New taxa and typifications in *Indigofera* (Fabaceae) for South Australia

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Introduction

The current *Flora of South Australia*, published in 1986, is being updated. As a prelude to a revised treatment of the tribe Indigofereae (Fabaceae) in this new edition, we are taking the opportunity to describe three new taxa in *Indigofera* and typify a number of others.

A new subspecies in *Indigofera australis* Willd.

*Indigofera australis* is a very variable species, particularly in New South Wales and Queensland. Leaflet numbers and sizes, habit and stem morphology (ribbed vs. \(\pm\) terete) vary geographically, usually without any readily discernible pattern, although a form found on hills in western New South Wales that usually has 7-9 rather long, narrow leaflets would be worthy of further study. However, the populations found in Western Australia and the western part of South Australia are morphologically relatively uniform. Plants in these populations are most readily distinguishable by their smaller, more numerous, relatively uniform leaflets and we here recognise them as a taxon at the rank of subspecies.

*Indigofera australis* Willd.

Sp. Pl. 3: 1235 (1802), — *Anila australis* (Willd.) Kuntze, Revis. Gen. Pl. 2: 938 (1891). — **Type citation:** ‘Habitat in Nova Hollandia? h (v.v.).’ **Type:** Probably not extant. Willdenow cites a living plant in his protologue (presumably one in cultivation in Berlin). There are two specimens in the Willdenow herbarium, apparently sent by Wendland, which match the protologue very well; we have chosen one of these as neotype. **Neotype (designated here):** specimen with immature fruit labelled ‘Ind. australis 1.’ (B-Willd., photo NSW [IDC microfiche, specimen no. 13904]).
Indigofera australis Willd. subsp. australis

Indigofera australis Willd. var. australis

Indigofera australis var. gracilis DC., Prodr. 2: 226 (1825).

— Type citation: ‘In Novae-Hollandiae orâ orientalij. I. australis Sieb! pl. exs. nov.-holl. n. 380. (v.s.)’. De Candolle cites two specimens, one collected by Sieber and the other by an unnamed collector. We have chosen the latter as lectotype. Lectotype (designated here): Nouvelle Hollande, côte orient. Musée de Paris 1821 (G-DC [IDC microfiche 800/11]).

Residual syntype: FW.Sieber Fl. Nov. Holl. 380 (G-DC [NSW, IDC microfiche 800/11]).

Isosyntypes: BM n.v., K, MEL, NSW, W.

Indigofera australis var. angulata Benth., Fl. Austral. 2: 200 (1864). — Type: not specified. Bentham probably based this variety on Lindley’s illegitimate name (see above) but this is not expressly indicated.

Indigofera australis var. minor Benth., Fl. Austral. 2: 200 (1864). — Type citation: ‘Chiefly in the interior of N.S. Wales and S. Australia, on the Lachlan and Darling, etc., and northward to Clarence river’. Bentham gave a broad geographic range for this variety but we could find no specimen annotated with this varietal epithet. We have chosen as lectotype a specimen that best matches the protologue; this is one of a number from the Clarence River area that was seen by Bentham. It is possible that this suite of specimens is taken from an intergrade population between I. australis and I. adesmiifolia A.Gray. Lectotype (designated here): Clarence River, Dr Beckler (MEL 586484).

Isolectotypes: MEL 585746, 584685.

Shrub, 0.5–2 m high; young stems ridged to terete. Leaves pinnate, (3–) 7–15 (–21) leaflets; stipules 1–2.5 (–5) mm long, glabrescent; petiole (3.5–) 6–15 (–19) mm long; rachis furrowed, with multicellular hairs between leaflet pairs absent to moderately dense (rarely dense), conspicuous to inconspicuous, red to brown, club-shaped. Leaflets opposite (sometimes a few alternate); stipellae generally absent, rarely 0.3–0.6 mm long; lamina ovate to elliptical or oblong, (5–) 10–40 (–63) mm long, (2.5–) 5–10 (–23) mm wide; upper surface green, glabrous or hairs sparse, rarely moderately dense; lower surface green (generally paler than above), glabrous or with sparse, rarely moderately dense, appressed hairs; apex acute, emarginate or obtuse and sometimes slightly curved, veines not prominent. Inflorescences (13–) 30–100 (–220) mm long, usually longer than the leaves; peduncle (1–) 10–20 (–33) mm long; bracts triangular, 0.5–1 (–2) mm long; flowers pink to purple; pedicel (1.5–) 2.4 (–5.5) mm long. Calyx (1–) 1.5–3 mm long, with unequal to subequal lobes shorter than the length of the tube, sparsely hairy with white to brown hairs. Standard purple or pink, ovate, obovate or orbicular, 6–8 (–10) mm high, 6.5–9 mm wide. Wings narrowly obovate, 6.5–11 mm long, 2.5–3.5 mm wide. Keel 6.5–10 mm long, 2.2–3 mm deep, apex rounded to acute; lateral pockets 0.8–1.5 mm long; hairs sparse to moderately dense, hyaline, along the bottom. Staminal tube 4.6–5.5 mm long. Ovary usually glabrous. Pod ascending to descending, (13–) 30–45 (–52) mm long, 2.5–4 mm deep, brown, usually glabrous but sometimes with scattered, appressed hairs; apex shortly pointed; endocarp spotted. Seed (4–) 8–10 (–12) per fruit.

