

Pimelea cremnophila (Thymelaeaceae), a new species from the New England Tablelands escarpment of northern New South Wales

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Abstract

Pimelea cremnophila L.M.Copel. & I.Telford, a rare new species endemic to the Macleay Gorges east of Walcha, is described. Notes are given on its distribution, habitat and conservation status. Although all plants are known from a conservation reserve the species is considered to be endangered due to its restricted distribution and small population size.

Introduction

The gorge country of the eastern escarpment of the New England Tableland is well known as a 'hot spot' for endemism. Narrowly endemic taxa in the Macleay and Guy Fawkes River gorges include *Hakea fraseri*, *Phebalium squamulosum* subsp. *verrucosum*, *Leucopogon trichostylus*, *Zieria floydii* and *Bertya ingramii*. Other taxa thought to be endemic to the area include undescribed members of *Westringia*, *Persoonia*, *Acalypha*, *Zieria*, *Callistemon*, *Eucalyptus*, *Leionema* and *Olearia* (Briggs & Leigh 1996; Copeland 1997). Recent fieldwork in Oxley Wild Rivers National Park has yielded a species of *Pimelea* which did not fit any currently known taxa in the treatments of Threlfall (1983), Rye (1990) and Harden (1990). An examination of *Pimelea* specimens held in CANB, NSW and NE also supported the recognition of the Macleay Gorges *Pimelea* as distinct (herbarium abbreviations follow Holmgren et al. 1990). This paper describes the new species and gives notes on its distribution, habitat and conservation status.

Pimelea cremnophila L.M.Copel. & I.Telford *sp. nov.*

P. umbratica similis sed indumento foliari caulinoque longiore densioreque et filamentis staminum distinctis differt.

Type: New South Wales: Northern Tablelands: Oxley Wild Rivers National Park, c. 40 km ENE of Walcha, 30° 55' S, 151° 52' E, *L.M. Copeland 3816, I.R. Telford & P.J. Lupica*, 13 Oct 2004 (holo NSW; iso BRI, CANB, CHR, HO, K, MEL, MO, NE). (Specific locality details withheld for conservation purposes).

Erect shrub to 2.5 m tall. *Stems* red-brown, hirsute with strigose white antrorse hairs to 3 mm long, glabrescent with age. *Leaves* opposite, petiolate; petioles c. 1 mm long, densely

hairy; lamina narrow-elliptic to narrow-ovate, acute, 10–37 mm long, 2.5–6 mm wide, secondary venation indistinct, the adaxial surface glabrous or sparsely hairy mainly along the midvein, the abaxial surface paler and hirsute with scattered white, strigose hairs, the hairs denser and longer, to 2.5 mm long, on the margins. *Inflorescences* axillary or terminal, extending up to 15 nodes below shoot apex, 1–4 flowered, condensed racemes 2–3 mm long; peduncle c. 1 mm long, strigose; bracts leaf-like, c. 2.5–5 mm long, caducous. *Flowers* functionally male, bisexual or functionally female; sessile. *Hypanthium* antrorse hairy outside, glabrous inside, greenish-white; sepals 4, narrow-ovate. *Male flowers* with hypanthium 6–8 mm long; sepals 3–4 mm long; stamens 2, rarely 3, inserted near summit of hypanthium; filaments c. 1 mm long; anthers narrow-oblong, c. 1.7 mm long; pistillode c. 1 mm long. *Bisexual flowers* protandrous, with hypanthium 4–6.5 mm long; sepals 3–4 mm long; stamens similar to male flowers; ovary c. 1.5 mm long, with erect hairs at apex; style eventually exerted; stigma brush-like. *Female flowers* with hypanthium 3–4.5 mm long, circumscissile c. 1 mm below sepal attachment; sepals 1.5–2.5 mm long; staminodes minute; gynoecium similar to bisexual flowers. *Fruit* dry, ovoid, enclosed in the persistent base of the hypanthium, pale green. *Seed* ovoid, 3–3.5 mm long, c. 2 mm wide, with minute longitudinal, foveate furrows, red-brown (Fig.1).

