Chiloglottis valida

large bird-orchid

TASMANIAN THREATENED SPECIES NOTESHEET

Image by Mark Wapstra

Scientific name: ***Chiloglottis valida*** D.L.Jones, *Austral. Orchid Res.* 2: 43 (1991)

Common name: large bird-orchid

Group: vascular plant, monocotyledon, family **Orchidaceae**

Status: *Threatened Species Protection Act 1995*: **listing as endangered under consideration**

Environment Protection and Biodiversity Conservation Act 1999: **Not Listed**

Distribution: Biogeographic origin: **not endemic to Tasmania**

Tasmanian Natural Resource Management regions: **Cradle Coast**

Tasmanian IBRA Bioregions (V6): **King, Northern Slopes**

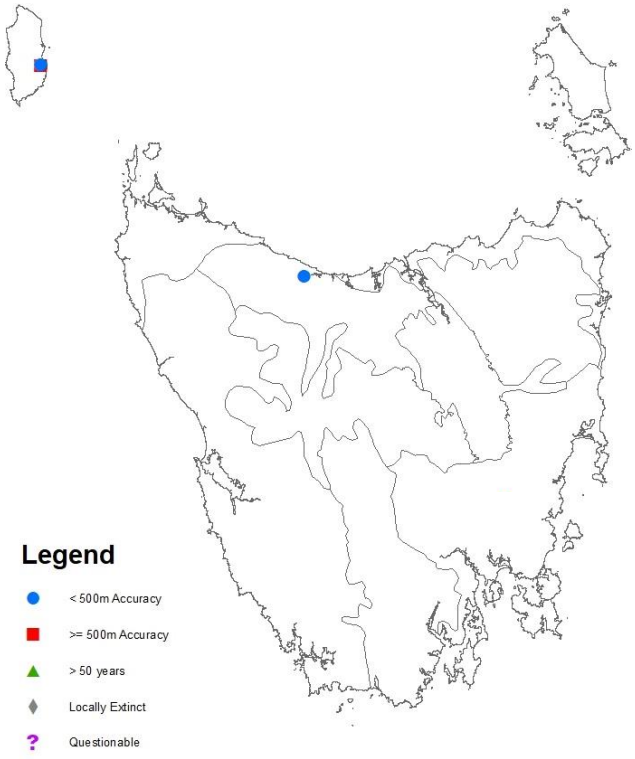

Figure 1. Distribution of *Chiloglottis valida* in Tasmania, showing IBRA bioregions (V6)

Plate 1. *Chiloglottis valida* (image by Craig Broadfield)

SUMMARY: ***Chiloglottis valida*** **(large bird-orchid)** is a terrestrial orchid that in Tasmania is only known from two locations in the north of the State, occurring in wet sclerophyll and swamp forest. The two sub-populations have fewer than 250 individuals that occupy much less than 1 ha in total, putting the species at risk from chance events. The main objectives for the management of the species in Tasmania are to prevent the inadvertent destruction of known occurrences and maintain their viability by promoting conditions for successful recruitment, as well as increasing the number of known subpopulations through survey.

IDENTIFICATION AND ECOLOGY

Chiloglottis valida belongs to a group of terrestrial orchids commonly known in Tasmania as bird-orchids because the fully open flower resembles the mouth of a young bird waiting to be fed. All species of *Chiloglottis* have two basal leaves that spread in opposite directions and a single flower carried on a short central inflorescence. They grow in vegetative colonies, usually with a low proportion of flowering plants (Jones 2006). All *Chiloglottis* species are deciduous and die back after flowering to small, fleshy subterranean tubers. Vegetative reproduction occurs when new tubers are produced on the end of long roots. With the exception of *Chiloglottis cornuta*, which is self-pollinating, the flowers of *Chiloglottis* species are pollinated by male thynnine wasps that attempt to mate with the labellum. The male wasps are attracted to the flowers by a scent similar to the pheromones emitted by the female wasps, and the appearance of the labellum with its shiny calli adds to the deception (Jones et al. 1999). After pollination, the flower stem of all species lengthens considerably prior to seed release to aid seed dispersal (Jones 2006).

