

ADDITIONAL NOTES ON THE GENUS *VITEX*. XIV

Harold N. Moldenke

VITEX Tourn.

Additional & emended bibliography: Woodville, Med. Bot. Suppl., ed. 3, 2: pl. 137. 1832; Wight, Icon. Pl. Ind. Orient. 4 (3): 11--12, pl. 1465--1467. 1849; Menzel, Jahrb. Preuss. Geol. Landesanst. 34: 62, pl. 5, fig. 36. 1913; H. Hallier, Meded. Rijks Herb. Leid. 37: 40--54. 1918; S. & G. Mangenot, Bull. Jard. Bot. Brux. 27: 653. 1957; Balle & Hallé, Adansonia, ser. 2, 1: [231] & 265. 1961; H. N. Andrews, U. S. Geol. Surv. Bull. 1300: 224. 1970; Kutuzkina, Paleont. Journ. Acad. Nauk USSR 3: 156--158, fig. 1 & 2. 1970; Palmer & Pitman, Trees South. Afr., ed. 2, 3: 1947 & 1949--1963. 1972; Napp-Zinn, Anat. Blatt. A (1): 410 & 653. 1974; R. Lancaster, Medit. Pl. Gard. 131. 1977; Fournet, Fl. Illustr. Phan. Guad. Mart. 1391--1393, fig. 662. 1978; Troncoso in Burkart. Fl. Illustr. Entre Rios 5: 230, 231, 290, & 292--294, fig. 138. 1979; Mold., Phytologia 44: 329--361. 1979.

Balle & Hallé (1961) report the mistletoes, *Globimetula braunii* and *Phragmanthera capitata*, as parasitizing two unknown species of *Vitex* in Ivory Coast.

VITEX *AGNUS-CASTUS* L.

Additional bibliography: Woodville, Med. Bot. Suppl., ed. 3, 2: pl. 137. 1832; Stapf, Ind. Lond. 6: 478. 1931; R. Lancaster, Medit. Pl. Gard. 131. 1977; Fournet, Fl. Illustr. Phan. Guad. Mart. 1392 & 1393. 1978; Mold., Phytologia 44: 330--348. 1979; Troncoso in Burkart, Fl. Illustr. Entre Rios 5: 292. 1979.

Additional illustrations: Woodville, Med. Bot. Suppl., ed. 3, 2: pl. 137. 1832; R. Lancaster, Medit. Pl. Gard. 131 (in color). 1977.

Fournet (1978) records this species cultivated in Guadeloupe and Martinique.

VITEX *ALTISSIMA* L. f.

Additional & emended bibliography: Wight, Icon. Pl. Ind. Orient. 4 (3): 11, pl. 1466. 1849; H. Hallier, Meded. Rijks Herb. Leid. 37: 44--45. 1918; Mold., Phytologia 44: 348--360. 1979.

Emended illustrations: Wight, Icon. Pl. Ind. Orient. 4 (3): pl. 1466. 1849.

VITEX *ALTISSIMA* f. *juv. ALATA* (Willd.) Mold.

Additional bibliography: Stapf, Ind. Lond. 6: 478. 1931; Mold., Phytologia 44: 348 & 355--360. 1979.

VITEX *AMBONIENSIS* Gürke

Additional & emended bibliography: Palmer & Pitman, Trees South. Afr., ed. 2, 1950, 1951, 1955, 1957, & 1962. 1972; Mold., Phytologia 44: 361. 1979.

Emended illustrations: Palmer & Pitman, *Trees South. Afr.*, ed. 2, 1954. 1972.

The *Tanner 3315*, distributed as *V. amboniensis*, seems actually to be *V. amaniensis* Pieper, while *Richardson & Livingstone s.n.* [30 October 1960] is *V. doniana* var. *parvifolia* (Engl.) Mold. and *Watt 17* is *V. mombassae* Vatke.

Additional citations: RHODESIA: *Leveridge s.n.* [Herb. Rhodes. 85922] (Mu). SOUTH AFRICA: Natal: *Ward 2731* (Mu).

VITEX AMBONIENSIS var. *AMANIENSIS* Pieper

Additional & emended bibliography: Pieper, *Engl. Bot. Jahrb. Beibl.* 141: 69. 1928; Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 403. 1938; Mold., *Phytologia* 8: 29. 1961; Mold., *Fifth Summ.* 1: 238 (1971) and 2: 923. 1971.

VITEX ANDONGENSIS J. G. Baker

Additional synonymy: *Vitex andongensis* Baker & Hiern ex Mold., *Fifth Summ.* 2: 713, in syn. 1971.

Additional & emended bibliography: J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 317 & 329--330. 1900; Mold., *Phytologia* 15: 89. 1967; Mold., *Fifth Summ.* 1: 245 (1971) and 2: 713 & 923. 1971.

Baker (1900) cites only the type collection, *Welwitsch 5696*, from Angola, in the herbarium of the British Museum, London.

Additional citations: ANGOLA: Loanda: *Welwitsch 5696* [F. G. Mey. photo 2994] (Gz--photo of type, N--photo of type).

VITEX ANGOLENSIS Gürke

Additional & emended bibliography: J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 316 & 325. 1900; Good & Exell, *Journ. Bot.* 68: Suppl. 144. 1930; Mold., *Phytologia* 15: 227. 1967; Mold., *Fifth Summ.* 1: 245 (1971) and 2: 923. 1971.

Baker (1900) cites only the type collection, *Welwitsch 5758*, from Angola, deposited in the herbarium of the British Museum, London.

Good & Exell (1930) have encountered the species in "shrub-grown thickets and on decayed ant-hills", citing their *nos.* 2263 & 2264 and listing the local vernacular name, "muvomba".

Additional citations: ANGOLA: Huila: *Welwitsch 5758* [G. F. Mey. photo 2992] (Gz--photo of type, N--photo of type).

VITEX APPUNI Mold.

Synonymy: *Vitex appunii* Mold. apud López-Palacios, *Revist. Fac. Farm. Univ. Andes* 15: 94. 1975.

Additional bibliography: H. N. & A. L. Mold., *Pl. Life* 2: 48. 1948; Mold., *Phytologia* 15: 227. 1967; Mold., *Fifth Summ.* 1: 128, 131, & 179 (1971) and 2: 923. 1971; López-Palacios, *Revist. Fac. Farm. Univ. Andes* 15: 94--95. 1975; López-Palacios, *Fl. Venez. Verb.* 582--585 & 654, fig. 136. 1977.

Illustrations: López-Palacios, *Fl. Venez. Verb.* [584], fig. 136. 1977.

Recent collectors refer to this species as a tree 5 m. tall, the flowers very abundant and showy, attracting large quantities of insects, and have found it in flower in April. The corollas are said to have been "blue-purple" on *Aristeguieta* 6083. The vernacular names, "guarataro" and "totumillo", have been recorded for it. López-Palacios (1975) says that it "Es un arbolito bajo, hasta de unos 8 m., que sólo se he registrado en las sabanas secas del Edo. Guárico [Venezuela]. Como el tipo proviene de la Guyana Británica, es posible que se encuentre en el amolío espacio existente entre el Guárico y Roraima." In his 1977 work he cites from Guárico: *Aristeguieta* 4257 & 5027, *Aristeguieta* & *Tamayo* 5071, and *Aristeguieta* & *Zabala* 7025, all in the Caracas herbarium.

Material of this species has been misidentified and distributed in some herbaria as *V. capitata* Vahl and *V. orinocensis* H.B.K.

Additional citations: VENEZUELA: Guárico: *Aristeguieta* 6083 (N).

VITEX AUREA Mold.

Additional bibliography: Mold., *Phytologia* 15: 227. 1967; Mold., *Fifth Summ.* 1: 262 (1971) and 2: 923. 1971.

Croat describes this species as a tree, 5 m. tall, with green fruit in January, and found it in cultivation at 1200 m. altitude.

Additional citations: CULTIVATED: Madagascar: *Croat* 28777 (N).

VITEX AXILLARIS Wall.

Synonymy: *Vitex* ? *axillaris* Wall., *Numer. List* [48], no. 1760, hyponym. 1829.

Additional bibliography: Wall., *Numer. List* [48], no. 1760. 1829; C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 588. 1885; Mold., *Phytologia* 15: 228. 1967; Mold., *Fifth Summ.* 1: 284 (1971) and 2: 923. 1971; Mold., *Phytologia* 23: 423. 1972.

According to Clarke (1885) the Wallich collection on which this name is based is not represented in the Wallich Herbarium at Kew. Jackson in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 2: 1213 (1895) was the first to remove the question-mark placed after the generic name by Wallich. Nothing else is known to me of this taxon and until the Wallich type is located, it is not possible to dispose of the binomial satisfactorily.

VITEX BAKERI B. L. Robinson, *Proc. Am. Acad. Sci.* 51: 531. 1916.

Synonymy: *Vitex diversifolia* J. G. Baker in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 5: 323. 1900 [not *V. diversifolia* Kurz, 1870].

Bibliography: J. G. Baker in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 5: 316 & 323. 1900; B. L. Robinson, *Proc. Am. Acad. Sci.* 51: 531. 1916; Lely, *Useful trees N. Nigeria* 116. 1925; Hutchins. & Dalz., *Fl. W. Trop. Afr.*, ed. 1, 275 & 276. 1936; Dalz., *Useful Pl. W. Afr.* 457. 1937; H. N. & A. L. Mold., *Pl. Life* 2: 49. 1948; Fedde & Schust., *Justs Bot. Jahresber.* 60 (2): 576. 1941; Worsdell, *Ind. Lond. Suppl.* 2: 500. 1941; Kerharo & Bouquet, *Pl. Méd. Tox. Côte Iv.* 234. 1950; Mold., *Phytologia* 6: 133. 1958; Kershaw, *Journ.*

Ecol. Brit. 56: 473. 1968; Mold., Fifth Summ. 2: 713 & 727. 1971; Mold., Phytologia 34: 261. 1975.

Illustrations: Lely, Useful Trees N. Nigeria 116. 1925.

This taxon has sometimes in the past been regarded as being conspecific with *V. simplicifolia* Oliv., but it differs markedly from at least the type collection of that species. Baker (1900) describes it as "A small tree; branchlets densely clothed with short whitish pubescence. Leaves 3-foliolate or simple, subcoriaceous, green and obscurely pubescent above when mature, densely matted beneath when young and less distinctly so when mature; leaflets obovate-cuneate or when solitary suborbicular, entire; end leaflet shortly stalked, 4--5 in. long, more than half as broad; main petiole 2--3 in. long. Cymes axillary, long-peduncled; branchlets densely villous; pedicels very short. Calyx campanulate, 1/8 in. long, densely villous; teeth minute. Corolla small, very hairy outside. Fruit globose, the size of a small cherry or plum, with a calyx 1/2 in. diam." He based it on *Barter 1096* from Nigeria and *1644* from the Niger Republic. Hutchinson & Dalziel (1936) describe it as "A small tree, densely pale-pubescent, with small hairy flowers 1/4 in. long, greenish with blue-purple corolla-lobes, in peduncled axillary cymes, and violet-black plum-like fruit," citing *Barter 1096 & 1644*, *Dalziel 176*, *Dent Young 206*, *Kitson 689*, *Lely P.197*, and *Vogel 97*, reporting it common on savannas, flowering from January to May. They give its overall distribution as French Sudan, Gold Coast, and Nigeria. Dalziel (1937) records it from French Sudan, Gold Coast, Togo, and Nigeria, noting that "The fruits are violet-black, cupped like an acorn, with thin edible pulp and a large 3--4-seeded stone. The twigs are used in N. Nigeria as tooth-sticks". He records the local vernacular names, "buji", "bummehi", "bummeji", "bummere", "dinyar biri", "dunyar biri", "idjoli", "kuru", "nambalerri", and "panyero buda". Kershaw (1968) reports that in Nigeria it grows in association with *Combretum binderianum* and *Crossopteryx febrifuga* in the limestone areas.

Kerharo & Bouquet (1950) tell us that this "Petit arbre assez fréquent dans les formations de savanes de Côte d'Ivoire et de la Haute-Volta.....est utilisé en médecine indigène contre les maladies de peau (décocté d'écorce en lotion) et comme odontalgique". They list the following common names: "ara", "awon", "awondolo", "dinehiar beurhi", "koto kiama", "kotoni", "m'bli", and "m'bliassoua".

Citations: SUDAN: Bahr-el-Ghazal: *Schweinfurth 1519* (N--cotype, N--photo of cotype, S--cotype, Z--photo of cotype). NIGERIA: Northern: *Chaloner, Elliott, & Molsla s.n.* [Dec. 1965] (Ln--245526).

VITEX BALBI Chiov.

Additional bibliography: Dale & Greenway, Kenya Trees Shrubs 592 & 593. 1961; Mold., Phytologia 15: 228. 1967; Gillett, Numb. Check-list Trees Kenya 47. 1970; Mold., Fifth Summ. 1: 241 (1971) and 2: 923. 1971.

Dale & Greenway (1961) cite Balbo 55, 78, & 861 from "East and west Mt. Kenya" and describe this little-known species as follows: "Tree. Leaves 5-foliolate with a stout petiole to 5 in. long, cylindrical and densely tomentose; leaflets sessile or subsessile, the terminal leaflet shortly petiolulate, coriaceous, obovate, the terminal to 5 in. long and to 2 in. wide, the laterals to 2 in. long and to 1 in. wide, apex rounded or obtuse and cuspidate, margin entire or minutely and irregularly undulate subcrenulate, lamina sparsely scabrid puberulous above, pubescent villose below, copiously on the nerves and veins. Flowers in axillary panicles with peduncles to 3 1/2 in. long, pedicels 1/10 in. long densely tomentose; corolla tube curved, 1/6 in. long, lobes 5, entire; ovary globose and hairy. Drupe obovate, 2/3 in. long, speckled with black".

