

ADDITIONAL NOTES ON THE GENUS BOUCHEA. IV

Harold N. Moldenke

BOUCHEA Cham.

Additional synonymy: Fovearia L. C. Rich. ex Moldenke, Alph. List Invalid Names 24, in syn. 1942. Buchea Cham. ex Moldenke, Alph. List Invalid Names Suppl. 1: 3, in syn. 1947. Beuchea Troncoso, Darwiniana 18: 302, sphalm. 1974.

Additional & emended bibliography: Breyn., Prod. Fasc. Rar. Pl. Anno 1679 Hort. 1680; Breyn., Prod. Fasc. Rar. Pl. Secund. 104. 1689; Pluk., Phytogr. 2: pl. 70, fig. 1, & pl. 321, fig. 1. 1691; Sloane, Cat. Pl. Ins. Jamaic. 64. 1696; Moris., Pl. Hist. Univ. Oxon. 3: 418 ["408"] & 419. 1699; Ray, Hist. Plant. 3: Suppl. 285 & 286. 1704; Herm., Cat. Plant. Nond. 13 & 15. 1705; Breyn., Prod. Fasc. Rar. Pl. Prim. & Sec. 2: 104. 1739; Crantz, Inst. Rei Herb. 1: 572. 1766; [Retz.], Nom. Bot. 11. 1772; Christm. & Panzer, Vollst. Pflanzensyst. Houttuyn 5: 121—122. 1779; J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 41 (1789) and ed. 13, pr. 2, 2: 41. 1796; Raeusch., Nom. Bot., ed. 3, 3. 1797; Balbis, Cat. Pl. Hort. Bot. Taur. 48. 1804; Pers., Sp. Pl. 3: 351. 1819; Peterm., Cod. Bot. Linn. Ind. Alph. 196. 1840; Steud., Nom. Bot., ed. 2, 2: 629 & 750. 1841; Voigt, Hort. Suburb. Calc. 473. 1845; Schau., Linnaea 20: 478. 1847; D. Clos, Ann. Sci. Nat., ser. 3, 10: 378—381. 1848; C. Gay, Hist. Fis. Chile Bot. 5: 25—27 & Atlas 1: pl. 55. 1849; Schnitzl., Icon. Fam. Nat. Reg. Beg. 137. 1856; Thwaites & Hook. f., Enum. Pl. Zeyl., pr. 1, 241. 1861; Bocq., Adansonia, ser. 1, 2: 89, 110, 115, 124, 125, 127, 128, 132, 139, 143, & 146—148 (1862) and 3: 180—182, 184, 185, 235—237, & 241, pl. 16. 1863; Bocq., Rev. Verbénac. (repr.) 89, 110, 115, 124, 125, 127, 128, 132, 139, 143, 146—148, 180—182, 184, 185, 235—237, & 241, pl. 16. 1863; Griseb., Cat. Pl. Cuba 214. 1866; Harv., Gen. S. Afr. Pl., ed. 2, 288 & 290. 1868; R. A. Phil., Anal. Univ. Chil. 35: 193. 1870; Pfeiffer, Nom. Bot. 1 (1): 450 & 702 (1873) and 2 (1): 759. 1874; A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 333—335. 1878; C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 564. 1885; Trimen, Journ. Ceylon Br. Roy. Asiat. Soc. 9: [Syst. Cat. Flow. Pl. Ceylon] 68. 1885; A. S. Hitchc., Ann. Rep. Mo. Bot. Gard. 4: 117. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 327, 349, & 753 (1893) and pr. 1, 2: 504, 564, & 567. 1894; T. R. Sims, Sketch & Check-list Fl. Kaffr. 63. 1894; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 974 & 1178. 1895; Robinson & Greenm., Am. Journ. Sci. 150 [ser. 3, 50]: 147. 1895; Trimen, Handb. Fl. Ceylon 3: 347—348. 1895; Just, Bot. Jahresber. 23 (2): 76. 1897; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 273 & 281—283. 1900; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 61. 1901; T. Peckolt, Bericht. Deutsch. Pharm. Gesell. 14: 466. 1904; M. Kunz, Anatom. Untersuch. Verb. 38—41. 1911; J. Matsumura, Ind. Pl. Jap. 2 (2): 533. 1912; Loes., Verh. Bot. Ver. Brand. 53: 79 [Abhandl.

244]. 1912; Prain, Ind. Kew. Suppl. 4, pr. 1, 28. 1913; Chiov., Result. Scient. Miss. Stef. 1: 143. 1916; Prin, Ind. Kew. Suppl. 5m pr. 1, 35. 1921; Gamble, Fl. Presid. Madras 6: 1085 & 1089. 1924; Bews, Pf. Forms & Evol. S. Afr. 156 & 188. 1925; Britton & P. Wils., Scient. Surv. Porto Rico 6: 137 & 142--143. 1925; Wangerin in Just, Bot. Jahresber. 54 (1): 1170 [366]. 1932; Steyerma. & Moore, Ann. Mo. Bot. Gard. 20: 801. 1933; Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 746--747. 1934; P. C. Standl., Field Mus. Publ. Bot. 18: 993. 1938; Tharp, Veg. Tex. 67. 1939; Robledo, Lecc. Bot. 2: 498. 1940; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 61. 1941; Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 569 & 571. 1941; Wangerin & Krause in Just, Bot. Jahresber. 60 (1): 653. 1941; Savage, Cat. Linn. Herb. Lond. 4. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 327, 349, & 753 (1946) and pr. 2, 2: 504, 564, & 567. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 33 & 222. 1947; Selling, Bishop Mus. Spec. Publ. 38: 274 & 394. 1947; E. D. Merr., Ind. Raf. 204. 1949; Metcalfe & Chalk, Anat. Dicot. 1031, 1032, & 1040. 1950; Chittenden, Roy. Hort. Soc. Dict. Gard., ed. 1, 1: 302. 1951; Kearney, List Citations Place Publ. Spp. Ariz. 19 [thesis]. 1951; Rambo, Sellowia 3: 72 & 78. 1951; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 448 & 449, fig. 256 C & D. 1952; Arnoldo, Zakfl. 125--126, 154, & 163, pl. 55, fig. 119. 1954; Rambo, Sellowia 6: 59, 67, & 153. 1954; J. B. Gillett, Kew Bull. Misc. Inf. 1955: 132--135. 1955; Angely, Cat. Estat. Gen. Bot. Fan. 17: 3. 1956; Chittenden, Roy. Hort. Soc. Dict. Gard., ed. 2, 1: 302. 1956; Rambo, Sellowia 7: 207. 1956; Angely, Fl. Paran. 7: 4 & 11. 1957; Moldenke, Biol. Abstr. 31: 561. 1957; Schnack & Fehleisen, Darwiniana 11: 245--255. 1957; Vélez, Herb. Angiosp. Lesser Ant. 116. 1957; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14354. 1958; Cave, Ind. Pl. Chromosome Nos. 1: vi & 53. 1958; R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; Humbert, Fl. Sahara Sept. & Cent. 407. 1958; Prain, Ind. Kew. Suppl. 4, pr. 2, 28. 1958; Van Campo, Bull. I. F. A. N. 20 (A-3): 753--760. 1958; Anon., Kew Bull. Gen. Index 1929-1956, 47. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 61. 1959; J. Hutchinson, Fam. Flow. Pl., ed. 2, 2: 395. 1959; G. Taylor, Ind. Kew. Suppl. 12: 23. 1959; Angely, Liv. Gen. Bot. Bras. 35 & 39. 1960; Howell & McClintock in Kearney & Peebles, Ariz. Fl., ed. 2, 730. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 327, 349, & 753 (1960) and 2: 504, 564, & 567. 1960; Kevorkian, Phytopath. 43: 406. 1960; Kevorkian, Mycologia 52: 523--524. 1960; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 611 & 656--657. 1960; Martin & Noel, Fl. Albany & Bathurst 92. 1960; Prin, Ind. Kew. Suppl. 5, pr. 2, 35. 1960; Rennó, Levant. Herb. Inst. Agron. Minas 149. 1960; Rambo, Pesquis. Bot. 4: 18 (1960) and 12: 21. 1961; Kevorkian, Mycologia 53: 437--438. 1961; Moldenke, Phytologia 7: 345--350. 1961; Moldenke, Biol. Abstr. 36: 2311. 1961; Runner, Rep. G. W. Groff Coll. 362. 1961; Angely, Fl. Paran. 17: 46. 1961; Angely, Fl. Bacia Paran. 22: 39. 1962; Nair & Rehman, Bull. Bot. Gard. Lucknow 76: 3. 1962; Moldenke, Biol. Abstr. 39: 614. 1962; Soukup, Biota 4: 123--124 (1962) and 4: 366. 1963; Hepper in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 437. 1963; Erdtman in Preston,

- Adv. Bot. Res. 149--208. 1963; Hocking, Excerpt. Bot. A.6: 532 & 535. 1963; Legris, Trav. Sect. Scient. Inst. Franç. Pond. 6: 395, 535, & 558. 1963; J. K. Maheshwari, Fl. Delhi 276 & 279. 1963; Quezel & Santa, Nouv. Fl. Alg. 2: 779 & 781. 1963; H. P. Riley, Fam. Flow. Pl. S. Afr. 128. 1963; Santapau & Wagh, Bull. Bot. Surv. India 5: 108. 1963; Angely, Bibl. Veg. Paran. 195. 1964; R. Good, Geogr. Flow. Pl. 440. 1964; Melchior in Engl., Syllab. Pflanzenfam., ed. 12, 2: 437. 1964; Langman, Select. Guide Lit. Flow. Pl. Mex. 208, 335, 517, & 1010. 1964; Puri, Jain, Mukerjee, Sarup, & Kotwal, Rec. Bot. Surv. India 19: 107. 1964; C. M. Rowell, Sida 1: 268. 1964; Santapau, Excerpt. Bot. A.7: 16. 1964; W. T. Stearn, System. Assoc. Publ. 6: 84. 1964; Thwaites & Hook. f., Enum. Pl. Zeyl., pr. 2, 241. 1964; Moldenke in Shreve & Wiggins, Veg. & Fl. Son. Des. 2: 1255--1256. 1964; Moldenke, Résumé Suppl. 11: 6 (1964) and 12: 3, 5, & 9. 1965; Angely, Fl. Anal. Paran., ed. 1, 577. 1965; F. A. Barkley, List Ord. Fam. Anthoph. 75, 146, & 158. 1965; Gooding, Loveless, & Proctor, Fl. Barbados 353, 355--356, & 466. 1965; Liogier, Rhodora 67: 349--350. 1965; Moldenke, Phytologia 12: 6. 1965; Rambo, Pesquis. Bot. 21: 13, 14, & [59]. 1965; Airy-Shaw in J. C. Willis, Dict. Flow. Pl., ed. 7, 150, 163, 664, & 896. 1966; Erdtman, Pollen Morph. & Pl. Tax., ed. 2, 448 & 449, fig. 256 C & D. 1966; Hirata, Host Range & Geogr. Distrib. Powd. Mild. 276. 1966; Jafri, Fl. Karachi 286 & 287, fig. 282. 1966; Jiménez, Supl. Cat. Fl. Doming. 1: 210. 1966; J. K. Maheshwari, Illustr. Fl. Delhi 172. 1966; Rzedowski & McVaugh, Contrib. Univ. Mich. Herb. 9: 107. 1966; W. T. Stearn, Botan. Latin 292 & 297. 1966; Hocking, Excerpt. Bot. A.11: 503. 1967; Moldenke, Résumé Suppl. 15: 2, 3, & 16. 1967; Puig, Bull. Soc. Hist. Nat. Toulouse 103: 309. 1967; Sladkov, Introd. Sporopoll. Analys. 1967; Burlage, Ind. Pl. Tex. 182 & 193. 1968; Moldenke, Biol. Abstr. 49: 4199. 1968; Moldenke, Résumé Suppl. 16: 5, 16, & 28 (1968) and 17: 8. 1968; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 1: xii & 8. 1969; Anon., Torr. Bot. Club Ind. Am. Bot. Lit. 3: 304 & 309. 1969; Bolkh., Grif, Mayvej., & Zakhar., Chrom. Numb. Flow. Pl. 714. 1969; M. Martinez, Pl. Med. Mex., ed. 5, 505. 1969; Moldenke, Phytologia 18: 504. 1969; A. L. Moldenke, Phytologia 18: 113--114. 1969; Quezel, Fl. & Veg. Plat. Darfur [Doss. 5 Rscherch. Coop. Prog. 45:] 131. 1969; Rickett, Wild Fls. U. S. 3 (2): 362 & 366. 1969; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 325 & 326. 1969; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 2: xxx. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1807 & 1871. 1970; El-Gazzar & Wats., New Phytol. 69: 457, 469, 471, 473, 477, 483, & 485. 1970; Gibson, Fieldiana Bot. 24 (9): 168 & 179--182, fig. 33. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1313 & 1335--1336. 1970; Oberwinkler, Pterid. & Sperm. Venez. 12 & 78. 1970; Reitz, Sellowia 22: 22. 1970; Rickett, Wild Fls. U. S. 4 (3): 542 & 765. 1970; Soukup, Raymondiana 3: 26 & 43. 1970; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 4: iii, 826, & 836--837, map 1388. 1971; Bews in Eyre, World Veget. Types 161. 1971; Dwyer, Raymondiana 4: 70. 1971; Erdtman, Pollen Morph. & Pl. Tax., ed. 3, 448.

