



Prasophyllum laticallosum (Orchidaceae), a new subalpine terrestrial orchid species from southern New South Wales

Gavin P. Phillips¹, Ben Brown², Lachlan Copeland³, David Jones⁴, Brian Towle² and Heidi Zimmer^{5*}.

¹ Nature and Natural Capital Strategy Division, NSW Department of Climate Change, Energy, the Environment and Water. 4 Parramatta Square, Parramatta, NSW 2150, Australia.

² Ecoplaning Pty Ltd, 428 Princes Highway, Woonona, NSW 2517, Australia.

³ Coffs Harbour, NSW 2450, Australia.

⁴ Kalaru, NSW 2550, Australia.

⁵ Centre for Australian National Biodiversity Research (joint venture between Parks Australia and CSIRO), Australian National Herbarium, GPO Box 1700, Canberra ACT 2601, Australia.

*Corresponding author: heidi.zimmer@csiro.au



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Abstract

A population of a narrow-range endemic *Prasophyllum* (Orchidaceae) that is similar to, but consistently different from, *Prasophyllum keltonii* D.L.Jones is described here as the new species *Prasophyllum laticallosum* G.P.Phillips & H.C.Zimmer. This new species occurs within Kosciuszko National Park and is separated from *Prasophyllum keltonii* D.L.Jones by approximately 20 km, but is morphologically distinct. Feral herbivores (including feral horses) threaten this species and its habitat.

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Introduction

Prasophyllum laticallosum G.P.Phillips & H.C.Zimmer sp. nov. is a perennial, terrestrial orchid first discovered by one of us (BB) in the Long Plain area of Kosciuszko National Park (NP). BB posted a photo of an unidentified leek orchid on a Facebook plant identification group on 26th January, 2021, and the high-quality photos of such a distinctive species were immediately identified as a likely new species by group members, including LC. GP (then, Royal Botanic Gardens, Sydney) visited to make the first collections and examine fresh material more closely. Additional photos taken by GP and BB, and circulated widely amongst a number of orchidologists, led

to a consensus that the species was indeed undescribed and most similar to *Prasophyllum keltonii*, another rare leek orchid occurring on the Bago Plateau approximately 20 km to the south-west.

A guide to the native orchids of NSW by Copeland and Backhouse (2022) was the first publication to recognise the new species, as *Prasophyllum* sp. aff. *keltonii* (Long Plain). At the time, the species was known from only one small group of plants; the species is now known from six small subpopulations of plants (defined as "geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange"; IUCN 2024) (Figure 1). A recent publication on the native orchids of the NSW Southern Tableland by

Hayashi and Egan (2024) also profiled the new species, while a targeted survey of the new species was conducted in January 2025 and documented by Copeland (2025).

There are three main lines of evidence indicating that *P. laticallosum* is a species, defined as a separately evolving lineage: (1) species is geographically disjunct from similar species, such that likelihood of genetic exchange is reduced; (2) flowering period distinct from similar species, again reducing the likelihood of genetic exchange; and (3) morphologically distinct flower structure, especially labellum, consistent among subpopulations and distinct from other species, indicative of heritable genetic variation. A key motivation for this manuscript is to aid the conservation of this species, which is threatened by grazing and habitat degradation from feral herbivores including horses (a key threatening process in NSW; NSW TSSC 2018).

Taxonomy

Prasophyllum laticallosum G.P. Phillips & H.C. Zimmer, sp. nov.

New South Wales, Southern Tablelands, Long Plain (exact locality withheld for conservation reasons), 2 Feb. 2021, G.P. Phillips 1403 & L. Watts (holotype: NSW1101672; isotypes: CANB, MEL, NSW (spirit)).

