

A REVISION OF THE GENUS *HUMBOLDTIA* VAHL
(LEGUMINOSAE–CAESALPINIOIDEAE)

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SUMMARY

The genus *Humboldtia* Vahl is revised and a key to the six species and one variety recognised; their descriptions and distributions are given. All the taxa are confined to Western Ghats in India, except *H. laurifolia*, which extends southwards into Sri Lanka.

INTRODUCTION

Humboldtia was described by Vahl (1794) based on collections from Sri Lanka ('Zeylonia'), with a single species, *H. laurifolia*. The genus was first named *Batschia* (on page 39), which Vahl himself changed into *Humboldtia* on page 106 in memory of Alexander von Humboldt. In the same year (1794) independent of Vahl's publication, Ruiz and Pavon (Flora Peruviana et Chilensis Prodrum, Oct. 1794: 121) described *Humboltia* (without 'd' but the orthography was 'corrected' by the authors in Dec. 1798 in Syst. Veg.: 233), a genus of Orchidaceae from Peru commemorating the same Alexander von Humboldt. Though Swartz (J. Bot. Schrader, 1799 (4): 240) accepted the priority of Vahl's name over *Humboltia* Ruiz & Pavon (see note 2 under *Humboldtia* Vahl by Rickett & Stafleu, Taxon 8, 1959: 289), the exact month of publication of Vahl's Symb. Bot. Vol. 3, 1794 is yet to be ascertained. Therefore, Geesink and Sanjappa (Taxon 35, 1986: 180) have proposed to conserve *Humboldtia* Vahl against *Humboltia* Ruiz & Pavon to forestall any undesirable nomenclatural changes of this otherwise conserved and widely accepted legume genus.

Humboldtia is a small genus with six species and one variety, all confined to Western Ghats of India, except *H. laurifolia* Vahl, which extends into Sri Lanka. The species of *Humboldtia* occur in evergreen forests at altitudes varying from c. 200 to 1200 m, and generally prefer riverbanks and watercourses.

No study of the genus has been made after Gamble's (1919) account in his Flora of the Presidency of Madras (vol. 1). The present revision of the genus is based on the collections represented in CAL, MH, BSIS, BSI, DD and PCM, as well as on field observations.

Of the seven species and one variety so far described, six species and one variety are recognised here, and the seventh, African species, *H. africana* Baill. (1899) is now treated under *Schotia* (Keay, Kew Bull. 1954: 490).

HUMBOLDTIA

Humboldtia Vahl, Symb. Bot. 3 (1794) 106, nom. cons.; Willd., Sp. Pl. 1 (1798) 1147; Poir. in Lamk., Encycl. 3 (1813) 69; DC., Prod. 2 (1825) 488; Wight & Arn., Prod. Fl. Penin. Ind. Or. (1834) 285; Drury, Handb. Ind. Fl. 1 (1864) 377; Benth. & Hook. f., Gen. Pl. 1 (1865) 579; Bedd., Fl. Sylv. 2 (1891) 93; Baker in Hook. f., Fl. Brit. India 2 (1876) 273; Trimen, Handb. Fl. Ceylon 2 (1894) 115; Gamble, Man. Ind. Timb. (1902) 279; Brandis, Indian Trees (1906) 202; Bourdillon, For. Trees Travancore (1908) 148; Rao, Fl. Pl. Travancore (1914) 143; Gamble, Fl. Pres. Madras 1 (1919) 410; Backer & Bakh. f., Fl. Java 1 (1963) 530; Hutch., Gen. Fl. Pl. 1 (1964) 270; Cowan & Polhill in Polhill & Raven, Adv. Legum. Syst. 1 (1981) 141. – *Batschia* Vahl, Symb. Bot. 3 (1794) 39, nom. inval.; Taubert in E. & P., Nat. Pfl. Fam. 3, 3 (1892) 143. – Type species: *H. laurifolia* Vahl.

