

JOURNAL of the ADELAIDE BOTANIC GARDENS

AN OPEN ACCESS JOURNAL FOR AUSTRALIAN SYSTEMATIC BOTANY

flora.sa.gov.au/jabg

Published by the

STATE HERBARIUM OF SOUTH AUSTRALIA

on behalf of the

BOARD OF THE BOTANIC GARDENS AND STATE HERBARIUM

© Board of the Botanic Gardens and State Herbarium,
Adelaide, South Australia

© Department of Environment, Water and Natural Resources,
Government of South Australia

All rights reserved

State Herbarium of South Australia
PO Box 2732
Kent Town SA 5071
Australia



Board of the
Botanic Gardens and
State Herbarium



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

Peter G. Wilson^a & Ross Rowe^{a, b}

^aNational Herbarium of New South Wales, Royal Botanic Gardens,
Mrs Macquaries Road, Sydney, New South Wales 2000
Email: peter.wilson@rbgsyd.nsw.gov.au

^bPresent address: Department of the Environment, Water, Heritage and the Arts,
GPO Box 787, Canberra, Australian Capital Territory 2601

Abstract

As a precursor to the revised *Flora of South Australia*, one new species of *Indigofera*, *I. cornuligera* Peter G. Wilson & Rowe (with two subspecies: subsp. *cornuligera* and subsp. *flindersensis* Peter G. Wilson & Rowe), and one new subspecies of *I. australis* Willd. (subsp. *hesperia* Peter G. Wilson & Rowe), are described. Neotypes are designated for three accepted species and lectotypes for seven synonyms.

Key words: Fabaceae, Indigoferae, *Indigofera*, nomenclature, taxonomy, South Australia.

Introduction

The current *Flora of South Australia*, published in 1986, is being updated. As a prelude to a revised treatment of the tribe Indigoferae (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. ± 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, 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 sylvatica Sieber ex Spreng., Syst. Veg. 3: 278 (1826). — **Type citation:** ‘Nov. Holl.’. Sprengel does not indicate a type, but de Candolle (1825: 226) cites the Sieber manuscript name as follows: ‘*I. sylvatica* Sieb.! pl. exs. nov.-holl. n. 379.’ Sprengel’s herbarium at B is no longer extant, so we choose De Candolle’s specimen as lectotype. **Lectotype (designated here):** *F.W.Sieber Fl. Nov. Holl. 379* (G-DC [IDC microfiche 800/11]). **Isolectotypes:** BM n.v., K, MEL, NSW.

Indigofera angulata Lindl., Bot. Reg. 12: t. 991 (July 1826), nom. illeg. non Rottler ex Spreng., Syst. Veg. 3: 277. 1826 (Jan.–Mar. 1826). — *Indigofera lindleyana* Spreng. ex Steud., Nomencl. Bot. ed. 2, 1: 807 (1841), nom. illeg. — **Type citation:** ‘Communicated in April last, by Mr. Whitney, of the Fulham Nursery, where it had been raised from New Holland seeds, received ... from Mr. Joseph Thomas.’ Lindley’s description is based on this cultivated plant but he does make some comparison with other specimens. There appears to be no extant specimen of this cultivated plant, so it seems prudent to choose the illustration as lectotype. **Lectotype (designated here):** Bot. Reg. 12: t. 991 (1826).

Note. The name *I. lindleyana* was given by Steudel (but attributed to Sprengel) apparently as a new name for the illegitimate *I. angulata*. The name is, however, itself illegitimate since Steudel cites the validly published name *I. sylvatica* as a synonym.

Key to subspecies

Leaves usually with 7–15 leaflets; leaflets usually 10–40 mm long; petiole usually 6–15 mm long; stipule-bases not swollen by masses of multicellular hairs; peduncle usually 10–20 mm long subsp. *australis*
Leaves usually with 17–25 leaflets; leaflets usually 5–10 mm long; petiole usually 3–6 mm long; stipules usually with bases swollen by masses of multicellular hairs; peduncle usually 4–7 mm long subsp. *hesperia*

Indigofera australis* Willd. subsp. *australis*Indigofera australis* Willd. var. *australis**Indigofera australis* var. *gracilis* DC., Prodr. 2: 226 (1825).— **Type citation:** ‘*h* in Novae-Hollandiae orâ orientali.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:** F.W.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). **Isolototypes:** 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 mucronate, veins 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 (–10.6) 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 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)

