

Prasophyllum stygium Elfin Leek-orchid

Taxonomy

Prasophyllum stygium D.L. Jones & D.T. Rouse

The taxon was named and described in 2017, having been previously known as *Prasophyllum* sp. aff. *fitzgeraldii* B. True *Prasophyllum fitzgeraldii*, as represented by the type specimen from the Lofty Ranges, South Australia, is not believed to occur in Victoria (VicFlora, 2018).

Current conservation status

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

Proposed conservation status

Critically Endangered in Australia

Criterion A2ce+3ce+4ce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1+2a(i,ii); D

Species Information

Description and Life History

Flowering stem slender, 20-40 cm tall. Leaf-blade to 20 cm long, 2-4 mm diam. at base, erect, apex senescent at flowering. Flowers 8-15, mostly brownish green, fragrant, in an open raceme 5-8 cm long; ovary sessile, obovoid, 5-7 mm long; sepals 5-7 mm long, dorsal sepal ovate-lanceolate, acute, lateral sepals free, ovate-lanceolate, parallel, recurved, apex bidentate; petals 4-5 mm long, linear-lanceolate, spreading, whitish. Labellum sessile, ovate, 4-5 mm long, reflexed at right-angles near middle, lamina white, upper margins crenulate-undulate; callus raised, narrowing distally and extending nearly to labellum apex, brown, papillate. Column appendages oblong, to 2 mm long. Flowers October-November (VicFlora 2017).

Generation Length

The generation length of *Prasophyllum stygium* 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 (OSRs) reliant on seed-based recruitment for population maintenance.

Distribution

The taxon is endemic to the Stawell area of western Victoria.

Habitat

The taxon is found in woodlands on rocky brown clay soils.

Threats

The taxon is likely to have been more widespread and abundant in the district, but most habitat has long been lost to clearing for agriculture. The sole subpopulation occurs in a reserve and is no longer under imminent threat from

habitat destruction. However, it is still highly vulnerable to stochastic events and long-term habitat changes from disturbance, browsing, weed invasion, altered fire regimes and increasingly dry conditions from declining rainfall. It is highly unlikely that such a small population will survive without direct and sustained management intervention.

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 inferred to be 70 to 90%, based on (c) and (e) above.

The taxon is likely to have been more widespread and abundant in the district but most habitat was lost in clearing for agriculture.

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 60 to 100 years is projected to be 50 to 85%, based on (c) and (e) above.

It is highly unlikely that such a small population will survive without direct and sustained management intervention.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 60 to 100 year period, including both past and future (up to 100 years in the future) is inferred to be 70 to 90%, 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 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 and B2 as Critically Endangered

The Extent of Occurrence (EoO) is estimated to be 4 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) is estimated to be 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has one location and has a continuing decline in (i), (ii), (iii), (iv) and (v).

The taxon is estimated to have one location, as any threat could impact the entire tiny population.

It has a continuing decline in (i), (ii), (iii), (iv) and (v). The habitat is protected but disturbance, browsing, drying habitat and altered fire regimes are likely to lead to an ongoing decline in plant numbers,

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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 C1 as Critically Endangered

It is estimated that there are 20 to 50 mature individuals. A maximum of about 30 plants have been observed at any one time over 20 years.

There is estimated to be a continuing decline of 30 to 50% within one generation.

Eligible under Criterion C2 as Critically Endangered

The number of mature individuals is projected to continue to decline, the number of mature individuals in each subpopulation is 50 or fewer and the percentage of mature individuals in one subpopulation is 90-100 %.

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: A.O. < 20 km ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Critically Endangered

It is estimated that there are 20 to 50 mature individuals.

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

References

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