Shrubs or small to medium-sized trees, 5–16 m, rarely reaching 20 m height; bark lenticellate, internodes of branchlets usually solid, sometimes fistular (often inhabited by ants). *Stipules* 2–6 cm long, connate at base (appearing intrapetiolar), conical, clasping the buds; usually appendiculate at base, fugacious or persistent, glabrous or tomentose, prominently veined. *Leaves* pinnate, 1–6-foliolate, coriaceous to chartaceous with intramarginal veins, glabrous; young leaves pendulous, whitish or purple; leaflets subsessile, large, ovate, elliptic, narrowly elliptic or narrowly ovate, usually oblique at base, acute to acuminate or caudate at apex, prominently reticulately veined on lower surface, deep-seated glands present on leaflets and stipules; leaf rachis winged or terete, glabrous or brown-tomentose. *Inflorescence* a dense raceme or corymb, axillary or on old branches and stem. *Flowers* orange or red; pedicels long, articulate below calyx tube, tomentose; bracts ovate, reddish when young, fugacious; bracteoles 2, connate up to the middle, clasping the bud or calyx tube, reddish or orange, fugacious or persistent. *Calyx tube* 0.5–1.5 cm long, obconically, turbinate, tomentose, calyx lobes 4, subequal, ovate, imbricate, tomentose on both surfaces, orange, pinkish or reddish. *Petals* usually 5, sometimes 3, spatulate, clawed, faintly veined, glabrous or tomentose within, variously coloured. *Stamens* 5, inflexed in bud, free, perfect, alternating with 5 minute staminodes; filaments filiform, gradually narrowing towards tip, glabrous, rarely pilose; anthers oblong, dorsifixed, versatile, dehiscence longitudinal, introrse. *Ovary* stipitate, stipes adnate to calyx tube (free part 1–2 mm long), tomentose, 2–5-ovuled; style filiform, glabrous or pilose at base or throughout; stigma capitate. *Pods* flattened, dolabriform, oblique at ends, coriaceous, dehiscent, 2-valved, tomentose, strongly veined on valves; sutures thick. *Seeds* 1–6, ellipsoid, orbicular or laterally compressed; exalbuminous.

Distribution. S. India and Sri Lanka, predominantly endemic in India: 6 species and 1 variety (maps 1 & 2).

KEY TO THE SPECIES

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|--|-----------------------|
| 1 a. Stipules appendiculate at base | 2 |
| b. Stipules not appendiculate at base | 6 |
| 2 a. Leaflets always 4; petals 3 | 2. <i>H. brunonis</i> |
| b. Leaflets 6–12; if 4, then 6- or more-foliolate leaves on the same plant; petals 5 | 3 |

- 3a. Rachis of leaves terete; plagiotropous branches swollen and hollow (often inhabited by ants) 4. *H. laurifolia*
 b. Rachis of leaves flattened and winged; internodes of branches neither swollen nor hollow 4
 4a. Rachis of leaves obscurely winged; petiolules distinct, 5–10 mm long; inflorescence 10–15 cm long 6. *H. vahliana*
 b. Rachis of leaves prominently winged; petiolules indistinct, 3–4 mm long; inflorescence 5–8.5 cm long 5
 5a. Leaf rachis 15–36 cm long; leaflets 15–38 by 5–12 cm, narrowly ovate or elliptic, subcoriaceous; inflorescence a raceme; style glabrous 3. *H. decurrens*
 b. Leaf rachis 10–12 cm long; leaflets 7–12 by 1.5–4 cm, narrowly ovate, chartaceous; inflorescence a corymb; style pilose 1. *H. bourdilloni*
 6a. Leaflets always 2; staminodes absent 5a. *H. unijuga* var. *unijuga*
 b. Leaflets usually 6; if 2, then 6- or more-foliolate leaves on the same plant; staminodes present 5b. *H. unijuga* var. *trijuga*

1. *Humboldtia bourdilloni* Prain – Fig. 1 F.

H. bourdilloni Prain, J. As. Soc. Beng. 73 (1895) 200; Rao, Fl. Pl. Travancore (1914) 144; Gamble, Fl. Pres. Madras 1 (1919) 411. – Type: *Bourdillon 906* (lecto CAL; syn CAL, K), India, Kerala, Peermad road, alt. 2800', Travancore, 7 Feb. 1894.

