

Argyrotegium mackayi Silver Cudweed

Taxonomy

Argyrotegium mackayi (Buchanan) J.M. Ward & Breitw.

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 A2c+4c; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a rhizomatous, mat-forming perennial. Leaves mostly basal, crowded toward branch-tips, spatulate or oblanceolate, 6-15 mm long, 1.5-5 mm wide, both surfaces silvery or whitish with dense, appressed cottony hairs. Flowering stems erect or ascending, 0-3 cm high (to 5 cm rarely 10 cm in fruit), with c. 5-10 leaves not or hardly smaller than basal ones. Inflorescence a terminal capitulum, with or without single capitula in axils of lower leaves, each subtended by 1-3 small leaves at anthesis, but usually becoming pedunculate in fruit. Capitula campanulate or cup-shaped; inner bracts c. oblong, 3.8-5 mm long, acute to obtuse, rarely emarginate, often with a red-purple band just below the straw-coloured tip; bisexual florets 6-10. Cypselas c. 1 mm long, glabrous or sparsely hairy. The taxon flowers from December to January (VicFlora 2019)

Generation Length

The generation length of *Argyrotegium mackayi* is estimated to be 20 to 40 years. Fire is historically rare in alpine ecosystems, occurring perhaps once or twice a century and, on average, perennial shrubs and herbs are likely to reach the end of their reproductive life prior to another fire. In undisturbed vegetation, the average plant age is likely to be at the older end of the estimated lifespan, reflecting the recruitment pulse after fire, and lower-level recruitment thereafter.

Distribution

In Victoria, the taxon is mainly from Bogong High Plains and Mt Loch, with records from Snowy Range and Baw Baw. VicFlora (2019) also indicates that this taxon occurs at Mt. Buffalo, Nunniong and Cobberas, however there are no records to substantiate this claim. It also occurs in New Zealand, NSW, ACT and Tas.

Habitat

The taxon usually colonises bare ground in grassland communities.

Threats

The taxon is considered at risk from disturbance, particularly from deer and horses, grazing by hares, weed invasion, increasingly dry conditions from declining rainfall, and the consequent increase in severity and intensity of bushfires.

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>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p> <p><i>based on any of the following:</i></p>			

Evidence:

Eligible under Criterion A2 as Endangered

The population reduction over the past 60 to 120 years is estimated to be 50%, based on (c) and (e) above.

This is based on the loss of about 50% of alpine wetland areas since settlement, which corresponds to an estimated 50% loss of habitat and individual plants.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A4 as Endangered

The population reduction over any 60 to 120 year period, including both past and future (up to 100 years in the future), is estimated to be 50%, based on (c) and (e) above.

Future decline is based on the potential impacts of disturbance and grazing of feral animals, i.e. deer, horses, and hares, and climatic drying leading to a reduction of suitable habitat.

The causes of reduction may not have ceased, be understood or be reversible.

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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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 732 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale. It has a patchy distribution with most occurrences isolated from other occurrences at separations exceeding the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats including disturbance, grazing by feral animals, and climatic drying leading to more frequent and intense fires.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 40 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is estimated to be severely fragmented, has 3 locations, 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

It is suspected that there are 800 to 1,200 mature individuals, but this qualifier is too weak and other thresholds under this criterion have not been met.

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

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

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Argyrotegium mackayi*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/c563267d-c2fb-4079-b880-b9b988a52ca9>