Additional specimens examined: New South Wales: Northern Tablelands: Oxley Wild Rivers National Park: c. 40 km ENE of Walcha, 30°55'S, 151°52'E, *L.M. Copeland 3444* & *P. Lupica*, 24 Oct 2002, (BRI, CANB, MEL, NSW, NE); c. 40 km ENE of Walcha, 30°55'S, 151°52'E, *L.M. Copeland 3608* & *S. Doak*, 8 Oct 2003, (CANB, MEL, NE, NSW); rim of gorge of Spring Ck., c. 38 km E of Walcha, 30°55' S, 151°51'E, *L.M. Copeland 3735*, *J.J. Bruhl* & *I.R. Telford*, 4 May 2004, (BRI, CANB, NSW, NE); c. 38 km ENE of Walcha, 30°55'S, 151°51'E, *L.M. Copeland 3819*, *I.R. Telford* & *P.J. Lupica*, 13 Oct 2004, (AD, NSW, NE); c. 37 km ENE of Walcha, edge of gorge of Redmans Ck, 30°56'S, 151°51'E, *L.M. Copeland 3822*, *I.R. Telford* & *P.J. Lupica*, 13 Oct 2004, (AD, AK, BRI, CANB, CHR, HO, MEL, NSW, NE). (Specific locality details of all specimens withheld for conservation purposes).

Distribution: apparently confined to gorge rims in the southern part of Oxley Wild Rivers National Park, approximately 40 km E of Walcha. Several small populations are scattered along a 5 km stretch of gorge rim. A large area of similar habitat exists within the park and further searches of this area of gorge rim could potentially yield additional populations.

Habitat: all plants observed grow in a shallow, skeletal loam over metasediments on exposed cliff tops or more sheltered cliff-side sites with south-westerly to south-easterly aspects. Altitude ranges from 1050–1090 m. Associated species include *Allocasuarina littoralis*, *Eucalyptus retinens*, *E. campanulata*, *Acacia blakei* subsp. *diphylla*, *Maytenus silvestris*, *Prostanthera rhombea*, *Dodonaea rhombifolia*, *Astrotricha longifolia*, *Ozothamnus obcordatus*, *Persoonia media*, *Callistemon* sp. nov., *Correa reflexa* var. *reflexa*, *Lepidosperma elatius* s.l., *L. laterale*, *Rhodanthe* sp. nov. and *Notodanthonia longifolia*.

Flowering: flowers have only been observed in early to mid October, but the presence of unopened floral buds and young fruits on specimens suggests that the species is likely to flower throughout spring.

Conservation status: the species is currently known from fewer than 100 individuals and relatively few juveniles have been observed. Potential threats include an inappropriate fire regime and grazing by feral goats. Several mature individuals appeared to die during

