

Notice of and reasons for the Final Determination

The NSW Threatened Species Scientific Committee, established under the *Biodiversity Conservation Act 2016* (the Act), has made a Final Determination to remove *Chiloglottis platyptera* D.L.Jones from the Schedules of the Act by omitting reference to this species from Part 3 of Schedule 1 (Vulnerable species). The omission of species from the Schedules is provided for by Part 4 of the Act.

Summary of Conservation Assessment

The NSW Threatened Species Scientific Committee has found that:

1. *Chiloglottis platyptera* (Barrington Tops Ant Orchid) is described by Jones (1991) as a “terrestrial tuberous herb forming extensive colonies. Tuberoles to 14 mm x 9 mm, ovoid, brown, fleshy. Leaves 4–7.5 cm x 14–22 mm, elliptical to oblong-elliptical, ground-hugging, dark green on the upper surface, paler beneath with numerous fine longitudinal veins, margins undulate to crispate; petioles 3–8 mm long. Peduncle 3–7 cm x ca 1.5 mm, green to reddish, fleshy. Floral bracts 14–18 mm x 4–6 mm, ovate-lanceolate, acuminate, closely sheathing. Pedicel 20–30 mm long, very slender, erect, green or reddish. Flower solitary, 10–12 mm long, greenish brown with a prominent black labellum callus. Dorsal sepal 12.5–13.5 mm x 3–3.2 mm, erect and incurved, more or less spatulate, narrow and tapered in basal three-quarters, then expanded into an ovate-elliptical section before narrowing to an obtuse apex; apical osmophore ca 0.5 mm long. Lateral sepals 9–10 mm x ca 1 mm, linear, connate at the very base, erect in the basal half then recurved and widely divergent, flat, tapered to osmophore; osmophore 0.6–0.8 mm long, dark red to blackish, narrower than lamina. Petals 9.5–10.5 mm x ca 3 mm, asymmetrically linear-oblongate, slightly falcate, reflexed against the ovary. Labellum articulated on a very short claw ca 0.1 mm long, obliquely erect in basal third then nearly horizontal, apex sharply recurved; lamina 9–10 mm x 8–8.5 mm, broadly obtrullate, basal narrow part ca 3.5 mm x 2 mm, tapered to base, margins purplish, main part of lamina greenish brown, lateral margins not level with obtuse apex when flattened although appearing so because of recurved apex. Lamina callus black, shiny, occupying most of the adaxial surface of the lamina; major proximal stalked gland ca 1.5 mm long, obliquely erect, apex ca 2 mm wide, handlebar-like, the stalk on the distal side of the gland with clustered, shiny black, sessile calli; major sessile gland ca 2 mm across, more or less semi-circular in shape, distally a broad mass of crowded, sessile calli extending to apex; a few shortly stalked, reddish, clavoid calli to 0.5 mm long flank the major glands; calli vestigial on narrowed base of labellum. Column 8.5–9.5 mm x 5.5–6 mm, erect, sharply incurved above the middle, pale green with purple flecks on the anterior surface; central ridge ca 2 mm across; wings extremely broad, concave, extending much higher than the anther. Anther ca 1.5 mm x 1.5 mm, smooth, with a short rostrum, yellow. Pollinia ca 2 mm long, boomerang-shaped, yellow, mealy. Stigma ca 1.5 mm across, transversely elliptical. Capsule not seen.”

