

ADDITIONAL NOTES ON THE GENUS *VITEX*. XXI

Harold N. Moldenke

VITEX OBANENSIS Wernham

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 42: 252. 1920; Mold., Phytologia 15: 312. 1967; Mold., Fifth Summ. 1: 223 (1971) and 2: 927. 1971; Mold., Phytol. Mem. 2: 213 & 592. 1980.

VITEX OBOVATA E. Mey.

Additional bibliography: Harv., Gen. S. Afr. Pl., ed. 1, 270. 1838; D. Dietr., Syn. Pl. 3: 612. 1843; Buek, Gen. Spec. Syn. Candoll. 3: 502. 1858; T. R. Sims, Sketch Check-list Fl. Kaffr. 63. 1894; Stapf, Ind. Lond. 6: 479. 1931; Mold., Phytologia 15: 312. 1967; Mold., Fifth Summ. 1: 258 (1971) and 2: 927. 1971; Palmer & Pitman, Trees South. Afr., ed. 2, 3: 1951 & 1961. 1972; Mold., Phytol. Mem. 2: 246 & 592. 1980.

Palmer & Pitman (1972) refer to this species as the "Cape vitex" and describe it as "a species of the eastern Cape -- and possibly of Natal -- a small tree with angled, hairy young twigs much marked with leaf scars. The 3--5 almost stalkless leaflets that make up the leaves are smallish, 2.5--5 cm. long and less than 2.5 cm. broad, typically egg-shaped or oblong, the tips often with a short jutting point, the bases narrowed, velvety when young, especially along the midrib and margins, becoming less hairy or smooth, with about 6--10 inconspicuous pairs of veins, the margins untoothed. The leaves are borne on shortish stalks less than 2.5 cm. long. The white flowers are in branching heads on long stalks in the axils of the leaves. They bloom about November. The small round fruit, ripe about April, is encircled by a pronounced lobed calyx."

VITEX ODORATA Huber

Additional bibliography: Mold., Phytologia 15: 312. 1967; Mold., Fifth Summ. 1: 180 (1971) and 2: 927. 1971; Mold., Phytol. Mem. 2: 172 & 592. 1980.

VITEX ORINOCENSIS H.B.K.

Additional & emended synonymy: *Vitex orinocensis* Kunth apud Spreng. in L., Syst. Veg., ed. 16, 2: 757. 1825. *Vitex orinocensis* Humb. & Kunth apud D. Dietr., Syn. Pl. 3: 612. 1843.

Additional bibliography: Spreng. in L., Syst. Veg., ed. 16, 2: 757. 1825; D. Dietr., Syn. Pl. 3: 612. 1843; Schau. in A. DC., Prodr. 11: 688. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 502. 1858; Pittier, Contrib. U. S. Nat. Herb. 20: 484. 1922; Knuth, Feddes Repert. Spec. Nov. Beih. 43: [Init. Fl. Venez.] 607. 1927; Stapf, Ind. Lond. 6: 479. 1931; Macbr., Field Mus. Publ. Bot. 13 (5): 692 & 696. 1960; Mold., Phytologia 17: 20--21. 1968; Mold., Résumé Suppl. 16: 29. 1968; Lasser, Act. Bot. Venez. 4: 48. 1970;

Mold., Fifth Summ. 1: 121, 128, 131, 133, 134, 144, 179, 180, & 374 (1971) and 2: 723, 725, 927, & 928. 1971; López-Palacios, Pittiera 5: 47. 1973; López-Palacios, Revist. Fac. Farm. Univ. Andes 9 (13): 56. 1973; Mold., Phytologia 27: 368. 1973; Lasser, Braun, & Steyerm., Act. Bot. Venez. 9: 36. 1974; Mold., Phytologia 28: 435 & 452. 1974; Finol U., Act. Bot. Venez. 11: 25, 46, 48, 53, & 55. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 98--102, fig. [20]. 1975; Mold., Phytologia 34: 256 & 257. 1976; Ortega U., Cienc. Naturaleza 17: 23. 1976; Soukup, Biota 11: 20. 1976; López-Palacios, Fl. Venez. Verb. 581, 582, 609, 614--623, & 654. 1977; Mold., Phytologia 36: 32. 1977; Steyerm. & Huber, Fl. Avila 861 & 868. 1978; López-Palacios, Revist. Fac. Farm. Univ. Andes 20: 33. 1979; Mold., Phytologia 44: 387. 1979; Mold., Phytol. Mem. 2: 112, 121, 123, 125, 126, 130, 136, 171, 172, 367, 459, & 592. 1980.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [615], fig. 143. 1977.

Recent collectors describe this plant as a tree, 8--20 m. tall, the trunk to 40 cm. in diameter, "casca fissurada, descascande em placas verticais, o corte de casca éxida de creme a uma coloração ferruginosa", the leaves mostly 3-foliolate, sometimes 1- or 5-foliolate, calyx truncate, stamens rather dark lilac in color, and have found it in flower in April and October at 400 m. altitude. The corollas are said to have been "violet" in color on López-Palacios 3912 and "light-lilac" on Mori & Benton 12868. López-Palacios, in a personal communication to me, lists the vernacular name, "tassajo", for this species. In his 1975 work he says: "Parece que su área de dispersión es muy restringida. Para Venezuela sólo he examinado e inventariado 4 registros: la colección típica en el Herbario Willdenow, Pittier 12356 y 12489, y Tamayo 4048. Este último ejemplar bien puede ser *V. orinocensis* var. *multiflora*, pues es de 3 folíolos y estos muy obtusos. Ha sido citado para el Guárico, aunque en su rótulo no se señala el lugar de recolección; sólo trae esta indicación: 'Crece en las orillas del Río Orinoco y en la llamada montaña de Carapa, Parmana, Edo. Guárico....Comision borrachera'." In his 1977 work he cites the latter collection as "Tamayo 4088". He cites the type, Bonpland 832, from Amazonas, but Knuth (1927) cites it from Bolívar. Macbride (1960) incorrectly cites the original publication by Humboldt, Bonpland, and Kunth as "1818". Lasser and his associates (1974) record the species as cultivated in Venezuela.

The *Aristeguieta* & *Zabala* 7025, distributed in some herbaria as *V. orinocensis*, seems better regarded as *V. appuni* Mold., while Gentry & Puig-Ross 14292 is *V. orinocensis* var. *multiflora* (M.) Huber and Schunke Vigo 1768 & 2913 are not verbenaceous.

Additional citations: COLOMBIA: Meta: López-Palacios 3912 (Z). BRAZIL: Bahia: Mori & Benton 12868 (Z).

VITEX ORINOCENSIS var. *GLABRA* Mold.

Additional bibliography: Mold., Phytologia 15: 513. 1967; Mold., Fifth Summ. 1: 121 (1971) and 2: 927. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 20: 33. 1979; Mold., Phytol. Mem. 2: 112 & 592. 1980.

VITEX ORINOCENSIS var. *MULTIFLORA* (Miq.) Huber

Additional synonymy: *Vitex orinocoensis* Huber ex Mold., Résumé 387, in syn. 1959. *Vitex orinocoensis* var. *multiflora* Miq. ex Mold., Phytol. Mem. 2: 459, in syn. 1980

Additional bibliography: Schau. in A. DC., Prodr. 11: 690. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 502. 1858; Stapf, Ind. Lond. 6: 479. 1931; Macbr., Field Mus. Publ. Bot. 13 (5): 696. 1960; Mold., Phytologia 17: 20--21. 1968; Mold., Résumé Suppl. 16: 29. 1968; Lasser, Act. Bot. Venez. 4: 48. 1970; Mold., Fifth Summ. 1: 121, 128, 131, 133, 134, 144, 179, & 180 (1971) and 2: 723, 725, & 928. 1971; López-Palacios, Pittiera 5: 47. 1973; López-Palacios, Revist. Fac. Farm. Univ. Andes 9 (13): 56. 1973; Mold., Phytologia 27: 368 (1973) and 28: 435. 1974; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 98--102, fig. [20]. 1975; Mold., Phytologia 34: 256 & 257. 1976; Ortega U., Cienc. Naturaleza 17: 23. 1976; Soukup, Biota 11: 20. 1976; López-Palacios, Fl. Venez. Verb. 581, 582, 609, 616--623, & 654, fig. 144. 1977; Mold., Phytologia 36: 32. 1977; Steyer. & Huber, Fl. Avila 861, [865], & 868, fig. 301B. 1978; López-Palacios, Revist. Fac. Farm. Univ. Andes 20: 33. 1979; Mold., Phytologia 44: 415. 1979; Mold., Phytol. Mem. 2: 112, 121, 123, 125, 126, 130, 136, 171, 172, 367, 459, & 592. 1980.

Additional illustrations: López-Palacios, Revist. Fac. Farm. Univ. Andes 15: fig. [20]. 1975; López-Palacios, Fl. Venez. Verb. [618], fig. 144. 1977; Steyer. & Huber, Fl. Avila [865], fig. 301B. 1978.

Recent collectors describe this plant as a tree, 6--25 m. tall, low-branched, the trunk to 1.15 m. in circumference and 50 cm. in diameter at breast height, the bark shallowly and finely fissured, brownish-gray, the leaves 3--5-foliolate, of 2 sizes, the central leaflet larger, all papery, pale-green, slightly glossy above, the cymes divaricate, the anthers dark-blue, and the fruit often sparse, at first green, turning black. They have found it growing along riversides and in adjacent forests, among roadside vegetation, in forests and swampy depressions on level terrain, and in old capoeira with *Orbignya* palms, at 30--1500 m. altitude, in anthesis from March to June and September to November, and in fruit in January, May to August, and October.

The corollas are said to have been "blue" on Aristeguieta & Zabala 7025, Gentry & Puig-Ross 14313, and Prance & al. 7892, "blue-violet" on Irwin & al. 55608, "lilac" on Romero C. 8305, "purple" on Steyermark & al. 120471, "pale-purple" on Breteler 3662, and "pale-blue with a small pubescent yellow patch on the lower petal" on Daly & al. D.631.

Recent collectors report the following vernacular names for this plant: "aceitillo", "aceituna", "aceituno", "aceituno negal", "aquariquari branca", "chitinim", "guarataro", "guarataro negro", "palo de arco", "pao-kera", "pechiche", and "rac-kara".

Ruiz-Terán and his associates describe the plant as an "árbol erecto, inerme, 4--15 m.; tronco irregularmente cilíndrico, heuce, 8 cm.--1,2 m. de diámetro basal, hojas opositi-decusadas, predominantemente 3-foliolado-digitadas, folíolos desiguales,

cartaceas, verde intensos, lucientes por la haz, más claras por el envés. Ejes inflorescenciales y pedicelos y cáliz pardo reji-zos a pardo purpúreos; corola blanca en la base del tubo, el resto, morado subintenso, con zonas más claras; filamentos morado claros: anteras pardo negruzcas; drupas maduras atropurpúreas". López-Palacios (1973) reports that the leaves are either opposite or ternate. Breteler refers to the plant as a lowland "species", while Gentry & Puig-Ross report it "common" in Táchira, Venezuela.

