

Pterostylis cucullata subsp. *cucullata*

leafy greenhood

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image by Matt Larcombe

Scientific name: *Pterostylis cucullata* R.Br., *Prodr.* 327 (1810) subsp. *cucullata*

Common name: leafy greenhood (Wapstra et al. 2005)

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

Name history: *Pterostylis cucullata*

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

Distribution: Endemic status: **Not endemic to Tasmania**
Tasmanian NRM Regions: **Cradle Coast, North**

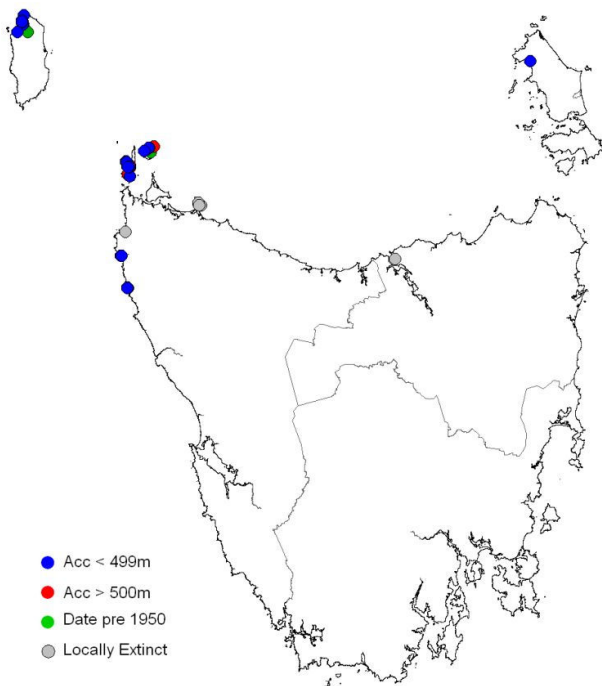


Figure 1. Distribution of *Pterostylis cucullata* subsp. *cucullata* within Tasmania



Plate 1. *Pterostylis cucullata* subsp. *cucullata*
(image by Richard Schahinger)

IDENTIFICATION AND ECOLOGY

Pterostylis cucullata subsp. *cucullata* is a terrestrial orchid with a loose basal rosette of large dark-green, elliptical leaves and an underground tuber. It has a flowering stem up to 12 cm tall with a solitary semi-nodding flower (Jones 2006). The species can be identified when flowering from October to November, with a peak in early November (Wapstra et al. 2008).

Pterostylis cucullata subsp. *cucullata* belongs to a group of orchids commonly known as greenhoods because the dorsal sepal and petals are united to form a predominantly green, hood-like structure that dominates the flower. When triggered by touch, the labellum flips inwards towards the column, trapping any insect inside the flower, thereby facilitating pollination as the insect struggles to escape (Jones et al. 1999).

The specific pollination vector for the species is unknown, although greenhood flowers in general are pollinated by gnats and occasionally by mosquitoes in larger species. Some species may also be self-pollinating.

Pterostylis cucullata subsp. *cucullata* grows on calcareous dunes in near-coastal areas, and generally occurs in shaded sites. Wind and salt pruning contribute to the maintenance of habitat suitable for the species in more exposed areas, while grazing by native animals and fire are likely to play significant roles in suppressing potentially invasive dune scrubs.

Description

Pterostylis cucullata subsp. *cucullata* has 5 to 7 fleshy dark green leaves in a loose, stem-encircling basal rosette. The leaves are oblong to elliptical, 40 to 100 mm long and 15 to 30 mm wide. The solitary, semi-nodding flower is 35 to 40 mm long and 20 to 25 mm wide, on a stout stem, 5 to 12 cm tall, with the uppermost leaf sheathing the base of the flower. The flowers are green, white and dark reddish brown. The hood is curved forward in a semicircle with the shortly hairy, lateral sepals, loosely embracing the hood. The lateral sepals are fused at the base, with the free ends often curved and 9 to 12 mm long. The labellum is

dark brown, oblong and 14 to 17 mm long, and is shortly curved near the apex. [description by Jones et al. 1999, Jones 2006]

Taxonomic issues

Pterostylis cucullata subsp. *cucullata* is a short coastal subspecies of *Pterostylis cucullata*, a taxon described originally from a specimen collected at Port Dalrymple in northern Tasmania sometime prior to 1810 (Jones et al. 1999). *Pterostylis cucullata* is now considered to comprise three subspecies (DEWHA 2009) including a tall subspecies from forests in inland Victoria and South Australia (*Pterostylis cucullata* subsp. *sylicola*), and a yet to be described species from Barrington Tops, New South Wales.

Confusing species

None in Tasmania (Jones et al. 1999).

DISTRIBUTION AND HABITAT

On mainland Australia *Pterostylis cucullata* subsp. *cucullata* occurs in southern Victoria where it is considered to be extremely rare and in South Australia where it is thought to be extinct (Jones 2006, DEWHA 2009).

