

ADDITIONAL NOTES ON THE GENUS VERBENA. XVI

Harold N. Moldenke

VERBENA RADICATA var. GLABRA (Hicken) Moldenke

Additional bibliography: Moldenke, Phytologia 24: 54. 1972.

Böcher and his associates (1963) describe this plant as a "Half-shrub, completely glabrous with large yellow flowers and very emarginate corolla lobes. According to Dr. Troncoso the anthers and their appendages are reduced, and the bracts lanceolate". They found the plant growing in arroyos and tributary valleys, at altitudes of 1900 to 2250 meters, flowering in November. They cite Böcher, Hjerting, & Rahn 922, 938, & 1311 from Mendoza, Argentina.

VERBENA RAMBOI Moldenke

Additional bibliography: Moldenke, Phytologia 16: 197 & 203. 1968; Moldenke, Fifth Summ. 1: 178 (1971) and 2: 919. 1971.

VERBENA RAMULOSA R. A. Phil.

Additional bibliography: Reiche & Phil., Fl. Chil. 5: 289 & 293. 1910; Moldenke, Phytologia 11: 53—54. 1964; Moldenke, Fifth Summ. 1: 193 (1971) and 2: 919. 1971.

VERBENA RECTA H.B.K.

Emended synonymy: Verbena recta Humb. & Bonpl. ex Steud., Nom. Bot. Phan., ed. 1, 873. 1821.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 873. 1821; Moldenke, Phytologia 16: 197. 1968; Moldenke, Fifth Summ. 1: 76 & 372 (1971) and 2: 661, 692, & 919. 1971; Moldenke, Phytologia 23: 293. 1972.

Recent collectors have found this species growing in pine or fir woods, maize or oats fields, and craters, at altitudes of 2500 to 3600 meters, flowering and fruiting from July to October. Beaman found it "in small open grassy meadows surrounded by Abies forest", Rowell says that it is "frequent in pine forests", and Vargas encountered it on "ladera andesítica con encinar abierto". The corollas are described as having been "purple" on Díaz Luna 34, I. Martínez 124, J. Rzedowski 20443a, and Villegas D. 218.

The González Quintero 1178, S. López 89, and Ryesky 102, distributed as V. recta, are actually V. carolina L., Franco R. s.n. [20.VIII.1967] is a mixture of V. carolina L. and V. menthaefolia Benth., González Quintero 732 is V. litoralis H.B.K., and Mears 441a is a mint.

Additional citations: MEXICO: Federal District: H. Hernández 26 (Ip); J. Rzedowski 1926 (Ip), 20443a (Au—243308, Ip); Villegas D. 218 (Ip), 438 (Ip). Hidalgo: Chávez O. s.n. [4.VIII. 1963] (Ip); González Quintero 243 (Ip, Mi); E. C. West G. 1466 (Ws). México: M. S. Fernández s.n. [6.VIII.1967] (Ip); I. Mar-

tínez 124 (Ip); C. M. Rowell 2050 (Au—122623); Vargas N. 73 (Rf)..  
Michoacán: Beaman 4353 (Au—240679, Ca—1304923, W—2575718); Díaz Luna 34 (Ip). Morelos: Ifiguez s.n. [20.VII.1966] (Ip).

**VERBENA REGNELLIANA** Moldenke

Additional bibliography: Moldenke, *Phytologia* 11: 56--57. 1964; Moldenke, *Fifth Summ.* 1: 178 (1971) and 2: 919. 1971.

**VERBENA REICHEI** Acevedo de Vargas

Additional bibliography: Cabrera, *Bol. Soc. Argent. Bot.* 5: 96. 1953; Moldenke, *Phytologia* 11: 478. 1965; Moldenke, *Fifth Summ.* 1: 193 (1971) and 2: 919. 1971.

According to Cabrera (1953) this species is found from Santiago to Concepción in Chile.

**VERBENA REITZII** Moldenke

Additional bibliography: Moldenke, *Biol. Abstr.* 48: 10099. 1967; Moldenke, *Phytologia* 16: 197. 1968; Moldenke, *Fifth Summ.* 1: 178 (1971) and 2: 919. 1971.

**VERBENA REITZII** var. **CASTRENSIS** Moldenke

Additional bibliography: Moldenke, *Phytologia* 14: 295. 1967; Moldenke, *Biol. Abstr.* 48: 10099. 1967; Moldenke, *Fifth Summ.* 1: 178 (1971) and 2: 919. 1971.

Additional citations: BRAZIL: Paraná: Smith, Klein, & Hatschbach 14526 (N—isotype).

**VERBENA RIBIFOLIA** Walp.

Additional & emended bibliography: Briq. in Chod. & Wilczek, *Bull. Herb. Boiss.*, sér. 2, 2: 543. 1902; Reiche & Phil., *Fl. Chil.* 5: 285 & 286. 1910; Cabrera, *Bol. Soc. Argent. Bot.* 5: 96. 1953; Moldenke, *Phytologia* 14: 295. 1967; Moldenke, *Fifth Summ.* 1: 193 & 202 (1971) and 2: 919. 1971.

The species has been collected in flower and fruit in March. Briquet (1902) cites Wilczek 50 from Mendoza, Argentina.

Additional citations: ARGENTINA: Santiago del Estero: Pierotti 55 (N), "h" (Au—270830).

**VERBENA RIBIFOLIA** f. **ALBA** Acevedo de Vargas

Additional bibliography: Cabrera, *Bol. Soc. Argent. Bot.* 5: 96. 1953; Moldenke, *Phytologia* 13: 259. 1966; Moldenke, *Fifth Summ.* 1: 193 (1971) and 2: 919. 1971.

**VERBENA RIBIFOLIA** var. **FOETIDA** (R. A. Phil.) Acevedo de Vargas

Additional bibliography: Cabrera, *Bol. Soc. Argent. Bot.* 5: 96. 1953; Moldenke, *Phytologia* 11: 478. 1965; Moldenke, *Fifth Summ.* 1: 193 (1971) and 2: 668 & 919. 1971.

**VERBENA RIBIFOLIA** var. **LONGAVINA** (R. A. Phil.) Acevedo de Vargas

Additional bibliography: Cabrera, *Bol. Soc. Argent. Bot.* 5: 96. 1953; Moldenke, *Phytologia* 11: 60--62. 1964; Moldenke, *Fifth Summ.*

1: 193 (1971) and 2: 681 & 919. 1971.

VERBENA RIGIDA Spreng.

