



Prasophyllum abblittiorum (Orchidaceae), a new distinctive species from north-western Tasmania

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Introduction

There are more than 100 species of *Prasophyllum* R.Br. currently accepted from Australia and New Zealand, with about half of these being described since 1989 by David Jones and his collaborators (Royal Botanic Gardens, Kew 2017). In addition, there are numerous informally named species, for example Rouse (2002), Jeanes and Backhouse (2006), Brown et al. (2008). 30 formally named species are recorded from Tasmania (de Salas and Baker 2017) including 19 that are listed under the Tasmanian *Threatened Species Protection Act 1995*.

During surveys for orchids in the far north-west of Tasmania, a very distinctive new species of *Prasophyllum* (Figures 1–3) was discovered by members of the Abblitt family in October 2012, hereafter the “bush population”. Interested individuals and the Wildcare Inc. group Threatened Plants Tasmania (TPT) subsequently assisted the Abblitt family with their surveys, and in 2013 discovered a second population of plants about 7 km from the site of the first discovery¹, hereafter the “road population”. The new species differs markedly from all other species of *Prasophyllum* (Pridgeon et al. 2003) by (1) an unornamented petaloid labellum that lacks a central callus and reflexed tip (Figure 2); (2) pollinia that readily fragment (Figure 2); and (3) an elongated anterior lobe of the column in some flowers (Figure 3).

¹ An image of a specimen taken by Roger Hay in 1995 has recently emerged, and this was located about 200 m away from the road population. This site is now long undisturbed, and no specimens were seen in the vicinity during a search in 2016.

Abstract

Prasophyllum abblittiorum P.A. Collier, is described as a new species that is very distinctive within the genus *Prasophyllum*, having flowers with an unornamented petaloid labellum, pollinia that readily fragment and an anterior lobe of the column in some flowers.

Key words: *Prasophyllum*, leek orchid, taxonomy



Figure 1. *Prasophyllum abblittiorum* (image: Peter Fehre)

Materials and methods

In 2014, 2015 and 2016, TPT volunteers visited the two known populations and attempted to flag and then count every flowering specimen. Volunteers then divided into smaller groups, with each group being assigned a collection of flagged plants. One person in a group was responsible for gathering selected morphometric data from each plant, while another person recorded the data on a pre-prepared sheet.

Herbarium collections have been made at various times since the discovery of this species. The resulting dried and pickled material was examined at the Tasmanian Herbarium using a Leica A60 stereomicroscope. Type specimens and duplicates were gathered in October 2016. These were measured in the field; then additional morphometric measurements were gathered from freshly dissected material using a Leica S6 stereomicroscope and installed graticule.

Results

Population counts: the maximum single-day population counts for each year between 2012 and 2016 are shown Table 1. The total number of fertile plants seen over the three years is unknown because individual plants are not marked.

Data analysis: We aggregate the field data, except for six records that were duplicates which are averaged (excepting one record of flowering measurements that are clearly outliers) and exclude all data for leaf length where the leaves have been grazed. We use this aggregated data in the species description using the customary notation: $(q_1 -)q_2 - q_3(-q_4)$, where $q_2 - q_3$ covers 95% of the range of values recorded, and q_1 and q_4 are omitted if they are equal to q_2 and q_3 respectively. For

Table 1. Maximum number of *P. abblittiorum* specimens counted during a single-day survey with a group of TPT volunteers, unless otherwise indicated.

	2012	2013	2014	2015	2016
Bush population	60 [†]	41 [‡]	60	71+2 leaves	82+1 leaf
Road population	N/A	14 [‡]	27	20	24

[†]“Mum and I did a second count in 2012 because we found a few extras further up the hill ... I think we counted about 60.” (Janine Cranney email 3/11/15).

[‡]“We flagged and counted but we did not have a large [TPT] group and may have missed a few” (Malcolm Wells email 4/11/15)



Figure 2. *Prasophyllum abblittiorum* with dorsal sepal removed showing the unornamented petaloid labellum (behind the column) and fragmenting pollinia. (Image: Miguel de Salas)

plant characters not collected in the field, we aggregate the much smaller number of lab measurements from fresh, spirit and pressed specimens, and provide minimum and maximum measured values, unless indicated explicitly.