Moderate-sized trees up to 16 m tall, trunk 35–45 cm in diameter. Branchlets solid, glabrous. *Stipules* ovate, acute, prominently veined, glabrous, appendages falcate, rounded, veined, persistent. *Leaves* (4–)6–8-foliolate; when lowest pair absent, a joint corresponding to its position present; leaflets 7.5–12 by 1.5–4 cm, linear to narrowly ovate, unequal at base, obtusely acuminate at apex, chartaceous, glabrous, obtusely acuminate at apex, chartaceous, glabrous, prominently reticulate with indistinct marginal arches, rachis obcordately winged between leaflets. *Corymbs* 5 cm long on tubercles on stem and old branches, tawny velvety. *Flowers* 7 mm long, pinkish; pedicels 1.4–1.7 cm long, brown velvety; bracts 4 by 1.8 mm, ovate, acute, densely brown tomentose on both surfaces, fugacious; bracteoles 2, connate almost throughout when young, splitting down to 1/3 at maturity, 8 by 1.5 mm, ovate-oblong, obtuse or rounded at apex, densely brown tomentose on both surfaces, gland present towards apex without, fugacious. *Calyx tube* 1.4 cm long, obconical, brown tomentose, persistent; lobes 4, crimson, imbricate, 11 by 3 mm, oblong, rounded at apex (anterior lobe broader, 5 mm), densely brown tomentose on both surfaces. *Petals* 5, white with pink veins, 3 longer and 2 shorter, 16–20 by 6 mm, shortly clawed, obovate, obtuse to rounded at apex, sparsely pilose within, glabrous without, sometimes a brown gland present in the middle within, fugacious. *Stamens* 5, alternating with petals; filaments 3–4 cm long, broad at base, pilose; anthers 4 mm long, shortly apiculate at one end. *Ovary* 8–10 mm long on 1–1.5 mm long stipe, obliquely oblong; ovules 3–5; style 2 cm long, gradually narrowing towards tip, pilose throughout when young; stigma capitate. *Pods* 10–11 by 2.5 cm, oblong or dolabri-



Fig. 1. Floral parts of *Humboldtia* species: A. *H. laurifolia* Vahl; B. *H. unijuga* Bedd. var. *unijuga*; C. *H. brunonis* Wall.; D. *H. vahliana* Wight; E. *H. decurrens* Bedd. ex Oliver; F. *H. bourdillonii* Prain. – 1. Sepals; 2. petals; 3. stamens; 4. carpels; 5. stipules; 6. bracts; 7. bracteoles.

form, velvety brown pubescent, bright red or crimson, 3–5-seeded; sutures thick, valves prominently veined. Mature seeds not seen.

Distribution. Endemic to India: Western Ghats of Kerala.

Ecology. An evergreen element in forests of Peermad Ghats of Kerala at an altitude of c. 850 m. Fl. Feb.–March, fr. April–May.

Uses. According to Bourdillon (For. Trees Travancore, 1908) the legumes are eaten by hillmen and he also considered the tree worth cultivating for its ornamental appearance. However, the tree has not been introduced in Gardens so far.

Vernacular name. Adimundan (Malayalam).

Note. Prain (l.c.) was correct in comparing the species with *H. decurrens* Bedd. ex Oliver, to which it is closely allied in having a winged rachis. The flowers of the species show 3 longer stamens with longer (3 mm) anthers and 2 shorter stamens with shorter (2.5 mm) anthers.

Specimens examined. INDIA. Kerala: Travancore Ghats, Bourdillon 906 (CAL, MH), 1614 (K). – Tamil Nadu, Tirunelveli Dist.: Beddome s.n., 1877 (MH).

2. *Humboldtia brunonis* Wall. – Fig. 1C.

H. brunonis Wall., Pl. As. Rar. 3 (1832) 17, t. 233; Wight & Arn., Prod. Fl. Ind. Or. (1834) 285; Wight, Ic. Pl. Ind. Or. 4 (1850) t. 1606; Drury, Handb. Ind. Fl. 1 (1864) 377; Bedd., Fl. Sylv. 2 (1871) 93; Baker in Hook. f., Fl. Brit. India 2 (1876) 274; Gamble, Man. Ind. Timb. (1902) 279; Brandis, Indian Trees (1906) 252; Rao, Fl. Pl. Travancore (1914) 143; Gamble, Fl. Pres. Madras 1 (1919) 411; Gandhi in Saldanha & Nicolson, Fl. Hassan Dist. (1976) 222; Sharma et al., Biol. Mem. 2 (1/2) (1977) 49. – **Type:** *Heyne in Wall. Cat. no. 5332* (CAL; K-W on microfiche; G), India.

Scandent shrubs or small trees, 5–12 m tall, branchlets solid, sometimes swollen, pubescent when young, glabrous at maturity, lenticellate. *Stipules* 1–2 by 0.25–0.5 cm, linear, prominently parallel veined, glabrous, depressed glandular; appendages broadly reniform, divergently veined, glabrous, glandular, persistent. *Leaves* 4-foliate, up to 25 cm long; leaf rachis 3–5 mm long or almost sessile; rachis 2 cm long, obscurely winged, shallowly canaliculate above, dark brown tomentose; leaflets 10–20 by 5–8 cm, obovate or elliptic to narrowly elliptic, base unequal, obtusely acuminate at apex, veins prominently reticulate below with indistinct marginal arches, sparsely depressed glandular beneath, glabrous. *Racemes* up to 15 cm long, axillary, pendulous, peduncles 1.5–3 cm long; rachis angular, brown pubescent, many-flowered. *Flowers* 2–3 cm long, white; pedicels 4–5 mm long, pilose, bracts 3 by 1.5 mm, ovate, acute, light brown pubescent without, fugacious; bracteoles 2, connate below, 5 by 2.5 mm, obovate or obovate-oblong, obtuse at apex, brown pubescent on both surfaces (more so without), short ciliate along margins. *Calyx tube* 8–10 mm long, brown pubescent without; lobes 4, 4 by 1.5 mm, concave, imbricate, ovate, acute or obtuse at tip, densely brown pubescent without and thinly within, reddish, fugacious. *Petals* 3, white or pink or orange, 1.5 cm long, ovate, shortly clawed, veined, glabrous. *Stamens* 5, deep pinkish; filaments 2 cm long, glabrous; anthers 2–3 mm long,