SOUTH AUSTRALIA. **Lake Eyre:** Brindana Gorge, 18 Oct. 1987, E.C.Foster 300 (AD). **Flinders Ranges:** Creekline, Paralana Springs, 24 Aug. 1968, Symon 6023 (AD, CANB); Arcoona Creek Camp site, Gammon Range, 23 Aug. 1956, Lothian 2034 (AD, NSW). **Eastern:** Bumbumie Springs, Koonamore, 24 Aug. 1930, Yardley s.n. (AD 98434988); Cathedral Rock, c. 20 km N of Olary, 26 Aug. 1972, Kuchel 3093 (AD). **Southern Lofty:** Torrens Gorge, Central Hills, 8 Dec. 1977, Spooner 5653 (AD, MEL); near Victor Harbour off Range Road, 12 Nov. 1968, Hunt 2871 (AD, BRI). **Murray:** Keyneton, Sep. 1927, coll. unknown (AD 97722021). **Northern Lofty:** Brown Hills, s.dat., Mueller s.n. (MEL 586511). **South-eastern:** Hundred of Caroline Sn 372, Honeysuckle Flat, Caroline Forest Reserve, 26 Sep. 1984, Dickson 71 (MEL, HO, NSW); Comaun, c. 20 km N of Penola, 20 Sep. 1964, Hunt 2145 (AD).

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 strumosae trichomatibus multicellularibus aggregatis; pedunculo plerumque 4–7 mm longo.

Holotype: Kalbarri, upper banks of the Murchison River, 22 Sep. 1991, Peter G. Wilson 1219 & R. Rowe (NSW). **Isotypes:** AD, PERTH.

Indigofera ervoides Meisn. in Lehm., Pl. Preiss. 1: 88 (1844).

— **Type citation:** ‘In umbrosis inter fragmenta rupium montis Mathilda, alt. 975 ped. (York) d. 11. Sept. 1939. Herb. Preiss. No. 1067.’ **Holotype:** 11 Sep. 1839, L. Preiss 1067 (LD, photo). **Isotype:** MEL.

Indigofera australis var. *angulata* Benth., Fl. Austral. 2: 200 (1864), pro parte quoad ‘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; lamina obovate, (3–) 5–10 (–20) mm long, (2–) 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

SOUTH AUSTRALIA. **Gairdner-Torrens:** near Glyde Hill outstation, c. 15 km N of Lake Everard Homestead, 30 Sep. 1972, *E.N.S.Jackson 2131* (AD, MEL, CANB). **Flinders Ranges:** creek along W side of Yowambulla Peak, 9 Aug. 1974, *N.N.Donner 5025* (AD); Port Germein Gorge, c. 10 km E of Port Germein township, 29 Aug. 1967, *D.J.E.Whibley 2042* (AD); Black Range, southern side of Mambray Creek, Mt Remarkable National Park, 7 Jul. 1974, *D.J.E.Whibley 4318* (AD). **Eyre Peninsula:** Hiltaba Station, c. 5 km E of Hiltaba Homestead, 3 Sep. 1975, *B.J.Blalock 1885* (AD, E); Roopena Station, W slope of Mt Whyalla, 12 Aug. 1969, *A.E.Orchard 2094* (AD). **Northern Lofty:** Wirrabara Forest Reserve, 6 Dec. 1984, *H.P.Vonow 180* (AD).

WESTERN AUSTRALIA. **Avon:** Mt Stirling [near Kellerberrin], Jul. 1941, *C.A.Gardner s.n.* (PERTH). **Eyre:** Mt Ragged, 1890, *Miss Brooke s.n.* (MEL 586707); W of Hamersley Range, 3 miles from Phillips River Crossing, 28 Aug. 1965, *E.Wittwer 439* (PERTH). **Coolgardie:** 2.3 km S of Symmonds Hill outcamp, Fraser Range Station, 3 Sep. 1968, *G.J.Keighery 3096* (PERTH). **Irwin:** 22.6 km SE of Mingenew & 3 km E of Yandanooka at Enokurra Rocks, 6 Oct. 1995, *A.A.Mitchell 4103* (NSW, PERTH). **Roe:** Peak Charles walking track, about 100 m from carpark, 16 Oct. 1997, *P.G.Wilson 1392*, *N.Lam & E.A.Brown* (NSW, AD, PERTH).