1971; Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 500. 1971; Wiggins & Porter, Fl. Galáp. Isls. 980. 1971; C. D. Adams, Flow. Pl. Jam. 626, 631, & 804. 1972; Anon., Biol. Abstr. 54 (4): B. A. S. I. C. S. 33. 1972; Cuf., Bull. Jard. Bot. Nat. Belg. 42 (3): Suppl. [Emm. Pl. Aethiop.] 1629. 1972; Moldenke, Biol. Abstr. 54: 1725. 1972; Moldenke, Phytologia 23: 210, 414, 416, 425, & 504. 1972; A. L. Moldenke, Phytologia 23: 318. 1972; J. Mukherjee, Trans. Bose Res. Inst. Calcutta 35: 37--44. 1972; Rouleau, Taxon Index Vol. 1--20 part 1: 54 & 379. 1972; Stafleu, Internat. Code Bot. Nom. 73, 354, & 380. 1972; R. R. Stewart in Nair & Ali, Fl. West Pakist. 605. 1972; Thanikaimoni, Inst. Franç. Pond. Trav. Sect. Scient. & Techn. 12 (1): 35. 1972; Whipple, Journ. Elisha Mitch. Sci. Soc. 88: [1], 9, & 13. 1972; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): 9 & [62]--63. 1973; Moldenke, Phytologia 25: 236 & 504 (1973) and 26: 500. 1973; Anon., Biol. Abstr. 57 (12): B.A.S.I.C. E.34. 1974; Hocking, Excerpt. Bot. A. 23: 290. 1974; "H. R.", Biol. Abstr. 57: 6940. 1974; Moldenke, Phytologia 28: 507. 1974; Troncoso, Darwiniana 18: 296, 301, 302, 305, 348--350, 408, 411, & 412, fig. 13. 1974.

Airy-Shaw (1966) avers that the Buchia D. Dietr., Syn. Pl. 3: 370--371 (1843) is a synonym of Bouchea Cham. In this disposition he is obviously following Jackson in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 349 (1893). However, it appears evident that the Buchia attributed to Dietrich is identical with the Buchia H.B.K. (1817) referred to by Dietrich and which Jackson on the same page of his work reduces to synonymy under Perama Aubl. in the Rubiaceae. The description is "Cal. bipartitus, laciniis acuminatis carinato-concavis. Cor. basi extus pilis seriatis cincta infundibuliformis 4-partita. Ovarium depresso-globosum. Stigma 3-partitum laciniis capillaribus. Fructus 3-cuspidatus 3-locularis." It seems unquestionable that both names belong in the synonymy of Perama, not Bouchea.

Barkley (1965) lists Denisia among the valid genera of Verbenaceae, although he also correctly lists it among the synonyms of Bouchea, where, in my opinion, it belongs. Chascanum E. Mey, often listed in the synonymy of Bouchea, is a valid separate genus and Pleurostigma Hochst. and Plexipus Raf. belong in its synonymy.

According to Rickett & Stafleu (1960), the generic name Bouchea has been conserved under the International Code of Botanical Nomenclature as follows: "† 7148. Bouchea Chamisso, Linnaea 7: 252. 1832", typified by B. pseudogervao (A. Saint-Hilaire) Chamisso (Verbena pseudogervao A. Saint-Hilaire) (typ. cons.)."

Nair & Rehman (1962) say that "It is known that in Bouchea, there are either 3-porate or 3-colpate grains on which basis the genus could be divided into two groups (Erdtman, 1945). But the Indian species of Bouchea have shown a 3-colporate condition as different from earlier reports." Actually, there are no true members of the genus Bouchea native to India — the plants referred to by Nair & Rehmann are probably Chascanum marrubiifolium Fenzl and

Svensonia hyderbadensis (Walp.) Moldenke, and I am not at all surprised to learn that the pollen grains are distinct.

The late Dr. Gunnar Erdtman, in a letter to me dated December 21, 1972, says "I am writing a short critical note on the (very abundant?) occurrence of Bouchea (maybe several species) similar to or, amazingly enough, almost identical with recent taxa in Late Cretaceous deposits in northeastern Brazil. Can you possibly drop me a line on your opinion in this matter? I consider my opinion (i.e. the determination of the fossil remains) as perfectly safe. What about paleoecology? What about connections betw. America, Africa, Madagascar and India? (Bouchea & Chascanum).". In a following letter, received by me on January 20, 1973, he says "Thank you so very much indeed for your very kind and prompt answer to my letter of December 21st. Bouchea seems to be a very interesting genus for several reasons and I would like to have a young palynologist making a detailed study of it before the publication of any data on its geologic history. B. linifolia, prismatica, pseudogervao, rusbyi etc. seem to be particularly interesting."

It should be noted here that Merrill (1949) and Airy Shaw (1966) erroneously reduce the genus Lomake Raf. to synonymy under Stachytarpheta Vahl -- it definitely belongs in the synonymy of Bouchea.

Soukup (1963) records the vernacular name "pacunga" as applied to a species of Bouchea in Peru [probably B. fluminensis (Vell.) Moldenke].

The Angely (1971) work referred to in the above bibliography bears the date "1970" on its title-page, but was not actually published until 1971. It is also worth noting here that the Schauer (1847) reference from Linnaea was published in August of 1847, while his generally quoted work in De Candolle's Prodrromus did not appear until November 26 of that year. The Index Kewensis uses the latter work as the original place of publication of the several new binomials published by Schauer in the Linnaea work. I am informed that this will be corrected in the next Index Kewensis Supplement.

Gibson (1970) makes the curious statement of the genus Bouchea: "Ten species, one in Abyssinia, the others found in tropical America". She does not indicate what the Abyssinian species is. Actually the genus is confined entirely to the New World. The Ethiopian species which formerly were placed in Bouchea are now regarded as Chascanum (4 species) and Svensonia (2 species). She lists only B. nelsonii, B. prismatica, B. prismatica var. brevirostra, and B. prismatica var. longirostra from Central America. Standley (1938) says "The genus Bouchea is represented in Central America, and perhaps in Costa Rica." Seven species and varieties occur in Mexico; the only one known to me from Costa Rica is B. nelsonii. Sanchez Sanchez (1969) says "Este género comprende unas 17 especies en América tropical y subtropical" -- actually 16 species and 7 named varieties and forms are now recognized. Martinez (1969) notes for an unidentified species from Veracruz

the following information: "Bouchea sp. Tierra Blanca, Ver. El cocimiento de las hojas se usa contra la diarrea." Tharp (1939) comments that some unidentified members of this genus in Texas [there are 3 in the state] are found "in mesquite chaparral and sotol-lechuguilla regions."

The "Bouchea sp." recorded by Robinson & Greenman (1895) is actually Stachytarpheta cayennensis (L. C. Rich.) Vahl. The Breedlove 10268, distributed as Bouchea sp., is actually Ghinia curassavica (L.) Millsp., Stuessey 1031 is Priva grandiflora (Ort.) Moldenke, and C. C. Albers 62122 is not verbenaceous.

BOUCHEA AGRESTIS Schau.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 327 (1893), pr. 2, 1: 327 (1946), and pr. 3, 1: 327. 1960; Moldenke, Phytologia 7: 346. 1961; Moldenke, Résumé Suppl. 12: 3. 1965; Moldenke, Fifth Summ. 1: 147 & 399 (1971) and 2: 768 & 850. 1971.

Two cotype specimens, Blanchet 3731 and 3907, deposited in the herbarium of the Conservatoire et Jardin Botaniques at Geneva, were photographed there by Macbride as his type photograph number 7851.

Additional & emended citations: BRAZIL: Bahia: Blanchet 3731 [Macbride photos 7851, in part] (E—134933—cotype, W—photo of cotype), 3907 [Macbride photos 7851, in part] (W—photo of cotype). Maranhão: Eiten & Eiten 4415 (N).

BOUCHEA BOLIVIANA (Kuntze) Moldenke

Additional synonymy: Bouchea pseudogervao f. pilosa Herzog apud R. C. Foster, Contrib. Gray Herb. 184: 169, in syn. 1958. Bouchea boliviana Mold. ex Troncoso, Darwiniana 18: 350. 1974.

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 39. 1938; Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 569. 1941; Moldenke, Phytologia 4: 488—489. 1954; R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; Moldenke, Résumé 113, 123, 239, 347, 356, & 443. 1959; Moldenke, Fifth Summ. 1: 181, 195, & 400 (1971) and 2: 628, 646, & 850. 1971; Moldenke, Phytologia 28: 441 & 953. 1974; Troncoso, Darwiniana 18: 350. 1974.

Recent collectors describe this plant as herbaceous, 1 m. tall, frequent in wet soil "en seja de monte", and have found it growing at 400 m. altitude, blooming in March. The corollas on R. F. Steinbach 789 are described as having been "violet" in color when fresh.

Troncoso (1974) cites Burkart & al. s.n. [Ledesma; Herb. Inst. Darwinion 15244] from Jujuy and Rodríguez 174 from Salta, Argentina, in the Darwinion herbarium.

Additional & emended citations: BOLIVIA: Santa Cruz: R. F. Steinbach 789 (N, S, W—2533570, Ws). Tarija: Pflanz 2037 (W—1234317).

BOUCHEA BOYACANA Moldenke

Additional bibliography: Moldenke, *Phytologia* 7: 346 (1961) and 13: 242. 1966; Hocking, *Excerpt. Bot. A.11*: 503. 1967; Moldenke, *Biol. Abstr.* 49: 4199. 1968; Moldenke, *Fifth Summ.* 1: 115 (1971) and 2: 850. 1971; Moldenke, *Phytologia* 28: 434. 1974.

BOUCHEA BOYACANA var. GLABRATA Moldenke

Bibliography: Moldenke, *Phytologia* 13: 242. 1966; Hocking, *Excerpt. Bot. A.11*: 503. 1967; Moldenke, *Biol. Abstr.* 49: 4199. 1968; Moldenke, *Fifth Summ.* 1: 139 (1971) and 2: 850. 1971.

Material of this taxon has been misidentified and distributed in some herbaria as *B. fluminensis* (Vell.) Moldenke.

Citations: PERU: Piura: Hutchison & Wright 6592 (W--2467554--isotype, Z--type).

BOUCHEA CHASCANOIDES Moldenke

Additional bibliography: Moldenke, *Phytologia* 7: 346. 1961; Moldenke, *Fifth Summ.* 1: 147 (1971) and 2: 850. 1971.

BOUCHEA CIPOENSIS Moldenke

Synonymy: *Bouchea cipoensis* Moldenke ex Rennó, *Levant. Herb. Inst. Agron. Minas* 149. 1960.

Additional bibliography: Rennó, *Levant. Herb. Inst. Agron. Minas* 149. 1960; Moldenke, *Phytologia* 7: 346--347. 1961; Moldenke, *Fifth Summ.* 1: 147 & 399 (1971) and 2: 850. 1971.

BOUCHEA DISSECTA S. Wats.