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2. *Chiloglottis platyptera* has a wide range across the Northern Tablelands of NSW, though is patchily distributed across the region (Copeland and Backhouse 2022). Initially known from 10 sites across 300 km of the Northern Tablelands (NSW Scientific Committee 2001), *C. platyptera* has since been found at many other sites within this range and is now considered common and widespread throughout the region (L. Copeland *in litt.* October 2022). The species is now known from at least 20 sites across the Northern Tablelands stretching from Barrington Tops in the south, along the eastern escarpments of the tablelands to near Deepwater in the north, and extending west to near Tingha.
3. While many known sites consist of isolated records, some sites occur in loose clusters united by biogeographic features and continuous vegetation. As gene flow is likely across these areas with the long-distance dispersal potential of orchid seed (Jersakova and Malinova 2007) and movement of pollinators (Whitehead *et al.* 2015), these clusters are considered to make up discrete subpopulations as per the IUCN definition (IUCN 2022). This means that the population of *Chiloglottis platyptera* is made up of at least 10 subpopulations, with most either wholly within conservation reserves or a mixture of conservation reserves and state forests.
4. *Chiloglottis platyptera* tends toward a generalist habitat preference, being commonly found in wetter types of tall open forests with a grassy or fern-dominated understorey along the tableland's escarpment (L. Copeland *in litt.* October 2022). Given the large, contiguous areas of suitable habitat across the region, inherent difficulties in detecting small terrestrial orchids (Commonwealth of Australia 2013; Copeland and Backhouse 2022), confusion with other similar taxa (Jones 1991), lack of targeted surveys on the species to date (M. Cameron pers. comm. October 2022) and large fluctuations in emergent *Chiloglottis* numbers dependent on disturbance regimes (Phillips and Watts 2021), it is highly likely that substantial numbers of *C. platyptera* and further sites remain unrecorded. This means that current population estimates are extremely conservative, with an approximate minimum of 6,800 plants estimated to date across the known subpopulations. However, this number is likely to easily exceed 10,000 (if not much higher) with further survey at the correct time of year (L. Copeland *in litt.* October 2022). This would also be in line with the findings of recent post-fire surveys on other closely related *Chiloglottis* which resulted in observed numbers increasing 10-100 times dependent on the survey time and conditions from previous estimates (Phillips and Watts 2021).
5. The geographic distribution of *Chiloglottis platyptera* is highly restricted based on its Area of Occupancy. The Extent of Occurrence (EOO) is based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2022) and was measured at 22,504 km². Area of Occupancy (AOO) was calculated using 2 x 2 km grid cells, the scale recommended by IUCN (2022), and was calculated to be 96 km².
6. *Chiloglottis platyptera* grows in wetter types of grassy tall open eucalypt forest on the tablelands, preferring damp, sheltered areas including rainforest ecotones (Copeland and Backhouse 2022). It is commonly found in grassy, open *Eucalyptus obliqua* forest where *Poa sieberiana*, *Lomandra longifolia* and/or *Pteridium*

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esculentum dominate the groundcover but can occur in genuine wet sclerophyll forest with a more mesic understorey in some areas (L. Copeland *in litt.* October 2022). Aside from the species listed above, co-occurring species in the eastern escarpment sites include *Eucalyptus nobilis*, *E. radiata*, *E. pilularis*, *Banksia integrifolia* subsp. *monticola*, *Elaeocarpus holopetalus*, *Leptospermum polygalifolium* subsp. *montanum*, *Allocasuarina littoralis*, *Pittosporum undulatum*, *Tasmannia* spp. and *Dicksonia antarctica* (G. Phillips pers. obs. October 2016, November 2016; NSW BioNet 2022). At more western sites including at the range limit near Tingha, the habitat of *C. platyptera* can be a layered woodland dominated by *Eucalyptus andrewsii* and *E. laevopinea* (NSW BioNet 2022). *Chiloglottis platyptera* also tends to occur on rich brown loam and clay soils, most often derived from metasediments or basalt (Jones 1991; Copeland and Hunter 1999; G. Phillips pers. obs. November 2016; NSW OEH 2019).

