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Prostanthera tallowa: a new species from New South Wales, Australia

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Abstract

Prostanthera tallowa B.J.Conn & T.C.Wilson (Lamiaceae) is a possibly vulnerable species that is here described from the Central Coast region of New South Wales, Australia.

Introduction

Several species of *Prostanthera* have been informally described in the *Flora of New South Wales* (Conn 1992) because they were incompletely known at the time of publication of the 'Flora' volume. Interpretation of morphological data from field studies of the taxon referred to as '*P.* species E', in the above 'Flora', and the results of current phylogenetic studies, based on DNA markers (Wilson 2010), have justified the conclusion that this taxon is a distinct species worthy of formal recognition.

Terminology follows Conn (1984), except inflorescence terminology as modified by Conn (1995).

Taxonomic treatment

Prostanthera tallowa B.J.Conn and T.C.Wilson, ***sp. nov.***

a *Prostanthera lasianthos sensu stricto* axe inflorescentiae non ramo foliis fere dimidiis latitudinibus differt.

Holotype: New South Wales: Central Coast: Morton National Park: NE of Tallowa Dam on the Tallowa Dam road, *R. Miller s.n.*, Jan 1988 (NSW 861009); *isotype*: AD, E, MEL, MO.

'*P.* species E' – B.J. Conn, *Flora of New South Wales* 3 (1992) 656

'*Prostanthera* sp E *sensu* B.J. Conn (1992)' – B.J. Conn, in *PlantNET* (2004).

Openly branched shrub, 1–2 m high; bark grey, slightly rough and flakey. *Branchlets* olive-green, distally with maroon tinge, subterete, laterally with a pair of shallow longitudinal ridges, glabrous except for a few hairs on nodes; hairs ± appressed, antrorse, 0.1–0.2 mm long, straight, white; glands distinct, hemispherical, subsessile, moderately to densely glandular [64–80 glands/mm^2]. *Leaves* often slightly glossy, mid-green adaxially, green abaxially, strongly aromatic (when crushed); *petiole* 2–5 mm long; *lamina* narrowly elliptic, (20–)30–40 mm long, 4–5 mm wide [length to width ratio (5–)7–9, length of maximum width from base to total lamina length ratio 0.4–0.5], glabrous or with occasional hairs, partly near base, then hairs 0.1–0.2 mm long, sparsely

