



## *Pterostylis diminuta* Crowded Greenhood

### Taxonomy

*Pterostylis diminuta* (D.L. Jones) G.N. Backh.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criteria A2ce+4ce

### Species Information

#### Description and Life History

The taxon is a flowering plant 8-40 cm tall, stem leaves 4-7, spreading, linear-lanceolate, 1.5-8 cm long, 2.5-4 mm wide. Rosette leaves 3-6, ovate to elliptic, 1.5-2.5 cm long, 3-5 mm wide, margins flat or crinkled. Flowers 1-20, 10-14 mm long, shiny, translucent green with darker green stripes, sepal tips orange-brown; galea decurved in the distal third; dorsal sepal with an acuminate apex; lateral sepals deflexed, conjoined part elliptic, 8-11 mm long, 4-6 mm wide, free points 3-4 mm long, divergent; petals slightly falcate, basal flanges small, apex obtuse. Labellum oblong, 4-5 mm long, 2-2.5 mm wide, yellowish brown with a darker basal mound and a blackish central stripe, covered with transparent, beaded cells and sometimes with a few acicular cells at the base, apex attenuate, notched. Flowers from August to October. This is a recently described and still poorly known species (VicFlora, 2015).

#### Generation Length

The generation length of *Pterostylis diminuta* is suspected 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, each 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 (OSRs) reliant on seed-based recruitment for population maintenance.

#### Distribution

The taxon is endemic to Victoria where it is known only from between the Grampians and near Ararat/Ballarat in the west of the State. The altitude ranges from 230-400 metres above sea level. It appears to have a very limited distribution but is often locally common, especially in forested foothills around Ararat (Backhouse et al., 2016; VicFlora, 2015).

#### Habitat

The taxon is found in heathy woodland and open forest with a tussocky or sparse shrubby understorey, on well-drained gravelly or stony clay loam soil (Backhouse et al., 2016; VicFlora, 2015).

### Threats

There has undoubtedly been some historical decline based on loss and degradation of habitat across the range of the taxon. Extensive clearing of habitat across the range of the taxon, and disturbance from gold mining and timber production occurred at several localities.

Most historic disturbance has now ceased, although there may be some problems with increasing recreation use of the parks system, especially at the Ararat Hills subpopulations. All remaining subpopulations occur in protected habitat in reserves. Subpopulations and habitat may be at risk from disturbance, weed invasion and increasingly dry conditions from declining rainfall and consequent increase in severity and intensity of bushfires. 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>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 A2 as Endangered

The population reduction over the past 60 to 120 years is suspected to be 20 to 70% (midpoint 50%), based on (c) and (e) above.

Past decline is based on extensive clearing of habitat across the range of the taxon.

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

#### Eligible under Criterion A4 as Endangered

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The population reduction over any 60 to 120 year period, including both past and future (up to 100 years in the future), is suspected to be 20 to 70% (midpoint 50%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Future decline is based on the impacts of the identified threats, notably weed invasion, increasingly dry conditions from declining rainfall and consequent increases in the severity and intensity of bushfires.

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:

### Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 3,150 km<sup>2</sup> and the Area of Occupancy (AoO) is estimated to be 40 km<sup>2</sup>, but other thresholds under this criterion have not been met.

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				

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## Evidence:

### Ineligible under Criterion C

It is estimated that there are 550 to 1,600 mature individuals, but other thresholds under this criterion have not been met.

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 <sup>2</sup> or number of locations ≤ 5

## Evidence:

### Eligible under criterion D as Vulnerable

It is estimated that there are 550 to 1,600 individuals

**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.

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)

Jones, D. L. (2006). Towards a revision of *Bunochilus* D.L.Jones and M.A.Clem. *Australian Orchid Research*, 5, 112-142.

VicFlora (2015). Flora of Victoria, Royal Botanic Gardens Victoria: *Pterostylis diminuta*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/9da3f542-ab68-40ab-9e7f-f386693de852>