López-Palacios (1977) cites the following collections from Venezuela: Amazonas: Holt & Blake 679, Maguire & Wurdack 34759, Medina E.387, Spruce 3653, Ll. Williams 15177. Apure: Chardon 142, Foldats 3515, Geay s.n., Ruiz-Terán 1841, Trujillo 2159, Vélez 2258 & 2699. Aragua: Pittier 14095. Barinas: Araque 8 21, Bernardi 1205 & 6849, Breteler 3663 & 3907, Gutiérrez 20 & 83, Little 15028, López-Palacios 2750, 2805, & 3147, Marcano-Berti & Torres-Lezama 192, Ramia 1690 & 1692, Rodríguez 1541, Ruiz-Terán 1769, Steyermark & al. 102008. Bolívar: Bernardi 2915, Marcano-Berti 2519, Ruiz-Terán 2582, Ruiz-Terán, Carabot, & Morales 10804, Ruiz-Terán & López-Palacios 11679, Steyermark 90773, Ll. Williams 13295. Carabobo: Saer 802. Cojedes: Pittier 11682, Vivas 102. Distrito Federal: Dillewijn s.n., Labbiente 33, Moritz 1148 & 1726. Falcón: Ruiz-Terán & López-Palacios 10353. Guárico: Aristeguieta 4574, Christ 3, Pittier 11797. Lara: Saer 422. Mérida: López-Palacios & Bautista 3311. Miranda: Aristeguieta 2801, Delgado 331, Tamayo 1505. Monagas: Aristeguieta 1727. Portuguesa: Aristeguieta & Zabala 6918. Tachira: Ijjasz & Madriz 378, López-Palacios 3593. State undetermined: Chardon 57.

Material of this variety has been misidentified and distributed in some herbaria as *V. appuni* Mold., typical *V. orinocensis* H.B.K., and *V. stahelii* Mold. [which has the peduncles shorter than the petioles, while in *V. orinocensis* var. *multiflora* the peduncles are notably longer than the petioles].

Additional citations: COLOMBIA: Antioquia: Gentry, Soejarto, Zarucchi, & Fallen 17938 (N). Arauca: López-Palacios 1991 (N), 2960 (N). Córdoba: López-Palacios 3858 (Ac, N). Cundinamarca: Uribe Uribe 6036 (E--1988368). Santander: Romero C. 8305 (N). VENEZUELA: Amazonas: Foldats 100a (W--2705441); Medina 387 (Ld). Barinas: Breteler 3662 (Mu, N, S), 3907 (N); López-Palacios 3147 (Ld, N); Steyermark, Bunting, & Blanco 102008 (Ld). Bolívar: Ruiz-Terán, Carabot, & Morales 10804 (Ld); Ruiz-Terán & López-Palacios 11679 (Mi). Distrito Federal: Manara s.n. [21-5-77] (N). Guárico: Aristeguieta & Zabala 7025 (N). Táchira: Gentry & Puig-Ross 14292 (N), 14313 (N); López-Palacios 3593 (N, N); Steyermark & Liesner 119349 (Ld); Steyermark, Liesner, & González 120471 (Ld). Raton Island: Bossio 12 (N). State undetermined: Cuatrecasas 4150 (W--2780389). SURINAM: Florschütz & Maas 2787 (Ld, W--2857197); Irwin, Prance, Soderstrom, & Holmgren 55608 (N, W--2737054). FRENCH GUIANA: Sagot 1013 (Pd). ECUADOR: Morena Santiago: Little, Ortega, & Vivar 732 (Ld). PERU: Loreto: Gentry, Diaz, Aronson, & Jaramillo 25834 (Ld); Gentry, Diaz, & Jaramillo 21818 (Ld, N); Revilla 2145 (N). BRAZIL: Acre: Prance, Coelho, Ramos, & Farias 7892 (Ld, N). Maranhão: Daly,

Campbell, Silva, Bahia, & Santos D.631 (Ld), D.742 (Ld); Ribeiro & Pinheiro 1176 [Herb. IPEAN. 151835] (Ld); Rosa & Vilar 2956 (N).

VITEX OSCITANS Mold.

Additional bibliography: Mold., *Phytologia* 15: 313--314. 1967; Mold., *Fifth Summ.* 1: 263 (1971) and 2: 724 & 928. 1971; Mold., *Phytol. Mem.* 2: 252 & 592. 1980.

VITEX OXYCUSPIS J. G. Baker

Additional & emended bibliography: J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 316 & 326--327. 1900; Hutchins. & Dalz., *Fl. W. Trop. Afr.*, ed. 1, 2: 276 & 277. 1931; Gledhill, *Check List Flow. Pl. Sierra Leone* 30. 1962; Anon., *Assoc. Etud. Tax. Fl. Afr. Trop. Index* 1967: 62. 1968; Mold., *Phytologia* 17: 21 & 42. 1968; Mold., *Fifth Summ.* 1: 218--221, 223, 232, 239, 245, & 253 (1971) and 2: 928. 1971; Jaeger & Mold., *Phytologia* 30: 403. 1975; Mold., *Phytologia* 34: 261. 1976; Odebiyi & Sofowora, *Lloydia* 41: 245. 1978; Mold., *Phytologia* 44: 480. 1979; Mold., *Phytol. Mem.* 2: 209--211, 213, 221, 228, 235, 242, & 592. 1980.

Adebiyi & Sofowora (1978) report finding saponins and tannins in the leaves and stems (but not in the roots) of this plant. Cooper describes it as a tree, 30--35 feet tall, the trunk 7--8 inches in diameter at breast height, and found it "common" in Liberia, where it is called "kpar-seh". Jaeger & Moldenke (1975) report it from a low forest "sur palier à *Gaertnera paniculata*" in Sierra Leone, commenting that the "Espèce proche de *V. micrantha* dont elle se distingue par ses feuilles plus grandes, grossièrement dentées et longuement acuminées", and giving its overall distribution as Sierra Leone, Liberia, Ivory Coast, Southern Nigeria, and Angola. Baker (1900) cites only *Mann 2243* from Nigeria; Hutchinson & Dalziel (1931) cite *Mann 2243*, *Cooper 321*, *Chevalier 17371*, *Kitson 1001*, and *Unwin & Smythe 37*, adding Gold Coast to the distribution area. In their 1963 work they cite *Small 613* and *Unwin & Smythe 37* from Sierra Leone, *Cooper 321* from Liberia, *Boughey GC.14858* from Ivory Coast, and *Jones & Keay FHI.14236*, *Mann 2243*, *Onochie FHI.36163*, *Ross 234*, and *Talbot 2061 bis* from Southern Nigeria.

Additional citations: LIBERIA: *Adam 27397 (E--2129040)*; *G. P. Cooper 321 [Herb. Mus. Yale Sch. Forest. 15228] (W--1378491)*; *Mayer 19 (W--2630358)*.

VITEX OXYCUSPIS var. *MOSSAMBICENSIS* Mold.

Additional bibliography: Anon., *Assoc. Etud. Tax. Fl. Afr. Trop. Index* 1967: 62. 1968; Mold., *Phytologia* 17: 21 & 42. 1968; Mold., *Fifth Summ.* 1: 253 (1971) and 2: 928. 1971; Mold., *Phytologia* 34: 261 (1976) and 44: 480. 1979; Mold., *Phytol. Mem.* 2: 228 & 592. 1980.

Recent collectors refer to this plant as a shrub with a woody base, 30 cm. tall, with opposite long-petiolate leaves with pink veins, and have encountered it in grassland with coconut forest patches.

Additional citations: TANZANIA: Tanganyika: *Harris, Tadros, & Macaulay BJH.5298 (Z)*.

VITEX PACHYCLADA J. G. Baker

Additional bibliography: Mold., *Phytologia* 15: 315. 1967; Mold., *Fifth Summ.* 1: 263 (1971) and 2: 928. 1971; Mold., *Phytol. Mem.* 2: 252 & 592. 1980.

VITEX PACHYPHYLLA J. G. Baker

Additional & emended bibliography: J. G. Baker in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 5: 317 & 328. 1900; A. Chev., *Vég. Util. Afr. Trop. Franç.* 9: 281 & 344--345, pl. 25. 1917; Janssonius, *Mikrogr. Holz.* 812. 1926; Good & Exell, *Journ. Bot.* 68: Suppl. 144. 1930; Kribs, *Comm. For. Woods*, ed. 2, 162, fig. 475. 1959; Saint Aubin, *Forêt Gabon* [194] & 206. 1963; Bouquet, *Invent. Pl. Méd. Tox. Cong. Braz.* 33. 1967; Mold., *Phytologia* 15: 315. 1967; Kribs, *Comm. For. Woods*, ed. 3, 162, fig. 475. 1968; Mold., *Fifth Summ.* 1: 226 & 227 (1971) and 2: 928. 1971; Hegnauer, *Chemotax. Pfl.* 6 [Chem. Reihe 21]: 679. 1973; Mold., *Phytologia* 44: 390. 1979; Mold., *Phytol. Mem.* 2: 216, 217, 235, & 592. 1980.

Additional illustrations: Kribs, *Comm. For. Woods*, ed. 2, fig. 475 (1959) and ed. 3, fig. 475. 1968..

Gossweiler refers to this plant as a hydrophyte, 15 m. tall, and encountered it at sealevel, fruiting in August. Vernacular names reported for it are "angona", "evino", and "nto", names all also applied to *V. ciliata* Pierre, as well as "koudou", "evou", and "ewu". Kirk describes the wood as follows: "Color uniform light yellowish or grayish brown. Luster slightly golden. Odor and taste not distinct. Rather light and soft, sp. gr. 0.53 (air dry); weight 33 lbs. per cu. ft. Grain straight to slightly interlocked. Texture medium fine." He also describes it in anatomical detail, commenting that it is used for furniture and cabinet work, interior finish, millwork, veneer, and plywood in Gabon, French Guinea, and Cameroons.

Baker (1900) cites only the type collection, Mann 994, from the Gabonese Republic. Good & Exell (1930) cite only Gossweiler 9199 from Kongo, noting that the species also occurs in "Gaboon and Congo [Zaire]".

The Krukoff 119, distributed as *V. pachyphylla*, actually is *V. barbata* Planch.

VITEX PADANGENSIS H. Hallier

Additional bibliography: Mold., *Phytologia* 15: 315. 1967; Mold., *Fifth Summ.* 1: 328 (1971) and 2: 928. 1971; Mold., *Phytologia* 46: 466. 1980; Mold., *Phytol. Mem.* 2: 319 & 593. 1980.

