



Vittadinia pustulata Warty New Holland Daisy

Taxonomy

Vittadinia pustulata N.T. Burb.

The pustules on the cypselas are unique to this taxon, which are more visible after soaking them in water. Burbidge (1982) mentions that they may serve a water absorption function at germination (VicFlora 2018).

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(iii,v)c(iv)+2ab(iii,v)c(iv)

Species Information

Description and Life History

The taxon is an annual herb or subshrub, to 30 cm high; stems branched above base; stems, leaves and involucre bracts with occasional to dense minute glandular hairs (sometimes absent from involucre bracts) and longer spreading septate hairs. Leaves narrowly oblanceolate to broadly oblanceolate, c. 2-20(-25) mm long, 1-7 mm wide, entire or with up to 3 teeth near apex; apex obtuse or apiculate and recurved. Involucre bracts elliptical, 5-6 mm long; ray florets purple to white, ligules c. 2 mm long. Cypselas oblanceolate, 2.5-4 mm long, flattened, with pustulate swellings towards base; base with dense eglandular appressed hairs; faces with shorter scattered appressed eglandular hairs; pappus bristles barbellate, 5-7 mm long. In Victoria, the taxon is recorded flowering in September (VicFlora 2018).

Field observations at Willis on the Snowy River suggest the taxon is a short-lived perennial although it may behave as an annual in the north-west of the state.

Generation Length

The generation length of *Vittadinia pustulata* is estimated to be 5 to 25 years. The taxon is likely to recruit opportunistically in response to seasonal conditions and, potentially, also in response to fire events, particularly in the Upper Snowy. Outstanding seasons are likely to occur at intervals of 5-15 years, in response to El Niño cycles, with additional pulse recruitment in response to very infrequent fire events.

Distribution

The taxon was first recorded in Victoria in 2011 and is known from only two sites, Pira Bushland Reserve in the north-west, and near Suggan Buggan in East Gippsland. The taxon also occurs in Western Australia, the Northern Territory, South Australia, Queensland, and New South Wales (VicFlora 2018).

Habitat

At Pira Bushland Reserve the taxon occurs in *Callitris gracilis* woodland, and near Suggan Buggan it occurs in *Eucalyptus albens* grassy woodland (VicFlora 2018).

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Threats

It is quite unclear whether the taxon has declined historically through habitat loss to agriculture in the north-west of the state or whether it has always been highly localised at both known Victorian sites.

Current threats include weed invasion, herbivory and, in the Upper Snowy, the risk of repeat fire events.

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>	<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>
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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:

Eligible under Criterion B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to be severely fragmented naturally at the regional scale. The two known occurrences are highly disjunct with no capacity for recolonisation in the event of local extinction.

It is estimated to have a continuing decline in (iii) and (v) above based on the current and projected identified threats, such as weed invasion, herbivory, and repeat fire events.

The taxon is estimated to have extreme fluctuations in (iv) above in response to seasonal conditions.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 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, and has a continuing decline in (iii) and (v) and extreme fluctuations in (iv) 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

Burbidge, N.T. (1982). A revision of *Vittadinia* A. Rich (Compositae) together with reinstatement of *Eurybiopsis* DC. and description of a new genus, *Camptacra*. *Brunonia* 5(1): 1-72.

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



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https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Vittadinia pustulata*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/2d02cf9e-4730-4d9f-b99e-21bb3e70030e>