

Prasophyllum abblittiorum

pallid leek-orchid

TASMANIAN THREATENED SPECIES NOTESHEET



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*: listing as **endangered pending**
Environment Protection and Biodiversity Conservation Act 1999: **Not listed but eligible**

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

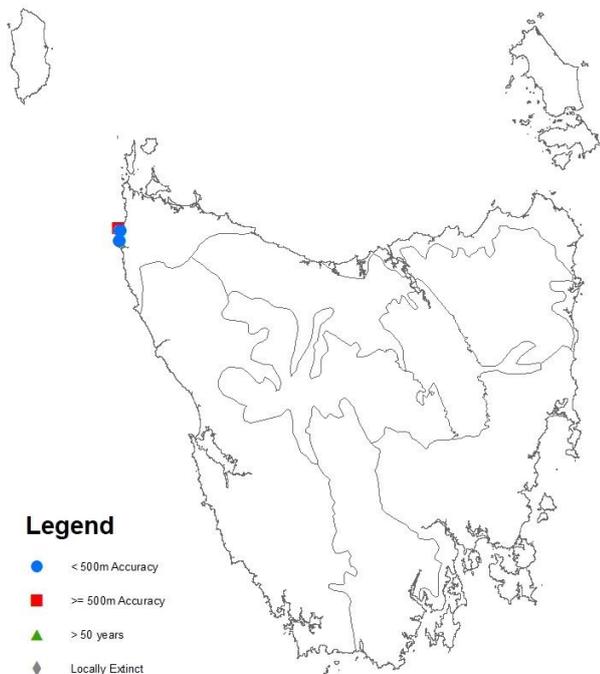


Figure 1. Distribution of *Prasophyllum abblittiorum*, showing IBRA bioregions (V6)



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 1999*) and one of 212 native taxa in the Orchidaceae family in Tasmania (de Salas & Baker 2019).

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).

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).

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	Marawah		2016 2015 2014 2013 (2012)	0.35	82 71 60 41 60
2	Bluff Hill Road	Arthur-Pieman Conservation Area	Cradle Coast	Bluff	1	2016 2015 2014 (2013)	0.025	24 27 20 24
					2**	2016 (1995)	0	0 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)

POPULATION ESTIMATE

Number of locations 2

Number of subpopulations 2

Linear extent 7.3 km

Extent of occurrence 1.4 km²

Area of occupancy 0.375 ha

Area of occupancy (as per IUCN criteria) 8 km²

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 is in the process of being listed as endangered on Schedules of the Tasmanian *Threatened Species Protection Act 1995* 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 km² (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

Threats to the species are discussed below:

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: *Prasophyllum abblittiorum* may require disturbance such as fire to provide an open habitat to allow emergence to replenish underground tubers, and flowering and recruitment to replace tubers lost by attrition. *Prasophyllum abblittiorum* was first found in October 2012 in an area that had been burnt in the previous December. However, plants were not seen at one site from which a 1995 image of the species was taken during surveys for the species in 2016, at which time the site had been long undisturbed. The results of Jasinge et al. (2018) suggest that it may be prudent to restrict planned burns in the habitat of terrestrial orchids to dry periods in the absence of emergence in order to lessen the impact on associated mycorrhizal fungi. If the orchids emerge it would be prudent to time burns to immediately following seed release, though if climatic conditions are too dangerous for burning, slashing may be a preferable disturbance to reduce competition. Orchid species such as *Prasophyllum abblittiorum* are known to respond well to summer burns, but a similar response to the repeated cool burns in other seasons that are associated with fuel reduction programs is unlikely and may be detrimental in the long term if not appropriately managed.

Road management: The Bluff Hill Road subpopulation in particular 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 abblittiorum*, 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 the species for moist habitats makes it susceptible to changed rainfall patterns leading to the drier growing conditions associated with climate change in Tasmania. 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.

MANAGEMENT STRATEGY

What has been done?

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. Other orchid enthusiasts and members of the Threatened Plants Tasmania group subsequently assisted the family with monitoring and surveys, discovering a second subpopulation, resulting in the formal description as *Prasophyllum abblittiorum* (Collier 2017).

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 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 radiating out from known sites,
- monitor known sites regularly for emergence and threats,
- 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 Recovery Plan (Threatened Species Section 2017),
- pursue listing on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

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