Distribution & habitat. Queensland, South Australia, NSW (incl. A.C.T.), Victoria, and Tasmania: wide range of sites generally on loamy soils on mountain slopes and ranges.

Selected specimens examined (S.A. only)


**Indigofera australis Willd. subsp. hesperia Peter**

G.Wilson & Rowe, subsp. nov.

Folia plerumque 17–25-foliolata, foliolis vulgo 5–10 mm longis et petiolo 3–6 mm longo; stipulae plerumque basi strumosa trichomatibus multicuspidatis aggregatis; pedunculo plerumque 4–7 mm longo.


Isotypes: AD, PERTH.


Indigofera australis var. angulata Benth., Fl. Austral. 2: 200 (1864), pro parte quod ‘Drummond and Preiss’s W. Australian specimens.’

**Indigofera australis sensu Ker Gawl., Bot. Reg. t. 386 (1819).**

Shrub, 0.3–1.5 (–2) m high; young stems ridged. Leaves pinnate, (7–) 17–25 leaflets; stipules generally with bases enlarged by dense masses of multicellular hairs, 2.5–4 (–5.5) mm long, pubescent or glabrescent, swollen bases often persistent; petiole 3–6 (–10) mm long; rachis furrowed, multicellular hairs between leaflet pairs moderately dense to dense, conspicuous or inconspicuous, red to brown, club-shaped. Leaflets opposite; stipellae absent or inconspicuous, 0.2 mm long; stipules 5–10 (–20) mm long, 2.5–4.5 (–6.5) mm wide; upper surface green, glabrous; lower surface green with sparse, appressed hairs; apex obtuse or emarginate; veins not prominent. Inflorescences (5–) 20–70 (–95) mm long, shorter to longer than leaves; peduncle (2–) 4–7 (–10) mm long; bracts triangular, 0.5–1.5 (–3) mm long; flowers pink to purple; pedicel 1.5–4 mm long. Calyx 1.5–3 mm long, with unequal to subequal lobes shorter than the length of the tube, clothed with sparse, brown, appressed hairs. Standard purple to pink, ovate to orbicular, 6.5–7.5 mm...
high, 5.5–7.5 mm wide. Wings narrowly obovate to spatulate, 6–8 mm long, 1.7–3 mm wide. Keel (5.5–) 6–7.5 mm long, 2–2.7 mm deep; apex acute to rounded; lateral pockets 0.8–1.3 mm long; hairs sparse, hyaline to white, along the bottom and margin ciliate. Staminal tube 4–4.8 mm long. Ovary glabrous to moderately hairy. Pod descending or rarely ascending, terete, (17–) 25–40 mm long, 2–3 mm deep, brown, glabrescent or tomentose; hairs very sparse, appressed; apex shortly pointed; endocarp spotted. Seed (4–) 8–10 (–11) per fruit.

Notes. In contrast with subsp. australis, this taxon is relatively uniform in morphology and is most readily distinguished by the smaller, more numerous leaflets. The two subspecies do intergrade in South Australia where their ranges overlap (see notes below). The epithet is an adjective that is a Latinised form of the Greek hesperos meaning ‘pertaining to the evening’ or ‘west’, a reference to this taxon’s distribution in the western half of the continent.

Distribution and habitat. Western Australia and South Australia, where it grows on a variety of generally loamy soils associated with rocky hills and mountain ranges.

Selected specimens examined


**Indigofera australis subsp. australis – subsp. hespera** intergrades

Plants with features intermediate between the two subspecies occur where their ranges meet. The vast majority of intergrade specimens have been collected in the Mt Remarkable area and along the western edge of the South Flinders Ranges.

