Threatened Species Assessment

Corybas despectans
Coast Helmet-orchid

Taxonomy

Corybas despectans D.L. Jones & R.C. Nash

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2001).

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

Proposed conservation status

Endangered in Victoria

Criteria A2ace+4ace; B2ab(i,ii,iii)

Species Information

Description and Life History

The taxon is a tiny, colony-forming, deciduous terrestrial orchid. It has a single, rounded to cordate ground-hugging leaf to 30 mm diameter. A short (to 10 mm long) thick stem arises from the leaf base and bears a single erect green and reddish flower. The labellum lamina is about 10 mm across, almost circular and slightly flared, the margins pointing forward and only slightly serrate. It is translucent with reddish blotches and streaks and a yellowish boss. The green dorsal sepal is erect and barely hoods the labellum, not reaching the labellum's forward edge. The petals and lateral sepals are reduced to short (to 3 mm long) filiform appendages. The auricles are minute, tubular and hidden behind the labellum lamina. Flowering occurs in July and August, and the flower is self-pollinating (SAC 2001).

Nothing is known of its relationship with mycorrhizal fungi or insect pollinators, however, many Corybas species are pollinated by small fungus gnats, with the flowers mimicking the fungus fruiting body (Backhouse and Jeanes 1995).

In some populations of *C. despectans* (e.g. at Cape Schanck), the labellum margins can vary from directed forwards to flared quite widely, the latter plants being similar to the South Australian species *C. expansus* D.L. Jones. Within populations of the widespread *C. incurvus*, some smaller-flowered plants with relatively narrow dorsal sepals may occur. These can resemble *C. despectans* but are readily distinguished by the strongly incurved labellum margins. Even at the small end of the size-range, flowers of *C. incurvus* are larger than typical *C. despectans* and are not self-pollinating (VicFlora 2015).

Generation Length

The generation length of *Corybas despectans* is estimated to be 15 to 20 years. The generation time for colony-forming clonal terrestrial orchids is estimated based on the capacity of each clone or genet to persist for decades without reliance on seed germination for population maintenance. Whilst the 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 is known from only two widely separated locations, at Cape Schanck on the Mornington Peninsula, and Cape Bridgewater near Portland in the far west (VicFlora 2015).

There are several hundred plants in each population. Since its discovery in Victoria, areas of potentially suitable habitat at Anglesea and the Otway Ranges have been searched by experienced field observers in an attempt to locate more populations but without success. The taxon also grows in South Australia and Western Australia (SAC 2001).

Habitat

The taxon grows in moist, shady situations under dense coastal scrubs, on sandy loam soils, usually with a layer of decomposing leaf litter (SAC 2001).

Specifically, the taxon occurs in closed scrublands, usually dominated by Coast Tee-tree (*Leptospermum laevigatum*), Moonah (*Melaleuca lanceolata* subsp. *lanceolata*), and other associated coastal scrub vegetation in moist, shady conditions. It occurs in humus-rich, well-drained limey sand and red soil over limestone soils (Backhouse & Jeanes 1995).

Threats

The taxon was probably once more common and widespread than current records suggest, as its tiny leaves and flowers are easily overlooked (Jeanes and Backhouse 2006). This is especially possible on the Mornington Peninsula, where much habitat has been lost to residential and recreational development. In the south-west, large areas of potential habitat were cleared for pine plantations and agriculture. Two recorded subpopulations near Portland appear to have been lost.

There is likely to be at least some small ongoing decline in plant and subpopulation numbers. Overall, plant numbers appear to have declined due to increasingly dry conditions across both locations. Several subpopulations occur in areas of fairly high disturbance and at least one occurs on land designated for a future road. Subpopulations and habitat are considered at risk from disturbance, weed invasion and increasingly dry conditions from declining rainfall. In addition, very small subpopulations are highly susceptible to stochastic events causing major decline or local extinction within a very short time frame.

The area where the taxon grows at Cape Schanck, although within Mornington Peninsula National Park, is criss-crossed with walking tracks and some trampling occurs, as well as some erosion and wearing along the track. Trampling was a major problem for the population near Cape Bridgewater but the area has since been fenced and the population has recovered substantially. The taxon is particularly threatened by weed invasion, grazing by introduced herbivores and habitat damage. The long-term changes to habitat from Coast Wattle invasion at Cape Bridgewater may be a major problem. 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. The survival of the taxon is further threatened by the loss of ecosystem processes, partially due to the loss of sheoaks and bandicoots from the system (SAC 2001).

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 inferred to be 40 to 70%, based on (a), (c) and (e) above.

Past decline is based on the likely habitat loss to residential and recreational development, as well as clearing for pine plantations and agriculture.

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

Eligible under Criterion A4 as Endangered

The population reduction over any 45 to 60 year period, including both past and future (up to 100 years in the future), is inferred to be 10 to 70%, based on (a), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Past decline is based on the likely habitat loss to land clearing and residential and recreational development. Future decline is based on the projected loss of habitat and the effects of declining habitat conditions.

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 Vulnerable

The Extent of Occurrence across the taxon's range is estimated to be 5380 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

Considering the limited dispersal ability of the taxon, the barriers to dispersal, or lack of habitat separating them, the individuals can be considered to be severely fragmented.

It is estimated to have two locations. It has a continuing decline in (i), (ii) and (iii) above, based on the current and projected impact of the identified threats, including ongoing habitat loss, the effects of declining habitat conditions, weed invasion at several sites, and increasingly dry conditions from declining rainfall.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 36 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to be severely fragmented to have 2 locations and has a continuing decline in (i), (ii) and (iii) 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:

Ineligible under Criterion C

It is estimated that there are 1,600 to 3,000 mature individuals, but other thresholds under this criterion have not been met.

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 1,600 to 3,000 individuals, and the taxon is estimated 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., & Cameron, D. (2005). Application of IUCN 2001 Red List Categories in Determining the Conservation Status of Native Orchids of Victoria, Australia. *Selbyana, 26*(1,2), 58-74.

Backhouse, G., & Jeanes, J. (1995). *The Orchids of Victoria*. Melbourne, Victoria: Melbourne University Press.

Backhouse, G., Kosky, B., Rouse, D., & 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

Jeans, J. and Backhouse, G. (2006). Wild orchids of Victoria, Australia. Melbourne, Vic., Australia: Rudie H. Kuiter.

SAC (2001). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 534 *Corybas despectans.*

VicFlora (2015). Flora of Victoria, Royal Botanic Gardens Victoria: *Corybas despectans.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/29bc7c58-f31c-47c2-addf-dde865072d34