In Tasmania *Pterostylis cucullata* subsp. *cucullata* is known from near-coastal areas in the northwest, including King Island, Hunter Island and Three Hummock Island, with an outlying occurrence on Flinders Island (Figure 1). There are also nineteenth century records from the north coast at Circular Head and George Town, though these sites are now presumed to be extinct (Table 1).

Pterostylis cucullata subsp. *cucullata* grows on near-coastal calcareous dunes and sand-sheets, within closed scrubs dominated by either *Leptospermum laevigatum* (coast teatree) or *Beyeria lechenaultii* var. *latifolia* (pale turpentine-bush). Associated species include *Leucopogon parviflorus* (coast beardheath), *Poa poiiformis* var. *poiiformis* (coastal tussockgrass) and *Poa rodwayi* (velvet tussockgrass). The sites are typically sheltered, facing south or south-easterly to westerly, with seasonally damp but well-drained humus-rich sandy loams, often with moss and deep leaf litter.

In Tasmania the species grows within an altitude range of 10 to 30 m above sea level. It has a linear range of 350 km, an extent of occurrence of 31,400 km² (which includes large areas of sea), and an area of occupancy of about 80 ha (Table 1).



Plate 2. *Pterostylis cucullata*: coast teatree habitat on King Island (image by Richard Schahinger)

POPULATION ESTIMATE

Pterostylis cucullata subsp. *cucullata* is known from at least 16 extant subpopulations in Tasmania, with a total of around 10,000 to 11,000 plants (Table 1). The subpopulations on King Island appear to be the most extensive, with an absolute count of over 6,500 individuals in 2008/2009 (Branson 2008; Threatened Species Section surveys). Flowering plants typically comprise about 10% of any given subpopulation, with fewer flowers in more exposed situations.

The plant numbers cited above are considered to be conservative due to the difficulties associated with locating the species in its shrubby habitat. It is also likely that additional subpopulations occur in large areas of unsurveyed potential habitat on private property on both King and Flinders Island, and in large areas of reserved habitat on Three Hummock Island.

RESERVATION STATUS

Pterostylis cucullata subsp. *cucullata* is reserved in Arthur-Pieman Conservation Area, Hunter Island Conservation Area and Three Hummock Island State Reserve.

CONSERVATION ASSESSMENT

Pterostylis cucullata subsp. *cucullata* was listed as rare (as *Pterostylis cucullata*) on the original schedules of the Tasmanian *Threatened Species Protection Act 1995*. It was uplisted to endangered in 2002 when the species was thought to be extinct on mainland Tasmania (Jones et al. 1999).

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The greatest threats to the known *Pterostylis cucullata* subpopulations in northwestern Tasmania and the Bass Strait islands are land clearance, cattle grazing and inappropriate fire regimes. Climate change and stochastic events also pose a threat to the species, while browsing by garden snails may have a local impact.

Habitat loss: Considerable areas of potential habitat on the northwest coasts of Tasmania are likely to have been lost in the past as a result of dune destabilisation in the 19th century triggered by a combination of cattle and fire (Stockton 1982), with the subsequent planting of the introduced marram grass (*Arenaria ammophila*) creating habitat unsuitable for the species. In addition, available habitat along Tasmania's northern coastal strip has been reduced significantly as a result of past agricultural and urban development.

All known subpopulations on King Island and Flinders Island are on private land, and consequently are at risk from a range of activities that can lead to degradation and loss of habitat.

Cattle grazing and fire: Much of the species' preferred habitat in Tasmania has been burnt at frequent intervals to maintain grasslands and grassy shrublands suitable for cattle grazing. Cattle grazing and associated activities may lead to physical trampling of the species, as well as causing dune destabilisation, nutrient enrichment and the introduction of weeds. Cattle continue to be an issue of concern for the subpopulations on King and Hunter Islands, as well as the Possum Banks subpopulation in Arthur-Pieman Conservation Area.

Table 1. Population summary for *Pterostylis cucullata* subsp. *cucullata* in Tasmania

