



Pterostylis multiflora Mountain Brown-tip Greenhood

Taxonomy

Pterostylis multiflora (D.L. Jones) G.N. Backh.

Despite the many records of *P. multiflora* in Victoria, its identification still remains uncertain, and all records have here been included in *P. rubescens* pending further research and survey. The taxon is said to be distinguished from *P. rubescens* by the early flowering period (Feb - March), occurrence at higher altitudes, taller stem and more numerous, somewhat crowded, slightly smaller and narrower flowers with a larger opening into the flower and the dorsal sepal and petal tips often separated.

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 A2b; B1ab(iii,v)+2ab(iii,v); C2a(i); D

Species Information

Description and Life History

The taxon is a flowering plant 20-45 cm tall, stem wiry, stem leaves 3-6, closely sheathing. Rosette leaves 3-5, ovate to cordate, 0.8-2.3 cm long, 0.5-1.5 cm wide, petiolate, margins flat, 1-3 rosettes arising laterally on the mature plant. Flowers 3-20, erect, 8-10 mm long, green and white basally, brownish towards apex, angular and narrow, crowded; galea erect in the basal half, curved forwards in the distal half; dorsal sepal shortly acuminate, apex scabrous; lateral sepals erect, tightly embracing the galea, sinus shallowly notched when viewed from the front, stepped when viewed from the side, free points linear-tapered, c. 3 mm long, not exceeding the galea; petals falcate. Labellum narrowly elliptic, 3-4 mm long, c. 1.5 mm wide, tip not visible through the sinus in the set position. The taxon flowers from January to March. The taxon is characterised by its many crowded, narrow, angular flowers that are brownish and scabrous towards the apex, and its summer flowering (VicFlora 2018).

Generation Length

The generation length of *Pterostylis multiflora* is estimated to be 20 to 40 (midpoint 30) years. Generation time for non-colonial terrestrial orchids is estimated to be a nominal 30 years based on the annual replacement of the mother tuber by daughter tubers. Whilst somatically immortal, every individual is susceptible to endogenous exhaustion or environmental causes of mortality at rates likely to result in replacement at intervals of several decades only. Such orchids are classed as obligate seed regenerators as they are reliant on seed-based recruitment for population maintenance.

Distribution

The taxon has only recently been described, with its distribution said to include the mountains of eastern Victoria, with records from near Corryong and Wulgulmerang. The Australian Virtual Herbarium lists at least 11 records of *P. multiflora* for Victoria, most from the mountains of eastern Victoria and with a single record from Creswick in western Victoria. Searches in the mountains of north-eastern Victoria in February and March (2018) resulted in the location of several populations. The taxon also occurs in New South Wales and the Australian Capital Territory.

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Habitat

The taxon is found in tall open forest with a dense shrubby or grassy understorey, on well-drained loams (VicFlora, 2018).

Threats

The only recent record is of one subpopulation. The other three, from Bidwell, Bendoc and Mt Buffalo, have not been seen since the 1940s, indicating a potential decline.

The single subpopulation may be at risk from grazing and trampling by feral horses. Habitat may be at risk from increasingly dry conditions from declining rainfall. Very small subpopulations are highly susceptible to stochastic events causing major decline or local extinction within a very short time frame.

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 style="text-align: center;">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 A2 as Endangered

The population reduction over the past 60 to 120 years is inferred to be 50 to 85%, based on (a) and (c) above.

Three of the four known subpopulations have possibly been lost in the last 70-80 years.

The causes of the reduction may not have ceased, be understood or be reversible.

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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 B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,114 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to be severely fragmented, considering the dispersal ability of the taxon, and the barriers or lack of habitat separating them

It is suspected to have 1 location, and has a continuing decline in (iii) and (v) above, due to the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 16 km², 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 (iii) and (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 Endangered

It is estimated that there are 50 to 400 mature individuals, based on sporadic surveys and VBA records. It has an inferred continuing decline, and the number of mature individuals in each subpopulation (if all four still exist) is fewer than 250.

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 ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Endangered

The taxon is estimated to have 50 to 400 mature individuals, based on sporadic surveys and VBA records.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Backhouse, G., Kosky, B., Rouse, D., and Turner, J. (2016). *Bush Gems: A Guide to the Wild Orchids of Victoria, Australia*. Melbourne, Victoria: EBook.



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