Threatened Species Assessment

Prasophyllum sp. aff. *occidentale* C
Western Leek-orchid

Taxonomy

Prasophyllum sp. aff. *occidentale* C sensu Rouse (2002)

This is an undescribed species that is related to *Prasophyllum occidentale.*

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criteria A2ace+3ce+4ace; B1ab(i,ii,iii,v)+2ab(i,ii,iii,v); C2a(i)

Species Information

Description and Life History

Flowering stem slender, 15-30 cm tall. Leaf-blade to 15 cm long, 2-3 mm diam. at base, apex erect, often partially senescent at flowering time. Flowers 7-25, small, fragrant, yellowish green to brownish, in a moderately loose spike 5-11 cm long; ovary obovoid, c. 3 mm long; sepals 7-8 mm long, dorsal sepal ovate-lanceolate, deflexed, lateral sepals linear-lanceolate, free, more or less parallel, straight or recurved; petals linear-lanceolate, 6-7 mm long. Labellum subsessile, ovate-lanceolate, 4.5-5.5 mm long, porrect at base, reflexed at about 90 deg. near middle, lamina cream to reddish, margins crinkled to slightly irregular; callus plate smooth, fleshy, raised, green or brownish, extending well beyond labellum bend. Column appendages linear-oblong, c. 2 mm long. Flowers September-October (VicFlora 2020).

Prasophyllum spp. are glabrous herbs arising annually from ovoid tubers. They are pollinated by nectar-seeking insects, principally wasps and native bees. Some species apparently produce seed without fertilization. Flowering in many species is enhanced by summer fires.

Generation Length

The generation length of *Prasophyllum* sp. aff. *occidentale* C 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 (OSRs) reliant on seed-based recruitment for population maintenance.

Distribution

In Victoria the taxon is known only from *Callitris gracilis/Allocasuarina luehmanni*i woodlands of the north-west, mostly in the Mallee and Wimmera regions (Backhouse and Jeanes 1995). It is apparently endemic to areas between Dimboola and Nhill (Vicflora 2020).

Habitat

The taxon grows in open mallee scrublands, and woodlands dominated by *Eucalyptus leucoxylon* (Yellow Gum) and *Callitris preissii* (Slender Cypress Pine) on well-drained sandy loams and heavier clay loams (Backhouse and Jeanes 1995).

Threats

The taxon has declined due to extensive loss of habitat in the region for agriculture, and due to a run of very dry seasons. The habitat at all localities is within reserves but is likely to decline through impacts of disturbance, weed invasion and increasingly dry conditions from reducing rainfall, possibly leading to further decline and loss of subpopulations. 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 65 to 75%, based on (a), (c) and (e) above.

The taxon was almost certainly much more widespread and abundant, based on the distance between subpopulations, but has suffered a historic catastrophic decline due to extensive loss of habitat in the region.

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

Eligible under Criterion A3 as Endangered

The population reduction over the next 60 to 100 years is inferred to be 55 to 75%, based on (c) and (e) above.

The remaining subpopulations are likely to decline through impacts of disturbance, weed invasion and increasingly dry conditions from reducing rainfall.

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 55 to 75%, based on (a), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 and B2 as Endangered

The Extent of Occurrence (EoO) is estimated to be 4,098 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) is estimated to be 16 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

The Wimmera plains and Milmed Swamp, where all subpopulations occur, is deemed a single location based on similar topography, climate and suite of threats operating on subpopulations.

It has a continuing decline in (i), (ii), (iii) and (v) above, based on the impacts of the identified threats, notably habitat loss, weed invasion and increasingly dry conditions from reducing rainfall

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 Endangered

It is estimated that there are 250 to 500 mature individuals. The taxon is known from four small widely separated subpopulations, with fewer than 500 plants.

It has an inferred continuing decline, and the number of mature individuals in one subpopulation is fewer than 250.

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 250 to 500 individuals, and the taxon is observed to be very restricted.

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.

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

Jones, D, L. (2006). *A complete guide to native orchids of Australia including the island territories.* Frenchs Forest, NSW: New Holland.

VicFlora (2020). Flora of Victoria, Royal Botanic Gardens Victoria: *Prasophyllum* sp. aff. *occidentale* C. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/5bae350f-5288-4cb0-8afd-7d6257669292