

Isotropis petrensis (Fabaceae: Mirbelieae), a new species from arid Western Australia

Robert W. Davis and Juliet A. Wege¹

Western Australian Herbarium, Biodiversity and Conservation Science,
Department of Biodiversity, Conservation and Attractions,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

¹Corresponding author, email: Juliet.Wege@dbca.wa.gov.au

SHORT COMMUNICATION

The new species described below was opportunistically collected by one of us [RD] in 2016 and immediately considered to be of taxonomic interest on account of its foliage, indumentum, and flower colour. Subsequent examination of the *Isotropis* Benth. holdings at the Western Australian Herbarium unearthed seven comparable collections, all from granite outcrops in the Yalgoo or Murchison bioregions. Type material of *I. atropurpurea* var. *alba* Ewart, collected in 1890 by Henry S. King and Courcy G. de Lefroy from near Lake Austin, was also found to be comparable. This varietal name has hitherto been of uncertain application (Council of Heads of Australasian Herbaria 2006–), perhaps in part due to Ewart's description of the standard petal as pale or white with striations (Ewart *et al.* 1908). Our field observations indicate that the standard is orange-yellow with dark red-brown striations and a yellow eye (Figure 1), although it fades to dark cream with dark purple striations when dried. We recognise this taxon at the species level (see *Notes* below) and, rather than making a new combination with a somewhat misleading epithet, we choose a more appropriate name based on a new type, placing Ewart's variety into synonymy.

Isotropis petrensis R.W.Davis & Wege, *sp. nov.*

Type: south-east of Murchison Settlement, Western Australia [precise locality withheld for conservation reasons], 7 August 2019, R. Davis & A. Brown RD 13011a (*holo*: PERTH 09316574; *iso*: CANB, MEL).

Isotropis atropurpurea var. *alba* Ewart, in A.J. Ewart, J. White & J.R. Tovey, *J. & Proc. Roy. Soc. New South Wales* 42: 190 (1908). *Type*: 'Near Lake Austin, W.A., King and Lefroy 1890' (*syn*: BM 000885505 image!, K 000278153 image!, K 000278154 image!, MEL 78150!, MEL 78151!, NSW 32662 image!, PERTH 01023144!).

Isotropis sp. Yalgoo (S. Patrick 2375), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 14 May 2021].

Erect or spreading *subshrub* (20–)30–45 cm high. *Stems* terete, densely sericeous when young, glabrescent with age; hairs appressed, antrorse, golden brown on the new growth, becoming paler or white, *c.* 0.2–0.6 mm long. *Leaves* scattered, unifoliolate, sericeous as per the stems; petiole ascending to descending, 3–15 mm long; petiolule straight or more often geniculate at junction with petiole; leaflet

spreading to ascending, oblong or narrowly lanceolate (rarely elliptic) with entire margins, (8–)12–50 mm long, 3–10 mm wide, apex obtuse with a deflexed mucro, base obtuse. *Stipules* recurved or sometimes spreading, narrowly triangular, 1.2–2.3 mm long, sericeous. *Inflorescence* a terminal (leaf-opposed) raceme, densely sericeous, rachis 10–14 cm long with widely-spaced flowers; pedicels mostly longer than the calyx, 8–14 mm long; bracts broadly ovate, 1.5–4.2 mm long; bracteoles toward summit of pedicel, ovate, 1.5–2.5 mm long. *Calyx* divided to near base into an upper lip and 3 lower lobes, densely hairy externally (the hairs appressed and antrorse to spreading and sometimes sinuous), glabrous internally except for a cluster of hairs at the tips of the lobes and towards the margins; tube 1.2–2 mm long; upper two lobes erect, united for most of their length, 7–10.3 mm long; lower lobes slightly spreading but not becoming reflexed, narrowly triangular, 4–7 mm long. *Corolla*: *standard* orange-yellow with dark red-brown striations and a yellow eye (drying orange-yellow and fading to dark cream with dark purple striations and a yellow eye), broadly ovate to transversely elliptic, 11–14 mm long including the 1.7–2.5 mm long claw, 9.5–14 mm wide, retuse, base cuneate; *wings* dark red-brown sometimes with orange-yellow markings apically (drying purple), narrow-obovate, 9–12 mm long including the 1.9–2.6 mm long claws, 3.5–4.8 mm wide, auriculate; *keel* dark red-brown (drying purple), obovate with the apex slightly upturned and the lower margin slightly curved, 9.5–10.7 (–13) mm long including the 2.3–2.5 mm long claws, 4.3–6 mm wide, auriculate. *Stamens* 10, ± uniform, free; anthers versatile, c. 0.9–1 mm long. *Ovary* shortly stipitate, fusiform, villose, ovules numerous; style slender, incurved, sparsely hairy towards the base. *Pods* narrow-obovoid, tapered at both ends, 17–24 mm long with a stipe 2–3 mm long, 6–7.5 mm wide, with dense, straight or sinuous to crispate hairs to 0.6 mm long. *Seeds* reniform, brown with prominent light yellow-brown reticulations, 3.1–3.5 mm long, 2.6–3 mm wide. (Figure 1)

Diagnostic features. Distinguished from other species in the genus by the following combination of characters: a golden brown or white and mostly sericeous indumentum (i.e. the hairs are usually silky, appressed and antrorse, although they can be sinuous and spreading on the calyces); spreading to ascending, oblong or narrowly lanceolate (rarely elliptic) leaflets with entire margins; erect or slightly spreading calyx lobes (never becoming reflexed); ovate bracts; an orange-yellow standard with red-brown striations and a yellow eye (pressed material fading to dark cream with dark purple striations and a yellow eye); wings and keel predominantly red-brown (drying dark purple).

