

Prostanthera decussata Dense Mint-bush

Taxonomy

Prostanthera decussata F. Muell.

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(i,ii,iii,iv)

Species Information

Description and Life History

The taxon is a compact, dense shrub to c. 2 m high, strongly aromatic; branches densely covered with short and long, spreading to subpatent hairs. Leaves ovate to narrowly ovate (young leaves broadly ovate), moderately thick, 4–7 mm long, 1–3.5 mm wide, dark green above, paler below, moderately covered with stiff, tuberculate, multicellular hairs, densely glandular on lower surface, base narrowly obtuse; margin entire, strongly recurved to revolute, apex obtuse; petiole 0–0.6 mm long. Flowers appearing axillary in distal nodes; bracteoles persistent, 2.5–3 mm long, 0.4–0.8 mm wide. Calyx 3.5–4 mm long, tube 1–1.5 mm long, adaxial lobe 2–2.5 mm long (not or only slightly enlarged in fruit); corolla mauve to violet, occasionally pinkish, markings absent, 6–8 mm long; anther appendage absent. Flowers October–March (VicFlora 2018).

P. decussata is long-lived and assumed to be a post-fire resprouter. It reproduces only by seed, which is assumed to form a long-lived, soil-stored seedbank. Recruitment is continuous with a post-fire pulse.

Flowers are pollinated by solitary bees visiting for a nectar reward, and seeds are passively dispersed and fall from the plant with no secondary dispersal. Therefore gene-flow distance is assumed to be very limited.

Generation Length

The generation length of *Prostanthera decussata* is suspected to be 30 to 60 years. This is based on its longevity, its assumed capacity to resprout after fire, and its continuous recruitment.

Distribution

P. decussata is very widely scattered in Victoria, from the Brisbane Ranges, to north-east Victoria and East Gippsland.

Habitat

The taxon occurs in open forest and shrublands in hilly terrain on well-drained soils derived from a variety of geologies, including Ordovician and Carboniferous sediments, metasediments, and granite. Sites are invariably stony, rocky, or with massive outcrops.

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Threats

Threats to the taxon include the effects of climate change such as decreased rainfall, increased evaporation, and extreme temperatures, increased frequency and intensity of fire, weed invasion, and browsing by goats and Sambar Deer (*Rusa unicolor*).

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"> (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:

Eligible under Criterion A3 as Vulnerable

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

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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 ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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 184 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is inferred to be severely fragmented considering its limited dispersal ability, the barriers to dispersal, and the lack of habitat separating individuals.

It is inferred to have a continuing decline in (i), (ii), (iii) and (iv) above due to the identified threats, particularly climate change, weed invasion, and Sambar Deer browsing.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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				

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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 population [Ⓜ]			
[Ⓜ]	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 ² 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.

Trigg, C., and Trigg, M. (2000). *Wildflowers of the Brisbane Ranges*. CSIRO Publishing, Collingwood

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Prostanthera decussata*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/16258907-e86b-4566-a64a-445ff8394449>