Additional & emended bibliography: Jan, Elench. Pl. 1. 1824; A. Wood, Am. Bot. & Flor., ed. 1, pr. 1, 236 (1870), ed. 1, pr. 2, 236 (1871), ed. 1, pr. 3, 236 (1872), ed. 1, pr. 4, 236 (1873), ed. 1, pr. 5, 236 (1874), and ed. 1, pr. 6, 236. 1875; O. R. Willis in A. Wood, Am. Bot. & Flor., ed. 2, 236. 1889; L. H. Bailey in A. Gray, Field For. & Gard. Bot., ed. 2, 341. 1895; Reiche & Phil., Fl. Chile 5: 283--285. 1910; Fyson, Fl. Nilg. & Puln. Hill-tops 1: 319 & 320 (1915) and 2: pl. 213. 1915; F. W. Pennell, Bull. Torrey Bot. Club 46: 186. 1919; Lázaro e Ibiza, Comp. Fl. Españ., ed. 3, 3: 297. 1921; Macself in Sanders, Encycl. Gard., ed. 21, pr. 1, 457 (1931) and ed. 21, pr. 2, 457. 1934; Cheymol, Bull. Soc. Chim. Biol. 19: 1647--1653. 1937; Noack, Biol. Zentralbl. 57: 384 & 386, fig. 8. 1937; Cheymol, Journ. Pharm. Chim., ser. 8, 25: 110--117. 1937; Anon., Chem. Abstr. 31: 7473 (1937) and 32: 2977. 1938; Macself in Sanders, Encycl. Gard., ed. 21, pr. 3, 457 (1938) and ed. 21, pr. 4, 457. 1942; E. L. D. Seymour, New Gard. Encycl., ed. 3, 1279. 1944; Macself in Sanders, Encycl. Gard., ed. 21, pr. 5, 457 (1945) and ed. 21, pr. 6, 457. 1946; E. L. D. Seymour, New Gard. Encycl., ed. 4, 1279. 1946; Hellyer in Sanders, Encycl. Gard., ed. 22, pr. 1, 457. 1950; E. L. D. Seymour, New Gard. Encycl., ed. 5, 1279. 1951; Hellyer in Sanders, Encycl. Gard., ed. 22, pr. 2, 506 & 507. 1952; Cabrera, Man. Fl. Alred. Buenos Aires 395. 1953; Hellyer in Sanders, Encycl. Gard., ed. 22, pr. 3, 506 & 507. 1956; Barroso, Rodriguésia 32: 70. 1957; Schnack, Fehleisen, & Cocucci, Revist. Fac. Agron. La Plata 35: 49, [54], & 55, fig. 3. 1959; Withamfogg in Kiaer & Hancke, Gard. Fls. Colour, pr. 1, 127 & 190, fig. 490. 1959; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 617. 1960; Lewis & Oliv., Am. Journ. Bot. 48: [639]--641, fig. 23. 1961; M. Gray, Contrib. N. S. Wales Nat. Herb. 3: 61. 1961; Willaman & Schubert, Agr. Res. Serv. U. S. Dept. Agr. Tech. Bull. 1234: 237. 1961; Hartl, Beitr. Biol. Pfl. 37: 293, 296, & 300, fig. 28. 1962; Anon., Cat. Sem. Hort. Bot. Univ. Valent. 27. 1963; Hocking, Excerpt. Bot. A. 6: 91. 1963; E. L. D. Seymour, Wise [New] Gard. Encycl., ed. 6, 1279. 1963; Balakrishnan, Bull. Bot. Surv. India 6: 87. 1964; Radford, Ahles, & Bell, Guide Vasc. Fl. Carol. 281 & 282. 1964; E. L. D. Seymour, Wise [New] Gard. Encycl., ed. 7, 1279. 1964; T. M. Simpson, Gard. South. Afr. 87. 1964; Angely, Fl. Anal. Paran., ed. 1, 573. 1965; Backer & Bakh., Fl. Java 2: 596. 1965; Martínez-Crovetto, Bonplandia 2: 39, 52, 53, 59, & 70. 1965; Trincoso in Cabrera, Fl. Prov. Buenos Aires 5: 128--129. 1965; J. W. Vickery, Contrib. N. S. Wales Nat. Herb. 3: 478. 1965; T. H. Everett, Reader's Digest Compl. Book Gard. 153. 1966; Hirata, Host Range & Geogr. Distrib. Powd. Mild. 277. 1966; Yotaro, Gard. Pl. World 3: 128, pl. 64, fig. 5. 1966; H. C. D. de Wit, Pl. World High. Pl. 2: 183. 1967; Ewan, Southwest. La. Journ. 7: 11 & 42. 1967; E. Lawrence, South. Gard., ed. 2, 114, 172, & 214. 1967; Rickett, Wild Fls. U. S. 2 (2): 462, [463], & 686, pl. 170. 1967; Zukowski in Pawlowskiego, Fl. Polsk. 11: 65. 1967; Martínez-

Crovetto, Bonplandia 1: 203. 1968; Moldenke, Phytologia 16: 197--199, 208, & 210. 1968; Moldenke, Résumé Suppl. 16: 1, 7, 8, 13, & 28 (1968) and 17: 7. 1968; Pullen, Jones, & Wats., Castanea 33: 333. 1968; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 717. 1969; Farnsworth, Blomster, Quimby, & Schermerh., Lynn Index 6: 267. 1969; Hansen, Bol. Mus. Munic. Funchal 24: 34. 1969; Hay & Synge, Dict. Gard. Pl. 177 & 369, pl. 1412. 1969; Rickett, Wild Fls. U. S. 3 (2): 364 & [367], pl. 111. 1969; Withamfogg in Kiaer & Hancke, Gard. Fls. Colour, pr. 5, 127 & 190, fig. 490. 1968; Angely, Fl. Anal. Fitogeogr. Est. S. Paulo, ed. 1, 4: 840 & xix, map 1395. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. 6:] 1314 & 1318. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. 6:] 1876 & 1877. 1970; E. L. D. Seymour, Wise [New] Gard. Encycl., ed. 8, 1279. 1970; Bostick, Castanea 36: 206. 1971; Guillardmod, Fl. Lesotho 236. 1971; Moldenke, Fifth Summ. 1: 23, 25, 27, 31--33, 47, 49, 60, 66, 76, 89, 92, 98, 101, 109, 111, 178, 184, 188, 190, 193, 202--204, 206, 255, 257, 262, 279, 312, 343, 349, 351, 372, & 402 (1971) and 2: 655, 666, 685, 693, 694, 705, 706, 708, 919, & 969. 1971; G. W. Park Seed Co., Park's Flower Book 1971: 75. 1971; Priszter, Delect. Sem. Spor. Pl. Hort. Bot. Univ. Hung. 59. 1971; D. Burpee, Burpee Seeds 1972: 56. 1972; Moldenke, Phytologia 22: 471, 477, & 478 (1972) and 23: 186, 421, & 427. 1972.

Additional & emended illustrations: Fyson, Fl. Nilg. & Puln. Hill-tops 2: pl. 213. 1915; Noack, Biol. Zentralbl. 57: 386, fig. 8. 1937; Schnack, Fehleisen, & Cocucci, Revist. Fac. Agron. La Plata 35: [54], fig. 3. 1959; Withamfogg in Kiaer & Hancke, Gard. Fls. Colour, pr. 1, 127, fig. 490 [in color] (1959) and pr. 5, 127, fig. 490 [in color]. 1968; Hartl, Beitr. Biol. Pfl. 37: 300, fig. 28. 1962; Yotaro, Gard. Pl. World 3: pl. 64, fig. 5 [in color]. 1966; Rickett, Wild Fls. U. S. 2 (2): [463], pl. 170 [in color] (1967) and 3 (2): [367], pl. 111 [in color]. 1969; Hay & Synge, Dict. Gard. Pl. 177, pl. 1412 [in color]. 1969.

Recent collectors have encountered this plant in sandy-loam soil in oak-pine associations, in sandy ditches with Juncus and grasses, on roadbanks, in full sunlight at the margins of pine woods, in sandy waste ground, and along weedy roadsides on river floodplains. Gray (1961) reports that it is now fairly common along roadsides in the Guyra area of New South Wales, while Healy refers to it as "a colony, garden escape", "a large colony in waste land", and "in grass along river, a well established garden escape" in New Zealand. McDaniel reports it as "locally common" in Lowndes County, Mississippi. Mueller-Dombois asserts that in Ceylon it is "probably escaped from cultivation". Ewan (1967) says "Verbena rigida is an introduced South American species, unknown in this state [Louisiana] before 1900, and so the species noticed by Bartram near Baton Rouge was more likely V. temisecta" Briq. [see under the latter species in this series of notes].