These same authors provide a very useful key to the Kenyan species of this genus as recognized by them. It is well worth repeating here:

1. Panicles terminal, sometimes from upper leaf-axils as well.
 2. Leaflets 3--5, markedly discolorous, 1--3 leaflets stalked.....*V. negundo*.
 - 2a. Leaflets 3, not discolorous.
 3. Leaflets glandular-puberulous on the veins beneath.....
V. lamiana.
 - 3a. Leaflets usually scabrid and more or less rugose above and densely to sparsely pubescent beneath.*V. strickeri*.
- 1a. Inflorescences all axillary.
 4. Leaflets glabrous, usually 5, sometimes up to 7, all distinctly stalked.
 5. Leaflets membranous, elliptic or lanceolate-obovate, acute or cuspidate; cymes lax, with a very long peduncle.....
V. carvalhoi.
 - 5a. Leaflets leathery, obovate-cuneate, slightly apiculate, rounded, or emarginate; cymes dense, peduncle to 3 in. long.....*V. doniana*.
 - 4a. Leaflets more or less pubescent or tomentose, at least beneath.
 6. Ovary glabrous, with sessile glands or sometimes with a few scattered hairs; leaflets 5.
 7. Leaflets sessile or subsessile, the terminal one with a petiolule up to 1/4 in. long.....*V. balbi*.
 - 7a. Leaflets distinctly petiolulate.
 8. Leaflets oblong to narrowly elliptic, base acute, apex shortly acuminate, scabrous above; a savanna tree.....*V. fischeri*.
 - 8a. Leaflets oblong-elliptic, base rounded or subacute, sometimes oblique, apex shortly acuminate, pubescent above; a high forest timber tree.....*V. keniensis*.
 - 6a. Ovary densely clothed with more or less erect hairs, glands often present but more or less concealed by hairs; leaflets 3--7, normally 5.
 9. Leaflets sessile or subsessile, pubescent above.

- 10. Bracts lanceolate or oblanceolate; leaflets 3--5, obovate-elliptic or oblong-elliptic....*V. mombassae*.
- 10a. Bracts linear; leaflets 5, obovate.....*V. payos*.
- 9a. Leaflets petiolulate, glabrous above.
- 11. Leaflets 3--5, usually 3, elliptic-lanceolate or oblong, apex acute or acuminate.....*V. tangensis*.
- 11a. Leaflets 5--7, usually 5, oblanceolate-elliptic to oblong-lanceolate, apex acute.....*V. amboniensis*

VITEX BARBATA Planch.

Additional & emended bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 316 & 323. 1900; Roberty, Pet. Fl. Ouest-Afr. 178. 1954; Gledhill, Check List Flow. Pl. Sierra Leone 30. 1962; Mold., Phytologia 16: 496. 1968; Mold., Fifth Summ. 1: 210, 215, 217, 218, 220, & 226 (1971) and 2: 714 & 923. 1971.

Hutchinson & Dalziel (1936) list this species from French Sudan, Sénégal, Gambia, French Guinea, Sierra Leone, and Gold Coast, citing *Chevalier* 496, 510 bis, 511, 12460, 12467, & 12990, *Dalziel* 8061, *Heudelot* 30, *Ingram s.n.*, *Kitson* 835, and *Scott Elliot* 4881 & 5189.

Material of *V. barbata* has been misidentified and distributed in some herbaria as *V. pachyphylla* J. G. Baker.

Additional citations: GABON: *Krukoff* 119 (N).

VITEX BEFOTAKENSIS Mold.

Additional bibliography: Mold., Phytologia 15: 228. 1967; Mold., Fifth Summ. 1: 262 (1971) and 2: 923. 1971.

VITEX BENTHAMIANA Domin

Additional synonymy: *Vitex trifolia* γ *parviflora* Benth. ex K. Schum. & Hollr., Fl. Kaiser Wilh.-land 121--122. 1889.

Additional bibliography: K. Schum. & Hollr., Fl. Kaiser Wilm.-land 121--122. 1889; F. M. Bailey, Compreh. Cat. Queensl. Pl. 386. 1913; Wangerin, Justs Bot. Jahresber. 56 (1): 668. 1936; Fedde & Schust., Justs Bot. Jahresber. 56 (2): 286. 1937; H. N. & A. L. Mold., Pl. Life 2: 50. 1948; Mold., Phytologia 15: 228. 1967; Mold., Fifth Summ. 1: 349 (1971) and 2: 729, 730, & 923. 1971.

Perry describes this plant as an erect shrub, 8 feet tall, with pink corollas, and found it growing in creekbeds with *Eucalyptus camalduensis*, flowering in May.

Additional citations: AUSTRALIA: Queensland: R. A. Perry 1061 (Ai, W--2156492, Z--photo).

VITEX BENUENSIS Engl.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 59 (2): 417. 1939; Mold., Phytologia 15: 228. 1978; Mold., Fifth Summ. 1: 224 (1971) and 2: 923. 1971.

VITEX BEQUAERTI DeWild.

Synonymy: *Vitex bequaertii* DeWild. apud Fedde & Schust., Justs Bot. Jahresber. 42: 252. 1920.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 42: 252. 1920; H. N. & A. L. Mold., Pl. Life 2: 50. 1948; Mold., Phytologia 15: 228. 1967; Mold., Fifth Summ. 1: 231 (1971) and 2: 923. 1971.

VITEX BERAIVIENSIS Vatke

Additional bibliography: Wangerin, Justs Bot. Jahresber. 53 (2): 644. 1925; Mold., Phytologia 16: 496 (1968) and 17: 17, 22, & 23. 1968; Mold., Fifth Summ. 1: 262 (1971) and 2: 713, 714, 718, & 923. 1971.

Additional citations: MADAGASCAR: *Hildebrandt 3085a* (Mu--1532-cotype).

VITEX BERAIVIENSIS var. *ACUMINATA* Mold.

Emended synonymy: *Vitex arborea* Bréon ex Mold., Phytologia 5: 213, in syn. 1955 [not *V. arborea* Brown, 1806, nor Desf., 1847, nor Fischer, 1829, nor Roxb., 1814].

Additional bibliography: Mold., Phytologia 15: 91 (1967) and 17: 17, 22, & 23. 1968; Mold., Fifth Summ. 1: 262 (1971) and 2: 713, 714, 718, & 923. 1971.

It should be noted here that the *V. arborea* accredited to Brown in the synonymy above belongs in the synonymy of *V. heptaphylla* A. L. Juss., that ascribed to Desfontaines and to Fischer is *V. negundo* f. *albiflora* Mold., while that credited to Roxburgh is *V. pinnata* L.

VITEX BERAIVIENSIS f. *PILOSA* Mold.

Additional bibliography: Mold., Phytologia 16: 496. 1968; Mold., Fifth Summ. 1: 262 (1971) and 2: 714 & 923. 1971.

VITEX BERAIVIENSIS f. *VILLOSA* Mold.

Additional bibliography: Mold., Phytologia 16: 496. 1968; Mold., Fifth Summ. 1: 262 (1971) and 2: 714 & 923. 1971.

VITEX BETSILIENSIS Humbert

Additional bibliography: Mold., Phytologia 16: 496. 1968; Mold., Fifth Summ. 1: 262, 263, & 373 (1971) and 2: 714 & 923. 1971.

VITEX BETSILIENSIS ssp. *BARORUM* Humbert

Synonymy: *Vitex barorum* Bernardi ex Mold., Fifth Summ. 2: 714, in syn. 1971. *Vitex barorum* Humbert ex Capuron, Adansonia, ser. 2, 12: 52. 1972.

Additional bibliography: Mold., Phytologia 15: 91. 1967; Mold., Fifth Summ. 1: 263 & 373 (1971) and 2: 714 & 923. 1971; Capuron, Adansonia, ser. 2, 12: 52. 1972.

Bernardi describes this plant as a large shrub or small tree, the leaves very coriaceous, ferrugineous-tomentose beneath, and found it growing at 1100--1200 m. altitude, fruiting in November.

Additional citations: MADAGASCAR: *Bernardi 11228* (Ac, N).

VITEX BOGALENSIS Wernham

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber.

42: 252. 1920; Mold., Phytologia 15: 228. 1967; Mold., Fifth Summ. 1: 224 (1971) and 2: 923. 1971.

It should be noted here that the Missouri Botanical Garden photograph A.856, cited below, consists not only of a picture of *Vitex bogalensis*, but also one of *Phyllanthus kaesneri* Hutchins.

Additional citations: CAMEROONS: Talbot 1046 [Mo. Bot. Gard. photo A.856, in part] (N--photo of type, W--photo of type).

VITEX BOJERI Schau.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 501. 1858; Wangerin, Justs Bot. Jahresber. 56 (1): 668. 1936; H. N. & A. L. Mold., Pl. Life 2: 50. 1948; Mold., Phytologia 16: 496. 1968; Mold., Fifth Summ. 1: 263 & 426 (1971) and 2: 714, 717, & 923. 1971.

Additional citations: MADAGASCAR: Bojer s.n. [Be-zon-zong] (Mu--625--isotype).

VITEX BOJERI var. *SUBORBICULARIS* Mold.

Additional bibliography: Mold., Phytologia 15: 92. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 923. 1971.

VITEX BRACTEATA S. Elliot

Additional bibliography: Mold., Phytologia 15: 229. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 923. 1971.

Bernardi describes this species as an erect shrub or small tree, the branches dark-green, the leaves "hispid" [this is not true!], coriaceous, "like those of a *Petrea*", the flowers borne on long slender pedicels, the corollas wine-red, and encountered it in sandy woods, flowering in November.

Additional citations: MADAGASCAR: Bernardi 11505 (Ac).

VITEX BREVILABIATA Ducke

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 53 (1): 1076. 1932; Mold., Phytologia 15: 229. 1967; Mold., Fifth Summ. 1: 179 (1971) and 2: 923. 1971.

VITEX BREVIPETIOLATA Mold.

Additional bibliography: Mold., Phytologia 15: 229. 1967; Mold., Fifth Summ. 1: 179 (1971) and 2: 923. 1971.

VITEX BUCHANANII J. G. Baker

Additional synonymy: *Vitex buchanani* "Bak. ex Guerke" apud Richards & Morony, Check List Fl. Mbala 239. 1969.

Additional & emended bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 315 & 319. 1900; Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; H. N. & A. L. Mold., Pl. Life 2: 51. 1948; Mold., Phytologia 15: 229. 1967; Richards & Morony, Check List Pl. Mbala 239. 1969; Mold., Fifth Summ. 1: 238, 246, 250, & 252 (1971) and 2: 714, 726, & 923. 1971.

Recent collectors describe this plant as a "herbaceous plant", small shrub, or tree, 4--6 m. tall, forming thickets, the young

twigs hairy, the leaflets 3--5, slightly rough above, hairy beneath, the petioles hairy, the flowers borne in lateral panicles on old wood, and have found it growing in coastal sandy grassland-bushland, in woodland on steep banks above cliffs, in thickets on sand dunes, and among rocks in sandy soil, at altitudes from sealevel to 1300 m., flowering in February. Schlieben found it "abundant between boulders". The corollas are said to have been "pale-green, with [a] dark mark on [the] upper petal" on Richards 19024. Buchanan 318 in the United States National Herbarium is marked "*V. buchanani* Baker, n. sp.", but actually is not one of the collections on which Baker based the taxon.

Richards & Morony (1969) cite Richards 4484, 10928, 18988, and 19204 from Tanzania, no. 18988 being from Crocodile Island.

The B. J. Harris 6180, distributed as *V. buchananii*, actually is *V. mossambicensis* Gürke, while Ludanga DSM.225, Schlieben 6008, and Wingfield, Kabuye, & Vollesen 3468 are *V. schliebeni* Mold.

Additional citations: TANZANIA: Tanga: Harris & Tadros BJH. 5586 (Z); Schlieben 1614 (Mu). ZAMBIA: Mrs. H. M. Richards 19024 (N). MALAWI: J. Buchanan 318 (W--74078).

VITEX BUCHANANII var. *QUADRANGULA* (Gürke) Pieper

Additional synonymy: *Vitex buchanani* var. *quadrangula* (Gürke) Pieper, Engl. Bot. Jahrb. Beibl. 141: 54. 1928.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; Mold., Phytologia 15: 229. 1967; Mold., Fifth Summ. 1: 238 & 250 (1971) and 2: 714, 726, & 923. 1971.

VITEX BUCHNERI Gürke

Additional & emended bibliography: Gürke, Engl. Bot. Jahrb. 18: 166. 1894; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 317 & 331. 1900; H. N. & A. L. Mold., Pl. Life 2: 52. 1948; Mold., Phytologia 15: 229. 1967; Mold., Fifth Summ. 1: 231 & 245 (1971) and 2: 923. 1971.

Material of this species has been misidentified and distributed in some herbaria as *V. camporum* Buettn.

Additional citations: ZAIRE: Liben 1926 (E--2168606).

VITEX BUDDINGII Mold.

Additional bibliography: Mold., Phytologia 15: 229. 1967; Mold., Fifth Summ. 1: 328 (1971) and 2: 923. 1971.