to moderately glandular [30–40 glands/mm^2]; base long-attenuate; margin slightly to moderately recurved, distantly toothed (teeth 16–20, 0.2–0.4 mm long), apex obtuse with blunt point c. 0.2 mm long; venation indistinct, midrib raised on abaxial surface, slightly sunken adaxially. *Inflorescence* a frondose racemiform conflorescence; uniflorescence botryoidal, (6–)10–20-flowered [per botryoid]; *pherophylls* not persistent, sessile, narrowly ovate, 3.5–4.5 mm long, 0.8–1.2 mm wide. *Podium* 2.5–3 mm long, glabrous, densely glandular. *Prophylls* green, persistent, inserted near base of calyx [a_1 axis to anthopodium ratio 3–6.7], opposite, narrowly ovate to narrowly elliptic, 3.5–5 mm long, 0.5–0.7 mm wide [length to width ratio 6.4–8.4, length of maximum width from base to total lamina length ratio 0.3–0.4], fimbriate (hairs as for leaf lamina), moderately glandular; base attenuate; margin entire; apex obtuse; venation not visible. *Calyx* striate, with outer surface pale green on abaxial surface of tube, very slightly maroon-tinged adaxial surface of tube; glabrous, densely glandular; inner surface of tube glabrous; lobes pale green, with outer surface glabrous, except margin densely fimbriate (hairs c. 0.1 mm long), densely glandular, inner surface densely hairy distally (hairs white, 0.1–0.2 mm long); *tube* 3–3.5 mm long; *abaxial lobe* very broadly to broadly ovate, 2.5–4 mm long, 2–4 mm wide at base [length to width ratio 0.8–1.3], apex rounded; *adaxial lobe* very broadly ovate, 3–4 mm long, 4–5.2 mm wide at base [length to width ratio 0.7–0.8], apex rounded [adaxial lobe length to abaxial lobe length ratio 1–1.2]. *Corolla* 12–15 mm long, superficially appearing white but with pale mauve tinge on outer surface of tube and all lobes; inner adaxial and lateral surface of tube with maroon dots; base of lateral lobes with maroon dots; adaxial medial-lobe pair and lateral lobes with mauve tinge; abaxial lobe with inner surface very faintly tinged with mauve distally, medially white with pale orange-brown dots towards base; outer surface glabrous basally, distally sparsely to moderately hairy [20–25 hairs/mm^2], hairs 0.4–0.7 mm long, ± spreading, slightly appressed, moderately glandular [30–35 glands/mm^2]; inner surface sparsely hairy, mostly on basal half of lobes, but extending into throat, hairs 0.4–1 mm long, spreading, multicellular; *tube* 7–8 mm long; *abaxial median lobes* broadly spathulate, 7.5–9 mm long, 7–8 mm wide [length to width ratio c. 1.1], apex slightly irregular and rounded, bilobed (sinus 2.5–3 mm long, 2.5–3 mm wide distally); *lateral lobes* narrowly elliptic, 4–5 mm long, 2.5–3.5 mm wide [length to width ratio 1.4–1.6], apex rounded, slightly irregular; *adaxial median lobe-pair* very broadly ovate, 3–4.5 mm long, 5–6 mm wide [length to width ratio 0.6–0.8], apex rounded, irregular, bilobed (sinus c. 3 mm long, median margin of lobes slightly touching or overlapping). *Stamens* inserted c. 2.5 mm above base of corolla; filaments white, c. 4.5 mm long; anthers pale mauve, 1–1.2 mm long, base of lobes (theca) glabrous or with a few narrowly triangular trichomes (up to 0.1 mm long), connective appendage white, 0.8–1.4 mm long, with a few narrowly triangular trichomes 0.1–0.3 mm long. *Disc* 0.4–0.5 mm long. *Pistil* 8.5–10.4 mm long; *ovary* cylindrical obovoid, 0.3–0.4 mm long, diam. at base 0.6–0.8 mm, lobes 0.3–0.4 mm long; *style* 7.5–8.5 mm long; *stigma lobes* 0.6–1 mm long (slightly unequal in length). *Fruiting calyx* not enlarged or only slightly so, abaxial lobe enclosing developing mericarps. *Mericarps* 1.8–2 mm long, distally extended 0.8–1 mm beyond base of style, distal diam. c. 2 mm; seeds ellipsoid-cylindrical, 1–1.2 mm long, c. 0.4–0.5 mm diam. (Figure 1a-f).

Distribution: only known from Tallowa Dam region, Morton National Park, New South Wales, Australia.

Phenology: main flowering period occurs from November to March.

Habitat: open *Eucalyptus* forest (*E. punctata*, *Corymbia eximia*, *Syncarpia glomulifera*, *Allocasuarina littoralis*) with open shrub layer composed of *Acacia* sp., *Bursaria spinosa*, *Cissus antarctica*, *Crowea saligna*, *Elaeocarpus reticulata*, *Leucopogon* sp., *Lomandra longifolia*, *Persoonia linearis*, and *Zieria* sp.. Found growing in sandy-loam rocky soils derived from sandstone, on cliff faces or amongst exposed sandstone boulders in talus slope (Figures 1a & b).

Conservation status: the conservation status of *P. tallowa* is unknown; however the known distribution of this species is very small, with only a few plants observed (c. 50 plants known – *Conn 5313*, *Wilson 234*). Although this species occurs in the Morton National Park, it appears to have a very restricted distribution and so should, at least, be considered as vulnerable.

Etymology: the specific epithet refers to its occurrence near Tallowa Dam; an indeclinable noun in apposition.

