# *Prasophyllum abblittiorum*

## pallid leek-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Peter Fehre

**Scientific name:** ***Prasophyllum abblittiorum*** P.A.Collier, *Muelleria* 36: 5 (2017)

**Name History:** *Prasophyllum* sp. Arthur-Pieman

**Common name:** pallid leek-orchid

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

**Status:** *Threatened Species Protection Act 1995*: **endangered**
*Environment Protection and Biodiversity Conservation Act 1999*: **Not listed**

**Distribution:** Biogeographic origin: **endemic to Tasmania**
Tasmanian NRM Regions: **Cradle Coast**
Tasmanian IBRA Bioregions (V6): **King**

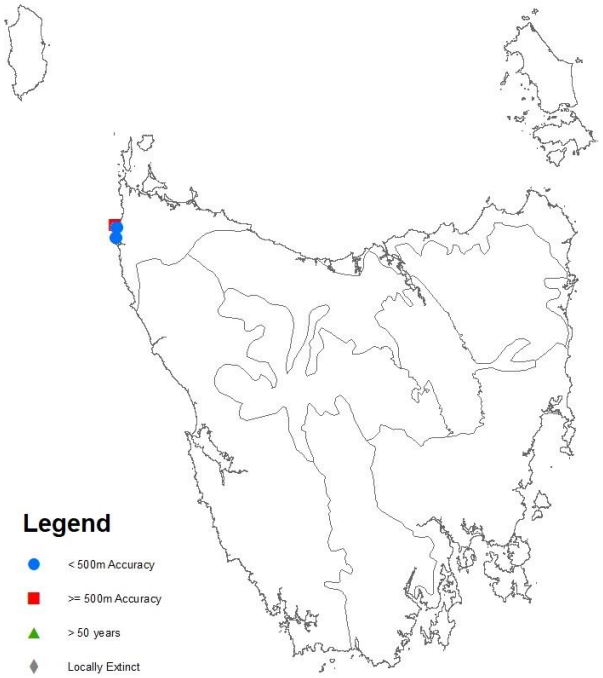


**Figure 1.** Distribution of *Prasophyllum abblittiorum*, showing IBRA bioregions (V6)

**Plate 1.** *Prasophyllum abblittiorum* (image by Peter Fehre)

**SUMMARY**: *Prasophyllum abblittiorum* (pallid leek-orchid) is a terrestrial orchid, endemic to Tasmania's far north-west. It is known from two small subpopulations that are 7.3 km apart, with fewer than 250 mature plants occupying 0.4 ha in total, the small population subjecting the species to stochastic risk. Appropriate care is required to prevent damage of one subpopulation from road maintenance activities. Some ecological burning or other disturbance such as slashing may be required to maintain the openness of the habitat required for emergence, flowering and recruitment to allow persistence.

## IDENTIFICATION AND ECOLOGY

*Prasophyllum abblittiorum* belongs to a group commonly known as leek-orchids because the erect hollow leaf has some resemblance to that of a leek. *Prasophyllum* species are deciduous terrestrials with small, fleshy, round or oval tubers and a few fleshy, irregular roots. Most species are dormant over summer and autumn and begin growth in early winter. The single leaf is green throughout and the flower spike emerges through the side of the leaf above the middle, with the portion of leaf above the point of emergence being free. *Prasophyllum abblittiorum* appears to be self-pollinated (Collier 2017), as unlike most other species in the genus, its pale colouring and lack of a nectar reward tends not to attract insect pollinators, and its fragile pollinia are less well suited for insect mediated cross pollination. The species flowers from mid-October to early November with fruit maturing in mid-December.

*Prasophyllum* species may be out-competed as their habitat becomes dense over time in the absence of disturbance such as fire, preventing emergence, flowering and seed-set necessary for the replenishment of their underground tubers and recruitment from seed. Attrition of tubers may be expected following long periods in a dormant state during unfavourable conditions, compromising the long-term persistence of a species in an area (Jones et al. 1999). Orchids rely on associations with mycorrhizal fungi for germination and growth with disturbance affecting the species directly or indirectly by impacting on their mycorrhizal fungi (Jasinge et al. 2018).

*Prasophyllum abblittiorum* is one of 31 native Tasmanian taxa in the genus (19 of which are listed on Schedules of the Tasmanian *Threatened Species Protection Act 1995)* and one of 212 native taxa in the Orchidaceae family in Tasmania (de Salas & Baker 2019).

Members of the Abblitt family discovered the distinctive species (now named after the family) during their surveys for orchids in the far north-west of Tasmania. Orchid enthusiasts and members of the Threatened Plants Tasmania group discovered a second subpopulation, resulting in the formal description as *Prasophyllum abblittiorum* (Collier 2017).

