Caladenia campbellii

thickstem fairy fingers

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Matthew Larcombe

Scientific name: ***Caladenia campbellii*** D.L.Jones, *Austral. Orchid Res.* 3: 25 (1998)
Common name: thickstem fairy fingers (Wapstra et al. 2005)
Group: vascular plant, monocotyledon, family **Orchidaceae**
Name history: *Petalochilus campbellii*

Status: *Threatened Species Protection Act 1995*: **endangered**
Environment Protection and Biodiversity Conservation Act 1999: **Critically Endangered**

Distribution: Endemic status: **Endemic to Tasmania**
Tasmanian NRM Region: **Cradle Coast**

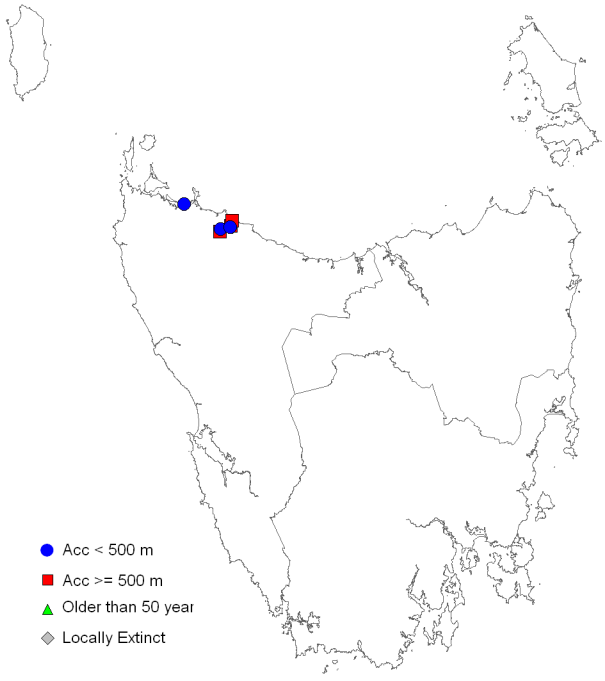

Figure 1. Distribution of *Caladenia campbellii, showing NRM regions*

Plate 1. *Caladenia campbellii* from Devils Elbow Road (image by Matthew Larcombe)

IDENTIFICATION AND ECOLOGY

Caladenia campbellii belongs to one of the small-flowered sections of the genus *Caladenia*, sometimes included in the genus *Petalochilus* (Jones et al. 2001). This group of *Caladenia* species is distinguished morphologically from other sections by the labellum calli being separate from each other (not on a plate-like structure) and usually arranged in two rows. The heads of individual calli are enlarged and the basal calli are larger than and usually of a different colour to the other labellum calli. The labellum and column are usually ornamented with prominent red transverse bars (Jones et al. 2001).

Plants grow singly or in loose groups. Flowering plants usually have a single narrow hairy dark green basal leaf, a thin wiry hairy flower stem and 1 to 5 flowers that are usually white or pink. The perianth segments are all of a similar size although the dorsal sepal can be shorter in some species. The dorsal sepal is erect or recurved away from the column and labellum. The lateral sepals and petals project forward or spread like the fingers of a hand. The labellum is hinged and 3-lobed with erect lateral lobes and a projecting or recurved mid-lobe that is ornamented with short marginal teeth. The calli are stalked and clubbed, often with yellow to orange heads and usually arranged in two rows, sometimes four in some species (Jones 2006).

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. The larger-flowered species in the *Petalochilus* group of species are pollinated by small native bees and the smaller-flowers species are mostly self-pollinating, sometimes without opening (Jones 2006). *Caladenia campbellii* is one of the smaller-flowered species and has short-lived flowers that are self-pollinating (Jones 2006).

Caladenia campbellii has a short flowering period with most collections in the first two weeks of November but also a few in the last half of October (Wapstra et al. 2008).

The response of species of *Caladenia* to fire varies but most species respond vigorously to high intensity fires during the preceding summer (Jones et al. 1999). The precise response of *Caladenia campbellii* to fire is unknown but its habitat is generally considered to be fire-prone with a relatively high fire frequency.

Description

Plants are 8 to 14 cm tall. The scape is relatively thick (to 1.5 mm diameter) and sparsely hairy. The leaf is erect, narrowly linear, dark green, sparsely hairy, and is 4 to 9 cm long and 2 to 3 mm wide. The inflorescence is 1 or 2 flowered, with the flowers being short-lasting and self-pollinating. Flowers are 15 to 18 mm across. The flowers are cream internally and pinkish externally. The labellum is cream with reddish bars, a yellowish apex, and yellow to orange calli. The dorsal (upper) sepal is narrowly ovate-oblong, erect to incurved, and 8 to 10 mm long and 3 mm wide. The lateral (lowermost) sepals are oblanceolate, porrect and slightly divergent, and 8.5 to 11 mm long and 3 to 3.5 mm wide. The petals are narrowly obovate, incurved, and 5.5 to 6.5 mm long and 6 to 7 mm wide. The labellum is ovate, and 5.5 to 6.5 mm long and 6 to 7 mm wide. The lateral lobes are obliquely erect with entire to shallowly irregular margins. The mid-lobe is narrowly ovate, recurved, with 1 broad pair of marginal calli that are up to 0.5 mm long. The lamina calli are in 2 somewhat irregular rows and extend to the base of the mid-lobe. The column is cream with red bars, and 5 to 6.5 mm long and 3.5 mm wide.