D'Arcy found V. rigida growing as scattered plants along roadside fences in Florida. Balakrishnan (1964) reports it cultivated in India. Lawrence (1967) tells us that in the southern United

States it starts blooming between April 30 and May 14 and ends in the autumn. Iltis and his associates found it growing in dry shallow soil of a prairie-like area on fossiliferous calcareous outcrops in Alabama. Pullen, Jones, & Watson (1968) record it from Adams, Amite, Clarke, Covington, Franklin, Hancock, Hinds, Jackson, Jasper, Jones, Lauderdale, Lawrence, Lincoln, Newton, Perry, Pike, Scott, Smith, Warren, Wayne, and Wilkinson Counties, Mississippi. Radford, Ahles, & Bell (1964) record it from waste ground and roadsides in the central parts of North Carolina north into Edgecombe and Martin Counties and south in the outer piedmont of South Carolina, blooming there from late March to July. Hansen (1969) reports it as escaped in Madeira and the Azores Islands. Fyson (1915) says of it "Native of Brazil. Common at Kodaikanal, where Mr. Tracey of the American Mission tells me it was introduced by him accidentally among grass seed. [Found now in the] Nilgiris: Ootacamund, Coonoor, etc., no doubt as a garden-escape". He cites Fyson 3061. He also notes that "Plants at Kew of the Himalayas and Nilgiris named by Clarke for F. B. I. [=Flora of British India] as V. bonariensis L. are V. venosa Gill and Hooker."

Lázaro e Ibiza (1921) describe V. rigida as "Hojas ásperas, oblongas, semi-abrazadoras, agudas, hendido-dentadas, rugosas, con nervios prominentes: brácteas más largas que el cáliz; corola lilácea o azulada. Fl. verano." Barroso (1957) describes it as "Planta pilosa com fôlhas lanceoladas, rijas, sêsseis, amplexo-caules, denteadas, agudas; flôres dispostas em espigas curtas; bracteola lanceolata longo acuminada, ciliada, com 6 mm de comprimento; cálice membranáceo piloso, denteado, com 3,5 mm de comprimento; corola com 1 cm de comprimento". He gives its distribution as "Sul de Brasil, Rio de Janeiro" and cites Campos Porto 1839 [RB 26050]. Troncoso (1965) gives its distribution as "Sur del Brasil, Paraguay, Bolivia, Uruguay, N. y NE. de la Argentina. Rara espontánea en la Provincia [Buenos Aires]. Muy cultivada especialmente en Europa, por sus flores vistosas". She cites Nicora 1988 (Si-3428) from Buenos Aires. Macbride (1960) states that V. rigida is "to be expected" in Peru, "has glandular inflorescences, bractlets and corolla tube longer than the calyx; probably more correctly classified as a variant [of V. bonariensis L.] as at least the glandular character varies in other specific entries. Said to be an introduction in Peru." I cannot agree that this taxon is only "a variant" of V. bonariensis: the two species are almost impossible to confuse.

Rickett (1969) states that V. rigida blooms from April to October and is found "in waste ground and fields on the coastal plain in eastern Texas and inland to the central part of the state; and eastward to Florida and North Carolina.....It often forms large, showy colonies". Guillarmod (1971) cites Christol s.n. in the Paris herbarium, Guillarmod 36 in his own herbarium, Dieter 977 at Capetown, Strasbourg, & Zurich, and Jacollet 48 at Zurich. He gives its overall distribution as "E. Cape, Orange Free State,

Transvaal" in South Africa.

The corollas are described as "violet-purple" by Hay & Synge (1969), "lavender" by Withamfogg (1959, 1968) and G. W. Park (1971) and on Webster & Wilbur 3352, "bright dark-mauve" on Bayliss BS. 3603, "purple" on Anway 465 and D'Arcy 1619, "blue" on Mueller-Dombois 68051848 and Guillaumin 8495, and "violet" on Hatschbach 14511 & 15492 and S. McDaniel 2165.

Schnack and his associates (1959) report that the species is apomictic in its reproduction. Junell (1934), Dermen (1936), Noack (1937), Schnack, Fehleisen, & Cocucci (1959), Lewis & Oliver (1961), and Bolkhovskikh & his associates (1969) all report the chromosome number as  $2n = 42$ . Stachyose is reported from the plant by Cheymol (1937). Hirata (1966) records the fungus, Oidium sp. (a powdery mildew) as parasitizing Verbena rigida in Ceylon.

Priszter (1971) offers seeds to the horticultural trade as his seed number 1671. Hay & Synge (1969) describe the species as follows: "Summer...Fl. violet-purple borne on erect, rigid stems. 1 1/2 — 2 ft. L[eaves] oblong, rigid and toothed. Roots tuberous. Effective when planted in bold groups in a sunny border in well-drained garden soil. In exposed gardens the tubers should be lifted and stored in the same manner as dahlias. Propagate in spring by removing young shoots with a small piece of tuber attached. This is best done from tubers in boxes in a warm house."

Material has been misidentified and distributed in some herbaria as V. stricta Vent. On the other hand, the Legg s.n. [4-6-64], distributed as V. rigida, is actually V. bipinnatifida Nutt., Amano 7373 is V. bonariensis L., and Pedersen 1307 is V. rigida var. obovata (Hayek) Moldenke. Iltis & Univ. Wisc. Pl. Geogr. Field Trip 25126 is a mixture with something non-verbenaceous and C. Ritchie 57 is also a mixture.

Additional citations: NORTH CAROLINA: Sampson Co.: Ahles & Laing 24480 (N, Se--199419). SOUTH CAROLINA: Richland Co.: Logue 976 (Au--257342). GEORGIA: Fulton Co.: P. O. Schallert 1961 (Go). FLORIDA: Alachua Co.: D'Arcy 1619 (N, W--2567475). ALABAMA: Sumter Co.: Iltis & Univ. Wisc. Pl. Geogr. Field Trip 25126, in part (Ws). MISSISSIPPI: Adams Co.: Jones & Hudson 11612 (Au--260932). Forrest Co.: K. E. Rogers 2231 (N). Lowndes Co.: S. McDaniel 2165 (N). Rankin Co.: Webster & Wilbur 3352 (N). Wilkinson Co.: Jones, Hudson, & Noble 13486 (N). LOUISIANA: East Baton Rouge Par.: Joor s.n. [June 11, 1874] (W--2607111). Saint Tammany Par.: R. J. Lemaire 660 (W--2587416a); K. E. Rogers 2247 (N). West Feliciana Par.: R. D. Thomas & al. 11418 (N). TEXAS: Harris Co.: L. C. Higgins 3930 (N); E. J. Palmer 12001 (Au--122626). Jefferson Co.: H. Gentry 53-229 (Au--122625). San Jacinto Co.: Gould & Reeves 8230 (Lk). Travis Co.: Tharp s.n. [Austin, 5/2/35] (Lk). Walker Co.: E. J. Palmer 12038 (Au--122627). BRAZIL: Paraná: Hatschbach 14511 (W--2563891), 15492 (W--2564723),

20479 (Ac); Reitz & Klein 17672 (N, W—2548337); Stellfeld 1521 (W—2527780). URUGUAY: Rosengurtt B.5301 (Se—126973). ARGENTINA: Corrientes: Ibarrola 3869 (Se—130307). Misiones: G. J. Schwarz 6433 (N). SWEDEN: C. Blom s.n. [21/9/1958] (Go). SOUTH AFRICA: Cape Province: Bayliss BS.3603 (W—2564567). Transvaal: Dahlstrand 176 (Go). 177 (Go). INDIA: Madras: Prain s.n. [Coonoon, Feb. 11, 1899] (Ed). State undetermined: C. Ritchie 57, in part (Ed). CEYLON: Mueller-Dombois 68051848 (W—2612115). RYUKYU ISLAND ARCHIPELAGO: Okinawa: Kanasiro 5828 (Ta). NEW CALEDONIAM ISLANDS: New Caledonia: Guillaumin 8495 (N). AUSTRALIA: New South Wales: Tilden 610 (W—2510092). Western Australia: Anway 465 (N). NEW ZEALAND: South: Healy 58/655 (Nz—121457), 60/40 (Nz—122788), 66/249 (Nz—172667). CULTIVATED: California: H. Evans s.n. [Santa Monica] (Sd—36459); Jerabek s.n. [Naval Hospital grounds, June 1945] (Sd—26458), s.n. [Franceschi Park, July 1945] (Sd—36694); W. R. Russell s.n. [June 21, 1965] (Se—229959). New York: A. L. Moldenke s.n. [September 15, 1969] (Ps—1021). North Carolina: W. C. Coker s.n. [10/2/36] (Se—162928).