7. *Chiloglottis platyptera* is a deciduous perennial terrestrial orchid which undergoes annual cycles of dormancy and emergence (Eco Logical Australia 2014; Copeland and Backhouse 2022). During dormancy, the species lives as small, ovoid tubers which are buried 1-7 cm below the soil surface, allowing survival through times of stress such as the hot, dry summer months (Bower 2007; Jones 2021). The tubers then sprout once seasonal conditions allow, producing a vertical stem which may branch to form multiple lateral roots (Bower 2007; Jones 2021). The main stem gives rise to a pair of leaves at the soil surface, with flowering stems developing simultaneously in reproductively mature plants (Bower 2007; Jones 2021). Flowering occurs predominantly in spring but can occur at any time between July to November (Eco Logical Australia 2014; Jones 2021; Copeland and Backhouse 2022).
8. *Chiloglottis platyptera* is capable of both asexual reproduction through the production of daughter tubers as well as sexual reproduction. All *Chiloglottis* are pollinated by male thynnine wasps, with *C. platyptera* being pollinated almost exclusively by males of the undescribed species *Neozeleboria* sp. 40 (Bower 1996; Peakall *et al.* 2010). Male thynnine wasps tend to only visit a single flower in a patch during mating flights due to patch avoidance behaviours as well as search for mates along patrol paths tens of metres long (Whitehead *et al.* 2015). This means that localised visitations are minimised and outcrossing rates are maximised across the broader *Chiloglottis* colonies, maintaining a relatively high level of colonial diversity and production of quality seed (Whitehead *et al.* 2015).
9. The main threats to *Chiloglottis platyptera* include damage to habitat by feral pigs and deer and the invasion of Scotch Broom (*Cytisus scoparius*), however there remains no direct evidence of these threats causing decline in any subpopulation or across the total population of *Chiloglottis platyptera* (DPE 2022b; M. Cameron pers. comm. October 2022; L. Copeland *in litt.* October 2022; P. Gadsby *in litt.* October 2022). 'Herbivory and environmental degradation caused by feral deer', 'Invasion and establishment of Scotch Broom (*Cytisus scoparius*)' and 'Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa* Linnaeus 1758' are listed as Key Threatening Processes under the Act.

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10. The most serious plausible threat which results in the lowest number of locations (per IUCN 2022) is damage to plants and habitat by feral pig digging. Pig activity has been recorded at or near to all sites where *Chiloglottis platyptera* has been positively recorded (NSW NPWS 2005, 2009, 2020, 2021; P. Gadsby *in litt.* October 2022; DPE 2022b) and typical home ranges of feral pigs are up to approximately 50 km² in montane areas (Saunders and Kay 1996). Therefore, the spatial nature of this threat is such that there are >10 geographically or ecologically distinct areas where a single threatening event could affect all individuals of the species present within a period of one generation, resulting in >10 threat-defined locations.
11. Continuing decline is not evident in the known subpopulations of *Chiloglottis platyptera* despite plausible threats being present. Feral pigs and deer are known to be active near a number of sites of *C. platyptera* (DPE 2022; M. Cameron pers. comm. October 2022; L. Copeland *in litt.* October 2022; P. Gadsby *in litt.* October 2022). Both have the potential to cause significant damage through herbivory and damage to habitat (NSW DPI 2022a, 2022b), although pig digging is less likely in the forest habitats *C. platyptera* occupies as opposed to more open areas (Hone 1988) and is yet to be observed directly affecting the species. Major infestations of the highly invasive Scotch Broom are also present near some sites, particularly in the Barrington Tops subpopulation (NSW NPWS 2022). However, there remains no direct evidence of any of these threats causing continuing decline in individual subpopulations or the total population of *C. platyptera* (DPE 2022; M. Cameron pers. comm. October 2022; L. Copeland *in litt.* October 2022; P. Gadsby *in litt.* October 2022). As such, these threats are considered only to be plausible future threats, not satisfying the definition for continuing decline (IUCN 2022).
12. The identified plausible future threats to *Chiloglottis platyptera* are also likely to be localised in nature if and when they do become apparent. Thus, these threats are not considered likely to rapidly drive the species to extinction in a very short time (1-2 generations) across its full distribution.
13. In view of the above, the NSW Threatened Species Scientific Committee is of the opinion that *Chiloglottis platyptera* D.L.Jones is not eligible to be listed as a threatened species in any category under the Act.

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Assessment against *Biodiversity Conservation Regulation 2017* criteria

The Clauses used for assessment are listed below for reference.