Additional citations: GREATER SUNDA ISLANDS: Borneo: Budding 227 [Boschbouwproefst. bb.27010] (N--isotype).

VITEX BULUSANENSIS Elm.

Additional bibliography: Mold., Phytologia 8: 29--30. 1961; Mold., Fifth Summ. 1: 318 (1971) and 2: 923. 1971.

Additional citations: PHILIPPINE ISLANDS: Luzon: Elmer 17004 (Mi--isotype).

VITEX BUNGUENSIS Mold., Phytologia 35: 419. 1977.

Bibliography: Mold., Biol. Abstr. 64: 2438. 1977; Mold., Phyto-

logia 35: 419 (1977), 36: 36 (1977), and 44: 354. 1979.

Collectors describe this plant as a tree, 30--50 feet tall, aromatic, gnarled, with brown-lined bark, or as a "trailer with woody stems", the leaves digitate, fragrant, entire or sometimes all coarsely dentate [=juvenile?]. They have encountered it in anthill thickets and at the edge of thickets, at 150 m. altitude, flowering in January.. The corollas are said to have been "purple/white" on *Rodgers MRC.164*. The vernacular name, "mpujwa", is recorded for the species. *Flock 363* exhibits all coarsely dentate leaflets, but Wingfield later visited the locality where it was collected and found all the leaves entire-margined; he concludes that perhaps the toothed ones represent a juvenile state. Most of the material cited below was originally misidentified and distributed as the south Indian and Sri Lankan *Vitex altissima* L. f.

The specific epithet adopted by me for this species was chosen because of the locality where the type collection was gathered as given on its accompanying label when sent to me. Unfortunately, this was published before the following comments from Robert Wingfield of the University of Dar-es-Salaam were received by me: "Since this plant is not confined to the Bungu area, and since there are 3 other 'Bungu' sites in the Tanzanian gazetteer, whereas this Bungu is not yet on any map or gazetteer, may I suggest you choose some other name? E.g. as a possibility, 'zanzensis', from zanj the old Arab name for the Kenya-Tanzania coastal region and in Zanzibar & Zinjanthropus - or something still less obscure."

Citations: TANZANIA: Tanga: *Flock 362* (Tz); *Minjas & Raya DSM. 1908* (Z--type); *Rodgers MRC.164* (Tz), s.n. (Tz).

VITEX BURMENSIS Mold.

Additional bibliography: Mold., *Phytologia* 15: 93. 1967; Mold., *Fifth Summ. 1*: 284 (1971) and 2: 923. 1971.

VITEX CAESPITOSA Exell in Good & Exell, *Journ. Bot.* 69, Suppl. 2: 145--146. 1931.

Additional & emended bibliography: Good & Exell, *Journ. Bot.* 69, Suppl. 2: 145--146. 1931; Mold., *Phytologia* 15: 230. 1967; Mold., *Fifth Summ. 1*: 245 (1971) and 2: 923. 1971.

This species is based on *Gossweiler 3302* deposited in the herbarium of the British Museum in London, re-determined as "*V. doniana* Sweet?" The original description reads as follows: "A caespitose undershrub with annual shoots. Leaves glossy on both faces, coriaceous, translucent. Flowers whitish-violet. Leaflets up to 12 x 4.5 cm., the outer ones smaller; petioles up to 7 cm. long; inflorescences 4--4.5 cm. long; pedicels usually about 0.5 mm. long; bracteoles 3--4 mm. long; calyx 3 mm. long, measuring to the end of the calyx-teeth, slightly zygomorphic; corolla 7 mm. long, the upper lip measuring about 2 mm.; stamens 3--3.5 mm. long; ovary 1.5 mm. in diam. with style attaining 4--5 mm. in length; fruit up to 10 x 6 mm. This species seems nearest to *V.*

puberula Baker, also from Angola, but can be distinguished by having three leaflets instead of five, by the opposite leaves, and by the abruptly acuminate leaflets."

Citations: ANGOLA: Luanda: Gossweiler 3302 [Mo. Bot. Gard. photo A.857] (N--photo of type, W--photo of type).

VITEX CALOTHYRSA Sandw.

Additional synonymy: *Vitex callothyrse* López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 97, sphalm. 1975.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 58 (2): 330. 1938; Mold., Phytologia 15: 230. 1967; Mold., Fifth Summ. 1: 128, 133, & 179 (1971) and 2: 725, 767, & 923. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 95 & 97, [fig. 18]. 1975; Mold., Phytologia 31: 412. 1975; López-Palacios, Fl. Venez. Verb. 579, 581, 585--588, & 654, fig. 137. 1977.

Illustrations: López-Palacios, Revist. Fac. Farm. Univ. Andes 15: [fig. 18]. 1975; López-Palacios, Fl. Venez. Verb. [586], fig. 137. 1977.

López-Palacios (1975) says: "Aunque el Dr. Moldenke cita *V. calothyrsa* como de Bolívar y del Territorio Amazonas.....nunca he visto ejemplares de Bolívar; todas las colecciones que yo he examinado, inclusive el tipo, Spruce 3356, provienen del Territorio Amazonas. Es, pues, un error la ubicación del Río Pacimoni en Bolívar.....; también debe advertirse el lapsus de la cita de William 14993 como del Brasil....que procede de la isla de Trapichote, en el Delta del Ventuari, Alto Orinoco, Territorio Amazonas (Ven.), pero a lo mejor esta ejemplar es *V. compressa*." In his 1977 work he cites from Amazonas, Venezuela: Maguire, Wurdack, & Bunting 37402, 37403, & 37413, Spruce 3356, Vareschi 7779, and Wurdack & Adderley 42328.

Additional & emended citations: VENEZUELA: Amazonas: Spruce 3356 [Macbride photos 17564, 30185, & 34229] (B--isotype, Bm--isotype, Br--isotype, Cb--isotype, Cb--isotype, Ed--isotype, F--663043--photo of isotype, F--876591--photo of isotype, F--923106--photo of isotype, F--976277--photo of isotype, K--type, K--isotype, Kr--photo of isotype, Kr--photo of isotype, Kr--photo of isotype, Lu--isotype, N--isotype, N--photo of isotype, N--photo of isotype, N--photo of isotype, P--isotype, V--isotype, X--isotype, W--photo of isotype); Ll. Williams 14993 in part (Ve--12874). GUYANA: R. Schomburgk s.n. [British Guiana] (Ut--3253678).

VITEX CANESCENS Kurz

Additional synonymy: *Vitex heterophylla* f. *tomentosa* Jenkins, in herb.

Additional & emended bibliography: Kurz, Forest Fl. Brit. Burma 2: 269, 270, & 612. 1877; Gamble, Man. Indian Timb., ed. 1, 296 & 522. 1881; C. B. Clarke in Hook. f., Fl. Brit. India 4: 586. 1885; Brandis, Indian Trees, imp. 1, 504. 1906; Kanjilal, Das, Kanjilal, & De, Fl. Assam 3: 479, 481--482, & 561. 1939; Biswas, Indian Forest Rec., ser. 2, Bot. 3: 42. 1941; Mold., Phytologia 16: 496--

497. 1968; Sawyer & Cherms., Nat. Hist. Bull. Siam Soc. 23: 126. 1969; El-Gazzar & Wats., New Phytol. 69: 483 & 485. 1970; Brandis, Indian Trees, imp. 2, 504. 1971; Mold., Fifth Summ. 1: 279, 284, 290, 293, 298, 303, & 373 (1971) and 2: 714 & 923. 1971; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974.

Recent collectors describe this plant as a shrub or deciduous tree, 4--12 m. tall ["200--250 feet tall" according to King's collector], the trunk 7--30 cm. in diameter at breast height, often buttressed, the bark rough and furrowed, fawn-gray, the wood cream or cream-gray, hard, the blaze "tan over tan", the leaves light glossy-green above, paler beneath, the flowers with a slight odor, usually produced before the leaves, the buds yellow-green with a brown hue, the calyx light-green, and the fruit light-green with a red-brown tinge. They have encountered it in mixed bamboo/deciduous forests, sandy open forests, rocky deciduous forests, stunted pyric swamp forests, and "in the open sun in scrub with occasional trees to 15 m. tall along with *Bauhinia* and *Lantana*", at altitudes of 6--1330 m., flowering in January and from March to June, fruiting in March and June to October.

The corollas are said to have been "light-tan or buff" on *Squires 814*, "cream" on *Maxwell 75-48*, "white" on *King's Collector s.n.*, and "lobes with purple veins and dots" according to Kanjilal & al. (1939). The leaves are used as cattle fodder in Assam. Vernacular names recorded for the species are "arekdal", "borkeng-thing", "ching moi", "dieng-sartudkhar", "mathokhrai", "panch-pati", "phung-arong", "teta", and "than-thang".

Maxwell 72-109 has the leaves exceptionally hairy. A bark specimen accompanies *Squires 814*. *King 5493* serves as a voucher for a wood collection. The inflorescence is very dense on *Squires 814*, but very loose on *Jenkins s.n.* and *King's Collector s.n.* The new leaves are said to unfold in April in Thailand. Sawyer & Chermsirivathana (1969) report "phytocenoses 1,3,4; 330--710 m." in this species.

Clarke (1885) cites *Griffith 6066* and *Masters s.n.* from Assam, *McLelland s.n.* & *Kurz s.n.* from Pegu and Ava in Upper Burma. He comments that "*Vitex canescens*, Wall. Cat. 1757, is not in Wallich's Herbarium; Kurz does not state whether he intended or guessed his own *V. canescens* to be the same as Wallich's or no."

Material of *V. canescens* has been misidentified and distributed in some herbaria as *V. pubescens* Vahl.

Additional citations: INDIA: Assam: *Jenkins s.n.* [Assam] (Mu--691, Mu--1133, Pd); *King's Collector s.n.* [April 1893] (Mu--3801). THAILAND: *R. M. King 5493* (W--2435951); *Maxwell 72-60* (Ac), 72-109 (Ac), 75-303 (Ac). INDOCHINA: Annam: *Squires 814* (Mu). Cambodia: *Pierre 648* (W--2602822). NEW GUINEA: Papua: *Schodde 2755* (Ba). CULTIVATED: Florida: *Gillis 8682* (Go, Z).

VITEX CAPITATA Vahl

Additional & emended synonymy: *Vitex bignonioides* Humb. & Bonpl. apud Steud., Nom. Bot. Phan., ed. 1, 888. 1821. *Vitex bignonioides* Kunth apud Spreng. in L., Syst. Veg., ed. 16, 2: 757. 1825. *Petrea*

bignonioides H.B.K. apud López-Palacios, Fl. Venez. Verb. 589, in syn. 1977. *Vitex wiccttrockiana* [Moldenke] apud López-Palacios, Fl. Venez. Verb. 654, in syn. 1977.

Additional & emended bibliography: Pers., Sp. Pl. 3: 361. 1819; Steud., Nom. Bot. Phan., ed. 1, 888. 1821; Sweet, Hort. Brit., ed. 2, 416. 1830; Loud., Hort. Brit., ed. 2, 551. 1832; Sweet, Hort. Brit., ed. 3, 551. 1839; D. Dietr., Syn. Pl. 3: 612. 1843; Schau., Linnaea 20: 484. 1847; Schau. in A. DC., Prodr. 11: 689. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 501. 1858; Pittier, Contrib. U. S. Nat. Herb. 20: 483 & 487. 1922; Knuth, Feddes Repert. Spec. Nov. Beih. 43: [Init. Fl. Venez.] 607. 1927; H. N. & A. L. Mold., Pl. Life 2: 89. 1948; J. A. Steyerl., Act. Bot. Venez. 1: 254. 1966; Mold., Phytologia 16: 497. 1968; Mold., Résumé Suppl. 16: 3, 13, & 29. 1968; Dennis, Kew Bull. Addit. Ser. 3: 177 & 289. 1970; Lasser, Act. Bot. Venez. 4: 48. 1970; Mold., Fifth Summ. 1: 112, 120, 128, 133, 179, & 373 (1971) and 2: 549, 714, 715, 731, & 923. 1971; Barrios & Briceño, Mem. II Congres. Venez. Bot. 155, 170, 173, 177, & 179. 1974; Howes, Dict. Useful Pl. 96. 1974; Mold., Phytologia 28: 452 (1974) and 31: 383. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 95--96. 1975; López-Palacios, Fl. Venez. Verb. 581, 589--594, 626, & 654, fig. 138. 1977.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [590], fig. 138. 1977.

Recent collectors describe this species as an unarmed shrub or small tree, 1.5--25 m. tall, the trunk erect, simple, cylindric, 12--30 cm. in diameter; leaves decussate-opposite, 3--5 digitately foliolate, mostly 5-foliolate, calyx dark-green, filaments deep-blue to amethyst, anthers dark-purple, fruit at first green, later red or purple, more or less spherical, 1 or 2 produced per cyme, the old fruit brown. They have found it growing on granite cliffs, in sandy disturbed soil of mata de cipó, in dry scrub, and in small patches of woods on savannas, at 50--900 m. altitude, flowering from March to June and in November, in fruit from March to July. Veillon notes: "apamate blanco-canalete". The corollas are said to have been "blue" on Curran 1797, Gentry & al. 11148, and Murça Pires & al. 14336, "violet" on Fosberg 45241, "light-red" on Mori & al. 11070, "bright-purple" on Collector undetermined 15 and Senaratna 193, "azul-arroxead" on Murça Pires & al. 14387, "azul a ametístina, con pelos blancos en la base del lóbulo inferior" on Ruiz-Terán & al. 10858, and "petals and stamens purple" on Prance & al. 11225. Murça Pires and his associates say: "árvore pequena, comu às vezes"; Mori and his associates call it "common" and describe the "frutos pretos".