Additional synonymy: *Bouchea dessecta* S. Wats. ex Moldenke, *Phytologia* 28: 453, in syn. 1974.

Additional & emended bibliography: Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 1, 61 (1921) and pr. 2, 61. 1941; Moldenke, *Phytologia* 4: 489--490. 1954; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 3, 61. 1959; Moldenke, *Résumé* 34, 238, 239, & 443. 1959; Moldenke in Shreve & Wiggins, *Veg. & Fl. Son. Des.* 2: 1256. 1964; Langman, *Select. Guide Lit. Flow. Pl. Mex.* 335. 1964; Moldenke, *Fifth Summ.* 1: 67, 399, & 400 (1971) and 2: 850. 1971; Moldenke, *Phytologia* 28: 453. 1974.

In Shreve & Wiggins (1964) the distribution of this species is given as "In shade on llanos, in pebbly, slightly red soil and fields, and on rocky ridges, ledges, and hill slopes, Lower Sonoran to Tropical Zones, central Sonora to Guerrero". Gentry found it on an open slope with turf grass and thin arid soil in the Lowland Forest Area, at 1500 feet altitude, and notes "the corollas falling before midday". Other recent collectors have found the species in fields, on dry llanos, on hillsides with dense shrubs and woods, and "occasional" on wooded bluffs with *Cordia*, *Acacia*, and *Lysiloma tergemina*.

The corollas are described as having been "pink" on Hinton 6492, 12019, & 12114, "bright pink" on H. S. Gentry 6133, "laven-der-pink" on Dieterle 4317, and "purple" on McVaugh 17993. The plant has been found in fruit in September. Hinton, on the label

of his no. 6492, says of it "very rare; a new record".

Still other recent collectors have encountered B. dissecta in fields and on forested slopes with Bursera, Pseudobombax, Ipomoea, and Guazuma, while Dieterle refers to it as an "occasional herb in the shade of shrubs in cultivated land with remnants of thorn forest and areas of old lava flows".

Additional & emended citations: MEXICO: Guerrero: Hinton & al. 6492 (Ld, Se--103432, Tu--112028). Michoacán: Dieterle 4317 (Mi); Hinton & al. 12019 (Ld, Se--103433, Tu--112029), 12062 (Mi, S), 12114 (Ld, Mi, Se--103341, Tu--112030); McVaugh 17993 (Mi). Sinaloa: T. S. Brandegees s.n. [Culiacan] (Ca--104993, W--873656); Breedlove & Thorne 17986 (Gg--532706); H. S. Gentry 6133 (Du--319742, Tu--124391); J. Gonzalez Ortega 621 (W--1083758), 681 (F--598077); Nervaez Montes & Salazar 621 (W--1039133); Edw. Palmer 1485 (W--305276); Waterfall 12757 (St, Z). Sonora: M. E. Jones 22361 (E--969938); Edw. Palmer 259 (W--46708--isotype), B (W--208736); I. L. Wiggins 7292 (Ca--665313, Ld, Se--168355, Tu--98486).

BOUCHEA FLABELLIFORMIS M. E. Jones

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 39. 1938; Moldenke, Phytologia 4: 490. 1954; Moldenke, Résumé 34 & 443. 1959; Moldenke, Fifth Summ. 1: 67 (1971) and 2: 850. 1971.

Emended citations: MEXICO: Baja California: M. E. Jones 27439 (E--1034293--isotype, F--721365--isotype).

BOUCHEA FLUMINENSIS (Vell.) Moldenke

Additional & emended synonymy: Verbena fluminensis Arrab. ex Steud., Nom. Bot., ed. 2, 750. 1841. Verbena pseudo-gervao A. St.-Hil. ex Steud., Nom. Bot., ed. 2, 2: 750, in syn. 1841. Bouchea pseudogervao Cham. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1179. 1895. Bouchea pseudogervao Cham. ex M. Kunz, Anatom. Untersuch. Verb. 40. 1911. Verbena fluminensis (Vell.) Moldenke, Résumé Suppl. 16: 28, in syn. 1968. Bouchea fluminensis Vell. ex Moldenke, Fifth Summ. 1: 399, in syn. 1971. Bouchea fluminensis Mold. ex Moldenke, Phytologia 25: 236, in syn. 1973.

Additional & emended bibliography: Cham., Linnaea 7: 252--254. 1832; Steud., Nom. Bot., ed. 2, 2: 750. 1841; Bocq., Adansonia, ser. 1, 3: [Rev. Verbénac.] 237. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 327 (1893) and pr. 1, 2: 1179. 1895; T. Peckolt, Bericht. Deutsch. Pharm. Gesell. 14: 466. 1904; M. Kunz, Anatom. Untersuch. Verb. 40. 1911; Wangerin in Just, Bot. Jahresber. 54 (1): 1170 [366]. 1932; Moldenke, Carnegie Inst. Wash. Publ. 522: 176. 1940; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 327 (1946) and pr. 2, 2: 1179. 1946; Chittenden, Roy. Hort. Soc. Dict. Gard., ed. 1, 1: 302. 1951; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 448. 1952; Chittenden, Roy. Hort. Soc. Dict. Gard., ed. 2, 1: 302. 1956; Rambo, Sellowia 7: 207. 1956; Angely, Fl.

Paran. 7: 11. 1957; Schnack & Fehleisen, Darwiniana 11: 245--255. 1957; Cave, Ind. Pl. Chromosome Nos. 1: vi & 53. 1958; R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 327 (1960) and pr. 3, 2: 1179. 1960; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 656--657. 1960; Renné, Levant. Herb. Inst. Agron. Minas 149. 1960; Rambo, Pesquis. Bot. 4: 18 (1960) and 12: 21. 1961; Angely, Fl. Paran. 17: 46. 1961; Soukup, Biota 4: 124. 1962; Hocking, Excerpt. Bot. A.6: 535. 1963; Angely, Bibl. Veg. Paran. 195. 1964; Moldenke, Résumé Suppl. 11: 6 (1964) and 12: 3 & 5. 1965; Angely, Fl. Anal. Paran., ed. 1, 577. 1965; Rambo, Pesquis. Bot. 21: 13--14 & [59]. 1965; Erdtman, Pollen Morph. & Pl. Tax., ed. 2, 448. 1966; Moldenke, Résumé Suppl. 16: 28. 1968; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 1: xli. 1969; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 714. 1969; Reitz, Sellowia 22: 22. 1970; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 4: 837, iii, & xix, map 1388. 1971; Dwyer, Raymondiana 4: 70. 1971; Erdtman, Pollen Morph. & Pl. Tax., ed. 3, 448. 1971; Moldenke, Fifth Summ. 1: 135, 139, 147, 181, 188, 195, 355, & 399--401 (1971) and 2: 628--631, 668, 680, 691, 768, & 850. 1971; Rouleau, Taxon Index Vol. 1-20 part 1: 54 & 379. 1972; Stafleu, Internat. Code Bot. Nom. 354. 1972; Moldenke, Phytologia 23: 425 (1972) and 25: 236. 1973; Troncoso, Darwiniana 18: 348--350, 411, & 412, fig. 12. 1974.

Additional illustrations: Troncoso, Darwiniana 18: 349, fig. 12. 1974.

Recent collectors describe this plant as an herb, subshrub, or open irregularly branched shrub, 1--1.5 m. tall, the leaves grayish-green, glabrous, and soft, the flowers slightly zygomorphic, and found it growing in open places, gallery forests, capoeira at the edge of streams, partial shade on wooded calcareous outcrops, and in semi-arid cactus-*Acacia* forests, at altitudes of 800--1200 m., flowering in March and from May to December, and fruiting in March, May, and October.

Hatschbach describes the species as "ruderal", while Macbride (1960) actually makes the amazing statement that "Too many collections have been made of this weedy plant". Actually, not intensive enough collecting of it has been done as yet in order to determine more accurately the distribution of its several names (and perhaps other as yet unnamed) subspecific taxa. Macbride also notes that correspondence between Saint-Hilaire and Kunth, from which I have quoted in a previous work (1940), "shows, interestingly, that the observing and extremely able French botanist [Saint-Hilaire] was deterred by his friend [Kunth] from proposing a new genus based on his *V[erben]a pseudogervao*, six years before Chamisso's segregation was published." Stafleu (1972) informs us that *Bouchea pseudogervao* (A. St.-Hil.) Cham. is the conserved type ["type cons."] for the genus *Bouchea*.

The corollas are described as having been "blue" on Hatschbach 32635 and Sehnem 4071, "purple" on Woytkowski 5801, "blue to purple" on Ferreira 17429, "lilac" on Krapovickas, Cristóbal, & Maruñak 15778, "violet" on Hatschbach 28462, "pale rosy-lavender"

on Irwin, Maxwell, & Wasshausen 21013, and "light-violet, the tube paler" on Irwin, Souza, Grear, & Reis dos Santos 15702, while on Madison 10447-70 it is stated that the calyx was "light-green, corolla-tube white, the lobes lavender, the anthers bright-yellow"

Erdtman (1966) has examined the pollen of Widgren 344 from Brazil and describes the grains as more or less like those seen in B. prismatica (L.) Kuntze, but slightly smaller, being 121 μ x 77 μ in dimensions. Soukup (1962) records the vernacular names "pacunga" and "pacungua" for B. fluminensis in Peru. Cave (1958) reports the haploid chromosome number as 20. Peckolt (1904) says "In den Staaten vom Äquator bis zur südlichen Tropenzone bekannt als Gervaõ de folha grande — Groszblätteriger G[ervaõ]. Diese Pflanze wird als Ersatz der folgenden [Stachytarpheta dichotoma (Ruiz & Pav.) Vahl] genommen, doch nicht so geschätzt."

A cotype specimen of Verbena pseudogervao, A. Saint-Hilaire 497, was photographed in the herbarium of the Botanischer Garten und Museum at Berlin by Macbride as his type photograph number 17583, but is now destroyed, and a specimen of Reineck s.n. in the same herbarium is his type photograph number 17604 [although it is not a type number of anything] and is also now destroyed.

Chittenden (1956) describes B. fluminensis as an "Evergreen perennial. Stems 4-angled, 2 to 5 ft. high", the leaves "ovate or elliptic-ovate, slender-pointed, toothed", the flowers [corollas] "purplish with white throat, in terminal spikes, 6 to 10 in. long, slender", flowering in September [in England]. He says that it was introduced into cultivation in England from Brazil in 1874 and should be grown there in the "Stove". "A well-drained compost or loam and sandy peat suits them. Propagated by cuttings taken in spring, placed in sand under a hand-glass in gentle heat." The Ledingham 4439, cultivated in Argentina, is said to have come originally from Misiones.

Rambo (1965) cites the following Herb. Anchieta numbers, all collected by himself except where otherwise noted: 1135, 2749, 9496, 30646, 35480 [Henz s.n.], 37900, 38378, 42431, 42763, 42903, 42950, 43792, 44756, 47069, 47761 [Sehnem 4056], 47762 [Sehnem 4071], 47763 [Sehnem 3819], 48734, 48893, 49118, 50473 [Sehnem 4056], and 52259 [Spies s.n.] from Rio Grande do Sul, 30453 [Reitz 995] and 32076 from Santa Catarina, and 35821 [Hatschbach 745] and 53477 from Paraná, Brazil. The 47761 [Sehnem 4056], however, has been examined by me and proves actually to be f. albiflora Moldenke.

Macbride (1960) cites from Peru: Cuzco: Diehl 2429, Soukup 800. Junín: Killip & Smith 26625, Klug 2839, Macbride 5304. San Martín: Goodspeed 35004 & 35105, Klug 3904 & 4206, Ll. Williams 5469, 5561, & 5808, Woytkowski 35004. He records the vernacular names "pacunga" and "pakungua" and gives the extra-limital distribution of the species as "Ecuador and Brazil".

Troncoso (1974) cites Rojas s.n. [Puerto Aguirre; Herb. Osten

8074] and Schnack s.n. [Iguazú; Herb. Inst. Darwin. 19855] from Misiones, Argentina, the former deposited in the herbarium of the Museo de Historia Natural in Montevideo and the latter in the Darwinion herbarium, and Ule 3886 from Santa Catarina, Brazil, in the Hamburg herbarium.