oblong rounded at both ends. *Ovary* 5 mm long on 1.5 mm long stipae, obliquely linear, densely brown pubescent, 3–5-ovuled; style 10 mm long, filiform, pilose at base; stigma capitate. *Pods* 5–10 by 2–4 cm, dolabriform, brown pubescent when young, 3–4-seeded. Mature seeds not seen.

Distribution. Endemic to India: Western Ghats of Karnataka, Kerala, and Tamil Nadu.

Ecology. Very common in evergreen forests at altitudes varying from 200 to 350 m. Fl. Dec.–June, fr. March–June.

Uses. Fruits edible, bark eaten in 'pan' (a mixture of betel nut, betel leaves and calcium carbonate). An elegant shrub or small tree with brightly coloured, showy flowers; it can be introduced as an ornamental in gardens.

Vernacular names. Khanasoka, kuimara (Kannada).

Note. Wight and Arnott (l.c.) have cited Wallich, Cat. no. 2332, but this should be corrected as no. 5332.

Specimens examined. INDIA. Karnataka: Watt 12882 (CAL, BSIS); Raghavan 8061, 62767, 65892, 68057 (all CAL, BSI), 80611, 83196, 86242, 97121, 97286 (all BSI); Meebold 8456 (CAL); Saldanha & Prakash 6984 (CAL); Laurie 5473 (DD); Bor 9380 (DD); Wadhwa 48810 (BSI); Arora 61656 (BSI); A. S. Rao 85535, 85673, 95030 (BSI); Mahajan 34797, 34813 (BSI). – Kerala: Ramachandran 58230, 59228 (CAL, MH); V. J. Nair 59944 (CAL, MH).

3. *Humboldtia decurrens* Bedd. ex Oliver – Fig. 1 E.

H. decurrens Bedd. ex Oliver in Hook., Icon. Pl. 4 (3) (1895) t. 2368; Gamble, Man. Ind. Timb. (1902) 280; Brandis, Indian Trees (1906) 252; Bourdillon, For. Trees Travancore (1908) 148; Rao, Fl. Pl. Travancore (1914) 144; Gamble, Fl. Pres. Madras 1 (1919) 411. – Type: *Bourdillon s.n.* (CAL; MH, K?), India, Kerala, Travancore near Colatoorpoly, Nov. 1893.

Moderate-sized trees, 10–15 m tall, trunk 25–35 cm in diameter, bark bluish green, wood greyish brown; branches dark brown pubescent when young, glabrous at maturity. *Stipules* 5–8 by 1–2.5 cm, ovate to narrowly ovate, falcate, acuminate to cuspidate at apex; prominently parallel veined, brown tomentose on both surfaces, appendages 2–4 by 1–2.5 cm, reniform with divergent reticulate veins, brown tomentose, depressed glandular. *Leaves* up to 45 cm long, subsessile, 10–12-foliolate, brown tomentose on midrib beneath, young leaves pink or white, pendulous; rachis obcordately or decurrently winged, wings reticulately veined, glabrous; petiolules 4–5 mm long, densely brown tomentose; leaflets 15–38 by 4–12 cm, narrowly ovate or elliptic, sometimes linear, obtuse or rounded at base, obtuse to acuminate at apex, subcoriaceous, prominently reticulately veined beneath with marginal arches, sparsely depressed glandular beneath, glabrous. *Racemes* 5–8.5 cm long, pendulous axillary or cauliflorous, subsessile; rachis terete, 10–30-flowered, tawny villous. *Flowers* 3–4 cm long, pink or white; pedicels 1–1.2 cm long, brown villous; bracts 7–8 by 5 mm, broadly ovate, obtuse to acute at apex, brown villous and glandular without, black and glabrous within, fugacious; bracteoles 2, connate at base, 7–13 by 4–5 mm, ovate, obtuse, brown villous on both surfaces. *Calyx tube* up to 1.2 cm