It seems very possible that this taxon may actually prove to be a species of *Teijsmanniodendron*.

VITEX PANSHINIANA Mold.

Additional synonymy: *Vitex paushiniana* Mold., *Phytol. Mem.* 2: 459, in syn. 1980.

Additional bibliography: Braga, *Fl. Nordest.*, ed. 2, 338. 1960; Mold., *Phytologia* 15: 315. 1967; Mold., *Résumé Suppl.* 17: 12. 1968; Mold., *Fifth Summ.* 1: 144 & 179 (1971) and 2: 725 & 928. 1971; Mold., *Phytologia* 23: 418 (1972), 28: 437 (1974), and

34: 280. 1976; Soukup, Biota 11: 20. 1976; Mold., Phytologia 44: 482 & 485. 1979; Mold., Phytol. Mem. 2: 125, 136, 171, 459, & 593. 1980.

Recent collectors describe this plant as a tree, 7.7--20 m. tall, the trunk 30--68 cm. in diameter at breast height, with no buttresses, the bark about 1.3 cm. thick, flaking longitudinally, rather evenly fissured, the wood blaze light-yellowish, darkening rapidly on exposure to air, the flowers visited by many bees, the filaments pale-purple or blue-purple, the anthers dark-gray or dark-brown, the style and stigma pale-purple, and have found it growing in wet tropical forests, in low forests in the transition from cerrado to Amazonian forest, frequent in gallery forests, on open savannas near forest margins, in the transition zone to "seashore forest" islands, and "with treelets between great groups of rocks", at 4--500 m. altitude, in anthesis in August and October. Oldenburger and his associates describe the corollas as "blue purplish or bluish-purple, inner side with clear or dark purple stripes, petals dirty-white or bluish-white, the upper side purplish, the lower side pale yellow-green, inner side of lip blue-purple". The corollas are described by other collectors as: "pale-blue" on Richards & al. R.501, "violet" on Herb. Fr. Guian. Forest Serv. s.n., "purple outside, white within" on Maguire 56153, and "upper lobe deep-blue, others pale-blue, eye yellow with dark-blue lines" on Prance & Silva 58615.

Vernacular names reported for the species are "malocopeici", "quinilla colorada", and "tarumao", the last-mentioned applied to most species of the genus in Brazil. Arostequi V. 104-I serves as herbarium voucher for a wood sample collected for the Forest Products Laboratory at Madison, Wisconsin.

Interestingly, Braga (1960) regards the species as a synonym of *V. flavens* H.B.K. Material has been misidentified and distributed in some herbaria as *V. polygama* var. *bakeri* Mold., *Boraginaceae*, and *Sapotaceae*!

Additional citations: SURINAM: Oldenburger, Norde, & Schulz ON. 323 (N), ON.360 (N, W--2673788). FRENCH GUIANA: Herb. Fr. Guian. Forest Serv. s.n. [4 fevrier 1955] (N). PERU: Loreto: Arostequi V. 104-I [muestra 123-AAV & 75-AAV] (Ws, Ws, Ws). BRAZIL: Maranhão: Prance & Silva 58615 (Ac, N). Mato Grosso: Maguire, Murça Pires, Maguire, & Silva 56153 (N, N); Richards, Ratter, Ramos, & Argent R.501 (N). Pará: Coradin 101 (Ld).

VITEX PANSHINIANA var. *PULCHRA* Mold.

Additional bibliography: Mold., Phytologia 15: 315. 1967; Mold., Fifth Summ. 1: 179 (1971) and 2: 928. 1971; Mold., Phytol. Mem. 2: 171 & 593. 1980.

VITEX PARVIFLORA A. L. Juss.

Additional synonymy: *Cofassus mas* Rumpf, Herb. Amboin. 3: 28, pl. 14, fig. A. 1743. *Cofassus mas seu rubra* Rumpf, Herb. Amboin. 3: 28, pl. 14, fig. A. 1743. *Vitex paraflora* Lamb. & Bruns. ex Mold., Fifth Summ. 1: 725, in syn. 1971. *Vitax parviflora* Juss. ex Mold., Phytol. Mem. 2: 456, in syn. 1980. *Vitex timoriana* Walp., in herb.

Additional & emended bibliography: Rumpf, *Herb. Amboin.* 3: 28--30, pl. 14, fig. A. 1743; D. Dietr., *Syn. Pl.* 3: 611. 1843; Walp., *Repert. Bot. Syst.* 4: 84--85. 1844; Schau. in A. DC., *Prodr.* 11: 686, 695, & 696. 1847; Buek, *Gen. Spec. Syn. Candoll.* 3: 501 & 502. 1858; Naves & Fern.-Villar in Blanco, *Fl. Filip.*, ed. 3, 6: pl. 227 (1878) and ed. 3, 4: 160. 1880; Vidal, *Sin. Fam. Gen. Pl. Leñ. Filip. [Introd. Fl. For. Filip.]* 2: 35--36 & 201, pl. 75C. 1883; Vidal y Soler, *Phan. Cuming. Philip.* 37, 48, 71, & 134. 1885; E. D. Merr., *Fl. Manila, imp.* 1, 403 & 404. 1912; Sydow, *Ann. Mycol.* 12: 551. 1914; W. H. Br., Merr., & Yates, *Philip. Journ. Sci. Bot.* 12: 240. 1917; Heyne, *Nutt. Plant. Ned. Ind.*, ed. 1, 113--114. 1917; E. D. Merr., *Philip. Journ. Sci. Bot.* 12: 391. 1917; H. J. Lam in Lam & Bakh., *Bull. Jard. Bot. Buitenz.*, ser. 3, 3: 49 & 50. 1921; Kalaw & Sacay, *Philip. Agriculturist* 14: 427. 1925; Fedde & Schust., *Justs Bot. Jahresber.* 47 (2): 246. 1927; Peteri, *Journ. Chem. Soc.* 1939: 1635--1637. 1939; Peteri, *Chem. Abstr.* 34: 764. 1940; Fedde & Schust., *Justs Bot. Jahresber.* 60 (2): 576. 1941; Bor & Raizada, *Some Beaut. Indian Clim.* [136]. 1954; Pételot, *Pl. Méd. Camb. Laos Vietn.* 2: 250 (1954) and 4: 171. 1954; Natarajan, *Phyton* 8: 24 & 35. 1957; Estores Anzaldo, Marañon, & Ancheta, *Philip. Journ. Sci. Bot.* 86: 236. 1958; Hansford, *Sydowia Ann. Myc.*, ser. 2, *Beih.* 2: 695. 1961; Burkill, *Dict. Econ. Prod. Malay Penins.* 2: 2277, 2278, & 2280. 1966; Hyland, *U. S. Dept. Agr. Pl. Invent.* 168: 196. 1967; Tingle, *Check List Hong Kong Pl.* 38. 1967; Brugues [ed. P. Fernandez], *Act. Manil.* 4: 73 & 80. 1968; E. D. Merr., *Fl. Manila, imp.* 2, 403 & 404. 1968; Mold., *Phytologia* 17: 8, 12, 13, & 21. 1968; Mold., *Résumé Suppl.* 16: 13. 1968; Uphof, *Dict. Econ. Pl.*, ed. 2, 122, 338, & 545. 1968; Angely, *Fl. Anal. Fitogeogr. Est. S. Paulo*, ed. 1, 4: 828 & xix. 1970; B. C. Stone, *Micronesica* 6: [Fl. Guam] 508 & 509. 1970; Farnsworth, *Pharmacog. Titles* 5, *Cumul. Gen. Ind.* 1971; Mold., *Fifth Summ.* 1: 106, 318, 319, 328, 331, 333, 339, 351, & 374 (1971) and 2: 713, 715--718, 720, 721, 725, 728, 791, & 928. 1971; Mold. in Woodson, Schery, & al., *Ann. Mo. Bot. Gard.* 60: 131--132 & 148. 1973; Gibbs, *Chemotax. Flow. Pl.* 3: 1752. 1974; León & Alain, *Fl. Cuba, imp.* 2, 2: 318. 1974; Mold., *Phytologia* 31: 412. 1975; Molina R, *Ceiba* 19: 96. 1975; Zimmerm. & Ziegler in Zimmerm. & Milburn, *Transp. Pl.* 1 [Pirson & Zimmerm., *Encycl. Pl. Physiol.*, ser. 2, 1]: 503. 1975; Mold., *Phytologia* 34: 270. 1976; L. H. & E. Z. Bailey, *Hortus Third* 1162. 1976; Clay & Hubbard, *Haw. Gard. Trop. Shrubs* 185 & 294. 1977; Mukherjee & Chanda, *Trans. Bose Res. Inst.* 41: 40 & 52. 1978; Fosberg, Sachet, & Oliver, *Micronesica* 15: 239. 1979; López-Palacios, *Revist Fac. Farm. Univ. Andes* 20: 34. 1979; Mold., *Phytologia* 44: 348, 404, & 485 (1979) and 46: 26 & 466. 1980; Fosberg, Otobed, Sachet, Oliver, Powell, & Canfield, *Vasc. Pl. Palau* 38. 1980; Mold., *Phytol. Mem.* 2: 98, 112, 288, 309, 310, 319, 321, 323, 329, 341, 367, 394, 456, 457, & 593. 1980; Mold., *Phytologia* 48: 456. 1981.

Emended illustrations: Vidal, *Sin. Fam. Gen. Pl. Leñ. Filip. [Introd. Fl. For. Filip.]* 2: pl. 75C. 1883.

Recent collectors describe this plant as a small or medium-

sized tree, 6--25 m. tall, spreading, the clear bole to 10 m. high, girth to 2 m., the wood strong and hard [or "soft" according to Falanruw], light-brown to straw-yellow, easy to work, the bark papery or scaly, the outer bark greenish or brownish to gray or white, the inner bark yellowish or yellow to greenish-white, reddish or brownish-yellow, the sapwood pale-yellow or yellowish-white, the flower panicles large, the flowers small, delicate, "borne at twig tips", mildly fragrant, and the fruit at first dark-green or greenish, then reddish-yellow, finally blue-black, "a small berry [actually a drupe!] the size of a blueberry". They have found it growing in brownish, sandy black, or coralline soil, in open places near the seashore, open forests, and both primary and secondary forests on hillsides and on ridgetops, from sealevel to 650 m. altitude, in anthesis from July to September and November, in fruit in August, September, and November.