Dwyer (1971) cites Woytkowski 5728 from Cajamarca, Peru, 5801 from Junín, and 7152 from San Martín.

Material of this species has been misidentified and distributed in some herbaria as B. ehrenbergii Cham. and as something in the Acanthaceae or Gesneriaceae. On the other hand, the Hutchison & Wright 6592, distributed as B. fluminensis, is actually the type collection of B. boyacana var. glabrata Moldenke, while Eggers 14618 is Stachytarpheta cayennensis (L. C. Rich.) Vahl.

Additional & emended citations: ECUADOR: Manabí: Anthony & Tate 87 (W--1192177). PERU: Cajamarca: Woytkowski 5728 (W--2397000). Cuzco: Diehl 2429 (F--630092). Junín: Killip & Smith 23397 (W--1358097), 25023 (W--1359316), 26625 (W--1460508); Macbride 5304 (F--536329, W--1515778); M. T. Madison 10447-70 (F--1728084); Woytkowski 5801 (W--2397040). Loreto: Klug 2839 (W--1065412); Spruce 4528 (V--294397). San Martín: Ferreira 17429 (W--2552872); Klug 3904 (E--1104925); L. Williams 5469 (F--626650), 5561 (F--623226), 5808 (F--626486, W--1496555). BRAZIL: Acre: Ule 9725 (Ut--49204, W--1615224). Distrito Federal: Irwin, Maxwell, & Wasshausen 21013 (Ld). Goiás: Irwin, Souza, Grear, & Reis dos Santos 15702 (Ac). Guanabara: N. Santos 5425 (Ja). Minas Gerais: Mexia 5268 (Au--120850, F--866392, Go, Mi); Regnell 1.340 [1856] (W--209654); A. Saint-Hilaire 947 [Macbride photos 17583] (E--663062--photo, E--914102--photo, N--photo, W--photo); Widgren s.n. [Caldas, 13/4/1846] (W--1323026). Paraná: Dusén 7567 (W--1481823), 9504 (D--683010, E--1035819, F--668416, W--1481824); Hatschbach 28462 (Ld), 32635 (Ld). Rio de Janeiro: Aguillar s.n. [Estação Experimental, 2 Nov. 1922] (Ja--45980, Ja); A. Lutz 23668 (F--656559). Rio Grande do Sul: Leite 2025 (G); Rambo Herb. Anchieta 48893 (W--2047022), 49118 (Du--376556, Go); Reinck s.n. [Macbride photos 17604] (W--photo); Sehnem 4071 [Herb. Anchieta 47762] (B). Santa Catarina: Reitz & Klein 2626 (W--2340820). BOLIVIA: El Beni: H. H. Rusby 915 (Du--382293, E--118620, V--928, W--32698, W--1323027). La Paz: Krukoff 10461 (W--1778164). ARGENTINA: Corrientes: Pedersen 2914 (W--2283157). Misiones: Krapovickas, Cristóbal, & Maruffak 15778 (Ld). CULTIVATED: Argentina: Ledingham 4439 (N).

BOUCHEA FLUMINENSIS f. ALBIFLORA Moldenke

Bibliography: Moldenke, *Phytologia* 8: 273. 1962; Moldenke, *Biol. Abstr.* 39: 614. 1962; Moldenke, *Résumé Suppl.* 4: 5. 1962; Hocking, *Excerpt. Bot. A.6*: 535. 1963; Moldenke, *Fifth Summ.* 1: 147 (1971) and 2: 850. 1971.

Citations: BRAZIL: Rio Grande do Sul: Sehnem 4056 [Herb. Anchietea 47761] (B--type).

BOUCHEA FLUMINENSIS var. PILOSA Moldenke

Additional bibliography: Angely, Fl. Paran. 7: 11 (1957) and 17: 46. 1961; Moldenke, Phytologia 7: 348. 1961; Angely, Bibl. Veg. Paran. 195. 1964; Angely, Fl. Anal. Paran., ed. 1, 577. 1965; Moldenke, Fifth Summ. 1: 147 & 195 (1971) and 2: 850. 1971.

Recent collectors have found this plant growing in forests, woods, and pastures, at 200--300 m. altitude, flowering in May, October, and December, and fruiting in December. They describe it as a subshrub, 70 cm. tall. The corollas are said to have been "lilac" in color when fresh on Hatschbach 29683 and this collection was made on the banks of an "areia".

Additional citations: BRAZIL: Paraná: Hatschbach 29683 (Ld). Santa Catarina: Smith & Klein 14100 (N, Z); Smith & Reitz 12670 (W--2451606).

BOUCHEA INOPINATA Moldenke

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 39. 1938; Moldenke, Phytologia 4: 493--494. 1954; Moldenke, Résumé 87 & 443. 1959; Moldenke, Fifth Summ. 1: 147 (1971) and 2: 850. 1971.

The type specimen, Schüch s.n., in the herbarium of the Naturhistorisches Museum in Vienna, was photographed there by Macbride as his type photograph number 34325.

Additional citations: BRAZIL: State undetermined: Schüch s.n. [Macbride photos 34325] (W--photo of type).

BOUCHEA LINIFOLIA A. Gray

Additional synonymy: Bouchea linitolia A. Gray ex Moldenke, Résumé Suppl. 6: 0, in syn. 1963.

Additional & emended bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 335 (1878) and ed. 2, 2 (1): 335. 1886; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 327 (1893) and pr. 2, 1: 327. 1946; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 448 & 449, fig. 256 C. 1952; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 327. 1960; Moldenke, Phytologia 7: 348 (1961) and 9: 165. 1963; Moldenke, Résumé Suppl. 6: 9. 1963; Erdtman, Pollen Morph. & Pl. Tax., ed. 2, 448 & 449, fig. 256 C. 1966; Rickett, Wild Fls. U. S. 3 (2): 366. 1969; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1807. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1336. 1970; Erdtman, Pollen Morph. & Pl. Tax., ed. 3, 448 & 449, fig. 256 C. 1971; Moldenke, Fifth Summ. 1: 54, 61, 67, & 400 (1971) and 2: 850. 1971.

Additional illustrations: Erdtman, Pollen Morph. & Pl. Tax., ed. 1, fig. 256 C (1952), ed. 2, fig. 256 C (1966), and ed. 3, fig. 256 C. 1971.

Recent collectors describe this plant as an erect shrub, 1--3 feet tall, or an "infrequent perennial", with large showy flowers,

growing on limestone hills, in limestone crevices, on open, dry, rocky or dry calcareous hillsides, in small rocky canyons, and "along permanent streams of water", at 1100--3800 feet altitude, flowering in April and from June to October, and fruiting from June to October. Warnock & McBryde describe it as "infrequent" in Val Verde County, Texas, but R. M. Stewart asserts that it is "fairly common" or "common" in Coahuila, Mexico.

The corollas are described as having been "lavender" when fresh on Warnock 13334 and on Warnock & McBryde 15100, "purple" on R. M. Stewart 1611, and "magenta" on Johnston & Mueller 342.

Erdtman (1966) examined the pollen from Wynd & Mueller 409 and describes the grains as 4--5-colpate, subprolate, and 76 μ x 65 μ in size.

The Sperry T.125 & T.563, distributed as B. linifolia, are actually Verbena perennis Wooton.

Additional & emended citations: TEXAS: Brewster Co.: Havard s. n. [W. of Taelingra] (F--252020). Kinney Co.: Havard 1383 (E--118634, F--252147, W--155945). Pecos Co.: Flyr 199 (Au--235324); B. H. Warnock 13334 (Ld). Presidio Co.: Tharp 253 (Ca--882436). Terrell Co.: B. H. Warnock 14001 (Ld). Uvalde Co.: E. J. Palmer 13007 (Au, Ca--425600, E--827557, Tu--69660). Val Verde Co.: G. L. Fisher 49109 (Ew); Schott s. n. [Emory 814] (W--43500); B. H. Warnock 11170 (Ld), 11289 (Ld); Warnock & McBryde 15100 (Au, Ld); C. Wright 449 (Ca--221687--cotype, W--43509--cotype), 1509 (E--118619--cotype, W--113510--cotype). MEXICO: Coahuila: Gould 10605 (Au--236394); Johnston & Mueller 342 (Au--299425); E. G. Marsh 1383 (Au, St); R. M. Stewart 645 (Au--301294), 1611 (Au--300789); Wynd & Mueller 409 (E--1114105, Mi, St).

BOUCHEA NELSONII Grenz.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 54 (1): 1170 [366]. 1932; Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 746. 1934; Moldenke, Phytologia 7: 348. 1961; Langman, Select. Guide Lit. Flow. Pl. Mex. 335 & 1010. 1964; Moldenke, Résumé Suppl. 15: 3. 1967; Gibson, Fieldiana Bot. 24 (9): 179--181, fig. 33. 1970; Moldenke, Fifth Summ. 1: 67, 78, 87, & 400 (1971) and 2: 850. 1971; Moldenke, Phytologia 23: 414 & 416. 1972.

Illustrations: Gibson, Fieldiana Bot. 24 (9): 181, fig. 33. 1970.

Recent collectors describe this plant as herbaceous, 60 cm. tall, with flowers 1/4 inch long, and have found it growing on limestone hillsides, on road shoulders, in chaparral, on slopes, in matorral vegetation in canyons, and on wet alluvium at small streamsides, at altitudes of 14--1100 m. Tapia encountered it on "ladera granítica con vegetación de bosque tropical decidua", while Ventura A. refers to it as "scarce" or "rare".

The corollas are described as having been "lavender" when fresh on R. M. King 877, "pink" on Breedlove 6303 and Hinton 10862, "blue" on Laughlin 2617, "light-blue" on Pfeifer 1613,

"purple" on Tapia s.n. and Ventura A. 2646, and "light red-violet" on Moldenke & Moldenke 2285.

King describes this species as "common", growing in open sun on clay-loam of flat grazed areas with the vegetation consisting mainly of cacti and leguminous shrubs. Gibson (1970) gives its distribution as "Brushy, rocky slopes or plains, 150—800 meters; Huehuetenango; Zacapa [Guatemala]. Mexico (Oaxaca and Chiapas); Honduras" and reports the vernacular name "verbena"

Material of this species has been misidentified and distributed in some herbaria as B. prismatica (L.) Kuntze and as B. prismatica var. longirostra Grenz. On the other hand, the Horton & Morrison 8854, distributed as B. nelsonii, is actually B. prismatica var. longirostra Grenz.

Additional & emended citations: MEXICO: Chiapas: Breedlove 6303 (Ac); Laughlin 2617 (W—2557095); Moldenke & Moldenke 2285 (Ld); E. W. Nelson 2867 (E—923400—photo of type, W—229331—type). Guerrero: Alexander & Hernandez Xolocotzi 111 [E. J. Alexander 2122] (N, N, N, N); Hinton 10862 (Ld, Se—120074); Webster, Rowell, & Barkley 17M718 (Au—123230). Oaxaca: E. J. Alexander 272 (N, N, Z); G. L. Fisher 35472 (E—1097034), s.n. (Tu—107930); R. M. King 877 (M1); Matuda 6119 (Ld); Orcutt 5268 (W—1266957); Tapia s.n. [25/IX/1965] (Ip). Veracruz: Ventura A. 2646 (Au—303155, M1, N). GUATEMALA: Zacapa: Kellerman 7932 (F—224758, W—2442732), s.n. [Zacapa, 1908] (W—2442663); H. Pittier 1779 (W—578173). HONDURAS: Distrito Central: Pfeifer 1613 (W). COSTA RICA: Guanacaste: A. R. Moldenke 1217 (Ac).

BOUCHEA NOTABILIS Moldenke

Additional bibliography: Moldenke, Phytologia 4: 495. 1954; Moldenke, Résumé 65 & 443. 1959; Moldenke, Fifth Summ. 1: 115 (1971) and 2: 850. 1971.

