



Pterostylis aestiva Long-tongue Summer-greenhood

Taxonomy

Pterostylis aestiva D.L. Jones

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(iii,v)

Species Information

Description and Life History

The taxon is a flowering plant to 10-35 cm tall, stem leaves 3-5, spreading. Rosette leaves 3-5, ovate, 1-3 cm long, 1-1.5 cm wide, petiolate, dark bluish green, margins entire. Flower 2-3 cm long, slightly nodding, bluish-green, white and brown; dorsal sepal with a filiform point 8-12 mm long; lateral sepals erect, tightly embracing the galea, sinus flat with a shallow central notch when viewed from the front, protruding prominently when viewed from the side, free points to 25-35 mm long, filiform, erect; petal margins flared. Labellum oblong-lanceolate, 15-19 mm long, c. 4 mm wide, dark red-brown towards the apex, curved, blunt, the distal third protruding prominently from the sinus in the set position (labellum sometimes protruding in relaxed position). The taxon flowers from January to April (VicFlora 2017).

Generation Length

The generation length of *Pterostylis aestiva* 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 restricted to east Victoria, specifically it occurs in the Eastern Highlands and East Gippsland, where it favours montane areas between altitudes of about 700m and 1200m. It is well represented in the Alpine National Park and possibly more widespread than current records suggest as the taxon grows in a rugged, poorly accessible region (Backhouse and Jeanes 1995; VicFlora 2017).

Habitat

The taxon grows in moist grassy open forests and Snow Gum woodlands, often in frost hollows and beside streams, and extends into drier open forests of rain-shadow areas. Substrates range from quite heavy clay loams to well-drained sandy loams and skeletal soils (Backhouse and Jeanes 1995; VicFlora 2017).

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Threats

There has been some decline in several existing subpopulations, especially in the Wulgulmerang-Cobberas region, from grazing and disturbance by domestic cattle and especially feral horses, and, also by severe summer bushfires (during the period when this taxon normally flowers). Some subpopulations and habitat are considered at risk from ongoing disturbance by feral horses 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"> (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 Vulnerable

The population reduction over the past 60 to 120 years is inferred to be 20 to 45%, based on (a), (c) and (e) above.

Past decline is based on historic decline in several subpopulations and habitat.

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

Eligible under Criterion A4 as Vulnerable

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 10 to 45%, based on (a), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Future decline is based on ongoing habitat disturbance at several localities.

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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 148 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

It is estimated to have 1 location. The mountains of north-eastern and far eastern Victoria, where all subpopulations occur, is deemed as a single location due to the uniform impact of the identified threats.

It has a continuing decline in (iii) and (v) above based on the current and projected impact of the identified threats, in particular ongoing damage by feral horses.

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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 Vulnerable

It is estimated that there are 1,220 to 2,650 mature individuals, based on sporadic surveys and VBA records. It should be noted that the total number of individual plants of *P. aestivalis* 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. The 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.

There is inferred to be a continuing decline and the number of mature individuals in each subpopulation is 1,000 or fewer.

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:

Ineligible under Criterion D

It is estimated that there are 1,220 to 2,650 mature individuals, which exceeds the thresholds for criterion D.

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



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References

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