The corollas are described as "blue to purplish" by the Baileys (1976) and are said to have been "light-blue" on Seibert 1535, "pale-blue" on Lambert & Brunson 116 and Pancho 98, "lilac-blue" on Gillis 10996, "deep-blue" on Gillis 8389, "violet" on Rbalo 257 and Falanruw 954, and "blue-purple, the central petal darker" on López-Palacios 4313. The Herb. Philip. Lumber Develop. Co. collection, cited below, represents a juvenile form with the leaflets elongate-elliptic and coarsely and antrorsely serrate from the middle to the apex. Loher 4428 is a mixture with *f. sterilis* H. J. Lam.

Fosberg & al. (1979) list this species from Guam in the Marianas Islands and from "Tor uil" in the Palau Islands. Clay & Hubbard (1977) list it as cultivated in Hawaii, Tingle (1967) as cultivated in Hong Kong, and Molina (1975) as cultivated in Honduras. Stone (1970) refers to it as a Philippine species "evidently introduced lately to Guam". Brown (1917) and Merrill (1917) list it from Volcano island; Gillis found it cultivated in Florida from material brought from the Philippines. Backer & Bakhuizen (1965) say of it: "Native to the Philippines and the eastern part of Malesia; stated to have once been collected near Cheribon [Java]". Rundi asserts that it is "not very common" in Sabah. López-Palacios says that it was "possibly introduced" in Colombia.

Hansford (1961) records the parasitic fungus, *Meliola cookeana* Speg., on this species in the Philippines, based on Philip. Bur. Sci. 294, and *M. rizalensis* Syd. based on Sydow 379, Philip. Bur. Sci. 23971 & 24629.

Vernacular names recently reported for *Vitex parviflora* are "amugauan", "chaste-tree", "daon kajuh, kulah", "hamolauon", "kajoe koela", "kajuh kulah", "kula", "molabe", "molauin", "molave", "molave chaste-tree", "mulawin", "small-flowered vitex", and "Timor chaste tree".

The Baileys (1976) say that the species is from the "Malay Archipelago, Philippine Islands, and Hawaii" and that its wood is utilitarian. Eballo notes that it "makes firstclass lumber". Lambert & Brunson refer to it as "one of the most important Philippine woods"; Fernandez (1968) says of it: "a universally ap-

preciated wood because of its unsurpassable qualities for all kinds of solid construction". Uphof (1968) adds "suitable for turnery and household goods". Seibert tells us that it was "introduced into Panama because the wood was used to make railroad ties". Teijsmann (1874) says: "een aftreksel van den bast op Timor wordt gedronken tegen geelen waterzucht". Kalaw & Sacay (1925) report hydrocyanic acid and saponin present in the leaves, bark, roots, and fruit, adding that because of this the bark is used as a fish-poison. Gibbs (1974) reports cyanogenesis present in "probably all parts" of the plant.

Fernandez-Villar (1880) avers that he observed living plants of this species on both Luzon and Panay islands in the Philippines and that it is common around Manila. He regarded "*V. altissima* Naves (non Blanco)" as a synonym of what he called *V. timoriensis* Walp., but both *V. timoriensis* Walp. and *V. altissima* Blanco, as well as *V. altissima* Naves, are now regarded as conspecific with and synonyms of *V. parviflora*, as is also the *V. geniculata* Blanco which he maintains as distinct. It should be noted that Walpers' binomial, *V. timoriensis*, is merely a new name for the *V. littoralis* of Decaisne, which Walpers rightly recognized as being a later and therefore invalid homonym of Cunningham's earlier *V. littoralis* (now known as *V. lucens* T. Kirk). The *Herb. Mus. Paris s.n.* [Timor] specimen in the Torrey Herbarium, cited below, is probably an isotype of *V. littoralis* Decne. and therefore also of *V. timoriensis* Walp.

In regard to the Rumpf pre-Linnean names listed in the synonymy (above) it is worth noting again Rumpf's original statement (1743): "Post *Metrosideri* species hoc celebre tignum suum obtinet locum, cujus tres nobis obvenere species: Primo 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 plate 14 figs. A and B are drawn as attached to each other! Of these "A" is trifoliolate (probably representing *V. parviflora* A. L. Juss.) while "B" is unifoliolate (probably representing *V. cofassus* Reinw.); "A" is in flower. "B" is in fruit. "A" probably represents *Cofassus mas* Rumpf and *Cofassus mas seu rubra* Rumpf; "B" probably represents *Cofassus alba* Rumpf and *Cofassus femina* Rumpf. "A" is inscribed on the plate as "folia maris" and "B" as "femina".

Decaisne's (1834) original description of his *V. littoralis* is long and detailed, ending with the observation that "Cette espèce voisine du *Vitex Leucoxylon* Linn. fil. s'en éloigne par plusieurs caractères tels que celui des feuilles qui sont toujours au nombre de trois, très glabres, opaques sur les deux faces, noircissant par la dessiccation, et par des panicules plus étalées. Ces caractères observés sur les échantillons recueillis à Timor, se sont retrouvés exactement les mêmes sur la plante rapportée de de Manille par les naturalistes de l'expédition de la Favorite, qui commandait M. le capitaine Laplace."

Blanco's original description (1837) of his three species, difficult to find in most libraries, is worth repeating in full here: "*Vitex Latifolia*. *Vitex* de hojas anchas. Hojas ternadas. Hoju-

elas oblicuamente aovadas anchas tiesas, alargadas y aguzadas. Peciolo propios cortes. Flores terminales en panoja dicotoma. Cal. pequenísimo, con cinco diemtecillos. Cor. con el extremo del tubo de figura de campana, bilabiada. El labio superior escotado: el inferior hendido con tres lacinias: la del medio mayor, con lana en la garganta y paladar. Estigma en dos partes. Lo demas, como en las otras especies. = Arbol comun en los montes de S. Mateo. Las hojas son mas anchas que en los otros molabres; y no son blanquecinas por debajo. El uso de esta arbol conocido en las cercanias de Manila, es el mismo que el de sus congeneros, de que hablaré adelante. Flor. en Abr. * T, Molauin, Hamuraon, Bulaon.

"*Vitex Geniculata*. *Vitex* con nudos. Hojas de tres en tres, ó de cinco sobre un peciolo comun. Hojuelas lanceoladas, algo vellosas en las orillas, y vena del medio. Peciolo comun con un nudo acia el medio, desde donde se dobla un poco en otro sentido. Peciolo propio corto. Flores en panoja verticilada. Cal. mui pequeño, derecho, de figura de campana, con tres ó cuatro dientes. Cor bilabiada de figura de campana; el tubo encorvado y ensanchado por arriba. El labio superior escotado: el inferior con tres lacinias: la del medio mayor, con lana en la garganta, y paladar. Estam. didinamos, vellosos por la parte inferior. Ant. de figura de media luna. Estilo del largo de los estambres. Estigma bifido. Drupa pequeña globosa, con una nuez como en las otras especies. = Este arbol se eleva mas de cincuenta pies, y muchas veces es torcido. Su madera tiene la primacia entre todas las que se conocen en Filipinas, y es de un uso immenso. Se aprecia para todo genero de obras; pero las habitaciones de molabre igualmente que las de ipil ó balayon son mui frias. Su color tira en poco a pagizo, y cuando se le trabaja, despidе olor de miel. Es durisima, y vidriosa: y así se asierra y labra facilmente; pero suele tener nudos, y agugeros: y esta es la mas dura: porque la que es mui limpia, no lo es tanto. Metida en tierra, en el agua, ó en la cal, dura muchismo tiempo. Por lo dicho se ve que el molabe, esa madera tan preciosa, y tan buscada, se da en cualesquiera parte: pues no es otra cosa que lo que conocen todos en al Pais con el nombre de Lagundi, el cual en los bosques se hace mui grande, hasta perder el nombre, y llamarse Molabe. Esta especie que tiene nudo en el peciolo, no es mui comun. Yo la vi en los bosques de S. Jose de Batangas. Las aserraduras finas del molabe, son usadas con exito feliz en las heridas por grandes que sean: y se dejan pegadas á la sangre hasta que se caigan: bien que para estos casos tienen los Indios una lista mui numerosa de remedios, de modo que se puede decir que curan las heridas con cualesquiera cosa, como lo he visto muchas veces. La infusion del leño da un color pagizo bastante bello; pero mui fugaz. * T, Molavin.

Vitex altissima. *Vitex* mui alto. Hojas de tres en tres ó de cinco en cinco, sobre un peciolo comun. Hojuelas lanceoladas enteras, y lampiñas por arriba, y por abajo blanquecinas. Peciolo propios cortos. Flores en panoja verticilada. Fruto como en el *Vitex geniculata*. = Esta especie llamada tambien Molabe, se

hace de primer orden como la anterior. Es comun en casi todos los bosques de las Islas, y las propiedades y usos son los mismos. * T, Molavin, Lagundi".

As Dr. Merrill has pointed out, Blanco's specimens with five leaflets probably represent *Viticipremna philippinensis* (Turcz.) H. J. Lam; only those with three leaflets are the true *Vitex parviflora* A. L. Juss.

Hyland (1967) cites U. S. Dept. Agr. Pl. Invent. 267710 from Hong Kong, while Hallier (1918) cites Cunningham 526, DeVriese & Teijsmann s.n., Heyne 1, Spanoghe s.n., Teijsmann 8941 & 8944, and Zippelius s.n. from Timor, Teijsmann s.n. from Amboina, Rosenbluth 12165 from Marinduque, and Cuming 1365, Hallier 4305b, and Vidal 488 from Luzon.

Material of *Vitex parviflora* has been misidentified and distributed in some herbaria as *V. divaricata* Sw., *V. floridula* Duchass. & Walp., *V. peduncularis* Wall., *V. pubescens* Vahl, *V. quinata* (Lour.) F. N. Will., and *Teijsmanniodendron* sp. On the other hand, the *Pancho* 28, distributed as typical *V. parviflora*, is f. *sterilis* H. J. Lam, while Hu 7870 & 8857 and Pitty & Ogata SAN.63263 are *V. quinata* (Lour.) F. N. Will., Fox 99 [Philip. Nat. Herb. 4706] is *V. quinata* var. *puberula* (H. J. Lam) Mold., and Strandtmann H.156 is *Stachytarpheta dichotoma* (Ruiz & Pav.) Vahl.