VERBENA RIGIDA var. ALBA (Trivetts) Moldenke

Additional bibliography: Moldenke, *Phytologia* 11: 95. 1964; Moldenke, *Fifth Summ.* 1: 372 (1971) and 2: 919. 1971.

VERBENA RIGIDA var. GLANDULIFERA Moldenke

Additional synonymy: Verbena rigida f. glandulifera Moldenke, *Phytologia* 13: 260. 1966.

Additional bibliography: Angely, *Fl. Anal. Paran.*, ed. 1, 573. 1965; Moldenke, *Phytologia* 13: 260. 1966; Moldenke, *Fifth Summ.* 1: 178 (1971) and 2: 693 & 919. 1971.

VERBENA RIGIDA var. LILACINA (Benary & Bodger) Moldenke

Additional bibliography: Moldenke, *Résumé Suppl.* 16: 28. 1968; Moldenke, *Phytologia* 16: 199. 1968; Moldenke, *Fifth Summ.* 1: 372 (1971) and 2: 693 & 919. 1971.

VERBENA RIGIDA var. OBOVATA (Hayek) Moldenke

Additional bibliography: Angely, *Fl. Anal. Paran.*, ed. 1, 573. 1965; Moldenke, *Phytologia* 13: 260. 1966; Moldenke, *Fifth Summ.* 1: 178, 188, 190, & 202 (1971) and 2: 693 & 919. 1971.

In addition to the months previously reported by me, this plant has been collected in anthesis in November and in fruit from February to April, July, and September to November. Pedersen reports that it is fairly common on moist soils of not too dry grasslands in Corrientes, Argentina. Vernacular names reported for it are "margarita" and "margarita azul". The corollas are described as having been "blue" on Montes 665, "heavenly blue" on Montes 14735, and "violet" on G. J. Schwarz 1204, 4989, & 5063. Montes 665 appears to be a mixture with typical V. rigida Spreng.

Additional citations: BRAZIL: Rio Grande do Sul: Palacios & Cuezco 592 (N), 1452 (N). PARAGUAY: Hassler 8911 (Ca—950522). ARGENTINA: Corrientes: Pedersen 1307 (N); Pierotti 6652 (N). Formosa: I. Morel 6407 (N). Misiones: Bertoni 1513 (N); Krapovickas, Cristóbal, Maruffak, Pire, & Tressens 15329 (Rf); Montes 665, in part (N), 14735 (Au—271292, N, Rf); G. J. Schwarz 1204 (N), 4989 (N), 5063 (N), 5626 (N); Schwindt 427 (N).

VERBENA RIGIDA var. REINECKII (Briq.) Moldenke

Additional bibliography: Moldenke, *Phytologia* 11: 479. 1965; Moldenke, *Fifth Summ.* 1: 178, 188, & 202 (1971) and 2: 655, 693, 706, & 919. 1971.

VERBENA RINCONENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 13: 260. 1966; G. Taylor, *Ind. Kew. Suppl.* 14: 142. 1970; Moldenke, *Fifth Summ.* 1: 76 (1971) and 2: 919. 1971.

García Saucedo encountered this plant in "bosque cerrado de Pinus-Quercus", flowering and fruiting in July. The corolla is described as having been "purple" on García Saucedo 173.

Additional citations: MEXICO: México: García Saucedo 173 (Ip); Hinton 8011 (Se—117443—*isotype*).

VERBENA RIPARIA Raf.

Additional bibliography: Radford, Ahles, & Bell, *Guide Vasc. Fl. Carol.* 282. 1964; Moldenke, *Phytologia* 16: 199. 1968; Moldenke, *Fifth Summ.* 1: 21 (1971) and 2: 704, 705, 793, & 919. 1971.

Radford, Ahles, & Bell (1964) report this species as rare on riverbanks in Caldwell and Stanly Counties, North Carolina. Curiously, they fail to include it in their key to the species of the genus. They aver that it blossoms in June and July.

Additional citations: VIRGINIA: Smyth Co.: J. K. Small s.n. [July 1, 1892] (Lk).

VERBENA ROBUSTA Greene

Additional bibliography: Howell, *Marin Fl.*, ed. 1, 233. 1949; Abrams, *Illustr. Fl. Pacif. States*, pr. 1, 3: 610—612 & 616, fig. 4345. 1951; Ferris in Abrams & Ferris, *Illustr. Fl. Pacif. States*, pr. 1, 4: 651 & 730. 1960; J. H. Thomas, *Fl. Santa Cruz Mtns.*, pr. 1, 294 & 434. 1961; Ferris in Abrams & Ferris, *Illustr. Fl. Pacif. States*, pr. 2, 4: 651 & 730. 1965; Boivin, *Natur. Canad.* 94: 642. 1967; Abrams, *Illustr. Fl. Pacif. States*, pr. 2, 3: 610—612 & 616, fig. 4345. 1967; Boughney, *Mus. Syst. Bio. Univ. Calif. Irvine Res. Ser.* 1: 82. 1968; Moldenke, *Phytologia* 16: 200 & 201. 1968; Moldenke, *Résumé Suppl.* 16: 1. 1968; Munz & Keck, *Calif. Fl.* 687, 688, & 1679. 1968; Munz, *Suppl. Calif. Fl.* 101. 1968; J. H. Thomas, *Fl. Santa Cruz Mtns.*, pr. 2, 294 & 434. 1968; Howell, *Marin Fl.*, ed. 2, 233. 1970; Rickett, *Wild Fls. U. S.* 4 (3): 540, [543], & 799, pl. 177 (1970) and 5 (2): [455], 456, & 666, pl. 152. 1971; Moldenke, *Fifth Summ.* 1: 66, 76, & 372 (1971) and 2: 686,



691, 693, & 919. 1971; Moldenke, *Phytologia* 23: 192 & 285--287. 1972.

Illustrations: Abrams, *Illustr. Fl. Pacif. States*, pr. 1, 3: 616, fig. 4345 (1951) and pr. 2, 3: 616, fig. 4345. 1967; Rickett, *Wild Fls. U. S.* 4 (3): [543], pl. 177 [in color] (1970) and 5 (2): [455], pl. 152 [in color]. 1971.

