

## *Maireana microphylla* Small-leaf Bluebush

### Taxonomy

*Maireana microphylla* (Moq.) 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 B1ab(iii,iv,v)+2ab(iii,iv,v)

### Species Information

#### Description and Life History

Erect, divaricately branched, often weakly spinescent shrub to c. 1 m high and wide; stems sparsely pubescent when young. Leaves often sparse, alternate, subterete, 2-4 mm long, glabrous or with a few short appressed hairs. Flowers bisexual, solitary in axils but crowded into leafy spikes at tips of branchlets, glabrous or margins of lobes ciliate. Fruiting perianth discoid, 1.5-3 mm diam., flat or slightly convex at apex, thin-walled, slightly open at apex exposing utricle; wing not developed in Victorian specimens (wings sometimes developed in plants from other States, then fruiting perianth to 7 mm diam.), but sometimes a very narrow marginal flange present around upper margin; radicular slit extending about halfway toward base of tube. The taxon fruits from July to October. It is rather variable both in vegetative and fruit morphology (VicFlora 2019; Wilson 1975).

#### Generation Length

The generation length of *Maireana microphylla* is estimated to be 25 to 40 years. This is based on a plausible longevity of 30-50 years, the lack of any reported suckering ability (not a feature of *Maireana* spp. in general) and the likelihood that the taxon recruits opportunistically in response to favourable seasonal conditions.

#### Distribution

The taxon's distribution within Victoria consists of only three localities near Strathmerton, Cobram and Katamatite (VicFlora 2019).

#### Habitat

The taxon is confined to small stands of remnant vegetation on heavy, loamy soils (VicFlora 2019). It has a distinctive habitat, namely grassy, floodplain, Black Box woodland. It is apparently restricted to Riverine Grassy Woodland or Riverine Swampy Woodland Ecological Vegetation Classes (EVCs). In these EVCs, it is closely associated with *Eucalyptus largiflorens* (Black Box) and, at times, *E. camaldulensis* (River Red-gum).

### Threats

The taxon is threatened by targeted browsing by livestock, continuing incremental habitat loss to agricultural intensification, roadside management and temporary roadside livestock grazing, and potentially, by reduced groundwater availability in response to climate change.

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

### Evidence:

#### Eligible under Criterion A2 as Vulnerable

The population reduction over the past 75 to 120 years is estimated to be 30 to 40% (midpoint 35%), based on (c) and (e) above.

Past decline is based on the very extensive habitat loss to agriculture across the Victorian range of the taxon, although a proportion of the historic loss is likely to have occurred prior to the last three generations. Local population density is also likely to have declined significantly in response to intense stock grazing.

#### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 75 to 100 years is projected to be 20 to 30%, based on (c) and (e) above.

Future decline is based on the continuing impact of targeted browsing by stock, noting that most occurrences are in freehold areas or on roadsides in highly fragmented landscapes.

#### Eligible under Criterion A4 as Vulnerable

The population reduction over any 75 to 120 year period, including both past and future (up to 100 years in the future), is estimated to be 20 to 30%, based on (c) and (e) above.

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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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 999 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented anthropogenically at the kilometre scale. Almost all known occurrences occur in small, isolated and often highly degraded stands of native vegetation at distances greatly exceeding the dispersal range of the taxon. *M. microphylla* is likely to be dispersed by animal vectors at the landscape scale.

It is estimated to have one location. It has a continuing decline in (iii), (iv) and (v) above, based on the continuing impact of targeted browsing by stock, noting that most occurrences are in freehold areas or on roadsides in highly fragmented landscapes.

#### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 68 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has one location and has a continuing decline in (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 inferred that there are 200 to 1,000 mature individuals, but 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 <sup>2</sup> 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: *Maireana microphylla*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/62b40a56-6654-4afb-ab74-52dc6d25cbb8>



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Wilson, P.G. (1975). A taxonomic revision of the genus *Maireana* (Chenopodiaceae). *Nuytsia*, 2 (1), 2-82.