Sweet (1830) and Loudon (1832) both assert that *V. capitata* was introduced into cultivation in England in 1822 from Trinidad, while *V. bignonioides* was introduced in 1826 from Caracas, Venezuela. Pittier (1922) also keeps the two taxa distinct, keying them out as follows:

1. Leaflets sessile or almost so; corolla-tube only twice as long as the calyx; Venezuela.....*V. bignonioides*.
- 1a. Leaflets distinctly petiolulate; corolla-tube much longer than

the calyx.

2. Corolla woolly in the throat; calyx distinctly but shortly repand-dentate; Trinidad & Venezuela.....*V. capitata*.
- 2a. Corolla almost glabrous in the throat; calyx hardly denticulate; Guyana.....*V. schomburgkiana*.

Vernacular names recently reported for *V. capitata* include "acietuno", "calisaya morada", "escolilla", "five leaf fiddle wood", "flor azul", "guarataro", "headed-flowered chaste-tree", "mariquita", "piedrero", "piqueguaro", "trumpet-flow'd chaste-tree", and "trumpet-flowered chaste-tree".

Dennis (1970) reports the following fungi as parasitizing this species: *Phyllachora taruma* Speg. and *Uredo viticis* Juel, both in Trinidad.

López-Palacios (1975) notes that "En lo que respecta a las localidades citadas por el Dr. Moldenke.....hay que anotar lo siguiente: El Edo. Zamora ya no figura en la actual nomenclatura de la división territorial; hoy corresponde al Edo. Barinas. Además de los Estado allí citados colecciones antiguas y recientes atestiguan su existencia en los de Anzoátegui (Pittier 14884); Portuguesa [Tamayo s.n. (VEN.34114)]; Sucre (Steyermark & otros 107814 y Aristeguieta 5555). Lasser 225, acreditada erróneamente por Moldenke para Monagas (Phytologia 5: 264) [It is not so accredited there!], procede de Santa Bárbara de Barinas. Williams 12696 es un ejemplar muy pobre (2 hojas y un inflorescencia en VEN. y apenas 3 folíolos sueltos en NY.); me dan fuertes dudas de que sea *V. staheli* por sus cimas divergidas, el tamaño de los folíolos, y el excepcional porte del árbol (18 m.), ya que las citas de los restantes ejemplares colectados en Venezuela no pasan de los 11 m. En P he visto un *Chaffanjon* M.11 'borde de l'Orenoque', con una cedula anexa que dice 'Mariquita-Calysaya morada'. Parece que con ella se quiere indicar nombres vulgares." López-Palacios (1977) cites the following collections from Venezuela: Amazonas: *Chaffanjon* 11, *Spruce* 3746, *Vareschi* s.n. Anzoátegui: *Aristeguieta* & *Agostini* 5555, *Pittier* 14884. Apure: *Badillo* 1372, *Smith* V.1460, *Trujillo* 2120, *Vélez* 2688. Aragua: *Bonpland* 741, *Ll. Williams* 10188. Barinas: *Lasser* 225, *López-Palacios* 3145, *Smith* V.1526, *Veillon* 87. Bolívar: *Aristeguieta* 5283, 5842, *Cardona* 2872, *Grosourdy* Cat. 13 s.n., *Little* 15961, *Pittier* 12849, *Ruiz-Terán*, *Carabot*, & *Morales* 10560, 10858, *Steyermark* 86791, 94269; *Ll. Williams* 11642, 12046, 12696, 12849. Carabobo: *Fernández-Yépes* F.679, *Saer* 868. Delta Amacuro: *Little* 15950. Guárico: *Aristeguieta* 4183, 4187, 6083, *Burkart* 16206. Lara: *Pittier* 11756. Monagas: *Aristeguieta* 1729, *F. D. Smith* 230, *Steyermark* 61777, *Wurdack* & *Monachino* 39451. Portuguesa: *Tamayo* s.n. Sucre: *Steyermark* & al. 107840.

Material of this species has been misidentified and distributed in some herbaria as *V. montevidensis* Cham., *V. schaueriana* Mold., and *V. trifoliolata* L. f. On the other hand, the *Little*, *Ortega U.*, *Samaniego V.*, & *Vivar C.* 548, distributed as *V. capitata*, actually is *V. moronensis* Mold., while *Prance*, *Forero*, *Pena*, & *Ramos* 4623 is *V. schomburgkiana* Schau. and *Aristeguieta* 6083 seems

better placed as representing *V. appuni* Mold. The *Williams* 12696, cited by me as *V. capitata* in a previous publication, seems better regarded as *V. stahelii* Mold. as pointed out by López-Palacios.

Additional & emended citations: COLOMBIA: Bolívar: Romero-Castañeda 1636 (N). VENEZUELA: Amazonas: Curran 868 (N), 1797 (N). Anzoátegui: Aristeguieta & Agostini 5555 (N). Barinas: Gentry, Morillo, & Morillo 11148 (W--2786426); Lasser 225 (Ca--734623, N, Ve--12850); López-Palacios 3145 (Ld, N); Veillon 87 (W--2654202). Bolívar: Aristeguieta 5842 (N); Gentry & Berry 14725 (N), 15103 (N); Ruiz-Terán, Carabot, & Morales 10858 (Ac); Ruiz-Terán, Carabot, Morales, & Jahn 10560 (Tu); Ruiz-Terán & López-Palacios 11658 (Mi). Delta Amacuro: Curran 1810 (N). Monagas: F. R. Fosberg 45241 (Ld). BRAZIL: Amazonas: Murça Pires, Cavalcante, Magnago, & Silva 14387 (Ld). Bahia: Mori, Mattos Silva, Kallunki, & Santos 9925 (Ld); Mori, Mattos Silva, Santos, Kallunki, & Pennington 9441 (Ld); Mori, Santos, & Thompson 11070 (Ld, N). Minas Gerais: Glaziou 14160 (B, Br, Cb, Cp, K, N, N--photo, P, P, P, W--1112492, Z--photo). Roraima: Murça Pires, Cavalcante, Magnago, & Silva 14336 (Ld); Murça Pires, Leite, & Lima s.n. [Herb. IPEAN 14610 (79)] (Ld); Prance, Forero, Pena, & Ramos 4623 (S); Prance, Steward, Ramos, & Monteiro 11225 (Ld, N); Ruiz-Terán & López-Palacios 11034 (Ld). CULTIVATED: Sri Lanka: Collector undetermined 15 [125/46] (Pd, Pd, Pd); Moldenke, Moldenke, & Jayasuriya 28144 (Ac, Ld, Pd, W--2764413); Senaratna 193 (Pd).

VITEX CARBUNCULORUM Smith & Ramas

Additional bibliography: Mold., *Phytologia* 15: 230. 1967; Mold., Fifth Summ. 1: 284 & 298 (1971) and 2: 923. 1971.

VITEX CARVALHI Gürke

Additional & emended bibliography: Gürke in Engl., *Pflanzenw. Ost-Afr. C*: 339. 1895; J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 316 & 326. 1900; H. N. & A. L. Mold., *Pl. Life* 2: 53. 1948; Dale & Greenway, *Kenya Trees Shrubs* 592 & 593. 1961; Mold., *Phytologia* 15: 230. 1967; Gillett, *Numb. Check-list Trees Kenya* 47. 1970; Mold., Fifth Summ. 1: 241 & 252 (1971) and 2: 923. 1971.

Baker (1900) cites only the type collection, *Carvalho s.n.*, from Mozambique. Dale & Greenway (1961) cite *Tiede* 23 from Kenya.

VITEX CAULIFLORA Mold.

Additional bibliography: Mold., *Phytologia* 15: 230. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 923. 1971.

VITEX CAULIFLORA var. *LONGIFOLIA* Mold.

Additional bibliography: Mold., *Phytologia* 15: 95. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 923. 1971.

VITEX CAULIFLORA var. *VILLOSISSIMA* Mold.

Additional bibliography: Mold., *Phytologia* 15: 95. 1967; Mold.,

Fifth Summ. 1: 263 (1971) and 2: 923. 1971.

VITEX CESTROIDES J. G. Baker

Additional bibliography: Mold., Phytologia 16: 497. 1968; Mold., Fifth Summ. 1: 263 (1971) and 2: 715 & 923. 1971.

VITEX CHARIENSIS A. Chev.

Additional bibliography: Mold., Phytologia 15: 230. 1967; Mold., Fifth Summ. 1: 227 (1971) and 2: 923. 1971.

VITEX CHARIENSIS var. *LATIFOLIA* A. Chev.

Additional bibliography: Mold., Phytologia 15: 95. 1967; Mold., Fifth Summ. 1: 227 (1971) and 2: 923. 1971.

VITEX CHRYSLERIANA Mold.

Additional bibliography: H. N. & A. L. Mold., Pl. Life 2: 53. 1948; Mold., Phytologia 15: 230--231. 1967; Mold., Fifth Summ. 1: 179 (1971) and 2: 923. 1971.

VITEX CHRYSOCARPA Planch.

Additional & emended bibliography: Hook. f. & Benth. in Hook., Niger Fl. 486. 1849; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 316 & 325. 1900; Hutchins. & Dalz., Fl. W. Trop. Afr., ed. 1, 2: 275 & 276. 1936; Dalz., Useful Pl. W. Trop. Afr. 456. 1937; H. N. & A. L. Mold., Pl. Life 2: 90. 1948; Roberty, Pet. Fl. Ouest-Afr. 178. 1954; Huber in Hutchins. & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 446 & 448. 1963; Mold., Phytologia 16: 497 (1968) and 17: 27. 1968; Mold., Fifth Summ. 1: 210, 215, 217, 219, 221, 222, 231, & 246 (1971) and 2: 715, 731, & 923. 1971; Mold., Phytologia 23: 420. 1972; Gray & DeZeeuw, IAWA Bull. 1974 (2): 25, fig. 2. 1974.

Illustrations: Gray & DeZeeuw, IAWA Bull. 1974 (2): fig. 2. 1974.

Hooker & Bentham (1849) list this species as "*Vitex (Chrysomallum) chrysocarpa*" and cite Vogel s.n. from Nigeria. Dalziel (1937) records the vernacular names, "balamagnian", "bu-kudu-né", "insuo-koto", and "kuru", noting that in Togo the wood of this plant is used to make fishing gear.

Additional citations: ZAIRE: Toussaint 534 (E--2168607).

VITEX CHRYSOMALLUM Steud.

Additional bibliography: D. Dietr., Syn. Pl. 3: 612. 1843; Buek, Gen. Spec. Syn. Candoll. 3: 501. 1858; H. N. & A. L. Mold., Pl. Life 2: 72. 1948; Mold., Phytologia 16: 497--498. 1968; Mold., Fifth Summ. 1: 263 & 426 (1971) and 2: 713, 715, 716, 722, & 924. 1971.

VITEX CHRYSOMALLUM var. *LONGICALYX* Mold.

Additional bibliography: Mold., Phytologia 15: 96. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 924. 1971.

VITEX CHRYSOMALLUM var. *TOMENTELLA* Mold.

Additional bibliography: Mold., Phytologia 15: 96. 1967; Mold.,

Fifth Summ. 1: 263 (1971) and 2: 924. 1971.

VITEX CILIATA Pierre

Additional & emended bibliography: Pellegrin, Mem. Soc. Linn. Normand. 26 [ser. 2, 1 (3); Fl. Mayombe 2]: 49--50, pl. 2. 1928; Saint Aubin, For. Gabon [194] & 206. 1963; Mold., Phytologia 15: 231. 1967; Mold., Fifth Summ. 1: 226 & 227 (1971) and 2: 7;5 & 924. 1971.

Additional & emended illustrations: Pellegrin, Mem. Soc. Linn. Normand. 26 [ser. 2, 1 (3); Fl. Mayomb. 2]: pl. 2. 1928; Saint Aubin, For. Gabon opp. [194]. 1963.

Saint Aubin (1963) records the vernacular names, "angona", "evino", and "nto", for this species but all also applied to *V. pachyphylla* J. G. Baker. *Vitex ciliata* seems to be based on *Le Testu 1701* from Gabon, although Pellegrin (1928) also cites *Klaine 3257* from the same country.

VITEX CILIO-FOLIOLATA A. Chev.

Additional bibliography: Mold., Phytologia 15: 231. 1967; Mold., Fifth Summ. 1: 220 (1971) and 2: 924. 1971.

VITEX CLEMENTIS Britton & P. Wils.

Additional bibliography: H. N. & A. L. Mold., Pl. Life 2: 85. 1948; Alain in León & Alain, Fl. Cuba, imp. 1, 4: 317 & 318. 1957; Mold., Phytologia 15: 231. 1967; Mold., Fifth Summ. 1: 98 (1971) and 2: 924. 1971; Alain in León & Alain, Fl. Cuba, imp. 2, 2: 317 & 318. 1974.

VITEX COCHINCHINENSIS Dop

Additional bibliography: Wangerin, Justs Bot. Jahresber. 56 (1): 669. 1936; Fedde & Schust., Justs Bot. Jahresber. 56 (2): 286. 1937; Mold., Phytologia 15: 231. 1967; Mold., Fifth Summ. 1: 303 (1971) and 2: 924. 1971.