### Survey techniques

Surveys for *Prasophyllum abblittiorum* should be undertaken during its peak flowering period, mid-October to early November (Wapstra 2018).

### Description

The leaves of *Prasophyllum abblittiorum* are typically 70 to 200 mm tall, and 2 to 5 mm in diameter. Plants are typically 75 to 215 mm tall when in flower, with 3 to 11 flowers in a sparse grouping. The flowers are 3.5 to 7 mm long and 3 to 7.5 mm wide and consistently yellow-green, with the petals and labellum slightly paler than the sepals, all with 3 to 5 faint striae. The lateral sepals are free and 4.5 to 7 mm long and 1 to 2 mm wide, with the dorsal sepal slightly shorter and wider, and the two petals shorter and narrower. The labellum is similar to the petals and unornamented. The column is ovate and 2.25 to 3 mm long, with 1.5 to 2.5 mm long column arms, and an elongated anterior column lobe present in some flowers. The pollinia are oval and fragmented.

[description based on Collier 2017]

### Confusing species

*Prasophyllum abblittiorum* differs markedly from all other species of *Prasophyllum* by an unornamented petaloid labellum that lacks a central callus and reflexed tip, pollinia that readily fragment, and an elongated anterior lobe of the column in some flowers (Collier 2017).

**Table 1.** Population summary for *Prasophyllum abblittiorum*

| | Subpopulation | Tenure | NRM Region * | 1:25000 Mapsheet | Site | *Year counted (first seen) | Area occupied (ha) | *Number of mature plants |
|---|---|---|---|---|---|---|---|---|
| 1 | West Point Road | Arthur-Pieman Conservation Area | Cradle Coast | Marrawah | | 2016<br>2015<br>2014<br>2013<br>(2012) | 0.35 | 82<br>71<br>60<br>41<br>60 |
| **2** | Bluff Hill Road | Arthur-Pieman Conservation Area | Cradle Coast | Bluff | 1 | 2016<br>2015<br>2014<br>(2013) | 0.025 | 24<br>27<br>20<br>24 |
| | | | | | 2** | 2016<br>(1995) | 0 | 0<br>at least 1 |

*as per Collier (2017); **sites 200 m apart

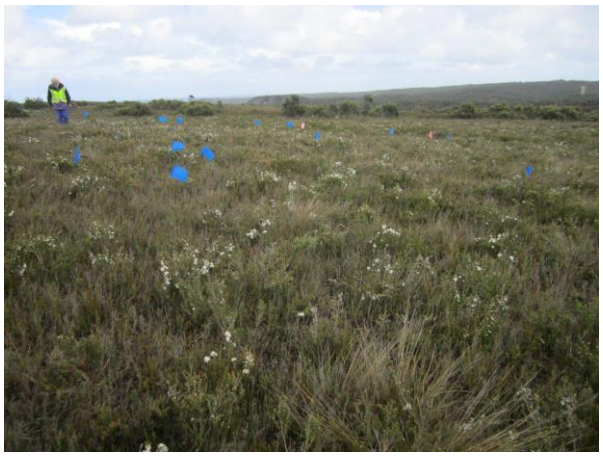

**Plate 2.** Threatened Plants Tasmania efforts to count *Prasophyllum abblittiorum* in flower (image by Robin Garnett)

## DISTRIBUTION AND HABITAT

*Prasophyllum abblittiorum* is known from two locations in the Arthur Pieman Conservation Area, between West Point Road and Bluff Hill Road (Figure 1, Table 1), occurring in wet heathland on quartz and sand, including some bare ground (Collier 2017).

## POPULATION ESTIMATE

*Number of locations:* 2
*Number of subpopulations:* 2
*Linear extent:* 7.3 km
*Extent of occurrence:* 1.4 km$^2$
*Area of occupancy:* 0.375 ha
*Area of occupancy (as per IUCN criteria*): 8 km$^2$
*No. of mature individuals:* 110 (sum of maximum count at each site)

While only formally described in 2017, the existence of the distinct little yellow-green *Prasophyllum* in the Arthur Pieman region has been recognised since 2012 with dedicated surveys for the species conducted by orchid enthusiasts annually since (Table 1, Collier 2017). It is possible that new occurrences will be found in the vicinity following fire.

For many terrestrial orchids such as *Prasophyllum abblittiorum*, not all mature plants will flower every year if climatic conditions are unfavourable, and some occurrences may not emerge and flower until their habitat is opened up by disturbance such as fire, making it difficult to estimate the total number of mature individuals. A substitute measure considered suitable for such species is the sum of the maximum number of flowering plants seen at each site over a number of years.

## RESERVATION STATUS

*Prasophyllum abblittiorum* is reserved in the Arthur Pieman Conservation Area.

