Threatened Species Assessment

Pterostylis prasina
Glossy Greenhood

Taxonomy

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

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2ce+4ce; B2ab(iii)

Species Information

Description and Life History

The taxon is a flowering plant to 50 cm tall, stem leaves 4-7, spreading, narrow ovate-lanceolate, 10-60 mm long, 3-9 mm wide, dark green. Rosette leaves on a separate plant, 3-5, ovate to ovate-lanceolate, 7-50 mm long, 4-15 mm wide. Flowers 1-8, 11-16 mm long, shiny, translucent green with darker green stripes and suffusions, sepal tips brownish; dorsal sepal with a short apical point; lateral sepals deflexed, conjoined part broad-oblong to elliptic, 10-16 mm long, 4-6 mm wide, free points 3-4 mm long, divergent; petals slightly falcate, with a well-developed basal flange. Labellum oblong, 5.5-7 mm long, 2-3 mm wide, emerald green with a darker green central stripe, covered with numerous, short, transparent, bead-like cells, longer and hair-like at base, apex attenuate, notched. The taxon flowers from July to September (VicFlora 2018).

Although it grows in a relatively dry habitat, the taxon can be locally common in years of good autumn and winter rainfall, but generally with only a small percentage of plants in flower. In dry years the plant flowers sporadically or not at all. Plants are usually fairly short and often grow in the shelter of dense low shrubs, so can be difficult to find. Most subpopulations have low numbers of flowering plants each year, with some subpopulations not flowering in dry years.

Generation Length

The generation length of *Pterostylis prasina* 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 north-western Victoria, in the Little Desert and Big Desert areas, north from Edenhope and west from Stawell and Ouyen (Backhouse *et al.* 2016; VicFlora 2018).

Habitat

The taxon grows in dry woodland, mallee and mallee heath on well-drained sandy to clay loam soils. The altitude ranges from 100-250 metres above sea level (Backhouse *et al*. 2016; VicFlora 2018).

Threats

There has almost certainly been an extensive historic decline in distribution and abundance due to widespread clearing for agriculture in the Wimmera and Mallee regions, with several subpopulations surviving in tiny habitat remnants

Most remaining subpopulations are protected in reserves and there is little indication of any current or future decline. 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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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 Endangered

The population reduction over the past 60 to 120 years is inferred to be 50 to 85% (midpoint 70%), based on (c) and (e) above.

Past decline is based on extensive historic habitat loss.

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

Eligible under Criterion A4 as 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 50 to 75%, based on (c) and (e) above.

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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 12,040 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

Considering the dispersal ability of the taxon, the barriers or lack of habitat separating them, the individuals can be considered to be severely fragmented.

It is estimated to have six locations. It is inferred to have a continuing decline in habitat quality, as a result of disturbance, weed invasion and increasingly dry conditions from declining rainfall.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 40 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

As above, it is severely fragmented, has six locations and has a continuing decline in (iii).

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 320 to 700 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 km2 or number of locations ≤ 5

Evidence:

Eligible under criterion D as Vulnerable

It is estimated that there are 320 to 700 mature individuals, based on sporadic surveys and the Victorian Biodiversity Atlas records.

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 (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Pterostylis prasina*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/229f63ca-dea3-4bbc-8b99-8569ee203494