VITEX COFASSUS Reinw.

Additional & emended synonymy: *Cofassus* Rumpf, Herb. Amboin. 3: 28--30, pl. 14, fig. B. 1743. *Cofassus alba* Rumpf, Herb. Amboin. 3: 28. 1743. *Cofassus femina* Rumpf, Herb. Amboin. 3: 28. 1743. *Cofassus mollis* Rumpf, Herb. Amboin. 3: 28. 1743. *Cofassus pallida* Rumpf, Herb. Amboin. 3: 28. 1743. *Vitex punctata* Schau. in A. DC., Prodr. 11: 687. 1847 [not *V. punctata* Merr., 1918]. *Vitex cofassus typica* H. J. Lam apud Worsdell, Ind. Lond. Suppl. 2: 500. 1941. *Vitex cofassi* Hall. f. ex Mold., Fifth Summ. 2: 715, in syn. 1971. *Vitex cofassus* "Reinw. ex Bl." apud Foreman, Div. Bot. Dept. For. N. Guin. Bot. Bull. 5: 63. 1972. *Vitex cofassus* Reinw., in herb.

Additional & emended bibliography: Rumpf, Herb. Amboin. 3: 28--30, pl. 14, fig. B. 1743; Moon, Cat. Indig. Exot. Pl. Ceyl. 1: 46. 1824; Blume, Bijdr. Fl. Ned. Ind. 14: 813. 1826; D. Dietr., Syn. Pl. 3: 611. 1843; Buek, Gen. Spec. Syn. Candoll. 3: 502. 1858; Thwaites & Hook. f., Enum. Pl. Zeyl. 244. 1861; Hassk., Neuen Schl.

48. 1866; Heyne, Nutt. Pl. Nederl. Ind., ed. 1, 112--113. 1917; H. Hallier, Meded. Rijks Herb. Leid. 37: 47--48, 51, & 85. 1918; Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 48. 1921; Fedde & Schust, Justs Bot. Jahresber. 47 (2): 246. 1927; Fedde, Justs Bot. Jahresber. 47 (2): 423. 1929; Fedde & Schust., Justs Bot. Jahresber. 60 (2): 576. 1941; Van Royen, Nova Guinea, ser. 2, 10: 240. 1960; Mold., Phytologia 16: 498. 1968; Mold., Résumé Suppl. 17: 6. 1968; Uphof, Dict. Econ. Pl., ed. 2, 545. 1968; Begemann, Lex. Nutzh. 4: 2470--2471 (1969) and 5: 2631. 1969; Worthley & Schott, Life Sci. 8: 225--238. 1969; Farnsworth, Pharmacog. Titles 5 (8): xvii & item 8792 (1970) and 5, Cumul. Gen. Ind. 1971; Mold., Fifth Summ. 1: 319, 320, 328, 331, 333, 337, 339, 340, 373, & 468 (1971) and 2: 715, 716, 722, 726, 788, & 924. 1971; Versteegh, Meded. Landbouwhoges. Wagen. 71-19: 10 & 62. 1971; Foreman, Div. Bot. Dept. For. N. Guin. Bot. Bull. 5: 14, 63, 178, & [179]. 1972; Hartley, Dunstone, Fitzg., Johns, & Lamberton, Lloydia 36: 294. 1973; Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 131 & 148. 1973; Farnsworth, Pharmacog. Titles 9 (1): xxviii. 1974; Mold., Phytologia 28: 452 & 465 (1974) and 34: 267. 1976; Fundter & Wisse, Meded. Landbouwhogsch. Wagen. 77 (9): 205--209. 1977.

Additional illustrations: Foreman, Div. Bot. Dept. For. N. Guin. Bot. Bull. 5: [179]. 1972; Fundter & Wisse, Meded. Landbouwhogsch. Wagen. 77 (9): 208 & 209. 1977.

Recent collectors describe this species as a large, tall, canopy tree, 8--37 m. tall, freely branched, sometimes branching 0.5 m. from the base, at other times with a bole 3--5.5 m. high, crooked, very much grooved and flanged; trunk often very gnarled and irregular, 25--75 cm. in diameter at breast height, with a girth to 3 m., with or without buttresses, the buttresses (if present) thick, equal, to 4 m. high and 2.5 m. long; outer bark pale-gray, gray, gray-brown, or pale brownish-gray to brown, light-brown, or yellowish-brown, often banded, sometimes "cream-powdery", close, soft, rather smooth or rough, very fibrous, scaly or "stringy-flakey", about 1/4 inch thick, peeling off in large, thin, fibery flakes or shredding into thin papery scales, the under bark brown, the inner bark, white, yellow, or yellow-straw, with conspicuous rings of fibers; crown light-green, sparse, spreading; branches heavy; wood hard, white or straw-color, without odor or exudate, the sapwood yellow or pale-yellow, the heartwood gray- or dark-brown, sharply defined; lenticels large, numerous; slash wood hard, light-brown or yellow; slash bark hard, "fawn-colored with flecks"; blaze pale-brown or "4-layered: orange-white, yellow, white with orange channels, and yellow"; buds green, covered with short hairs; leaves light yellowish-green, sometimes reddish-margined, or else dark- or mid-green and glossy or rather dark dull-green above, paler or light-green and dull beneath; inflorescences terminal, paniculate, their branches green; flowers scented or scentless; corolla-throat hairy; fruit oval or irregularly globular, about 8 mm. long and 7--10 mm. wide, shiny, at first light- or dull-green to gray-green or even yellowish-white, blue or black to reddish-purple when ripe,

fleshy, shiny.

Collectors have found this species growing in open fields, on the sides of beaches, and in swamp margins on flat plains, in rainforests and lowland rainforests on clayey soil, in burned-over secondary forests, in valley bottoms, coastal forests and well-drained primary forests, in forests on sandy loam soil, alluvial rainforests, and along open roadsides on volcanic clay soil with *Morinda*, *Thelypteris*, and *Scleria*, as well as in "alluvial freshwater-tidal forest ecotones" and "ridge forests on shallow soil over conglomerate rock", from sealevel to 550 m. altitude, flowering from February to July, as well as October to December, fruiting in February, April to July, September, and October. Kajewski refers to it as "common in rainforests" and Walker & White report it "common in lowland rainforests".

The corollas are said to have been "white" on *Herb. Brit. Sol. Isls. Prot.* 6697 & 6830 "whitish-blue on Kuswata & Soepadmo 111, "blue" on *Herb. Brit. Sol. Isls. Prot.* 5967, "lilac-blue" on Gillis 10995, "purplish-blue on Fryar 3347, "mauve-blue" on Schodde & Craven 4497, "blue and purple" on Robinson 302, "purple" on Canfield 567, Collector undetermined 343, and Sutrisno 35, "mauve" on Croft & Lelean LAE.65427, Floyd 6633, and Walker & White 20, "violet" on Brass 21950, "lavender" on Brass 21909, and "yellow" on *Herb. Brit. Sol. Isls. Prot.* 6785.

Vernacular names reported for this species include "afas", "ahsang", "anoano", "a'sang", "bai-ah", "bitum", "fata", "father", "gofasa", "gofassa", "gupasa", "kofasa", "namavue", "New Guinea teak", "ridohokko", "sassuwar", and "vitex". A wood sample accompanies Schodde & Craven 4497. Robinson 302 is said to represent the *Cofassus femina* of Rumpf's (1743) plate 14 B, which exhibits both 1- and 3-foliolate leaves. The type of the species itself is probably a Rumpf collection from Amboina.

Kajewski notes that the "exceptionally strong timber [is] used by natives [in the Solomon Islands] for making large wooden bowls and platters for feasts, pounding food in [a] manner similar to mortar". Wood anatomy characters are given in detail by Fundter & Wisse (1977) who cite *NGBW nos.* 809, 843, 1335, 9436, & 10074 from New Guinea. Foreman (1972) cites *NGF.* 577, 2862, 16422, 19690, 45643, 45748, & 48608, Kajewski 1033 & 1843, Rechinger 3748, Schodde & Craven 3651, 4004, & 4119, Wat. 6-B, and Wat. Yale 29, all from Bougainville island.

Heyne (1917) gives detailed notes on the uses of this species in Indonesia and differentiates the characteristics of the three forms of the species noted by Rumpf (1743). For *Cofassus alba* he lists the vernacular name, "gofasa perampoean", for *Cofassus mas* "gofasa batoe", and for *C. femina* "gofasa gaba-gaba". From Ceram he lists also the local names, "gofasa tikar" and "gofasa mérah". Hallier (1918) records the name, "adjie bitie" from Celebes, "matatakum" from New Guinea, and "gafussu", "govasa-batu-baum", and "govasa-gaba-baum" from the Molucca Islands. He cites Heyne 2821 from Celebes, Elbert 2732 from Buton, DeVriese & Teijsmann 5 & 6, Forsten s.n., and Reinwardt 1465 from the Moluccas, and

Weinland 155 from New Guinea. Lam (1919) cites Boerlage 503 and Robinson 302 from Amboina, *Hulstijn* 404 from Sula Besi, and *Hulstijn* 414 from Mangoli. Uphof (1968) gives the range of the species as "Malay Archipelago, Celebes, Moluccas etc." and notes that its wood is "durable, resistant to sea-water and moist soil; used for building vessels." Begemann (1969) describes the wood characters in detail, gives the distribution as "Neu-Guinea und den Salomon-Inseln, aber auch in Malaysia, dem Sarawak und in Indonesien heimisch", and notes that "Das Holz wirt generell zu den gleichen Zwecken wie Teak.....verwandt, speziel aber im Boots- und Schiffbau, als Bau- und Konstruktionsholz mit einer mittleren Beanspruchung, zum Innenausbau, als Fussboden und Perkett, für Möbel, Leitungsmaste und Schwellen....Die Liefermöglichkeiten sind beschränkt. Der Hauptabnehmer dieses Holzes ist nach wie vor Australien."

Hartley and his associates cite their nos. 9631b & 10154. Versteegh (1971) reports that the slash of this wood turns dark-green on exposure and the living bark yellow, and that in the English and Indonesian trade the wood goes by the name of "gofassa".

Foreman (1972) gives detailed descriptions of the tree, its bark, leaves, flowers, fruits, and wood (density 44 lbs. per cubic foot). He affirms that "The timber is strong, hard, durable and does not warp after cutting. It is used in boat building and has been used for panelling. The poor form restricts its attractiveness to saw millers. It is used much for carvings and drums..... The wood is very similar to that of *Viticipremna novaepommeranae* (*Vitex quinata*) which has been cut extensively on New Britain, but that species has a much better form than *Vitex cofassus*." He gives its distribution as "Moluccas, Micronesia, New Guinea, throughout the Solomon Islands and Bismark Archipelago." The Gillis collection, cited below, was gathered from cultivated material in Florida, grown from the seed of *Fairchild* 319 from Maripa island in the Moluccas.

It should be pointed out here that Foreman (1972) is in error in synonymizing *Viticipremna novae-pommeranae* (Warb.) H. J. Lam with *Vitex quinata* (Lour.) F. N. Will.

It is also worth noting here that according to Merrill (1917) *Cofassus mas* Rumpf is in part *Vitex cofassus* and in part *V. parviflora* A. L. Juss. Actually, on p. 28 Rumpf says: "Post Metrosideri species hoc celebre tignum suum obtinet locum, cujus tres nobis obvenere species: Prima *mas* seu *rubra*; Secundo *alba*, seu *pallida*; Tertio *mollis*, quae *femina* esse putatur, quae omnes parum forma, modoque crescendi differunt, excepto lignorum colore." On his pl. 14 fig. A and B are drawn as attached to each other -- "A", above, is trifoliolate and probably represents *V. parviflora*, while "B", below, is unifoliolate and probably represents *V. cofassus*. As to the names he cites, it seems that *Cofassus mas* and *C. rubra* probably represent "A" or *V. parviflora*, while *C. alba*, *C. pallida*, *C. mollis*, and *C. femina* probably represent "B" or *V. cofassus*. "A" is drawn with flowers, "B" with fruit. "A" is marked "folia maris" on the plate and "B" is marked "femina".

The Blume (1826) reference cited in the bibliography above is often mistakenly cited as "8: 3", "9: 813", or "1825"; that of Moon (1824) is sometimes cited as "1821"; that of Thwaites & Hooker (1861) as "246" or "1839"; and that of Foreman (1972) by the misleading title-page date of "1971".

