Chiloglottis trapeziformis

broadlip bird-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Mark Wapstra

Scientific name: ***Chiloglottis trapeziformis*** Fitz., *Austral. Orchids* 1(3): t.9 (1877)

Common Name: Broadlip bird-orchid (Wapstra *et al.* 2005)

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

Name History: Recent taxonomic revisions re-classified *Chiloglottis* species into three genera, *Chiloglottis*, *Simpliglottis* and *Myrmechila*, the latter genus including *Mymechila trapeziformis* but this has not gained wide acceptance.

Status: *Threatened Species Protection Act 1995*: **endangered**

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

Distribution: Endemic status: **Not endemic to Tasmania**

Tasmanian NRM Region: **Cradle Coast, North**

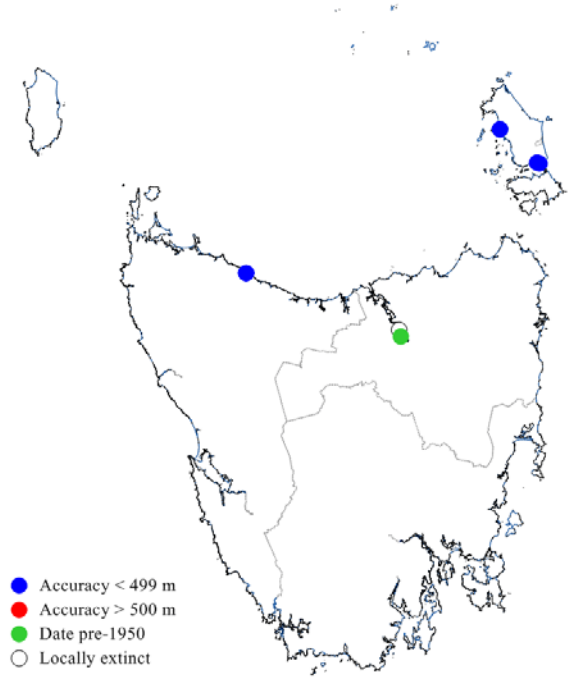

Figure 1. The distribution of *Chiloglottis trapeziformis* within Tasmania

Plate 1. *Chiloglottis trapeziformis* flower from Wynyard
(Image by Mark Wapstra)

IDENTIFICATION AND ECOLOGY

Chiloglottis trapeziformis belongs to a group of orchids commonly known as wasp-, ant- and bird-orchids because of the appearance of the flowers. The genus has been reviewed in recent years and the morphological forms within the genus have been recognised as distinct genera by some authorities (e.g. Szlachetko 2001, Jeanes 2002, Jones & Clements 2005, Jones 2006). According to this taxonomy, *Chiloglottis trapeziformis* belongs to the genus *Myrmechila*.

All species of *Chiloglottis* have 2 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). In the Sydney area, flowers of *Chiloglottis trapeziformis* are pollinated by male thynnine wasps of the genus *Neozeleboria* (Stoutamire 1981). After pollination, the flower stem of all species lengthens considerably prior to seed release (Jones 2006).

Species in the *Myrmechila* group are distinguished from other species of *Chiloglottis* on the basis of their spring-flowering habit, flowers that are held erect or almost so, very short clubs on the sepals and a short labellum. The flower has narrow sepals and petals with very sort apical clubs. The lateral sepals curve sharply downward and diverge beneath the labellum while the petals reflex tightly back against the ovary. The wedge- to diamond-shaped labellum is mostly held erect and has densely packed shiny calli in an arrangement that resembles the body of an ant or a female wasp (Jones 2006).

Chiloglottis trapeziformis can only be positively identified when in flower. The flowering period is August to November (Jones 2006, Wapstra *et al.* 2008), with collections as early as mid August on Flinders Island and early November on mainland Tasmania (Wapstra *et al.* 2008).

The flowering response of species of *Chiloglottis* to fire varies but most species will persist in the absence of flowering. Many species grow in the shelter of shrubs and bracken in damp sites (Jones *et al.* 1999). The fire frequency of sites supporting *Chiloglottis trapeziformis* in Tasmania varies considerably from moderate to high to relatively low.

Description

Chiloglottis trapeziformis have paired ovate-lanceolate leaves that are 5 to 8 cm long and 1.5 to 2.5 cm wide. The leaves are dark green with entire or wavy margins. The petioles are 1 to 3 cm long. The scape is 8 to 12 cm tall and bears a single flower. The flower is held erect to obliquely erect and is about 12 to 16 mm long and 6 to 8 mm wide. The flower is brownish green to reddish brown or purplish. The labellum has shiny black calli and the column is brownish. The dorsal sepal is narrowly obovate-spathulate, 12 to 14 mm long and 3 to 4 mm wide, incurved over the column, and has an osmophore (club on apex) about 1 mm long. The lateral sepals are linear-lanceolate, 13 to 15 mm long and 2.5 mm wide, recurved in the upper two-thirds and widely divergent, with osmophores about 2 mm long. The petals are narrowly oblong, 9 to 11 mm long and 4 mm wide, and reflexed against the ovary. The labellum is diamond-shaped, 10 to 12 mm long and 7 to 8 mm wide. The labellum is held stiffly erect. The calli on the labellum are sessile and crowded in a conspicuous compact central group. The column is 8 to 10 mm long and 4 to 4.5 mm wide.