long, obconical, brown villous; lobes 4, 11 by 5 mm, oblong, rounded at apex, brown villous without, imbricate (in cauliflorous flowers lobes are 15 by 3 mm, linear-oblong). *Petals* 5, pink or white, 2–2.5 by 0.5 cm, obovate or oblanceolate, clawed, obtuse to rounded at apex, pilose within at base (in cauliflorous flowers the petals are 2 by 0.5 cm, lanceolate, distinctly clawed, abruptly acute at apex, sparsely pilose at base within). *Stamens* 3.5–4 cm long; filaments filiform, broad and brown pilose at base (glabrous in cauliflorous flowers); anthers 3–3.5 mm long, obtuse at both ends. *Ovary* 5 mm long on 1.5 mm long stipa, obliquely linear, brown villous, 3–6-ovuled; style filiform, glabrous; stigma capitate. *Pods* 7–12 by 4 cm, oblong or dolabriform, 2–3-seeded, brown, veined, rugulose and dark brown tomentose when young; sutures thick. *Seeds* 1–2 cm broad, thick, flat, glabrous.

Distribution. Endemic to India: Tirunelveli ('Tinnevely') Ghats of Tamil Nadu and Travancore Ghats of Kerala.

Ecology. A common tree in evergreen forests of Travancore and Tirunelveli Ghats at 150–900 m altitude. Usually confined to valleys. Fl. Jan.–April, fr. May–June.

Vernacular names. Kunthani, malam thodappu, naynoli (Malayalam).

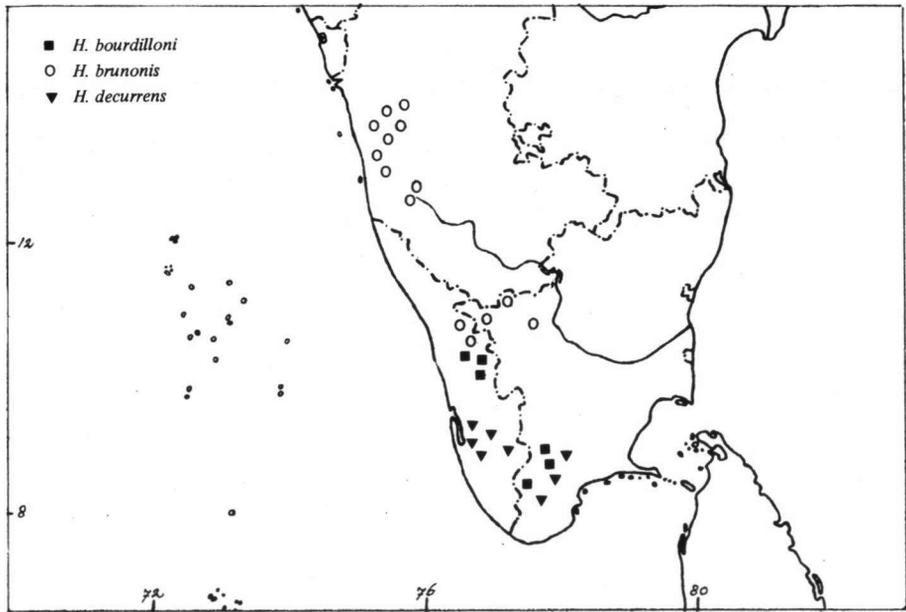
Note. The white flowers in pendulous corymbs all over the branches and stem makes the tree very conspicuous in the forest.

Specimens examined. INDIA. Kerala: Lawson 38 (CAL, DD, MH); Bourdillon 548 (DD); R.S. Rao 61361 (BSI); Mohanan 69258 (MH). – Tamil Nadu: Herb. Beddome 2574 (BM).

