

## SHORT COMMUNICATION

***Tephrosia pedleyi* (Fabaceae: Millettiae), a new species from the west Kimberley of Western Australia**

A new, orange-flowered species of *Tephrosia* Pers. from Western Australia is described herein. This species was recognised as putatively new by Les Pedley in 1984 (*in sched.*), and the concept embodied by his annotated specimens led to it being recognised as '*Tephrosia* sp. C' by Wheeler (1992) prior to being included on the Western Australian vascular plant census as *T.* sp. C Kimberley Flora (K.F. Kenneally 5599); it is named in his honour.

***Tephrosia pedleyi*** R. Butcher, *sp. nov.*

*Typus*: [near] Frome Rocks, Dampier District, Western Australia [precise locality withheld for conservation reasons], 8 June 1999, J. Grimes, D. Murphy & C. Hohnen JG 3557 A (*holo*: MEL 2074296, *image!*; *iso*: PERTH 05978793!).

*Tephrosia* sp. C, J.R. Wheeler, *Fl. Kimb. Reg.* p. 452 (1992).

*Tephrosia* sp. C Kimberley Flora (K.F. Kenneally 5599), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 20 November 2017].

Spindly to rounded, erect *subshrub*, 0.3–0.8 m tall, 0.1–1 m wide; multistemmed at or near base, mature stems corky; taproot unspecialised. *Branchlets, leaf and inflorescence rachides* with moderately dense to dense, short, straight, appressed, usually stramineous indumentum, 0.15–0.45 mm long. *Leaves* pinnate, up to 175 mm long including petiole; *stipules* persistent, antrorse at first then inclined 45–80°, attenuate to lanceolate, 1.6–4.7 mm long; *petiole* 13–46 mm long; *ultrajugal rachis* usually absent, very rarely to 6 mm long; *stipellae* absent; *petiolules* 0.4–0.8 mm long; *leaflets* (7–)13–19, linear, strongly channelled in T.S., at least some attached in basal half of leaf, base attenuate, apex acute to rounded, deflexed, not to scarcely mucronate, mucro 0.1–0.2 mm long; lateral leaflets 7.1–60 mm long, 0.6–1.3 mm wide, length 8.9–46.2 × width; terminal leaflet 1–1.95 × length of adjacent laterals, 7.2–58 mm long, 0.7–1.8 mm wide, length 6–36.3 × width; lamina concolorous; upper surface sparsely to moderately hairy, the hairs appressed, straight, stramineous, occasionally also white; lower surface glabrescent (hairs as above where seen), smooth; secondary and intersecondary veins obscured due to narrowness of leaf. *Inflorescence* pseudoracemose, leaf-opposed, 110–425 mm long, with 3–12(–15) flowers in each cluster (often forming short lateral shoots in axils of inflorescence bracts); *floral bracts* 0.6–0.9 mm long, deltoid, acute, caducous; *bracteoles* absent; *pedicel* 1.8–5.3 mm long. *Calyx* 2.7–3.9 mm long; indumentum moderately dense to dense, the hairs straight, appressed, stramineous; tube 1.7–2.4 mm long, 1.3–1.9 × the length of lateral lobes; lower and lateral lobes broadly ovate with acute apices; vexillary lobes united a little higher than lower three, free for 0.2–0.5(–0.7) mm (divided to 19–50(–63)% length); lowest lobe 1–1.7 mm long, ±equal to lateral lobes. *Corolla* orange; *standard* 5–6.2 mm long, 5.9–7.8 mm wide, the claw 1.4–2 mm long with thickened margins, the blade transversely reniform to suborbicular, slightly callused at base, apex emarginate; *wings* 5–6.7 mm long, 2.4–3.4 mm wide, a little longer than keel, the blade obovate to broadly obovate, the apex rounded;