Plants robust, 300–600 mm tall. *Leaf* erect, terete, 280–550 mm long, c. 3–6 mm wide, bright green; base 2.5–4 mm wide, purplish-green; free part of leaf erect, margins revolute, 120–270 mm long, withered at anthesis. *Inflorescence* a dense spike 70–150 mm long, bearing 10–30 moderately to densely crowded flowers. *Ovaries* sessile, held obliquely erect to the stem, obovoid, 4–5 mm long, 2–3 mm wide, bright green. *Flowers* 12–16 mm long, 7–9 mm wide, green to reddish-brown with faint darker stripes, callus green to brown. *Dorsal sepal* 7–8 mm long, 4–5 mm wide, constricted towards apex, ovate to ovate-lanceolate, with up to 5 darker stripes; apical half shallowly decurved to decurved. *Lateral sepals* free to base, widely spreading, linear-lanceolate, 7–10 mm long, 1–2 mm wide, parallel, erect to recurved, distal margins revolute, apex entire. *Petals* 7–8 mm long, 1.5–2.5 mm wide, narrowly lanceolate, spreading, held flat to gently incurved, apex obtuse to acute. *Labellum* shortly stalked, porrect to obliquely erect. *Labellum lamina* broadly ovate when flattened, 5–7 mm long, 4–5 mm wide, broadest at base, constricted in the distal third, recurved to reflexed often with lamina tip parallel to base and projected through the lateral sepals; margins entire and marked with faint darker stripes. *Callus* broadly quadrate to ovate, 4–5 mm long, c. 3 mm wide, green to brownish-green, prominently raised, deeply and broadly channeled; base broadly concave; margins raised and ridge-like; ending above labellum bend; apex a short, raised knob. *Column* porrect from end of ovary,

ovate, 2–3 mm long, 2–2.5 mm wide; appendages oblong-ob lanceolate, 2–2.5 mm long, 0.5–0.8 mm wide, slightly shorter than or equal in length to the stigmatic plate; apex obtuse. *Anther* ovate, 2 mm long, 1.5 mm wide, purplish. *Pollinarium* c. 3 mm long; viscidium ovate, 0.5 mm long; hamulus narrow, c. 0.8 mm long; pollinia c. 1.5 mm long, bright yellow, sectile. *Stigma* ovate-quadrate, c. 1.5–2 mm long, c. 1.5–2 mm wide; rostellum about as high as appendages. *Capsules* obovoid, 5–6 mm long, 3–4 mm wide. *Seed* c. 0.05 mm long, brown; testa membranous, striolate. (Figures 2–4).

Diagnostic features. *Prasophyllum laticallosum* is closest morphologically to *P. keltonii* and *P. canaliculatum*, both of which also occur on the NSW Southern Tablelands. *Prasophyllum laticallosum* is distinguished by its longer inflorescence, shallowly decurved to decurved dorsal sepal, prominently recurved to reflexed labellum which is often projected through the lateral sepals and a blunt, knob-like labellum callus apex (Table 1, Jones 1997, Jones 2007). *Prasophyllum laticallosum* also flowers approximately 2–3 weeks later than *P. keltonii* (although some overlap may occur), and approximately 4–5 weeks later than *P. canaliculatum*.

Prasophyllum laticallosum flowers can be variable in colour, ranging from green to reddish-brown (Figures 2–4); diagnosis instead focuses on size, shape and arrangement of floral parts (Figure 5).

Phenology. Flowering in January–February.

Distribution & habitat. Southern Tablelands of NSW where currently known from six small subpopulations in northern Kosciusko National Park (Figure 1) ranging from 1300–1400 m asl. Habitat is sod tussock grassland and herbfield on subalpine plains where it occurs in boggy ground among tussocks, near to alpine bogs, fens and creeklines (Figure 6). Co-occurring plants include *Epacris microphylla*, *Juncus* sp., *Poa clivicola*, *Empodisma minus*, *Craspedia jamesii*, *Celmisia tomentella* and *Prasophyllum alpestre*. Soils are peaty loams on granite. The species occurs sympatrically with multiple *Prasophyllum* species, including *P. alpestre*, *P. sphacelatum* and *P. viriosum*.

Ecology. Flowering occurs freely in the absence of fire, and flowers attract a variety of nectar-seeking insects with nectar commonly observable at the base of the labellum.