Indigofera australis subsp. *australis* – subsp. *hesperia* 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

SOUTH AUSTRALIA. **Flinders Ranges:** Mt Aleck, Elder Range, NW of Hawker, 28 Sep. 1981, *P.E.Conrick 669* (AD, MEL); foot of Mt Remarkable, 10 Oct. 1970, *B.Copley 3198*

(AD); Port Germein Gorge, 18 Sep. 1960, *R.Filson 3147* (AD, BRI, CANB, MEL); inner slope of wall of Pound, Wilpena, 8 Sep. 1961, *D.E.Symon 1427* (AD); Brachina Gorge, Orparinna National Park, 18 Sep. 1971, *J.Z.Weber 2627* (AD). **Northern Lofty:** Wirrabara, Oct. 1882, *J.E.Brown* (AD).

New typifications

Indigofera basedowii E.Pritzl

Repert. Spec. Nov. Regni Veg. 15: 356 (1918). — **Holotype:** Central Australia, 1903, *H.Basedow 33* (B, destroyed). **Neotype (designated here):** Northern Territory: Kings Canyon, George Gill Range, 27 Aug. 1980, *J.R.Maconochie 2485* (DNA). **Isonotypes:** CANB, BRI.

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 long 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 Ernabella 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.

Philipp. J. Sci. 19: 355 (1921). — *Galega colutea* Burm. f., Fl. Indica: 172 (1768). — **Holotype** (see Gillett 1958: 66–67): Plukenet, Phytographia t. 166, f. 3 (1691).

Indigofera viscosa Lam., Encycl. 3: 247 (1789). — *Anila viscosa* (Lam.) Kuntze, Revis. Gen. Pl. 2: 940 (1891). — **Holotype** (see Gillett 1971: 268): specimen from a cultivated plant of unknown origin (P).

Indigofera seticulosa Harv., Fl. Cap. 2: 196 (1862). — **Type citation:** ‘HAB. Uncertain, Armstrong. (Herb. Hooker)’. **Holotype** (see Gillett 1958: 65): Australia: *J.W.Armstrong 385* (K).

