

Volume 17: 413–418
Publication date: 18 December 2014
[dx.doi.org/10.7751/telopea20148130](https://doi.org/10.7751/telopea20148130)

TELopea

Journal of Plant Systematics



plantnet.rbgsyd.nsw.gov.au/Telopea • escholarship.usyd.edu.au/journals/index.php/TEL • ISSN 0312-9764 (Print) • ISSN 2200-4025 (Online)

Prostanthera elisabethae (Lamiaceae, tribe Westringieae), a new species from northern New South Wales, Australia

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Abstract

The new species *Prostanthera elisabethae* B.J.Conn & T.C.Wilson (Lamiaceae) is described for the first time. The distribution and abundance of this species is inadequately known, having only been collected from near Ashby, on the North Coast of New South Wales, Australia. Although very similar to *P. linearis*, this taxon is different by having longer pedicels. Measurements and figures accompany the description provided here to substantiate this as a new species.

Introduction

An undescribed species of *Prostanthera* (Lamiaceae) was discovered in the Ashby region of the North Coast, New South Wales, Australia, occurring on private property in close proximity to the Sandy Creek and Mangrove Creek areas. The one putative population was surveyed in November 2014 and was found to consist of dispersed single individuals or small clusters of plants, occurring in an area of c. 1 hectare, with as few as five individuals per cluster, and with a larger cluster estimated to contain between 80–120 individuals (Conn 5908, 5909, 5911–5914).

This taxon is morphologically similar to *P. linearis* R.Br., *P. nivea* A.Cunn. ex Benth., *P. phyllicifolia* F.Muell. and *P. scutellarioides* F.Muell. because they all are open, erect, spreading shrubs with narrow leaves and flowers arranged in leafy botryoids. It most resembles *P. linearis* in that both have distinctly ridged or winged branches that are mostly glabrous, except for a band of minute hairs (sometimes only a few) at or near nodes (Table 1). These hairs sometimes extend distally along the adaxial side of the short shoots. However, this taxon is here described as new because it has much longer pedicels (10–20 mm long) and a longer abaxial calyx lobe (compared to adaxial lobe) than all of the above species. Although not so important to the recognition of *P. elisabethae*, the calyx abaxial lobe of *P. scutellarioides* is often retuse with two sharp points, and hence, differs from all of the above species discussed here.

A description of *P. elisabethae*, including images, comments on conservation status, and a modification of the New South Wales key to species of *Prostanthera* (Conn 1992, 1993) is provided. Specimens examined are listed according to botanical regions of New South Wales (Anderson 1961; Jacobs and Pickard 1981).

Table 1. Comparison of selected morphological characters useful for distinguishing between *Prostanthera elisabethae* and other morphologically similar species

	Species				
Morphological Characters	<i>P. elisabethae</i>	<i>P. linearis</i>	<i>P. nivea</i>	<i>P. phylicifolia</i>	<i>P. scutellarioides</i>
Branches	4-winged or strongly 4-ridged	4-winged or strongly 4-ridged	not distinctively ridged	not distinctively ridged	not distinctively ridged
Branch indumentum	few hairs at nodes, otherwise glabrous	narrow band of hairs at nodes and on base of short shoots	hairy	hairy	hairy
Leaf lamina	slightly recurved or revolute	slightly recurved or revolute	flat or incurved	slightly recurved or revolute	recurved or revolute
Pedicel length (mm)	10–22	c. 2–4	c. 1–3	c. 1–2	c. 1–4
Pedicel to flower length ratio	at least 1:1	1:4	1:5	1:7	1:2

Taxonomy

Prostanthera elisabethae B.J.Conn & T.C.Wilson, sp. nov. Figs 1, 2

Diagnosis: *Prostanthera elisabethae* differs from *P. linearis* R.Br. by its long pedicels (10–20 mm long; c. 2.5 mm long in *P. linearis*), longer abaxial calyx lobe compared to the adaxial lobe (lobes equal or almost so in *P. linearis*), the apex of the adaxial calyx lobe being rounded (distinctly apiculate in *P. linearis*).

Type: Australia: New South Wales: North Coast: near Ashby (precise locality withheld due to conservation concerns), B.J. Conn 5911 & H.M. Conn, 3 Oct 2014 (holotype: NSW870879; isotypes: BRI, CANB, K, MEL).