Affinities: recent unpublished molecular phylogenetic studies by Wilson (2010) recovered *P. tallowa* as sister to *P. lasianthos sensu stricto* rather than having close affinities to *P. linearis* R.Br., as suggested by Conn (1992, 2004).

Notes: *Prostanthera tallowa* differs from *Prostanthera lasianthos sensu stricto* by the axis of inflorescences being unbranched (it is usually much-branched and panicle-like in *P. lasianthos*) and leaves are almost half the width of those in *P. lasianthos*; (5–)7–9 times as long as wide, *cf.* 3–4.5 times in *P. lasianthos*. Morphologically, *P. tallowa* and *P. linearis* have similar shaped, linear leaves (Figs 1b & d). Although the typical variant of *P. lasianthos* has larger and narrowly ovate leaves, the 'rheophytic variant' and 'Girraween/Polblue variant' of *P. lasianthos sensu lato* (Conn 1992, 2004) have narrower and smaller leaves. However, the leaves of these two variants are at least twice as broad as those of *P. tallowa* (ranging from 7–12 mm wide in the above two variants cf. 4–5 mm for

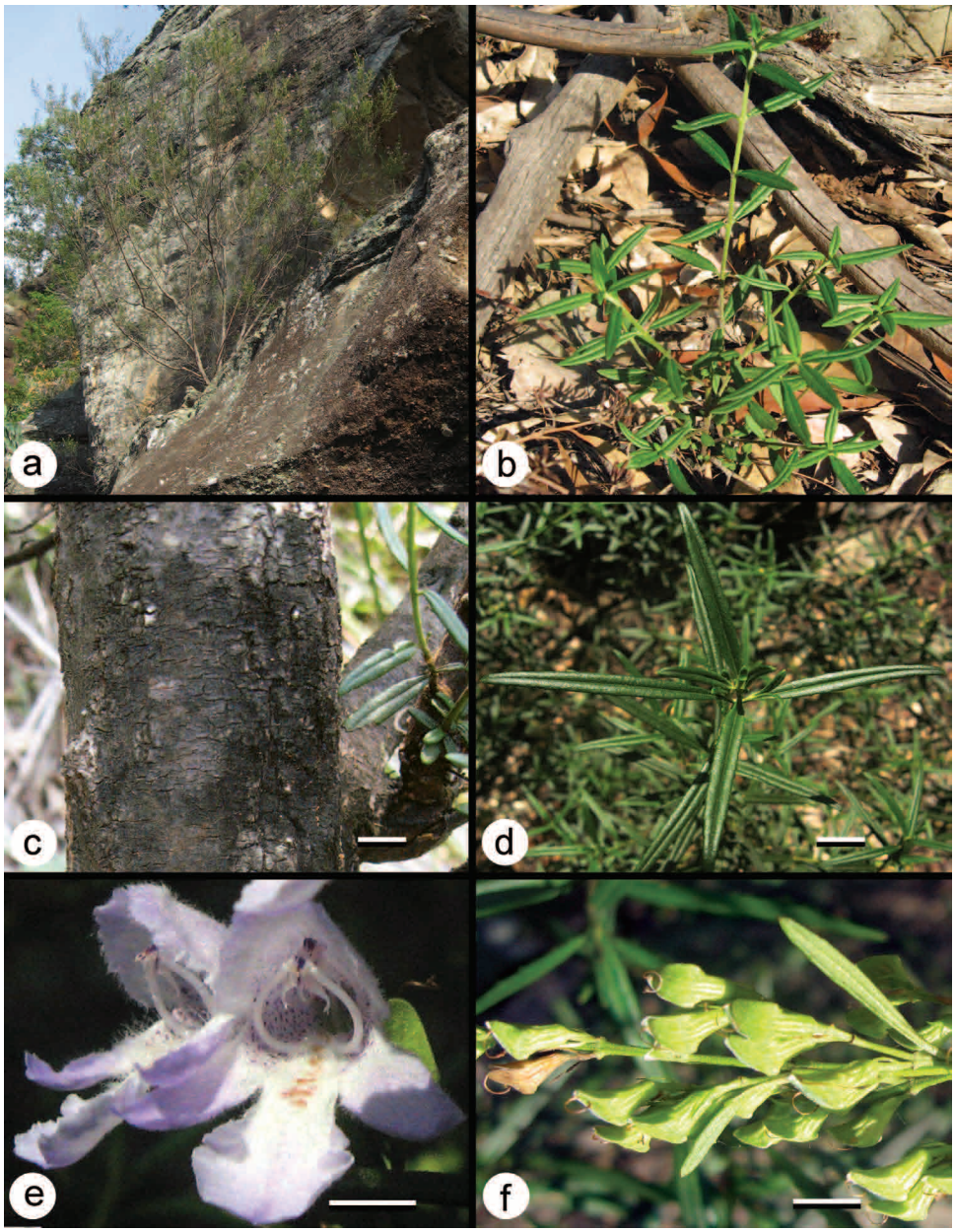

Fig. 1. *Prostanthera tallowa*. **a,** habit of mature plant. **b,** juvenile plant. **c,** bark of mature plant. **d,** apical view of shoot tip and leaves of mature plant. **e,** open corolla, showing stamens and staminal connectives in early anthesis. **f,** young infructescence, with abaxial lobe of calyx infolded and enclosing developing mericarps. Scale bar: c & d = 10 mm; e & f = 5 mm. Photographs: T.C. Wilson.

Table 1. Comparison of selected vegetative morphological characters and habitat preferences useful for distinguishing *Prostanthera lasianthos, P. linearis* and *P. tallowa.*

	Species		
Morphological Characters	***P. lasianthos***	***P. linearis***	***P. tallowa***
Petiole length	4–8 mm	< 2 mm	2–5 mm
Lamina length	60–95 mm	15–45 mm	30–40 mm
Lamina width	20–30 mm	≤ 4 mm	4–5 mm