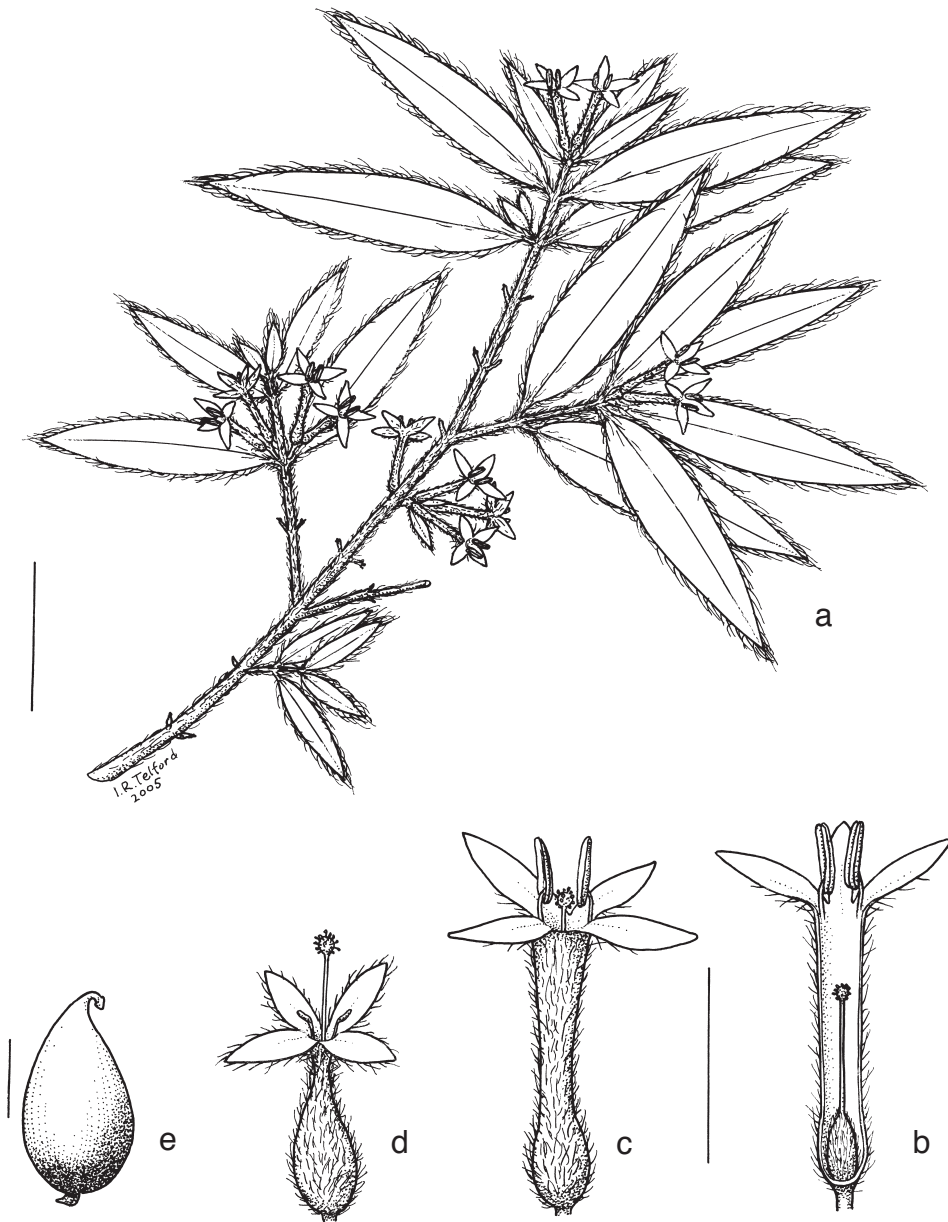


Fig. 1. *Pimelea cremnophila* **a**, flowering branch; **b**, bisexual flower prior to elongation of style, with part of hypanthium and one sepal removed; **c**, bisexual flower; **d**, functionally female flower; **e**, seed. Scale bar: a = 10 mm; b–d = 5 mm; e = 1 mm. (a, b, e, from *L.M. Copeland 3608* & *S. Doak*; c, d, from *L.M. Copeland 3816*, *I.R. Telford* & *P. Lupica*)