Chiloglottis valida is one of 8 native Tasmanian taxa in the genus (one of which is listed on Schedules of the Tasmanian *Threatened Species Protection Act 1999)* and one of 212 native taxa in the Orchidaceae family in Tasmania (de Salas & Baker 2019). The genus *Chiloglottis* has been reviewed in recent years and the morphological forms within the genus have been recognised as distinct genera by some authorities (e.g. Jones 2006) though not in Tasmania (de Salas & Baker 2019). According to this classification, *Chiloglottis valida* belongs to the genus *Simpliglottis* which includes about 12 recognised species from Australia and New Zealand (Jones 2006). This group is distinguished by the broad paired basal leaves with smooth margins, and flowers with broad sepals and petals, a delicately hinged broad labellum and callus glands that are mostly column-shaped (Jones 2006).

The flowering response of species of *Chiloglottis* to fire varies but most species will persist in the absence of flowering. The fire frequency of sites supporting *Chiloglottis valida* in Tasmania has been historically low. Orchids rely on associations with mycorrhizal fungi for germination and growth with disturbance affecting the species directly or indirectly by impacting on their mycorrhizal fungi.

Survey techniques

The peak flowering time of *Chiloglottis valida* in Tasmania appears to be mid-October through to late December (Wapstra 2018). In general, it is difficult to identify species of *Chiloglottis* if not in flower, with the paired basal leaves of most species being superficially similar. However, *Chiloglottis valida* has the largest leaves of all Tasmanian species (to 15 cm long) and the leaves have a well-defined mid-rib extending from the petiole (Plate 1), so it may be possible to identify suspected colonies from vegetative features.

Description

Chiloglottis valida is a perennial herb with a tuber, paired basal leaves and flower scape arising from between the leaves. The leaves are broadly elliptical with an apiculate apex. They are 5 to 15 cm long and 20 to 40 mm wide, dark green and shiny above and lighter below, hairless, and the margins are entire and smooth. The petiole is 10 to 30 mm long extending into a well-defined mid-rib. The scape is 40 to 100 mm tall, green and hairless. The single flower is held stiffly erect, about 35 mm across, green to greenish purple or purplish brown, the labellum with shiny black calli, and a reddish brown column. The dorsal sepal is obovate-spathulate, 19 to 30 mm long, 4 to 7 mm wide, incurved close to the column,

and with an osmophores to 2.5 mm long. The lateral sepals are narrowly linear-lanceolate, 17 to 25 mm long, 3 to 4 mm wide, erect in the proximal half then curved forward, and divergent, with osmophores to 1.5 mm long. The petals are ovate-lanceolate, 17 to 23 mm long, 8 to 11 mm wide, incurved or slightly divergent and strongly curved. The labellum is ovate-cordate, 14 to 18.5 mm long, 12 to 16 mm wide, and held more or less horizontal, with a pale marginal band and slightly darker veins. The calli occupy the proximal central two-thirds of the labellum on a slightly raised plate, extending half to two-thirds of the distance to the apex. The main central gland is erect, 3 to 4 mm long and columnar with a swollen apex. The two basal glands, 1 to 3 pairs of lateral glands and the distal gland are sessile and about 1.5 mm across. The column is 13 to 17 mm long, 7 to 8 mm wide and incurved.

[description based on Jones (1991), Jones (2006), Jones et al. (1999), M. Wapstra pers. obs.]

Plate 2. *Chiloglottis valida* growing in situ on Mount Dial (image by Craig Broadfield)

Confusing species

Chiloglottis valida is a distinctive species when in flower, being the most robust of the "*Simpliglottis*" section of the genus. It is characterised by the large flower, held stiffly erect with incurved petals and thin calli (Plates 1 & 2). In Tasmania, it is superficially similar to *Chiloglottis triceratops* but that species has three crowded column-like basal calli. *Chiloglottis gunnii* is also a robust species but has calli confined to a central band, the basal one stalked with a large swollen head. A key to *Chiloglottis* is provided in Jones et al. (1999) but couplet 5 should be amended to delete reference to scape height.

DISTRIBUTION AND HABITAT

Figure 2. Distribution of *Chiloglottis valida* on mainland Australia
[source: *Atlas of Living Australia*, 1 Jan. 2020]

Chiloglottis valida occurs in New South Wales, the Australian Capital Territory, Victoria and northern Tasmania (Figures 1 & 2).

