# Threatened Species Assessment

## *Lomandra oreophila*
## Mountain Mat-rush

### Taxonomy

*Lomandra oreophila* B.J. Conn & Quirico

Prior to 1994, this taxon was included within a broad circumscription of *Lomandra micrantha* and was represented by the types of *Xerotes micrantha* var. *sororia* and *Xerotes laxa*.

### 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(iii)

### Species Information

#### Description and Life History

Tussocks usually slender, occasionally clump-forming. Leaves stiff and erect, 25-50 cm long, (2.5-)3.3-4(-5.5) mm wide, glabrous, flat with margin usually ± incurved, or slightly concavo-convex in cross-section, not twisted; margins thickened, smooth to minutely scabrous; basal sheath with margin intact or occasionally slightly torn, 4-6 cm long; apex rounded or with two lateral teeth. Inflorescences usually much-branched, c. one- to two-thirds as long as leaves, with non-flowering axis hidden or exposed; axes conspicuously covered with tubercles to c. 0.1 mm long. Male inflorescences 14-30 cm long; female inflorescences similar to male but 7-21 cm long. Male flowers with tepals 1.9-2.6 mm long; female flowers with tepals 3-4.5 mm long. Fruit ovoid, c. 3 mm diam., pale brown. The taxon flowers from October to January (VicFlora 2021).

#### Generation Length

The generation length of *Lomandra oreophila* is estimated to be 50 to 100 years and is based on a longevity of at least 50 years and the likelihood that the taxon resprouts from the rhizome following most fire events. The taxon is likely to recruit episodically post-fire and sporadically and opportunistically in response to localised site disturbance events and seasonal conditions. Pre-settlement fire intervals are likely to have been at the multi-decadal to the century scale.

#### Distribution

The taxon is endemic to Victoria within the Eastern Highlands, Snowfields, and East Gippsland (Conn and Quirico 1994; VicFlora 2021).

The taxon is reliably recorded from the Aberfeldy district, Mt Skene in the west to Mt Tingaringy on the New South Wales border in the east, and from The Viking in the north to Mt Useful in the south.

#### Habitat

The taxon is scattered, but locally rather common in alpine and subalpine *Eucalypus pauciflora* and *E. dives* Woodlands (Conn and Quirico 1994; VicFlora 2021). The taxon is a habitat specialist that is apparently restricted to the summits of the highest peaks in the Victorian Alps, within its very restricted known range at elevations of 1060-

1634 m. Across this altitudinal and geographic range itoccurs in *Eucalyptus dives* woodland, *Eucalyptus kybeanensis* and *Eucalyptus delegatensis* stands, sparse *Eucalyptus pauciflora* Snow Gum woodland  well as treeless summit areas in low shrublands.Soils include slate derived from Ordovician sediments and shallow shale soil, derived from Devonian mudstones

**Threats**

The taxon is a habitat specialist, known only from summits of the highest peaks within its very restricted known range. By inference, the taxon is therefore highly dependent on the microclimatic conditions, hydrological regimes and vegetation associated with these exceptionally limited habitats. The taxon is therefore likely to be highly susceptible to any alteration to these highly restricted mountain top conditions, including climatic warming and drying, altered seasonality of precipitation and the persistence of snow, a projected increase in frequency, duration and intensity of extreme drought events and altered fire regime.

In addition to these generic threats which apply across the narrow range of the taxon, mountain tops are inherently threatened by planned and inadvertent management activity. This includes the targeted removal of summit vegetation to create helipads for fire suppression, lines of sight for fire spotting and trig points, and the construction and maintenance of access roads and tracks. Mountain summits are the locations of choice for construction of fire-spotting towers, telecommunication facilities and trig stations, all of which require regular vegetation clearance for lines of sight, fuel reduction and vehicle access and parking. Mountain summits are also destinations for tourists and for interpretative facilities. These targeted activities have already degraded and permanently altered the habitat at several mountain peaks within the known range of the taxon, including the summit of Mt Tingaringy which is the most disjunct occurrence of the taxon at the eastern limit of its range. This summit was bulldozed many years ago to create a helipad and permanent lines of site in all directions, eliminating the highly significant summit vegetation, which included the type population of Tingaringy Gum *Eucalyptus glaucescens,* and numerous other rare and threatened plant populations including highly restricted local endemics.

## 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:

**Eligible under Criterion B1 as Vulnerable**

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8,772km², based accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the subregional and landscape scales. All known occurrences are highly disjunct from each other at spacings greatly exceeding the dispersal range of the taxon, which has no specialised mechanism for long-distance dispersal. This precludes the possibility of recolonisation in the event of local extinction.

It has a continuing decline in (iii) above, based on the impact of the current and projected identified threats.

**Eligible under Criterion B2 as Endangered**

The Area of Occupancy (AoO) across the taxon's range is estimated to be 62 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented and has a continuing decline in (iii).

| 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 insufficient evidence to determine the number of mature individuals.

| 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<br>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:<br>AoO <·20 km2 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

Conn, B.J., and Quirico, A.L. (1994). *Lomandra oreophila* (Lomandraceae) - a new species in the *L. micrantha* group. *Muelleria, 8*(2), 123-132.

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VicFlora (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Lomandra oreophila*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/9beeb8e4-f374-410d-910b-9360d338b905