

Leionema lamprophyllum subsp. *obovatum* Shiny Leionema

Taxonomy

Leionema lamprophyllum subsp. *obovatum* F.M. Anderson

A few specimens of this plant appear almost intermediate between *Leionema lamprophyllum* subsp. *lamprophyllum* and subsp. *obovatum*.

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Species Information

Description and Life History

Leionema lamprophyllum is a compact shrub to c. 1.5 m high; branchlets terete or angular when young, prominently verrucose, minutely stellate- and simple-pubescent between decurrent leaf-bases. Leaves very shortly petiolate, subcoriaceous to chartaceous, elliptic to broadly obovate or suborbicular, 3-10 mm long, 3-5 mm wide, apex acute to rounded, upper surface with midrib impressed or plane, flat, glabrous, margin entire or minutely erose near apex. Inflorescence a terminal or upper-axillary umbel-like cluster of 1-3 flowers; pedicels 2-3.5 mm long. Calyx c. 1 mm long, lobes deltoid, c. 0.5 mm long, fleshy; petals valvate, narrow-elliptic, 3.5-4.5 mm long, white with pink tips, glandular-punctate, glabrous; stamens equal to or slightly exceeding petals, anthers pale pink or yellow; disc short-cylindric, red; ovary glabrous. Follicles spreading, shortly rostrate or minutely apiculate on outer angle.

Subsp. *obovatum* is distinguished from subsp. *lamprophyllum* by its leaves which are obovate to broadly obovate, (2.5-)4-6(-9) mm long, apex usually obtuse, sometimes subacute, margin minutely erose to crenulate, rarely entire, obtuse to attenuate at base. Pedicel 1.5-3(-3.8) mm long. Petals 2.5-4 mm long. The subspecies flowers from July to November (VicFlora 2016).

Generation Length

The generation length of *Leionema lamprophyllum* subsp. *obovatum* is estimated to be 25 to 70 (midpoint 50) years. The taxon is a long-lived perennial with a longevity plausibly to 45-50 years. It is inferred to be an obligate seed regenerator which is fire-killed, recruiting episodically post-fire at an estimated pre-settlement fire interval of 35-60 years, with some more continuous recruitment in response to favourable seasons or localised site disturbance events. Long-persistent soil-stored seedbanks are likely to be viable for at least 25-50 years. The tolerable fire interval (TFI) for the taxon is plausibly 20 years.

Distribution

The taxon occurs in disjunct populations, from the Brisbane Ranges near Bacchus Marsh in Victoria to near the New South Wales (NSW) border; near the Genoa River in far East Gippsland; and in the Burrowa-Pine Mountain area in the north east of Victoria. It is also found in NSW (VicFlora 2016).

Leionema lamprophyllum subsp. obovatum

Shiny Leionema

Specimens collected at Mount Buffalo, one of which has been determined as subsp. *lamprophyllum*, are more likely to be referable, on biogeographic grounds, to subsp. *obovatum*, noting that some specimens appear almost intermediate between subsp. *lamprophyllum* and subsp. *obovatum* (VicFlora 2016).

Habitat

The taxon usually occurs in dry woodland or shrublands on rocky sites (VicFlora 2016).

Threats

In the longer term, the taxon may be threatened by climate change leading to a significant increase in fire intensity and frequency, approaching or below the tolerable fire interval (TFI) for the taxon, which is suspected to be 20 years. In the medium term, it is potentially susceptible to adult mortality and recruitment failure during early post-fire recruitment in response to extreme or prolonged drought stress. The taxon may also be threatened by targeted browsing by Sambar Deer (*Rusa unicolor*) which are rapidly increasing in numbers, particularly during post-fire recruitment, although its palatability is unknown and it is a member of a strongly aromatic genus and family.

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 style="text-align: center;">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

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.

Leionema lamprophyllum subsp. obovatum Shiny Leionema

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:

Ineligible under Criterion B

The Extent of Occurrence across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 35,100 km² which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA, is estimated to be 20 km² but other thresholds under this criterion have not been met.

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				

Leionema lamprophyllum subsp. *obovatum* Shiny Leionema

Evidence:

Ineligible under Criterion C as Data Deficient

There is insufficient evidence to determine the number of mature individuals as there is no available estimate of total population size for the taxon in Victoria.

Criterion D - Very small or restricted population [Ⓜ]			
[Ⓜ]	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. It has a restricted distribution, occurring in three locations and with an AoO of 20 km², such that this restriction makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations. This is in response to the impact of the identified long-term threats, notably increase in fire intensity and frequency, extreme or prolonged drought stress and targeted browsing by Sambar.

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 (2016) Flora of Victoria, Royal Botanic Gardens Victoria: *Leionema lamprophyllum* subsp. *obovatum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/907dd8a8-c5e6-4447-9214-8f20211db8e7>