Taxonomy

Prasophyllum abblittiorum P.A.Collier, **sp. nov.**

Type: TASMANIA. Arthur Pieman Conservation Area,

5km south-west of Marrawah, 22.x.2016, P. Collier 5654 (holotype: HO; isotypes AD, MEL).

Terrestrial tuberous herb usually growing singly. *Tubers* sub-globose to ovate forming a current and replacement pair. Current year's tuber 6–7.5 mm wide, 7–12 mm long in fresh specimens seen. *Leaf of fertile plant* (55–)70–200(–250) mm tall, erect, acicular with a long fine apex, (1.5–)2–5(–7) mm in diameter at the widest point, hollow, glabrous, narrower in infertile

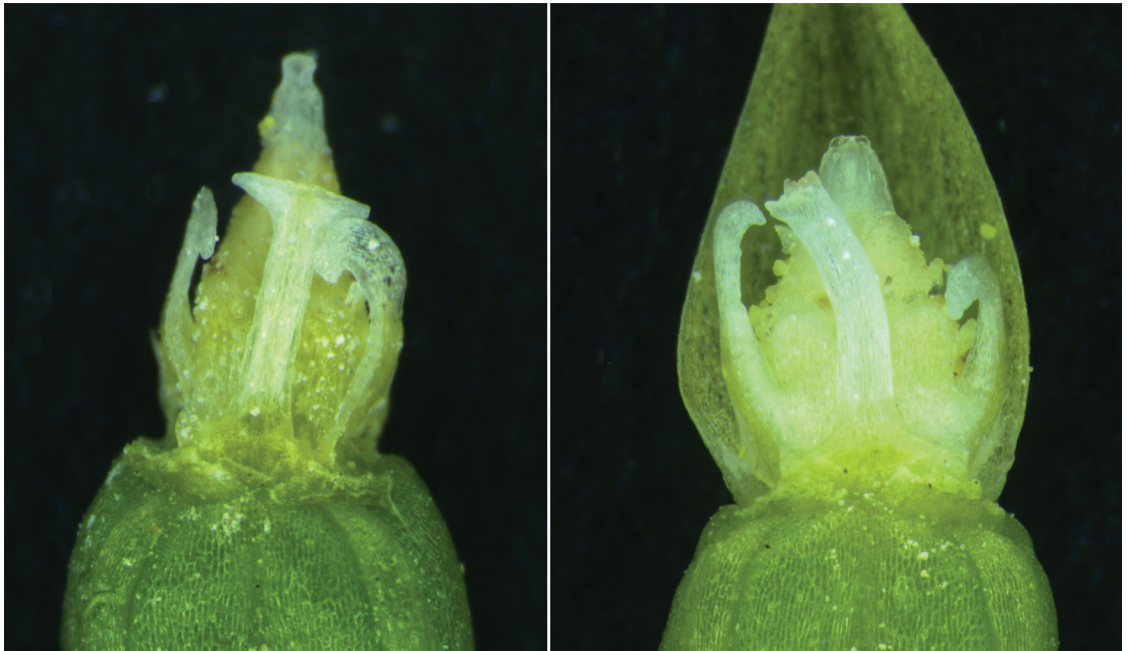


Figure 3. *Prasophyllum abblittiorum* flower with tepals removed showing two forms of the anterior lobe of the column. (Image: Miguel de Salas)