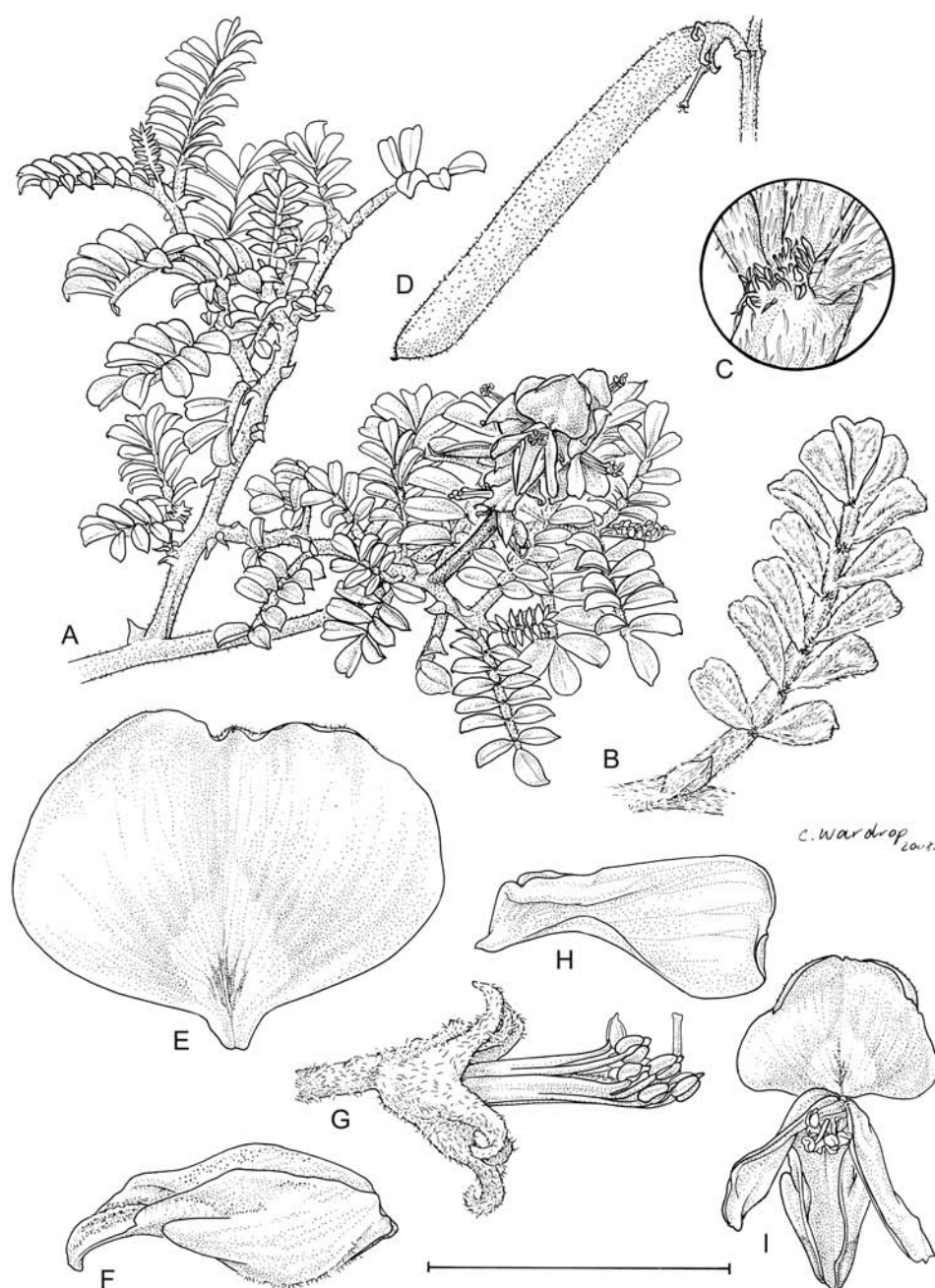


Fig. 1. *Indigofera cornuligera* subsp. *flindersensis*. A habit; B leaf; C detail of multicellular hairs on leaf rachis; D fruit; E standard; F keel; G lateral view of calyx and androecium; H wing; I flower. Scale bar: A 30 mm; B 10 mm; C–D 2 mm; E–I 6 mm. — A Wilson 796 & Rowe; B, E–I Wilson 824 & Rowe; C Wilson 795 & Rowe; D Lothian 3090.

Indigofera inconspicua Domin, *Biblioth. Bot.* 89 (3): 189 (1926). — **Type citation:** 'Gladstone, A. Dietrich No. 612; s.l., A. Dietrich No. 1375'. **Lectotype (designated here):** Queensland: Gladstone, [Feb 1865], A. Dietrich 612 (PR 52711, 52712). **Isolectotypes:** MEL 586363, HBG.

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

J. Adelaide Bot. Gard. 10: 119 (1987). — *I. uncinata* Ewart & L.R.Kerr, Proc. Roy. Soc. Victoria, n.s. 39: 3, fig. 2 (1926), nom. illeg. nec G. Don, Gen. hist. 2: 208 (1832), nec Roxb., Fl. ind. ed. 1832, 3: 382 (1832). — **Lectotype** (see Wilson 1987): South Australia: Mt Watson near Birksgate Range (Camp 17, Elder Exploring Expedition), 8 Jul. 1891, *R. Helms s.n.* (AD 97310107). **Probable isolectotype**: NSW.

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).

Indigofera uncinata var. *minor* Ewart & L.R.Kerr, Proc. Roy. Soc. Victoria, n.s. 39: 3 (1926). — **Type citation**: ‘Hastings River, Dr. Beckler; Barrier Range, Dr. Beckler, 1861; Gascoyne River, W.A. J. Forrest, 1882’. **Lectotype (designated here)**: Towards the Barrier Range, 2 Feb. 1861, *Beckler s.n.* (MEL 586326, lowermost 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 Exploring Expedition (the Burke and Wills Expedition) but left the expedition early, at Menindee, in October 1860.

