Threatened Species Assessment

Prasophyllum uvidulum
Summer Leek-orchid

Taxonomy

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

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* as *Prasophyllum* sp. aff. *frenchii* B (SAC 2007).

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

Species Information

Description and Life History

The Summer Leek-orchid is shortish (35 mm tall), slenderish leek orchid, with a dorsal sepal up to 9 mm long, parallel to narrowly spreading lateral sepals and narrowly to widely spreading petals. It is greenish to greenish brown with faint thin darker stripes, externally brown to reddish brown, labellum creamy white to brownish to pinkish with a yellowish green, narrow, deeply channelled callus plate with barely raised somewhat indistinct margins, and extending to just beyond the bend. It has up to 25 widely-spaced, fragrant flowers with a long, triangular recurved labellum. The taxon is characterised by summer flowering habit, and a moderately open spike of uncrowded relatively small colourful flowers.

Generation Length

The generation length of *Prasophyllum uvidulum* is inferred to be 20 to 40 years (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 known only from a single site near Shelley in north-eastern Victoria, at 735 metres above sea level.

Habitat

The taxon grows in swamp complex vegetation in in damp soaks and along drainage lines within open forest, on heavy clay loam soils.

Threats

Threats include browsing by exotic herbivores such as deer and feral pigs, and associated pugging and compaction; weed competition and invasion including Blackberry, St. John's Wort, exotic grasses such as Sweet

Vernal Grass and pine wildlings from the surrounding pine plantations. Other threats include human impacts such as unauthorised four-wheel drive vehicle damage to soils and vegetation. Longer term site drying associated with climate change impacts also significantly threaten the taxon's viability.

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 Critically Endangered

The population reduction over the past 90 to 150 years is inferred to be 95 to 99%, based on (a), (c) and (e) above.

This is based on known clearance and or modification of preferred swamp complex vegetation, including conversion to agriculture or pine plantations, competition or exclusion by pest animals and impacts of exotic herbivores.

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 90 to 100 years is projected to be 0 to 100%, based on (c) and (e) above.

Ongoing recovery work and site protection may prevent further significant reduction or the impacts of climate change and other known threats. On the other hand, the species is highly restricted, in small numbers and is dependent on a sensitive habitat. Over time the known threats may override protection efforts and result in total extinction of the species.

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is inferred to have 1 location. It has a continuing decline in (ii), (iii), (iv) and (v) above, as a result of the current and ongoing threats, including weeds, human disturbance, exotic herbivores and climate change impacts that can lead to drying of the swamp complex.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range 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 is inferred to have 1 location and has a continuing decline in (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 C as Critically Endangered

It is estimated that there are 70 to 100 mature individuals. A maximum number of 72 plants (flowering and non-flowering) was recorded in 2014 as part of targeted monitoring for the taxon. Each plant was recorded via differential GPS, however individual plants were not tagged.

A continuing decline of 0 to 100% is projected to occur within 1 generation.

The number of mature individuals is inferred to continue to decline, and the percentage of mature individuals in one subpopulation is 90-100 %.

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

It is estimated that there are 70 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., 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.

Jones, D.L. and Rouse, D.T. (2009) *Prasophyllum uvidulum*, a critically endangered new species of Orchidaceae from northeast Victoria. *Orchadian* 16, 248-252.

SAC (2007). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 766 *Prasophyllum* sp. aff. *frenchii B*