Threatened Species Assessment

Caladenia peisleyi
Heath Spider-orchid

Taxonomy

Caladenia peisleyi (D.L. Jones) G.N. Backh.

The taxon is also referred to as *Arachnorchis peisleyi*, or Peisley's Spider-orchid. The taxon forms rare hybrids with *Caladenia ancylosa* and *Caladenia tessellata* (Backhouse et al. 2016).

This taxon was included in *Caladenia fitzgeraldii,* and has been known as *Caladenia* sp. aff. *fitzgeraldii* (SAC 2007).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2007).

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(iv,v)+2ab(iv,v); C2a(i); D

Species Information

Description and Life History

The taxon is a deciduous terrestrial orchid with a single, lanceolate hairy leaf and a slender, erect flower stem, bearing one or two flowers. A small greenish yellow spider-orchid, sometimes with pale reddish stripes, a dark red labellum, frequently with the apex projecting forward or downward and not rolled under, the margins with few, short serrate teeth, a few short sparse laminar calli not extending on to the mid lobe, short, thin-textured, stiffly spreading petals and later sepals, the sepals tipped with short blackish clubs to 6 mm long, occasionally petals tipped with tiny beady clubs. The flowering occurs from September to October (SAC 2007).

The flowering is enhanced by infrequent summer wildfires in its heathy habitat, with numbers of flowering plants decreasing in subsequent years, as the vegetation regenerates (SAC 2007). Fire is not required to stimulate flowering as some plants will flower in most years in open sites such as along tracks and in natural clearings in the forest (Backhouse et al. 2016). However, all subpopulations have low numbers of flowering plants, with numbers fluctuating from year to year and in some years no flowering plants in some subpopulations are seen.

Generation Length

The generation length of *Caladenia peisleyi* 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 occurs in Gippsland, east from Cobbanah to the New South Wales border. The altitude range 50-310 metres above sea level. The taxon is a recently described, apparently rare orchid known from few, scattered populations and low numbers of plants. However, it is probably more common than current records suggest, as flowering is enhanced by summer fires in its heathy habitat, and there is considerable apparently suitable habitat within its distribution (Backhouse et al. 2016).

Habitat

The taxon grows in coastal and near-coastal open forest, less commonly in heathland and heathy woodland, on well-drained sandy loam and clay loam soils (Backhouse et al. 2016; SAC 2007).

Threats

The taxon's habitat may be at risk from increasingly dry conditions from reducing rainfall and consequent increase in intensity and severity of bushfires, possibly leading to 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.

The threats are not precisely known due to the rarity of the taxon. However, due to the reliance on summer fires to enhance flowering, the fire management of the taxon's heathy habitat may be a long-term management issue (SAC 2007).

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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4817 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented because of its limited dispersal ability and isolation of subpopulations from one another, with a reduced probability of recolonisation should subpopulations become extinct. This results in an increased extinction risk to the taxon.

It is estimated to have 1 location. It has a continuing decline in (iv) and (v) above, from increasingly dry conditions from reducing rainfall and consequent increase in intensity and severity of bushfires.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 52 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 1 location and has a continuing decline in (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 C2 as Endangered

It is estimated that there are 180 to 370 mature individuals. The taxon is known from 10 small, widely separated subpopulations, with fewer than 400 plants.

The number of mature individuals is inferred to continue to decline, and the number of mature individuals in each subpopulation is 250 or fewer.

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 180 to 370 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.

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Turner, J., Bould, A., and Wilkinson, J. (2014). *Orchids of East Gippsland: A Field Guide*. Bairnsdale: Bairnsdale and District Field Naturalists Club Inc.

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