Indigofera leucotricha E. Pritzel

Repert. Spec. Nov. Regni Veg. 15: 357 (1918). — **Type citation**: ‘in Australia centrali prope Hermannsburg ad fluvium Fincke, leg. Strehlow, 1906–1908, no. 156, 220.’ (B, destroyed). **Neotype (designated here)**: Northern Territory: Central South: Finke River, 1.7 km from the turn-off to Palm Valley at Hermannsburg, 17 Sep. 1990, *Peter G. Wilson 720 & R. Rowe* (NSW). **Isolectotype**: DNA. *Indigofera lasiantha* F. Muell., New S. Wales – Parl. Pap. – Votes & Proc. Legis. Assembly 2 (159-A): 6 (1859), nom. illeg. non Desv., Ann. Sci. Nat. (Paris) 9: 410 (1826). **Holotype**: Coopers Creek [1858], *A.C. Gregory s.n.* (MEL 585991).

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 4959* (AD); creek within 8 km of Mt Attacherrikanna, 23 Sep. 1974, *Symon 9265* (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 greenish to grey, usually with moderately dense, appressed hairs; stipules with distinctly thickened, persistent bases *I. cornuligera*

Indigofera cornuligera Peter G. Wilson & Rowe, sp. nov.

Frutex ad 1.25 m. altus internodiis comparate brevibus, stipulis atque bracteis inflorescentiae basin versus incrassatis. Folia pinnata foliolis plerumque 9–15, utrinque appresso-pubescentibus. Calyx pilis fuscatis indutus; lobi breves subaequales. Corolla usque ad 10 mm longa. Tubus staminalis 4.5–6.5 mm longus.

Holotype: Northern Territory: 20 km west of Mulga Park, 21 Sep. 1990, *Peter G. Wilson 768 & R. Rowe* (NSW). **Isotypes:** AD, DNA.

Indigofera A86365 MacDonnell Ranges (Albrecht et al. 1997)

Spreading to erect subshrub or shrub to 1.25 m high, with woody rootstock; young stems terete or slightly ridged, green or grey to brown, strigose with

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, spinescent, 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. Staminal tube mostly 4.5–6.5 mm long. Ovary moderately hairy. Pod spreading to descending, terete, brown, strigose to glabrescent; hairs sparse to dense, appressed to spreading; apex shortly pointed; endocarp spotted. Seed usually up to 10 per fruit.

Notes. The epithet is derived from the Latin *cornulum*, little horn, and *gero*, to bear or carry, and alludes to the horn-like appearance of the pairs of thickened stipules, which are well-developed in this taxon.

Key to subspecies

Flowers pink to purplish; sepals ± straight; clusters of multicellular hairs between leaflet pairs distinct, usually also scattered along the rachis subsp. *cornuligera*

Flowers red; sepals mostly with recurved tips; clusters of multicellular hairs between leaflet pairs not strongly developed subsp. *flindersensis*

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

Spreading to erect subshrub or shrub, (0.2–) 0.4–1.25 m high. Leaves with (7–) 9–15 (–21) leaflets; stipules 1.5–4 mm long; petiole 1–4 (–7) mm long; multicellular hairs between leaflet pairs moderately dense to dense, conspicuous; stipellae absent or inconspicuous, 0.2–0.6 mm long. Leaflets with lamina obovate, 2.5–7 (–11) mm long, 1.5–4 (–5.5) mm wide; apex obtuse and emarginate. Inflorescences (7–) 15–50 (–85) mm long, equal to longer than leaves; peduncle (1.5–) 4–13 (–20) mm long; bracts 1–2 mm long; flowers pink to purple; pedicel 1–2 mm long. Calyx 2–4 mm long, clothed with moderately dense to dense, brown to black (rarely pale) appressed or shortly spreading hairs. Standard purple to pink, ovate to orbicular, 6.5–8.3 mm high, 6.5–9.5 mm wide. Wings spatulate, 6.5–8 mm long, 2–4.5 mm wide. Keel 7–8 mm long, 3–3.5 mm deep; apex rounded to acute; lateral pockets 0.5–1.3 mm long; hairs moderately dense to dense, hyaline to dark brown, along the bottom and at the tip; margin ciliate. Staminal tube 5–6.5 mm

long, colourless or free ends and tube pigmented. Pod (15–) 20–30 (–40) mm long, 2.5–4 (–4.5) mm deep, brown, tomentose; hairs sparse to moderately dense, appressed to shortly spreading. Seed (4–) 7–10 (–12) per fruit.

