Caladenia congesta

blacktongue finger-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by H. & A. Wapstra

Scientific name: ***Caladenia congesta*** R.Br., *Prodr.* 324 (1810)

Common name: blacktongue finger-orchid (Wapstra et al. 2005)

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

Name history: *Stegostyla congesta*

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 Regions: **Cradle Coast, North, South?**

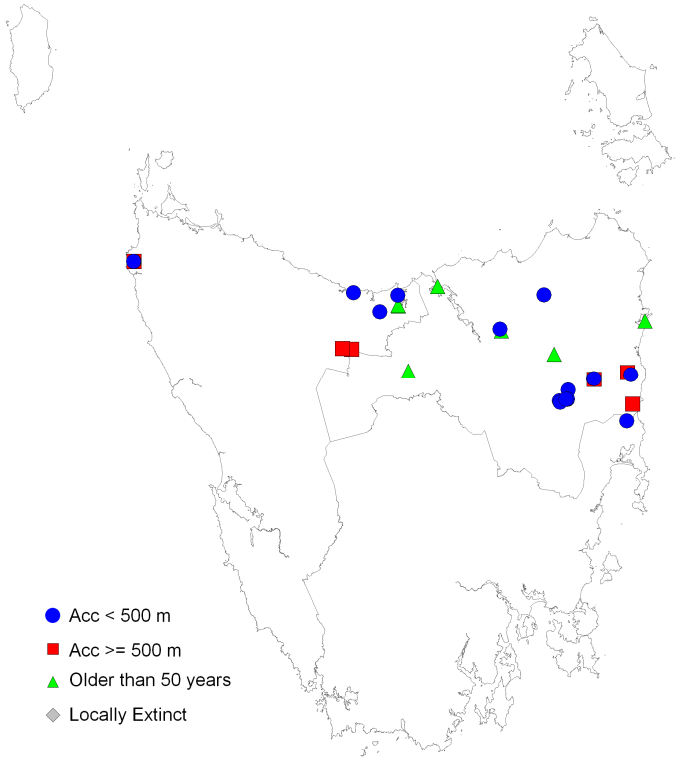

Figure 1. The distribution of *Caladenia congesta* within Tasmania

Plate 1. *Caladenia congesta* from Port Sorell (image by Phil Collier)

SUMMARY: *Caladenia congesta* (blacktongue finger-orchid) is a small herb, found mainly in dry heathland and heathy woodland habitats in lowland areas of the northern half of Tasmania. While recorded from over 20 locations, the data suggest that the total population in Tasmania is small as most sites support only 1 or 2 plants and the species is likely to occupy well less than 1 ha in total, making the species susceptible to losses from chance events. The species and its habitat face a very high risk of inadvertent losses as the precise site of many subpopulations is unknown and the species may avoid detection as it tends to flower and be identifiable infrequently; flowering in response to disturbance such as fire, in non-drought years only. The species has been seen from only 4 sites in the last 20 years suggesting a serious decline. The most important needs of the species are to prevent destruction and degradation of known and potential habitat, and to promote recruitment through burning and/or slashing habitat.

IDENTIFICATION AND ECOLOGY

Caladenia congesta belongs to one of the small-flowered sections of the genus *Caladenia*. It is sometimes included in the genus *Stegostyla* (Jones *et al.* 2001) which is not widely accepted as a separate genus (see Hopper & Brown 2004), despite being distinguished from other sections by the strongly hooded dorsal sepal and separate calli with enlarged yellow or purple spiky heads.

Caladenia congesta reproduces from seed in association with mycorrhizal fungi. All *Caladenia* species are deciduous and die back after flowering to small subterranean tubers enclosed by a fibrous sheath or tunic. The basal leaf appears above ground in late autumn or early winter following rains. Above-ground parts may be destroyed by grazing, drought-stress and fire. Even so, plants can survive into subsequent years because of the presence of the tubers (Jones et al. 1999). However, plants may die if conditions remain unsuitable for successive years and they are unable to emerge and replenish their tubers, for example, if the vegetation becomes overgrown or during periods of prolonged drought.

