Threatened Species Assessment

Chiloglottis jeanesii
Mountain Bird-orchid

Taxonomy

Chiloglottis jeanesii D.L. Jones

The taxon often grows with *Chiloglottis cornuta* and *C. valida*. It was once thought to be a hybrid between the two (VicFlora 2019). The taxon is also referred to as *Simpliglottis jeanesii* (Backhouse et al. 2016).

Current conservation status

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

Proposed conservation status

Vulnerable in Australia

Criteria A2bce+3ce+4bce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1; D2

Species Information

Description and Life History

The taxon is a flowering plant 4-7 cm tall (scape elongating to 10 cm or more after pollination). Leaves broadly elliptic, petiolate, 30-70 mm long, 10-30 mm wide, dark green above, paler beneath, margin entire. Flower green or purplish-brown; dorsal sepal erect, incurved, obovate-spathulate, 17-20 mm long; lateral sepals porrect in basal half then recurved, divergent or parallel, broadest near the base then tapered to apex, 14-17 mm long; petals widely divergent, asymmetrically ovate-lanceolate, 13-16 mm long. Labellum on short claw, ovate-cordate, 10-13 mm long; calli reddish to blackish, 6-10, 3 basal ones tall and column-like, terminal one sessile. Column widely winged in upper half, wing as long or longer than anther (VicFlora 2019).

The taxon flowers from December to February. Summer bushfires often inhibit flowering the following season(s). *Chiloglottis* spp. can multiply vegetatively and can form large dense colonies. All *Chiloglottis* spp. are pollinated by male thynnid wasps through sexual deception. After pollination the flower stem can elongate to 20 cm or more to aid seed dispersal (Backhouse et al. 2016).

Generation Length

The generation length of *Chiloglottis jeanesii* is estimated to be 30 to 80 (midpoint 50) years. The 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 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 endemic to Victoria, where it occurs over a narrow range between Monbulk and Erica, mostly in the Dandenong Ranges and on the Toorongo and Baw Baw Plateaux in south-central Victoria (Backhouse et al. 2016). Although the taxon apparently has a limited distribution, it can be locally common in suitable habitat and form large colonies containing hundreds of plants. It was thought to be restricted to a small area just east of Melbourne, but a single outlying population was recently found in eastern Victoria, on the Nunniong Plateau north-east of Ensay in

East Gippsland. This suggests that the taxon is possibly more widely distributed than currently thought and is undoubtedly still being mistaken for *C. valida* (Backhouse et al. 2016).

Habitat

The taxon grows in damp shaded areas in moist foothill to wet subalpine forest, particularly where Myrtle Beech *Nothofagus cunninghamii* is present, on rich loamy soils. The altitude range is 500-1,500 metres above sea level (Backhouse et al. 2016). The taxon is sometimes locally common in fern gullies and wet sclerophyll forests (VicFlora 2018).

Threats

Historic habitat loss to agriculture or township development is likely to have been relatively minor, since most reliable records are in State forest or parks and reserves. Some habitat loss is likely to have occurred in the Dandenong Ranges through township development and close settlement within Mountain Ash forests.

However, the association of the taxon with landscapes dominated by merchantable forest types suggests it may have suffered significant historic decline through early logging of the Melbourne water catchments, forestry operations in Mountain Ash forests in the last 70 years and the impact of repeated fire events since the late 1800s.

The key impact of forestry operations is likely to be through the disruption of soils by machinery operating throughout logging coupes and particularly along snig tracks, on log landings and through preparation of fire control lines for regeneration burns. Road construction and maintenance to service forestry operations could also impact on populations.

The taxon remains regionally common, and is conserved in Dandenong Ranges National Park (NP), Yarra Ranges NP, Baw Baw NP and Bunyip SP. It is likely to be more widespread than current records indicate.

