Threatened Species Assessment

Pterostylis coccina
Scarlet Greenhood

Taxonomy

Pterostylis coccina Fitzg.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion D

Species Information

Description and Life History

It should be noted that the number of individual plants of *P. coccina* 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 only about 10% 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 10% of the estimated total subpopulation size.

The taxon has a flowering stem to 22 cm tall, stem leaves 3-5. Rosette leaves 2-5, ovate, 1.5-3 cm long, 1-1.5 cm wide, petiolate, shiny, margins entire; flower 4-5 cm long, white and bluish-green or white and red; galea nearly flat or curved forwards in the distal third; dorsal sepal with a filiform point to 12-16 mm long; petal margins slightly flared; lateral sepals erect, tightly embracing the galea, sinus wide, flat, slightly bulbous when viewed from the side, scabrid, free points 3.5-4.5 cm long, filiform, divergent, erect or curved forwards. Labellum oblong-elliptic, 2-2.5 cm long, 3.5-4 mm wide, red-brown, curved near the apex, apical third protruding prominently from the sinus in the set position. The taxon flowers from January to April (VicFlora 2018).

The taxon flowers well in response to late summer rains but most plants produce only a rosette of leaves.

Generation Length

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

Distribution

The taxon appears to be naturally restricted to a very small area in eastern Victoria where it is at the southern end of its national distribution. The taxon is confined to a remote montane area of north-eastern Victoria, near the upper reaches of the Snowy River in the Eastern Highlands. Whilst very localised it is reasonably common in its favoured habitat. Given its remote and seldom visited location, it is highly likely that other subpopulations exist within the

region. A disjunct occurrence has also been recorded further west in Grampians National Park (VicFlora 2018; Backhouse and Jeanes 1995).

Habitat

The taxon grows in open forests in montane rain-shadow areas on generally cooler slopes facing south and south-east, often in sheltered crevices among rock outcrops. Soils are well-drained sandy loams, often rich in leaf and bark litter (Backhouse and Jeanes 1995).

Threats

All known colonies are protected within the Alpine National Park and, unless the prevailing conditions change appreciably, the taxon is likely to persist there. Illicit collection of plants is an ongoing problem, as it is with all horticulturally desirable taxon (Backhouse and Jeanes 1995). The only long-term threat to the taxon, and one difficult to quantify, is habitat change from more frequent and severe of bushfires due to climate change.

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km² and the Area of Occupancy (AoO) is estimated to be 8 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 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 200 to 1,000 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 Endangered

The taxon is estimated to have 200 to 1,000 mature individuals, based on sporadic surveys and Victorian Biodiversity Atlas (VBA) records.

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.

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