

## *Aphanopetalum resinsum* Gum Vine

### Taxonomy

*Aphanopetalum resinsum* Endl.

### Current conservation status

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

### Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(v)+2ab(v); C2a(i,ii); D

### Species Information

#### Description and Life History

The taxon is a climber or weak shrub to c. 5 m high. Leaves ovate, 3-10 cm long, 1.5-4 cm wide, glossy, discolorous. Flowers clove-scented, sepals 5-12 mm long, pale green, sometimes tinged reddish; petals, if present, oblanceolate, 1-3 mm long, cream; stamens c. 5 mm long, shortly exceeding style. Nut 2-3 mm long. The taxon flowers in spring (New South Wales) (VicFlora 2018).

#### Generation Length

The generation length of *Aphanopetalum resinsum* is estimated to be 50 to 100 years. This is based on a longevity of plausibly 50-70 years. The plants cultivated at the Royal Botanic Gardens are still alive after having been planted decades ago.

Disturbance events such as fire, flooding, and land-slip events are assumed to be very infrequent in rainforest habitats, and plants growing in these habitats are likely to be very old. The turnover rate of the population in these habitats is therefore likely to be over 50 years because recruitment opportunities are rare. The turnover in non-rainforest habitats is shorter because of more frequent disturbance events such as fire.

#### Distribution

The taxon is known in Victoria from a single 1993 collection near Howe Hill, east of Mallacoota. It also occurs in Qld, NSW, where it is common (VicFlora 2018). The taxon is evidently exceedingly rare in Victoria, and it is distinct enough to have been noted during incidental surveys or incidental observations.

#### Habitat

Based on the collecting notes on the specimen held at MEL, the Victorian plant/s appear to have been collected in an ecotone between rainforest and *Eucalyptus* forest. The notes specify that the plant/s were growing on a steep upper slope facing east, with granite derived soil and high organic content. It was found in more open parts of the damp forest, dominated by *Eucalyptus muelleriana* and gums (either *E. cypellocarpa* or *E. globulus*), with understorey species including *Pittosporum undulatum*, juvenile *Acmena smithii*, *Bedfordia arborescens*, *Marsdenia rostrata*, *Morinda jasminoides*, *Tetrarrhena juncea* and *Smilax australis*.

In NSW, the taxon occurs in most types of rainforest, often a straggling shrub in more open sites or along streams in open forest.

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### Threats

The Victorian occurrence of this taxon appears to be from an ecotone between rainforest and *Eucalyptus* forest. This makes it potentially more at risk from increased drying, climate change, and a higher frequency of fire events.

### 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 100 years is suspected to be 40%, based on (c) above. This is based on the likelihood of increased drying as a result of climate change, and the increase in the frequency of fire events.

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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 4 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is estimated to have 1 location. It has a continuing decline in (v) above, based on the current and projected impact of the identified threats.

#### Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to have 1 location and has a continuing decline in (v) above.

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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:

### Eligible under Criterion C2 as Critically Endangered

It is estimated that there are 1 to 50 mature individuals, although there is little reliable population information for this taxon as there have been no dedicated surveys. The taxon is evidently exceedingly rare in Victoria, it distinct enough to have been noted during incidental surveys or incidental observations.

The number is estimated to continue to decline. There are less than 50 mature individuals in each subpopulation, and the percentage of mature individuals in one subpopulation is 90-100 %.

Criterion D. Very small or restricted populations <sup>a</sup>				
		Critically Endangered <sup>a</sup>	Endangered <sup>a</sup>	Vulnerable <sup>a</sup>
Number of mature individuals (observed or estimated) <sup>a</sup>		< 50 <sup>a</sup>	< 250 <sup>a</sup>	< 1,000 <sup>a</sup>
D2. Only applies to the VU category <sup>†</sup> 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. <sup>a</sup>		- <sup>a</sup>	- <sup>a</sup>	D2. Typically: <sup>†</sup> Aoo: < 20 km <sup>2</sup> or number of locations ≤ 5 <sup>a</sup>

## Evidence:

### Eligible under Criterion D as Critically Endangered

The taxon is estimated to have 1 to 50 mature individuals.



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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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Aphanopetalum resinosum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/f6207118-43cb-44c9-88c4-748b96ea2ef5>