Threatened Species Assessment

Leionema lamprophyllum subsp. *lamprophyllum*
Shiny Leionema

Taxonomy

Leionema lamprophyllum subsp. *lamprophyllum* (F. Muell.) Paul G. Wilson

A few specimens appear to be 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.

Subspecies *lamprophyllum* is distinguished from subspecies *obovatum* by its leaves which are elliptic, (5.5-)7.5-11(-14) mm long, apex acute, margin entire to minutely erose toward apex, attenuate at base. Pedicel (3-)3.5-4.5 mm long. Petals 2.5-4.5 mm long. The taxon flowers mostly from August to November (VicFlora 2016).

Generation Length

The generation length of *Leionema lamprophyllum* subsp. *lamprophyllum* 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 disturbances. Long-persistent, soil-stored seedbanks are likely to be viable for at least 25-50 years. The tolerable fire interval for the taxon is plausibly 20 years.

Distribution

The taxon occurs in disjunct populations from near Erica in Victoria to just within New South Wales (NSW) near Mt Tingaringy (VicFlora 2016). It is apparently restricted in Victoria to two disjunct localities; firstly, in Central Gippsland from the Thomson River near Walhalla and the headwaters of the Macalister River near Licola to The Pinnacles and east to Mt Ray north of Stockdale; secondly, in far East Gippsland in the headwaters of the Snowy

River from Suggan Buggan and Wulgulmerang to the NSW border near Mt Tingaringy and the Monument Range. It has also been collected nearby in the Byadbo Wilderness on the NSW side of the Victorian border.

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).

Another specimen identified as subsp. *lamprophyllum* from Pine Mountain in the North East of Victoria is likewise almost certainly referable to subsp. *obovatum* since duplicates of the specimen are determined as that taxon.

Habitat

The taxon is usually associated with low shrublands and woodlands on exposed, elevated, 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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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.

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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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 is estimated to be 6,404 to 12,961 km² and the Area of Occupancy is estimated to be 131 to 139 km², but other thresholds under this criterion have not been met.

The lower bound excludes a Mt Buffalo specimen record of a single plant, that was subsequently destroyed by fire and potentially misidentified and referable to subsp. *obovatum*.

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 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 km2 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, with two locations, such that this restriction makes it capable of becoming Critically Endangered or Extinct within a timeframe of one or two generations, because of the effects of increases in fire intensity and frequency.

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. *lamprophyllum*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/13252ccc-07de-4b53-b409-fc8e8d187c53