Recent collectors have found this plant growing in stream beds and in wet seepage areas underlain by serpentine rocks. Howell (1970) states that it is "occasional among seepages or along course of ephemeral vernal brooks" in Marin County, California; Boughey (1968) found it "occasional in wet places", while Thomas (1961), in the Santa Cruz Mountains area, found it at the "margins of ponds, riverbeds, low moist ground where water has stood during the winter, mainly on the eastern side of the Santa Cruz Mountains," flowering there from June to October. Hoover describes it as "erect and to 2 m. tall or even longer and bending over". The corollas are said to have been "lilac" on Hoover 9218. Boughey (1968) cites Boughey & Pembroke 1000 from Orange County, California. A common name recorded for the species is "robust vervain".

Boivin (1967) is of the opinion that the Née 90 specimen preserved in the Madrid herbarium and labeled as having been collected on Nootka Island, is mis-labeled, since the species is not otherwise known from that island. This opinion is very probably correct, since so many others of Née's specimens have been shown to be accompanied by erroneous locality notations in the Madrid herbarium.

The D. F. Howe s.n. [17 July 1964], distributed as V. robusta, is actually V. bracteata Lag. & Rodr.

Additional citations: CALIFORNIA: San Diego Co.: Cleveland s.n. [Sweetwater Valley] (Sd--6786). San Luis Obispo Co.: Hoover 8029 (Au--297804), 9218 (Au--297792). San Mateo Co.: A. R. Moldenke 2748 (Rf). Santa Clara Co.: L. S. Rose 65098 (Au--272832, N). Tuolumne Co.: A. R. Moldenke 3412 (Go). CHANNEL ISLANDS: Santa Cruz: C. B. Wolf 4160 (Se--109272).

#### VERBENA RUGOSA Mill.

Additional bibliography: Moldenke, *Phytologia* 11: 479. 1965; Moldenke, *Fifth Summ.* 1: 76 (1971) and 2: 620 & 919. 1971.

#### VERBENA RUNYONI Moldenke

Additional bibliography: Moldenke, *Phytologia* 14: 296. 1967; Rickett, *Wild Fls. U. S.* 3 (2): 365. 1969; Moldenke in Correll & Johnston, *Man. Vasc. Pl. Tex.* [Contrib. Tex. Res. Found. Bot. 6:] 1315 & 1320. 1970; Correll & Johnston, *Man. Vasc. Pl. Tex.* [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970; Moldenke, *Fifth Summ.* 1: 60, 64, 76, & 372 (1971) and 2: 694 & 919. 1971; Moldenke, *Phytologia* 23: 242. 1972.

Runyon describes this plant on his labels as follows: "annual erect herb, tall; roots fibrous; stems hollow; bark green or dark-green; leaves dark-green, largest at base, oblong in outline, in-

cised, toothed, or lobed; flowers in terminal spikes, no odor or with faint odor; fruit a small pubescent capsule; occasional in moist situations, open moist ground, ditches, in clay or clay-loam soil, in open fields, along roadsides, on banks and resecta bottoms, occasional in semi-dry fields, frequent or abundant in open ground, town lots, etc., scarce in damp situations, occasional along bank of Arroyo Colorado near La Feria bridge" in Cameron County, Texas. The fruits, of course, are not capsules. The corollas are described as having been "blue" on R. Ruryon 2588, 2691, 2692, & 4187.

Additional citations: TEXAS: Cameron Co.: R. Ruryon 2588 (Au--268737), 2691 (Au--266163), 2692 (Au--266147), 4187 (Au--266142), 4871 (Au--266165), 6011 (Au--269649).

VERBENA RUNYONI f. ROSIFLORA L. I. Davis

Emended synonymy: Verbena runyonii f. rosiflora L. I. Davis ex Moldenke, Alph. List Invalid Names 26, in syn. 1947; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1315 & 1320. 1970. Verbena runyonii rosiflora L. I. Davis ex Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970.

Additional bibliography: Moldenke, Phytologia 11: 111--112. 1964; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1315 & 1320. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970; Moldenke, Fifth Summ. 1: 60 (1971) and 2: 694 & 919. 1971.

VERBENA RUSSELLII Moldenke

Additional bibliography: Moldenke, Phytologia 11: 479. 1965; Moldenke, Fifth Summ. 1: 77 (1971) and 2: 919. 1971.

xVERBENA RYDBERGII Moldenke

Additional & emended bibliography: Rydb., Fl. Rocky Mtns., ed. 1, 740. 1922; Hitchc., Cronq., & Ownbey, Vasc. Pl. Pacif. Northwest 4: 244. 1959; Poindexter, Trans. Kans. Acad. Sci. 65: 409--411, 413, 415, & 417. 1962; Rydb., Fl. Rocky Mtns., ed. 2, 740. 1969; Swink, Pl. Chicago Reg. 427. 1969; Moldenke, Phytologia 16: 200. 1968; Cochrane, Rice, & Rice, Mich. Bot. 10: 183. 1971; Moldenke, Fifth Summ. 1: 14, 15, 35--37, 41, 44, 45, 52, & 53 (1971) and 2: 656, 673, 674, 688, 694, 697, 698, 704, & 919. 1971.

Hitchcock and his associates (1959) point out that the accepted binomial designation for this common natural hybrid is "a strictly synonymous nomenclatural substitute for the apparently quite legitimate name V. paniculato-stricta Engelm. Am. Journ. Sci. 46: 100. 1844, which, in turn was based on Geyer, banks of the Mississippi opposite St. Louis". My own view is that Engelm's designation was not formally proposed as a binomial name, but merely as a description of what he supposed the constitution of the plant to be. It is probable that the Engelmann s.n. [St. Louis, July 1843], cited below, is part of the type collection, but the label is not

identical, therefore I am not so considering it.

Cochrane and his associates (1971) found this plant growing in low weedy fields in Rock County, Michigan, and call it "Rydberg's vervain". Swink (1969) reports it from Cook and DeKalb Counties, Illinois. Poindexter gathered material of the hybrid in a small clearing, a broad ravine, and an overgrazed pasture in Kansas, flowering and fruiting in July and August. According to notations on the labels, he found the chromosome count to be  $n = 7$  in Poindexter 229-11, where the pollen fertility was 92 percent; in his 201-53 the pollen fertility was 39 percent, in 201-52 it was 32 percent, and in 191-66 it was only 24 percent. In his 1962 work he compares the hybrid with its two parents. My son, Dr. Andrew R. Moldenke, of the University of California, Santa Cruz, informs me that 99 percent of the seeds of xV. rydbergii sent to him by me from freshly gathered material for growing in the experimental greenhouses at Stanford University proved to be aborted and infertile, even though originally collected from healthy and vigorous plants of the same season.

The W. H. Horr E.33, distributed as this hybrid, appears to be V. stricta Vent.

Additional citations: ILLINOIS: Henderson Co.: H. N. Patterson s.n. [Oquawka, July] (Pa). IOWA: Dickinson Co.: Shimek s.n. [Aug. 8, 1916] (Au-122736). KANSAS: Barber Co.: Poindexter 201-52 (N), 201-53 (N). Douglas Co.: Poindexter 191-66 (N), 229-11 (N). MISSOURI: Saint Louis: Eggert s.n. [Prairies, 19 August 1877] (Pa); Engelmann s.n. [banks of Mississippi, St. Louis, July 1842] (Au-122288), s.n. [St. Louis, July 1843] (Au-122286).

VERBENA SAGITTALIS Cham.

Additional bibliography: Moldenke, *Phytologia* 11: 120--121. 1964; Moldenke, *Fifth Summ.* 1: 178 (1971) and 2: 694 & 919. 1971.

VERBENA SALVIAEFOLIA Schrad. ex Steud., *Nom. Bot. Phan.*, ed. 1, 874, nom. nud. 1821.

Bibliography: Steud., *Nom. Bot. Phan.*, ed. 1, 874. 1821; Moldenke, *Fifth Summ.* 1: 375 (1971) and 2: 919. 1971.