Overall Assessment Outcome:

Chiloglottis platyptera was found to be ineligible for listing as a threatened species as none of the criteria were met.

Clause 4.2 – Reduction in population size of species

(Equivalent to IUCN criterion A)

Assessment Outcome: Not met

(1) - The species has undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon:		
(a)	for critically endangered species	a very large reduction in population size, or
(b)	for endangered species	a large reduction in population size, or
(c)	for vulnerable species	a moderate reduction in population size.
(2) - The determination of that criteria is to be based on any of the following:		
(a)	direct observation,	
(b)	an index of abundance appropriate to the taxon,	
(c)	a decline in the geographic distribution or habitat quality,	
(d)	the actual or potential levels of exploitation of the species,	
(e)	the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.	

Clause 4.3 - Restricted geographic distribution of species and other conditions (Equivalent to IUCN criterion B)

Assessment Outcome: Not met

The geographic distribution of the species is:		
(a)	for critically endangered species	very highly restricted, or
(b)	for endangered species	highly restricted, or
(c)	for vulnerable species	moderately restricted,
and at least 2 of the following 3 conditions apply:		
(d)	the population or habitat of the species is severely fragmented or nearly all the mature individuals of the species occur within a small number of locations,	
(e)	there is a projected or continuing decline in any of the following:	
	(i)	an index of abundance appropriate to the taxon,
	(ii)	the geographic distribution of the species,
	(iii)	habitat area, extent or quality,
	(iv)	the number of locations in which the species occurs or of populations of the species,
(f)	extreme fluctuations occur in any of the following:	

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	(i)	an index of abundance appropriate to the taxon,
	(ii)	the geographic distribution of the species,
	(iii)	the number of locations in which the species occur or of populations of the species.

Clause 4.4 - Low numbers of mature individuals of species and other conditions (Equivalent to IUCN criterion C)

Assessment Outcome: Not met

The estimated total number of mature individuals of the species is:		
(a)	for critically endangered species	very low, or
(b)	for endangered species	low, or
(c)	for vulnerable species	moderately low,
and either of the following 2 conditions apply:		
(d)	a continuing decline in the number of mature individuals that is (according to an index of abundance appropriate to the species):	
	(i)	for critically endangered species very large, or
	(ii)	for endangered species large, or
	(iii)	for vulnerable species moderate,
(e)	both of the following apply:	
	(i)	a continuing decline in the number of mature individuals (according to an index of abundance appropriate to the species), and
	(ii)	at least one of the following applies:
	(A)	the number of individuals in each population of the species is:
	(I)	for critically endangered species extremely low, or
	(II)	for endangered species very low, or
	(III)	for vulnerable species low,
	(B)	all or nearly all mature individuals of the species occur within one population,
	(C)	extreme fluctuations occur in an index of abundance appropriate to the species.

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**Clause 4.5 - Low total numbers of mature individuals of species
(Equivalent to IUCN criterion D)
Assessment Outcome: Not met**

The total number of mature individuals of the species is:			
	(a)	for critically endangered species	extremely low, or
	(b)	for endangered species	very low, or
	(c)	for vulnerable species	low.

**Clause 4.6 - Quantitative analysis of extinction probability
(Equivalent to IUCN criterion E)
Assessment Outcome: Data deficient**

The probability of extinction of the species is estimated to be:			
	(a)	for critically endangered species	extremely high, or
	(b)	for endangered species	very high, or
	(c)	for vulnerable species	high.

**Clause 4.7 - Very highly restricted geographic distribution of species–
vulnerable species
(Equivalent to IUCN criterion D2)
Assessment Outcome: Not met**

For vulnerable species,	the geographic distribution of the species or the number of locations of the species is very highly restricted such that the species is prone to the effects of human activities or stochastic events within a very short time period.
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Professor Caroline Gross
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Supporting Documentation:

Phillips G.P. (2022) Conservation Assessment of *Chiloglottis platyptera* D.L.Jones (Orchidaceae). NSW Threatened Species Scientific Committee.

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