[description from Jones *et al.* 1999, Jones 2006]

Confusing Species

Chiloglottis trapeziformis is not likely to be confused with other Tasmanian bird-orchids when in flower (Jones *et al.* 1999) because of its spring flowering time and distinctive erect to semi-erect trapezium-shaped labellum.

However, vegetative plants (i.e. paired ground-hugging leaves) cannot be differentiated with certainty from other species of *Chiloglottis*, especially *Chiloglottis reflexa* which is also spring flowering. These species can closely co-occur and leaves can be present all year round so flowering plants are needed for identification.

DISTRIBUTION AND HABITAT

Chiloglottis trapeziformis occurs in Queensland, New South Wales, ACT, Victoria, South Australia (where it may be naturalised) and in northern Tasmania. Within Tasmania it is known from Flinders Island, Great Dog Island (also in the Furneaux group), possibly extinct sites near Legana (north of Launceston) and from Wynyard on the northwest coast (Figure 1).

On the mainland, *Chiloglottis trapeziformis* is a widespread and common species growing in sheltered sites in many habitats from the coast to the ranges in well drained soil (Jones 2006). Its habitat in Tasmania is also quite variable. On Great Dog Island it occurs in teatree and sheoak scrub on sandy humus overlying granite. In the Tamar Valley it occurred in dry, open eucalypt forest and at Wynyard it occurs in moderately drained soils in relatively densely shrubby eucalypt forest (Plate 2).

POPULATION ESTIMATE

There are few recent reliable population estimates available for *Chiloglottis trapeziformis* for any of its recorded locations. In 2008, 7 mature flowers, 3 budding flowers and about 100 leaves were present at the Wynyard site. In the previous year there were only 3 flowering plants (Larcombe 2008). The numbers of flowering plants present at the other sites is largely unknown. A survey of the Pickford Creek location on Flinders Island in 2008 failed to find any plants. This site had been burnt in a 2006 bushfire, but local Parks Ranger Wayne Warren indicated that parts of the subpopulation had escaped the fire. However, surveys in unburnt habitat nearby failed to locate any plants. Previous estimates for the Pickford Creek subpopulation on Flinders Island indicated about 150 leaves (but very few mature flowers) present in 1999, with numbers of plants apparently dwindling on subsequent assessments until no leaves were observed in both 2007 and 2008.

There are large areas of lowland near-coastal forest, woodland and scrub over much of the Furneaux group, other Bass Strait islands and along the north coast of mainland Tasmania that would appear suitable for the species. The species appears to have a highly disjunct distribution in Tasmania and some subpopulations in well-visited locations have only been discovered in recent years. While there may be undetected localised subpopulations present elsewhere in Tasmania, the chance of detection is low.

However, it seems unlikely that subpopulations of *Chiloglottis trapeziformis* large enough to influence its conservation status will be discovered in the future.

Table 1. Population summary for *Chiloglottis trapeziformis*.

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last seen	Area occupied (ha)	Number of mature plants
1	Pickford Creek recreation area, Flinders Island	Crown land	North	Wybalenna	2002	Unknown	Unknown (0 in 2008)
2	Great Dog Island	Private property	North	Fisher	1992	Unknown	Unknown
3	Ecclestone Road north of Launceston	Unknown	North	Dilston	1923	Unknown	Unknown
4	Legana north of Launceston	Private property	North	Launceston	1970	Unknown	Unknown
5	York Street, Wynyard	Council reserve	Cradle Coast	Wynyard	2008	0.0004 (2 x 2 m)	7

* NRM region = Natural Resource Management region.

RESERVATION STATUS

The subpopulation at Wynyard occurs in a Council-managed bushland reserve with no gazetted status. The subpopulation on Flinders Island occurs on Crown land managed as a Public Reserve.

CONSERVATION ASSESSMENT

Chiloglottis trapeziformis was first protected as rare on schedules of the Tasmanian *Threatened Species Protection Act 1995* in 1995. It was uplisted to endangered in 2001, meeting criterion B because there are fewer than 250 mature individuals and its range is severely restricted (it occupies less than 1 hectare, and it is known to be extant in only 1 subpopulation).

Plate 2. Habitat of *Chiloglottis trapeziformis* at the York Street bushland reserve in Wynyard. (Image by Mark Wapstra)

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

It is possible that the distribution of the species within Tasmania represents the southern limit of the distribution of the species and that it was never widespread and/or common in the State. However, it is possible that there were (perhaps still are) other subpopulations elsewhere on the Bass Strait islands and along the north coast. As such it is possible to identify some generic threats, which are probably applicable to many threatened orchid species.

