



Pterostylis baptistii King Greenhood

Taxonomy

Pterostylis baptistii Fitzg.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1

Species Information

Description and Life History

The taxon is a robust, seasonal orchid. Flowering plant to 40 cm tall. Rosette leaves 4-8, ovate to oblong, 3-8 cm long, 1.5-2.5 cm wide, petiolate, margins wavy or crisped. Flower 5-6 cm long, green and white with brown in the apex of the galea; galea apex decurved to flat; dorsal sepal acuminate; lateral sepals erect, loosely embracing the galea leaving a lateral gap, sinus nearly flat when viewed from the front, notched at the centre, protruding in a prominent bulge when viewed from the side, free points linear-tapered to filiform, 2.5-3.5 cm long, reflexed; petals broad, anterior margins often crinkled. Labellum narrowly elliptic-lanceolate, 18-22 mm long, 5-6 mm wide, reddish brown, apex subacute, distal quarter to third protruding from the sinus in the set position. The taxon flowers from August to November (VicFlora 2015).

Generation Length

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

Distribution

The taxon is restricted to far East Gippsland, on alluvial flats between Orbost and Genoa (VicFlora 2014) in coastal and hinterland areas. It is known to occur within the extensive Croajingalong National Park and several smaller nature reserves (Backhouse and Jeanes 1995).

Habitat

In far East Gippsland, the taxon grows in moist to wet soils on sheltered slopes in open-forest and adjacent to swamps. In far East Gippsland, east of Orbost, the taxon is apparently confined to near-coastal areas in damp scrubby woodlands bordering on swamps and watercourses, on heavy soils (VicFlora 2015).

According to Backhouse and Jeanes (1995) the taxon grows on swampy flats and along watercourses among heathy vegetation, grasses, and sedges, often in open forest and woodland. Substrates are generally moist, peaty soils and heavy clay loams. It is always found growing in association with *Malaleuca ericifolia* (Swamp Paperback) and forming loose colonies amongst the grass and sedge-dominated field layer (SAC 1991).

Threats

From its current distribution, the taxon's populations appear to have been reduced to small, isolated patches within its former restricted range, due to a significant proportion of its habitat having been cleared for cattle grazing early this century. The taxon inhabits high nutrient soil, which is in demand for grazing and other activities, and much of the suitable habitat within its range has been cleared. According to Backhouse (pers. comm. 2018) it has suffered an extensive decline in distribution and abundance, with the loss of at least 4 subpopulations. Only two populations are in biological reserves, and both are declining. The population at Lake Curlip is in decline due to competition from several introduced grasses which make up part of the field layer. Subpopulations and habitat are considered 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 also highly susceptible to stochastic events causing major decline or local extinction within a very short time frame.

Backhouse and Jeanes (1995) noted other threats such as drainage of swamps and predation by herbivores. As a rare and attractive orchid, it is threatened by collectors and the impacts of orchid collectors.

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 			

Eligible under Criterion A2 as Endangered

The population reduction over the past 60 to 120 years is estimated to be 35 to 90% (midpoint 65%), based on (a), (c) and (e) above.

Past decline is based on the known loss of subpopulations.

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 projected to be 35 to 95% (midpoint 65%), based on (c) and (e) above.

Future decline is based on declining plant numbers, subpopulation loss and ongoing habitat degradation, in response to the identified threats.

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 to the future) is estimated to be 35 to 95%, (midpoint 65%) based on (a), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Evidence:

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon is estimated to be 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.

The taxon is estimated to have 2 locations.

The taxon has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected identified threats.

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 VBA. The taxon is severely fragmented, has 2 locations and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

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 C1 as Critically Endangered

It is estimated that there are 70 to 150 mature individuals, based on sporadic surveys and VBA records.

A continuing decline of 20 to 45% is estimated to occur within 1 generation.

Eligible under Criterion C2 as Endangered

The number of mature individuals is estimated to continue to decline, and the number of mature individuals in each subpopulation 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

It is estimated that there are 70 to 150 mature individuals.

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

References

- Backhouse, G., and Jeanes, J. (1995). *The Orchids of Victoria*. Melbourne, Victoria: Melbourne University Press.
- 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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- Jones, D. L. (1988). *Native Orchids of Australia*. New South Wales: Reed.
- SAC (1991). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Flora and Fauna Guarantee, Nomination No. 102 *Pterostylis baptistii*.
- Turner, J., Bould, A., and Wilkinson, J. (2014). *Orchids of East Gippsland: A Field Guide*. Bairnsdale: Bairnsdale and District Field Naturalists Club Inc.
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