Erect to spreading shrub, to 2(–2.5) m tall, 1–2 m wide (Fig. 1a). *Branches* quadrangular, distinctly 4-ridged to 4-winged (Fig. 1c), non-glandular or indistinctly glandular, glabrous, except for a few minute hairs at or near nodes between base of opposite leaves, often extending from node of short shoots arising from branches along more basal internode; hairs simple, straight to curled, mostly antorse, 0.1–0.2 mm long, white; short shoots densely glandular, with glands sub-spherical, small, 0.15–0.2 mm diam. *Leaves* green, slightly aromatic to non-aromatic when crushed. *Petiole* indistinct, c. 1 mm long. *Lamina* oblong to narrowly elliptic when flattened, 15–26 mm long, 1.5–2 mm wide, sometimes appearing linear because margin slightly recurved to revolute, sometimes with only abaxial surface of mid-vein visible, green, moderately glandular on both surfaces with glands hemispherical, 0.15–2 mm diam.; adaxial surface with mid-vein slightly depressed; abaxial surface with mid-vein distinct and raised, lateral veins not visible to indistinct; base shortly attenuate; margin slightly recurved to revolute, entire; apex subacute, sometimes slightly hooked. *Inflorescences* [conflorescences] foliose, botryoidal; uniflorescences monadic, hence flowers occurring singularly in distal axils. *Podium* (pedicel—Fig. 2d) 10–22 mm long, glabrous, ± maroon throughout, darker distally (propodium to anthopodium ratio 10–15; anthopodium indistinct). *Prophylls* persistent, often slightly sub-opposite to distinctly so, inserted below base of calyx, linear to very narrowly elliptic, 1.5–2.7 mm long, 0.3–0.5 mm wide; margin sparsely hairy towards base, with hairs white, spreading to antorse, 0.1–0.2 mm long. *Calyx* green on abaxial surface, maroon adaxially, especially on adaxial lobe; outer surface glabrous, except for a few hairs near sinus, moderately glandular; inner surface densely hairy towards margin of lobes, glabrous basally; tube 3–3.5 mm long; lobes with margin slightly fimbriate, with a few white hairs up to 0.2 mm long; *abaxial lobe* broadly ovate, 2.2–2.5 mm long, 1.5–3 mm wide, apex rounded; *adaxial lobe* broadly ovate, 1.5–2.2 mm long, c. 3 mm wide; apex rounded and apiculate. *Corolla* 12–13 mm long, pink-mauve, paler to almost white toward base of lobes, with darker maroon and dull orange markings in throat, and sometimes two dull orange markings on abaxial lobe (Fig. 2 a–c), outer surface very sparsely hairy (hairs 0.4–0.5 mm long), inner surface sparsely hairy distally, with hairs white, spreading, ± curled, (0.2–)0.6–1 mm long; *tube* 5–6 mm long; *lobes* moderately hairy basally (as for inner surface of tube) with white hairs, margins distally undulate and variously irregular; abaxial lobe broadly elliptic to almost broadly spatulate, 6–8 mm long, 7–7.5 mm wide near apex, apex rounded and bilobed (sinus 1–1.2 mm long, c. 2 mm wide

distally); lateral lobes broadly elliptic, 4.5–6 mm long, 4.5–5.2 mm wide, apex broadly obtuse to rounded; adaxial median lobe-pair very depressed ovate, 1–2 mm long, 9–10 mm wide together, apex bilobed. Stamens inserted 2–5 mm above base of corolla; filaments 1.5–2.5 mm long; anthers 0.8–1 mm long, connective with trichomes white, 0.1–0.2 mm long, extended to form a basal appendage 0.6–0.9 mm long, terminating in narrowly triangular trichomes up to 0.1 mm long. Pistil 7.5–9 mm long; ovary c. 0.6 mm long; stigmatic lobes to 0.4 mm long. Mericarps maturing to dark brown, 1.5–1.7 mm long, minutely papillose, distally 1–1.2 mm extended beyond base of style. Seeds not seen.

Other specimens examined: Australia: New South Wales: North Coast: Ashby area, Conn 5908 & H.M. Conn, 3 Oct 2014 (BRI, NSW), 5909 (BRI, NSW), 5912 (BRI, MEL, NSW), 5913 (MEL, NSW), 5914 (BRI, NSW); J. Mousley s.n., 31 Jul 2006 (CFSHB33319, NSW840984); S.P. Phillips & B.A. Phillips 1194, 14 Jul 2004; 1282, 8 May 2005; 1286, 10 May 2005 (all BRI).

