

A rediscovered rarity: *Pimelea cruciata* (Thymelaeaceae), a new species from Western Australia's Mallee bioregion

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SHORT COMMUNICATION

More than 30 years ago, Eileen Croxford—a prolific plant collector, particularly in southern Western Australia—made three collections of an undescribed species of *Pimelea* Banks & Sol. ex Gaertn. from the Tarin Rock area. These specimens do not appear to have been incorporated into the collection at the Western Australian Herbarium (PERTH) until after revisionary work on the genus had been completed (Rye 1988). Although the new taxon has been informally recognised as *P.* sp. Tarin Rock (E.J. Croxford 2118) since 1999 (Western Australian Herbarium 1998–), its taxonomic resolution has been impeded by the paucity of herbarium material available for study combined with a lack of field observations. Targeted field research conducted in 2017 led to its rediscovery in the wild and confirmation of its status as a distinct species. Its description below adds to the spate of recent research on *Pimelea* that has included the recognition of eight new species from Queensland (Bean 2017) and one from Tasmania (Gray & Baker 2016), and resulted in an improved understanding of systematic relationships (Motsi *et al.* 2010; Foster *et al.* 2016).

Pimelea cruciata Rye & Wege, *sp. nov.*

Type: north-east of Lake Grace, Western Australia [precise locality withheld for conservation reasons], 3 October 2017, J.A. Wege & K.A. Shepherd JAW 2041 (*holo*: PERTH 08984018; *iso*: MEL).

Pimelea sp. Tarin Rock (E.J. Croxford 2118), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 5 February 2018].

Erect or spreading shrub, 0.3–0.6 × 0.15–0.8 m, single-stemmed although sometimes branching toward the base. *Young stems* yellowish at first, becoming uniformly dark red, glabrous except for axillary hairs. *Leaves* opposite, antrorse to spreading, glabrous. *Petioles* mostly 0.4–0.6 mm long, yellowish green. *Leaf blades* (excluding the 2 pairs of leaves directly below each inflorescence) dark olive green, elliptic to ovate, (3.5–)6–11 × (1.8–)3–5 mm, acute, sometimes with an apical mucro 0.1–0.2 mm long, venation indistinct except for obvious midvein on abaxial surface, somewhat glaucous especially on the adaxial surface, slightly concave adaxially. *Uppermost leaf blades* (on the leaf pair directly below each inflorescence) more bract-like in size and shape, 10–16 × 5–12 mm. *Involucral bracts* 4 or 6, sessile, yellowish to pale green, broadly elliptic to ovate, 15–17 × 9.5–13 mm, glabrous on margin or rarely with a couple of long cilia towards the middle of the inner bracts; outer surface glabrous; inner

surface with some appressed hairs mostly at base or along midrib. *Inflorescences* terminal, pendulous, compact, commonly 45–65-flowered. *Pedicels* 0.5–0.7 mm long; longest hairs 2–3.8 mm long. *Flowers* bisexual as far as known, glabrous inside floral tube and sepals, circumscissile, 7–9 mm diam. *Floral tube* 12–16.5 mm long, moderately densely hairy, with basal hairs noticeably larger and thicker than upper hairs; swollen base 3–4.5 mm long to the circumscission point, light green, with antrorse hairs, the longest hairs 2–3.5 mm long; cylindrical upper part 9–12 mm long, 0.9–1.1 mm diam. at summit, with very fine, widely antrorse to patent hairs, the largest 1.2–1.5 mm long, but also numerous minute hairs *c.* 0.2 mm long. *Sepals* narrowly oblong, 3–4.5 mm long, white, obtuse, entire, with recurved margins, hairy outside. *Stamens* shorter than or about as long as the sepals at maturity; filament 2.25–3 mm long; anther 0.8–1.2 × 0.35–0.5 mm wide, orange. *Ovary* *c.* 1.6 mm long, yellowish green, glabrous. *Style* 12–18 mm long. *Fruit* dry, enclosed in the persistent enlarged base of floral tube; seed (most mature seen) *c.* 1.9 × 1.3 mm, *c.* 1 mm thick, apparently smooth. (Figure 1)

Diagnostic features. Distinguished from all other species of *Pimelea* by the following combination of characters: stems glabrous; inflorescences pendulous and subtended by sessile involucre bracts; flowers white, circumscissile and bisexual; floral tube and sepals glabrous inside and hairy outside, with the basal hairs noticeably larger and thicker than those on the upper part of the tube; stamens shorter than or about as long as the sepals; and ovary glabrous.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 26 Oct. 1981, *E.J. Croxford* 1534 (PERTH); 18 Oct. 1982, *E.J. Croxford* 2118 (PERTH); 23 Oct. 1986, *E.J. Croxford* 5329 (PERTH); 9 Oct. 2017, *J.A. Wege* 2043 (PERTH).