Selected specimens examined


New typifications

**Indigofera basedowii** E.Pritzel


Notes. The type at B is no longer extant (fide H. Ern, in litt. 1984). As there do not appear to be any duplicates of Basedow 33, a neotype has been designated. The original description is somewhat in conflict with the morphology of herbarium specimens. The main features of habit, indumentum and leaflet number are in agreement with the protologue and seem unambiguously to apply to this taxon but the dimensions given for the calyx and peduncle are markedly different. In the case of the peduncle, the possible explanations for the length given (8–12 cm) are either that it includes the lower portion of the inflorescence axis after the flowers have fallen, all of which has been interpreted as peduncle, or that the measurement should have been in millimetres. The case of the calyx, however, is a mystery since a calyx 6–8 mm long with lobes c. 5 mm mm is found only in I. hirsuta, a species which is greatly at variance with the protologue in indumentum and flower colour. Specimens of the related species I. longibractea from near Erabella do have a calyx that approaches these dimensions but the number and size of the leaflets in this taxon are also at variance with the protologue. The neotype has been chosen to match the protologue as closely as possible and to preserve current usage but does not come from the area suggested earlier (Wilson 1987: 121), between Mount Chandler and Moorilyanna Well. Existing specimens from this general area have leaflets that differ in size or number from those described in the protologue.

Distribution and habitat. Northern Territory and South Australia: found on coarse gravel or sand, in skeletal soils of rocky granite, quartz and sandstone hills, on ridges, in creek beds or on flats at the base of hills.

**Indigofera colutea** (Burm.f.) Merr.


Notes. We have lectotypified Domin’s species, *I. inconspicua*, by the only specimen he cited unequivocally. The second specimen cited, as ‘s.l., A. Dietrich No. 1375’, is also listed under Domin’s entry for *I. viscosa* (= *I. colutea*). The lectotype at PR now consists of two sheets, one with two pieces of plant and one with a single piece. The latter sheet also has a hand-written draft of Domin’s description attached.

**Distribution and habitat.** In South Australia, this species occurs only in the north and north-east. It is widely distributed in Queensland, the Northern Territory and the north-western parts of Western Australia, but is only found in a limited area of New South Wales adjacent to the Queensland border. It is recorded from sand dunes, grassy plains, roadsides or in open forest or woodland on...
soils derived from a wide range of substrates. Although presumably a native species (it was collected by Banks and Solander at Endeavour River), it grows readily in disturbed sites and is now considered to be a weed in some parts of Australia (Lazarides et al. 1997). It also occurs in Africa, Arabia to India, Sri Lanka, Burma, Thailand, Vietnam, Indonesia and New Guinea.

**Indigofera helmsii Peter G Wilson**  

*Indigofera brevidens* var. *uncinata* Benth., Fl. Austral. 2: 201 (1864). **Type**: none cited. **Lectotype (designated here)**: Indigofera brevidens var. stipulis uncinatis McDoual [sic] Stuart’s Expedition” (K, ex herbarium Hookerianum, lower right-hand element).


Notes. We have chosen as lectotype of *I. brevidens* var. *uncinata* Benth., the only specimen with sharp, recurved stipules. As pointed out by Wilson (1987), Ewart and Kerr did not explicitly base their name *I. uncinata* on Bentham’s varietal name so the types of the two taxa are different.

**Distribution & habitat.** Recorded from the Northern Territory, Western Australia, South Australia and New South Wales. The species is known only from a single area in Western Australia and from a limited area in N.S.W. This species is quite rare in N.S.W. and has only recently (May 2003) been rediscovered in Mutawintji National Park, the likely site of Beckler’s ‘towards the Barrier Range’ collection cited above. Hermann Beckler (1828–1914), was appointed doctor and botanist on the Victorian Expedition (the Burke and Wills Expedition) but left the expedition early, at Menindee, in October 1860.

**Indigofera leucotricha** E. Pritzel  

Notes. The syntypes at B were apparently destroyed during the war (fide H. Ern, in litt. 1984) and a neotype has been designated. The neotype is a collection from near the type locality, where this species is very common.

**Distribution & habitat.** This species is relatively common, but localised, in the Northern Territory and in the Gregory North and Gregory South districts of Queensland. In South Australia it is only known from ranges immediately to the west of the Simpson Desert (Lake Eyre region). References in the *Flora of South Australia* (Weber 1986) to *Indigofera leucotricha* occurring outside the Lake Eyre region do not apply to this species. Plants from other populations, which had been included in this broad species concept, are described below as a separate taxon.