Caladenia congesta is one of the more cryptic of the *Caladenia* species. Plants grow singly or in small loose groups, and they tend not to flower every year, particularly during dry periods or when shaded, leading to perceptions of decline when the species is not seen over extended periods. As for most *Caladenia* species (Jones *et al.* 1999), flowering is enhanced by summer fires (Jones 2006), with a moderate to high fire frequency in areas where *Caladenia congesta* occurs (Jones et al. 1999). Observations suggest that the species may also respond to slashing. The small size of subpopulations and seemingly infrequent recruitment episodes suggest that local extinction rates may be high and that the species may rely on dispersal of seed by wind from other sources to recolonise or colonise new sites. The flowers are pollinated by small bees of the genus *Hylaeus* (Bates 1982).

Survey techniques

The flowers are used to identify *Caladenia congesta*. The flowering period on mainland Australia is October to January (Jones 2006). In Tasmania, there is a definite peak in flowering in the latter half of November but in colder areas this may extend into early January, making late November to December the recommended survey period (Wapstra *et al.* 2008). In some situations, the identification period can be extended as unpollinated flowers may last up to 10 weeks (Jones et al. 1999), and fertilised flowers may be identifiable by dissection because of the highly distinctive labellum. Surveys are unlikely to be fruitful in potential habitat that is long unburnt or in dry years.

Description

Plants of *Caladenia congesta* are 20 to 60 cm tall, with a thin, wiry and sparsely hairy scape bearing 1 to 4 flowers. The leaf has a reddish base, and is narrowly linear, sparsely hairy, and 12 to 18 cm long and 4 to 5 mm wide. Flowers are up to 30 mm across. They are bright pink internally and brownish pink externally. The labellum is dark pink, with shiny black calli. The dorsal (upper) sepal is narrowly oblanceolate, 16 to 20 mm long and 3.5 mm wide. It is strongly incurved over the column. The lateral (lowermost) sepals are narrowly lanceolate, 16

to 20 mm long and 4 mm wide, divergent, and spreading or obliquely deflexed. The petals are narrowly lanceolate, 16 to 20 mm long and 3 mm wide, widely spreading, and acuminate. The labellum is narrowly ovate, 8 to 10 mm long and 4.5 to 5.5 mm wide, with lateral lobes that are entire, erect and column-embracing. The mid-lobe of the labellum is long and narrow with a protruding recurved tip. The calli of the lamina of the labellum are crowded in 2 rows, forming a congested shiny black mass at the apex of the mid-lobe. The basal calli are stalked, while the rest are sessile. The column is 8 to 9 mm long and 2.5 mm wide and is pink with darker markings.

[description from Jones 1998, Jones 2006, Jones et al. 1999]

Confusing species

Caladenia congesta is unlikely to be confused with other species due to its distinctive labellum, with densely congested black labellum calli that extend to the apex of the midlobe.

DISTRIBUTION AND HABITAT

Caladenia congesta occurs in Tasmania, Victoria, South Australia, ACT and New South Wales. In Tasmania, *Caladenia congesta* extends from the east coast through to the northeast and central north, with a disjunct occurrence on the west coast (Figure 1). It occurs in lowland areas to around 600 m in altitude. The species is mainly found in heathy woodland and open forest, frequently among grass tussocks on slopes. Sites supporting the species are usually dry, with sandy and loamy soils that are often gravelly (Jones et al. 1999). The species has also been found in other open vegetation.

POPULATION PARAMETERS

Over 20 subpopulations of *Caladenia congesta* have been detected in Tasmania (Table 1). While population information is limited, *Caladenia congesta* is renowned for being uncommon and usually localised in its occurrence, with most sites reportedly supporting one or very few individuals. The total area occupied by the species is unlikely to exceed 250 m^2, assuming that the average area occupied by each subpopulation is 10 m^2 or less. The linear extent of the distribution is about 312 km and extent of occurrence about 32,000 km^2.

Though perhaps a result of infrequent and sporadic flowering, the perception of decline of *Caladenia congesta* cannot be discounted as plants have not been observed at many known sites for decades. Decline concerns are heightened as the species is obvious in its surrounds, being difficult to miss even from a distance, and unpollinated flowers are persistent for a long time. Many orchid enthusiasts have not seen the species despite the increased interest in spotting orchids since the early 1990s and a similar flowering period to that of many other orchid species.