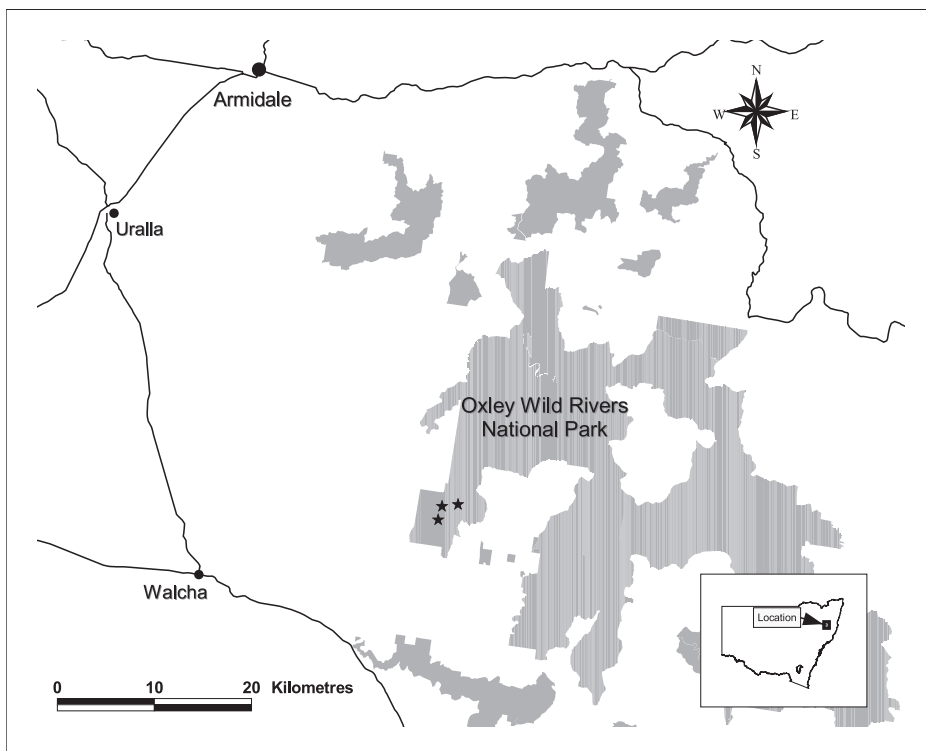


Fig. 2. The distribution of *Pimelea cremnophila* (denoted by ★) in northern New South Wales.

the period 2002–2003, presumably due to the extreme drought conditions endured at the time. Although all known plants are reserved in Oxley Wild Rivers National Park, the species should still be considered endangered due to its highly restricted distribution, small population size and the potential threats. A ROTAP code of 2ECit is recommended following the criteria of Briggs & Leigh (1996).

Etymology: the specific epithet *cremnophila* is derived from the Greek *cremnos* (cliff) and *philos* (loving), in reference to its habitat.

Comparison with similar species: *Pimelea cremnophila* belongs to section *Epallage* (Endl.) Benth. and appears to be most similar to *P. umbratica*. It differs from *P. umbratica* by its longer, denser indumentum, less prominent secondary leaf venation, predominantly axillary inflorescences, and smaller anthers on distinct filaments (Table 1).

Sexuality in sect. *Epallage* requires further study. Threlfall (1983) stated that in *P. umbratica*, male, female and bisexual flowers may occur on the same individual. However, Threlfall included *P. leptospermoides* under *P. umbratica* and did not cite which specimens had been studied for that observation. Rye (1990) claimed *P. umbratica* has bisexual and female flowers. We have observed apparently functionally male (with pistillodes) and functionally female (with staminodes) flowers on the same plant. In *P. cremnophila*, plants appear to be polygamous, with functionally male and bisexual flowers on the same plants and only functionally female on others.

Note that in Harden (1990) the description of *P. umbratica* follows Threlfall (1983) with *P. leptospermoides* (a central Queensland serpentinite endemic) included in the circumscription. The leaves of *P. leptospermoides* are alternate while those of *P. umbratica* are in fact opposite.

Table 1. A comparison of the distinguishing features between *Pimelea cremnophila* and *P. umbratica*.

Character	<i>P. cremnophila</i>	<i>P. umbratica</i>
Secondary venation	obscure	prominent
Secondary venation angle	25–35°	40–50°
Inflorescence	mostly axillary	mostly terminal
Bisexual flower hypanthium length	4–6.5 mm	5–7.5 mm
Bisexual flower sepal length	3–4 mm	2–2.5 mm
Stamens	filaments present	anthers sessile
Anther length	1.7 mm	2–2.5 mm
Seed colour	red-brown	black

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