plants. *Peduncle* (50–)75–215(–250) mm tall; emergent through a membranous section of the leaf. *Inflorescence* a spike of (2–)3–11(–12) flowers. *Floral bracts* ovate-deltoid, 1.5–2.25 mm long, 1.25–2 mm wide, closely sheathing the short pedicel in lower flowers and base of the ovary. *Flowers* (3–)3.5–7 mm long, (2–)3–7.5 mm wide, consistently yellow-green, petals and labellum slightly paler than the sepals, all with 3–5 faint striae. *Dorsal sepal* ovate, 4–6 mm long, 1.75–3 mm wide, flat to shallowly concave, tip acute, thickened. *Lateral sepals* separate, lanceolate, (4–)4.5–7(–8) mm long, 1–2 mm wide, concave to involute, apex acute. *Petals* lanceolate, (3–)3.5–5.5(–7) mm long, 0.75–1.5 mm wide, shallowly concave, apex acute. *Labellum* unornamented, petaloid, lanceolate, 3.75–5.25 mm long, 1–2 mm wide. *Column* ovate 2.25–3 mm long, including acuminate rostellum about 0.5 mm long; *Hamulus* reflexed, linear about 1 mm long. *Column arms* linear, increasingly falcate towards the apex, a vestigial to well-formed basal lobe on the dorsal side, pale yellow-green fading to translucent at the margins and the apex, 1.5–2.5 mm long, up to 0.75 mm wide at the base, narrower at the apex. *Column anterior lobe* present or absent in flowers of the same spike, attached to the base of the column, linear, 1.75–2.5 mm long, up to 0.5 mm wide, translucent, apex truncate with lateral lobes up to 0.5 mm long at the apex, or shallowly to moderately v-notched, or minutely denticulate. *Anther* basifixed on the posterior side of the column, yellow-green with brownish markings, 1.25–2.25 mm long, 1–1.5 mm wide. *Pollinia* oval, fragmented in all collected specimens. *Ovary* obovate with 3 shallow ridges (2.5–)3–7(–8) mm long, 1.5–2.75 mm wide, expanding in the fruiting stage. *Stigma* a sticky patch

towards the apex of the column. *Mature capsules* in two specimens seen 5.5–6.5 mm long, 3–3.5 mm wide, tending smaller in upper flowers. *Seed* often elongated, but highly variable in shape. *Testa* transparent, 0.4–0.6 mm long, 0.15–0.25 mm wide, comprised of elongated air-filled yellow-brown cells. *Embryo* relatively opaque, oval.

Selected specimens: AUSTRALIA: TASMANIA. Arthur Pieman CA, 5km south-west of Marrawah, 28.x.2012, P. Collier and J. Cranney 5501 (HO); Arthur Pieman CA, 5km south-west of Marrawah, 2.xi.2013, D. Abblitt s.n. (HO575652); Arthur Pieman CA, Bluff Hill Road, between Bluff Hill Lighthouse and Arthur River Road, 3.xi.2013, M. Wells s.n. (HO585428); Arthur Pieman CA, 500 m south of West Point Road, 23.xi.2015, P.A. Collier 5601 (HO); Arthur Pieman CA, Bluff Hill Road, 22.x.2016, P. Collier 5653 (HO).

Flowering period: Mid October to early November.

Distribution and habitat: Known from two sites 7 km apart in the Arthur Pieman Conservation Area, between West Point Road and Bluff Hill Road. The habitat is wet heathland on quartz and sand, including some bare ground. The larger bush population occupies a gentle north-facing slope with total area of approximately 1400 sq. m. within a bounding rectangle of 125 m x 25 m. The smaller road population occupies a north-facing slope beside a gravel road in an area of approximately 100 sq. m. A list of co-occurring species at the bush population is in Table 2.

Conservation status: *P. abblittorium* satisfies criteria D to be listed as endangered under the Tasmanian Threatened Species Protection Act 1995, given that the total population is currently “estimated to number fewer than 250 mature individuals” (DPIPWE 2017). Additionally, the road population could be damaged

Table 2. Co-occurring species at the bush population of *Prasophyllum abblittorium*

