

## *Prostanthera arapilensis* Arapiles Mint-bush

### Taxonomy

*Prostanthera arapilensis* M.L. Williams, Drinnan & N.G. Walsh

### Current conservation status

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

### Proposed conservation status

Critically Endangered in Australia

Criterion B1ab(i,ii,iii,iv,v)

### Species Information

#### Description and Life History

*Prostanthera arapilensis* is a long-lived erect shrub to 1.5m high, aromatic; branches with moderately dense to dense spreading or retrorse coarse hairs, sparsely glandular, with regular decussate spines 6–15 mm long. Leaves broadly ovate to broadly obovate or orbicular, lamina (1.5–)3–4.5(–6) mm long, 1–2(–5) mm wide, light to dark green, paler below, surfaces moderately to densely hispid, copiously covered with subsessile glands below, base acute to subobtuse, margin entire, sometimes slightly recurved, apex obtuse; petiole 0.2–1 mm long. Flowers appearing axillary; bracteoles persistent, 1.5–2 mm long, 0.2–0.3 mm wide. Calyx 5.5–7 mm long, tube 3–4 mm long, adaxial lobe 1.5–3 mm long (not enlarged in fruit); corolla pale mauve or white, orange-brown dotted or streaked in throat on lower lip, 12–19 mm long; anther appendage c. 1–2 mm long (VicFlora 2018)..

It is assumed to be a post-fire resprouter; reproducing only by seed and recruitment is assumed to be continuous but with a post-fire pulse. The breeding system is unknown, i.e. whether self-fertile or an obligate outbreeder. Flowers are pollinated by solitary bees for a nectar reward. Seeds are passively dispersed, and apparently without a secondary dispersal mechanism, the seeds assumed to form a long-lived soil-stored seedbank.

#### Generation Length

The generation length of *Prostanthera arapilensis* is suspected to be 30 to 50 years. This is based on the suspected longevity of the plants, and continuous recruitment and assumed resprouting capacity post-fire.

#### Distribution

*Prostanthera arapilensis* is endemic in Victoria. It is confined to Mount Arapiles in western Victoria, where it occurs on the eastern, northern and western sides of the rocky summit.

#### Habitat

The taxon occurs in very rocky heathy woodland and shrubland on very well-drained sandy soils derived from Siluro-Devonian sandstone

# Prostanthera arapilensis

## Arapiles Mint-bush

### Threats

Threats include climate change (decreased rainfall, increased evaporation, extreme temperatures); increased frequency and intensity of fire; damage to plants by rock climbers accessing cliffs; weed invasion; browsing by goats (potential); and grazing of young recruits by rabbits.

### 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> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>			

### Evidence:

#### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 90 to 100 years is suspected to be 30%, based on (c) above.

Future reduction is based on the projected impacts of the suite of threats identified, notably weed invasion and climate change impacts.

# *Prostanthera arapilensis* Arapiles Mint-bush

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 B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 16 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

Considering the limited dispersal ability of the taxon, the barriers to dispersal, or lack of habitat separating them, the individuals can be considered to be severely fragmented.

is inferred to have 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above due to the identified threats, notably weed invasion and climate change impacts.

### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 16 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 1 location and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

# Prostanthera arapilensis

## Arapiles Mint-bush

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

No reliable estimate of the total population size for the taxon is available.

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: [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 (2018). *Flora of Victoria*, Royal Botanic Gardens Victoria: *Prostanthera arapilensis* Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/9fc06ef8-7317-496e-baaa-337723ee94c1>



*Prostanthera arapilensis*  
Arapiles Mint-bush

Williams, M.L., Drinnan, A.N., and Walsh, N.G. (2006) Variation within *Prostanthera spinose* (Lamiaceae): Evidence from morphological and molecular studies. *Australian Systematic Botany* 19(5), 467-477.