Threatened Species Assessment

Caladenia sp. aff. *venusta* (Kilsyth South)
Kilsyth South Spider-orchid

Taxonomy

Caladenia sp. aff. *venusta* (Kilsyth South) sensu Ross (2000)

Current conservation status

Listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2000).

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+4ace; B1ab(ii,v)+2ab(ii,v); C1+2a(i,ii); D

Species Information

Description and Life History

The Kilsyth South Spider-orchid is an herbaceous perennial geophyte which is about 35 cm high, with a single leaf 15 cm long and one to two flowers. It is a deciduous orchid that dies back annually to a small, spherical, underground tuber. The single leaf is long and narrow. The erect, hairy flower stem grows to 35 cm high has one or two large, creamy white flowers which grow up to 8 cm across. The sepals and petals are up to 7 cm long and slender, with long filamentous tips covered in brownish glands. The uppermost sepal is erect, the petals and lateral sepals spread and droop. The central petal (labellum) is narrowly triangular with the tip rolled under. The expanded part of the labellum has four to six rows of short, curved, reddish teeth and the sides of the labellum are fringed with short, thickened, reddish teeth decreasing in size and extending almost to the labellum tip (Jeanes and Backhouse 2006). The taxon relies on frequent fire in its fairly dense habitat to stimulate flowering only breed if hand-pollinated because likelihood of insect pollinators is so low.

Generation Length

The generation length of the taxon is estimated to be 20 to 40 (midpoint 30) years. This is based on the generation time for non-colonial terrestrial orchids, that is estimated to be a nominal 30 years based on the annual replacement of the mother tuber by daughter tubers. Whilst somatically immortal, individuals are 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, only known from a single site in at Kilsyth South in the outer eastern suburbs of Melbourne. It occurs in single small reserve su*rrounded by residential and industrial development.

Habitat

The taxon grows in open moist foothill shrubby forest with a dense grassy ground layer, on grey loam soils (VicFlora 2015).

Threats

The taxon is threatened by residential development. It relies on periodic fire in its fairly dense habitat to stimulate flowering, with numbers declining as the understorey regenerates in years after fire (Backhoue et al. 2016).

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 60 to 120 years is estimated to be 90 to 90%, based on (a), (c) and (e) above.

Monitoring shows that population decreased from 15-30 plants in 2002 to one in 2018.

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

Depending on funding for conservation and human intervention the plants may increase in numbers, but without improved management, extinction is highly likely.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 60 to 120 years period, including both past and future (up to 100 years in the future), is estimated to be 0 to 100%, 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 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 observed to have 1 location, as it is known from a single plant and site and is subject to threats that cold drive it to extinction. It has a continuing decline in (ii) and (v) above.

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 has 1 location and has a continuing decline in (ii) 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

The taxon is observed to have 2 to 3 mature individuals. In 2018, one plant was observed in the wild which flowered in 2017. Two other plants were seen in ~2015 but were either dormant of dead. Every year the habitat is searched, especially during the flowering period.

It has an estimated continuing decline of 0 to 100% (midpoint 50%) within one generation.

It has an estimated continuing decline, the number of mature individuals in each subpopulation is fewer than 50 and the percentage of mature individuals in each subpopulation is 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 Critically Endangered

The taxon is observed to have 2 to 3 mature individuals. In 2018, one plant was observed in the wild which flowered in 2017. Two other plants were seen in ~2015 but were either dormant of dead. Every year the habitat is searched, especially during the flowering period.

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

References

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