

Caladenia rosella Little Pink Spider-orchid

Taxonomy

Caladenia rosella G.W. Carr

Current conservation status

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

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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

Proposed conservation status

Critically Endangered in Australia

Criteria A2ace+4ace; B1ab(ii,iv)

Species Information

Description and Life History

The Rosella Spider-orchid is a flowering plant 10 - 17 cm tall. Leaf 4 - 9 cm long, 5 - 8 mm wide, blotched with red at base. Flower solitary, with musk-like fragrance; perianth segments 3 - 5 cm long, pale to bright rose-pink with dark glandular tail; sepals flattened at base, 2 - 5 mm wide, tapered to a long tail densely covered in crowded, glandular hairs; petals shorter than sepals but otherwise similar. Labellum curved forward with apex recurved and lateral lobes erect, lamina ovate-cordate, very obscurely 3-lobed, 9 - 15 mm long and 7 - 10 mm wide (when flattened), pale pink at base with deep pink mid-lobe, margins and calli, sometimes with a paler tip; margins of lateral lobes fringed with linear calli to 2 mm long; margins of mid-lobe with shorter calli becoming tooth-like and broader towards tip; lamina calli in 4 - 6 rows, extending slightly onto mid-lobe, narrow, finger-like, to 1.5 mm long at base of lamina, decreasing in size towards apex (VicFlora 2015).

The Rosella Spider-orchid has a summer dormancy period, which commences when temperatures increase, and soils dry out in late spring. The orchids shoot in response to soaking rains in late autumn, initially producing only a single green leaf. Growth of the rosella spider-orchid occurs during late autumn, winter and spring, and flowering occurs in August and September.

Generation Length

The generation length of *Caladenia rosella* is estimated to be 20 to 40 years (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 reliant on seed-based recruitment for population maintenance.

Distribution

The taxon occurs in disjunct populations north east of Melbourne at Cottles Bridge, Research, and Christmas Hills, and there is an unconfirmed record from near Stawell (Todd 2000). In 2000 it was estimated that there were 120

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plants in four populations (Todd 2000). The former distribution is uncertain but may have been scattered through the Box Ironbark woodlands and forests of the Victorian Midlands bioregion (Todd 2000).

Habitat

The Rosella Spider-orchid is typically found in heath woodlands and woodlands on well-drained sandy soils derived from sandstone and mudstone, that are moist in winter and dry in summer (Backhouse and Jeanes 1995; Todd 2000).

Threats

The Rosella Spider-orchid is threatened by habitat loss and fragmentation, invasive taxa, and insecure land tenure. Other threats include weed invasion by mainly annual grasses and herbs such as *Briza maxima* and *Ehrharta erecta*, grazing and disturbance by the House Mouse, rabbits, and White-winged Choughs, and inappropriate fire regimes. A key pollinator taxon, a bee of the *Leioproctus* genus, is reliant upon a diverse range of daisies, wattles, and peas to collect enough food to feed its young, and habitat degradation can lead to a decline in pollinator numbers. Deer grazing is a new and critical threat.

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%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p> <p style="text-align: center;">based on any of the following:</p> <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>			

Evidence:

Eligible under Criterion A2 as Critically Endangered

The population reduction over the past 60 to 120 years is estimated to be 80 to 95%, based on (a), (c) and (e) above.

Past reduction is based on recorded losses (Backhouse et al 2016) and observed declines.

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 60 to 120 years period, including both past and future (up to 100 years in the future), is suspected to be 50 to 80 %, based on (a), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

There is expected to be no future decline, assuming there are site micro-management and successful translocations.

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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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 82 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented as all individuals are found in small and relatively isolated populations, and there is little chance of natural recolonisation should a subpopulation be lost.

It is estimated to have a continuing decline in (ii) and (iv) above, based on the impacts of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 24 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is severely fragmented, and has a continuing decline in (ii) and (iv) above.

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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:

Ineligible under Criterion C

It is estimated that there are 200 to 270 mature individuals, but other thresholds under this criterion have not been met.

Criterion D. Very small or restricted populations		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 km ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Endangered

It is estimated that there are 200 to 270 mature individuals.

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

References

Backhouse, G., Kosky, L., Rouse, D. and Turner, J. (2016). *Bush Gems: A guide to the wild orchids of Victoria, Australia*. Published by Gary Backhouse, Bill Kosky, Dean Rouse and James Turner, Melbourne, Australia.

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Todd, J.A. (2000). *Recovery Plan for Twelve threatened Spider-orchids Caladenia taxa of Victoria and South Australia 2000 - 2004*. Department of Natural Resources and Environment, Melbourne, Victoria.

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