



## *Cryptostylis hunteriana* Leafless Tongue-orchid

### Taxonomy

*Cryptostylis hunteriana* Nicholls

### Current conservation status

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

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1996).

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

### Proposed conservation status

Endangered in Victoria

Criteria A2bce+4bce; B1ab(iii)+2ab(iii); C1

### Species Information

#### Description and Life History

The Leafless Tongue-orchid is the only Australia tongue-orchid lacking basal leaves. Although the labellum is a similar colour to *Cryptostylis subulata*, it is erect rather than deflexed and covered with short stout hairs, giving it a characteristic furry appearance (Backhouse et al. 2016).

All five Australian tongue-orchids are pollinated by males of the Red Flower Wasp *Lissopimpla excelsa* through sexual deception. Interestingly, in eastern Australia there are many sites where at least two species of tongue-orchid (*C. leptochila* and *C. subulata*, or *C. erecta* & *C. hunteriana*) will grow and flower together. Although they have the same pollinator, no hybrids between species of *Cryptostylis* have ever been observed (Backhouse et al. 2016).

Plants are often seen flowering second season following a fire, floral bolt initiate in spring and flowers in summer, plants are leafless.

#### Generation Length

The generation length of *Cryptostylis hunteriana* is estimated to be 20 to 40 (midpoint 30) years. Generation time for non-colonial terrestrial orchids is estimated to be a nominal 30 years based on the annual replacement of the mother tuber by daughter tubers. Whilst somatically immortal, each individual is 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

In Victoria, the taxon is found in east Gippsland, between Orbost and Mallacoota, at an altitude range of 10-150 metres ASL. It also occurs in NSW, Qld (Backhouse et al. 2016).

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### Habitat

The taxon occurs in coastal heathland on Spear Grass-tree *Xanthorrhoea resinifera* plains and in adjacent heathy woodland, rarely in foothill open forest, on moist to dry sandy soils that may be peaty (Vicflora, 2018, Backhouse et al. 2016).

### Threats

The taxon is threatened by drainage of swamps, weed invasions, inappropriate fire regimes and illegal collection (Backhouse and Jeanes 1995). Some plants may have been lost due to housing development in the Marlo area. The population in William Hunter reserve on the edge of Marlo is suffering from habitat drying, possibly due to water table lowering caused by swamp drainage as part of housing developments in the region. Small population sizes mean that small scale clearing may result in localised extinctions.

### 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>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>
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### Evidence:

#### Eligible under Criterion A2 as Endangered

The population reduction over the past 60 to 120 years is estimated to be 30 to 60%, based on (b), (c) and (e) above.

This is based on past habitat clearing and possibly some past losses around Marlo.

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

#### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 60 to 100 years is estimated to be 25 to 35%, based on (c) and (e) above.

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This is based on ongoing habitat damage, as in some areas the habitat is being impacted by draining.

## Eligible under Criterion A4 as Endangered

The population reduction over any 60 to 120 years period, including both past and future (up to 100 years in the future), is estimated to be 30 to 50%, based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 1,585 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas.

It is inferred to have two locations, as the key threat of habitat loss may operate differently on public and private land.

It has a continuing decline in (iii) above.

### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 120 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has 2 locations and has a continuing decline in (iii) 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:

#### Eligible under Criterion C as Endangered

It is estimated that there are 280 to 450 mature individuals, based on DELWP records from 2018.

There is estimated to be a continuing decline of 15 to 25% within two generations.

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 <sup>2</sup> or number of locations ≤ 5

### Evidence:

#### Eligible under criterion D as Vulnerable


It is estimated that there are 280 to 450 individuals

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

### References

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

Backhouse, G., Kosky, B., Rouse, D., and Turner, J. (2016). *Bush Gems: A Guide to the Wild Orchids of Victoria, Australia*. Melbourne, Victoria: EBook.



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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](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)

Nicholls, W.H. (1938), A new species of the genus *Cryptostylis* R. Br. *The Victorian Naturalist* 54(11): 182

SAC (1996). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 361 *Cryptostylis hunteriana*

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Cryptostylis hunteriana*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/a6368003-f1c4-4c15-9948-4d6605bf4267>