Nothing is known to me about this supposed taxon except that it is listed by Steudel as a valid species, accredited to Schrader, with no literature citation of any sort. It is not listed in the "Index Kewensis" nor any of its supplements. It does not seem probable that it is conspecific with the later V. salviaefolia Hook. & Arn., which is a member of the genus Aloysia, or with Lippia salviaefolia Cham., also proposed much later.

VERBENA SANTIAGUENSIS (Covas & Schnack) Moldenke

Additional synonymy: Verbena santiaguensis Darlington & Wylie, *Chrom. Atl.*, pr. 1, 323, nom. nud. 1955. Glandularia santiaguensis Covas & Schnack ex Bolkh., Grif, Matvej., & Zakhar., *Chrom. Numb. Flow. Pl.* 715, sphalm. 1969.

Additional & emended bibliography: Schnack & Covas, Darwiniana 7: [71], 73-75, & 77-79, fig. 2 A & B, pl. 1 A & D & 5 A-G. 1945; Covas & Schnack, Darwiniana 7: 86 & 88. 1945; J. A. Clark, Card Ind. Gen. Sp. Var. issue 191. 1945; Moldenke, Phytologia 16: 200. 1968; Solbrig, Passani, & Glass, Am. Journ. Bot. 55: 1238 & 1239. 1968; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 715. 1969; Moldenke, Biol. Abstr. 50: 12950. 1969; Hocking, Excerpt. Bot. A. 15: 422. 1970; Solbrig, Princ. & Meth. Biosystem. 75, 76, 157, & 158, fig. 5-1. 1970; Moldenke, Fifth Summ. l: 190, 202, & 372 (1971) and 2: 522, 683, 694, 700, & 919-920. 1971; Moldenke, Phytologia 23: 194, 284, 427, 431, & 436 (1972) and 24: 47-49. 1972.

Additional & emended illustrations: Schnack & Covas, Darwiniana 7: 78, fig. 2 A, pl. 1 A & 5 B. 1945; Solbrig, Princ. & Meth. Biosystem. 76, fig. 5-1. 1970.

Recent collectors have found this plant in anthesis in March and November, and in fruit in March, April, November, and December. The corollas are described as having been "violet" on P. Garcia 920 and as "lilac" on Rodriguez Vaquero 667. The chromosome number is given as  $2n = 10$  by Covas & Schnack (1944), Schnack & Covas (1945), Schnack & Gonzalez (1945), and Bolkhovskikh & his associates (1969). The Troncoso 353, cited below, was previously identified by other herbarium workers as Glandularia pulchella and then as Verbena erinoides.

Solbrig (1970) says of V. santiaguensis that it occupies open dry and semidry grassland in northern and central Argentina along with V. peruviana (L.) Britton and V. pulchella Sweet, that V. pulchella and V. santiaguensis "replace each other geographically, with the former growing in the cooler southern and eastern areas and the latter in the more subtropical northern and western areas". He continues "G. santiaguensis.....is larger than G. pulchella, with large leaves and flowers and less divided leaves."

Additional citations: ARGENTINA: Buenos Aires: Rodriguez Vaquero 667 (N); Troncoso 353 (W-2595182). Chaco: M. R. Malvárez 1268 (N). Córdoba: M. Ruiz Huidobro 407 (N). Santiago del Estero: P. Garcia 920 (N); T. Meyer 12730 (N).

VERBENA SANTIAGUENSIS (Covas & Schnack) Moldenke x V. PERUVIANA (L.) Britton

Synonymy: Glandularia santiaguensis x G. peruviana Schnack & Covas, Darwiniana 7: 73 & 75, in textu. 1945.

Bibliography: Schnack & Covas, Darwiniana 7: 73 & 75. 1945; Solbrig, Princ. & Meth. Pl. Biosystem. 157. 1970; Moldenke, Phytologia 23: 427 & 431. 1972.

Solbrig (1970) refers to a hybrid between these two species when he says "Hybrids between Glandularia santiaguensis and Glandularia peruviana are 50% pollen sterile (Solbrig, 1968)". He does not formally describe the hybrid nor cite authenticating

herbarium vouchers so that the identity of the putative parents can be verified, so I have refrained from assigning a binomial name to the hybrid.

VERBENA SANTIAGUENSIS (Covas & Schnack) Moldenke x V. PHLOGIFLORA Cham.

Synonymy: Glandularia santiaguensis x G. phlogiphora Schnack & Covas, Darwiniana 7: 73 & 75, in textu. 1945.

Bibliography: Schnack & Covas, Darwiniana 7: 73 & 75. 1945; Moldenke, Phytologia 23: 427. 1972.

Nothing is known to me of this hybrid, presumably produced artificially in Argentina, except that it is referred to by Schnack & Covas in the above-mentioned reference.

VERBENA SANTIAGUENSIS (Covas & Schnack) Moldenke x V. PULCHELLA Sweet ex Solbrig, Princ. & Meth. Pl. Biosystem. 157--158. 1970.

Bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 1968; Solbrig, Princ. & Meth. Pl. Biosystem. 75 & 158. 1970; Moldenke, Fifth Summ. 2: 920 & 970. 1971; Moldenke, Phytologia 24: 48--49. 1972.

Solbrig (1970) refers to a natural hybrid between what he calls Glandularia santiaguensis and G. pulchella, but does not formally describe it or name it, nor does he cite any specimens that could be used as authentication. He refers to a work by himself in Heywood, Mod. Meth. Pl. Tax. (1968), not as yet seen by me. It is not at all certain to me just what the actual plants are to which he is referring as the parents, since it seems that his concept of at least one of these putative parental species differs from mine. I have therefore not assigned a binomial name as yet to the hybrid.

VERBENA SANTIAGUENSIS f. ALBIFLORA Moldenke

Bibliography: Moldenke, Phytologia 18: 295. 1969; Moldenke, Biol. Abstr. 50: 12950. 1969; Hocking, Excetpt. Bot. A.15: 422. 1970; Moldenke, Fifth Summ. 1: 202 (1971) and 2: 920. 1971.

Citations: ARGENTINA: Buenos Aires: Rodriguez Vaquero 666 (N--type).

VERBENA SCABRA Vahl

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 874. 1821; Voigt, Hort. Suburb. Calc. 473. 1845; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1179. 1895; Abrams, Illustr. Fl. Pacif. States, pr. 1, 3: 610, 611, & 616, fig. 4342. 1951; Ferris in Abrams & Ferris, Illustr. Fl. Pacif. States, pr. 1, 4: 651 & 730. 1960; Howell & McClintock in Kearney & Peebles, Ariz. Fl., ed. 2, 726 & 727. 1960; Radford, Ahles, & Bell, Guide Vasc. Fl. Carol. 281 & 282. 1964; Ferris in Abrams & Ferris, Illustr. Fl. Pacif. States, pr. 2, 4: 651 & 730. 1965; J. E. Moore, Castanea 30: 26. 1965; Abrams, Illustr. Fl. Pacif. States, pr. 2, 3: 610, 611, & 616, fig. 4342. 1967; Anon., Biol. Abstr. 49 (3): B.A.S.I. C. S.185. 1968; Moldenke, Biol. Abstr. 49: 1325. 1968; Moldenke, Phytologia 16: 200--201. 1968; Munz & Keck, Calif. Fl. 686, 687, &

1679. 1968; H. L. Mason, Fl. Marshes Calif., pr. 2, 677 & 877. 1969; Rickett, Wild Fls. U. S. 3 (2): 364-365 (1969) and 4 (3): 540 & 799. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1314 & 1319. 1970; Long & Lakela, Fl. Trop. Fla. 741, 742, & 961. 1971; Moldenke, Fifth Summ. 1: 21, 23, 25, 27, 31, 33, 47, 49, 60, 63, 66, 77, 92, 98, 99, 101, 106, & 396 (1971) and 2: 575, 690, 691, 694, 704, & 920. 1971; C. D. Adams, Flow. Pl. Jam. 627-628 & 846. 1972; Moldenke, Phytologia 22: 501 (1972) and 23: 192 & 229. 1972.