*keel* 4.5–5.7 mm long, 2.2–3 mm wide, the blade semi-circular, broadly pouched in front of spur, mostly glabrous or with a few hairs along the lower margin towards apex. *Staminal* tube glabrous near fenestrae, which are slightly callused on margins; vexillary filament glabrous, slightly callused near base; anthers 0.50–0.65 mm long, 0.35–0.55 mm wide. *Ovary* densely hairy; ovules 4–6, positioned proximally in the ovary with a distal void (void not evident in mature fruits). *Style* flattened, almost uniform along length, mostly glabrous; stigma with hairs at base, linear. *Pods* linear, straight or slightly upturned at apex, 36–42 × 3.5–4 mm, laterally compressed, depressed between seeds, tan at maturity; indumentum moderately dense, appressed, white and stramineous; beak in line with upper suture, deflexed; tissue between seeds membranous. *Seeds* 4–6 per pod, with 5.5–6.5 mm between centres of adjacent seeds, compressed-transversely ellipsoid, 2–2.5 × 3–3.5 mm, orange-brown, testa smooth, hilum ±central to excentric; caruncle absent. (Figure 1)

*Diagnostic features.* *Tephrosia pedleyi* is readily distinguished by the following combination of characters: erect subshrub to c. 0.8 m tall, with an indumentum of short, appressed, usually stramineous hairs; stipules persistent, 1.6–4.7 mm long; leaves with (3–)6–9 pairs of lateral leaflets, usually lacking an ultrajugal rachis, leaflets linear, canaliculate 7.1–60 mm long; calyx 2.7–3.9 mm long, with the tube 1.3–1.9 × lateral lobe length; flowers orange, in elongate pseudoracemes, with glabrous stamens and 4–6 ovules positioned proximally in the carpel; pods straight to slightly upturned at apex, 36–42 × 3.5–4 mm, with moderately dense indumentum of appressed, white and stramineous hairs, and the beak in line with the upper suture and deflexed.

*Other specimens examined.* WESTERN AUSTRALIA: [localities withheld for conservation reasons] 20 Aug. 2001, *C.P. Campbell* 3421 (DNA, PERTH); 17 Sep. 2011, *P. Docherty* 275 (BRO., PERTH); 12 Aug. 1976, *K.F. Kenneally* 5599 (CANB, PERTH); 15 Aug. 1976, *K.F. Kenneally* 5679 (PERTH); 15 Sep. 1959, *M. Lazarides* 6540 (BRI, CANB, DNA, NSW, PERTH); 20 June 2017, *A. Markey & R. Coppen* LG 10005 (MEL, PERTH); 20 July 2017, *A. Markey & R. Coppen* LG 10006 (BRI, DNA, PERTH); 20 July 2017, *A. Markey & R. Coppen* LG 10007 (BRI, CNS, PERTH); 16 Aug. 2017, *A. Markey & R. Coppen* LG 10008 (DNA, PERTH).

*Phenology.* Flowers and fruits collected June to September, with timing apparently dependent on local conditions. One specimen from June (the type) has flowers and mature pods with seeds, and one specimen from September (*M. Lazarides* 6540) is close to sterile; the remainder, collected from June to September, have flowers and developing or immature pods.

*Distribution and habitat.* On current knowledge, occurs primarily in the Dampierland bioregion of Western Australia, with limited extension southward into adjacent areas of the Great Sandy Desert (Figure 2). Grows in red sand, loamy sand or sandy laterite, on gently undulating sandplain or among dunes. In pindan country *T. pedleyi* has been collected from sites with scattered trees to open woodland (*Bauhinia cunninghamii*, *Corymbia greeniana*, *C. zygophylla*, *Dolichandrone occidentalis*, *Gyrocarpus americanus*) over sparse to very sparse tall shrubland (*Acacia eriopoda*, *A. monticola*, *Grevillea refracta*, *Persoonia falcata*), sparse low shrubs (*Corchorus sidoides*, *Cullen corallum*, *Dodonaea hispidula*, *Halganina solanacea*, *Newcastelia cladotricha*, *Seringia katatona*) and mid-dense to dense grassland (*Aristida holathera*, *A. inaequiglumis*, *Chrysopogon pallidus*, *Eriachne ciliata*, *Sorghum plumosum*, *Triodia* spp.), with a sparse herb layer (*Bulbostylis barbata*, *Goodenia sepalosa*, *Heliotropium leptaleum*, *Polycarpaea corymbosa*, *Scaevola parvifolia*, *Trianthema pilosum*). In dune country, recorded as occurring in open, low vegetation comprising *Acacia* spp., *Eucalyptus* spp., *Grevillea eriostachya*, *Hibiscus* sp., *Newcastelia* sp., and *Triodia* spp.