Conservation status. *Prasophyllum laticallosum* is currently known from only six small subpopulations ranging in size from 3 to over 200 individuals, with a conservative total population estimate of 500 individuals. While only known from location, there is uncertainty surrounding the true population size of the species and it may be more common than records suggest. However, based upon the distribution of records and its habitat associations the species appears to have a very restricted distribution.

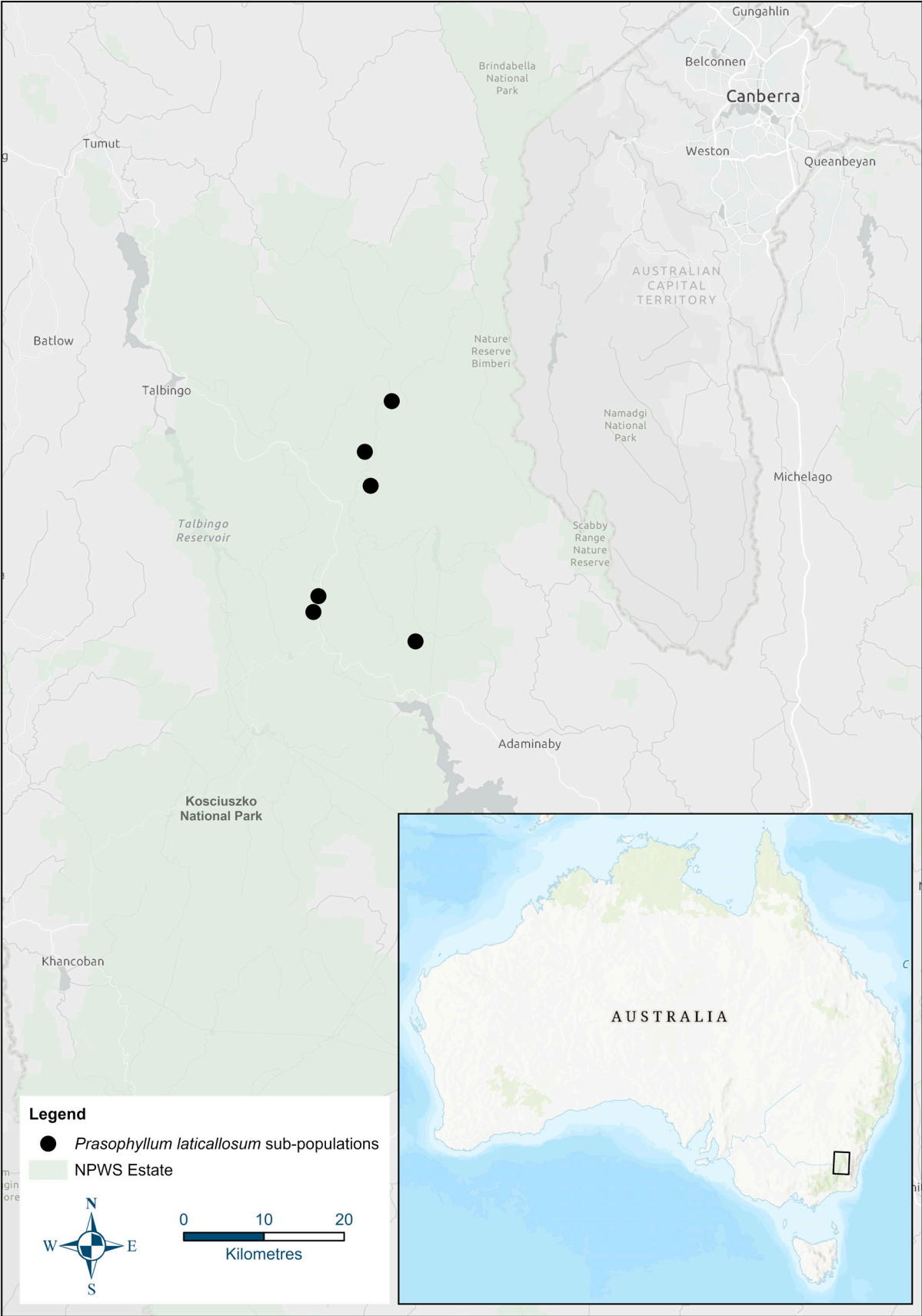


Figure 1. Distribution map for *Prasophyllum laticallosum*.