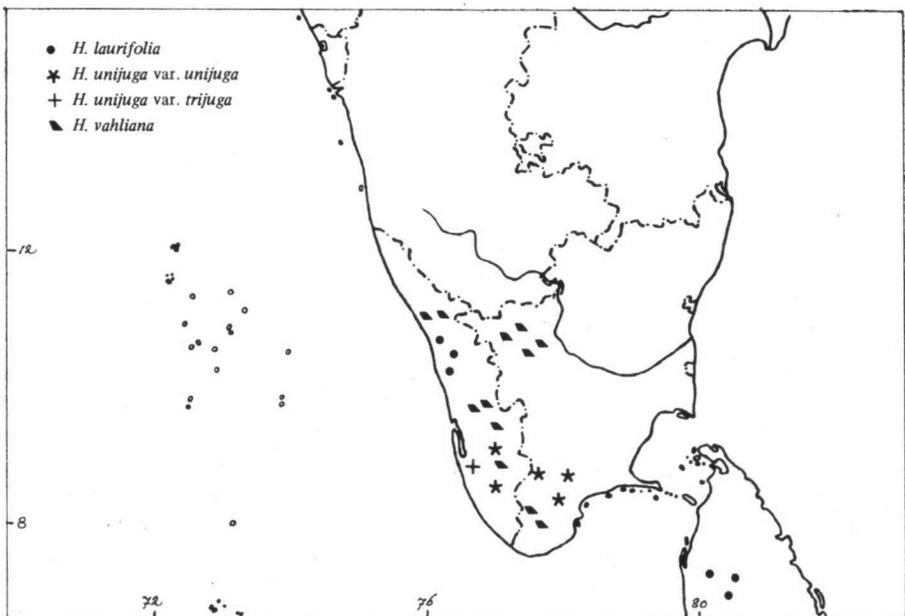
4. *Humboldtia laurifolia* Vahl – Fig. 1 A.

H. laurifolia Vahl, Symb. Bot. 3 (1794) 106, t. 56; Moon, Cat. Indig. & Exot. Pl. Ceylon (1824) 17; DC., Prod. 2 (1825) 488; R. Brown in Wall., Pl. As. Rar. 3 (1832) 18; Wight & Arn., Prod. Fl. Ind. Or. (1834) 285; Wight, Ic. Pl. Ind. Or. 4 (1850) t. 1605; Thwaites, Enum. Pl. Zeyl. (1864) 97; Bedd., Fl. Sylv. 2 (1871) 93; Baker in Hook. f., Fl. Brit. India 2 (1876) 273; Trim., Handb. Fl. Ceylon 2 (1894) 115; Hort. Zeyl. 2 (1888) 28; Gamble, Man. Ind. Timb. (1902) 279; Brandis, Indian Trees (1906) 158; Rao, Fl. Pl. Travancore (1914) 143; Gamble, Fl. Pres. Madras 1 (1919) 411; Lewis, Veg. Prod. Ceylon (1934) 158; Backer & Bakh. f., Fl. Java 1 (1963) 530. – *Batschia laurifolia* Vahl, Symb. Bot. 3 (1794) 39, nom. inval. – Type: Herb. Vahl (C; microfiche CAL), Zeylonia (Sri Lanka).

Shrubs or small trees, 4–6 m tall, bark greyish brown; branches drooping, internodes of the branchlets thickened upwards, obtusely quadrangular, or terete, glabrous, curiously fistular, often provided with perforations, the cavities are usually inhabited by ants. *Stipules* 2–4 by 1.3–1.7 cm, narrowly ovate, erect, parallel veined, glabrous; appendages 2–3 by 0.7 cm, reniform or falcate, acutely acuminate on one side. *Leaves* up to 30 cm long, including basal part of rachis of 5–6 mm long, 6–10 (–12)-foliolate, leaflets (7–)10–13 by 4–5 cm, ovate or elliptic, base oblique, abruptly caudate or cuspidate at apex, thinly pubescent when young, glabrous at maturity, prominently veined and depressed glandular beneath; rachis terete, thinly pubescent when young. *Racemes* 10 cm long, axillary, sometimes 2–3 racemes clustered in an axil, sessile, erect; rachis brown scabrous, many-flowered. *Flowers* 1.5–2



Map 1. Distribution of *Humboldtia bourdillonii* Prain, *H. brunonis* Wall., and *H. decurrens* Bedd. ex Oliver.



Map 2. Distribution of *Humboldtia laurifolia* Vahl, *H. unijuga* Bedd. var. *unijuga* and var. *trijuga* Joseph & Chandrasekharan, and *H. vahliana* Wight.

cm long, pink, honey-scented; pedicels 5–6 mm long, finely brown pubescent; bracts 3–4 by 1.5 mm, ovate, acute, finely brown pubescent without with 1–2 glands, glabrous within, recurved, greenish, persistent; bracteoles 2, connate to the middle, 5–7 by 3 mm, obovate or ovate, rounded at apex, finely brown pubescent on both the surfaces, persistent. *Calyx tube* 3–4 mm long, obconical, finely brown pubescent; lobes 4, pinkish (3 smaller and 1 larger), 6 by 2–3 mm, ovate-oblong, brown pubescent on both the surfaces. *Petals* 5, white or pink, 4–5 by 2.5 mm, obovate, clawed, rounded at apex, glabrous. *Stamens* 5; filaments 1–1.5 cm long, glabrous; anthers 3 mm long, oblong. *Ovary* 5 mm long, linear, densely brown pubescent, up to 4-ovuled; style 10 mm long, filiform, pilose at base; stigma capitate. *Pods* 6–12 by 2–3.5 cm, compressed, veined, glabrous. Mature seeds not seen.