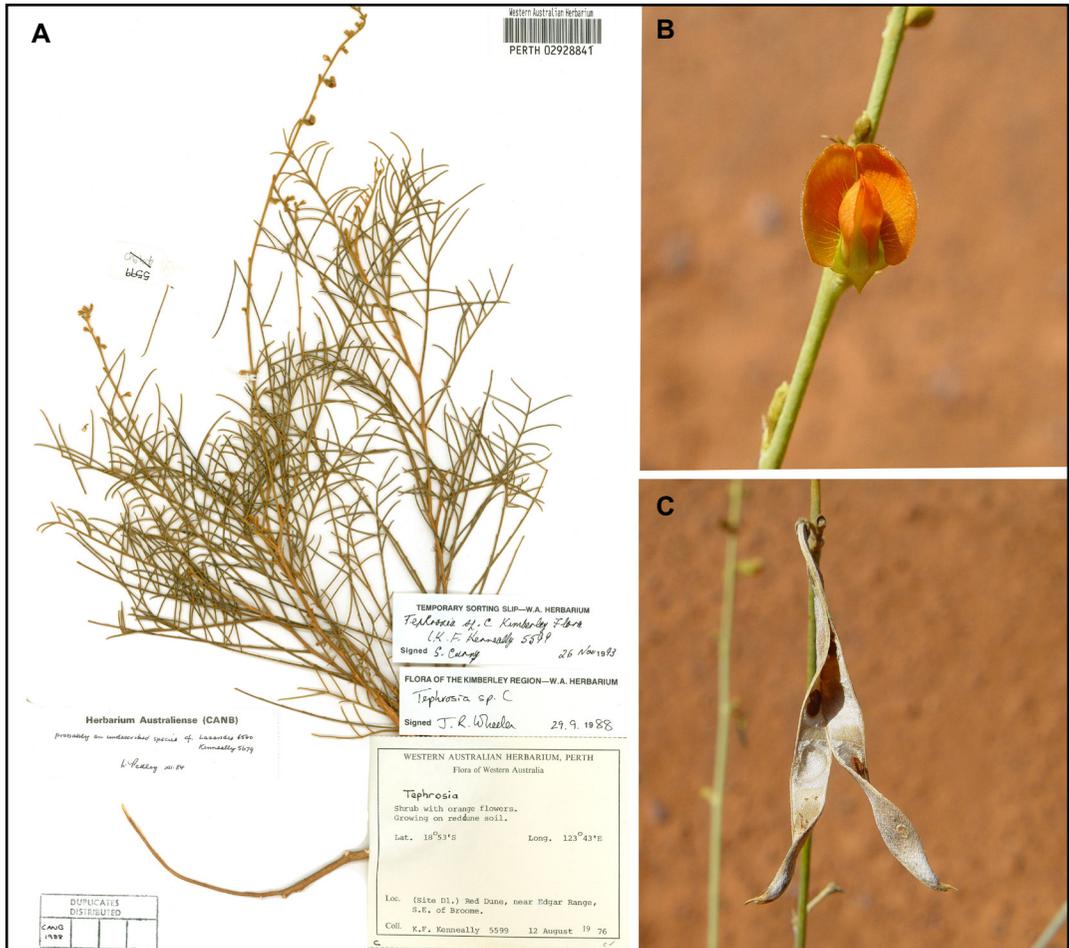


Figure 1. *Tephrosia pedleyi*. A – herbarium specimen showing leaf morphology, elongate pseudoracemes, and stramineous indumentum; B – flower from front; also buds with appressed, stramineous indumentum on the outer surface of the calyx; C – dehiscent pod, showing membranous tissue between seeds. Photographs by G. Byrne from unlodged specimen G. Byrne 1464 (B, C); used with permission.