Notes: The long podium (pedicel) characteristic of this species is unusual in *Prostanthera*, only known in the Western Australian species, *P. pedicellata* B.J.Conn (Conn 1984), a member of *P. sect. Klanderia* (F.Muell.) Benth. The characteristics of the calyx and corolla shape, and corolla colour, suggest that this species belongs to *P. section Prostanthera* (Conn 1988, 1992, 2004). Even though it has entomophilous characteristics of *P. sect. Prostanthera*, it still could be related to *P. pedicellata* because the current sectional classification may be artificial. Wilson et al. (2012) concluded that *P. sect. Prostanthera* and *P. sect. Klanderia* could not be resolved as monophyletic groups based on molecular data.

When compared with other species of *P. sect. Prostanthera*, this species appears to be morphologically similar to *P. linearis*, *P. nivea*, *P. phyllicifolia* and *P. scutellarioides*; however, the latter four species have shorter pedicels and a longer adaxial calyx lobe in relation to the abaxial calyx lobe. *Prostanthera nivea*, *P. phyllicifolia* and *P. scutellarioides* differ by not having distinct ridges or wings on the stem, which is hairy, or at least has hairs in the grooves between the shallow ridges. *Prostanthera nivea* has leaves that are weakly incurved or flat, or almost so, whereas *P. elisabethae* have leaves that are slightly recurved to revolute. *Prostanthera linearis* sometimes has flowers arranged as terminal racemose inflorescences where flowers are subtended by caducous bracts or reduced leaves; as of yet, this has not been observed on *P. elisabethae*. Although the calyx lobes of *P. linearis* are almost equal, the adaxial lobe of this species is distinctly apiculate.

Etymology: The specific epithet is based on the well-established Latinized form of ‘Elizabeth’, namely ‘Elisabeth’. This species is named after our very close friend and colleague, the late Elizabeth Anne Brown (1956–2013, Fig. 3) in recognition of her contribution to systematic botany and specifically for accompanying Barry Conn while searching for species of *Prostanthera* in northern New South Wales.

Distribution: *Prostanthera elisabethae* is only known from the Ashby area, near Maclean, North Coast, New South Wales.

Habitat: This species occurs in *Eucalyptus pilularis*–*Corymbia intermedia* dry sclerophyll forest in ridge-line communities (Fig. 1a) and on lower slopes in wet sclerophyll forests, on sandy soils derived from sandstone (Mousley s.n.), and at elevations of about 35–100 m (Conn 5908, 5909, 5911–5914; Phillips & Phillips 1194, 1282, 1286). It forms part of the open to moderately dense understorey that reaches up to 2.5 m containing *Lambertia formosa*, *Persoonia laevis*, *Pteridium esculentum* and *Dianella* sp.

Conservation status: The conservation status of *Prostanthera elisabethae* is data deficient and the level of threat should be assessed as a matter of urgency since its known distribution is restricted to privately held land in the Ashby region of northern New South Wales. When the population was surveyed in October 2014 it was noted that juvenile plants (Fig. 1b) were common. Regeneration appears to be from seeds rather than from under-ground stems (Conn 5909).