BOUCHEA PRISMATICA (L.) Kuntze

Additional synonymy: Verbena americana media annua, ocymi folio lanuginoso, flore purpureo amplo Breyn., Prod. Fasc. Rar. Pl., ed. 1, 2: 104. 1688. Verbena americana annua, folio ocymi Breyn., Prod. Fasc. Rar. Pl., ed. 1, 2: 104, in syn. 1688. Verbena scutellariae, s. cassidae folio, dispermos, americana, an Verbena indica Bontii. Hist. Ind. Or. forte etiam Verbena curassavica scutellariae foliis, flore purpurascens Pluk., Phytogr. 1: pl. 70, fig. 1. 1691. Verbena minima chamaedryos folio Sloane, Cat. Pl. Ins. Jamaic. 64. 1696. Verbena americana media annua ocimi folio lanuginoso, flore purpureo amplo Breyn. apud Moris., Pl. Hist. Univ. Oxon. 3: 418 ["408"]. 1699. Verbena curassavica scutellariae foliis, flore purpurascens Herm. ex Moris., Pl. Hist. Univ. Oxon. 3: 418 ["408"], in syn. 1699. Verbena americana media annua, ocimifolio lanuginoso, flore purpureo amplo Breyn. apud Ray, Hist. Plant. 3: Suppl. 285.

1704. Verbena scutellariae sive cassidae folio dispermos Pluk. apud Ray, Hist. Plant. 3: Suppl. 285, in syn. 1704. Verbena scutellariae foliis dispermos americana Pluk. ex Herm., Cat. Plant. Nond. 13 & 15. 1905. Verbena americana media annua, ocymi folio lanuginoso, flore purpureo amplo Breyn., Prod. 2: 104. 1739. Verbena erecta divisa, spicis e divaricationibus supremis assurgentibus Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 115. 1755. Verbena folio subrotundo serrato, flore caeruleo Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 116, in syn. 1755. Verbena scutellariae sive cassidae folio, &c. Pluk. ex Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 116, in syn. 1755. Verbena diandra, spic. laxis, calyc. alternis prismaticis truncatis aristatis, fol. ovatis obtusis J. A. Murr. in L., Syst. Veg., ed. 13, 62. 1774. Verbena diandra, spicis laxis, calycib. alternis prismaticis truncatis aristatis, fol. ovatis obtusis L. apud H. E. Richter, Cod. Bot. Linn. 35. 1835. Verbena minima, chamaedryos fol. Sloane apud H. E. Richter, Cod. Bot. Linn. 35, in syn. 1835. Verbena, scutellariae s. cassidae fol., dispermos americ. Pluk. apud H. E. Richter, Cod. Bot. Linn. 35, in syn. 1835. Verbena minima, chamaedr. fol. Sloane apud Peterm., Cod. Bot. Linn. Ind. Alph. 196, in syn. 1840. Verbena scutellariae s. cassid. fol. etc. Pluk. apud Peterm., Cod. Bot. Linn. Ind. Alph. 196, in syn. 1840. Stachytarpheta prismatica Vahl ex Voigt, Hort. Suburb. Calc. 473. 1845. Bouchéa ehrenbergiana Cham. ex Schau., Linnaea 20: 478. 1847. Bouchea prismatica Briq. ex Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 61, in syn. 1901. Bouchea prismatica Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 61, in syn. 1901. Callicarpa prismatica Robledo, Lecc. Bot. 2: 498. 1940. Verbena folio subrotundo serrato flore coerulea Sloane ex Moldenke, Fifth Summ. 2: 670, in syn. 1971. Zapania prismatica Lam. ex Moldenke, Fifth Summ. 2: 737, in syn. 1971.

Additional & emended bibliography: Breyn., Prod. Fasc. Rar. Pl. Secund. 104. 1689; Pluk., Phytogr. 1: pl. 70, fig. 1. 1691; Sloane, Cat. Pl. Ins. Jamaic. 64. 1696; Moris., Pl. Hist. Univ. Oxon. 3: 418 ["408"]. 1699; Ray, Hist. Plant. 3: Suppl. 285—286. 1704; Herm., Cat. Plant. Nond. 13 & 15. 1705; Breyn., Prod. Fasc. Rar. Pl. Prim. & Sec. 2: 104. 1739; Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 115—116. 1755; Crantz, Inst. Rei Herb. 1: 572. 1766; [Retz.], Nom. Bot. 11. 1772; J. A. Murr. in L., Syst. Veg., ed. 13, 62. 1774; Christm. & Panzer, Vollst. Pflanzensyst. Houttuyn 5: 121—122. 1779; Sloane, Civil & Nat. Hist. Jamaic., ed. 2, 115—116. 1789; J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 41 (1789) and pr. 2, 2: 41. 1796; Raeusch., Nom. Bot., ed. 3, 3. 1797; Balbis, Cat. Pl. Hort. Taur. 48. 1804; Dum. Cours, Bot. Cult., ed. 2, 2: 624. 1811; Pers., Sp. Pl. 3: 351. 1819; H. E. Richter, Cod. Bot. Linn. 35. 1835; Peterm., Cod. Bot. Linn. Ind. Alph. 196. 1840; Steud., Nom. Bot., ed. 2, 2: 629 & 750. 1841; Voigt, Hort.

Suburb. Calc. 473. 1845; Schau., *Linnaea* 20: 478. 1847; Bocq., *Adansonia*, ser. 1, 3: [Rev. Verbénac.] 237. 1863; Griseb., *Cat. Pl. Cuba* 214. 1866; A. Gray, *Syn. Fl. N. Am.*, ed. 1, 2 (1): 334. 1878; A. S. Hitchc., *Ann. Rep. Mo. Bot. Gard.* 4: 117. 1893; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 1: 327. 1893; Just, *Bot. Jahresber.* 23 (2): 76. 1897; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 1, 61. 1901; M. Kunz, *Anatom. Untersuch. Verb.* 39. 1911; J. Matsumura, *Ind. Pl. Jap.* 2 (2): 533. 1912; Loes., *Verh. Bot. Ver. Brand.* 53: 79 [Abhandl. 244]. 1912; Britton & P. Wils., *Scient. Surv. Porto Rico* 6: 143. 1925; Wangerin in Just, *Bot. Jahresber.* 54 (1): 1160 [366]. 1932; Fedde & Schust. in Just, *Bot. Jahresber.* 54 (2): 746. 1934; Robledo, *Lecc. Bot.* 2: 498. 1940; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 2, 61. 1941; Savage, *Cat. Linn. Herb. Lond.* 4. 1945; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 1: 327. 1946; Selling, *Bishop Mus. Spec. Publ.* 38: 274 & 394. 1947; E. D. Merr., *Ind. Raf.* 204. 1949; Kearney, *List Citations Place Publ. Spp. Ariz. Fl.* 19 [thesis]. 1951; Erdtman, *Pollen Morph. & Pl. Tax.*, ed. 1, 448 & 449, fig. 256 D. 1952; Arnoldo, *Zakfl.* 125--126, 154, & 163, pl. 55, fig. 118. 1954; Vélez, *Herb. Angiosp. Lesser Ant.* 116. 1957; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 3, 61. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 1: 327. 1960; Howell & McClintock in Kearney & Peebles, *Ariz. Fl.*, ed. 2, 730. 1960; Kevorkian, *Phytopath.* 43: 406. 1960; Kevorkian, *Mycologia* 52: 523--524. 1960; J. F. Macbr., *Field Mus. Publ. Bot.* 13 (5): 657. 1960; Kevorkian, *Mycologia* 53: 437--438. 1961; Moldenke, *Phytologia* 7: 348--349. 1961; Langman, *Select. Guide Lit. Flow. Pl. Mex.* 335. 1964; C. M. Rowell, *Sida* 1: 268. 1964; Gooding, Loveless, & Proctor, *Fl. Barbados* 355--356 & 466. 1965; Liogier, *Rhodora* 67: 349--350. 1965; Moldenke, *Résumé Suppl.* 12: 3 & 9. 1965; Erdtman, *Pollen Morph. & Pl. Tax.*, ed. 2, 448 & 449, fig. 256 D. 1966; Hirata, *Host Range & Geogr. Distrib. Powd. Mild.* 276. 1966; Rzedowski & McVaugh, *Contrib. Univ. Mich. Herb.* 9: 107. 1966; Puig, *Bull. Soc. Hist. Nat. Toulouse* 103: 309. 1967; Moldenke, *Résumé Suppl.* 15: 2 (1967) and 16: 5 & 28. 1968; A. L. Moldenke, *Phytologia* 18: 113--114. 1969; Rickett, *Wild Fls. U. S.* 3 (2): 366. 1969; Sanchez Sanchez, *Fl. Val. Mex.*, ed. 1, 326. 1969; Correll & Johnston, *Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:]* 1807. 1970; Gibson, *Fieldiana Bot.* 24 (9): 179, 180, & 182. 1970; Moldenke in Correll & Johnston, *Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:]* 1336. 1970; Oberwinkler, *Pterid. & Sperm. Venez.* 12 & 78. 1970; Rickett, *Wild Fls. U. S.* 4 (3): 543 & 765. 1970; Erdtman, *Pollen Morph. & Pl. Tax.*, ed. 3, 448. 1971; Moldenke, *Fifth Summ.* 1: 62, 67, 78, 82, 85, 93, 94, 100, 102, 104, 106, 108, 112, 113, 115, 122, 135, 147, 355, 398--400, 402, 416, & 475 (1971) and 2: 519, 568, 627, 631, 639, 646, 647, 651, 653, 665, 666, 684, 691, 695, 696, 737, 790, & 851. 1971; C. D. Adams, *Flow. Pl. Jam.* 631, 797, & 846. 1972; Moldenke, *Phytologia* 23: 414. 1972; A. L. Moldenke, *Phytologia* 23: 318. 1972; López-Palacios, *Revist. Fac. Farm. Univ. Los Andes* 9 (13): [62]--63, fig. 1--12. 1973; Moldenke, *Phytologia* 28: 434, 436, & 464. 1974.

Additional illustrations: Pluk., *Phytogr.* 1: pl. 70, fig. 1.

1691; Erdtman, Svensk Bot. Tidsk. 39: 282, fig. 8. 1945; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 449, fig. 256 D. 1952; Arnoldo, Zakfl. pl. 55, fig. 118. 1954; Erdtman, Pollen Morph. & Pl. Tax., ed. 2, 449, fig. 256 D. 1966; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): [62], fig. 1--4. 1973.

Recent collectors describe this plant as an erect annual herb or subshrub ["sufrutice"], unarmed, 15 cm. to 1 m. tall, with zygomorphic flowers, the calyx green, the corolla easily detached, filaments white, anthers yellow, ovary and style light-green, and stigma darker green. Erdtman (1966) describes the pollen grains as 3-colporate, trans- and brevicolpate, the colpi not very distinct, about $4\text{ }\mu\text{x}27\text{ }\mu$ in size, the ora more or less circular, diameter about $27\text{ }\mu$ (margins included), prolate, $156\text{ }\mu\text{x}96\text{ }\mu$ overall. He asserts that this is the longest axis of any pollen grains [which he has examined] in the Verbenaceae, Avicenniaceae, Stilbaceae, and Symphoremaceae, and that the grains of B. fluminensis are similar but slightly smaller.

The corollas are described as having been "lavender" when fresh on Laughlin 822 and Lundell & Lundell 7876, "violet" on Daniel 2284 and Hutchison, Idrobo, & Wright 3085, "carmine" on Contreras 1523, "lilac" on Arnoldo 1693, "purple" on H. Pittier 7887, "violet-blue" on Dugand & Jaramillo 3324, "blue" on Breedlove 10615 & 12080, R. Irving 196, and Ton 1385, "lilac" on Contreras 3311 and Romero C. 9797, "pink" on F. A. Barkley 38C431, "purplish-pink" on Liogier 17637, "rose-violet" on López-Palacios 3095, "lilac to clear purple" on Ruiz-Teran & López-Palacios 6197, "pale-green" on Liogier 17505, and "lavender above, white below" on Crosby, Hespenheide, & Anderson 132.

This plant has been found growing in vacant lots, waste places, airfield clearings, and low forests, on bottomlands with large forest trees, along roadsides, on wooded slopes, and, according to Crosby and his associates, "very common in waste areas on back of river bed" [in Jamaica], from sealevel to 1950 m. altitude, flowering in February and from April to November, and fruiting in April and from July to November. Matsumura (1912) asserts that it is cultivated in Japan.