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

Confusing species

Caladenia campbellii is most easily confused with *Caladenia alata*, to which it is closely related (Jones et al. 1999). *Caladenia campbellii* has a broader concave leaf (2 to 3 mm wide), a thicker scape (to 1.5 mm diameter), larger and more rounded flower segments, more broadly rounded and widely spreading lateral labellum lobes and a larger column.

Table 1. Population summary for *Caladenia campbellii*

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1	Devils Elbow Road – Duniams Road	Crown land & private property	Cradle Coast	Mawbanna	2009 (1994)	1–2	c. 150
2	Newhaven Road (3 sites)	State Forest	Cradle Coast	Mawbanna	1995, 2007 & 2010	Unknown	'… a few'
3	Thousand Acre Plain	Private property	Cradle Coast	Stanley	2006	Unknown	10+

* NRM region = Natural Resource Management region; the species' identity at Thousand Acre Plain and one of the Newhaven Road sites remains to be confirmed.

DISTRIBUTION AND HABITAT

Caladenia campbellii is endemic to Tasmania (Jones et al. 1999). The species is known from a few scattered localities on the northwest coast (Figure 1). It grows on slopes and ridges on rolling hills in stunted coastal and near-coastal scrub and forest on well-drained sandy loams and gravelly loams over clay (Jones 1998, Jones et al. 1999; Plate 2). The dominant eucalypt is the endemic *Eucalyptus nitida* (western peppermimt), and the elevation range of confirmed sites is 70 to 165 metres above sea level; the unconfirmed Thousand Acre Plain site is close to sea level.

Plate 2. *Caladenia campbellii* habitat at Devils Elbow Road (image by Matthew Larcombe)

POPULATION ESTIMATE

The total population of *Caladenia campbellii* is thought to consist of fewer than 250 mature individuals in two or possibly three highly localised subpopulations (Table 1).

Although it is possible that additional subpopulations of *Caladenia campbellii* exist, detection is likely to be a chance event given the species' preferred habitat is a relatively widespread vegetation type in northwestern Tasmania.

RESERVATION STATUS

Unreserved.

CONSERVATION ASSESSMENT

Caladenia campbellii was listed in 2001 as endangered on the schedules of the Tasmanian *Threatened Species Protection Act 1995*. The species meets criterion D: total population estimated to number fewer than 250 mature individuals.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Caladenia campbellii occurs at a few highly localised sites and in consequence is at risk of extinction from chance events. The small size of subpopulations may also lead to inbreeding problems, possibly in combination with insufficient maintenance of populations of pollinating insects and associated mycorrhizal fungi.

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 *Caladenia campbellii*. The largest known subpopulation occurs in forest/scrub remnants close to agricultural land, and further clearing is a potential threat.

Part of the Devils Elbow Road subpopulation occurs on Crown land that has been recommended for sale (CLAC Project Team

2006), though the sale is contingent upon an 'investigation of any significant conservation values and suitable means to protect them'.

Inappropriate fire regime: The ecological requirements of *Caladenia campbellii*, especially in relation to the frequency, timing and intensity of fires, is largely unknown but it may be adversely affected by frequent high intensity fires that affect the litter and soil conditions. There has been no controlled fire management at the known sites for *Caladenia campbellii*.

Forestry activities: Large areas of potential habitat of *Caladenia campbellii* occur within State Forest, although most sites suitable for the species are unlikely to be highly suitable for commercial forestry. The effect of such activities on the species has not been formally documented. The subpopulation on Newhaven Road occurs on State Forest but at least one is unlikely to be affected by forestry activities due to its roadside context (though the latter site is slashed periodically).

Inappropriate disturbance regime: The subpopulation along Devils Elbow Road is periodically disturbed, including by trail bikes using eroded tracks close to the road, vehicle disturbance to soil and understorey vegetation near apiary sites, potential invasion by radiata pine wildlings from nearby mature fertile trees, and inadvertent disturbance from roadside works. Taken alone each of these factors may not have a significant impact on the species, but combined their effect is likely to be deleterious.

The site near Stanley occurs on private property and is subject to grazing by cattle.

Climate change: Changes in the rainfall pattern may lead to habitat becoming unsuitable for the species and associated pollinators and mycorrhizal fungi.

Stochastic events: While stochastic events are by definition unpredictable, in this case, such events are most likely to be associated with events such as unintended fires (e.g. arson, lightning strikes).

MANAGEMENT STRATEGY

What has been done?

Monitoring of the subpopulation at Devils Elbow Road was undertaken in 2007 and 2008 (Larcombe 2008), with fencing erected in May 2009 to protect plants from disturbance by motor bikes (Larcombe 2009); the latter activity was funded by the Cradle Coast Authority.

Caladenia campbellii was included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (Threatened Species Unit 2006).

Management objectives

What is needed?

The main objective for the management of *Caladenia campbellii* is to ensure that there is no decline in the known subpopulations:

- undertake surveys of the known sites to determine their precise extent, condition. and management requirements;
- collect specimens from unconfirmed sites to determine their taxonomic status;
- undertake surveys for the species in potential habitat on the northwest coast between Boat Harbour and Stanley;
- ensure that management of the Crown land supporting the species along Devils Elbow Road and Duniams Road is appropriate to the species' requirements;
- improve management arrangements for unreserved subpopulations through liaison with private landowners via private land conservation programs;
- 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.

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www.dpipwe.tas.gov.au/threatenedspecieslists

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.