Additional citations: COLOMBIA: Antioquia: López-Palacios 4313 (Ld). THAILAND: Bunnak 76 [Herb. Roy. Forest. Dept. 9770] (Z). PHILIPPINE ISLANDS: Biliran: R. C. McGregor s.n. [Herb. Philip. Bur. Sci. 18860] (W--1238780). Camotes: Ahern s.n. [1901] (W--446122, W--446136). Cuyo: Escritor s.n. [Herb. Philip. Bur. Sci. 21367] (W--800877). Guimaras: Gammill s.n. [Herb. Philip. Forest. Bur. 95] (W--852308). Leyte: Rosenbluth s.n. [Herb. Philip. Forest. Bur. 12730] (W--711555). Luzon: Adduru 90 (W--898695); Ahern's Collector s.n. [Herb. Philip. Forest. Bur. 1445] (W--851281); Banos s.n. [Herb. Philip. Forest. Bur. 18869] (W--900096); H. H. Bartlett 14940 (Mi, N); Borden s.n. [Herb. Philip. Forest. Bur. 771] (W--625376), s.n. [Herb. Philip. Forest. Bur. 2022] (W--625545); Cuming 1365 (M, Mu--1352); H. M. Curran s.n. [Herb. Philip. Forest. Bur. 6887] (W--706071); Elmer 17286 (W--897399); Escritor s.n. [Herb. Philip. Bur. Sci. 21078] (W--900811); Fénix s.n. [Herb. Philip. Bur. Sci. 12970] (W--714270); Hagger 255 (W--1584070); Herb. Philip. Lumber Develop. Co. s.n. [Nov. 2, 1902] (W--1584100); Loher 4427 (Mu--3959, Mu--3960, W--446874), 4428 in part (Mu), 4429 (Mu--3962, W--446876), 6591 (Mu--4211), 6592 (Mu--4272), 12490 (Mu--4332); F. Manuel s.n. [Herb. Philip. Forest. Bur. 23187] (W--1376033); E. D. Merrill 2084 (W--437033), 2327 (W--437275), 2960 (W--437932); Otanes s.n. [Herb. Philip. Bur. Sci. 17984] (W--1238580); J. V. Pancho 98 (Ba); C. Reyes s.n. [Herb. Philip. Forest. Bur. 7476] (Bz--24552, W--595600); Velasco s.n. [Herb. Philip. Forest. Bur. 24860] (W--1293785); H. N. Whitford 886 (W--851823), 906 (W--852753), 1243 (W--852017). Masbate: W. W. Clark s.n. [Herb. Philip. Forest. Bur. 2526] (W--852301), s.n. [Herb. Philip. Forest. Bur. 2540] (W--852305); E. D. Merrill 3072 (W--438042), 3079

(W--438050). Mindanao: *Ahern* 504 (W--445365), *s.n.* [1901] (W--445911); *Elmer* 11031 (W--779451), 13440 (W--1172252); *E. D. Merrill* 5454 (W--710737); *D. P. Miranda* *s.n.* [Herb. Philip. Forest. Bur. 20545] (W--902692), *s.n.* [Herb. Philip. Forest. Bur. 20561] (W--901620), *s.n.* [Herb. Philip. Forest. Bur. 20565] (W--901523), *s.n.* [Herb. Philip. Forest. Bur. 20573] (W--901630); *Miras, Soriano, & Mariano* *s.n.* [Herb. Philip. Forest. Bur. 24419] (W--1293390); *Ponce* *s.n.* [Herb. Philip. Forest. Bur. 22832] (W--1293391); *Wenzel* 2759 (Mu). Mindoro: *Bermejós* *s.n.* [Herb. Philip. Bur. Sci. 1522] (W--439462); *Conklin* *s.n.* [Philip. Nat. Herb. 18685] (W--2214833); *Ebalo* 257 (Mi); *Lambert & Brunson* 116 (W--1862426); *E. D. Merrill* 2448 (W--437405). Negros: *Cardona* *s.n.* [Herb. Philip. Forest. Bur. 24220] (W--1376031). Sibuyan: *Elmer* 10995 (W--873091). GREATER SUNDA ISLANDS: Sabah: *Binideh* 63159 (Ld); *Lajanagah* 44560 (Ld); *Pitty & Ogata* 63240 (Sn--40927); *Rundi* 43001 (Ld); *Tarmiji & Dewal* SAN.84157 (Sn--52345). LESSER SUNDA ISLANDS: Timor: *Herb. Mus. Paris* *s.n.* [Timor] (T); *Smith & Wiles* *s.n.* [Voyage of the Providence] (W--2887736). MARIANAS ISLANDS: Guam: *Falanruw* 954 (W--2676329). HAWAIIAN ISLANDS: Oahu: *L. H. Bailey* *s.n.* [Sept. 7, 1944] (Ba); *Judd* *s.n.* [Dec. 10, 1938] (N). CULTIVATED: Florida: *A. Gentry* 222 (Ws); *Gillis* 8389 (Ac), 8423 (Ft, Ft, Ft, Z), 8553 (Ft, Ft, Dt, Ft, Ft, Ld), 10996 [U. S. Dept. Agr. Pl. Introd. 101451, M.6501] (Ac, Ba); *Landingham* 320 (Ne--38669); *H. N. Moldenke* 21455 (Ac); *Tomlinson* *s.n.* [22 Sept. 1968] (Ac, Ft). Guam: *Null & Scully* 130 (W--2920644, W--2920645). Hawaiian Islands: *Degener & Degener* 30092 (N). Panama: *Seibert* 1535 (E--1570768).

VITEX PARVIFLORA var. *PUBERULENTA* Mold.

Synonymy: *Vitex cofassus* var. *timorensis* subvar. *pubescens* H. Hallier, Meded. Rijks Herb. Leid. 37: 48. 1918. *Vitex cofassus* var. *pubescens* H. Hallier ex Mold., Prelim. Alph. List Inv. Names 50, in syn. 1940.

Bibliography: H. Hallier, Meded. Rijks Herb. Leid. 37: 48. 1918; Mold., Prelim. Alph. List Inv. Names 50. 1940; Mold., Phytologia 15: 317. 1967; Mold., Fifth Summ. 1: 318 (1971) and 2: 928. 1971; Mold., Phytol. Mem. 2: 309 & 593. 1980.

It seems most probable that Hallier's plant is the same as the present taxon and since he proposed it as a "Subvariety" his name does not take precedence over mine which was proposed as a variety. His original (1918) description is "Paniculae et plerumque etiam calyces plusminus cinereo-pubescentes". He cites *Hallier* 4305, *Merritt & Curran* 12398, and *Vidal* 489 & 849 from Luzon, *Elmer* 10995 from Sibuyan, *Curran* 17452 from Negros, *Cenabre* 15251 from Cebu, and *Ahern* 389, *Elmer* 11031, 13440, & 14218, *Hallier* 4305a, and *Reillo* 16463 from Mindanao. He reports finding it with aborted flowers in January as "mehrere kleine Bäume mit *Oroxylum indicum*, *Lagerstroemia speciosa* usw. im Busch" and in February as "mehrere kleine Bäume mit Früchten und Blüthensrandshexenbesen in Sekundärbusch".

Material has been misidentified and distributed in some herbaria as *V. littoralis* Decne.

Additional citations: PHILIPPINE ISLANDS: Luzon: *Mangubat* *s.n.*

[Herb. Philip. Bur. Sci. 1361] (W--439813--isotype).

VITEX PARVIFLORA f. *STERILIS* H. J. Lam

Additional bibliography: Mold., *Phytologia* 15: 317. 1967; Mold., Fifth Summ. 1: 318 & 374 (1971) and 2: 791 & 928. 1971; Mold., *Phytol. Mem.* 2: 309, 367, & 593. 1980.

This teratologic form of the species obviously has no taxonomic significance whatever, but is so very widely represented in herbaria that the name proposed by Dr. Lam is continued to be used by me purely for convenience. The collections cited below are some of the *Vitex parviflora* collections on which this form has been observed.

Additional citations: PHILIPPINE ISLANDS: Basilan: W. I. Hutchinson s.n. [Herb. Philip. Forest. Bur. 6125 in part] (W--595598). Bohol: R. C. McGregor s.n. [Herb. Philip. Bur. Sci. 1218] (W--439589). Luzon: Ahern 37 in part (W--445035, W--445588), 752 (W--445460); Ahern's Collector s.n. [Herb. Philip. Forest. Bur. 2158] (W--625988); Elmer 18089 (W--1237556); Klemme s.n. [Herb. Philip. Forest. Bur. 5243 in part] (W--709437); Loher 4428 in part (Mu--3961, W--446875), 4430 (W--446877), 7289 (Mu--4213); Mariano s.n. [Herb. Philip. Forest. Bur. 27153 in part] (W--1294729); E. D. Merrill 2593 in part (W--437557), *Sp. Blanc.* 340 (W--904022); M. Ramos 16 (Mu--4274); Rothdauscher s.n. [Manilla 1879] (Mu--1525). Mindanao: Ahern 389 [89] in part (W--445289), s.n. [Tetuan, 1901] (W--446007), s.n. [Sungao 1902] (W--445912); DeVore & Hoover 272 in part (W--449541); Elmer 14218 in part (W--1051223); D. P. Miranda s.n. [Herb. Philip. Forest. Bur. 17942] (W--568525), s.n. [Herb. Philip. Forest. Bur. 18760 in part] (W--900143); Quadras 344 (W--1584684). Samar: Lasquety s.n. [Herb. Philip. Forest. Bur. 23590] (W--1375171). CULTIVATED: Philippine Islands: J. V. Pancho 28 (Ba).

VITEX PATULA E. A. Bruce

Additional bibliography: Mold., *Phytologia* 15: 317. 1967; Van der Schijff, Check List Vasc. Pl. Kruger Natl. Park 81. 1969; Palmer & Pitman, *Trees South Afr.*, ed. 2, 3: 1951, 1960, & 1962. 1972; Mold., Fifth Summ. 1: 253 & 258 (1971) and 2: 928. 1971; Mold., *Phytol. Mem.* 2: 242, 247, & 593. 1980.

Illustrations: Palmer & Pitman, *Trees South. Afr.*, ed. 2, 1960. 1972.

Palmer & Pitman (1972) state that "*Vitex patula*, literally 'the spreading vitex', grows in the northern Transvaal where it is common on the slopes of the Soutpansberg, in the eastern Transvaal, and in northern Zululand, in mixed bushveld, on wooded rocky slopes, and sometimes on sandy flats. It is a fairly common species in the Mkuze and Ndumu Game Reserves in Zululand. It also occurs in Mozambique. It is usually a small, bushy tree with spreading branches, up to about 6 m tall, although one collector describes it as a 'tall, thin little tree with a rough stem up to 6 inches diameter'. The foliage is light green -- the young growth red-gold -- the twigs hairy and knobbly....The fruit...is ..a shiny green with white spots, becoming black, with a shallow,

5-toothed calyx. It ripens in the late autumn and is eaten by birds and monkeys. This species is closely allied to *Vitex amboniensis* which, however, most often has 5 and not 3 leaflets which are stalked, narrower and usually more pointed and more densely hairy."

Van der Schijff (1969) cites from Kruger National Park his nos. 761, 3668, 3690, & 3732, Codd 4227 & 5319, and "Lam." 27 & 45.