Irving remarks that he found it to be frequent "in dense stands of Melampodium americanum", Ton found it on slopes with Heliocharpus, Croton, and Erythrina along a small river and on grassy slopes with Quercus, and Liogier says that it is "common in open places along roadsides in coastal thickets on limestone". The vernacular name, "wild vervine" [sic] is recorded for it in Jamaica and the names "shon Lena" and "yerba distatia" in Curacao.

Rickett (1969) describes the plant as "erect or rather spreading, not usually more than 16 inches tall. The paired leaves have slender stalks up to an inch long and mostly elliptic, blunt, toothed blades up to $1\frac{1}{2}$ inches long. The spikes terminate the stems and branches which rise from the axils. They are 2--6 inches

long, quite narrow, and many-flowered. The small corolla is funnel-shaped, from rose to blue and purple, and less than 1/2 inch long." He avers that it blooms from March to November "in fields and waste land from western Texas to Arizona; also in Mexico, South and Central America, and the West Indies". Raeschel (1797) refers to it as a perennial. Macbride (1960) says that it "probably" extends into Peru from northern South America, but I have as yet seen no material of it from that country. He describes it as having the "calyx 5--9 (10) mm. long, the 2 cocci separating, about 7.5 mm. long, beak 1--1.5 (3) mm. long, dorsal surface often smooth, commissural often rough. Too many collections have been made of this weedy plant."

Gibson (1970) tells us that "Plants of this species usually wither when the rains end and are seldom seen during the dry months". Adams (1972) says "Rather local in the southern parishes [of Jamaica], a weed of open ground in thin pastures on limestone and dry alluvial gravel; 20--1000 feet; fl. and fr. June--Jan." and cites Adams 5511 & 5655, Harris 11792, and Powell 1020, giving its overall distribution as "S. United States, Mexico to northern S. Amer., Bahamas, Greater Antilles, Virgin Is., Antigua, Barbados."

López-Palacios (1973) illustrates very well the seed characteristics of the typical form of B. prismatica as compared with those of var. brevirostra Grenz. and var. longirostra Grenz. He cites Miller & Johnston 205 from Margarita Island and notes that B. prismatica and its var. longirostra "aparecen simultáneamente en varios estados [of Venezuela] y aún en el mismo lugar".

According to Savage (1945) the Linnean Herbarium in London contains one specimen of this plant:

"35 VERBENA

3 Verbena 4 prismatica [m. Sol.] Br.

[Sm:] Stachytarpheta prismatica Sm. in R. Cycl. n. 11"

Here, according to his explanation, "Verbena" is in Solander's handwriting, "prismatica" in Linnaeus's, the Stachytarpheta citation in Smith's, and "Br" stands for Patrick Browne, the collector of the specimen in Jamaica.

Alma Moldenke (1969) lists some references in mycological literature to fungi infesting Bouchea prismatica, notably Elsinoë boucheae Kevork., a spot anthracnose disease on the stems, leaf-blades, and petioles of this host. Hirata (1966) records Oidium verbenae on this host in Dominica and O. sp. in Venezuela.

The type of Rafinesque's Lomake brachiata was collected in Cuba, but Merrill (1949) is in error when he reduces it to synonymy under the genus Stachytarpheta Vahl.

A specimen of C. A. Ehrenberg 112, deposited in the herbarium of the Botanisches Museum in Berlin, was photographed there by Macbride as his type photograph number 17582, but is now destroyed.

It should be noted here that the Verbena curassavica scutellariae foliis, flore purpurascens accredited to William Sherard in

P. Hermann, Par. Bat. Prod. (1689) by Plukenet (1691) and Morison (1699) does not appear to occur in the New York Botanical Garden copy of that work. Sloane (1696) notes for his Verbena minima chamaedryos folio "Ad ripas fluvii Cobre dicti infra urbem St. Jago de las Vega repetitur". This locality is in Cuba, not Jamaica. Crantz (1766) cites "SLOAN. iam. 63. hist. l. p. 172. T. 107. F. 2" for this species and this citation is repeated by Schauer, but thus far I have been unable to locate or verify the existence of this illustration.

The Bouchea prismatica recorded by Gooding, Loveless, & Proctor (1965) from the Barbados Islands is most probably var. brevirostra Grenz. I have seen no material of typical B. prismatica from those islands, but have seen material of the variety from there. They cite Herb. Barb. Mus. 222 and Herb. Univ. W. Ind. 79.

Sloane (1755) calls this plant "The larger erect Vervine" [sic] and comments that "This plant has been commonly confounded with the following species [Stachytarpheta jamaicensis (L.) Vahl], from which it is easily distinguished by its growth and appearance; it is commonly divided into a great number of branches, and generally rises from one to two feet, or more, above the root." This statement is well illustrated by the fact that his Verbena folio subrotundo serrato flore caeruleo has often been placed in the synonymy of Stachytarpheta jamaicensis by various authors, including myself in my 1971 work!

Material of Bouchea prismatica has been misidentified and distributed in some herbaria as Priva lappulacea (L.) Pers., Stachytarpheta cayennensis (L. C. Rich.) Vahl, S. straminea Moldenke, and S. sp., as Bouchea prismatica var. longirostra Grenz., and as Pluchea sp.

On the other hand, the Barkley, Webster, & Rowell 7579 & 7642, Contreras 5669, Díaz Luna 256, H. E. Moore Jr. 1508, Pipes 58, Quintero 2637, Stewart & Johnston 2105, Stuessy 1006, Turner, Dodge, & Mason 2061, J. R. Walther 61, and Waterfall & Wallis 13883, all distributed as typical B. prismatica, are actually var. brevirostra Grenz., D. Powell 1020, E. Reed 587 & 588, and Yunker 17366 are var. longirostra Grenz., H. H. Rusby 915 is B. fluminensis (Vell.) Moldenke, Laughlin 2617 and Ventura A. 2646 are B. nelsonii Grenz., Hitchcock & Stanford 6905 is Ghinia curassavica (L.) Millsp., and Cuatrecasas & Castañeda 25472 is Stachytarpheta angustifolia f. elatior (Schrud.) López-Palacios.

Additional & emended citations: MEXICO: Aguas Calientes: Rose & Hay 6220 (W--396033). Chiapas: Breedlove 10615 (W--2470262), 12080 (W--2470267); Laughlin 822 (Ac); Ton 1075 (W--2556595), 1385 (N, W--2557238). Federal District: W. Schumann 232 [1885] (W--1323023), 232 [1887] (W--1323022). Guanajuato: Knobloch 1078 (Mi). Hidalgo: Purpus 485 (Ca--138824, W--470290). Oaxaca: Rowell, Webster, & Barkley 174488 (Mi); H. H. Rusby 49 (W--574555).

Puebla: Rose & Hay 5949 (W-395740). Quintana Roo: G. F. Gaumer 1935, in part (F-58733). Veracruz: R. Irving 196 (Au-246694). Yucatán: Arrington & al. s.n. [27.IX.1964] (Ip); Degener & Degener 26761 (N), 26762 (N, W); G. F. Gaumer 1139 (D-659191, E-954564, F-38519, V-10525, W-1265789), 1160 (F-38540), 24305 (F-552310); Lundell & Lundell 7876 (Du-362752, Ld, N, Se-165626); Steere 1071 (F-668593), 2127 (F-668596). State undetermined: C. A. Ehrenberg 112 [Macbride photos 17582] (F-663061, N-photo). GUATEMALA: El Petén: Aguilar Hidalgo 166 (E-1067875, F-713087); Contreras 1523 (Ld, M1, S), 3311 (Ld, Ld, S); R. T. Ortiz 905 (N). HONDURAS: Copán: Barkley & Velez 40291 (Ld). CUBA: Las Villas: A. Gonzalez 447 (N). JAMAICA: Crosby, Hespenheide, & Anderson 132 (M1, N). HISPANIOLA: Dominican Republic: Abbott 958 (W-1078766); B. Augusto 1208 (N); Eggers 1878 (W-1323018); Faris 189 (W-1048464), 199 (W-1048474); Liogier 17505 (N), 17637 (N); Raunkiaer 1102 (W-1110127); Türckheim 2532 (E-118633, V-1132, W-656068). Haiti: Ekman H.7072 (W-1304615); Harshberger 51 (W-426764). PUERTO RICO: Britton & Britton 9499 (W-1409710); Britton & Wheeler 252 (W-847282); Goll 689 (W-409232); A. A. Heller 6109 (D-500590, E-118623, Ms-30912, W-426346); Sintenis 2117 (E-118626, V-70, W-403386); Underwood & Griggs 585 (W-405528). VIRGIN ISLANDS: St. Thomas: Eggers s.n. [Jul 1887] (W-1323202). LEEWARD ISLANDS: Antigua: Wulfschlägel 435 (V-88207). CURACAO: Rose & Rose 22012 (W-763424). NORTHERN SOUTH AMERICAN ISLANDS: Margarita: Gines 4031 (W-2174911); Miller & Johnston 205 (E-118625, W-534020). COLOMBIA: Antioquia: F. A. Barkley 38C431 (Ft-3948); Daniel 2284 (M1); F. W. Pennell 10825 (D-623263, W-1143079); Toro 324 (W-1342843). Atlántico: Allen 7 (E-1013896); Elias 1068 (F-680933). Bolívar: Dugand & Jaramillo 3324 (W-1852947), 3379 (W-1852979); Heriberto 81 (W-1036845); Romero-Castañeda 9797 (N), 9981 (Ac). Cauca: Holton 505 (D-610666); H. Pittier 833 (W-531024). Magdalena: Allen 517 (E-1014440). Valle del Cauca: Dryander 260 (W-1690541); Hutchison, Idrobo, & Wright 3085 (Ac, N). VENEZUELA: Aragua: H. Pittier 5830 (W-601540), 5832 (W-601542). Barinas: López-Palacios 3095 (Ld). Federal District: Eggers 13069 (W-1234544); E. Pittier 72 (W-1186939); H. Pittier 7887 (M1), 9720 (W-1120755). Lará: Birkart 16621 (Ve). Mérida: López-Palacios 2564 (Ft); Ruiz-Teran & López-Palacios 6197 (N); Vareschi & Pannier 1546 (Ve-32344). Táchira: Steyermark & Velasco 100029 (Ld). Trujillo: E. Reed 1068 (W-1693919). State undetermined: Bolding s.n. [coast] (Ut-14394). CULTIVATED: Curacao: Arnoldo 1693 (W-2110533).

BOUCHEA PRISMATICA var. BREVIROSTRA Grenz.

Additional synonymy: Bouchea prismatica brevirostra Grenz. ex Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1807, in syn. 1970.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 54 (1): 1170 [366]. 1932; Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 746. 1934; Kearney, List Citations Place Publ. Spp. Ariz. Fl. 19 [thesis]. 1951; Howell & McClintock in Kearney & Peebles, Ariz. Fl., ed. 2, 730. 1960; Moldenke, Phytologia 7: 349. 1961; Langman, Select. Guide Lit. Flow. Pl. Mex. 335. 1964; Moldenke in Shreve & Wiggins, Veg. & Fl. Son. Des. 2: 1256--1257. 1964; Gooding, Loveless, & Proctor, Fl. Barbados 355--356. 1965; Liogier, Rhodora 67: 350. 1965; Rzedowski & McVaugh, Contrib. Univ. Mich. Herb. 9: 107. 1966; Moldenke, Résumé Suppl. 15: 2. 1967; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 326. 1969; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1807. 1970; Gibson, Fieldiana Bot. 24 (9): 179 & 180. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1336. 1970; Moldenke, Fifth Summ. 1: 31, 54, 62, 67, 78, 84, 106, 109, 112, 115, 122, & 400 (1971) and 2: 518, 571, 626, 628, 631, 665, 666, 736, 737, & 851. 1971; Moldenke, Phytologia 23: 414. 1972; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): [62] & 63, fig. 9--12. 1973; Moldenke, Phytologia 28: 434. 1974.

Illustrations: Grenz., Ann. Mo. Bot. Gard. 13: pl. 9, fig. 9--12, & pl. 12, fig. 30. 1926; Sanchez Sanchez, Fl. Val. Mex., ed. 1, fig. 261-B. 1969; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): [62], fig. 9--12. 1973.