The widespread and disjunct distribution of *Caladenia congesta* in Tasmania, combined with its apparent wide habitat preferences, suggests that the species may be detected at further sites. Because of the highly localised occurrences and sporadic flowering, discovery is likely to be serendipitous rather than as a result of targeted surveys.

RESERVATION STATUS

Caladenia congesta occurs in the Mount Roland Regional Reserve, Douglas Apsley National Park, Ben Lomond National Park (possibly), Castle Cary Regional Reserve, Arthur-Pieman Conservation Area and three sites on private property reserved under the Tasmanian *Nature Conservation Act 2002* (Table 1).

CONSERVATION ASSESSMENT

Caladenia congesta was listed as rare on schedules of the *Threatened Species Protection Act 1995* when the Act came into being. The species was uplisted to endangered in 2001, meeting criteria C and D as the total population was estimated to number fewer than 250 mature individuals and a continuing decline was inferred in the number of mature individuals.

Table 1. Population summary for *Caladenia congesta* within Tasmania

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1	Apsley River	unknown	South/ North	Bicheno	1980	unknown	unknown
2	north of Douglas River	Douglas Apsley National Park	North	Seymour	1980	unknown	unknown
3	near Gray	roadside	North	Gray	1997	0.15	2 (1997)
4	radio tower, St Marys	unknown	North	St Marys	1974	0.0001	1
5	Mangana Road	private property (part conservation covenant)	North	Mangana	1990 (1980)	unknown	20-30 (1990)
6	slopes SE Rossarden	State forest	North	Rossarden	1978	unknown	rare
7	Rajah Rock	Castle Cary Regional Reserve	North	St Pauls Dome	1988 (1977)	unknown	unknown
8	west of Rajah Rock	Castle Cary Regional Reserve	North	St Pauls Dome	1991	unknown	unknown
9	Storys Creek Road	private property	North	Hanleth	1974	unknown	unknown
10	Ben Lomond	Ben Lomond National Park?	North	Giblin	1929	unknown	unknown
11	Georges Bay	unknown	North	St Helens	c. 1890s	unknown	unknown
12	Tonganah	unknown	North	Scottsdale	1971	unknown	unknown
13a	Prossers Forest Road (north)	private property	North	Patersonia	1987	unknown	unknown
13b	Prossers Forest Road (south)	private property	North	Nunamara	1944	unknown	unknown
14	Meander River Flats, S of Long Hill	private property	North	Montana	1959	unknown	unknown
15	Georgetown	unknown	North	Bell Bay/ Lowhead	1804	unknown	unknown
16	Port Sorell	private property (with conservation covenant)	Cradle Coast	Port Sorell	2011 (1990s to 2005)	0.007	15*(2008 to 2011) 30-40 (1990s to 2005)
17	Harford	unknown	Cradle Coast	Harford	1932	unknown	unknown
18	Railton	Henry Somerset Orchid Conservation Area (private reserve)	Cradle Coast	Latrobe	1983	unknown	not many
19	Stubbs Road near Turners Beach	private property	Cradle Coast	Ulverstone	1970	unknown	unknown
20	Gowrie Park	Mount Roland Regional Reserve?	Cradle Coast	Cethana	1983	unknown	unknown
21	near Cethana	Mount Roland Regional Reserve?	Cradle Coast	Cethana	1973	unknown	unknown
22	Black Bull Scrub	Arthur-Pieman Conservation Area	Cradle Coast	Marrawah	2009 (1974)	unknown	2 (2009) 1 (2008) 2 (1999)

NRM region = Natural Resource Management region
* cumulative count of plants tagged between 2008 and 2011 (2 plants flowered in 2011)

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The largest impediment to the management of *Caladenia congesta* in Tasmania is its small size of subpopulations and cryptic nature, with plants only appearing to flower in response to disturbance events, which tend to be infrequent where the species has been found. This has resulted in the species being seen only rarely, and the precise location of many subpopulations is not known, particularly for older recordings. Potential habitat is not easily defined due to the seeming wide habitat preferences of the species, further hampering management. The sporadic observations of the species make it difficult to determine the veracity of what appears to be a serious decline. Risks to the species are exacerbated by possible non-emergence in unfavourable conditions, and the relationship with mycorrhizal fungi which may make the species susceptible to additional factors.