Figure 2. *Prasophyllum laticallosum* inflorescence: Long Plain. Credit: B. Towle.



Figure 3. *Prasophyllum laticallosum* inflorescence: Three Mile Creek. Credit: B. Towle.



Figure 4. *Prasophyllum laticallosum* inflorescence: Long Plain. Credit: L. Copeland.



Figure 5. Comparison of (L-R): *Prasophyllum laticallosum* from the type locality at Long Plain, New South Wales; *P. keltonii* from the type locality at McPhersons Plain east of Tumbarumba, New South Wales; and *P. canaliculatum* from the type locality on the Countegany - Wadbilliga Road east of Cooma, New South Wales. Credit: G. Phillips.



Figure 6. Habitat of *Prasophyllum laticallosum*: Long Plain. Credit: L. Copeland.

The key threats to the species and its habitat are trampling, grazing and habitat destruction by feral horses. Feral pigs may also be contributing to habitat disturbance. Competition with exotic perennial grasses such

as Sweet Vernal Grass (*Anthoxanthum odoratum*) and Yorkshire Fog (*Holcus lanatus*) is also a threat, particularly in the more disturbed areas close to roadsides.

Table 1. Comparison of *Prasophyllum laticallosum* and similar species

	<i>P. laticallosum</i>	<i>P. keltonii</i>	<i>P. canaliculatum</i>
Inflorescence length (mm)	70—150	50—90	50—110
Dorsal sepal	Shallowly decurved to decurved	Deflexed	Deflexed
Lateral sepal arrangement	Widely spreading	Narrowly spreading	Narrowly spreading]
Petal width (mm)	1.5—2.5	1.3	2
Labellum lamina shape	Broadly ovate	Ovate-lanceolate	Ovate-elliptical
Labellum venation	Obvious dark venation on the margins	Lacking obvious venation	Subtle venation
Labellum position	Prominently recurved to reflexed; often projected through the lateral sepals	Porrect to obliquely erect labellum; rarely projecting through the lateral sepals	Porrect to obliquely erect labellum; does not project through the lateral sepals
Labellum callus size (mm)	4—5 x 3	3 x 3	4 x 3
Labellum callus apex	Blunt, knob-like	Tailed	Tailed
Labellum channel	Broad, deep	Narrow, deep	Broad, deep
Flowering time	Jan-Feb	Late Jan-early March	Late Dec- Jan

Preliminary assessment of *Prasophyllum laticallosum* against the IUCN Red List Categories and Criteria indicates it is likely to be eligible for listing as Endangered under Criteria B1+2ab(iii) (geographic range), with an extent of occurrence of 202 km² (less than 5,000 km²), area of occupancy of 24 km² (less than 500 km²), occurrence in fewer than five threat-defined locations, and continuing decline at least in the extent, area and quality of habitat as a result of trampling, grazing and habitat destruction by feral herbivores. It also meets the threshold for listing as Endangered under Criterion C2a(i) (small population size) as its estimated population size is <2,500 and maximum subpopulation size is <250.

Etymology. From the Latin, ‘latus’, meaning broad and ‘callosus’, calloused, indurated, in reference to the particularly broad labellum callus of this species.

Further research. Uncertainty remains around the identity of a *Prasophyllum* taxon in Namadgi National Park, specifically whether it is *P. canaliculatum* or *P. keltonii*. This taxon is distinguished from *P. laticallosum* by its earlier flowering time, narrower labellum callus and preference for a particularly wet, swampy habitat.

Disclosures

The authors have no conflicts of interest to declare.

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