VITEX PAUCIDENTICULATA Kutuzkina, Paleont. Journ. Akad. Nauk USSR 3: 156--158, fig. 1. 1970.

Bibliography: Kutuzkina, Paleont. Journ. Akad. Nauk USSR 3: 156--158, fig. 1 & 2. 1970; Tsagareli, Bull. Acad. Sci. Georgian SSR 78:383--384. 1975; Anon., Biol. Abstr. 61: Acl.733. 1976; "H. R.", Biol. Abstr. 61: 2221. 1976; Mold., Phytologia 45: 485. 1980; Mold., Phytol. Mem. 2: 369 & 593. 1980.

Illustrations: Kutuzkina, Paleont. Journ. Akad. Nauk USSR 3: 157, fig. 1. 1970.

This fossil species is known thus far only from the original collections in the Upper Sarmat Formation, of Upper Miocene age, in Russia.

VITEX PAYOS (Lour.) Merr.

Additional synonymy: *Vitex guerkeana* "Engl. ex Eyles." apud Palmer & Pitman, Trees South. Afr. 3: 1962, in syn. 1972. *Vitex payo* Good, Biol. Abstr. 55: 6069, sphalm. 1973.

Additional & emended bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 316 & 326. 1900; E. D. Merr., Trans. Am. Phil. Soc., ser. 2, 24 (2): 334 & 444. 1935; Wild & Gelfans, Cent. Afr. Journ. Med. 5: 292--305. 1959; Dale & Greenway, Kenya Trees Shrubs 593 & 597. 1961; Amico, Webbia 22: 489, 498, 500, & 501, pl. 35. 1967; Mold., Phytologia 15: 317--319. 1967; Hyland, U. S. Dept. Agr. Pl. Invent. 172: 303. 1968; Mold., Résumé Suppl. 16: 29 (1968) and 17: 8. 1968; Greenway, Journ. East Afr. Nat. Hist. Soc. 27: 176 & 196. 1969; Gillett, Numb. Check-list Trees Kenya 47. 1970; Mold., Fifth Summ. 1: 232, 239, 240, 245, 247, 249, 250, 253, 254, 374, & 386 (1971) and 2: 531, 717--719, 725, 727, 728, 731, 769, 928, & 969. 1971; Lopes & Oliveira, Agron. Moçamb. 6: 73, 75, & 79--81. 1972; Palmer & Pitman, Trees South. Afr. 3: 1951 & 1962--1963. 1972; Anon., Biol. Abstr. 55 (11): B.A.S.I.C. S.275. 1973; Farnsworth, Pharmacog. Titles 8 (8): xxiii. 1973; Good, Biol. Abstr. 55: 6069. 1973; Jacobsen, Kirkia 9: 172. 1973; Mold., Phytologia 25: 235 (1972), 28: 465 (1974), 44: 390 (1979), and 45: 494. 1980; Mold., Phytol. Mem. 2: 221, 228, 230, 231, 235, 236, 238, 239, 242, 243, 367, 459, & 593. 1980; Mold., Phytologia 48: 465. 1981.

Additional illustrations: Amico, Webbia 22: 489, pl. 35. 1967.

Recent collectors describe this species as a stiffly branched shrub, 2 m. tall, or a small tree, 3--8 m. tall, growing in groups, the trunk single, the bark brown, smooth or rough, striated or corrugated, the sap colorless, the petioles hairy, the leaf-blades leathery, soft to touch, dull-green beneath and hairy on the prominent veins, the upper surface "darker and veins subcurrent",

the flowers slightly aromatic, "in clusters at ends of long stems", and have encountered it in open or thick dry hillside forests on black or red sandy-loam soil, among granite rocks at the tops of kopjes, and along roadsides, from sealevel to 1250 m. altitude, in anthesis from December to February, and in fruit in January and April. The corollas are described as "white with a violet-bluish lower lip" by Gürke (1895) and are said to have been "white and very pale mauve" on *Tanner 2554*, "white and blue" on *Tanner 2605*, "mauve" on *Tanner 2523*, "white with one mauve petal" on *Johnstone 91*, and "yellow" on *Tanner 3877a*.

Lovemore reports that "typically the trunk has the appearance of having been cleaned of all bark by termites" in Zimbabwe. Hornby reports the species occasional with *Pseudolachnostylis napprouneaefolia* and *Diospyros kirkii* in *Brachystegia-Isobertlinia* woodlands. Amico (1967) records it from Zambezia in Mozambique, while Jacobsen refers to it as rare on graphitic slates and termittaria in thickets in Zimbabwe. Hyland (1968) reports it cultivated in Maryland as *U. S. Dept. Agr. Pl. Introd. 302762*, grown from seed imported from Zimbabwe. Greenway (1969) asserts that it is a rare tree in Tsavo East National Park, citing *Greenway & Kabwie 12630*. Dale & Greenway (1961) describe the fruit as edible and assert that the tree is an inhabitant of coastal savannas in Kenya, citing *Elliot 1680*, *Graham 1731*, and *Kirk 149*. My wife and I observed it in cultivation at the Karen home of Mr. & Mrs. Sidney Downey in Kenya in August, 1972 -- they stated that it had been on the grounds there when they purchased the estate and had never known its name.

Vernacular names reported for *Vitex payos* include "chikubai", "mfu", "mfudu". "mfufu", "mfuu", "mgobe", "mkoko", "mpulu", "m'purre", "muhubva", "mukubvu", "mutsubvu", "mwengere", "umbalebale", "umbindolo", "umchangwela", and "umtshwankela".

Watt & Breyer-Brandwijk (1962) assert that the flesh of the fruit has a distinctive flavor and is much eaten by the natives in Zimbabwe, saying also that "it contains no ascorbic acid". Tanner reports that the roots and bark are boiled and the resulting liquid is drunk to alleviate pain "in the lower stomach" connected with constipation. Lopes & Oliveira (1972) report on the chemical composition of the plant and its food value, finding that the "high energy value and high niacin content are comparable to those of tropical fruits of the same type".

The species is easily confused with *V. mombassae* Vatke, but that species has a brownish-appearing inflorescence and larger flowers, while in *V. payos* the inflorescence has a decided canescent appearance and the flowers are smaller.

Palmer & Pitman (1972) remark that "Until recently *Vitex payos* was held to be distinct from *Vitex hildebrandtii*. White, however, in his *Flora of Northern Rhodesia* considers them as inseparable.... the distribution and ecology of the species are imperfectly known. It is a tropical east African species and there are records -- whether authentic or not is not clear -- of the tree in the Caprivi and in Botswana.....The specific name *payos* was given by J. de Loureiro, a Portuguese Jesuit priest, who visited Mozambique in

the 1780's on his way from China to Europe. He collected botanical specimens there, and it is probable that he found the tree near the river Payosi, a small tributary of the Zambesi, and that the specific name is based on the name of the river."

The *Eyles 1201*, cited below, is the type collection of *Vitex eylesii* S. Moore. *Swynnerton 34* is cited by Pieper (1928) as one of the several cotypes of his var. *glabrescens*, but the leaves on at least the U. S. National Herbarium specimen of this collection are extremely densely hairy with long ochraceous hair and so it would seem that this collection (in part, at least) should not be regarded as typical of the variety.

Material of *V. payos* has been misidentified and distributed in some herbaria as *V. isotjensis* Gibbs and even as *Torenia mannii* Skan, but the latter surely as the result of the mixing of labels during mounting since this name applies to *Tanner 2533*, not to *Tanner 2523*.

Additional citations: TANZANIA: Tanganyika: *Holst 2101* (Mu--1794); *Tanner 2523* (Ba), 2554 (Ba, N), 2605 (Ba, N), 3877 (Ba), 3877a (N), 3957 (Ba, N); *Wingfield 3361* (Ld). KENYA: *B. C. Stone 7936* (K1--10570, W--2584494A). ZIMBABWE: *Dehn 509* (Mu--painting); *Eyles 1201* [Mo. Bot. Gard. photos A.853] (Go--photo, N--photo, W--photo, Z--photo); *Fries, Norlindh, & Weimarck 3205* (Mu); *Hornby 3222* [Govt. Herb. Salisb. 32894] (N); *Johnstone 91* (Mu); *Leach 9693* (Mu); *Lovemore 38* [Govt. Herb. Salisb. 33175] (N); *Mullin 62/51* [Govt. Herb. Salisb. 32666] (N); *Whellan 473* [Govt. Herb. Salisb. 31206] (N); *Wuiwood-Smith 21359* (Mu). MOZAMBIQUE: GAZALAND: *Swynnerton 34* in part (W--945790).

VITEX PAYOS var. *GLABRESCENS* (Pieper) Mold.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 57 (2): 403. 1938; Mold., Phytologia 15: 318--319. 1967; Mold., Fifth Summ. 1: 232, 239, 249, 250, 253, & 254 (1971) and 2: 719, 731, & 928. 1971; Mold., Phytol. Mem. 2: 221, 228, 238, 239, 242, 243, & 593. 1980; Mold., Phytologia 48: 465. 1981.

Recent collectors describe this plant as a small savanna tree, 1--6.5 m. tall, with densely pubescent branchlets, coriaceous, 3--5-foliolate leaves, plum-sized drupes, 2.5 cm. in diameter, shiny and green with many lighter spots [when immature?], and have encountered it on savanna grasslands with thickets, at 80 m. altitude, in fruit in March and April.

Material of this taxon has been misidentified and distributed in some herbaria as *V. mombassae* Vatke. The *Swynnerton 34*, cited by Pieper (1928) seems in part, at least, to represent typical *V. payos* (Lour.) Merr.

Additional citations: TANZANIA: Tanganyika: *B. J. Harris 2827* (Ac); *Lemboko 26* (Ld).

VITEX PAYOS var. *STIPITATA* Mold.

Additional bibliography: Mold., Phytologia 15: 1967.

VITEX PAYOS var. *ZAMBESIACA* (J. G. Baker) Mold.

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

57 (2): 403. 1938; Mold., *Phytologia* 15: 319. 1967; Mold., Fifth Summ. 1: 253 (1971) and 2: 719, 731, & 928. 1971; Mold., *Phytol. Mem.* 2: 242 & 593. 1980.

VITEX PEARSONII Pieper

Additional bibliography: Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 404. 1938; Mold., *Phytologia* 15: 319. 1967; Mold., Fifth Summ. 1: 253 (1971) and 2: 718 & 928. 1971; Mold., *Phytol. Mem.* 2: 242 & 593. 1980.

VITEX PEDUNCULARIS Wall.

Additional synonymy: *Vitex morana* Hamilt. ex D. Dietr., *Syn. Pl.* 3: 611, in syn. 1843. *Vitex peduncularis* Das, *Indian Forest.* 101: 556, sphalm. 1975.