Recent collectors have found this plant growing in fields, llanos, wet or wet open meadows, grassland, deserts, clearings, roadside marshes, dry open roadsides, in moist gravel, granitic soil on cliffs of sandstone and soft granite, in black volcanic soil among boulders, on hills, limestone hills with Prosopis and Acacia, and gently sloping pastured hills, in secondgrowth bordering airfields and in moist draws, among Quercus emoryi and in matorral of Prosopis, Celtis, and Karwinskia, in pestizal on hillsides and volcanic soil on mountainsides, in vacant lots and grassy valleys, in moist soil or fairly moist sandy-loam soil, in moist gravel and in black soil of basaltic outcrops, often in the open sun, on cropped hillsides, steep rocky volcanic outcrops, wet stony hillsides with Acacia, banks of irrigation ditches, shrubby or gentle igneous west slopes, shrub-covered flats and silty flats in deserts, among grasses, along roadsides, on hill-tops, in cropped grassland, and among shrubbery in sandy barrancas, at altitudes of 330--2490 m., flowering and fruiting from April to October.

Ugent and his associates have found this plant in weedy bean fields with Solanum cardiophyllum var. endoiodandrum and S. rostratum, on north-facing steep dry grazed slopes under Acacia and Opuntia with Castilleja and Solanum cardiophyllum, and at the

base of adobe walls and along roadsides under scattered acacias in a grazed field with Solanum pinnatisectum. Howell & McClintock refer to it as "frequent in rich shaded ground along streams", Stuessy calls it "common", while Iltis and his associates record it as "common in dense pure stands in wet open meadows". Díaz Luna encountered it "in potrero with isolated Pinus oocarpa and P. michoacana", while Rzedowski collected it on "ladera caliza con vegetación de matorral bajo de Karwinskia y Condalia" and "ladera de roxa cristalina con vegetación de matorral de Prosopis, Myrtillocactus, Agave, Opuntia y Eysenhardtia".

Contreras 8731 exhibits unusually large leaves, much like those normally seen in typical B. prismatica (L.) Kuntze.

Bouchea prismatica var. brevirostra is described by recent collectors as an erect herb, 50--60 cm. tall, although on the label of Waterfall 16384 it is stated that the plant may be "3--4 feet tall". It is said to be branched, often smaller in stature when growing among grasses. The corollas are described as having been "blue" on Breedlove 10615, 12080, & 14415, Stewart & Johnston 2105, and S. S. White 2605, "pale-blue" on Spivey 174, "purple-blue" on Feddema 1627, "purple" on Hinton 12998, Laughlin 1105, J. Rzedowski 286, 1348, & 16193, and Stuessy 1006, "lavender" on Harker & Mellowes 29 and Schery s.n., "pink" on Hinton 13036 & 13968 and Moore & Wood 4229, "pink-purple" on Contreras 5669, "rose" on J. Rzedowski 24644, "reddish" on H. E. Moore Jr. 1508, "carmine-lilac" on Contreras 8731, "purple to pink, white at base of lower lip" on McVaugh 16633, "lavender with whitish throat" on Feddema 1736, and "purple to lavender or pinkish, lower lip white at center" on McVaugh 16313.

McVaugh refers to this variety as "abundant" in Jalisco and "abundant especially in disturbed ground" in Aguas Calientes; Stewart & Johnston found it to be "frequent" in Chihuahua, and Feddema says that it is a "common weed" in Jalisco and Morelos, but "not abundant" in Nayarit. Iltis and his associates found it growing in "wet open meadows in openings high up near top of cerro" in Jalisco. The Moldenkes refer to it as "abundant on road shoulders and grazed areas" in Oaxaca. The vernacular name, "shep-uón", has been recorded for it.

Sanchez Sanchez (1969) describes the variety as "Planta herbácea, que mide 20--35 cm de altura, con el tallo tetra-angulado, pubescente, poco ramoso. Hojas ovales, crenado-dentadas, esparcidamente pilosas en ambas caras, que miden 4--8 cm de largo, por 3--5 de ancho. Racimos terminales, de 8 cm o algo más, con las flores pequeñas, cortamente pedunculadas, subsésiles, bracteadas, con las corolas violáceas.....Colectada los meses de julio y agosto. Desierto de Los Leones, Cañada de Contreras."

López-Palacios (1973) illustrates very well the differences in the seeds of this variety as compared to those of the typical form and of var. longirostra Grenz. He cites Miller & Johnston 205a from Margarita Island and notes that this variety often grows

together with the typical form in Mérida, Venezuela, and on Margarita Island.

The original description of Stachytarpheta laxiflora (regarded by me as a synonym of Bouchea prismatica var. brevirostra) is as follows: "(Tarphostachydes spicis elongatis). St caule fruticoso subtetragono tenuiter puberulo trichotomo, ramis dichotomis; foliis longiuscule petiolatis, basi parum attenuatis subrhomboidibus, a medio ad apicem argute serratis, utrinque vix puberulis; spicis e dichotomiis nascentibus longissimis laxifloris; calycis dentibus 4 setaceis bracteis oblongas aristatas fere duplo superantibus. Corolla coerulea, tubo e calyce parum exserto. In prov. Pamplona Novae Granadae, prope San Jose de Cuento, alt. 200 hexap. Linden No 1380."

The Bouchea prismatica recorded by Gooding, Loveless, & Proctor (1965) from the Barbados Islands is more probably var. brevirostra, since I have not as yet seen any of the typical form from those islands. They cite Herb. Barb. Mus. 222 and Herb. Univ. W. Ind. 79. The latter is probably the Barron s.n. [Bot. Stat. Herb. Barbados 79] which I have cited in a previous work as var. brevirostra.

Lomake brachiata Raf. is cited in the synonymy of this variety in Shreve & Wiggins (1964), but on what basis is not clear to me, since the type came from Cuba and this variety is not known from that island. Dr. Barkley's surname is misspelled "Berkley" on the label of Barkley, Rowell, & Paxson 737 at Austin.

Material of this variety has been misidentified and distributed in some herbaria under the names Bouchea prismatica (Jacq.) Kuntze, B. prismatica (L.) Kuntze, Phyla sp., Stachytarpheta sp., Valerianoides mutabilis (Jacq.) Kuntze, Verbena sp., and even Escholtzia glabra Benth.

Additional & emended citations: TEXAS: Val Verde Co.: C. Wright 1508 (W--43511). ARIZONA: Cochise Co.: Gooding 905 (Tu--98494), 235-60 (Tu--151336); Peebles, Harrison, & Kearney 3523 (W--1367918). Santa Cruz Co.: Harrison 8168 (W--1530787); J. Kaiser 459 (Gg--373579, Tu--106950). MEXICO: Aguas Calientes: Hartweg 178 (V--294441); R. McVaugh 16633 (Ip, Mi, N); J. Rzedowski 16193 (Ip, Mi). Chiapas: Breedlove 10615 (Ac, Ip), 12080 (Ld), 14415 (Ac, N, Ws); Laughlin 1105 (Ld). Chihuahua: LeSueur Mex.91 (Ca--712706); Pringle 325 (Ms--30913, V--2513, W--57336), 994 (Ca--104994, E--118631); Shreve 9093 (Ca--731836); Stewart & Johnston 2105 (Au--300682, G); Stuessy 1006 (Au--257715, Bl--236060, Ws); Waterfall 12508 (St), 16113 (Ca); S. S. White 2325 (Mi), 2481 (Mi), 2605 (Mi). Colima: Edw. Palmer 104 (W--315457). Durango: Edw. Palmer 416 (Ca--138822, E--118622, W--304365); Shreve 9162 (Ca--731726). Federal District: Balls B.5212 (Ca--684203); P. Bopp 0. 215 (Ip); Bourgeau 545 (W--43505); G. L. Fisher 327 (E--914798, F--555003, W--1207412), 7480 (Tu--107885), s.n. [Tlalpam,

Aug. 3, 1924] (Ws); E. Lyonnet 317 (W—1034197); J. Rzedowski 236 (Ip), 1348 (Au—241396, Ip); Schmitz s.n. [Valle de Mejico] (Bm). Guanajuato: Furness s.n. (F—467638); Spivey 174 (Ca—916735); Waterfall & Wallis 13883 (Au—183051, St), 13920 (St). Guerrero: R. Q. Abbott 309 (Ip); Moldenke & Moldenke 2319 (Id). Hidalgo: González Quintero 1071 (Ip), 2501 (Ip), 2637 (Ip, Mi, Tu—169596, Ws); H. E. Moore Jr. 1508 (Ba); Moore & Wood 4229 (Ba). Jalisco: F. A. Barkley 35520 (Ac, N); Barkley, Webster, & Rowell 7579 (Au—167059), 7642 (Au—167082); Díaz Luna 256 (Mi); Feddema 1736 (Mi); Harker & Mellowes 29 (Ip, Mi, Ws); Iltis, Koeppen & Iltis 823 (Ip, Mi, Ws); R. McVaugh 16313 (Mi, N); Edw. Palmer 261 (W—43502); Tuttle 333 (Tu—187728); Waterfall 15622 (St), 16384 (Ca); Weintraub & Roller 118 (Mi). México: Berlandier 838 (V—144780); Hinton 1152 (Id, Se—120051, Tu—112077); Paray 2413 (Ip); Parra A. 11 (Mi, N); Peñalosa 871 (Gg); J. Rzedowski 15845 (Ip). Michoacán: Arsène 2857 (E—845039—type, W—1003539—isotype), 3040 (E—845038, W—566648, W—1003540), 8489 (E—839731, W—1003462); Hinton 12998 (Id, Se—120047, Tu—112076), 13036 (Mi), 13968 (Id, Se—120069, Tu—112042); Schery s.n. [near Morelia, July 14, 1941] (Mi); Ugent & Flores C. 2071 (Ws); Ugent, Ugent, & Flores C. 1875 (Ws). Morelos: Feddema 1627 (Mi); Pipes 58 (Mi); J. R. Walther 61 (Mi). Nayarit: Feddema 595 (Ip, Mi); Waterfall 16341 (Ca). Oaxaca: Johnston & Davis s.n. [June 28, 1947] (Au—278271); Liebmann 11184 (W—1315034); Moldenke & Moldenke 2313 (Ac); Purpus 3405 (Ca—138823, E—118612, W—841138); Rowell, Webster, & Barkley 174488 (Au—170054); Seler & Seler 112 (W—1323017); Ugent, Ugent, & Flores C. 2625 (Ws). Querétaro: Arsène 9997 (E—844607, W—1003640); Barkley, Rowell, & Paxson 737 (Au—123232); Barkley, Webster, & Paxson 697 (Au—170146, Mi, Ws); Basile 98 (W—1268615); Rose, Painter, & Rose 9570 (W—453061); Waterfall 16533 (Ca). San Luis Potosí: Parry & Palmer 716 (E—118624, E—118632, W—57335); J. Rzedowski 3767 (Ip), 24644 (Ip). Sonora: Thurber 1094 (F—306233); Turner, Dodge, & Mason 2061 (Du—500479, Tu—142270); S. S. White 2634 (Mi), 3728 (Mi), 4055 (Mi, Tu—118661); Wiggins 7055 (Tu—98488). Tamaulipas: Stanford, Lauber, & Taylor 2302 (Se—147716). GUATEMALA: El Petén: Contreras 5669 (Au—254130, Id), 8731 (Id, Id). Huehuetenango: Seler & Seler 3072 (W—1205600). Santa Rosa: Heyde & Lux 2965 (W—43508, W—1323019). EL SALVADOR: Santa Ana: Calderón 2169 (W—1266534). San Vicente: P. C. Standley 21620 (W—1137386). WINDWARD ISLANDS: Barbados: Barron s.n. [Barbados Bot. Stat. Herb. 79] (W—845525). COLOMBIA: Nariffo: Lehmann B.T. 687 (W—794779). Norte de Santander: Linden 1380 (V—294467). VENEZUELA: Aragua: Burkart 16914 (Ve).

BOUCHEA PRISMATICA var. LACINIATA Grenz.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 746. 1934; Moldenke, Phytologia 7: 349 (1961) and 9: 388 & 393. 1964; Langman, Select. Guide Lit. Flow. Pl. Mex. 335. 1964; Moldenke, Fifth Summ. 1: 67 & 399 (1971) and 2: 678, 679, & 851. 1971.

Emended citations: MEXICO: Veracruz: Ervendberg 102 (E--925904 --photo of type).

