

Threatened Species Assessment

Pterostylis conferta Leprechaun Greenhood

Taxonomy

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

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* as *Pterostylis* aff. *mutica* (Basalt Plains) (SAC 2006).

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

Proposed conservation status

Critically Endangered in Australia

Criteria A2ace+3ce+4ace; B2ab(i,ii,iii)

Species Information

Description and Life History

The taxon is a flowering plant to 16 cm tall, stem leaves 3-5, loosely sheathing. Rosette leaves 5-10, ovate to elliptic, 0.5-2.5 cm long, 3-8 mm wide, shortly petiolate to nearly sessile, margins entire. Flowers 5-16, crowded, pale green with darker green lines, 10-13 mm long; galea curved throughout, suddenly decurved near the apex; dorsal sepal acute; lateral sepals deflexed, conjoined part broadly ovate in outline when flattened, 6-7 mm long, 6-7 mm wide, margins incurved, concave, united basally, free points broadly triangular, c. 3 mm long, parallel; petals asymmetrical, broadest towards the base. Labellum pale green with a dark green basal appendage; lamina obovate-oblong, c. 3 mm long, c. 2.5 mm wide; appendage c. 2 mm long, recurved. The taxon flowers in October and November. In years of good winter rains, the taxon is often hidden under the herbs and grasses with which it grows (VicFlora 2018).

Generation Length

The generation length of *Pterostylis conferta* 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 being reliant on seed-based recruitment for population maintenance.

Distribution

The taxon is endemic to Victoria where it was formerly widespread in basalt plains grassland north and west of Melbourne. It is now extremely rare and is known from 2 very small subpopulations about 135 km apart growing in tiny habitat remnants.

Habitat

The taxon grows in remnant native herb-rich grassland among embedded basalt rocks (Backhouse *et al.* 2016). Soils are red-brown clay loams (VicFlora 2018).

Threats

The taxon is at great risk from weed invasion, rabbit grazing and trampling from visiting orchid enthusiasts. Virtually all its habitat was historically cleared for agriculture or is highly degraded, especially from weed invasion which is an ongoing threat. The taxon is at extremely high risk of extinction from ongoing threats and stochastic events and will only survive through active and sustained management at the site for many years to come.

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;"><i>based on any of the following:</i></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 suspected to be 90 to 99%, based on (a), (c) and (e) above.

It is almost certain that the taxon was once much more abundant and widespread, but virtually all likely habitat has been long since been cleared or is highly degraded, and the taxon survives in only tiny habitat remnants.

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

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 60 to 100 years is suspected to be 90 to 99%, based on (c) and (e) above.

The taxon is at extremely high risk of extinction from the identified threats, The Parwan population has almost certainly declined over the last 20 years and both subpopulations are likely to decline further.

Eligible under Criterion A4 as Critically 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 90 to 99%, based on (a), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is known from just two subpopulations about 135 km apart. These individual occurrences are considered severely fragmented based on the taxon's limited dispersal ability, the barriers to dispersal and/or the lack of habitat separating them. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have one location, based on threats of weed invasion, disturbance and drying conditions from declining rainfall occurring at both subpopulations.

It has a continuing decline in (i), (ii) and (iii) above, based on the current and projected impacts for the identified threats.

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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:

Ineligible under Criterion C

It is estimated that there are 55 to 100 mature individuals, but other thresholds under this criterion have not been met.

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

It is estimated that there are 55 to 100 mature individuals.

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

References

- Backhouse, G. N., and Jeanes, J. A. (1995). *The Orchids of Victoria*. Melbourne: The Meigunyah Press.
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