

Phlegmatospermum eremaeum Spreading Cress

Taxonomy

Phlegmatospermum eremaeum (J.M. Black) E.A. Shaw

Current conservation status

Categorised as Vulnerable 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 is a slender, prostrate to spreading (rarely erect) annual herb, hairs bifid, appressed; stems 2-10(-20) cm long. Basal leaves in rosette, petiolate, obovate, tapered at base, to 4 cm long, pinnately lobed or scalloped, rarely entire; stem leaves obovate, to 2 cm long, toothed. Inflorescence a dense raceme. Sepals 1-2 mm long, sometimes with purple borders; petals 2-3 mm long, white, sometimes with purple bases and veins; stigma flat, not capitate. Fruit elliptic, 5-7 mm long, 3-4 mm wide, apex slightly notched; valves not winged, often with hairs on tuberculate bases; pedicels c. 2 mm long; seeds 5-7 per locule. Flowers winter-spring (VicFlora 2021).

Generation Length

The generation length of *Phlegmatospermum eremaeum* is estimated to be 3 to 15 years. This is based on the estimated mean interval between peak rainfall events mediated, under undisturbed pre-European settlement conditions, by La Niña events. The taxon is a small annual herb which recruits episodically following peak rainfall events from a soil-stored seedbank.

Distribution

The taxon is rare and occurs in the north-west of State. It also occurs in Western Australia and South Australia (VicFlora 2021).

Habitat

The taxon occurs in open mallee on calcareous clay or loam (VicFlora 2021).

Quadrat data suggests that taxon has a close affinity with *Eucalyptus gracilis*, often with *E. oleara* or *E. dumosa* or *E. socialis*, exceptionally also *E. leptophylla*, and sometimes with *Casuarina pauper* in an essentially herbaceous understorey, amongst sparse shrubs. Its habitat has a weed index that ranges from almost weed-free to moderately weedy only. Some associated taxa are indicative of some salinity, water retentive soils, or moderately deep sand, but the majority are consistent with moderately fertile sandy loams.

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Threats

The taxon is inferred to have suffered very significant historic habitat loss and population decline mostly prior to the last three generations. Plausible long-term threats may include incremental weed invasion, herbivory, the impact of climatic drying, and increased fire risk.

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 or will be a reduction in population sufficient to meet any threshold for Criterion A.

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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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 10,314 km² and the Area of Occupancy (AoO) is estimated to be 56 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>	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

There is insufficient evidence to determine the number of mature individuals.

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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 2 locations, 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 weed invasion, herbivory, climatic drying, and increased fire risk.

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 (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Phlegmatospermum eremaeum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/e6f4cbc9-110f-4fc5-92a5-903d6d90dadd>