



Eriochlamys squamata Scaly Mantle

Taxonomy

Eriochlamys squamata N.G. Walsh

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2bce; B2ab(i,ii,iii,iv,v)c(i,ii,iv)

Species Information

Description and Life History

The taxon is an annual, 4-10(-16) cm high; stems branched below, woolly to glabrescent. Leaves linear, mostly 1.5-4(-7) mm long and 0.3-0.6 mm wide, erect, subacute to obtuse, base subamplexicaul, margins revolute, more or less glabrous. Capitula campanulate, 2-3.5 mm diam., solitary or in groups of up to 5, but remaining discrete; outer involucre bracts c. rhombic or narrowly ovate, 1.3-2.2 mm long, green with a scarious tip, shortly woolly, inner ones broad-ovate, green with scarious margins, apex entire, more or less glabrous. Florets 20-40; corolla c. 2 mm long, slightly exceeding involucre, densely woolly at base. Cypselas 0.5-0.6 mm long, brown. Flowers mainly Oct.-Feb. (VicFlora 2018).

Generation Length

The generation length of *Eriochlamys squamata* is estimated to be 2 to 3 years depending on the frequency of favourable seasons for recruitment. The taxon is an annual but does not recruit annually. The seeds are retained in persistent infructescence held above ground up to 2 years on dead plants.

Distribution

The taxon is scattered across northern and north-western Victoria from Echuca to near the South Australian border and as far south as Dimboola (VicFlora 2018).

Habitat

The taxon usually grows in woodland on clay or clayey loam soils, sometimes on raised sandy areas within saline or gypseous flats. It is associated with semi-arid grasslands of the northern plains (Wimmera and Riverina). Sometimes it is associated with Buloke and Box woodlands. Associated taxa from collectors' notes include *Alectryon oleifolius*, *Casuarina pauper*, *Rhagodia spinescens*, perennial tussock grasses, low shrubs and prostrate chenopods.

Threats

Stock grazing is not considered a threat as the taxon is completely avoided by stock given its sharply aromatic foliage with a pine-like aroma. The taxon is responsive to moderate disturbance by cattle, however it does not withstand cultivation (ploughing) which is an on-going threat. It is likely that climate change will lead to habitat loss and degradation due to higher drought frequencies and an overall decline in rainfall.

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	<p>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>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>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>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 		
A2			
A3			
A4			

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.

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			

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Evidence:

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 236 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

Considering the limited dispersal ability of the taxon, the barriers to dispersal, or lack of habitat separating them, the subpopulations can be considered to be severely fragmented. All of the subpopulations occur in highly fragmented and even relicual landscapes that are not well protected (with the possible exception of the Patho Plains where the number of reserves has greatly increased in recent decades).

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impacts of the identified threats. At least 25% of all records thought extinct or likely extinct due to ongoing habitat loss in already highly fragmented landscapes; The trend of decline likely to continue into the future and be exacerbated by climate change.

It also has extreme fluctuations in (i), (ii) and (iv) above, in response to climate fluctuations. Mature adults of the taxon are dramatically reduced or even completely disappear during droughts. They are generally absent from low quality habitat or very low densities even during wet years. The relatively short generation time and seed life made the taxon vulnerable to disappearing from areas in times of extended drought. Whilst the taxon has limited dispersal, the proximity of other occurrences provide a source of recolonization.

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 suspected that there are 6,100,000 to 101,000,000 mature individuals, which exceeds the thresholds for criterion C.

The suspected current population range is based on records, data from Foreman (1996) and knowledge of the patchy patterns of core red soil grassland habitat (Foreman pers. comm.). It is assumed that densities are lower in low rainfall areas as well as in lower quality habitat (for instance historically cropped paddocks) however the very broad range reflects the lack of data on actual habitat extent and condition. In addition, the range factors in the taxon's spatial and temporal dynamics.

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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:

Ineligible under Criterion D

The taxon is suspected to have 6,100,000 to 101,000,000 mature individuals.

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

Foreman, P.W. (1996). Ecology of native grasslands of Victoria's northern Riverine Plain. MSc Thesis, La Trobe University, Melbourne

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens: *Eriochlamys squamata*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/74774c65-603f-4c9f-892e-86e250874a3a>

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