



## *Leucopogon microphyllus* var. *pilibundus* Hairy Beard-heath

### Taxonomy

*Leucopogon microphyllus* var. *pilibundus* (A. Cunn ex DC.) Benth.

There are two varieties, but only *L. microphyllus* var. *pilibundus* is recorded in Victoria. *L. microphyllus* var. *microphyllus* occurs further north in New South Wales and Queensland. This variety is distinguished by the absence of hairs on leaves, and relatively short, erect corolla lobes.

A variant from rocky bluffs north of Combiabar approaches var. *microphyllus* in having almost glabrous leaves, bracteoles, and sepals (VicFlora 2017). This variant was previously ascribed to var. *microphyllus*.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criterion B2ab(iii)

### Species Information

#### Description and Life History

The taxon is a shrub to c. 1 m. high; branchlets hispid. Leaves not widely spreading, narrowly elliptic to c. oblong, 2-6 mm long, c. 1 mm wide, convex, concolorous, upper surface and margins hispid with scattered hairs of different lengths, lower surface papillose between nerves, otherwise glabrous or sparsely hispid; apex bluntish, slightly recurved. Flowers white, crowded, (1-)2-5 in spikes 3-7 mm long in upper axils; bracteoles ovate, 1-1.5 mm long, acute, minutely hispid; sepals narrowly ovate, 2.2-3 mm long, acute, dark-tipped, minutely hispid; corolla c. 2-3 mm long, lobes 1.2-2 times longer than tube, acute, spreading or recurved, densely bearded within; anthers with short sterile tips; ovary 2-3-locular, glabrous, style 0.3-0.5 mm long. Fruit ovoid, 1.5-2.2. mm long. The taxon flowers August to October (VicFlora 2017).

#### Generation Length

The generation length of *Leucopogon microphyllus* var. *pilibundus* is estimated to be 35 to 70 years. The taxon is a long-lived perennial which is likely to be a fire-sensitive obligate seed regenerator killed by intense fire and recruiting episodically from a persistent soil-stored seedbank at pre-settlement fire intervals of 35-70 years or more. The taxon may resprout following low intensity fire events and may also recruit opportunistically following localised disturbance events or in outstanding seasonal conditions.

#### Distribution

The distribution of the taxon is disjunct, as it is known only from the Lerderderg Gorge area north-west of Melbourne, north and east from near Buchan in East Gippsland (VicFlora 2017), and at Pine Mountain and Mount Burrowa in the far North East.

# Leucopogon microphyllus var. pilibundus

## Hairy Beard-heath

### Habitat

The taxon occurs in elevated, dryish, and often rocky sites supporting open-forest and woodland communities (VicFlora 2017).

### Threats

Although the taxon is well adapted to dry and sometimes rocky habitats, it is likely to be at increasing long-term risk of adult mortality and recruitment failure in response to extreme and extended drought events. The taxon may also be at long-term risk of seedbank depletion and local extinction in response to repeat fire events at intervals approaching the tolerable fire interval for the taxon. Although this risk is currently mitigated by the relatively low rate of fuel accumulation in drier habitats, in many sites in East Gippsland, the taxon occurs in moister forest habitats with dense understoreys which can carry repeat fires at shorter intervals. Intensive clearfell harvesting may have contributed to the drying out of such forests in East Gippsland since the use of slash burns favours the regeneration of fire-adapted taxa at the expense of more mesic elements of the flora. This effect is exacerbated by the routine application of planned burning. The taxon may also be threatened by casual or targeted browsing by Sambar Deer (*Rusa unicorn*), particularly during early stages of recruitment.

### 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>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### Evidence:

#### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 100 years is projected to be 15 to 35% (midpoint 25%), based on (c) and (e) above.

#### Eligible under Criterion A4 as Vulnerable

# *Leucopogon microphyllus* var. *pilibundus* Hairy Beard-heath

The population reduction over any 105 to 210 year period, including both past and future (up to 100 years in the future), is estimated to be 15 to 45% (midpoint 30%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 149 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented naturally at the regional and landscape scales. Seed is likely to be dispersed by ants (myrmecochory), which operate at the metre scale, or by small mammals or birds, which operate at the kilometre scale.

It is estimated to have 3 locations, and has a continuing decline in (iii) above based on the current and projected impact of the identified threats, such as drought, repeat fire events, and browsing by Sambar Deer.

# Leucopogon microphyllus var. pilibundus

## Hairy Beard-heath

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, although it is likely to be in the thousands since the taxon is often recorded as locally common, and quadrats taken in East Gippsland often record the taxon with projective foliage cover exceeding 5%.

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 <sup>2</sup> 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

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne. Retrieved from:



*Leucopogon microphyllus* var. *pilibundus*  
Hairy Beard-heath

[https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Leucopogon microphyllus* var. *pilibundus*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/be8c384f-de1e-4a4d-8bb6-acaeac8b7dc5>