Clearing of potential habitat: Clearing of near-coastal native vegetation may have resulted in, and may still be contributing to, the loss of potential habitat for *Chiloglottis trapeziformis*. The site at Legana is now known to be extinct (residential housing) and this may also be the fate of the Ecclestone Road site (precise location unknown but this area is now heavily developed as a rural-residential zone). Clearing for residential housing has recently occurred almost immediately adjacent to the Wynyard site.

Inappropriate fire regime: The flowering of *Chiloglottis trapeziformis* is unlikely to be strongly related to fire regime because most sites for the species occur in relatively damp vegetation that is burnt infrequently. Frequent low intensity fires (e.g. fuel reduction burning for management purposes) may eventually render habitat unsuitable through loss of litter and understorey shrubs. More intense fires of a more natural frequency may not be directly deleterious to the species but if combined with a frequent low intensity fire regime and/or localised disturbance (e.g. fire-fighting activities), such events may cause local extinctions.

Climate change: While the subpopulations of *Chiloglottis trapeziformis* occur in parts of the State with relatively naturally low rainfall, climatic warming has the potential to further exacerbate the precarious position of the species, particularly if the rainfall pattern changes. This may be further complicated by changed fire regime pressures linked to changes in climatic conditions.

Grazing by snails and native mammals: There is anecdotal evidence that the subpopulation of *Chiloglottis trapeziformis* at Pickford Creek on Flinders Island was being grazed by a small snail (probably a species of *Helicarion*). Whether this is a contributing cause to the apparent decline of the species at this site is unknown. Invertebrate grazing on localised subpopulations of threatened orchids is becoming recognised as a potentially serious issue (e.g. Norris 2007) but there are presently limited mitigation options known. The subpopulation at Wynyard is being disturbed by digging by brown bandicoots. This species is probably digging for tubers and also eating the

slightly succulent leaves. The potential impact of this natural event is unknown but may have significant consequences if combined with other risk factors.

Inadvertent disturbance: At least two subpopulations of *Chiloglottis trapeziformis* are in situations where inadvertent disturbance could deleteriously affect and perhaps even eliminate the species. For example, the subpopulation at Wynyard occurs in a council-managed bushland reserve immediately adjacent to a walking track frequented by many walkers, naturalists and bike riders. It is possible that the subpopulation could be affected by minor track alterations, collection of plants or digging by dogs. Re-directing the walking track is a possible option to alleviate the risk but the presence of the track, which creates infrequent ground disturbance and a slight canopy opening, may be the reason for the persistence of the species at the site. Re-directing the track may also disturb another part of the subpopulation because leaves of *Chiloglottis*, as yet unconfirmed as *Chiloglottis trapeziformis* due to lack of flowers, are frequent in nearby areas. The subpopulation at Pickford Creek on Flinders Island is also in an area frequented by 4WD vehicles and while some guide posts have been positioned and direct traffic away from the plants, damage to the infrastructure by fire, accident or vandalism could increase the risk of inadvertent disturbance to the site.

The precise site of the subpopulation on Great Dog Island requires verification. The site may have been subject to quarrying and track construction activity and may also be threatened by destruction of habitat through fuel collection for muttonbird processing boilers.

MANAGEMENT STRATEGY

What has been done?

Minor infrastructure has been erected near the site of the Pickford Creek subpopulation to direct 4WD vehicles from driving over plants. This has worked successfully and the site of the subpopulation was left undisturbed during fire fighting activities.

Extension surveys were conducted in the Wynyard area in 2008, which included surveys of several bushland patches with similar habitat to the known site. No additional subpopulations were detected, although virtually all sites supported extensive patches of *Chiloglottis* colonies likely to be *Chiloglottis reflexa*. However, given that it is virtually impossible to differentiate vegetative material of *Chiloglottis reflexa* and *Chiloglottis trapeziformis*, a watching brief should be kept on these sites.

Chiloglottis trapeziformis was formally included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006), with a high priority noted for the requirement for a baseline survey of the Great Dog Island subpopulation.

Management objectives

The main objectives for the management of *Chiloglottis trapeziformis* is to ensure that there is no decline in the extant subpopulations.

What is needed?

- resurvey known sites of collection and nearby similar habitat during the week or two either side of the local flowering time (based on collection dates held in databases) in order to confirm the presence of the species and determine management needs;
- develop a site management plan for the subpopulation in the Council reserve at Wynyard, including a fire management strategy to ensure that the site is not affected by a severe fire, and fencing to prevent inadvertent disturbance (and potentially exclude mammal browsers), implemented so as not to draw attention to the site and increase the risk of collection or deliberate disturbance;
- monitor vegetative colonies of *Chiloglottis* in the Wynyard area, especially the York Street reserve that supports *Chiloglottis trapeziformis*,

for flowering to enable identification to species level;

- undertake further extension surveys of potential habitat in nearby areas during the flowering period of the species;
- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies and the local community on the locality, significance and management of known subpopulations and potential habitat;
- collect seed for long-term storage at the Tasmanian Seed Conservation Centre, contingent on sufficient fertile material being present (manual pollination and temporary caging may be required);
- implement the threatened orchid recovery plan (TSU 2006) and include the species in any revision of the plan.

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