Additional illustrations: Abrams, Illustr. Fl. Pacif. States, pr. 1, 3: 616, fig. 4342 (1951) and pr. 2, 3: 616, fig. 4342. 1967.

Recent collectors have found this plant growing at the edge of streams, in marshy spots and seeps, in moist gravel in shaded canyons, on damp sandy flats, and on everglade prairies. The corollas are described as "pinkish-white" on Crutchfield 1976 and the common name "rough verbena" has been reported. Rickett (1969) describes the species as follows: "V. scabra may grow to be over 3 feet tall, with a single stem which may be unbranched. The leaves are toothed but not lobed or cleft, and rough ('scabrous'). There are several spikes. The blue corolla is about 1/3 inch long and its lobes spread less than 1/10 inch". He avers that in Texas it blooms from "March to December: in moist soil by water and in swamps from eastern, southern, and western Texas to California and Mexico, and eastward to Florida and North Carolina."

Radford, Ahles, & Bell (1964) report the species from the margins of marshes, frequently brackish, and often in shell deposits in the outer parts of the central portions of North Carolina and South Carolina, flowering there from May to October. Moore (1965) reports it from Yell County, Arkansas. Adams (1972) gives its overall distribution as Bermuda, the southeastern United States, Mexico, and the Greater Antilles, and cites Adams 10967, Harris 9937, and Howard & Proctor 14546 from Jamaica.

Material of V. scabra has been misidentified and distributed in some herbaria as V. macdougalii Heller. On the other hand, the Abrigo s.n. [April 12, 1963], distributed as V. scabra, is actually V. cloverae Moldenke, while L. C. Crawford 1053 is V. simplex Lehm.

Additional citations: NORTH CAROLINA: Chowan Co.: Ahles & Duke 47840 (N). SOUTH CAROLINA: Beaufort Co.: Ahles & Bell 15630 (Se--194381, Se--194382, Se--195466). FLORIDA: Dade Co.: Craighead s.n. [11 April 1961] (Ft--10925); Gillis 7058 (Rf); J. K. Small 8090 (N). Lee Co.: J. K. Small s.n. [Punta Rassa, May 1928] (N). ARIZONA: Pima Co.: Pringle s.n. [July 18, 1884] (Pa). Yavapai Co.: Crutchfield 1976 (Ld). CALIFORNIA: Los Angeles Co.: S. F. Blake 632 [Herb. Blake 1590] (Ld), 676 [Herb. Blake 1637] (Ld), 788 [Herb. Blake 1750] (Ld), 855 [Herb. Blake 1820] (Ld). San Bernardino Co.: Parish & Parish 1043 (Pa); Roos & Roos 5307 (W--2567361). Santa Barbara Co.: H. M. Pollard s.n. [Aug. 9, 1964] (Au--273433). MEXICO: Coahuila: Johnston & Muller 877 (Au--301657, Mi). JAMAICA:

Barkley & Bouthillette 38711 (Ac).

## VERBENA SCABRA f. ANGUSTIFOLIA Moldenke

Synonymy: Verbena scabra angustifolia Moldenke ex Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970.

Additional bibliography: Anon., Biol. Abstr. 49 (3): B.A.S.I.C. S.185. 1968; Moldenke, Biol. Abstr. 49: 1325. 1968; Moldenke, Phytologia 16: 201. 1968; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1314 & 1319. 1970; Moldenke, Fifth Summ. 1: 60 (1971) and 2: 691, 694, & 920. 1971.

## VERBENA SCABRELLA Sessé &amp; Moc.

Additional bibliography: Moldenke, Phytologia 11: 133. 1964; Moldenke, Fifth Summ. 1: 77 (1971) and 2: 645 & 920. 1971.

## xVERBENA SCHNACKII Moldenke

Additional synonymy: Glandularia peruviana x megapotámica Schnack & Covas, Revist. Argent. Agron. 12: 224. 1945.

Additional bibliography: Moldenke, Phytologia 11: 134. 1964; Solbrig, Passani, & Glass, Am. Journ. Bot. 55: 1239. 1968; Solbrig, Princ. & Meth. Pl. Biosystem. 76. 1970; Moldenke, Fifth Summ. 1: 372 (1971) and 2: 522, 683, 689, & 920. 1971; Moldenke, Phytologia 23: 373. 1972.

Solbrig (1970) says that "The cross between G. peruviana and G. megapotámica, for example, was approximately 65% pollen fertile."

## VERBENA SCHULZII Moldenke

Additional bibliography: Moldenke, Phytologia 11: 135--136. 1964; Moldenke, Fifth Summ. 1: 202 (1971) and 2: 920. 1971.

## xVERBENA SCORTA Moldenke

Additional bibliography: Moldenke, Phytologia 11: 136. 1964; Moldenke, Fifth Summ. 1: 372 (1971) and 2: 672, 679, & 920. 1971.

## VERBENA SCROBICULATA Griseb.

Additional bibliography: Moldenke, Phytologia 13: 261. 1966; Moldenke, Fifth Summ. 1: 190, 202, & 372 (1971) and 2: 675, 695, & 920. 1971.

Recent collectors have found this plant in flower in January and in fruit in January and July. The corollas are described as having been "whitish" on Willink 159.

The Rodrigues Villegas 907, distributed as V. scrobiculata, is actually V. incisa Hook.

Additional citations: ARGENTINA: Salta: Pierotti 1236 (N), "h" [Herb. Inst. Miguel Lillo 7] (N), "h" [Herb. Inst. Miguel Lillo 115] (N); Schulz & Varela 5267 (N); Willink 159 (N), s.n. [Herb.

Inst. Miguel Lillo 106867] (N).

VERBENA SEDULA Moldenke

Synonymy: Verbena sedula var. sedula Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 506. 1971.

Additional bibliography: Hocking, Excerpt. Bot. A.7: 206. 1964; Moldenke, Résumé Suppl. 16: 5 & 28. 1968; Moldenke, Phytologia 16: 201 & 340—342 (1968) and 18: 211. 1969; Anon., Biol. Abstr. 50 (1): B.A.S.I.C. S.194. 1969; Moldenke, Biol. Abstr. 50: 418 & 7999. 1969; Hocking, Excerpt. Bot. A.14: 206 (1969) and A.18: 444. 1971; Moldenke, Fifth Summ. 1: 138 (1971) and 2: 695 & 920. 1971; Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 504, 506, & 508. 1971; Wiggins & Porter, Fl. Galáp. Isls. 997. 1971; Moldenke, Phytologia 23: 185. 1972.

VERBENA SEDULA var. DARWINII Moldenke, Phytologia 16: 341. 1968.

Synonymy: Verbena polystachya var. foliis incis segmentis grossè serratis Hook., Trans. Linn. Soc. Lond. Bot. 20: 195. 1847. Verbena polystachya var. foliis incis, laciniis grosse serratis Hook. apud N. J. Anderss., Galap. Veg. 81, in syn. 1859. Verbena sedula darwinii Moldenke ex Anon., Biol. Abstr. 50 (1): B.A.S.I.C. S.194. 1969.

