaporation, extreme temperatures); inappropriate timing of prescribed fire; damage to plants and soils by off-road recreational vehicles (mountain bikes, trail bikes); horse riding; rubbish dumping; weed invasion; and grazing by feral animals, particularly rabbits and deer.

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"> (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 30 to 60 years is suspected to be 50 to 60%, based on (c) and (e) above.

Past reduction of the taxon's population is based on habitat loss to agriculture and urbanisation, and threats that have operated historically.

Eligible under Criterion A4 as Endangered

The population reduction over any 30 to 60 year period, including both past and future (up to 100 years in the future), is observed to be 30 to 40%, based on (c) and (e) above.

Past reduction of the taxon's population is based on the identified threats. Future reduction of the taxon's population is based on the projected impacts of the suite of threats operating, particularly climate change and weed invasion.

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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:

Eligible under Criterion B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 33 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas.

Considering the limited dispersal ability of the taxon, the barriers to dispersal, or lack of habitat separating them, the individuals can be considered to be severely fragmented.

It is estimated to have 1 location. The main threats to the taxon (i.e. fire, climatic drying and warming, habitat loss and fragmentation, weed invasion, fungal pathogens and extreme drought stress) have a non-reversible impact on the individuals of the taxon and occur in a stochastic manner, and have the potential over time to threaten the majority of individuals in the geographic area. There is considered to be one such area, so there is considered to be 1 location.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, due to the identified threats, particularly climate change and weed invasion.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 20 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 1 location and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

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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.

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 ² 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

Best, R.J., Francis, D.E. and Walsh, N.G. (2009) A new subspecies of *Stylidium armeria* (Stylidiaceae) from the Macedon Range, Victoria. *Muelleria* 27: 174-178

DEPI (2014) *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne.



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SAC (2009). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 799 *Stylidium armeria* subsp.nov. (Riddells Ck)

VicFlora (2016) Flora of Victoria, Royal Botanic Gardens Victoria *Stylidium armeria* subsp. *pilosifolium*. Retrieved from <https://vicflora.rbg.vic.gov.au/flora/taxon/6f292894-da64-4bf7-b18a-1ed57be91c5c>