BOUCHEA PRISMATICA var. LONGIROSTRA Grenz.

Additional synonymy: Veronica spicata jamaicana teucris praten-
sis folio dispermos Pluk. apud Moris., Pl. Hist. Univ. Oxon. 3:
419, in syn. 1699. Verbena dispermos americana lignescens veroni-
cae foliis Moris., Pl. Hist. Univ. Oxon. 3: 419. 1699.

Additional bibliography: Pluk., Phytogr. 2: pl. 321, fig. 1. 1691; Moris., Pl. Hist. Univ. Oxon. 3: 419. 1699; Wangerin in Just, Bot. Jahresber. 54 (1): 1170 [366]. 1932; Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 746. 1934; Moldenke, Phytologia 7: 349--350. 1961; Liogier, Rhodora 67: 349. 1965; Jiménez, Supl. Cat. Fl. Doming. 1: 210. 1966; Gibson, Fieldiana Bot. 24 (9): 179, 180, & 182. 1970; Moldenke, Fifth Summ. 1: 67, 81, 82, 93, 94, 100, 102, 104, 113, 115, & 122 (1971) and 2: 709 & 851. 1971; A. L. Moldenke, Phytologia 23: 318. 1972; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): [62] & 63, fig. 5--8. 1973; Moldenke, Phytologia 28: 436. 1974.

Illustrations: Pluk., Phytogr. 2: pl. 321, fig. 1. 1691; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): [62], fig. 5--8. 1973.

Recent collectors describe this plant as an annual herb, 0.5--1 m. tall, with its leaves lighter green beneath. The corollas are described as having been "purple" on Mexia 107 and J. Rzedowski 18653, "pinkish-purple" on Holdridge 1042, "pink" on Hinton 12050, "rose-pink" on H. E. Moore 4928, "delicate pale-lavender" on D. Powell 1020, "mauve" on Alston 5438, and "lilac" on Romero-Castañeda 9797, while Ruiz-Teran & López-Palacios describe it as "flores de color lila a morado claro".

The plant has been found growing in dry soil, in poor dry soil on open hillsides, on dry hillsides with thin black soil over limestone outcrops, in deserts with water only in the rainy season, along roadsides and shaded roadsides, in tropical deciduous forests, and in tall stands with grass in sunny locations, at altitudes from sea-level to 4700 feet, flowering in March and from August to November, fruiting in March and from August to November. Miss Mexia describes the plant as "common" in Sinaloa. Rzedowski encountered it on "ladera basáltica con vegetación de bosque tropico deciduo".

Material of this variety has been misidentified and distributed in some herbaria under the names B. prismatica (L.) Kuntze, B. nelsonii Grenz., Stachytarpheta cayennensis (L. C. Rich.) Vahl, and S. jamaicensis L. On the other hand, the Dugand & Jaramillo

3324 & 3379, distributed as this variety, are actually typical B. prismatica (L.) Kuntze, while Tapia s.n. [25/IX/1965] is a mixture with B. nelsonii Grenz.

Additional & emended citations: ALABAMA: Mobile Co.: C. T. Mohr 794 (W--1323021), s.n. [Mobile, 1883] (W--771823). MEXICO: Guerrero: J. Rzedowski 18653 (Z). Hidalgo: H. E. Moore 4928 (Ba). Michoacán: Hinton 12050 (Ld, Mi, Se--120050). Oaxaca: Nelson 1599 (W--566032); Tapia s.n. [25/IX/1965] (Au--256588). Sinaloa: J. Gonzalez Ortega 6051 (D--615075, W--1209723); Mexia 107 (Ca--367354). Yucatán: Seler & Seler 3951 (F--144524, F--689831, W--1323025). BRITISH HONDURAS: Gentle s.n. [C. L. Lundell 4856] (F--683507). HONDURAS: Amapala: Horton & Morrison 8854 (Ca--643903). CUBA: Camaguey: Shafer 2861 (W--697308). Havana: Baker & Wilson 524 (W--845219); A. S. Hitchcock s.n. [Santiago de las Vegas] (F--229957). Las Villas: Combs 154 (E--118627, F--357965, W--1411616); A. Gonzales 447 (Mi, S); C. Wright 3660 (W--43515). Province undetermined: Sagra 818 (P). JAMAICA: R. C. Alexander s.n. [Kingston] (W--1048363); W. Harris 11792 (E--792611--type, W--790854--isotype); A. S. Hitchcock s.n. [Kingston streets] (E--118628, F--228168), s.n. [Port Royal] (E--118630); H. A. Lang 594 (D--554667); Maxon & Killip 314 (W--1046010); D. Powell 1020 (Mi); Yunker 17366 (Mi). HISPANIOLA: Dominican Republic: Valeur 217 (W--1414677). Haiti: Eyerdam 29 (W--1303137); Holdridge 1042 (Au--189215, Ca--913159, Mi); E. C. Leonard 2852 (W--1075098), 2981 (W--1075228), 4183 (W--1076607), 5219 (W--1077822), 9801 (W--1300846); Leonard & Leonard 12087 (W--1450937). PUERTO RICO: Britton, Cowell, & Brown 5378 (E--805365, W--791807). COLOMBIA: Atlántico: Elias 260 (W--1342546). Bolívar: Heriberto 208 (W--1036960); Killip & Smith 14035 (W--1350034); Romero-Castañeda 9797 (Ac); Schott 4 (F--41159). Cundinamarca: Arbeláez 2495 (W--1615650). VENEZUELA: Bolívar: Holt & Gehrig 174 (W--1471887). Federal District: Alston 5438 (N); H. Pittier 7887 (W--987984). Mérida: R. Reed 587 (W--1619027), 588 (Mi); Ruiz-Teran & López-Palacios 6177 (N).

BOUCHEA PSEUDOCHASCANUM (Walp.) Grenz.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 327. 1893; A. W. Hill, Ind. Kew. Suppl. 8: 31. 1933; Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 747. 1934; K. V. O. Dahlgren, Svensk Bot. Tidsk. 32: 231. 1938; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 327 (1946) and pr. 3, 1: 327. 1960; Moldenke, Phytologia 7: 350. 1961; Moldenke, Fifth Summ. 1: 147, 355, & 400 (1971) and 2: 627, 628, 631, & 851. 1971.

This species has been collected in anthesis and in fruit in January. Material has been misidentified and distributed in some herbaria under the name Stachytarpheta dichotoma Vahl.

Additional citations: BRAZIL: Guanabara: B. Lutz 523 (Ja, Ja--

23668); Mello Filho 1008 (Ja, Ja, Ja--52577); N. Santos 5819 (Ja, Ja); Segadas-Vianna 842 (Ja, Z). MOUNTED ILLUSTRATIONS: Schau. in Mart., Fl. Bras. 9: pl. 33. 1851 (N, Z).

BOUCHEA RUSBYI Moldenke

Additional bibliography: M. Kunz, Anatom. Untersuch. Verb. 40. 1911; A. W. Hill, Ind. Kew. Suppl. 9: 39. 1938; Metcalfe & Chalk, Anat. Dicot. 1031--1032. 1950; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 448. 1952; Moldenke, Phytologia 4: 503--504. 1954; R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; Erdtman, Pollen Morph. & Pl. Tax., ed. 2, 448 (1966) and ed. 3, 448. 1971; Moldenke, Fifth Summ. 1: 181 & 400 (1971) and 2: 851. 1971.

Erdtman (1966) has examined the pollen of M. Bang 2226 from Bolivia and describes the grains as more or less of the same type as those of B. prismatica (L.) Kuntze, which see, but 129 μ x 87 μ in size.

Emended citations: BOLIVIA: El Beni: Buchtien 8183 (W--1543400). Province undetermined: M. Bang 2226 (E--7350--isotype, V--1273--isotype, W--350081--isotype, W--1323024--isotype).

BOUCHEA SPATHULATA Torr.

Emended synonymy: Bouchea spatulata Torr. ex A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 335. 1878.

Additional bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 335. 1878; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 327. 1893; Steyererm. & Moore, Ann. Mo. Bot. Gard. 20: 801. 1933; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 327. 1946; Moldenke, Phytologia 4: 504 (1954) and 5: 6--7, fig. 12--16. 1954; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 327. 1960; Langman, Select. Guide Lit. Flow. Pl. Mex. 335. 1964; Rickett, Wild Fls. U. S. 3 (2): 366. 1969; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1807 & 1871. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1336. 1970; Moldenke, Fifth Summ. 1: 54, 67, 401, & 402 (1971) and 2: 851. 1971; Anon., Biol. Abstr. 54 (4): B.A.S.I.C. S.33. 1972; Moldenke, Biol. Abstr. 54: 1725. 1972; Moldenke, Phytologia 23: 210 & 444. 1972; Hocking, Excerpt. Bot. A.23: 290. 1974.

Illustrations: Moldenke, Phytologia 5: 6--7, fig. 12--15. 1954.

Recent collectors describe this plant as a bush or shrub, 1--3 feet tall, erect, with large flowers, whose tube is to 3 cm. long & whose limb is 1.5 cm. wide when well pressed, and have found it flowering from July to September, fruiting in August and September, and growing at 3800 feet altitude. The corollas are described as having been "lavender" on C. H. Muller 3274, R. M. Stewart 1189, and B. H. Warnock 10749, "purplish" on I. M. Johnston 8367 and Johnston & Muller 381, "purple" on I. M. Johnston 9286 and R. M. Stewart 2938, "lavender-blue" on Johnston & Muller 640, and "lilac to bluish" on I. M. Johnston 8724.

The plant has been found growing on dry limestone slopes or rocky limestone slopes at canyon mouths and along arroyos. Warnock

reports that it is "frequent" or "infrequent" in limestone soil in Brewster County, Texas. In Coahuila it is described by Muller as "abundant in desert scrub on steep slopes", while Johnston reports it as "common on limestone ledges on north-facing mountainsides" and "common on rocky flats and ridges". Stewart reports it as "common" on hillsides in Coahuila, while in the same Mexican state Johnston & Muller found it common below the oak and pine belt, in open valleys with scrub oaks and scattered pines, and on limestone ledges.

Steyermark & Moore (1933) comment that the species was "Collected previously in Texas by Hanson and Havard", while they found it on "Rock ridge above [Boquillas] canyon. The plants are suffrutescent at the base, have thick coriaceous leaves, and bright purple corollas". Rickett (1969) describes it as "a densely branched shrub with leaves in pairs and threes, their blades rather thick, an inch long and widest at the end; no teeth, no stalks. It is a plant of western Texas and Mexico." The common name "spoon-leaf" is recorded for it.

The J. Baird s.n. [July 1936], distributed as B. spathulata, is actually Aloysia macrostachya (Torr.) Moldenke.

Additional & emended citations: TEXAS: Brewster Co.: H. C. Hanson 718 (W--983030); Moore & Steyermark 3446 (Ca--471421, D--695293, E--1008109); C. C. Parry s.n. [Great Cañon of the Rio Grande near Mt. Carmel] (W--49887--isotype); B. H. Warnock 10749 (Ld), 10766 (Ld). Oldham Co.: Havard 96 (F--252007, W--147554). MEXICO: Coahuila: I. M. Johnston 8357 (G), 9286 (G); Johnston & Muller 381 (Au--299381, G, Mi), 640 (Au--299693, G, Mi); C. H. Muller 3274 (Ca--725273, Ld, Mi); Purpus 4750 (Ca--148244); R. M. Stewart 1189 (Au--301996, G), 2938 (G).

BOUCHEA SPATHULATA var. LONGIFLORA Moldenke

Bibliography: Moldenke, Phytologia 23: 210 & 414. 1972; Anon., Biol. Abstr. 54 (4): B.A.S.I.C. S.22. 1972; Moldenke, Biol. Abstr. 54: 1725. 1972; Hocking, Excerpt. Bot. A.23: 290. 1974.

This variety differs from the typical form of the species in having its corolla-tubes 3--4 cm. long.

Citations: MEXICO: Coahuila: I. M. Johnston 8724 (Au--299954--type, G--isotype).



Moldenke, Harold N. 1974. "Additional notes on the genus Bouchea. IV." *Phytologia* 29, 38–65. <https://doi.org/10.5962/bhl.part.13096>.

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