Distribution and habitat. South Australia, Western Australia and Northern Territory; found on hillsides, rocky ground, and in gorges and creek outwash areas.

Selected specimens examined.

SOUTH AUSTRALIA. **North-western:** Poondinna Transshipping, Birksgate Range, 21 Aug. 1973, *N.N. Donner 4314* (AD, DNA); Tomkinson Ranges, Dulgunia Hill, Northeastern slopes of Scarface, 4 Sep. 1978, *J.Z. Weber 5384* (AD, NSW); c. 1 km E of Everard Park Homestead (Mimili), 13 Sep. 1978, *D.J.E. Whibley 6902* (AD, NSW).

NORTHERN TERRITORY. **Central South:** hill above Lasseter's Cave, Hull River, 25 Aug 1973, *R.J. Chinmock 506* (AD, DNA); Mt Olga, 25 Jun. 1958, *G. Chippendale NT4669* (AD, DNA, NSW); South Bloods Range, 26 Sep. 1970, *C.R. Dunlop 1901* (DNA, NSW).

WESTERN AUSTRALIA. **Giles:** Eastern foot of Walter James Range, 24 Jul. 1967, *A.S. George 8879* (CANB, PERTH); Blackstone Range, Wingelina Nickel area, 8 Jan. 1973, *D.E. Symon 8394* (AD).

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

Ab subsp. *cornuligerae floribus rubris, sepalis saepe recurvatis, caespitibus pilorum in rhachidi minus effectis differt.*

Holotype: South Australia: Flinders Ranges: c. 1.2 km E of Eregunda Creek on Wirrealpa–Blinman Road, 26 Sep. 1990, *Peter G. Wilson 824 & R. Rowe* (AD).

Isotypes: K, NSW.

Erect and spreading 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. Leaflets 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; pedicel 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. Staminal 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.

SOUTH AUSTRALIA: **Flinders Ranges:** Freeling Heights, May 1976, *R.Bates* 2026 (AD); Paralana Springs, 15 Jul. 1986, *K.A.Menkhurst s.n.* (MEL, NSW); Italowie Gorge, 25 Sep. 1990, *P.G.Wilson* 795–796 & *R.Rowe* (AD, NSW).

Acknowledgements

We wish to thank the heads of the herbaria cited for loans of herbarium material or access to collections under their care. Our special thanks to the illustrator, Catherine Wardrop, for her excellent work. This study was supported by a grant from the Australian Biological Resources Study.

References

- Albrecht, D.E., Duguid, A.W., Latz, P.K., Coulson, H. & Barritt, M.J. (1997). *Vascular plant checklist for the southern bioregions of the Northern Territory: nomenclature, distribution and conservation status.* (Parks and Wildlife Commission of the Northern Territory: Darwin).
- Candolle, A.P. de (1835). *Indigofera*. In: *Prodromus systematis naturalis regni vegetabilis* 2: 221–233.
- Gillett, J.B. (1958). *Indigofera (Microcharis)* in Tropical Africa with the related genera *Cyamopsis* and *Rhynchotropis*. *Kew Bulletin, Additional Series* 1: 1–166.
- Gillett, J.B. (1971). *Indigofereae*. In: Milne-Redhead, E. & Polhill, R.M. (eds), *Flora of Tropical East Africa* 3: 212–330. (Crown Agents for the Colonies: London).
- Lazarides, M., Cowley, K. & Hohnen, P. (1997). *CSIRO handbook of Australian weeds.* (CSIRO Publishing: Collingwood).
- Weber, J.Z. (1986). *Indigofereae*. In: Jessop, J.P. & Toelken, H.R. (eds), *Flora of South Australia* 2: 576–582. (The Flora and Fauna of South Australia Handbooks Committee: Adelaide).
- Wilson, P.G. (1987). Taxonomic notes on some Australian species of *Indigofera* (Fabaceae–Faboideae). *Journal of the Adelaide Botanic Gardens* 10: 119–126.