

Further notes on the typification of some species in *Indigofera* (Fabaceae)

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Abstract

The typification of the names of three non-endemic species of *Indigofera* in Australia is revisited. Firstly, the uncertain typification of an introduced species, *I. hochstetteri* Baker, is considered; a previous, imprecise lectotypification is recognised and a second step lectotype is designated. Secondly, an earlier error in the citation of the type of another introduced species, *I. sessiliflora* DC., is corrected and specific details of the holotype are provided. Thirdly, a lectotype is designated for *I. seticulosa* Harv. a synonym of the widespread native species, *I. colutea* (Burm.f.) Merr.

Introduction

Typification of the names of various Australian *Indigofera* species has been resolved in previous papers (Wilson 1987, Wilson & Rowe 2004, Wilson & Rowe 2008, Wilson & Rowe 2010, Wilson 2014). However, it has more recently become apparent that the typification of two names, already considered in these papers, requires clarification and these cases are addressed here, following the rules outlined in the *International Code of Nomenclature for algae, fungi, and plants* (ICN; Turland & al. 2018). Additionally, the previous typification of the name of a recent adventive species is shown to be inadequate and a second step lectotype is proposed for it.

Typifications

1. *Indigofera hochstetteri* Baker

Indigofera hochstetteri was first collected in Australia in 2004 on Mundubullangana Station, south of Port Hedland. It has been suggested (S. van Leeuwen, pers. comm.) that the species could have been in the area for many years and may even have been introduced when *Cenchrus setiger* was introduced into the Pilbara in the early 1900s, possibly from India. The species was included in the key to Western Australian species by Wilson & Rowe (2015) but not treated in full.

Indigofera hochstetteri was published by Baker (1871: 101) as an avowed substitute (*nomen novum* ICN Art. 6.11) for the illegitimate name *I. ornithopodioides* Hochst. ex Jaub. & Spach and, therefore, has the same type (ICN Art 7.4). Jaubert and Spach (1856: t. 480) published the name *I. ornithopodioides*, using the manuscript

name Hochstetter had applied to a Schimper collection (“Hochst., in *Schimp. Plant. exs. Arab. Fel.*, N° 769”) but they also cited a wide range of other collections. Two superfluous names were later published for this taxon: *I. anabaptista* Steud. ex Baker, where Baker (1876: 102) mistakenly considered a *nomen nudum* listed by Steudel (1840 :805) to be validly published, and *I. jaubertiana* Schweinf. (Schweinfurth 1896: 245).

The typification of this species has been treated in various ways in the intervening years, but no publication definitively typified the taxon. I here assess the relevant publications and make a second-step lectotypification following Art. 9.17 of the ICN.

***Indigofera hochstetteri** Baker in Oliver, Fl. Trop. Afr. 2: 101 (1871).

Indigofera ornithopodioides Hochst. ex Jaub. & Spach, Ill. Pl. Orient. 5, t. 480 (1856), *nom. illeg.*, non Schumach. (1827) nec Cham. & Schltdl. (1830).

Type citation: Crescit Arabia Felici (*Schimper, ex Hochstetter*), Nubia (*Kotschy!*) et Abyssinia : *W. Schimper!* “in arvis humidis incultis, alt. 3000–5000 ped.” Aug. anni 1852, nec non Maio et Julio anni 1853. (*Herb. Mus. Par.*).

Lectotype (first step: Gillett 1958: 13): “YEMEN, *Schimper* (1837) 769 isotype [*sic*] of *I. hochstetteri*.”

Lectotype (second step, designated here): [Arabia felix] *Schimper* 769, 15 Feb 1836 (P barcode P02958688); isolectotypes P02958689, E00405620, E00405621, E00354935, HBG519680, HBG519679, L.2050546, L.2050547, L.2050548, MEL304459, MEL304892, MEL305138, TUB001223.

The citation by Jaubert and Spach (1856) included specimens from ‘Arabia Felix’ [usually taken to mean Yemen and adjacent parts of south-west Saudi Arabia], ‘Nubia’ [perhaps part of Sudan or Eritrea] and Abyssinia [Ethiopia]. When Baker (1871) published the replacement name, he cited the Hochstetter manuscript name and associated sheet plus Jaubert and Spach’s illustrated description.

As far as I can determine, the first author to narrow the type citation was Gillett (1958: 13), who cited “YEMEN, *Schimper* (1837) 769 isotype of *I. hochstetteri*, *I. anabaptista*, *I. ornithopodioides* and *I. jaubertiana*.” This can be interpreted as a first step lectotypification. According to Art. 9:22 of the ICN (Turland et al. 2018), there is no requirement prior to 1 January 1990 to specify a repository in which the type is conserved. Gillett’s use of the term ‘isotype’ is puzzling but is perhaps an indication of a specimen he considered to be common to all four homotypic names.

There are numerous duplicates of *Schimper* 769, almost all bearing labels with the following locality details: “in arenosis ad margines agrorum prope Unsert Arabiae felicis,” the date “15 Febr. 36,” and “Unio itiner. 1837.” This last is a reference to *Unio Itineraria*, an organisation based at Esslingen, Germany, that promoted scientific endeavours and funded expeditions by Schimper and others (see <https://plants.jstor.org/stable/10.5555/al.ap.person.bm000121890>). Gillett has taken ‘Arabia felix’ to be a reference to Yemen but others have considered it a reference to south-western Saudi Arabia. I here make a second-step lectotypification, following Art. 9.17 of the ICN. Note that there is a third sheet in the Paris herbarium (barcode P02958687) that is apparently mixed since it bears labels for *Schimper* 769 but also *Schimper* 2295 (collected in Ethiopia and dated Sept. 1854). The sheet bears 5 elements that cannot be associated with either collecting number.