On mainland Australia, the species is "widespread and common, found in many habitats, including tall moist forest and drier open forest in well-structured loam" (Jones 2006). In Tasmania, until recently, the species was only known from King Island, where its habitat was described as "the shelter of dense swamp paperbark (*Melaleuca ericifolia*) in what would originally have been blue gum (*Eucalyptus globulus*)" (Jones et al. 1999). More specifically, the collection notes indicate that the soils were "grey white sand" in a "moist peaty area" on the "margins of a track cleared through dense *Melaleuca ericifolia* forest". The species was confirmed from the same property 11 years later but from a steeper slope associated with the head of a creekline in shrubby *Eucalyptus brookeriana* wet sclerophyll forest, at about 80 m a.s.l.. The Mount Dial subpopulation occurs in *Leptospermum scoparium* (common teatree, manuka) tall scrub with *Dianella tasmanica* (tasman flaxlily) at about 420 m a.s.l. (Plate 3).

Table 1. Population summary for *Chiloglottis valida* in Tasmania

Location	Subpopulation	Tenure	NRM region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of plants (flowering)
1	**1a** . King Island, Pegarah Road	private property	Cradle Coast	Naracoopa	1998	unknown	"one colony"
	1b. King Island, Pegarah Road	private property	Cradle Coast	Naracoopa	2009	unknown	"small patch" (1)
2	**2a.** Mount Dial	Mount Dial Nature Recreation Area	Cradle Coast	Stowport	2019 2018 (2017)	0.0001 0.0001 0.0001	9 (0) 23 (4) 20 (7)
	2b. Mount Dial	Mount Dial Nature Recreation Area	Cradle Coast	Stowport	2019	0.002	40 (0)

Plate 3. Habitat of *Chiloglottis valida* on Mount Dial (image by Craig Broadfield)

POPULATION PARAMETERS

Number of locations 2
Number of subpopulations 2
Linear extent of occurrence 215 km
Extent of occurrence <215 km^2
Area of occupancy <1 ha (0.0021 ha recorded)
Area of occupancy (as per IUCN criteria) 8 km^2
No. of mature individuals <250 (

Within Tasmania, *Chiloglottis valida* is known from two subpopulations, each with two sites recorded (Table 1). Verification of the second site on Mount Dial does however require the emergence of flowers to confirm its identity. The recorded sites are all highly localised, occupying well less than the conservation status criteria threshold of 1 ha.

Estimating the number of mature individuals for the purpose of applying the criteria for determining the conservation status of species is somewhat problematic for many terrestrial orchids particularly for species where the emergence and flowering response is promoted by favourable climatic conditions or disturbance events. A substitute measure considered suitable for such species has been the sum of the maximum number of flowering plants seen at each site over a number of years. However, this may be an underestimate for colony forming species that have a low proportion of plants that flower, such as *Chiloglottis valida,* particularly as emergence is likely to be more regular in its less disturbance prone habitat. Table 1 indicates that the number of mature individuals for the species is greater than about 10 (the sum of the highest number of flowering plants recorded at each site) to a maximum of about 100 (the total of the number of individuals recorded), well short of the threshold value of 250.

Potential habitat must be regarded as widespread across much of northern Tasmania given that the species is widespread and common on mainland Australia, occurring in a range of vegetation types at different

elevations. However, the fact that this relatively distinctive species has only been recorded twice on King Island, despite some now quite extensive surveys of potential habitat (e.g. Wapstra et al. 2009), and has only recently (2017) been detected on mainland Tasmania, strongly suggests a genuinely disjunct and highly localised distribution and low abundance in Tasmania. That said, further serendipitous detections of the species are possible, and although such discoveries may represent range extensions or infillings, it is highly unlikely that the conservation status of the species would be altered.

RESERVATION STATUS

Chiloglottis valida occurs in the Mount Dial Nature Recreation Area.