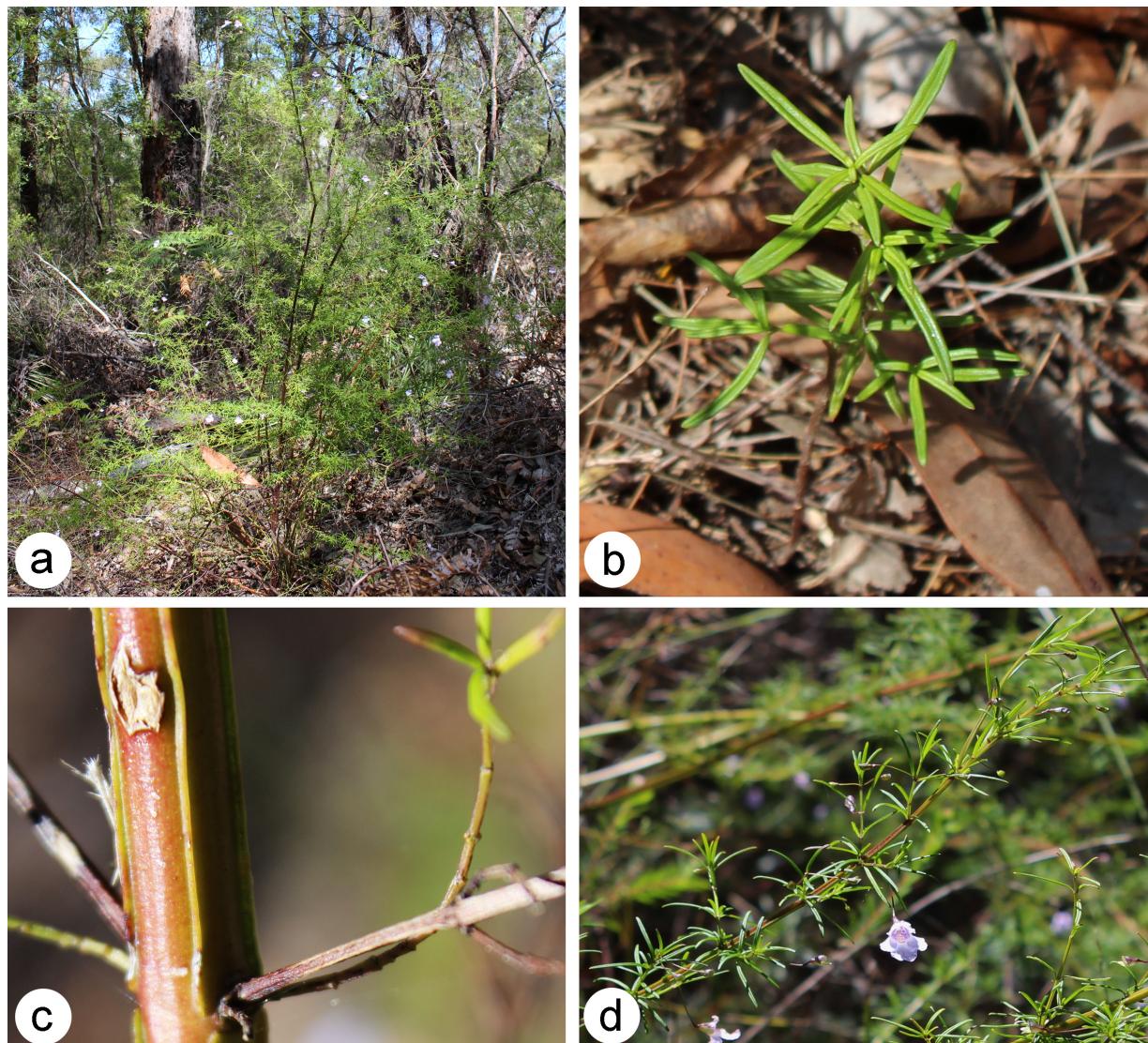


Fig. 1. *Prostanthera elisabethae*. **a**, habit of mature plant. **b**, juvenile plant. **c**, ridged stem of mature plant. **d**, flowering branchlet. Photographs: B.J. Conn

Key to species

An excerpt from the key to the New South Wales species of *Prostanthera* (Conn 1992) is here amended to incorporate *P. elisabethae*.

- 28 Branches glabrous, except for nodes 28a
- 28a Nodes and bases of short shoot distinctly hairy; inflorescences terminal, racemose, with flowers occasionally clustered; flower approximately 4 times longer than pedicel; bracteoles (prophylls) opposite; adaxial calyx lobe apiculate and approximately equal in size to abaxial calyx lobe *P. linearis*
- 28a* Nodes with a few short hairs present; inflorescences foliose, hence flowers appearing to be axillary, never clustered in terminal racemose inflorescences; pedicels as long as or up to 2 times as long as the flower; bracteoles (prophylls) more or less subopposite; adaxial calyx lobe rounded, shorter than abaxial calyx lobe *P. elisabethae*
- 28* Branches hairy throughout 29



Fig. 2. *Prostanthera elisabethae*. **a**, open corolla, showing stamens and staminal connectives in early anthesis. **b**, open corolla, showing stamens repositioning as the anthers begin to senesce. **c**, open corolla at late anthesis, showing stamens repositioned and style curved downwards. **d**, fruiting branchlet, showing leaves, long podia, immature fruiting calyx (below), with abaxial lobe of calyx infolded and enclosing developing mericarps, and mature fruiting calyx (above). Scale bar: a–d = c. 2.5 mm. Photographs: B.J. Conn

Acknowledgments

The authors thank Robert (Bob) and Barbara Brownlow (Ashby, New South Wales) for their hospitality and for providing access to their property so that the morphological variation within the known population of *Prostanthera elisabethae* could be studied in detail. Sue and Brian Phillips kindly provided photographs and additional information on the distribution of this species. Helen Conn (Picnic Point, N.S.W.) accompanied Barry Conn as a joint collector of the representative herbarium samples. We acknowledge that Trevor Wilson was supported by Australian Biological Resources Study (ABRS) grant RFL212-43.

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Fig. 3. Elizabeth A. Brown, field work in Tasmania, Dec 2007 Photograph: Allan Fife

Manuscript received 16 October 2014, accepted 15 December 2014