Distribution. India (Malabar, Kerala), Sri Lanka. Introduced in gardens of Indonesia.

Ecology. Common in Sri Lanka. Thwaites (l.c.) stated 'very abundant in the Ambagamowa and Ratnapoora Districts on the shady banks of streams.' In India it occurs in wet evergreen forests of Malabar up to 600 m altitude, usually growing on shady banks of the streams. Fl. Jan.–April, fr. May–June.

Vernacular names. Gal-karanda (Sinhalese), Little Amherstia (English).

Note. The species is very distinct by its fistular internodes of branchlets. Lewis (l.c.) mentions calyx segments 5, thin recurved.

Specimens examined. INDIA. Malabar: Herb. Wight 846.

SRI LANKA. Thwaites s.n. (C.P. 328) (CAL); Chatterjee 313 (CAL).

MALACCA. Goodenough 1468, in experimental garden (CAL).

5. *Humboldtia unijuga* Bedd.

H. unijuga Bedd., Fl. Sylv. 3 (1873) t. 783 et Icones t. 107; Baker in Hook. f., Fl. Brit. India 2 (1876) 374; Gamble, Man. Ind. Timb. (1902) 280; Brandis, Indian Trees (1906) 252; Bourdillon, For. Trees Travancore (1908) 147; Rao, Fl. Pl. Travancore (1914) 143; Gamble, Fl. Pres. Madras 1 (1919) 411. – Type: *Beddome* 76 (K; photo CAL), India, Kerala, Travancore Ghats, Attarymally, alt. 3000–4000'.

a. var. *unijuga* – Fig. 1 B.

Moderate to large-sized trees, 10–15(–20) m tall, trunk 20–30 cm in diameter; branches slender, solid, terete, strigose when young, glabrous and faintly suberose when mature. *Stipules* 5–7 by 2.5 mm, narrowly ovate, acute, prominently parallel veined, connate at base, intrapetiolar, glabrous, appendages absent. *Leaves* 2-foliate, basal part of rachis 3–6 mm long, stout, glabrous; leaflets subsessile, 8–15 by 2–5 cm, elliptic to narrowly ovate, base unequal, obtusely acuminate at apex, coriaceous, glabrous, prominently veined below with marginal arches. *Racemes* 2–2.5 cm long, axillary as well as cauliflorous; sterile bracts present at the base of racemes; rachis pubescent, many-flowered. *Flowers* 1.5–2.5 cm long, crimson; pedicels 5–10 mm long, finely brown pubescent; bracts 2–3 by 1.5 mm, ciliate and brown pubescent without; bracteoles 2, 4–5 by 1.5–2 mm, ovate, rounded at apex, brown ciliate

and finely pubescent without. *Calyx tube* 8 mm long, obconical, brown pubescent; lobes 4, 8–10 by 2–3 mm, obovate, rounded at apex. *Petals* 5, crimson, 10–15 mm long, obovate, narrowed at base, veined, glabrous. *Stamens* 5; filaments 10 mm long, filiform; anthers 2.5–3 mm long. *Ovary* 5–6 mm long on 2–3 mm long stipa, obliquely oblong, densely brown pubescent, 2–3-ovuled; style 8–10 mm long, filiform, glabrous; stigma capitate. *Pods* 5–8 by 2–3 cm, compressed, veined, 2–3-seeded.

Distribution. Endemic to India: Travancore Ghats of Kerala and Tirunelveli Ghats of Tamil Nadu.

Ecology. Rare in dense evergreen forests at altitudes varying from 600 to 1300 m. Fl. Jan.–Feb., fr. May–June.

Uses. A handsome tree, yields hard and durable timber.

Specimens examined. INDIA. Kerala: Beddome 2562 (BM, MH). – Tamil Nadu: Beddome 2563 (BM).

b. var. *trijuga* Joseph & Chandrasekharan

H. unijuga Bedd. var. *trijuga* Joseph & Chandrasekharan, J. Bomb. Nat. Hist. Soc. 81 (1985) 729, f. 1–10. – Type: *Joseph 44511* (MH?), India, Kerala, Trivendrum Dist., Kovitherimalai near Bonaccord Estate.

Differs from var. *unijuga* in having 3 pairs of leaflets (very rarely 2 or 4 pairs) and 5 staminodes.

