

Westringia senifolia Alpine Westringia

Taxonomy

Westringia senifolia F. Muell.

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criterion B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a compact to spreading shrub, 0.3-1.3 m high, up to c. 1 m diam.; branches stiff, densely covered with white, spreading hairs; internodes short. Leaves in whorls of 5 or 6, sessile, narrowly elliptic to c. linear, usually with a pointed, upswept apex, 5-10 (-14) mm long, 1-2 mm wide, length-to-width ratio at least 5, surfaces scabrous, margin entire and mostly strongly revolute (such that abaxial surface concealed and lamina appearing almost terete). Flowers densely clustered in distal axils; bracteoles 3.5-4 mm long, almost as long as calyx. Calyx green, often with maroon margin, outer surface densely hairy, tube 2-4 mm long, lobes triangular, 2-4 mm long, 0.8-1 mm wide, lobe-to-tube ratio c. 1; corolla 8-11 mm long, white, with dull orange spots in throat. Flowers summer (VicFlora no date; Conn 1999).

Lamiaceae taxa are known to be visited by insects (Armstrong 1979). No information was found about bird pollination in this taxon, and it does not appear to have any mechanisms for long-distance dispersal.

Generation Length

The generation length of *Westringia senifolia* is estimated to be 20 to 40 years. Vital attribute data suggest that the taxon is an obligate seeder that does not resprout after fire. It is intolerant of establishment in older vegetation, takes 5 years to reach reproductive viability, lives for 10-50 years as a medium-lived perennial, and has seeds that survive up to 50 years in the soil. In undisturbed vegetation where fire is naturally infrequent, plants are expected to live to old age and generation length is likely to be at the older end of the longevity range.

Distribution

The taxon is endemic in Victoria. It is locally common on high rocky mountains such as Mt Buffalo, The Razor, and Mt Wellington, with a disjunct occurrence at low altitude (c. 800 m) on western slopes of Mt Donna Buang (VicFlora no date).

Habitat

The taxon usually occurs on shallow soils amongst rock in exposed shrubland communities, or in *Eucalyptus pauciflora* woodlands (VicFlora no date; Conn 1999). Vegetation of this rocky habitat is assumed to be drought-tolerant (McDougall and Walsh 2007).

Threats

Plants within the rocky open heathland habitat of this taxon are assumed to be drought tolerant (McDougall and Walsh 2007). Nonetheless, increasingly dry conditions from declining rainfall and a consequent increase in the severity and intensity of bushfires are likely to be detrimental. Two fires in rapid succession could lead to local extinction, given that this taxon is an obligate seeder with complete germination of seeds after fire. Fire could also increase the stem density of Snowgum and reduce habitat quality. Grazing by ungulates and weed invasion are unlikely to be of concern in this dryer, rocky habitat, and declines are expected to be in the future rather than the past.

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 10,814 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA). A record at Inglewood, west of Bendigo has been removed, as it is well away from the normal distribution and is implausible.

The taxon is estimated to be severely fragmented as it has a patchy distribution with most occurrences isolated from other occurrences at separations greatly exceeding the localised dispersal range of the taxon, which has no known mechanism for long range dispersal.

It is inferred to have 4 locations, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the current and projected impact of the identified threats, particularly fire. Isolated occurrences that are already marginal are most vulnerable.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 134 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, has 4 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 estimated that there are 10,000 to 20,000 mature individuals, which exceeds the thresholds for criterion C.

Plants can be locally common, with some VBA quadrats having 5-25% foliage cover. However, other quadrats only have scattered individuals with less than 1% cover. There are 93 records in the VBA, so assuming that each of these records is associated with 20-40 plants, and that less than a fifth of the total population is captured in its rocky habitat, then total numbers are likely to be in the range of 10,000-20,000.

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:

Ineligible under Criterion D

The number of mature individuals exceeds the threshold for Criterion D and the taxon is not estimated to be restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

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- VicFlora (no date). Flora of Victoria, Royal Botanic Gardens Victoria: *Westringia senifolia*. Retrieved 2021, from: <https://vicflora.rbg.vic.gov.au/flora/taxon/21788a54-d320-4757-89fb-0b495ae06110>