CONSERVATION ASSESSMENT

Chiloglottis valida is under consideration for listing as endangered on Schedules of the Tasmanian *Threatened Species Protection Act 1995,* meeting the following criteria:

D: Total population extremely small or area of occupancy restricted, and

1. total population estimated to number fewer than 250 mature individuals;
2. total population with an area of occupancy less than 1 ha and typically in five or fewer locations that provide an uncertain future due to the effects of human activities or stochastic events, and thus capable of becoming extinct in a very short time period.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Land clearing: Given the Tasmanian occurrences represent the southern limit of the distribution of *Chiloglottis valida,* it is possible that the species was never widespread and/or common in the State. However, it is also possible that the small disjunct Tasmanian occurrences are to some extent the result of past clearing and habitat modification. Approximately 70% of the native vegetation on King Island has been cleared or highly modified since European settlement, and includes areas most likely to have supported the species, (Barnes et al. 2002; KINRMG 2002; Finzel 2004). Similarly, clearing and habitat modification has been extensive in areas in the north of the State that would have supported suitable habitat for the species. Land clearing is not identified as a specific threat to any of the known sites at present.

Stochastic events: The small and highly localised occurrences of *Chiloglottis valida* in Tasmania mean that the risk of losses due to chance events, such as unplanned fires (e.g. caused by arson, lightning strikes or fire escapes) or animal diggings, is high, particularly for as yet undetected sites. The sites currently supporting *Chiloglottis valida* have not been visited frequently by people in the past, reducing the risk of inadvertent losses.

Inappropriate disturbance: *Chiloglottis valida* appears to occur in habitats subject to little natural or anthropogenic disturbance in the past. The response of the species to disturbance events, especially fire, is not known, but it is suggested that prescribed burns should largely avoid known sites and supporting habitat until further knowledge is available.

Mountain bike and other trails: The sites of *Chiloglottis valida* on Mount Dial were located adjacent to an existing track and near a proposed mountain bike trail. Targeted extension surveys and consultation with the land manager has resulted in re-routes to avoid occurrences (C. Broadfield pers. comm.). Careful micro-management to avoid disturbance to known sites will reduce the threat posed by mountain bike trails and walking trails during construction but the level of direct or indirect threats posed by increased visitation from the use of new trails is unknown.

Forestry activities: Large areas of potential habitat of *Chiloglottis valida* may occur within potential wood production forests, although most sites suitable for the species are unlikely to be highly suitable for commercial forestry and are likely to be informally excluded from forestry operations.

Lack of secure tenure: The sites on King Island are on private land, and consequently are at risk from a range of unregulated

activities that may impact the species directly or indirectly.

Climate change: It is possible that even minor shifts in average seasonal conditions will have an adverse impact on locally restricted species such as *Chiloglottis valida*, especially given the small size of occurrences, and possible impacts on the mycorrhizal fungi that the species relies on for germination and growth. The risk is exacerbated by the increased frequency and intensity of fires associated with climate change in Tasmania.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the management of *Chiloglottis valida* in Tasmania are to increase the number of known subpopulations through survey, to prevent the inadvertent destruction of subpopulations, maintain the viability of existing subpopulations, and promote conditions for successful recruitment.

What has been done?

Surveys of the Seal River, Grassy River, Yarra Creek, Pegarah State Forest and Naracoopa areas were undertaken by personnel with the Threatened Species Section in 2007 and 2009 (e.g. Wapstra et al. 2009) as part of flora verification projects funded by the Cradle Coast Authority. This resulted in the detection of a novel site on the same property that the species was originally detected on in 1998.

The serendipitous detection of the species in the Mount Dial area was followed by targeted monitoring, and extension surveys were conducted in response to a proposed mountain bike trail, resulting in the detection of a second site and redirection of the proposed trail to avoid direct impacts during construction (C. Broadfield pers. comm.).

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions (coordinated efforts may achieve the best and most efficient results):

- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat;
- monitor known occurrences with respect to extent, abundance, condition of supporting habitat and threats and response to disturbance;
- monitor the second Mount Dial occurrence for the emergence of flowers to enable verification of the identity of the plants;
- undertake extension surveys of potential habitat, radiating out from the known sites, using topographic and vegetation maps as a basis of targeting putatively suitable habitat;
- collect seed for long-term conservation storage at the Tasmanian Seed Conservation Centre (based at the Royal Tasmanian Botanical Gardens).

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