**Selected specimens examined (S.A. only)**  
**SOUTH AUSTRALIA.** Lake Eyre: Nilpinna homestead, 6 Jun. 1979, *Badman* 206 (AD); *Peake*,1882, *Chandler* s.n. (AD, MEL 585989); c. 40 km north of William Creek, 31 Jul. 1968, *Lothian* 4939 (AD); creek within 8 km of Mt Attacherrikanna, 23 Sep. 1974, *Symon* 9263 (AD, CANB, NSW).

**The new species, I. cornuligera**

A new species, *I. cornuligera*, is recognised from amongst those specimens referred to *Indigofera leucotricha* in the previous version of the *Flora*. This species is distinct from *I. leucotricha* and we recognise two subspecies that are geographically separate from each other. Specimens from the North-Western region of the state are referable to subsp. *cornuligera* and those from the Flinders Ranges to subsp. *flindersensis*. These two new taxa belong to a group of apparently related species with a distribution extending from western Queensland through central Australia and as far west as the Pilbara. They all have some degree of thickening of the stipule bases.

**Key to distinguish I. leucotricha and I. cornuligera**

Leaflets white in appearance, with dense, somewhat spreading hairs; stipules sometimes persistent but never with strongly thickened bases ....................... *I. leucotricha*  
Leaflets greennish to grey, usually with moderately dense, appressed hairs; stipules with distinctly thickened, persistent bases ....................... *I. cornuligera*
dense to very dense, appressed and shortly spreading, equally biramous hairs. Leaves pinnate, usually with 9–15 leaflets; stipules triangular, generally distinctly thickened, 1.5–4 mm long, glabrescent to pubescent, spinose, persistent; petiole 1–4 (–7) mm long; rachis furrowed (often only slightly), multicellular hairs between leaflet pairs sparse to dense, usually conspicuous, red to dark brown, club-shaped to pointed linear. Leaflets opposite; stipellae absent or inconspicuous; lamina obovate, usually 2–8.5 mm long, 1–5.5 mm wide; upper surface grey to green, with sparse to moderately dense appressed hairs; lower surface grey to green (generally paler than above), with moderately dense to dense appressed hairs; apex obtuse; veins not prominent. Inflorescences equal to longer than leaves; peduncle usually to c. 20 mm long; bracts triangular to ovate (sometimes thickened and persistent), usually 1–2 mm long. Calyx with subequal lobes less than or equal to the length of the tube, clothed with moderately dense to dense, dark, appressed or shortly spreading hairs. Petals to c. 9 mm long. Staminial tube mostly 4.5–6.5 mm long. Ovary moderately hairy. Pod spreading to descending, terete, brown, strigose to glabrescent; hairs sparse to moderately dense to dense appressed or shortly spreading hairs. Petals relatively large. Stamens mostly 4.5–6.5 mm long, free ends and tube pigmented. Pod 18–32 mm long, 2.5–3 mm deep, grey to brown, tomentose, often glabrescent; hairs sparse to dense, spreading. Seed c. 9 per fruit. **Fig. 1.**

**Indigofera cornuligera subsp. flindersensis** Peter G.Wilson & Rowe

**Spreading and erect shrub or subshrub, 0.3–1.2 m high, up to 2 m wide. Leaves with (5–) 11–15 (–19) leaflets; stipules 1.5–3.5 mm long; petiole 1–4 (–7) mm long; multicellular hairs between leaflet pairs sparse to dense, moderately conspicuous; stipellae absent. Leaves with lamina obovate, 2–8.5 mm long, 1–6 mm wide; apex obtuse, mucronate and emarginate. Inflorescences 25–110 mm long, longer than leaves; peduncle 4–20 (–28) mm long; bracts 1.8–2.3 mm long; flowers red; petiole 1.5–3.5 mm long. Calyx 2.5–4 (–5) mm long, clothed with dense, brown to almost black, appressed hairs. Standard red, broadly ovate or orbicular, (5–) 6–9 mm high, 7–10 mm wide. Wings narrowly obovate or spatulate, 6.5–8.5 mm long, 1.7–2.5–3.7 mm wide. Keel (5.5–) 6.5–9 mm long, 2.4–3.3 mm deep; apex acute or rounded; lateral pockets 1–1.7 mm long; hairs moderately dense to dense, rarely sparse, brown, along the bottom and at the tip. Staminial tube (4–) 4.5–6 mm long, free ends and tube pigmented. Pod 18–32 mm long, 2.5–3 mm deep, grey to brown, tomentose, often glabrescent; hairs sparse to dense, spreading. Seed c. 9 per fruit. **Fig. 1.**

**Distribution and habitat.** Restricted to the Flinders Ranges where it has been found on rocky hillsides or
in rocky creek beds on a range of substrates including shale and limestone.

Selected specimens examined.


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References