Additional citations: PALAU ISLANDS: Aimiriik: Kanehira 1977 (W--1656936). Koror: Canfield 567 (W--2835869, W--2835970). Palau: Hosokawa 7051 (W--2036330). MOLUCCA ISLANDS: Amboina: C. B. Robinson 302 (W--654620). Ceram: Kuswata & Soepadmo 111 (N). Halmahera: Herb. Neth. Ind. For. Serv. bb.23772 (N), bb. 23773 (N). Ternate: Herb. Neth. Ind. For. Serv. bb.23185 (N). AROE ISLANDS: Kobroor: Herb. Neth. Ind. For. Serv. bb.25296 (N). NEW GUINEA: Papua: Brass 21909 (W--2603087), 21950 (W--2603093). Territory New Guinea: Fryar 3347 (N, W--2211051); Schodde & Craven 4497 (Ac); Weinland 155 (Mu--3963); Womersley 2913 (N), 3313 (W--2211054). BISMARK ARCHIPELAGO: New Britain: Floyd 6633 (W--2603222); Frodin NGF.26866 (Mu); Henty & Lelean NGF.49499 (Mu); Womersley & Kazakoff NGF.7082 (W--2603189). New Ireland: Croft & Lelean LAE.65427 (Mu). SOLOMON ISLANDS: Guadalcanal: Walker & White B.S.I.P.20 (W--2157870, W--2157871). Malaita: Kajewski 2381 (W--1752235). New Georgia: Maenu'u s.n. [Herb. Brit. Sol. Isls. Prot. 5967] (W--2578788). Ulawa: Teona s.n. [Herb. Brit. Sol. Isls. Prot. 6269] (W--2578324). Ysabel: Beer collectors s.n. [Herb. Brit. Sol. Isls. Prot. 6830] (W--2578424), s.n. [Herb. Brit. Sol. Isls. Prot. 6697] (W--2578661), s.n. [Herb. Brit. Sol. Isls. Prot. 6785] (W--2578460), s.n. [Herb. Brit. Sol. Isls. Prot. 7778] (W--2578379). CULTIVATED: Florida: Gillis 10995 [Pl. Introd. 139401 M.10573] (Ld). India: Herb. Hort. Bot. Calcut. s.n. (Pd). Java: Sutrisno 35 [Herb. Hort. Bogor. XIII.J.87] (N). Sri Lanka: Collector undetermined 343 (Pd), s.n. (Pd).

VITEX COFASSUS f. *ANOMALA* Mold.

Additional bibliography: Mold., Phytologia 15: 98. 1967; Mold., Fifth Summ. 1: 328, 333, & 373 (1971) and 2: 924. 1971.

VITEX COFASSUS var. *PUBERULA* H. J. Lam

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 47 (2): 246 (1927) and 60 (2): 576. 1941; Mold., Phytologia 15: 98. 1967; Mold., Fifth Summ. 1: 334, 338, & 340 (1971) and 2: 715 & 924. 1971.

VITEX COLUMBIENSIS Pittier

Emended synonymy: *Vitex colombiensis* Pittier apud A. W. Hill, Ind. Kew. Suppl. 7: 252. 1929.

Additional & emended bibliography: Pittier, Contrib. U. S. Nat. Herb. 20: 483--485. 1922; Fedde & Schust., Justs Bot. Jahresber. 53 (1): 1076. 1932; Record & Mell, Timbers Trop. Am. 525--527. 1924; Mold., Phytologia 15: 232. 1967; Mold., Fifth Summ. 1: 120 (1971) and 2: 778 & 924. 1971.

López-Palacios, in a personal communication, lists the follow-

ing vernacular names for this species: "Totumillo costeño según Duque-Jaramillo; Aceotuno en Bolívar, y en la región de Urabá posiblemente sea a esta especie a la que se denomina Truntago (-negro; -blanco; tená), Jorge Ignacio del Valle, o. c.: 275".

VITEX COMPRESSA Turcz.

Additional & emended bibliography: Pittier, Contrib. U. S. Nat. Herb. 20: 483 & 485. 1922; Pittier, Man. Pl. Usual. Venez. 94 & 451. 1926; Knuth, Feddes Repert. Spec. Nov. Beih. 43: [Init. Fl. Venez.] 607. 1927; Fedde & Schust., Justs Bot. Jahresber. 53 (1): 1076. 1932; Pittier, Supl. Pl. Usual. Venez. 55. 1939; H. N. & A. L. Mold., Pl. Life 2: 81. 1948; Macbr., Field Mus. Publ. Bot. 13 (5): 692 & 693. 1960; Mold., Phytologia 16: 498. 1968; J. A. Steyer., Act. Bot. Venez. 3: 83. 1968; Uphof, Dict. Econ. Pl., ed. 2, 122, 255, & 545. 1968; Mold., Fifth Summ. 1: 111, 112, 120, 128, 131, 133, 134, 144, 179, 373, & 470 (1971) and 2: 714, 727, 730, & 924. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 95--97. 1975; Mold., Phytologia 34: 259. 1976; Soukup, Biota 11: 20. 1976; López-Palacios, Fl. Venez. Verb. 579, 581, 595--601, 639, 648, & 654, fig. 139. 1977; R. F. Sm., Act. Bot. Venez. 13: 186, 208, & 240. 1978.

Illustrations: López-Palacios, Fl. Venez. Verb. [596], fig. 139. 1977; R. F. Sm., Act. Bot. Venez. 13: 240. 1978.

Recent collectors describe this species as a small or tall tree, 2.5--30 m. tall, erect, unarmed, leafy, the trunk 8--30 cm. in diameter at breast height, the leaves firmly membranous, rich-green above, "concha arenosa en textura", the lower petal 3-lobed, the filaments white, pilose, the anthers deep-purple or black, the line of dehiscence cream-color, and the fruit green [immature?], fleshy, depressed at the apex, bland. They have found the plant growing in periodically inundated forests (varzea), primary forests in the warm zone, on stream banks, on savanna-covered slopes with dry thickets, and between rocks on sand of river banks, at altitudes of 10--300 m., flowering in February, April, June, and August, in fruit in April and from June to September.

The corollas are said to have been "rose" on *Cavalcante* 2482 and *Murça Pires & al.* 14414, "purple" on *Blanco* 998, "light-purple, the throat light yellowish-green" on *Ruiz-Terán & López-Palacios* 11701, "pale-blue, the lower lip dark-blue with a yellow spot" on *Lanjouw & Lindeman* 2028, and "lateral lobes light-blue, central lobe dark-purple with a yellow spot inside" on *Mori & al.* 8137. Macbride (1960) says that *V. compressa* "Becomes a stout tree to 30 meters tall, the straight trunk to a meter in diameter; flowers blue to purple, fragrant". He lists it from Peru with a question, adding that it is found naturally "To Colombia, Trinidad and Brazil".

Vernacular names reported for the species include "aceituno", "guaratare", "guarataro", "guateloro", "hakiaballi", "kalebashout", "pachaca", "totumillo", "totumillo blanco", "totumillo sarnito", and "totumo". Uphof (1968) refers a "Guiana Chaste Tree" to *Vitex divaricata* Sw., but it seems more probable

that this name belongs to *V. compressa*. Smith (1978) lists *V. compressa* from Lara, Venezuela.

López-Palacios (1977) cites the following collections from Venezuela: Amazonas: Ll. Williams 14993. Anzoátegui: Pittier 15069 & 15118. Aragua: Montaldo 3076, 3403, & 3425; Stauden 17; Trujillo 3413; Ll. Williams 10257. Barinas: Marceno-Berti & Lezama 219. Bolívar: Aristeguieta 5315 & 5844; Bernardi 7400; Little 17596 & 17618; Steyermark 86381, 86621, 86722, 86916, 94217, 94239, & 94269. Carabobo: Karsten s.n.; Steyermark & Carreño 106876. Falcón: Blanco 925 & 998; Ruiz-Terán 467 & 701; Steyermark & Manará 110731. Guárico: Aristeguieta & Agostini 6407; Ruiz-Terán & López-Palacios 11701. Lara: Badillo 409; Smith V.1753; Steyermark 56822. Miranda: Steyermark & Steyermark 110042. Monagas: Aristeguieta & Vera 7524. Portuguesa: Trujillo 3901. Sucre: Steyermark & Manará 107898. Trujillo: Curran 761; Pittier 10848; Trujillo & Bunting 2819. Yaracuy: Bernardi 6955; Madriz 38. Zulia: Aristeguieta & al. 6846; Delascio & Benkosky 3084; Tejera E.117; Trujillo 4242.

Additional & emended citations: COLOMBIA: Caquetá: Romero-Castañeda 4094 (N). Guajira: Trujillo 4242 (Ut--333344b). Magdalena: Romero-Castañeda 1057 (W--2104673), 9051 (N); H. H. Smith 2107 (Ld). VENEZUELA: Aragua: Vogl 814 (Mu). Bolívar: Aristeguieta 5844 (N); J. A. Steyermark 94217 (N, W--2438641). Falcón: Aristeguieta, Blanco, & Carrillo 6846 (N); C. A. Blanco 925 (N, W--2777220, N), 998 (N); Steyermark & Manará 110731 (N). Guárico: Ruiz-Terán & López-Palacios 11701 (Ld). Miranda: Steyermark & Steyermark 110042 (N); Trujillo 2819 (Ld). Zulia: Aristeguieta, Blanco, & Carrillo 6846 (Ac); Budowski 2 (Ld, N). GUYANA: D. H. Davis 726 (N). GUYANAN ISLANDS: Thomas: Mori, Bilten, Persaud, Boyan, Roberts, Jugernauth, & Dwarka 8137 (Ld, N). SURINAM: Lanjouw & Lindeman 2028 (W--2796107); Lindeman 5443 (Ld, W--2640856); J. P. Schulz 7709 (N). BRAZIL: Pará: Cavalcante 2482 (Ld, N); Murça Pires & Leite 14845 (Ld). Roraima: Murça Pires, Cavalcante, Magnago & Silva 14414 (Ld).

VITEX CONGENSIS A. Chev.

Additional bibliography: Mold., Phytologia 15: 232. 1967; Mold., Fifth Summ. 1: 219 & 231 (1971) and 2: 776 & 924. 1971.

VITEX CONGESTA Oliv.

Additional bibliography: Mold., Phytologia 15: 232. 1967; Mold., Fifth Summ. 1: 263 & 468 (1971) and 2: 648 & 924. 1971.

VITEX CONGOLENSIS DeWild. & Th.-Dur.

Additional & emended bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 316 & 325. 1900; Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; H. N. & A. L. Mold., Pl. Life 2: 61. 1948; Mold., Phytologia 16: 498. 1968; Mold., Fifth Summ. 1: 224, 231, & 245 (1971) and 2: 710, 717, 718, 776, & 924. 1971.

Recent collectors describe this species as a small tree, 40--50 feet tall, or as a shrub, 3--4 m. tall, the trunk 20--70 cm. in

diameter, and have encountered it on sandy plains, along rivers, and on savannas with *Hymenocordia acida*, at 470 m. altitude, flowering in March, fruiting in November. A vernacular name reported for it is "kpar-seh".

Baker (1900) cites *Schweinfurth* 3442 from Zaire as the type of what he called *V. aesculifolia* J. G. Baker and notes that "*Vitex congolensis*.....is not separable from *V. ferruginea*, Schumacher. & Thonn., by the description. It was collected by Dewèvre at Bokakata in the northern part of the Congo Free State [Zaire]".

Material of *V. congolensis* has been misidentified and distributed in some herbaria as *V. rufa* A. Chev. and *V. thonneri* DeWild.

Additional citations: LIBERIA: G. P. Cooper 355 (W--1378523). ZAIRE: Carlier 286 (Mu); Louis 3509 (N), 13889 (W--2091110); Luyten 29 (Mu).

VITEX CONGOLENSIS var. *GILLETII* (Gürke) Pieper

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; H. N. & A. L. Mold., Pl. Life 2: 61. 1948; Mold., Phytologia 15: 232. 1967; Mold., Fifth Summ. 1: 231 (1971) and 2: 717 & 924. 1971.

VITEX COOPERI Standl.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 57 (2): 404. 1938; H. N. & A. L. Mold., Pl. Life 2: 54. 1948; Kribs, Comm. For. Woods, ed. 2, 161--162, fig. 474 (1959) and ed. 3, 161--162, fig. 474. 1968; Mold., Phytologia 16: 498. 1968; Mold., Résumé Suppl. 16: 4. 1968; Whitmore & Hartshorn, Lit. Rev. Com. Trop. Trees 95. 1969; Gibson, Fieldiana Bot. 24 (9): 234--235. 1970; Farnsworth, Pharmacog. Titles 6 (9): xii & title 15746. 1971; Mold., Fifth Summ. 1: 81, 84, 86, 89, & 91 (1971) and 2: 924. 1971; Saez R. & Nassar C., Revist. Biol. Trop. 18: 137. 1971; Farnsworth, Pharmacog. Titles 6, Cum. Gen. Ind. [122]. 1973; Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 131, 134--135, & 148. 1973; Janos in Sanders & al., Endomycor. 437--446. 1975; Molina R., Ceiba 19: 96. 1975; Anon., Forest. Abstr. 37: 555 (1976) and 37 (10): 9. 1976; Croat, Fl. Barro Colorado 40 & 732. 1978.

Illustrations: Kribs, Comm. For. Woods, ed. 2, fig. 474 (1959) and ed. 3, fig. 474. 1968.

Recent collectors describe this species as a tree, 30--80 feet tall, the trunk 12--30 inches in diameter, fluted at the base, the flowers fragrant, and have found it growing from sealevel to 50 m. altitude, flowering from June to August. The corollas are said to have been "blue" on Woodson & Schery 937 and "lavender" on Allen 5294.

Whitmore & Hartshorn (1969) report *V. cooperi* from "lowland forests from Guatemala to Panama". Croat (1978) tells us that on Barro Colorado Island, Panama, it flowers and fruits "in the wet season". He gives its overall distribution as "Guatemala to Panama; sea level to 600 m. In Panama, known from tropical moist forest in the Canal Zone and Darién and from premontane wet forest in

Chiriqui (Progreso); reportedly fairly common on the Atlantic watershed around Gatun Lake (*Fisher 1*) and no doubt more widespread and common than collections indicate." Gibson (1970) reports it from damp thickets in Izabal, Guatemala, as well as the Atlantic coast of Honduras, Nicaragua, Costa Rica, and Panama. She notes that "This has been confused with *V. floridula* Duchass. & Walp. of Panama, which has larger flowers and short-pedunculate cymes. It more closely resembles the West Indian *V. divaricata* Sw. which has slightly larger flowers and glabrate pedicels and calyxes." She distinguishes the Guatemalan species as follows:

"Leaflets 3; calyx cupuliform, subtruncate, remotely and minutely denticulate.....*V. cooperi*.
Leaflets 5 (rarely 7); calyx campanulate, lobate or dentate.

