Threatened Species Assessment

Prasophyllum erythrocommum
Tan Leek-orchid

Taxonomy

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

This taxon is part of a complex of similar looking taxa, and has been confused in particular with members of the *Prasophyllum occidentale* complex (VicFlora 2018).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (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 A2a+4abc; B1ab(iii)+2ab(iii); D

The taxon has not been seen since 2009, and it may be extinct.

Species Information

Description and Life History

The taxon is a flowering stem slender, to 25 cm tall, solitary. Leaf-blade to 10 cm long, 2-3 mm diam. at base, apex erect, often partially senescent at flowering time. Flowers 10-30, small, fragrant, greenish brown to dark brown, in a loose spike 5-10 cm long; ovary obovoid, 4-5 mm long; sepals 4.5-6 mm long, dorsal sepal ovate-lanceolate, deflexed, lateral sepals linear-lanceolate, free, more or less parallel, recurved; petals narrowly oblong-lanceolate, 4-5.5 mm long. Labellum on a short stalk, ovate-lanceolate, 4-5 mm long, obliquely erect at base, recurved at less than 90 deg. near middle, lamina greenish to pinkish, margins entire or slightly irregular; callus plate smooth, fleshy, raised, dull greenish, extending almost to the labellum apex. Column appendages oblong, c. 1.5 mm long, obtuse. The taxon flowers in October to November (VicFlora 2018).

Generation Length

The generation length of *Prasophyllum erythrocommum* is suspected to be 40 to 50 years. Generation time for non-colonial terrestrial orchids is estimated 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 Victoria, where it is known only from Yan Yean, just north of Melbourne, and at Strathfieldsaye, near Bendigo in central Victoria. The altitude ranges from 200-220 metres above sea level (Backhouse et al. 2016).

The taxon was known from only two widely separated locations. The Strathfieldsaye subpopulation contained 20-30 plants while the Yan Yean subpopulation contained perhaps 200 plants. No plants have been observed at the Strathfieldsaye site since 2003 or the Yan Yean site since 2009, and it is feared that the taxon may be extinct.

Other subpopulations almost certainly existed but have been lost due to extensive habitat clearance and degradation across the distribution of this taxon.

Specifically, the two populations consisted of a total of only about 250 plants. The Strathfieldsaye site suffered badly in the decade-long drought up to 2011, and it is not known if this population persists. There is also some doubt as to the correct identity of these plants, which were taller with slightly larger flowers than the Yan Yean plants. Although the Yan Yean population grew in a protected area, during a wildfire in 2009 the site was bulldozed to create a fire break, which cleared much of the area in which the plants grew, and debris was also piled up on part of the site. Plants have not been seen at the Yan Yean site since, and it is feared the Tan Leek-orchid may now be extinct (Backhouse et al. 2016).

Habitat

The Yan Yean site is River Red Gum *Eucalyptus camaldulensis* grassy woodland on heavy clay soil, while the Strathfieldsaye site is in Grey Box *E. microcrapa* grassy woodland on clay loam soil (Backhouse et al. 2016).

Threats

The taxon is threatened by weed invasion, herbicide spraying for weed control, and vehicle movement over the site causing soil compaction (SAC 2007).

Further habitat deterioration, through weed invasion and drying, is likely to continue. No plants have been seen in recent years, so the taxon may already be extinct.

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 120 to 150 years is estimated to be 100%, based on (a) above. No plants have been observed at the Strathfieldsaye site since 2003 or the Yan Yean site since 2009, and it is feared the taxon may be extinct.

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

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 120 to 150 year period, including both past and future (up to 100 years in the future), is inferred to be 100%, based on (a), (b) and (c) above. The causes of reduction may not have ceased, be understood or be reversible.

No plants have been observed at the Strathfieldsaye site since 2003 or the Yan Yean site since 2009, and it is feared the taxon may be extinct. Future decline is not projected as no plants are currently known in either location.

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). The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

The taxon was known from just two sites, but no plants have been observed at the Strathfieldsaye site since 2003 or the Yan Yean site since 2009, and it is feared the taxon may be extinct.

If both subpopulations are still extant, the taxon can be considered to be severely fragmented due to the limited dispersal ability of the taxon, the barriers to dispersal, or lack of habitat separating them. Specifically, the taxon was known only from two widely separated locations and subpopulations, situated about 105 km apart.

It is estimated to have a continuing decline in (iii) above.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be between 0 and 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented and has a continuing decline in (iii) 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 C2 as Critically Endangered

It is possible that no mature individuals remain, since no plants have been observed at either site since 2009, and the taxon may be extinct. If it still exists, it will be in only tiny numbers, perhaps five, and is very likely to continue to decline.

The number of mature individuals is estimated to continue to decline, and the number of plants in each subpopulation is fewer than 50.

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 Critically Endangered

It is estimated that 0 to five mature individuals remain

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.

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VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Prasophyllum erythrocommum*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/ce5cf5b8-15fd-4ce0-b71b-dbb976ee1c4c