**Conservation status.** This species is listed as Priority One under Conservation Codes for Western Australia, under the name *T. sp. C Kimberley Flora* (K.F. Kenneally 5599) (Smith & Jones 2018).

**Etymology.** Named for Les (Leslie) Pedley (1930–), a taxonomic expert on the genus *Tephrosia*, who is currently focussed on revising the Queensland taxa (see Pedley 2014), and who first recognised this species as new.

**Affinities.** *Tephrosia pedleyi* is clearly distinct from all other Western Australian *Tephrosia* taxa, but very similar to the Queensland taxon *T. sp. Mt Isa* (P.L. Harris 277) *s. str.*<sup>1</sup>. While these two orange-flowered taxa are extremely similar in their inflorescence and vegetative features, and in the indumentum

<sup>1</sup>Herein meaning the voucher specimen P.L. Harris 277 and collections approximating this (i.e. BRI: Farrell 316, Bradford 15, Wilson 644 & Rowe, Specht 45 & Rogers, Fell 4907, Booth 3586, Schmid 405 & 611, Forster 22172 & 22317 & Booth). There is considerable variation among the specimens identified as *T. sp. Mt Isa* (P.L. Harris 277) at BRI, including both orange- and pink-/purple-flowered collections, and it appears that there are at least two taxa filed under that phrase name at present.