Leaflets glabrous beneath or nearly so; calyx with triangular-oblong to linear, often reflexed lobes 1.5--2.5 mm.
long.....*V. kuylenii*.

Leaflets tomentulose and velutinous beneath; calyx with acute teeth 0.5--1 mm. long.....*V. gaumeri*.

Janos (1975) calls *V. cooperi* "rare" in northeastern Costa Rica. He has found that inoculations of *Endomycorrhiza* into the roots of this species significantly improve growth and the ability to survive attack by native insects "owing to the more vigorous growth of their axillary buds."

Vernacular and common names reported are "cua-ja", "cuajada", "raja bien", "rajate bien", and "yellow manwood".

Additional citations: COSTA RICA: Puntarenas: *P. H. Allen* 5294 (N, Ws). PANAMA: Canal Zone: *Stern & Chambers* 159 [Yale wood 51651] (E--1739902). Chiriquí: *Woodson & Schery* 937 (W--1209356).

VITEX COURSI Mold.

Additional bibliography: Hocking, *Excerpt. Bot. A.13*: 570. 1968; Mold., *Phytologia* 16: 498. 1968; Mold., *Fifth Summ.* 1: 263 (1971) and 2: 716 & 924. 1971.

VITEX CRENATA A. Chev.

Additional bibliography: Mold., *Phytologia* 15: 240. 1967; Vergiat, *Journ. Agr. Trop. Bot. Appl.* 17: 337. 1970; Mold., *Fifth Summ.* 1: 227 (1971) and 2: 924. 1971.

Vergiat (1970) records the vernacular names, "alya", "bili", and "bili betena", for this species, describing it merely as an "Arbre de savane, à feuilles crénelées vers le sommet. Floraison: grappes de fleurs lilas. Fructification: grappes de trois à quatre fruits noir violacé, de la grosseur d'une cerise, comestibles." He asserts that "La décoction des feuilles est bue contre la dysenterie. La décoction de l'écorce contre la toux, on l'emploie aussi pour laver les pieds enflés. L'eau de macération de l'écorce, aspirée par le nez, excite les sécrétions nasales. Les racines fraîches des racines pilées avec des graines de...*Amblygonocarpus Schweinfurthii*, servent à confectionner des petits tampons que l'on maintient appliqués sur les dents dont on souffre." He says that an unidentified species of *Vitex* in the same area of

what used to be called French Equatorial Africa exhibits the same medicinal properties as *V. crenata*.

VITEX CUSPIDATA Hiern

Additional bibliography: Bouquet, Invent. Pl. Med. Tox. Cong. Braz. 33. 1967; Mold., Phytologia 15: 240. 1967; Mold., Fifth Summ. 1: 231 & 245 (1971) and 2: 924. 1971.

Meyer's photograph of the type collection, cited below, actually shows the holotype of the species preserved in the herbarium of the British Museum, London.

Citations: ANGOLA: Cuanza Norte: Welwitsch 5665 [F. G. Meyer photo 2991] (Gz--photo of type, N--photo of type).

VITEX CYMOSA Bert.

Additional synonymy: *Vitex cymosa* "Bert. ex Spreng." apud Angely, Fl. Anal. Paran., ed. 1, 580. 1965.

Additional & emended bibliography: D. Dietr., Syn. Pl. 3: 612. 1843; Schau. in A. DC., Prodr. 11: 688. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 501. 1858; Kuntze, Rev. Gen. Pl. 3 (2): 258. 1898; Briq. in Chod. & Hassl., Bull. Herb. Boiss., ser. 2, 4: 1169. 1904; Briq. in Chod. & Hassl., Plant. Hassler. 2: 505. 1904; Peckolt, Bericht. Deutsch. Pharm. Gesell. 14: 481. 1904; Fedde & Schust., Justs Bot. Jahresber. 39 (2): 320. 1913; Pittier, Contrib. U. S. Nat. Herb. 20: 484. 1922; Pittier, Man. Pl. Usual. Venez. 94 & 451. 1926; Knuth, Feddes Repert. Spec. Nov. Beih. 43: [Init. Fl. Venez.] 607. 1927; Pittier, Supl. Pl. Usual. Venez. 55. 1939; Chardon, Mycologia 32: 199--200. 1940; Pérez-Arbeláez, Pl. Util. Colomb., ed. 1, 442. 1947; Michalowski, Serv. Tecn. Interam. Coop. Agr. Bol. 174 (1954), 173 (1955), and 189. 1955; Pérez-Arbeláez, Pl. Util. Colomb., ed. 2, 745. 1956; Cuatrecasas, Revist. Acad. Colomb. Cienc. 10: 241. 1958; R. C. Foster, Contrib. Gray Herb. 184: 171. 1958; Macbr., Field Mus. Publ. Bot. 13 (5): 692--695 & 697. 1960; Martínez-Crovetto, Bonplandia 1: 198. 1963; Angely, Fl. Anal. Paran., ed. 1, 580. 1965; Mold., Phytologia 16: 498. 1968; Mold., Résumé Suppl. 16: 4. 1968; A. L. Mold., Phytologia 18: 128. 1969; Mold., Fifth Summ. 1: 91, 128, 179, 184, 188, 203, & 373 (1971) and 2: 531, 715--717, 725, & 924. 1971; Mold., Phytologia 23: 418. 1972; Altschul, Drugs Foods 246. 1973; Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 131, 136--137, & 148. 1973; Mold., Phytologia 28: 452. 1974; Troncoso, Darwiniana 18: 395 & 412. 1974; Kooiman, Act. Bot. Neerl. 24: 462. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 97. 1975; Zimmerm. & Ziegler in Zimmerm. & Milburn, Transp. Pl. 1 [Pirson & Zimmerm., Encycl. Pl. Physiol., ser. 2, 1]: 503. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 17: 50--51. 1976; Mold., Phytologia 34: 256. 1976; López-Palacios, Fl. Venez. Verb. 581, 582, 602--606, 649, & 654, fig. 140. 1977.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [603], fig. 140. 1977.

Recent collectors describe this species as a shrub, 2--4 m. tall, or a large tree, 10--23 m. tall [or to "86 m." according to Berg &

al.], the trunk 25--50 cm. in diameter, the stems and/or branches arching, the bark light-colored, finely fissured, the flowers showy, "visitadas por abundantes abejas y abejorros", the calyx dark-blue, and the fruit about 24 mm. long and 14 mm. wide, at first green or greenish, then red or reddish-black, finally maroon, dark red-brown, or black, and fleshy, "vinoso", falling off at the slightest touch when ripe. They have found the plant growing in gallery forests, tropical moist forests, rain forests, primary forests on terra firma, and "disturbed forests with *Prosopis* and *Scheelea*", on floodplains, in degraded cerrado, along quebradas on streamsides and riverbanks, at lake margins, in small patches of low wet woods, on creek margins, and in both whitewater and blackwater flooded varzea river margins, at altitudes of 16--550 m., in flower from January to March and June to November, in fruit in January, April, and June to August. Anderson reports finding it "emergent from water in dense inundated vegetation of trees and vines or riverine forests"; Prance found it overhanging rivers.

The corollas are said to have been "blue" on Anderson 10982, McDaniel & al. 2683, and Prance & al. 5372, 14144, & 15080, "lavender-blue" on Anderson 10874, "blue-lilac" on Fernandez & Jaramillo 7105, "blue with white center" on Prance & al. 59124, "lilac" on Hatschbach & Scherer 30433, "violet" on Schunke 2413, "purple" on Campbell & al. 22456, and "deep-purple" on Haught 4039.

Fosberg reports finding the species "occasional". The leaves are extraordinarily large on Berg & al. P.19703. Steinbach says: "fruta.....del tamaño de un olivo, a que se parece también alyo en el gusto. Es fruta muy sana". In Colombia Fosberg reports the fruit eaten by the natives, "but [they] are of very flat taste". Schunke asserts that the wood is used for farmhouse construction in Peru. Chardon (1940) reports it attacked by the parasitic fungus, *Phyllachora toruma* Speg., the report based on Müller 166 & 225.

Peckolt (1904) says of *Vitex cymosa*: "In den Staaten Bahia, Matto Grosso, Minas und Pará [Brazil] vorkommend mit den Tupybenennung Taruma -- Ölfrucht. Urwaldbaum, bis 20 m hoch, mit schöner, dicht belaubter Krone, fünf- bis siebenzähligen, oberseite glänzend grünen, unterzeits weissfilzigen Blättern. Blüten blau. Kugelrunde, weisse, fast transparente saftige Steinfrucht von der Grosse einer Herzkirsche. Ein wohlschmeckendes Waldobst; vom Saftte wird mit gleichen Teilen Zucker ein Hustensirup bereitet. Das Dekokt der Rinde wendet man an bei sekundärer Syphilis. Das Holz dient zu Bauten." It is problematic whether this white pleasant-tasting fruit tree of Brazil is conspecific with the black and not especially good-tasting fruit tree passing under this name in other regions.

Vernacular names reported for *V. cymosa* include "aceituna", "aceituna del monte", "aceituno", "cormuñon", "cuajado", "pechiche", "taruma", "tarúma", "tarumã", "tarumão", "veludo", and "zarumã".

Altschul (1973) cites Steinbach 6428 from Bolivia; Macbride

(1960) cites *Weberbauer* 5341 from Lima, Peru, giving the species' overall distribution as "To Colombia, Brazil, Bolivia, Patagonia" -- "Patagonia" obviously an error for "Paraguay". López-Palacios (1977) cites the following collections from Venezuela: Zulia: *Aristeguieta & al.* 6763, *Karsten* s.n., *Müller* 1114, *Pittier* 10477 & 10491, *Plée* 7 & 12, *Tamayo* 4575. Zulia or Falcón: *Curran* 744. He comments that "La especie es bastante característica. En Venezuela, que yo sepa, sólo ha sido registrada en los Edos. Zulia y Falcón. La referencia que el Dr. Moldenke.....hace para el Edo. Bolívar parece basarse en alguna mala interpretación, quizás *Cardona* 2119, que es *V. staheli*." He also says: "No he tenido oportunidad de examinar los tipos de *Vitex cymosa* Bert. y *Vitex flavens* HBK., pero el material que se les asigna en los herbarios es tan similar, que hace pensar que con coespecíficos o que el material he sido mal interpretado."

Material of *V. cymosa* has been misidentified and distributed in some herbaria as *Godmania aesculifolia* (H.B.K.) Standl. or as *Bignoniaceae* sp. On the other hand, the *Mexia* 6177, distributed as *V. cymosa*, actually is *V. gigantea* H.B.K., while *Fiebrig* 5382 & 5807, *Jorgensen* 3786, and *Vattuone & Bianchi* L.170 are *V. megapotamica* (Spreng.) Mold., and *Mexia* 5251 & 5474 are *V. mexiae* Mold.

Additional citations: PANAMA: Darién: *Duke & Bristan* 8244 (E--1864914). COLOMBIA: Caldas: *Fernández-Pérez & Jaramillo Mejía* 7105 (N, W--2844805). Guajira: *Saravia* T. 2339 (W--2587516). Cundinamarca: *Gentry, Daly, León, & Barbosa* 18107 (Ld). Magdalena: *F. R. Fosberg* 39401 (Ac); *Haught* 4039 (N); *Romero* 1029 (W--2104654); *H. H. Smith* 1936 (Ld). VENEZUELA: Zulia: *Aristeguieta, Blanco, & Carrillo* 6763 (Ac, N); *Budowski* 14 (Gz, N); *H. M. Curran* 102 (N), 206 (N), 235 (N). PERU: Tumbes: *Schunke Vigo* 2413 (N). BRAZIL: Amazonas: *Berg, Bisby, & Monteiro* P.19703 (Ld, N); *McDaniel, Fernando, Leonel, & Quintino* 2683 (W--2667277); *Prance, Maas, Atchley, Steward, Woolcott, Coelho, Monteiro, Pinheiro, & Ramos* 14144 (Ld, N); *Prance, Maas, Woolcott, Coelho, Monteiro, & Ramos* 15080 (Ld, N); *Prance, Philcox, Forero, Coelho, Ramos, & Farias* 5291 (Ac). Mato Grosso: *Hatschbach & Scherer* 30433 (Ld, N, W--2705990); *Prance & Silva* 59124 (N); *Prance, Silva, & Murça Pires* 59124 [L.S. 120] (N); *Prance & Schaller* 26286 (N); *R. P. Richards* 6511 (N). Pará: *W. R. Anderson* 10874 (Ld, N), 10982 (Ac, N); *Campbell, Ongley, Ramos, Monteiro, & Nelson* P.22456 (Ld, N). Paraná: *Hatschbach & Haas* 15809 [4317] (Ld, Ld, W--2536540). Rondônia: *Prance, Forero, Wrigley, Ramos, & Farias* 6719 (E--2135202); *Prance, Philcox, Forero, Coelho, Ramos, & Farias* 5291 (N), 5372 (Ld, N). BOLIVIA: El Beni: *E. Schmidt* 155 (Mu); *Werdermann* 2336 (E--999946). PARAGUAY: *Hassler* 12307a (Ws). CULTIVATED: Egypt: *Täckholm & Elsayed* s.n. [1/6/1961] (Gz, Gz).