Some populations occur in areas where forestry operations have been active in the past, however, the effect of forestry operations on the taxon is not currently known. The Victorian *Code of Practice for Timber Production 2014* (the Code) includes general prescriptions such as protection and buffering of rainforests, old growth forests and waterways, to provide protection from forestry operations.

In recent years, modified harvesting and forest regeneration practices have been implemented in native forest that are designed to further mitigate the potential threat from forestry operations to threatened species and their habitats.

The greatest current and emerging threat to the taxon is the increasing frequency, intensity and landscape scale of repeat fire events which eliminate old-growth Wet Forest, Cool Temperate Rainforest, including Cool Temperate Mixed Forest, and shrink rainforest ecotones which are the core habitat of the taxon. The taxon is also threatened by Sambar Deer (*Rusa unicolor*) activity, particularly trampling and wallowing in damp habitats in riparian or gully vegetation. Some sites may also be threatened by feral pigs which excavate damp soils within the habitat range of the taxon in search of edible roots. Climatic drying and warming are likely to exacerbate fire risk and result in the long-term contraction of the habitat range of the taxon. Some sites are undoubtedly threatened by weed invasion by both herbaceous and woody exotics such as *Digitalis purpurea* (Foxglove), *Hedera hibernica* (Atlantic Ivy), *Ilex aquifolium* (English Holly), *Rhamnus alaternus* (Italian Buckthorn) and *Rubus* species (Blackberry). Blackberries have been introduced into wet forest by heavy machinery operating in production forests.

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 Vulnerable

The population reduction over the past 90 to 240 years is inferred to be 30 to 50% (midpoint 40%), based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

The association of the taxon with landscapes dominated by merchantable forest types suggests it may have suffered significant historic decline through early logging of the Melbourne water catchments, forestry operations in Mountain Ash forests in the last 70 years and the impact of repeated fire events since the late 1800s..

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 90 to 100 years is inferred to be 30 to 50% (midpoint 40%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This is based on the projected impact of the identified threats, especially more frequent and intense bushfires, mechanical disturbance, Sambar Deer and weed invasion.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 90 to 240 year period, including both past and future (up to 100 years in the future), is projected to be 30 to 50% (midpoint 40%), based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This is based on the past loss of habitat and the likelihood of further loss into the future, as a result of fires, and climate-induced increased drying and warming that will presumably impact the wet forest habitat.

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 (EoO) across the taxon's range is estimated to be 11,000 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is estimated to have ten locations, based on land tenure and local ecological conditions: several for occurrences in the Central Highlands protected within parks and reserves, several for occurrences in the Central Highlands in State forest still available for timber production and one for the isolated occurrence on the Nunniong Plateau in East Gippsland.

It has a continuing decline in (i), (ii), (iii) (iv) and (v) above, based on the occurrence of the taxon in vegetation types (i.e. moist to wet forest, particularly with Myrtle Beech) that are sensitive to the effects of fire and increased drying and warming. There is a high risk of local extinction of small and isolated subpopulations, such as the recently discovered occurrence on the Nunniong Plateau in East Gippsland.

Eligible under Criterion B2 as Vulnerable

The Area of Occupancy (AoO) across the taxon's range is estimated to be 88 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to have 3 locations and has a continuing decline in (i), (ii), (iii) (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 C1 as Vulnerable

There is estimated to be 1,000 to 8,000 (midpoint 4,000) mature individuals, based on VBA records and observations. The lower bound estimate reflects the tendency to overestimate population density by confusing rosettes or ramets with clones or genets. The extent of each vegetative clone can only be determined by excavation or, for very old clones, by genetic analysis.

There is estimated to be continuing decline of 30 to 50% with three generations.

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 D2 as Vulnerable

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., 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

Jones, D.L. (1997). *Chiloglottis jeanesii* (Orchidaceae), a new species from Victoria. *Muelleria, 10*, 64-66.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Chiloglottis jeanesii*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/92c11315-ab8b-485b-a42f-31517c6bbe93