

Leiocarpa tomentosa Woolly Plover-daisy

Taxonomy

Leiocarpa tomentosa (Sond.) Paul G. Wilson

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2bce+4bce; B1b(ii,iii)c(ii,iv)+2b(ii,iii)c(ii,iv)

Species Information

Description and Life History

The taxon is an erect or sprawling bushy perennial, mostly 30-70 cm high; young stems woolly to cobwebbed with underlying glandular hairs. Leaves linear, mostly 1-3 cm long, 2-4 mm wide, acute, mucronate, both surfaces woolly to cobwebbed with underlying glandular hairs, margins sometimes undulate. Capitula broad-campanulate, 12-18 mm diam.; involucral bracts broad-linear, to 10 mm long, cobwebbed-tomentose with underlying glandular hairs, apices brown, scarious laciniolate-ciliate; outer bracts shortest. Florets yellow. Cypselas 2.5-4 mm long, glabrous; pappus bristles 18-24, 6-11 mm long. The taxon flowers most of year (VicFlora 2018).

Generation Length

The generation length of *Leiocarpa tomentosa* is estimated to be 2 to 10 (midpoint 5) years. The uncertainty in the generation length reflects doubt about how much time the taxon may spend in the seed bank. The generation length has therefore been conservatively estimated.

Distribution

The taxon is currently known in Victoria by a few collections from near Mildura in riverine woodland and a single specimen from Murtoa. Paul Wilson has determined, although it is no longer present at that site, that the record for Murtoa appears to be a reliable. There are very few recent records for this taxon. This indicates that perhaps the taxon is either highly restricted to the North West, which is inconsistent with its distribution in New South Wales and South Australia, or has been under-sampled across its range. Previous records may have been lumped with the single taxon previously documented for Victoria in the *Flora of Victoria*. It is likely the distribution of the taxon is wider than currently documented and that the taxon may form locally abundant populations under appropriate conditions.

Habitat

The taxon is currently found in *Eucalyptus largiflorens* (Black Box) woodlands. The occurrence of the taxon near Melbourne indicates that it may have been more widespread historically and may have been associated with seasonally inundated woodlands.

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Threats

The taxon is potentially threatened by livestock grazing regimes and climatic warming and drying that, synergistically, increase the risk of recruitment failure due to repeat grazing events and extreme drought stress.

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 6 to 30 years is inferred to be 25 to 70% (midpoint 50%), based on (b), (c) and (e) above.

The extent of past decline is uncertain due to possible misidentification. If the taxon is similar to other *Leiocarpa* spp. then it will have been heavily affected by sheep grazing and this may be one reason that it is almost absent from its potential range in Victoria.

Given the nature of the current population, and uncertainty about its presence at other sites, the estimate of past and future change in population size is difficult to estimate. However, if current population monitoring data is a reasonable reflection of past and future trends, the estimates provided are within the bounds of probability.

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 6 to 30 year period, including both past and future (up to 100 years in the future), is suspected to be 25 to 50%, based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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This is based on the inferred past decline, and an expectation of a future decline as a result of the identified threats.

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 1,938 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It has a continuing decline in (ii) and (iii), largely due to the predominant land use and the effects of intense grazing by sheep.

It is inferred to have extreme fluctuations in (ii) and (iv) above. This taxon has a similar ecology to other *Leiocarpa* spp. in that monitoring data indicates its population fluctuates significantly between years with the potential for significant recruitment and mortality events.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 12 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has a continuing decline in (ii) and (iii) and extreme fluctuations in (ii) and (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

It is suspected that there are 150 to 1,000 (midpoint 250) mature individuals, but this qualifier is too weak and other thresholds under this criterion have not been met.

Criterion D. Very small or restricted population ^a				
		Critically Endangered ^a	Endangered ^a	Vulnerable ^a
Number of mature individuals (observed or estimated) ^a		< 50 ^a	< 250 ^a	< 1,000 ^a
D2. Only applies to the VU category ^b 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. ^a		- ^a	- ^a	D2. Typically: ^b AoO < 20 km ² or number of locations ≤ 5 ^a

Evidence:

Ineligible under Criterion D

It is suspected that there are 150 to 1,000 (midpoint 250) 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.

VicFlora (2018). *Leiocarpa tomentosa*, Royal Botanic Gardens Victoria: Woolly Plover-daisy. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/0aedaf76-a425-419f-9134-03f6ba38e4ee>