Phenology. Flowers recorded from late September to October; immature fruits in late October. Mature fruits from the previous flowering season were found entangled in cobwebs on the type gathering.

Distribution and habitat. *Pimelea cruciata* is restricted to a small area in the Mallee bioregion between Harris Smith and Lake Grace, where it grows in upslope habitats with yellow-brown sandy loam and lateritic gravel bearing mallee shrubland with *Allocasuarina* spp., *Melaleuca* spp., *Grevillea* spp. and *Banksia* spp.

Conservation status. Listed by Smith and Jones (2018) as Priority One under Conservation Codes for Western Australian Flora, under the name *P. sp.* Tarin Rock (*E.J. Croxford* 2118). *Pimelea cruciata* appears to be highly localised. Despite searches of numerous sites, only four individuals were found in 2017; these plants were growing adjacent to the road verge in somewhat disturbed areas of habitat. Further survey is required to determine whether populations are extant at the localities recorded by Croxford in the 1980s and to search for new populations. This species may warrant listing as Threatened.

Etymology. From the Latin *cruciatus* (cross-shaped), referring to the flower shape as viewed from above (see Figure 1E), caused by the recurved sepal margins making the sepals appear narrowly oblong.

Vernacular name. Tarin Rock Banjine.

Affinities. *Pimelea cruciata* is very similar in overall appearance to *P. cracens* Rye. However, *P. cracens* has creamy yellow or yellow-green flowers (*cf.* white) with a dense indumentum of extremely fine hairs on the swollen base of the floral tube (*cf.* a less dense indumentum of larger, coarser hairs), stamens that are longer than the sepals (*cf.* shorter than or similar in length to the sepals), and fine silky hairs covering the ovary (*cf.* ovary glabrous). *Pimelea cracens* is widespread in the Mallee and Esperance



Figure 1. *Pimelea cruciata*. A – habit; B – leaves; C – yellowish young stems beneath pendulous inflorescences. Note the stems are glabrous and become dark red with age; D – inflorescence showing yellowish to pale green involucral bracts with a glabrous outer surface, and uppermost leaves that approach the bracts in size and shape; E – white, cross-shaped flowers with orange anthers and filaments that are shorter than the sepals. Photographs © J. Wege from *J.A. Wege & K.A. Shepherd* JAW 2041 (A, B) and *J.A. Wege* 2043.

Plains bioregions, with records extending into the Southern Jarrah Forest subregion (Western Australian Herbarium 1998–). There is one record from the Tarin Rock vicinity (*F.W. Humphreys* 26; PERTH 03410404), but it is not known whether it grows with or in close proximity to *P. cruciata*.

Pimelea cruciata could also be confused with *P. lehmanniana* Meisn. as the two species share white flowers with both long and short hairs on the floral tube, and a glabrous ovary. *Pimelea lehmanniana* differs in having stamens that exceed the sepals (*cf.* shorter than or similar in length to the sepals), flowers that are hairy inside at the throat (*cf.* glabrous), and a floral tube that is either glabrous or with minute hairs on the swollen base (*cf.* with longer hairs to 2–3 mm long). Although widespread, *P. lehmanniana* is separated geographically from *P. cruciata*, having a distribution centred on the Jarrah Forest and Esperance Plains bioregions, and does not occur in the Mallee bioregion (Western Australian Herbarium 1998–).

Notes. The young stems are yellowish for several internodes below the inflorescence (Figure 1C), eventually becoming uniformly dark red on the lower internodes. Combined with the dark olive green of the leaves, these stem colours make *P. cruciata* highly attractive even when not in full flower.

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