Threatened Species Assessment

Corybas fimbriatus
Fringed Helmet-orchid

Taxonomy

Corybas fimbriatus (R. Br.) Rchb. f.

Basionym: *Corysanthes fimbriata* R.Br. Synonym: *Corybas callosus*

Corybas fimbriatus has been confused with *C. hispidus*, but the latter has a creamy white labellum boss that is deeply notched and covered with bristly hairs. (VicFlora 2019)

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2ac+3bc+4abc

Species Information

Description and Life History

Plants flower from May to July. After fertilisation, the flower stem elongates, raising the ovary to 20 cm or more above the ground, to aid seed dispersal. Most species reproduce readily by vegetative means and can form large, dense colonies containing hundreds of plants. Pollination is by fungus gnats of the family Mycetophilidae, which are tiny, mosquito-like flies, and it is thought that the flowers mimic the fruiting bodies of fungi, on which the fungus gnats lay their eggs (Backhouse et al. 2016).

Generation Length

The generation length of *Corybas fimbriatus* is estimated to be 25 to 50 years. Generation time for colony-forming clonal terrestrial orchids is estimated to be a nominal 50 years (or more) based on the capacity of each clone or genet to persist for decades without reliance on seed germination for population maintenance. Whilst mortality of clones may occur for a variety of endogenous (genetically determined) or exogenous (environmental) reasons, the clonal replacement is likely to occur at multi-decadal intervals.

Distribution

The taxon occurs in southern Victoria, east from Melbourne, from the coast to the foothills at an altitude range 0-400 metres ASL. It also occurs in Tas, NSW, Qld (Backhouse et al. 2016). It usually forms colonies on moist, shaded sandy soil near the coast and generally east of Western Port, but with isolated occurrences near Melbourne at Gembrook, Warrandyte and Greensborough (Vicflora 2019). It could potentially be more widespread than currently known in non-coastal habitat in eastern Victoria. Some potential new colonisation may be occurring at the western end of its range, with new small populations recently been found at Baluk Willam NCR and Langwarrin FFR.

Habitat

The taxon grows in damp shady spots in coastal scrubs, heath, heathy woodland and lowland forest, usually on sandy loam soils, less commonly on heavier clay loams (Backhouse et al. 2016).

Threats

There has been widespread loss of habitat since European settlement. The species was discovered at Greensborough in the north-eastern suburbs of Melbourne in 1992, well away from what was considered its more typical distribution. That colony was lost soon after due to the construction of a track over the site where it occurred (Backhouse et al. 2016).

Some coastal sites and sites near Melbourne and other towns are potentially threatened by human recreation activity. It was thought to be largely coastal in distribution but has recently been found at several sites in the foothills of central Gippsland growing up to at least 400 meters altitude.

The taxon is likely to be threatened by weed invasion and grazing by introduced herbivores, and habitat damage. The potential effects of climate change on the taxon are not understood, but changed climatic conditions are likely to threaten the ongoing survival of the taxon.

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 45 to 60 years is estimated to be 40 to 75% (midpoint 60%) based on (a) and (c) above.

There has been widespread loss of habitat since European settlement.

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 past 45 to 60 years is estimated to be 40 to 75% (midpoint 60%) based on (a) and (c) above.

Eligible under Criterion A4 as Endangered

The population reduction over any 45 to 60 years period, including both past and future (up to 100 years in the future), is estimated to be 40 to 75% (midpoint 60%) based on (a), (b) and (c) above. The causes of reduction may not have ceased, be understood or be reversible.

Some coastal sites and sites near Melbourne and other towns are potentially threatened by human recreation activity. Some potential new colonisation occurring at the western end of its range with new small populations recently been found at Baluk Willam NCR and Langwarrin FFR.

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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 32,415 km² which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 183 km² but other thresholds under this criterion have not been met.

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 175,000 to 350,000 mature individuals, which exceeds the thresholds for criterion C.

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:

Ineligible under Criterion D

It is estimated that there are 175,000 to 350,000 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.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Corybas fimbriatus*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/66ccbf08-701b-4e3a-bb0f-5c4ce7733b3b