Inappropriate disturbance: As *Caladenia congesta* requires light and some space to allow regular emergence, growth and seed-set, it may be out-competed, resulting in local extinctions as its habitat becomes dense over time in the absence of disturbance. As flowering appears to be associated with disturbance and *Caladenia congesta* appears to occur in areas that are subject to infrequent disturbance events, recruitment episodes would appear to be limited. The flowering of *Caladenia congesta* is strongly enhanced by summer fires (Jones et al. 1999). However, fire management in potential habitat for the species is usually directed towards preventing the type of high intensity broadscale fires considered ideal to stimulate flowering. A more frequent lower intensity fuel reduction fire regime is unlikely to benefit the species and in the long term may reduce habitat quality. At least 2 subpopulations occur in remnant vegetation subject to periodic roadside slashing, suggesting that slashing may allow subpopulations to persist. Observations at Port Sorell suggest that severe drought may perform a similar function to disturbance by reducing competition and promoting flowering when the drought breaks.

Land clearing: In Tasmania, threats to *Caladenia congesta* may have included extensive land clearing, but the extent to which this factor has, and continues to, operate is unknown. It is likely that land clearance has fragmented the distribution of the species. This potentially reduces the proximity of a seed source for sites where the species previously occurred but was lost through competition, thereby reducing the ability for the species to recolonise sites following gap forming disturbance.

Road maintenance works: Periodic slashing of roadsides does not seem to be deleterious to the subpopulation near Gray (M. Wapstra pers. obs.) but some works (e.g. weed spraying) may result in local extinctions.

Forestry activities: Large areas of potential habitat of *Caladenia congesta* occur within potential wood production forests, although most sites suitable for the species are unlikely to be highly suitable for commercial forestry and would be probably be excluded from forestry operations.

Collection: While sites supporting *Caladenia congesta* are infrequently visited by people, the picking of flowers is a low, but genuine, risk to a species occurring in low numbers at highly localised sites.

Stochastic events: The small size of subpopulations, uncertainty as to their precise location, and the cryptic nature of the species make the species highly susceptible to losses from inadvertent activity and chance events.

MANAGEMENT STRATEGY

What has been done?

- The emergence and flowering of plants in the Port Sorell subpopulation have been monitored annually by the current owners since 2007 (P. Collier, pers. comm.). The property was initially acquired in 2003 to protect its natural values and is now being managed under covenant by fire and slashing to maintain the diversity of orchids (including *Caladenia congesta*) and other natural values on the property.

- *Caladenia congesta* was formally included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006).

Management objectives

The main objectives for the management of *Caladenia congesta* in Tasmania are to increase the number of known subpopulations through survey and to ensure that all subpopulations do not decline by protecting and managing habitat.

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.

- survey areas in the vicinity of observations with imprecise location details to determine the precise location, size and management needs of the subpopulations, though surveys may need to be conducted following fire or other disturbance in non-drought years;
- determine the status, size and management needs of other subpopulations that have not been seen for several years;
- undertake extension surveys in potential habitat radiating out from known sites and focussing on more recently disturbed areas in non-drought years;
- monitor a subset of subpopulations annually to determine response to disturbance and drought;
- regenerate declining subpopulations by burning or slashing if the vegetation has become overgrown;
- improve the species' reservation status and/or develop management agreements with private landowners and public land managers, and ensure that current priorities for the species are incorporated into the Private Land Conservation Program's (DPIPWE) reservation strategies;
- 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;
- collect seed and associated mycorrhizal fungi for long-term conservation storage at the Tasmanian Seed Conservation Centre, which is based at the Royal Tasmanian Botanical Gardens;
- implement the threatened orchid Recovery Plan (TSU 2006) and include the species in any revision of the plan.

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Contact details: Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44, Hobart, Tasmania, Australia, 7001. Ph (03) 6233 6556; fax (03) 6233 3477.

Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.