

Pterostylis dolichochila Long-tongue Shell-orchid

Taxonomy

Pterostylis dolichochila D.L. Jones & M.A. Clem.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2ce+4ce

Species Information

Description and Life History

The taxon is a flowering plant to 15 cm tall, stem leaves 3-5 closely sheathing. Rosette leaves 4-10, ovate, 4-12 mm long, 3-8 mm wide, margins entire. Flower 2-2.5 cm long, erect, green and white with reddish brown stripes and suffusions; dorsal sepal with a decurved filiform point 1-2 mm long; lateral sepals erect, tightly embracing the galea, sinus nearly flat, shallowly notched when viewed from the front, curved when viewed from the side, free points 1.5-2 cm long, filiform, erect, curved forwards near the tip; petal margins broadly flared. Labellum narrowly ovate-lanceolate, 13-15 mm long, 3-4 mm wide, whitish with a dark brown apex, shallowly curved, distal quarter protruding from the sinus in the set position (VicFlora 2015).

Variable in appearance, there seems to be as much variation within as between populations, so trying to discern any taxonomic pattern is difficult. The taxon flowers from July to August. In common with many cauline greenhoods, individual populations can be fairly large but usually with only a small proportion in flower, even in years of food rainfall. Plants may not flower at all in dry years (VicFlora, 2015).

Generation Length

The generation length of *Pterostylis dolichochila* 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, 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 as they are reliant on seed-based recruitment for population maintenance.

Distribution

The taxon is confined to a small area of the Wimmera and southern Mallee in north-western Victoria, between Natimuk and Rainbow, and west to the South Australian border. The altitude ranges from 100-200 metres above sea level (Backhouse *et al.* 2016).

Apart from an isolated occurrence near Portland, the taxon is apparently confined to the Little Desert and Big Desert areas of western Victoria (VicFlora 2015).

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Habitat

The taxon mainly grows under mallee-scrub/heath or *Callitris gracilis* (Slender Cypress-pine)/*Eucalyptus leucoxylon* (Yellow Gum) woodland, on well-drained sandy to clay loam soils (Backhouse *et al.* 2016; VicFlora 2015).

Threats

There has almost certainly been an extensive historic decline in distribution and abundance due to widespread clearing for agriculture between the Little and Big Deserts, with the Telopea Downs subpopulation surviving in a tiny habitat remnant.

The remaining subpopulations are protected in reserves, but subpopulations and habitat may be at risk from disturbance, weed invasion and 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>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 Critically Endangered

The population reduction over the past 60 to 120 years is inferred to be 90 to 99%, based on (c) and (e) above. Past decline is based on extensive habitat loss.

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

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 60 to 120 year period, including both past and future (up to 100 years in the future), is inferred to be 80 to 90%, based on (c) and (e) above. The causes of 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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 320 km² and the Area of Occupancy (AoO) is estimated to be 12 km², 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 <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				

Evidence:

Ineligible under Criterion C

It is estimated that there are 110 to 220 mature individuals, but other thresholds under this criterion have not been met.

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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 D as Endangered

It is estimated that there are 110 to 220 mature individuals, based on sporadic surveys and Victorian Biodiversity Atlas records.

It should be noted that that the number of individual plants of *P. dolichochoila* is much higher than the estimates used in this assessment. The taxon reproduces vegetatively as well as by seed, and some groups of plants have arisen through clonal reproduction. Flowering rate is usually very low, and even in years of good rainfall perhaps only about 20% of the total subpopulation size will flower. In dry years, the percentage of flowering plants drops well below 10% and in very dry years no individual plants will flower. Therefore, the number of mature individuals capable of reproduction in any year has been assessed as 20% of the estimated total subpopulation size. All subpopulations have low numbers of flowering plants each year, with subpopulations not flowering in dry years.

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

VicFlora (2015). Flora of Victoria, Royal Botanic Gardens Victoria: *Pterostylis dolichochoila*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/8a5d7c0c-4454-43b9-8c17-de0100d788dc>