grassland greenhood

Pterostylis ziegeleri

TASMANIAN THREATENED FLORA LISTING STATEMENT

Scientific name:	***Pterostylis ziegeleri*** D.L.Jones, *Austral. Orchid Res.* 3:158 (1998)
Family:	Orchidaceae
Common name:	grassland greenhood (Wapstra *et al.* 2005)
Name history:	*Pterostylis cycnocephala* sensu W.M.Curtis (1979)
Status:	*Threatened Species Protection Act 1995*: **vulnerable** *Environment Protection and Biodiversity Conservation Act 1999*: **Vulnerable**
Distribution:	Endemic status: **endemic to Tasmania** Tasmanian NRM Region: **Cradle Coast, North & South**

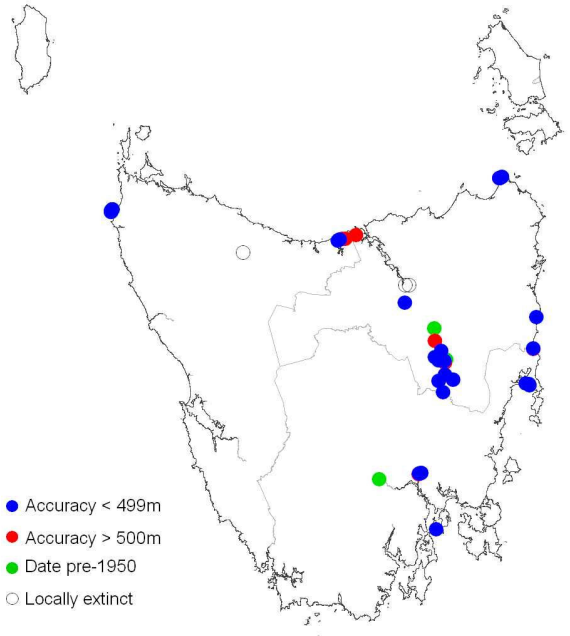

Figure 1. Distribution of *Pterostylis ziegeleri*.

Plate 1. *Pterostylis ziegeleri* (Photograph: D. Tng).

DESCRIPTION AND ECOLOGY

Pterostylis ziegeleri is a terrestrial orchid with a basal rosette of dark-green, oval leaves and an underground tuber. The flowering stem is up to 20 cm tall and has 2 to 24 small flowers crowded at the end of the stem (Jones 1998). It can only be identified during its flowering season, September to December.

It is endemic to Tasmania, growing in scattered colonies in near-coastal areas, and in grassy habitat in the Midlands.

Pterostylis ziegeleri 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 (Jones *et al.* 1999). When triggered by touch, the labellum flips inwards towards the column, trapping any insect inside the flower, thereby aiding pollination as the insect struggles to escape. Greenhoods are deciduous terrestrials that have fleshy tubers, which are replaced annually. At some stage in their life cycle all greenhoods produce a rosette of leaves.

The circumscription of *Pterostylis ziegeleri* D.L.Jones has been expanded since the publication of *The Orchids of Tasmania* (Jones *et al.* 1999) to include Tasmanian plants formerly assigned to *Pterostylis cycnocephala*. True *Pterostylis cycnocephala* is now considered to be confined to mainland Australia (CHAH 2006).

Identification

Pterostylis ziegeleri has a rosette of leaves that encircles the base of the flower stem. The 6 to 12 leaves are dark green, crowded and oval shaped, 12 to 25 mm long and 8 to 18 mm wide. In flower, the plants are generally 8 to 20 cm tall, though in dry years the plants may remain as short as 5 cm. They have 2 to 24 moderately crowded bright green and white flowers. The hood apex curves down and terminates with a short tip. The two lateral sepals hang down and are fused to form a pouch below the labellum though the tips may remain free. The labellum, which also hangs down, is thin-textured, pale green and oblong and has an appendage that points out with a dark green, knob-like apex with a pointed beak about 0.9 mm long. In all, the flowers are 7 to 9 mm long and 4 to 4.5 mm wide. (Description from Jones *et al.* 1999)

Confusing Species

Ptersotylis wapstrarum, which co-occurs with *P. ziegeleri* at the Pontville Small Arms Range Complex, has a labellum appendage that curves back into the flower (Jones *et al.* 1999).

DISTRIBUTION AND HABITAT

Pterostylis ziegeleri is endemic to Tasmania (Buchanan 2007). It is known from widely separated localities ranging from lowland coastal regions in the northwest, north and east, and in the Midlands to 300 m altitude (Figure 1). In coastal areas it is found on the slopes of low stabilised sand dunes and in grassy dune swales, while in the Midlands it grows in native grassland or grassy woodland on well-drained clay loams derived from basalt (Jones *et al.* 1999).

The species has a linear range of 330 km, an extent of occurrence 43,000 km^2, and an area of occupancy of about 20 to 25 ha (Table 1).