Distribution. So far known only from the type locality.

Ecology. Rare in evergreen forests along streams at an altitude of 825 m. Fl. Oct., fr. July–August.

Note. Specimens of this variety were not available to me for examination.

6. *Humboldtia vahliana* Wight – Fig. 1 D.

H. vahliana Wight, Ic. Pl. Ind. Or. 4 (1850) t. 1607-8; Drury, Handb. Ind. Fl. 1 (1864) 377; Bedd., Fl. Sylv. 2 (1871) 93; Gamble, Man. Ind. Timb. (1902) 280; Brandis, Indian Trees (1906) 252; Bourdillon, For. Trees Travancore (1908) 148; Rao, Fl. Pl. Travancore (1914) 143; Gamble, Fl. Pres. Madras 1 (1919) 411; Sastri (ed.), Wealth Ind. 5 (1959) 135; Sharma et al., Biol. Mem. 2 (1977) 49. – Type: *Herb. Wight prop. 276* (K; photo CAL), Penin. Ind. Or.

Moderate-sized trees, up to 18 m tall, trunk 32–48 cm in diameter, bark dark brown mottled with white, wood light brown; internodes of the branchlets solid, terete, glabrous, branchlets sometimes zigzag. *Stipules* 1.5–3 by 2.2 cm, persistent, ovate-cordate, acute at apex, parallel veined, glandular, glabrous, appendages 1 by 2.2 cm, reniform, divergently veined, glandular, glabrous. *Leaves* 20–35 cm long including infrajugal rachis of 2–2.5 cm long; leaflets 6–8, 12–25 by 3–5 cm, ovate to narrowly ovate or elliptic to narrowly elliptic, sometimes curved, base equal, rounded, obtusely acuminate at apex; chartaceous, glabrous, prominently very closely reti-

culate veined with shallowly depressed glands below, lateral veins undulate towards tips. Petiolules 7–10 mm long, glabrous. *Racemes* 10–15 cm long, subsessile, axillary, racemes sometimes 2–3 per axil; rachis angular, brown velvety; many-flowered (rachis with prominent raised scars of fallen flowers). *Flowers* white with buff calyx, 3–4 cm long, including 5–6 mm long, brown tomentose pedicels; bracts 8–10 by 4 mm, lanceolate, acute, brown villous on both surfaces, persistent; bracteoles 2, connate at base, 8–10 by 8 mm, obovate, rounded at apex, brown villous on both surfaces, fugacious. *Calyx tube* 8–10 mm long, obconical, brown villous; lobes 4, obovate-oblong, rounded at apex, slightly concave, brown villous without. *Petals* 5, 10–12 by 4 mm, obovate, shortly clawed, broadly rounded at apex, glabrous. *Stamens* 5; filaments 10 mm long, red, pilose up to the middle; anthers 3 mm long. *Ovary* 4–5 mm long; obliquely linear, brown villous, 3–4-ovuled; style 10–15 mm long, filiform, pilose at base, reddish; stigma capitate. *Pods* 15–20 by 4–6 cm, elliptic, compressed; sutures thick (especially upper), valves prominently veined, brown villous, 3–4-seeded. *Seeds* 2–2.5 cm across, almost orbicular, glabrous.

Distribution. Endemic to India: Travancore Ghats of Kerala; Nilgiris and Tirunelveli Ghats of Tamil Nadu.

Ecology. Common on the riverbanks and streams in dense evergreen forests at altitudes from 125 to 350 m. Fl. Dec.-Feb., fr. May-July.

Uses. Yields moderately hard wood which is suitable for matchboxes and fuel. Powder or a decoction of the bark is given to cure biliousness, impure blood, leprosy, ulcers and epilepsy.

Vernacular names. Jelavedesa (Sanskrit), arru vanchi, atta vanchi, nir vanchi (Tamil), kara pongu, koratthi, kurrappuni (Malayalam).

Specimens examined. INDIA. Kerala: Ramamurthy 49325 (CAL, MH); Mohanan 54680 (CAL, MH); Chandrabose 49044 (CAL, MH); Bourdillon 411 (CAL), 770 (DD); Meebold 929, 957 (CAL); Vivekanathan 66160 (MH); Wight Kew Dist. 846, Herb. Wight prop. 276 (K); Puri 15683 (BSI); Subramanian 70408, 70921, 77472 (BSI). – Tamil Nadu: Calder & Ramaswamy 1407 (CAL).

EXCLUDED SPECIES

Humboldtia africana Baill., Hist. Pl. 2 (1869) 99 = *Schotia africana* (Baill.) Keay, Kew Bull. (1953) 490.

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