Additional & emended bibliography: D. Dietr., *Syn. Pl.* 3: 611. 1843; Buek, *Gen. Spec. Syn. Candoll.* 3: 502. 1858; Prain, *Bengal Pl.*, imp. 1, 832 & 833. 1903; Brandis, *Indian Trees*, imp. 1, 505. 1906; Kirtikar & Basu, *Indian Med. Pl.*, ed. 1, 3, 1936, & 1941, pl. 741. 1918; Troup, *Silvicult. Indian Trees* 2: 776 & 777. 1921; Haines, *Bot. Bihar Orissa*, ed. 1, 4: 711 & 712. 1922; Hubert, *Rév. Bot. Appl.* 2: 282. 1922; Boddington, *Mem. Asiat. Soc. Beng.* 10: 12, 40, 68, & 88 (1925) and 10: 187 & 245. 1927; Stapf, *Ind. Lond.* 6: 479. 1931; Fletcher, *Kew Bull. Misc. Inf.* 1938: 405, 432, & 436. 1938; Kanjilal, Das, & al., *Fl. Assam* 3: 480, 484--485, & 561. 1939; Biswas, *Indian Forest Rec.*, ser. 2, Bot. 3: 42. 1941; H. N. & A. L. Mold., *Pl. Life* 2: 79. 1948; Sharma, *Journ. Sci. Ind. Res.* 14B: 267--270. 1956; Puri, *Indian Forest Ecol.* 189. 1960; Brooker & Cooper, *N. Zeal. Med. Pl.* 36. 1961; Haines, *Bot. Bihar Orissa*, ed. 2, 2: 745--747. 1961; Mold., *Phytologia* 8: 72. 1961; Gaussen, Legris, & Viart, *Ind. Counc. Agr. Res. Map Ser.* 2: 33. 1965; Burkill, *Dict. Econ. Prod. Malay Penins.* 2: 2277. 1966; Yamazaki in Hara, *Fl. East. Himal.* 270. 1966; Kariyone, *Ann. Ind. Rep. Pl. Chem.* 1962: 136. 1967; R. E. Alston in Mabry, *Recent Adv. Phytochem.* 1: 311. 1968; Badhwar & Fernandez, *Edible Wild Pl. Himal.* 284. 1968; Das, *Pakist. Journ. Forest.* 18: 308 & 311. 1968; Deb, *Indian Forest.* 94: 756 & 765. 1968; Mold., *Phytologia* 17: 9 & 21--22. 1968; Mold., *Résumé Suppl.* 16: 10 & 29. (1968) and 17: 5. 1968; Uphof, *Dict. Econ. Pl.*, ed. 2, 545. 1968; Sawyer & Chermisier, *Nat. Hist. Bull. Siam Soc.* 23: 126. 1969; Agarwal, *Wood-yield. Pl. India* 67. 1970; Farnsworth, *Pharmacog. Titles* 5 (9): vii & item 9509. 1970; Jain & Tarafder, *Econ. Bot.* 24: 266. 1970; Brandis, *Indian Trees*, imp. 2, 505. 1971; Farnsworth, *Pharmacog. Titles* 5: Cum. Gen. Ind. (1971) and 6 (1): xvii & title 1370. 1971; Mold., Fifth Summ. 1: 269, 271, 279, 284, 285, 298, 303, & 374 (1971) and 2: 712, 722, 725, 726, 928, & 970. 1971; Mold., *Phytologia* 23: 423. 1972; Rollet, *Bois For. Trop.* 145: 33 & 34. 1972; Farnsworth, *Pharmacog. Titles* 6: Cum. Gen. Ind. [122]. 1973; Hegnauer, *Chemotax. Pfl.* 6 [Chem. Reihe 21]: 663. 1973; Mold., *Phytologia* 28: 445, 452, & 465. 1974; Das, *Indian Forest.* 101: 556. 1975; Mold., *Phytologia* 35: 275. 1977; Khosla & Sareen, *Indian Journ. Forest.* 1: 174. 1978; Mukherjee & Chanda, *Trans. Bose Res. Inst.* 41: 52. 1978; Sharma, Shetty, Vivekan., & Rathak., *Journ. Bomb. Nat. Hist. Soc.* 75: 33. 1978; Mold., *Phytologia* 44:

355, 356, & 358 (1979) and 46: 17 & 27. 1980; Mold., Phytol. Mem. 2: 256, 266, 271, 274, 275, 288, 289, 294, 367, 457, 459, 460, & 593. 1980; Mold., Phytologia 49: 373. 1981.

Recent collectors describe this plant as a "small" tree, 4--32 m. tall, the trunk 30--35 cm. in diameter at breast height and 140 cm. in circumference, the inflorescence axes light- or yellow-green, the flowers not odorous or with a slight sweetish odor, the calyx yellow-green, the lobes brown or white, the corolla-buds light-yellow, and the fruit at first green, then black. Young plants and those from watersprouts have the petioles winged and the leaflets serrate. Maxwell refers on the labels of some of his collections to "inflorescence axes, corolla, and fruit light-green" -- on his no. 76-293 the corollas are said to have been "white with a yellow spot", while on *Larsen & Larsen* they were "purplish", on *Judd s.n.* "light-blue". on *Squires 777* "light-pink to white", on *Squires 861* "white", and on *Majumder & Islam 24493* "yellow". Judd mistakenly refers to the fruits as "berries" -- actually they are drupes.

Collectors have encountered this tree in deciduous, open or dry evergreen, semidense or deciduous dipterocarp (*Dipterocarpus obtusifolius* & *D. tuberculatus*), rocky deciduous, and mixed forests, often growing in red-brown gravelly-sandy clay soil or even in the open sunlight, at 100--1000 m. altitude, in anthesis from March to June, and in fruit from May to September and December.

The type of the species was collected at or near Moulmein, Burma. Sharma and his associates (1978) refer to the tree as a common one, with white "flowers" [corollas] in Tamil Nadu, citing *Vivekananthan 40805*. Das (1975) asserts that it comprises 6.4--16 percent of the individuals of all tree species in the mixed deciduous forests was "sal" (*Shorea robusta*) in the South Kamrup area of India. Puri (1960) found it associated with *Clerodendrum* and *Gmelina* in moist tropical deciduous "sal" forests of Assam. Sawyer & Chermisrivathan (1969) report it infrequent to common in Thailand. Yamazaki (1966) gives its natural distribution as the eastern Himalayas, Burma, Indochina, and Malaya. Kanjilal and his associates (1939) aver that it occurs throughout Assam and assert that "petioles winged in coppice shoots; wood very hard, used for posts, oil-mill pestles, yokes, etc." Prain (1903) records it from Orissa, Chota Nagpur, Bihar, and Chittagong. Clarke (1885) cites unnumbered Roxburgh and Wallich collections and gives its distribution as "Assam and Bengal to Tenasserim, frequent".

Fletcher (1938) cites from Thailand: *Haniff & Nur 4242*, *Kerr 34, 34a, 572, & 5275*, *Put 2788*, *Vanpruk 300*, and *Winit 255*, listing the species also from Burma and Indochina. Troup (1921) describes it as "A moderate-sized to large tree with trifoliate leaves, the petioles being winged in young plants and coppice-shoots. Wood hard, close-grained, used for posts and beams, yokes, &c. A tree of the eastern sub-Himalayan tract, Assam, Chota Nagpur, Orissa, and the Circars; common in upper mixed and tropical forests in many parts of Burma. Haines says that in Chota Nagpur it occurs in Singbhum and Gangpur, especially along streams, but also on rocky northern slopes, and that in Manbhum and Hazaribagh it is very common and

attains large size on the northern slopes of Parasnath; also in Koderma, Palamau, and the Santal Parganas (frequent). Flowers, March--June; fruits, August--September. The fruit is a small drupe with a 3- or 4-celled stone. Growth, according to Gamble, 6 to 8 rings per inch of radius, giving a mean annual girth increment of 0.78 to 1.05 in."

Agarwal (1970) asserts that it "Grows in Bengal, Assam, Bihar, Orissa, extending South up to Godavari & in West Pakistan & Burma. Wood reddish grey to light brown, very heavy, even textured, can be seasoned slowly, susceptible to insects, not very durable, polishes well; Wt. 27.40 kgms/cft. Used generally for agricultural implements, in Burma for harrows, wells, sugarcane crushers, rice pounders, mortars, oars & carving, and in Assam for beams in buildings."

Vernacular names recorded for the species include: "ahul", "ashol", "ashot", "asiltol", "awal", "boruna", "goda", "ing-het-lunghin", "jadhgach", "khelreng-thing", "khoidol", "kyetyo", "osai", "pazin-nyo", "rang-ngi", "rangri", "shelong-phang", "shilangri", "sila", and "sila-tita".

Khosla & Sareen (1978) report the chromosome number as $4x = 32$, 34. The chemical structure of the vitexin in this species is discussed by Kariyone (1967).

As to medicinal uses, Jain & Tarafder (1970) report its use in treating whitlow, spleen complaints, muscular pains, stab wounds, dysentery, and bone fractures. Uphof (1968) tells us that it is recommended as a febrifuge in India and Burma. Deb (1968) asserts that the bark and leaves are used medicinally in Tripura (Pakistan), where Das (1968) claims that it grows in association with *Stereospermum personatum*, *Duabanga sonneratioides*, *Sterculia villosa*, and *Salmalia* spp. Badhwar & Fernandez (1968) aver that in the Himalaya Mountains it is used locally in cases of blackwater fever. Brooker & Cooper (1961) record its use in India in the treatment of various fevers and for antihaemolytic activity against cobra venom.

Material of *Vitex peduncularis* has been misidentified and distributed in some herbaria as *V. leucoxydon* L. f., *V. littoralis* A. Cunn., *V. lucens* T. Kirk, and *V. pierriana* Dop. On the other hand, the *Bunnak* 76 [Herb. Rpy. Forest. Dept. 9779], distributed as *V. peduncularis* and so cited by me in 1957, actually is *V. parviflora* A. L. Juss.

Additional citations: INDIA: Assam: *Hooker & Thomson s.n.* [Khasia] (Pd); *Jenkins s.n.* [Assam] (Mu--671). Chota Nagpur: *Haines* 321 (Mu--3990). State undetermined: *Brandis s.n.* [Pesa] (Pd). BANGLADESH: *Griffith* 6061 (Mu--669); *Majumder & Islam* 24493 [44] (Ws, Ws). BURMA: Upper Burma: *Herb. Burma Forest School* 9 (E--1276707, E--1284615); *Mokim s.n.* [Kachin Hills, 1897] (Mu--3743). Lower Burma: *Wallich* 1753 (Pd). Tenasserim: *Falconer* 501 (Mu--670, Z), 509 (Mu--651). THAILAND: *R. M. King* 5461 (W--2435877); *Larsen & Larsen* 33677 (Ac), 33951 (Ac, Ld); *Larsen, Santisuk, & Warncke* 2770 (Ac, Ld); *Maxwell* 75-342 (Ac), 76-293 (Ac); *Van Beusekom & Phengkhilai* 1307 (Ac). INDOCHINA: Annam: *Squires* 777 (Mu), 861 (Mu). Cambodia: *Pierre* 549 (W--

2602860). CULTIVATED: Hawaiian Islands: *Judd s.n.* [Dec. 1, 1930] (Mu). India: *Wallich 1752/3* (Pd). LOCALITY OF COLLECTION UNDETERMINED: *Herb. Zuccarini s.n.* (Mu--3901).