Lamina margin teeth	distinct	absent, margin entire	distinct, short
Habit	small to medium-sized tree, sometimes a large shrub, 1–6 m high	erect shrub, 1–3 m high	open shrub, 1–2 m high
Habitat	wet sclerophyll forest of moist gullies and watercourses, frequently bordering cool-temperate rainforest (Conn 2004)	sclerophyll forest, often in riverine habitats, in sandy soils over sandstone or gravelly clays (Conn 2004)	sclerophyll forest, in sandy-loam rocky soils derived from sandstone, on cliff faces or amongst exposed sandstone boulders

P. tallowa). *Prostanthera tallowa* also resembles *P. lasianthos* because, unlike *P. linearis*, both have petiolate leaves with margin of lamina finely-toothed (Fig. 1d) and the leaves are aromatic when crushed. Other morphological features and habitat preferences useful for distinguishing these three species are summarised in Table 1. One morphological feature which is very similar between all three species is the shape and colour of the corolla (compare Fig. 1e with figures and photographs in Conn 2004).

During early anthesis, anthers are held above throat of corolla (Fig. 1e) and it is assumed that pollen is transferred to the dorsal surface of floral visitors. Although pollinators have not yet been identified for *P. tallowa*, we have observed visits from honey bees (*Apis mellifera*) as well as unknown species of Diptera, Lepidoptera, and native bees.

Other specimens examined: New South Wales: Central Coast: Morton National Park: near gate to Tallowa Dam, *B.J. Conn 5313 & H.M. Conn*, 11 Apr 2010 (NSW, MEL); along escarpment on Tallowa Dam Road, *T.C. Wilson 234 & E.D. Cooper*, Mar 2010 (NSW); near junction of Kangaroo and Shoalhaven rivers, Kangaroo Valley, *A. Fairley 2*, Feb 1985 (MEL); Kangaroo Valley area, *R. Miller s.n.*, Sep 1985 (MEL1543231).

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