RESERVATION STATUS

Pterostylis ziegeleri has been recorded from Musselroe Bay Conservation Area, Lagoons Beach Conservation Area, West Point State Reserve and Narawntapu National Park. Its continued presence in the latter reserve is in doubt, however, as it has not been seen in recent years and the habitat may have become too overgrown for it to have survived.

POPULATION ESTIMATE

There are 25 to 30 known subpopulations, though some of these are now thought to be extinct (Table 1). The total number of *Pterostylis ziegeleri* is estimated to be six to seven thousand plants, with the largest subpopulation, at Crooked Billet (Brighton) consisting of three to four thousand plants.

Table 1. Population summary for *Prasophyllum ziegeleri*.

	Subpopulation	Tenure	NRM Region	1:25,000 mapsheet	Year last (first) seen	Area occupied (ha)	Number	Threats
1	**Fort Direction**	Commonwealth Dept. of Defence	South	Blackmans Bay	2007 (2005)	0.04–0.05	470	Rabbits, snails
2	**Crooked Billet, Brighton**	Private land	South	Tea Tree	2008 (2008)	3.4	3800 ±1000	Clearance, over-grazing, drought
3	**Pontville 1**	Crown land *	South	Tea Tree	2008 (2008)	0.04	30–40	Drought
4	**Pontville 2**	Commonwealth Dept. of Defence	South	Tea Tree	2007 (1996)	1	c. 1000	Over-grazing, earthmites, drought
5	**Glen Morey Salt Pan**	Private land	South	Tunbridge	1984 (1984)		< 30?	Clearance, over-grazing, drought
6	**North of Tunbridge**	Private land	North	Ellinthorp	1999 (1984)		1	Clearance, over-grazing, drought
7	**Old Cemetery, Ross**	Private land	North	Ross	2005 (2005)	??	81	Mismgt, drought
8	**Northeast of Ross**	Private land	North	Ross	1999	0.25	25	Clearance, over-grazing, drought
9	**Southeast of Ross**	Private land	North	Ross	2005 (2005)	0.04	20	Clearance, over-grazing, drought
10	**West of Campbell Town**	Private land	North	Jacobs	2007 (1984)	4–5	> 500	Clearance, over-grazing, drought
11	**Campbell Town Golf Course**	Private land	North	Campbell Town	1999 (1996)	0.5	100	Mismgt, drought
12	**St Johns cemetery, Campbell Town**	Private land	North	Campbell Town	2008 (2008)	0.02	40	Mismgt, drought
13	**South of Conara**	Private land	North	Conara	1999 (1996)	0.05	5	
14	**Cleveland**	Private land	North	Cleveland	1985		< 30?	Clearance, over-grazing, drought
15	**West of Perth**	Private land	North	Longford	1992 (1992)		< 30?	Clearance, over-grazing
16	**Dolphin Sands**	Private land	South	Swansea	1985	0.01 Status uncertain	5	Clearance
17	**Swanwick Bay**	Private land	South	Coles Bay	1998 (1992)	0.0005	7	Clearance
18	**River & Rocks Road, Swanwick**	Private land	South	Coles Bay	1992 (1992)		?	Clearance
19	**Bicheno**	Private land	South	Bicheno	1972 (1964)		?	Clearance
20	**Chain of Lagoons**	Lagoons Beach Conservation Area	North	Gray	1998 (1984)	0.004	30–40	Camping, scrub invasion

	Subpopulation	Tenure	NRM Region	1:25,000 mapsheet	Year last (first) seen	Area occupied (ha)	Number	Threats
21	**Cape Portland**	Private Sanctuary	North	Lyme Regis	1998 (1981)	1.2	110–130	Scrub invasion, snails
22	**Lanoma Point**	Musselroe Bay Conservation Area	North	Lyme Regis	1983 (1983)	Status uncertain		Scrub invasion
23	**Badger Head Road**	Private land	North	Port Sorell	1987 (1987)		?	Clearance
24	**Bakers Beach (several sites)**	Narawntapu National Park	Cradle Coast	Port Sorell	1987 (1973)	Status uncertain	Several colonies of < 20–30	Scrub invasion
25	**Nettley Bay**	West Point State Reserve	Cradle Coast	Marrawah	2007 (2004)	Small	180–200	Scrub invasion
26	**Tea Tree golf course**	Private land	South	Tea Tree	1975 (1975)	Presumed extinct		
27	**Launceston**	Unknown	North	Launceston	1841 (1841)	Presumed extinct		
28	**Hampshire Hills**	Unknown	Cradle Coast	Tewkesbury	1841 (1841)	Presumed extinct		

NRM Region = Natural Resource Management region;
* Recommended to become a Nature Reserve under the Tasmanian *Nature Conservation Act 2002* (CLAC Project Team 2006).