	Subpopulation	Tenure	NRM region	1:25 000 mapsheet	Year last (first) seen *	Area of occupancy (ha)	Number of plants
1	King Island (Rocky Point)	Private	Cradle Coast	Wickham	2009 (2009)		1
2	King Island (Cape Wickham)	Private	Cradle Coast	Wickham	2009 (1998)	1 ^	1700–1900
3	King Island (Yellow Rock north)	Private	Cradle Coast	New Year	2008 (2008)	5 ^	2000
4	King Island (Yellow Rock middle)	Private	Cradle Coast	New Year	2009 (2009)	27 ^	1700
5	King Island (Yellow Rock south)	Private	Cradle Coast	New Year	2009 (1998)	21 ^	1060
6	Three Hummock Island (North)	State Reserve	Cradle Coast	Rochon	2002	0.12	76
7	Three Hummock Island (South)	State Reserve	Cradle Coast	Kerauden	2002	0.02	20
8	Three Hummock Island (West Telegraph)	State Reserve	Cradle Coast	Kerauden	2008	1	32
9	Hunter Island (Lighthouse Dune system)	Conservation Area	Cradle Coast	Cuvier	2002	0.02	150 (3 sites)
10	Hunter Island (Cuvier Bay track)	Conservation Area	Cradle Coast	Cuvier	2002	0.001	10
11	Hunter Island (Homestead Lagoon)	Conservation Area	Cradle Coast	Cuvier	2002		100
12	Hunter Island (Homestead Dune system)	Conservation Area	Cradle Coast	Cuvier	2002	9 ^	900 (7+ sites)
13	Hunter Island (South)	Conservation Area	Cradle Coast	Cuvier	2001		2+
14	Arthur-Pieman (Gardiner Point)	Conservation Area	Cradle Coast	Bluff	2007 (2001)	0.004	23
15	Arthur-Pieman (Possum Banks)	Conservation Area	Cradle Coast	Temma	2007 (2002)	9 ^	2000–3000
16	Flinders Island (Tanners Bay)	Private	North	Tanner	2008 (2005)	0.0004	11
17	Marrawah		Cradle Coast	Marrawah	1906 (1906)	Presumed extinct	
18	Circular Head		Cradle Coast	Stanley	1900? (1837)	Presumed extinct	
19	Near George Town		North	Bell Bay	1844 (prior to 1810)	Presumed extinct	

* first collected from King Island in 1888, Three Hummock Island in 1944 and Hunter Island in 1971; ^ Area of occupancy taken to be the subpopulation's extent of occurrence.

Cattle grazing on Hunter Island is currently the subject of negotiations between the Tasmanian Parks and Wildlife Service and a preferred leaseholder, while the agistment of cattle in the Arthur-Pieman Conservation Area is governed by prescriptions in the *Arthur-Pieman Conservation Area Management Plan* (PWS 2002).

Fire management of the species' coastal dune habitat may be a pertinent issue in less exposed sites, with the likely development of invasive scrub vegetation in the absence of targeted ecological burns. In terms of those subpopulations on public land, only those within the Arthur-Pieman Conservation Area have a fire management plan in place (PWS 2003). Prescriptions are being developed for Hunter Island Conservation Area as part of a grazing lease, while passive fire management is expected to continue into the foreseeable future for Three Hummock Island State Reserve.

Browsing by garden snails: The introduced brown garden snail (*Helix aspersa*) was cited as a threat to the Hunter Island subpopulations by Jones et al. (1999), though more recent surveys by Threatened Species Section personnel have not revealed any substantive impact (Dalglish & Schahinger 2006).

Climate change & stochastic events: A reduction in rainfall associated with global climate change may lead to a diminution of suitable habitat and also exacerbate the risk of fire, while the small size of some of the subpopulations exposes them to a stochastic risk of extinction.

MANAGEMENT STRATEGY

What has been done?

- Baseline surveys of known sites were conducted in 2002 (Dalglish & Schahinger 2006).
- The Possum Banks site in the Arthur-Pieman Conservation Area has been identified as a cattle exclusion area (Schahinger 2002). It is anticipated that an area containing about half the known plants will be fenced in the near future.
- A management plan and fire management plan has been published for the Arthur-

Pieman Conservation Area (PWS 2002, 2003).

- Potential habitat in the Arthur-Pieman Conservation Area between Preminghana and the Interview River was surveyed in 2001 and 2004 (Schahinger 2002, 2005).
- Extension surveys of suitable habitat were undertaken in 2007, 2008 and 2009. Target areas included the Arthur-Pieman Conservation Area, King Island, Three Hummock Island and Flinders Island. The surveys revealed the presence of significant new subpopulations on King Island and Three Hummock Island, and increased the number of known plants in the Arthur-Pieman Conservation Area.
- The species was included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006).

Management objectives

The main objective for the recovery of *Pterostylis cucullata* subsp. *cucullata* is to prevent the inadvertent destruction of subpopulations, maintain the viability of existing subpopulations, and promote conditions for its successful recruitment.

What is needed?

- provide information and extension support to the Cradle Coast and Northern Natural Resource Management committees, relevant local councils, government agencies and the local community on the locality, significance and management of known *Pterostylis cucullata* subsp. *cucullata* subpopulations and areas of potential habitat;
- undertake extension surveys to determine the species' full extent on King, Three Hummock and Flinders islands (including determining the status of all reported but undescribed subpopulations, and the identification of management issues);
- pursue increased security and improved management of subpopulations on private land through private land conservation programs;

- prepare and implement fire and grazing management plans for Hunter Island and Three Hummock Island to take the requirements of the species into account;
- monitor known subpopulations at two-yearly intervals to determine the level of recruitment and/or plant loss and to better inform management prescriptions;
- implement the threatened orchid recovery plan (TSU 2006) and include the species in any revision of the plan.

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- Prepared** in 2009 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Approved by the Secretary and published in July 2010.
- Cite as:** Threatened Species Section (2010) *Listing Statement for Pterostylis cucullata subsp. cucullata (leafy greenhood)*, Department of Primary Industries, Parks, Water and Environment, Tasmania.
- View:**
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.