VITEX DEGENERIANA Mold.

Additional bibliography: H. N. & A. L. Mold., Pl. Life 2: 55. 1948; Mold., Phytologia 15: 241. 1967; Mold., Fifth Summ. 1: 224 (1971) and 2: 924. 1971.

VITEX DENTATA Klotzsch

Additional & emended bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 316 & 320--321. 1900; Mold., Phytologia 15: 241. 1967; Mold., Fifth Summ. 1: 252 (1971) and 2: 924. 1971.

VITEX DINKLAGEI Gürke

Additional bibliography: H. N. & A. L. Mold., Pl. Life 2: 56. 1948; Mold., Phytologia 15: 241. 1967; Mold., Fifth Summ. 1: 224 (1971) and 2: 924. 1971.

VITEX DIVARICATA Sw.

Additional synonymy: *Tanaecium paniculatum* Sieb. apud Buek, Gen. Spec. Syn. Candoll. 3: 469. 1858. *Vitex divaricata* var. *divaricata* [Sw.] apud Alain in León & Alain, Fl. Cuba, imp. 1, 4: 318. 1957. *Vitex divaricata* var. *divaricata* [Alain] ex Mold., Résumé 383, in syn. 1959. *Vitex divaricata* var. *divaricata* Alain ex Mold., Fifth Summ. 2: 716, in syn. 1971. *Vitis divaricata* Mold. ex López-Palacios, Fl. Venez. Verb. 606, in syn. 1977.

Additional & emended bibliography: Raeusch., Nom. Bot., ed. 3, 182. 1797; D. Dietr., Syn. Pl. 3: 611. 1843; Schau. in A. DC., Prodr. 11: 691. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 469 & 501. 1858; Urb., Symb. Antill. 7: 357. 1912; Fedde & Schust., Justs Bot. Jahresber. 40 (2): 336. 1915; Pittier, Contrib. U. S. Nat. Herb. 20: 484. 1922; Pittier, Man. Pl. Usual. Venez. 386 & 451. 1926; Knuth, Feddes Repert. Spec. Nov. Beih. 43: [Init. Fl. Venez.] 607. 1927; Fedde & Schust., Justs Bot. Jahresber. 57 (2): 404. 1938; R. W. Br., Compos. Scient. Words 833. 1954; Cocker & Shaw, Journ. Chem. Soc. Lond. 1962: 5194--5197. 1962; Anon., Hortic. Abstr. 34: 151. 1964; Little & Wadsworth, Comm. Trees Puerto Rico [U. S. Dept. Agr. Handb. 249:] 476 & 486--487, fig. 230. 1964; J. A. Steyerl., Act. Bot. Venez. 1 (2): 13 & 17. 1966; D'Arcy, Rhodora 69: 439. 1967; Kariyone, Ann. Ind. Rep. Pl. Chem. 1962: 136. 1967; Mold., Phytologia 16: 498--499. 1968; Mold., Résumé Suppl. 17: 2. 1968; Uphof, Dict. Econ. Pl., ed. 2, 122, 255, & 545. 1968; Dennis, Kew Bull. Addit. Ser. 3: 289. 1970; Gibson, Fieldiana Bot. 24 (9): 234. 1970; Mold., Fifth Summ. 1: 98, 101, 106, 107, 109, 111, 112, 128, 373, & 391 (1971) and 2: 639, 716, 732, & 924. 1971; Mold., Phytologia 23: 416 (1972) and 25: 228. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 672. 1973; Alain in León & Alain, Fl. Cuba, imp. 2, 2: 317--318. 1974; Howes, Dict. Useful Pl. 96. 1974; Little, Woodbury, & Wadsworth, Trees Puerto Rico Virg. Isls. 2: [U. S. Dept. Agr. Handb. 449] : 854, 990, & 1023. 1974; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 97--100 (1975) and 17: 50. 1976; L. H. & E. Z. Bailey, Hortus Third 1162. 1976; Laurence & Mohammed, Journ. Agr. Soc. Trin. Tob. 76: 345. 1976; López-Palacios, Fl. Venez. Verb. 581, 582, & 606--610, fig. 141. 1977; Fournet, Fl. Illustr. Phan. Guad. Mart. 1392--1393, fig. 662. 1978.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [607], fig. 141. 1977; Fournet, Fl. Illustr. Phan. Guad. Mart. 1392, fig. 662. 1978.

Recent collectors describe this species as a very handsome tree,

6.5--13 m. tall, the trunk 10--20 cm. in diameter at breast height, the bark light-tan, the lateral leaflets often caducous, thus giving the leaves a 1-foliolate appearance, the flowers fragrant, hairy in the center, the stamens lavender, the immature fruit green or yellow-green, turning brownish, fleshy. They have found it growing in dry or montane forests, at forest edges, in clearings, and along roadsides from near sealevel to 1000 m. altitude, flowering in May and June, fruiting in July and August.

Vernacular names recently reported for *V. divaricata* are "aceituno", "black fiddle wood", "higüerillo", "totumillo", and "white fiddlewood". Uphof (1968) lists "Guiana chaste tree", but this name more probably applies to *V. compressa* Turcz. instead. Raeuschel (1797) makes the remarkable (and completely erroneous) statement that *V. divaricata* is a native of "India orient."

The corollas are said to have been "blue" on *Little* 13698 and *Purseglove* P.6439, "violet-blue" on *Proctor* 17797, "purplish-blue" on *Little* 13081, "violet with blue lip" on *Proctor* 20929, and "4 petals pale-lavender, the fifth dark-purple, center white" on *Wagner* 560.

López-Palacios describes the species as an "Arbol ca. 12 m. Hojas por lo general 1-folioladas y cuando 3-folioladas los folíolos laterales pequeños (0.5--5 x 0.2--4 cm.), el folíolo central generalmente obovado o elíptico; cimbras divaricadas con 2 brácteas pequeñas; cáliz 5-apiculado; corola lila, el pétalo central un poco más oscuro y ligeramente amarillo y barbelado en la base, el tubo con líneas moradas al interior; 4 estambres didínemos, filamentos arqueados con pequeñísimos pelos glandulares; tecas negras apicifijas, divergentes, con dehiscencia longitudinal; polen blanquecino; estilo bifurcado en el ápice.....frecuente también ls parta adyacente del Edo. Mérida, alt. 50 m.; fl. Oct." he also comments that "El Dr. Moldenke cita en sus trabajos 11 *Vitex* para Colombia. Yo he agregado además a *Vitex divaricata* Sw.....García Barriga & Lozano 18443 (COL), Reyes, Tibú a Petrolea, junio 1--3 de 1968, 50 m., que he colocado aquí por la forma de sus inflorescencias y de sus hojas, y por su vecindad al Lago de Maracaibo, región en donde se he registrado para Venezuela." He also notes (1977) that "Moldenke.....cita para este taxon el Edo. Sucre. Es posible que se atribuyan a este Estado las dos colecciones paralelas citadas arriba, *Jahn* 483 y *Withford* 43, ambas de Puerto La Cruz, del Distrito Federal, no de Sucre, ni tampoco la población homónima del Edo. Anzoátegui." He cites from Venezuela the following collections: Aragua: *Pittier* 8628, *Ll. Williams* 10111 & 11119. Distrito Federal: *Clemente* 784, *Jahn* 483, *Vivas* 37, *Whitford* 43. Falcón: *Ruiz-Terán* 461. Mérida: *López-Palacios* & *Bautista* 3410, *Ruiz-Terán* 576 & 2197. Zulia: *López-Palacios* 2999. Knuth (1927) cites *Pittier* 8628 from "Miranda"; he also cites *Jahn* 483. Steyermark (1966) records the species from Sucre.

The Baileys (1976) describe the flowers as "violet or blue" and note that the wood is used for making shingles and the leaves to yield tannin. Cocker & Shaw (1962) report that the heartwood contains esters and their long-chain alcohols and acids in which the

C₃₀ compounds predominate. Uphof (1968) adds that the leaves contain 14 percent tannin. Dennis (1970) reports that the tree is host to the parasitic fungus, *Phyllachora taruma* Speg., in Trinidad and "Colombia".

Fournet (1978) regards *V. multiflora* Miq. as a synonym of *V. divaricata* Sw.

The *C. V. Morton* 4785, distributed as *Vitex divaricata*, actually is not verbenaceous.

Additional & emended citations: PUERTO RICO: *R. A. Howard* 16646 (S); *Little* 13081 (N, W--2633021), 13275 (N, W--2633046), 13698 (N, W--2632845); *Sintenis* 2601 (Ac); *Vélez* 319 (Lv); *R. J. Wagner* 560 (Ws). VIRGIN ISLANDS: Tortola: *Little* 16400 (N). LEEWARD ISLANDS: Guadeloupe: *L'Hérminier* s.n. [V-VI 1893] (N). Marie Galante: *Proctor* 20929 (Ld, W--26138-5). WINDWARD ISLANDS: St. Lucia: *R. A. Howard* 11558 (Ld); *Proctor* 17797 (W--2585081). TRINIDAD AND TOBAGO: Trinidad: *Purseglove* P.6439 (N). VENEZUELA: Distrito Federal: *Jahn* 483 (Ve, Ve, W--1065393). Zulia: *López-Palacios* 2999 (Ac, N, Z).

VITEX DIVARICATA var. *CUBENSIS* Urb.

Additional bibliography: Fedde & Schust., *Justs Bot. Jahresber.* 40 (2): 336 1915; Urb., *Arkiv Bot.* 21A (17): 110. 1929; Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 404. 1938; Alain in León & Alain, *Fl. Cuba*, imp. 1, 4: 317--318. 1957; Mold., *Phytologia* 15: 104. 1967; Mold., *Fifth Summ.* 1: 98 & 373 (1971) and 2: 716 & 924. 1971; León & Alain, *Fl. Cuba*, imp. 2, 2: 317--318. 1974.

Day encountered this plant growing in potreros. Alain (1974) lists it from "Rocas y sabanas: probable en toda Cuba."

Additional citations: CUBA: Havana: *E. H. Day* 481 (N). Province undetermined: *Sagra* 504 (P). HISPANIOLA: Dominican Republic: *Marsano* s.n. [April 19, 1962] (Jz).

VITEX DIVERSIFOLIA Kurz, Rep. Veg. Andam. App. A: 45 & 75. 1870

[not *V. diversifolia* J. G. Baker, 1900].

Additional & emended bibliography: Kurz, Rep. Veg. Andam. App. A: 45 & 75. 1870; C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 585. 1885; Brandis, *Indian Trees*, imp. 1, 504. 1906; Mold., *Phytologia* 16: 499. 1968; Brandis, *Indian Trees*, imp. 2, 504. 1971; Mold., *Fifth Summ.* 1: 285 (1971) and 2: 924. 1971.

In view of the controversy about the validity of the name herein used for this taxon, it may be worth quoting Clarke (1885) whose description is "leaves simple and 3-foliolate glabrate, leaflets sessile oblong cuneate at both ends entire, panicles terminal fulvous-strigose, bracts ovate prominent, corolla 1/3 in. Andaman Islands; Kurz. Branchlets and shoots fulvous-strigose, or subtomentose. Leaflets attaining 5 by 1 3/4 in., above with minute thinly-scattered white glands, beneath finely reticulated, microscopically white-tomentose in the depressions, obscurely puberulous on the midrib; nerves 6--8 pairs; petiole 1 1/2 in. Panicles 2--3 in., upper leaves graduating into bracts; upper bracts 1/4 in. Calyx 1/8 in., campanulate, subtruncate, fulvous-strigose. Corolla ful-

vous-villous, subtomentose. Drupe not seen." He bases the name on Kurz Andam. Rep. App. A 45 and B 14". Kurz (1870) describes the plant merely as "30 ft. tall, 12 foot bole, 2--2 1/2 ft. girth, Port Blair seashore" and "Steep hill sides along the northern coast of Port Blair from South Point to Flat Shallows, rather frequent." The original for the "B: 14" reference cited by Clarke (1885) has not been located by me -- the name does not occur in the Appendix B following the Appendix A in the 1870 work by Kurz referred to here.

Additional citations: ANDAMAN ISLANDS: South Andaman: Kurz s. n. [South Andaman] (Mu--1137--isotype, Z--isotype).

VITEX DJUMAENSIS DeWild.

Additional bibliography: Mold., Phytologia 15: 241. 1967; Mold., Fifth Summ. 1: 231 (1971) and 2: 924. 1971.

VITEX DONIANA Sweet

Additional synonymy: *Vitex umbrosa* H. T. ex Sweet, Hort. Brit., ed. 1, 1: 323. in syn. 1826 [not *V. umbrosa* Sw., 1788]. *Vitex cienkowski* Kotschy & Peyr. apud Palhinha in Ficalho, Pl. Úteis Áfr. Portug. 238. 1947. *Vitex umbrosa* "G. Don ex Sabine" apud Cuf., Senckenb. Biol. 43: 283, in syn. 1962. *Vitex cienkowski* Kotschy & Perr. apud Uphof, Dict. Econ. Pl., ed. 2, 545, in syn. 1968. *Vitex odoniana* Legris, Trav. Sect. Scient. Techn. Inst. Franç. Pond. 3 (5): 24, sphalm. 1969. *Vitex cuneata* Schum. in herb. *Vitex umbrosa* Sabine, in herb.

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[to be continued]



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