The Minister's delegate approved this Conservation Advice on 15/07/2016.

Conservation Advice

Leionema lachnaeoides

Conservation Status

Leionema lachnaeoides is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) effective from the 16 July 2000.

The species was eligible for listing under the EPBC Act at that time as, immediately prior to the commencement of the EPBC Act, it was listed as Endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth).

Species can also be listed as threatened under state and territory legislation. For information on the listing status of this species under relevant state or territory legislation, see http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

The main factors that are the cause of the species being eligible for listing in the Endangered category are its low number of individuals and populations and its limited geographic distribution.

Description

Leionema lachnaeoides is a tall shrub to 2 m with narrow aromatic leaves. New stems are whitish from a covering of stellate (star shaped) hairs. It displays yellow flowers between winter and late spring which occur singly towards the ends of branches. Flowers are radially symmetric, bisexual and have five yellow petals, being approximately 5 mm long and gland dotted (Weston and Portners 1991).

Distribution

Leionema lachnaeoides is currently only known from the Megalong and Jamison Valleys in the Blue Mountains Local Government Area in New Soith Wales (NSW OEH 2016). *Leionema lachnaeoides* is currently known from ten populations totalling approximately 400 mature plants (NSW OEH 2016).

Populations of *L. lachnaeoides* occur on exposed sandstone cliff tops and terraces at 960 - 1000m altitude with aspects from south-east to south-west. Habitat is montane heath and commonly includes *Eucalyptus stricta* (Blue Mountains mallee ash), *Allocasuarina nana* (dwarf she-oak), *Dillwynia retorta* (eggs and bacon pea), *Epacris microphylla* (coral heath) and *Caustis flexuosa* (curly wig) (NSW OEH 2016). This habitat is considered likely to be habitat critical to the survival of *Leionema lachnaeoides*.

Relevant Biology/Ecology

Little information is known about the biology and ecology of *L. lachnaeoides*. Until more information is known the following assumptions are made. *Leionema lachnaeoides* is a shrub species with a life span of greater than 10 years. The age of *L. lachnaeoides* populations is likely to be linked to the time of the last fire event. Individuals are assumed to be killed by fire and regeneration of the species is reliant upon a soil stored seed bank, based on responses of congeners and growth form of this species. As *L. lachnaeoides* is found within sclerophyllous vegetation it is prone to the impacts of inappropriate fire regimes (NSW NPWS 2001).

Threats

Table 1 – Threats impacting *Leionema lachnaeoides* in approximate order of severity of risk, based on available evidence.

Threat factor	Threat type and status	Evidence base
Hydrological change		
Altered drainage	known current	Up-slope development is causing alterations to drainage patterns and nutrient enrichment of soils, sedimentation and weed spread (NSW OEH 2016).
Fire		
Too frequent burning	suspected current	Increased burning up slope may alter plant community and habitat. Too frequent fires may adversely affect the survival of *L. lachnaeoides* by interrupting its life cycle (NSWPWS 2001).
Weeds		
Competition	known current	Invasion of habitat and competition from various invasive weed species, including Radiata pine (*Pinus radiate*) (NSWPWS 2001).
Recreational activities		
Habitat degradation	known current	Disturbance or damage to plants by rock climbers, walkers or other recreational users.

Conservation Actions

Conservation and Management priorities

Site priorities

- Focus efforts at three sites (Shipley Plateau, Bonnie Doon and Narrow Neck) identified as priority by the NSW government for the conservation of this species (NSW OEH 2016).

Habitat modification and degradation

- Ensure best practice mitigation is in place for any proposed up slope development activities to maintain suitable drainage and hydrological regimes.
- Control Radiata pine (*Pinus radiata)* seedlings establishing at sites.
- Minimise the impacts of recreational disturbance at sites through improved education and access constraints.

Fire

- Minimise the frequency of fire through acknowledgement of *L. lachnaeoides* sites and habitat in Bushfire management plans developed by the NSW National Parks and Wildlife Service, City of Blue Mountains Council, Blue Mountains Bush Fire Risk Management Committee and the NSW Rural Fire Service.

- Fires must be managed to ensure that prevailing fire regimes do not disrupt the life cycle of *L. lachnaeoides*, that they support rather than degrade the habitat necessary to *L. lachnaeoides*, that they do not promote invasion of exotic species, and that they do not increase impacts of grazing/predation.
- Physical damage to the habitat and individuals of the threatened species must be avoided during and after fire operations.

Stakeholder Engagement

- Fire management authorities and land management agencies should use suitable maps and install field markers to avoid damage to the *L. lachnaeoides*.
- Land managers (including pastoralists, indigenous communities, IPAs, etc) should be given information about managing fire for the benefit of the *L. lachnaeoides*.

Survey and Monitoring priorities

- Monitor runoff from upslope paddocks and infrastructure and disturbance impacts.
- Conduct further surveys for the species in suitable habitat throughout the Blue Mountains Local Government Area.
- Monitor the size and structure and reproductive status of populations at different stages in the fire cycle, taking opportunities to monitor after planned and unplanned fires (where they occur) and improve understanding of the fire response of the species.

Information and research priorities

- Undertake research to understand fecundity and seedbank dynamics.
- Improve understanding of the mechanisms of response to different fire regimes and identify appropriate fire regimes for conservation of *L. lachnaeoides* by undertaking appropriately designed experiments in the field and/or laboratory.
- Where appropriate, use understanding and research on fire responses among related (e.g. congeneric) or functionally similar species to develop fire management strategies for conservation.

References cited in the advice

New South Wales Office of Environment and Heritage (2016). Species profile for *Leionema lachnaeoides*.. Viewed: 22 March 2016. Available on the Internet at: http://www.environment.nsw.gov.au/ThreatenedSpeciesApp/profile.aspx?id=10457

New South Wales National Parks and Wildlife Service. (2001). *Leionema lachnaeoides* Recovery Plan. NSW NPWS, Hurstville.

Weston, P.H. and Portners, M.F. (1991). *Phebalium*. In Harden, G.J. (Ed.) Flora of New South Wales, Vol. 2, pp. 255-263. New South Wales University Press, Sydney.