## CONSERVATION ASSESSMENT

*Prasophyllum abblittiorum* was listed as endangered on Schedules of the Tasmanian *Threatened Species Protection Act 1995* in 2020 meeting the following criterion:

D: Total population extremely small or area of occupancy very restricted, and

1. total population estimated to number fewer than 250 mature individuals;

2. total population with an area of occupancy less than 0.01 km$^2$ (1 hectare), and typically in five or fewer locations that provide an uncertain future due to the effects of human activities or stochastic events, and thus capable of becoming extinct within a very short time period.

**THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES**

**Stochastic events:** *Prasophyllum abblittiorum* is highly localised and has been recorded from just two small subpopulations, making the species vulnerable to inadvertent destruction and stochastic events. This is exacerbated by the reliance of the species on mycorrhizal fungi which also have their own requirements and tolerances.

**Inappropriate disturbance**:

While fire may promote emergence and flowering, an inappropriate fire regime may be detrimental to the species. Planned burns in the habitat of *Prasophyllum abblittiorum* should be restricted to dry periods when the species has not emerged, to lessen the impact on associated mycorrhizal fungi (Jasinge et al. 2018). If the species emerges it is advised to time burns for immediately following seed release. If climatic conditions are too dangerous for burning, slashing may be a preferable disturbance to reduce competition and maintain an open understorey that favours the species.

For example, *Prasophyllum abblittiorum* was first found in October 2012 in an area that had been burnt 10 months prior. Conversely, plants that were recorded by photo in 1995 (and later identified as this species) were not re-recorded during subsequent surveys in 2016 at a long undisturbed site.

Orchid species such as *Prasophyllum abblittiorum* are known to respond well to summer burns. It is unlikely to respond in a similar way to the repeated cool burns in other seasons that are associated with fuel reduction programs, which may be detrimental in the long term if not appropriately managed.

**Road management:** The Bluff Hill Road subpopulation is at risk from roadside management activities and road widening or realignment works.

**Climate change:** It is likely that even minor shifts in average seasonal conditions will have an adverse impact on such a locally restricted species as *Prasophyllum abblitiorum*, especially if other ecological factors such as appropriate fire or disturbance regimes are absent. The risk is exacerbated by impacts to the mycorrhizal fungi upon which the species relies. In particular, the preference of *Prasophyllum abblitiorum* for moist habitats makes it susceptible to loss under reduced rainfall associated with climate change. Drier conditions can lead to a decrease in emergence and flowering, and death of tubers in the long term.

While the species may benefit from the increased risk of hot summer fires associated with climate change in Tasmania, the associated need for increased fuel reduction burns may have an adverse impact in the long term if not managed appropriately.

**MANAGEMENT STRATEGY**

**What has been done?**

Seed and associated mycorrhizal fungi have been collected for use in the Orchid Recovery Program and long-term conservation storage at the Tasmanian Seed Conservation Centre (based at the Royal Tasmanian Botanical Gardens, Hobart).

**Management objectives**

The main objectives for the recovery of *Prasophyllum abblittiorum* are to prevent the loss or degradation of known occurrences and potential habitat in their immediate vicinity, and to increase the number of known subpopulations through survey.

**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.

- 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 the species and its potential habitat;
- introduce protocols for road works to ensure that plants and habitat are not destroyed or damaged by maintenance activities or other road works;
- conduct extension surveys in potential habitat near known sites;
- monitor known sites regularly for emergence and threats, and to assess management needs and responses;
- in the absence of emergence of the species, implement burns, or slash to reduce competition if sites become overgrown, or when fuel reduction burns are needed, restrict any planned burns to dry periods;
- if the species has emerged, restrict planned fuel reduction burns to immediately following seed release, or slash when plants have died down to reduce fuel loads or reduce competition if needed;
- include the species in the next revision of the *Threatened Tasmanian Orchids Flora Recovery Plan* (Threatened Species Section 2017).

**REFERENCES**

Collier, P.A. (2017). *Prasophyllum abblittiorum* (Orchidaceae), a new distinctive species from north-western Tasmania. *Muellaria* 36: 3–7.

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Jones, D. Wapstra, H., Tonelli, P., & Harris, S. (1999). *The Orchids of Tasmania*. Melbourne University Press.

Threatened Species Section (2017) *Threatened Tasmanian Orchids Flora Recovery Plan*. Department of Primary Industries, Parks, Water and Environment, Hobart.

Wapstra, M. (2018). *Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists*. Self-published by the author. Accessible at https://dpipwe.tas.gov.au/Documents/Flowering-Times-of-Tasmanian-Orchids.pdf

**Prepared** in 2019 and updated in 2020 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Approved by the Secretary in 2021.

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**View:** www.naturalvaluesatlas.tas.gov.au
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**Permit:** It is an offence to collect, disturb, damage or destroy this species unless under permit.