There has been longstanding uncertainty regarding the typification of *Indigofera hochstetteri* and this uncertainty has apparently persisted until today. The earliest example, indicating an alternative type, was published by Gillett himself in his later treatment of the genus in the *Flora of Tropical East Africa* (Gillett 1971: 223) where he cited a different specimen as type. In this case, he cited a specimen from Ethiopia: “N. Ethiopia, *Schimper* (P, holo.)” without providing more specific details. This was, itself, not specific, since there are numerous collections by Schimper in the Paris herbarium that were collected before the replaced synonym was published in 1856. These include, for example, specimens collected at different sites in different years but assigned the same record number, *Schimper* 495: two sheets dated Aug 1852, labelled “Abyssinie, Sera Walke/Walqua” (=Sera Wakele), and two sheets dated 24 July 1853, labelled “Abyssinie, Golleb/Gölleb” (=?Golbe). More recently, Cortés-Burns et al. (2002: 703) agreed with my assessment and cited “Yemen, 1837, *Schimper* 769 (P holotype)” although this, too, does not effectively indicate a type.

An alternative typification is indicated by Kotresha et al. (2012: 31), who cited “Type: Ethiopia. Province: locality, *Schimper* 495 (holotype: K!).” The intended Kew specimen, barcode K000392751, has a Paris herbarium label, is stamped “HERBARIUM HOOKERIANUM 1867” and has a slip noting that it was named by J.G. Baker in the *Flora of Tropical Africa*. As noted above, the provenance of the collection *Schimper* 495 cannot be determined unequivocally.

2. *Indigofera sessiliflora* DC.

This species is sparingly naturalised in Australia, probably introduced via ballast from an iron ore ship at Port Hedland in north-western Australia and first collected in 1991. The name *Indigofera sessiliflora* was published by A.P. de Candolle based on a Perrottet collection from Senegal but Wilson & Rowe (2008: 304) erred in stating the following as type: “**Holotype**: Senegal, *Perrottet s.n.* (P, *n.v.*). Isotype: BM, *n.v.*” I here provide the correct details of the type, including the barcode number.

****Indigofera sessiliflora*** DC., Prodr. 2: 228 (1825).

Type citation: Senegal ‘v.s. comm. a cl. Perrottet inventore’

Holotype: Senegal, *Perrottet s.n.* (G-DC, barcode G00497609). Isotype BR (barcode BR000000625514); probable Isotype: BM (barcode BM000843135) “n. 183”

The holotype consists of a single, relatively large specimen and the associated label confirms that it was collected in Senegal by Perrottet and received by de Candolle in 1825. It also indicates that it was separated from a mixed collection (“*melée avec Crotalaria bracteolata de Perrottet*”).

3. *Indigofera seticulosa* Harv.

Harvey (1862: 196) described *Indigofera seticulosa* in *Flora Capensis*, citing an Armstrong specimen in Herb. Hooker, but noted that “the habitat of this is quite uncertain, and possibly it may not be S. African”. Brown (1912: 275) first recognised this as a synonym of *I. viscosa* Lam. (= *I. colutea* (Burm.f.) Merr.), with “the type specimen being identical with Armstrong’s No. 385, collected at Port Essington [Australia], and doubtless belongs to that gathering”. Gillett (1958: 65) listed the name as a synonym of *I. colutea* var. *colutea* and cited Armstrong 385 as “holotype of *I. seticulosa*, wrongly thought to be from S. Africa”.

Wilson & Rowe (2010: 69) cited Gillett’s “holotype” uncritically, not realising there were four sheets in the Kew herbarium. Furthermore, given that there are multiple sheets in that herbarium from this gathering, it is not possible to interpret Gillett’s citation of a ‘holotype’ as an effective lectotypification under Art. 9.10 of the ICN.

Indigofera seticulosa Harv., *Flora Capensis* 2: 196 (1862).

Type citation: ‘HAB. Uncertain, Armstrong. (Herb. Hooker)’.

Lectotype (designated here): Australia: [Northern Territory: Port Essington, Cobourg Peninsula] *Armstrong* [385] (K, barcode K000393277). Isolectotypes: K000393274, K000393275, K000393276.

Although there is circumstantial evidence that one of the four sheets at Kew could be interpreted as the holotype, this cannot be established unequivocally and I have taken the precautionary approach of designating a lectotype. Of those four sheets, only one (K000393275) is not in contention for lectotypification because Harvey had cited the source of his specimen as ‘(Herb. Hooker)’ and this one is ex Herbarium Benthamianum. None of the three remaining sheets, all stamped ‘Herbarium Hookerianum’ bears the name *Indigofera seticulosa* in Harvey’s hand but only one sheet, K000393277, lacks the locality and Armstrong’s collecting number, both of which are absent from the protologue. This sheet is designated lectotype; the other sheets, all clearly part of a single gathering, are isolectotypes.

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