Shrubs	<i>Acacia suaveolens</i> (Sm.) Willd., <i>Allocasuarina zephyrea</i> L.A.S.Johnson, <i>Aotus ericoides</i> (Vent.) G.Don, <i>Banksia marginata</i> Cav., <i>Boronia pilosa</i> Labill., <i>Dillwynia glaberima</i> Sm., <i>Epacris impressa</i> Labill., <i>Eucalyptus nitida</i> Hook.f., <i>Gompholobium huegelii</i> Benth., <i>Hibbertia prostrata</i> Hook., <i>Leptospermum scoparium</i> J.R.Forst. & G.Forst., <i>Leucopogon collinus</i> (Labill.) R.Br., <i>Philothea virgatus</i> (Hook.f.) Paul G.Wilson, <i>Phyllota diffusa</i> (Hook.f.) F.Muell., <i>Sphaerolobium minus</i> Labill., <i>Sprengelia incarnata</i> Sm.
Herbs	<i>Amperea xiphoclada</i> (Sieber ex Spreng.) Druce var. <i>xiphoclada</i> , <i>Caladenia carnea</i> R.Br., <i>Cassytha glabella</i> R.Br., <i>Comesperma calycina</i> Labill., <i>Drosera peltata</i> Thunb., <i>Drosera pygmaea</i> DC., <i>Laxmannia orientalis</i> Keighery, <i>Opercularia varia</i> Hook.f., <i>Stackhousia viminea</i> Sm., <i>Stylidium gramineum</i> Sw., <i>Thelymitra aristata</i> Lindl., <i>Thelionema caespitosa</i> (R.Br.) R.J.F.Hend., <i>Prasophyllum pulchellum</i> D.L.Jones, <i>Pterostylis aphylla</i> Lindl., <i>Pterostylis tasmanica</i> D.L.Jones
Graminoids	<i>Baumea acuta</i> (Labill.) Palla, <i>Chordifex monocephalus</i> (R.Br.) B.G.Briggs, <i>Empodisma minus</i> (Hook.f.) L.A.S.Johnson & D.F.Cutler, <i>Hypolaena fastigiata</i> R.Br., <i>Lepidosperma filiforme</i> Labill., <i>Leptocarpus tenax</i> Labill., <i>Patersonia fragilis</i> (Labill.) Asch. & Graebn.
Fern and allies	<i>Lindsaea linearis</i> Sw., <i>Selaginella uliginosa</i> (Labill.) Spring

by road maintenance activities unless appropriate care is taken. While the two known populations are in a protected area that includes large areas of potentially suitable habitat, recent surveys and investigations have revealed only an old photographic record from near the road population.

Etymology: Named for the Abblitt family: Vicky Abblitt, daughter Janine Cranney and son Don Abblitt. Vicky and Janine discovered plants of this species in October 2012 and recognised them as being undescribed. During their frequent surveys in a voluntary capacity, the family have substantially increased our knowledge of the presence and distribution of orchids and other taxa in the far north-west of Tasmania. They frequently and willingly act as guides to many individuals and groups who have assisted their endeavours.

Discussion

Prasophyllum abblittiorum is morphologically distinct from any other known species of *Prasophyllum*. It bears only superficial resemblance with its overall green colour and/or relatively small stature to *P. lindleyanum* Rchb. f., *P. pulchellum* D.L.Jones and the '*P. macrostachyum* R.Br. - *P. gracile* Lindl.' group (Rouse 2002). The overall appearance of the known plants of *P. abblittiorum* is remarkably consistent, both in colour of the plants and morphology of the flowers. This may be due to plants being self-pollinated, unlike most *Prasophyllum* spp. that offer a nectar reward to pollinators. The fragile pollinia seen in nearly all flowers examined are consistent with a self-fertilisation hypothesis.

Orchids are well-known for producing peloric or pseudopeloric mutants where (1) replicas of the labellum replace the two petals, or (2) a replica of the petals or sepals replace the labellum (Bateman 1985). Indeed, Bateman (1985, p. 359) mentions the possibility that an "autogamous ... pseudopeloric founder can generate a large population of similar individuals" with a named variety of the variable European species *Epipactis phyllanthes* G.E.Sm. as an example. In contrast, *P. abblittiorum* is distinct from related species not only with its petaloid labellum, but also with friable pollinia, an anterior lobe of the column in some flowers and a consistent yellow-green colour. A few *P. pulchellum* plants have been found growing amongst the bush population, and a *P. favonium* D.L.Jones plant is known

from near the bush population; neither are known from near the road population. The number of recorded individuals of *P. abblittiorum* vastly exceeds the number of these two named species, see Table 1. This evidence strongly suggests that *P. abblittiorum* is not a mutant of the second Bateman (1985) type above.

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