VITEX PEDUNCULARIS f. *juv. ROXBURGHIANA* (C. B. Clarke) Mold.,
Phytologia 37: 275. 1977.

Synonymy: *Vitex alata* Roxb. ex Willd. in Rottl., Gesell. Naturforsch. Freunde Berl., ser. 2, 4: 203. 1803 [not *V. alata* Heyne, 1821, nor Royen, 1940, nor Schau., 1885, nor Wall., 1947, nor Willd., 1803]. *Vitex roxburghiana* Kanjilal in Kanjilal & al., Pl. Assam 485. 1939.

Bibliography: Rheede, Hort. Ind. Malab. 5: pl. 1. 1685; Willd. in Rottl., Gesell. Naturforsch. Freunde Berl., ser. 2, 4: 203. 1803; Roth, Nov. Pl. Sp. 316. 1821; Wall., Numer. List [48], no. 1752 (1829) and 86. 1831; Roxb., Fl. Ind., ed. 2, imp. 1, 3: 72. 1832; Schau. in A. DC., Prodr. 11: 685. 1847; Voigt, Hort. Suburb. Calc. 469. 1845; Buek, Gen. Spec. Syn. Candoll. 3: 501. 1858; Dalz. & Gibs., Bombay Fl. 201. 1861; Roxb., Fl. Ind., ed. 2, imp. 2, 482. 1874; Kurz, Forest Fl. Brit. Burma 2: 272. 1877; Campbell & Watt, Descrip. Cat. Econ. Prod. Chutia Nagpur No. 9281. 1881; Gamble, Man, Indian Timb., ed. 1, 298 & 522. 1881; Watt, Econ. Prod. India 7: 254. 1883; C. B. Clarke in Hook. f., Fl. Brit. India 4: 587. 1885; Lisboa, Useful Pl. Bombay 201. 1886; Watt, Dict. Econ. Prod. India 6 (4): 250. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 1213. 1895; Gamble, Man. Indian Timb., ed. 2, 541. 1902; Prain, Bengal Pl., imp. 1, 2: 832. 1903; Troup, Silvicult. Indian Trees 2: 777. 1921; Haines, Bot. Bihar Orissa 4: 711 & 712 (1922) and 6: 712. 1924; Boddington, Mem. Asiat. Soc. Beng. 10: 285. 1927; Kanjilal & al., Fl. Assam 3: 485 & 561. 1939; Mold., Suppl. List Comm. Names 3, 4, 8, 9, 12, 14--16, & 20. 1940; Mold., Prelim. Alph. List Inv. Names 49. 1940; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 55 & 104. 1942; Mold., Alph. List Inv. Names 52. 1942; Mold., Phytologia 2: 121. 1944; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 1213. 1946; H. N. & A. L. Mold., Pl. Life 2: 79. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 125, 128, 129, & 202. 1949; Metcalfe & Chalk, Anat. Dicot. 1036. 1950; Mold., Phytologia 6: 51--52. 1957; Seshagiri Rao, Journ. Bombay Nat. Hist. Soc. 55: 438 & 439. 1958; Mold., Résumé 159, 165, 166, 380, & 477. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 1213. 1960; Prain, Bengal Pl., imp. 2, 2: 621 & 622. 1963; Mold., Phytologia 15: 320 (1967) and 17: 22. 1968; Jain & Tarafder, Econ. Bot. 24: 266. 1970; Farnsworth, Pharmacog. Titles 6 (1): xvii & title 1370. 1971; Mold., Fifth Summ. 1: 269, 279, & 284 (1971) and 2: 712, 928, & 970. 1971; Roxb., Fl. Ind., ed. 2, imp. 3, 482. 1971; Mold., Phytologia 28: 465 (1974), 37: 275 (1977), and 44: 355, 356, & 358. 1979; Mold., Phytol. Mem. 2: 266, 271, 274, 367, 457, 459, 460, & 593. 1980.

This is a juvenile form of the species, with no taxonomic significance, found also on watersprouts or "coppice-shoots" from older stumps, with the petioles conspicuously and often broadly winged. Roxburgh (1832) describes it as a separate species, *V. alata* "native of Chittagong, where it grows to be a large tree. From thence it

was introduced by Dr. Buchanan into the Botanic garden at Calcutta, where it blossoms in the month of April.....Leaves ternate; leaflets lanceolate . Petiole winged. Panicles axillary...Trunk straight, decorated with numerous, spreading and ascending branches, whole height of tree ten years old, about thirty feet. Bark smooth, of a dark, brownish, ash-colour. Leaves opposite, ternate. Leaflets lanceolate, smooth, entire, about six inches long. Petioles winged, particularly while the trees are young, about three or four inches long. Panicles axillary, solitary, erect, brachiate, with ramifications dichotomous, and a sessile flower in each division. Flowers numerous, pale yellow, tinged with very little blue. Calyx campanulate. Border unequally five-toothed. Corol, the middle lobe of the upper lip large, in proportion to its lateral lobes; the under lip two-parted, and small. Anthers thin, and of a bluish colour. Berry round, smooth, pulpy, when ripe purple, and the size of a marrow-fat pea. Nut turbinate, furrowed, four-celled, with a single seed in each." The fruit, of course, is a drupe, not a berry. Numerous other, even quite recent, authors maintain this taxon as a species.

Prain (1903), reporting it from Chota Nagpur, as well as Bihar and Chittagong, refers to it as "A considerable tree". Jain & Tarafder (1970) also list it from Bihar. Clarke (1885) describes the plant as a variety "less grey-pubescent, petioles winged, panicles lax few-fld.", citing unnumbered collections of Edgeworth [Behar, at Parasnath], Hooker f. & Thomson [E. Bengal and Khasia Terai], and Kurz [Pegu], noting that "Roxburgh quotes (for his Chittagong *V. alata*) Rheede Hort. Mal. c. t. 1, which has leaves that might do, but a totally different inflorescence, and is Heyne's *V. alata*."

Voigt (1845) also reports the plant in cultivation in Calcutta. Prain (1902) lists the vernacular names, "badu marak", "boruna", "goda", "kamrup", "krawru", and "nowgong". Jain & Tarafder (1970) assert that it is used in local medicine in treating the bite of a rabid dog or jackal. Kanjilal and his associates (1939) report an infusion of the leaves ("for this and/or its varieties") used as a specific for blackwater fever in Assam. It seems quite obvious that most, if not all, of the above information applies to typical *Vitex peduncularis* Wall. as well as to this form.

The Silva specimen, cited below, exhibits not only alate petioles but also serrate leaflet-blades.

Additional citations: CULTIVATED: Sri Lanka: Silva 1002 (Pd).

VITEX PENTADACTYLA Velenovsky

Additional bibliography: Stopes, Cat. Mesoz. Pl. 225. 1913; Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 376 (1971) and 2: 928. 1971; Mukherjee & Chanda, Trans. Bose Res. Inst. 41: 44. 1978; Mold., Phytol. Mem. 2: 369 & 593. 1980.

VITEX PENTAMERA Engelhardt

Additional bibliography: Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 376 (1971) and 2: 928. 1971; Tsagarela, Bull. Acad. Sci. Georgian SSR 78: 383. 1975; Anon., Biol. Abstr. 61: ACL.733.

1976; Mold., Phytologia 45: 485. 1980; Mold., Phytol. Mem. 2: 369 & 593. 1980.

VITEX PERRIERI Danguy

Additional bibliography: Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 928. 1971; Mold., Phytol. Mem. 2: 248, 252, & 593. 1980.

VITEX PERVILLEI J. G. Baker

Additional bibliography: Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 259 & 263 (1971) and 2: 928. 1971; Mold., Phytol. Mem. 2: 248, 252, & 593. 1980.

Gentry refers to this plant as a shrub, 3 m. tall, in green [immature] fruit in May, and found it growing at 200 m. altitude.

Additional citations: MADAGASCAR: A. Gentry 11457 (E--2740064).

VITEX PERVILLEI var. *PUBESCENS* Mold.

Additional bibliography: Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 263 (1971) and 2: 928. 1971; Mold., Phytol. Mem. 2: 252 & 593. 1980.

VITEX PETERSIANA Klotzsch in Peters, Naturwiss. Reise Mossamb. 6 [Bot.] 1: 264. 1861.

Additional & emended bibliography: Klotzsch in Peters, Naturwiss. Reise Mossamb. 6 [Bot.] 1: 256 & 264. 1861; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 316 & 320--321. 1900; Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 247, 249, & 253 (1971) and 2: 719, 728, & 928. 1971; Mold., Phytol. Mem. 2: 236, 238, 242, & 593. 1980.

Glürke (1895) records this plant from Tette (Mozambique), where it grows on sandy and rocky land and where bows and arrows are made from its wood. Gilges describes it as a small tree, growing in the bush, in flower in December.

Additional citations: ZAMBIA: *Gilges* 691 (Mu). ZIMBABWE: *Love-more* 179 [Govt. Herb. Salisb. 35109] (N).

VITEX PETERSIANA var. *TETTENSIS* (Klotzsch) Pieper

Emended synonymy: *Vitex tettensis* Klotzsch in Peters, Naturwiss. Reise Mossamb. 6 [Bot.] 1: 264--265. 1861.

Additional & emended bibliography: Klotzsch in Peters, Naturwiss. Reise Mossamb. 6 [Bot.] 1: 264--265. 1861; Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; Mold., Phytologia 15: 321. 1967; Mold., Fifth Summ. 1: 249 & 253 (1971) and 2: 728 & 928. 1971; Mold., Phytol. Mem. 2: 242 & 593. 1980.

Pieper (1928) classifies this taxon in his Subgenus *Euvitex*, Section *Axillares*, Subsection *Cymosae*.

VITEX PHAEOTRICHA Mildbr.

Additional synonymy: *Vitex phaeotricha* "Mildbr. ex Pieper" ex Mold., Phytol. Mem. 2: 459, in syn. 1980.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 57 (2): 402. 1938; Mold., Phytologia 17: 22. 1968. [to be continued]



Moldenke, Harold N. 1981. "Additional notes on the genus Vitex. XXI."
Phytologia 49, 362–384.

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