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 26 Sep. 2000, *M.D. Crisp & L.G. Cook* MDC 9261 (CANB *n.v.*, PERTH); 4 Aug. 2016, *R. Davis & A. Brown* RD 12636 (PERTH); *R. Davis & A. Brown* RD 13011b (BRI, NSW, PERTH); 10 Sep. 1987, *J.W. Green* 5256 (PERTH); 6 July 2004, *G.J. Keighery* 16615 (PERTH); 3 Sep. 1967, *A.R. Main* 5 (PERTH); 2 Aug. 1995, *S. Patrick* 2375 (PERTH); 2 Aug. 1992, *S. Patrick & D. Edinger* SP 1114 (PERTH); 20 Sep. 1967, *E.M. Scrymgeour* 2118 (PERTH).

Phenology. Flowering from late July to mid-September; mature fruits have been collected in September.

Distribution and habitat. *Isotropis petrensis* occurs in the Yalgoo and southern Murchison bioregions where it grows in sandy loam in association with granite outcropping. It has been recorded in open shrubland of *Gastrolobium laytonii*, *Calycopeplus paucifolius*, *Acacia lasiocalyx* and *Eremophila serrulata*, high open shrubland of *Brachychiton gregorii*, *Calycopeplus paucifolius* and *Kunzea pulchella*, *Acacia* scrub or shrubland in association with *Grevillea pityophylla* or *Eremophila*, and shrubland among tussocks of *Cymbopogon*.

Conservation status. Recently listed as Priority One under Conservation Codes for Western Australian Flora, under the name *I. sp.* Yalgoo (*S. Patrick* 2375) (Western Australian Herbarium 1998–). This



Figure 1. *Isotropis petrensis*. A – shrubby and leafy habit; B – flowers, showing the orange-yellow standard with dark red-brown striations and a yellow eye, dark red-brown wings, and ovate bracts; C – flower, showing the dark red-brown keel; D – developing fruit with erect calyx lobes. Photographs by R.W. Davis from the type population.

species appears to be uncommon and may be susceptible to grazing by goats.

Etymology. The epithet is Greek (*petrensis* – among rocks) and refers to the occurrence of this species on or around granite outcrops.

Vernacular name. Granite Granny Bonnets.

Notes. Upon describing *I. atropurpurea* var. *alba*, Ewart noted that its indumentum was less prominently rusty tomentose than that of *I. atropurpurea* F.Muell. var. *atropurpurea* and that it had narrower and rather longer leaves, slightly longer calyx lobes and a pale or white standard with striations (Ewart *et al.* 1908). He did not consider these differences sufficient to establish a distinct species; however, with more material at our disposal, we have been able to obtain additional evidence in support of its recognition at species rank.

Indumentum is a key feature: it is sericeous in *I. petrensis*, consisting of appressed or antrorse hairs that are moderately dense (not obscuring the leaflet and stems), whereas in *I. atropurpurea* it is velvety, comprising crispate or sinuous hairs that are noticeably denser (obscuring the surface of the leaflet and stems). The colour of the standard is also diagnostic: orange-yellow with dark red-brown striations in *I. petrensis* (drying orange-yellow and fading to dark cream with dark purple striations) and orange to orange-red with dark red striations in *I. atropurpurea* (drying purple to pale mauve with dark purple striations). *Isotropis petrensis* also has an elliptic to lanceolate leaflet with an obtuse apex (*cf.* broadly elliptic to suborbicular or ovate with a rounded apex in *I. atropurpurea*), mostly longer pedicels (8–14 mm long *cf.* 4–8 mm) and mostly longer upper calyx lobes (7–10.3 mm long *cf.* 5–7 mm). *Isotropis atropurpurea* is widespread in arid areas but is not known from the Murchison and Yalgoo bioregions, occurring further north and extending into the Northern Territory.

Isotropis petrensis is morphologically more akin to *I. foliosa* Crisp (Crisp 1987), a species from north-eastern New South Wales and south-eastern Queensland with a similar indumentum. *Isotropis petrensis* has distinct leaflets that are spreading to ascending, oblong or narrowly lanceolate (rarely elliptic), and with entire margins and a mostly persistent indumentum. In *I. foliosa* they are deflexed, ovate (rarely elliptic), glabrescent and usually with undulate margins. *Isotropis petrensis* also has broadly ovate bracts (*cf.* narrowly triangular in *I. foliosa*), an orange-yellow standard that fades to dark cream with dark purple striations when dried (*cf.* orange drying mauve to pale brownish mauve in *I. foliosa*), and red-brown wings and a red-brown keel that dry dark purple (*cf.* wings orange-red drying mauve to pale brownish mauve, and keel dark red-brown apically drying purple apically and pale mauve to brownish mauve below).

Isotropis petrensis could be confused with *I. iophyta* Wege & R.W.Davis, a recently named species that is widespread in Western Australia's arid zone including the Murchison bioregion (Wege & Davis 2020), although the distributions of the two species are not known to overlap (Western Australian Herbarium 1998–). *Isotropis petrensis* can be separated from *I. iophyta* by its indumentum (hairs mostly appressed and antrorse *cf.* crispate or sinuous in *I. iophyta*), erect or slightly spreading calyx lobes (*cf.* becoming strongly reflexed), longer pedicels (8–14 mm long and mostly longer than calyx *cf.* 4–8 mm long and mostly shorter than the calyx), and predominantly orange-yellow standard (*cf.* orange, often drying purple).

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