Several new subpopulations have been discovered in recent years, including three in the spring of 2008 (Table 1). It is considered likely that additional small subpopulations will be uncovered given a well-resourced survey effort.

CONSERVATION ASSESSMENT

Pterostylis ziegeleri was listed as endangered on the Tasmanian *Threatened Species Protection Act 1995* in 2001 under the name of *Pterostylis cycnocephala*. It was down-listed to vulnerable in early 2008 as part of the Act's 5-year review. At that time it qualified for listing as vulnerable on the TSP Act under criterion C:

- Total population estimated to number fewer than the 10,000 mature individuals, and no subpopulation estimated to contain more than 1,000 mature individuals and a continuing decline.

Pterostylis ziegeleri (narrow sense) was listed as Endangered on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* in 2001. *Pterostylis ziegeleri* (broad sense) was downlisted to Vulnerable in November 2008 following a review of its status as part of a Species Information Partnership between the Australian and Tasmanian Governments. The species' geographic distribution was considered to be limited and precarious for its survival, making it eligible for listing under criterion 2.

THREATS & LIMITING FACTORS

Pterostylis ziegeleri is a species of coastal sands and Midlands grasslands and grassy woodland on basalt. These habitats have been in serious decline and continue to be under threat.

The species would in the past have been widespread and locally common in native pastures in the Midlands but is now reduced to just a few colonies. Only two subpopulations qualify as 'locally common' with many hundreds of plants almost uniformly throughout some hectares of grassland on basalt, a highly threatened habitat. However, the other subpopulations are probably best described as remnant subpopulations in remnant habitats, rather than subpopulations in remnant habitats. Pasture development has been the main cause of the decline in the Midlands, as orchids are extremely sensitive to ploughing and fertilising, while overgrazing is also an issue. The security of some

subpopulations has improved, as many landowners/managers are sympathetic to the plight of threatened plants.

The red-legged earth mite (*Halotydeus destructor*), a pastoral pest species, is known to have affected around 50% of the subpopulation at the Pontville Small Arms Range Complex in 2007 (Norris 2007). It is thought that individuals affected by the mite fail to set seed, as flowers are preferentially grazed. Monitoring sites have been established to assess the long-term impact of the mite.

The subpopulation on the Tea Tree golf course has been lost due to improvements of the land through fertilisation and introduction of exotic grasses.

The coastal subpopulations are also remnants of a once wider distribution in coastal grasslands and are under threat. In the Narawntapu National Park, the species used to occur behind the sand dunes, in grassy swales now almost totally overtaken by coast wattle (*Acacia longifolia* subsp. *sophorae*), and the species has not been seen here for almost two decades. The Swanwick Bay and Chain of Lagoons localities are extremely vulnerable, as they are adjacent to vehicular tracks, in camping areas and in openings giving access to a lagoon. The Cape Portland subpopulations are at risk from browsing from the introduced garden snail *Helix aspersa*, as these snails eat the flowers before seed production. Much suitable habitat in this area is likely to have been lost by conversion to grazing land.

MANAGEMENT STRATEGY

The main objectives for the recovery of *Pterostylis ziegeleri* is to prevent the loss or degradation of known subpopulations, promote conditions for its successful recruitment, and to increase the number of known subpopulations through survey

What has been done?

Pterostylis ziegeleri was included in a project to manage and recover Tasmanian grassland orchids. Survey work was carried out in 1998–1999.

The Campbell Town Golf Course is subject to a conservation covenant under the Tasmanian *Nature Conservation Act 2002* and a management plan that address the needs of the species (Nicholson 2000). Several sympathetic landowners in the Midlands are managing subpopulations on their properties. A draft environmental management plan has been prepared for the Pontville Small Arms Range Complex (Greening Australia 2007).

Pterostylis ziegeleri is included within the *Tasmanian Threatened Orchids Recovery Plan 2006–2010* (Threatened Species Section 2006).

What is needed?

Recovery actions necessary to decrease the extinction risk to *Pterostylis ziegeleri* include the following:

- provision of 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 subpopulations and areas of potential habitat;
- pursue management options with landowners/managers to protect subpopulations of *Pterostylis ziegeleri* against possible changes in land use that would be detrimental to the species;
- refine grazing management guidelines at the Pontville Army Rifle Range;
- monitor the implementation and success of the management plan for the Campbell Town Golf Course;
- protect the small subpopulations at Swanwick and Chain of Lagoons from damage by trampling and vehicles;
- prevent the invasion of coast wattle into *Pterostylis ziegeleri* sites and reclaim sites that have become overgrown, especially behind Bakers Beach in Narawntapu National Park;
- investigate whether snail control at critical times will be beneficial, particularly for small subpopulations;

- monitor known subpopulations for threats and declines;
- establish a mechanism to ensure management intervention when required;
- further survey.

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View:
http://www.dpiw.tas.gov.au/threatenedspecieslists

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