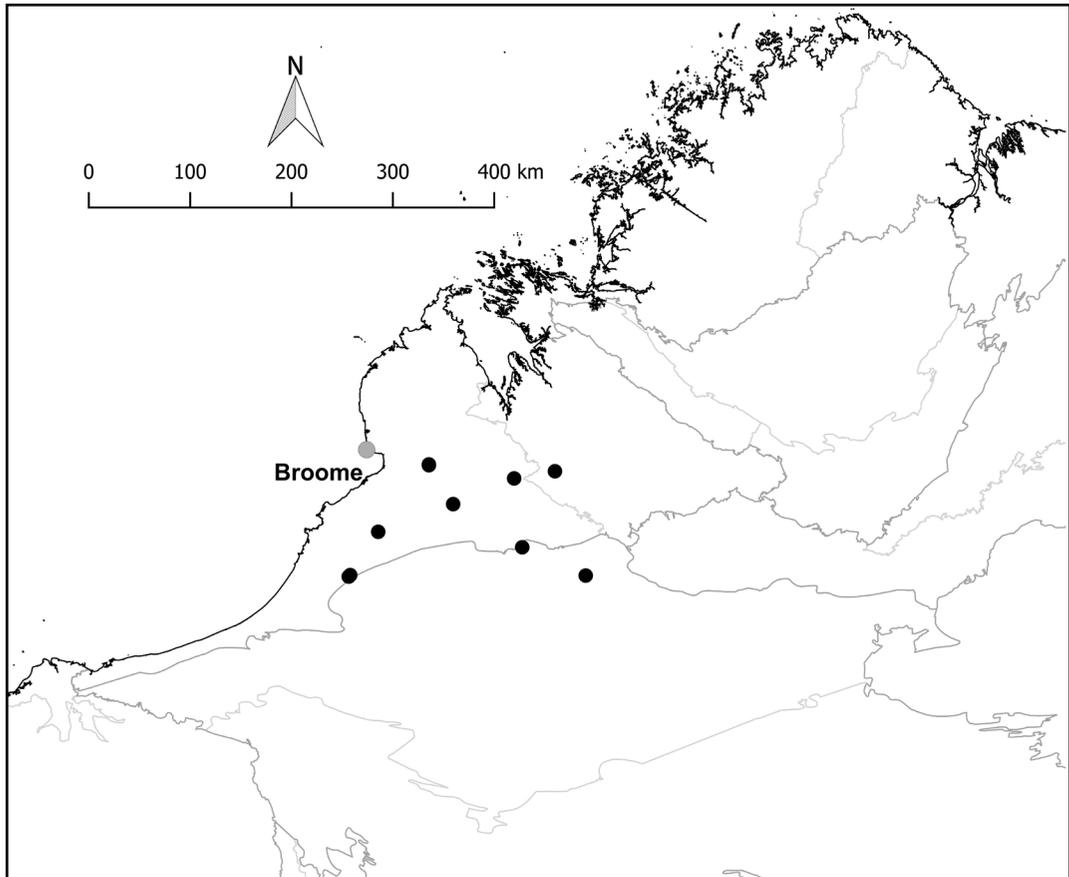


Figure 2. Distribution of *Tephrosia pedleyi* in northern Western Australia, where it is known from the Dampierland bioregion and adjacent parts of the Great Sandy Desert bioregion. IBRA v 7 bioregions shown in dark grey with subregions shown in light grey (Department of the Environment 2013).

and dimensions of their calyces, they have a number of differences, which, given their geographic disjunction, has led to them being retained as distinct (Butcher *et al.* 2017). In particular, *T. sp.* Mt Isa has deltoid calyx lobes with the lowermost one noticeably longer than the lateral pair, an entire apex to its standard petal<sup>2</sup>, patent hairs on the vexillary staminal filament (in front of the prominent callosities and extending towards the anther over a long distance), hairs near the fenestrae and often on the sides of the staminal tube, 9–11 ovules, and patent hairs on the longer (44.5–63 mm long) pods, which have a distinctly upturned apex. It also tends to have an ultrajugal rachis (1.5–17 mm long) below the terminal leaflet, although this character has been found to be variable within other taxa. These two taxa also differ in their habitat, with *T. sp.* Mt Isa growing in open woodland (predominantly *Eucalyptus leucophloia*) in rocky soils (quartzite and laterised sandstone) associated with outcrops and hills.

Among the Western Australian *Tephrosia* taxa, *T. pedleyi* is most similar to *T. sp.* sparse pinnae (C.R. Michel 2202), a *T. subpectinata* Domin ally from the central and northern Kimberley and the Northern Territory, with which it shares orange flowers, linear leaflets and leaves that typically lack an ultrajugal rachis. *Tephrosia sp.* sparse pinnae can be readily distinguished, however, by the

<sup>2</sup>The voucher specimen *P.L. Harris 277* also has distinct, elongate auricles at the base of the standard petal blade, which are not shared with any of the other *T. sp.* Mt Isa specimens cited above for which flowers were available for study.

following characters: glabrous to sub-glabrous vegetative parts; calyces glabrous or with sparse, white indumentum; ovary with 6–8 ovules; large ((37–)45–52 mm long), sub-glabrous to sparsely hairy pods with a gently upturned to upturned apex and a short, straight beak; seeds with a white to cream, annular caruncle around the hilum.

*Tephrosia pedleyi* is superficially similar to narrow-leafleted specimens of *T.* sp. B Kimberley Flora (C.A. Gardner 7300) from the Pilbara and Gascoyne bioregions, but this can be distinguished by the following: leaves with an ultrajugal rachis (1–9 mm long) and caducous stipules; larger flowers (corolla 8.5–9.5 mm long) with notably hairy and callused staminal filaments; differently-shaped calyx, with the upper lobes strongly fused, the tube strongly arched below the upper lip, and the lower lobe longer than the laterals; ovary with 8–10 ovules; pods achieving a much greater length (30–70 × 3–5 mm), with an excentric beak; seeds transversely obloid to pulvinate, and mottled mid- and dark brown, brown and tan, or olivaceous, brown and tan.

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### Ryonen Butcher

Western Australian Herbarium, Biodiversity and Conservation Science,  
Department of Biodiversity, Conservation and Attractions,  
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983  
Email: Ryonen.Butcher@dbca.wa.gov.au