Bibliography: Hook., Trans. Linn. Soc. Lond. Bot. 20: 195. 1847; N. J. Anderss., Vet. Akad. Handl. Stockh. 1853: 199—200. 1853; N. J. Anderss., Galap. Veg. 81. 1859; Hocking, Excerpt. Bot. A.7: 206. 1964; Moldenke, Phytologia 16: 340—341. 1968; Moldenke, Résumé Suppl. 16: 5 & 28. 1968; Anon., Biol. Abstr. 50 (1): B.A.S.I.C. S.194. 1969; Hocking, Excerpt. Bot. A.14: 206. 1969; Moldenke, Biol. Abstr. 50: 418. 1969; Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 506 & 508. 1971; Wiggins & Porter, Fl. Galáp. Isls. 997. 1971; Moldenke, Fifth Summ. 1: 138 (1971) and 2: 690, 695, & 920. 1971; Moldenke, Phytologia 23: 185. 1972.

This variety is known thus far only from the type collection.

Citations: GALAPAGOS ISLANDS: James: C. Darwin s.n. [beginning of October, 1835] (Cu—type).

VERBENA SEDULA var. FOURNIERI Moldenke, Phytologia 18: 211. 1969.

Bibliography: Moldenke, Phytologia 18: 211. 1969; Moldenke, Biol. Abstr. 50: 7999. 1969; Hocking, Excerpt. Bot. A.18: 444. 1971; Moldenke, Fifth Summ. 1: 138 (1971) and 2: 920. 1971; Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 506 & 508. 1971; Wiggins & Porter, Fl. Galáp. Isls. 997. 1971.

This variety, known only from two collections, has been found growing along roadsides and beside a small pond, at altitudes of 200 to 500 meters, flowering in February. The corollas are said to have been "white" on L. A. Fournier 276.

Citations: GALAPAGOS ISLANDS: Chatham: L. A. Fournier 269 (Z—type), 276 (Rf).

VERBENA SELLOI Spreng.

Additional synonymy: Verbena pulchella gracilior (Troncoso)



Shinners apud Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970.

Additional & emended bibliography: Troncoso, Darwiniana 13: 468--470, 476, & 481--484, fig. 6. 1964; J. A. Clark, Card Ind. Gen. Sp. Var. issue 248 (1964) and issue 251. 1965; Solbrig, Castanea 30: 173--174. 1965; Troncoso in Cabrera, Fl. Prov. Buenos Aires 5: 137 & 139. 1965; Solbrig, Biol. Abstr. 47: 2870. 1966; Hocking, Excerpt. Bot. A.11: 123. 1967; Moldenke, Phytologia 16: 201. 1968; Moldenke, Résumé Suppl. 16: 6, 22, 26, & 28. 1968; G. Taylor, Ind. Kew. Suppl. 14: 63. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1323. 1970; Schnack & Rubens, Bol. Soc. Argent. Bot. 13: 207. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1877. 1970; Moldenke, Fifth Summ. 1: 178, 190, 202, & 372 (1971) and 2: 522, 619, 691, & 920. 1971.

Hunziker describes this plant as decumbent. It has been collected in fruit in February, April, and November. The vernacular names, "margarita morada" and "yerba meona", have been recorded for it. The corollas are described as having been "lilac" on J. H. Hunziker 384 & 1990, "blue" on Ruíz Huidobro 1176 & 1271, "violet" on Hatschbach 13674, and "intense lilac" on Hatschbach 14968 & 14984. The Herter 181a [Herb. Herter 68181], cited below, was previously erroneously cited by me as V. tenera Spreng.

Additional citations: BRAZIL: Paraná: Hatschbach 13674 (W--2563852), 14968 (W--2564571), 14984 (W--2563951). Rio Grande do Sul: Palacios & Cuezco 976 (N). Santa Catarina: J. Dias s.n. [Herb. Fac. Farmácia 5780] (W--2527807). URUGUAY: Herter 181a [Herb. Herter 68181] (Ca--278518). ARGENTINA: Buenos Aires: J. H. Hunziker 384 (N), 1990 (N); Ruíz Huidobro 1176 (N), 1271 (N). Salta: Garolera & Romero s.n. [21-I-1947] (N).

#### VERBENA SESSILIS (Cham.) Kuntze

Additional synonymy: Glandularia sessilis Schnack & Rubens, Bol. Soc. Argent. Bot. 13: 205. 1970. Glandularia sessilis (Cham.) Tronc. ex Moldenke, Phytologia 23: 431. 1972.

Additional bibliography: Moldenke, Phytologia 16: 201. 1968; Moldenke, Résumé Suppl. 17: 3. 1968; Schnack & Rubens, Bol. Soc. Argent. Bot. 13: 205. 1970; Moldenke, Fifth Summ. 1: 178, 188, 190, & 202 (1971) and 2: 695, 697, & 920. 1971; Moldenke, Phytologia 23: 228 & 431. 1972.

In addition to the months previously reported by me, recent collectors have found this plant in anthesis in October and in fruit from September to November and in January, growing in low generally more or less flooded land. Schnack & Rubens (1970) record it from Corrientes, Argentina.

Verbena sessilis is certainly very closely related to V. stellaroides Cham. and I am not at all certain that it is worthy of specific distinction.

Additional citations: ARGENTINA: Corrientes: Pedersen 9627 (N);

Pierotti 6692 (N). Formosa: I. Morel 3655 (N), 3940 (N), 4085 (N).

VERBENA SETACEA Perry

Additional bibliography: Moldenke, *Phytologia* 16: 201--202. 1968; Moldenke, *Fifth Summ.* 1: 77 (1971) and 2: 920. 1971.

Additional citations: MEXICO: Baja California: Wiggins & Thomas 187 (Mi).

VERBENA SHREVEI Moldenke

Additional bibliography: Moldenke, *Phytologia* 11: 479--480. 1965; Moldenke, *Fifth Summ.* 1: 77 (1971) and 2: 920. 1971.

VERBENA SIMPLEX Lehm.

Additional synonymy: Verbena simplex Michx. ex Moldenke, *Fifth Summ.* 2: 695, in syn. 1971. Verbena simplex Vent. ex Moldenke, *Fifth Summ.* 2: 695, in syn. 1971.

Additional & emended bibliography: Balbis, *Cat. Stirp. Hort. Acad. Taur.* 80. 1813; Pers., *Sp. Pl.* 3: 347. 1819; Steud., *Nom. Bot. Phan.*, ed. 1, 873 & 874. 1821; Beck, *Bot.*, ed. 1, 284. 1833; A. Wood, *Class-book*, ed. 1, 269 (1845), ed. 2, pr. 1, 412 (1847), ed. 2, pr. 2, 412 (1848), and ed. 10, pr. 1, 412. 1848; Beck, *Bot.*, ed. 2, pr. 1, 285. 1848; A. Gray, *Man. Bot.*, ed. 1, 312. 1848; A. Wood, *Class-book*, ed. 10, pr. 2, 412 (1849), ed. 10, pr. 3, 412 (1850), ed. 17, 412 (1851), ed. 23, 412 (1851), ed. 29, 412 (1853), ed. 35, 412 (1854), ed. 41, pr. 1, 412 (1855), and ed. 41, pr. 2, 412. 1856; Beck, *Bot.*, ed. 2, pr. 2, 285. 1856; A. Gray, *Man. Bot.*, ed. 2, pr. 1, 298 (1856), ed. 2, pr. 2, 298 (1858), and ed. 2, pr. 3, 298. 1859; A. Wood, *Class-book*, [ed. 42], pr. 1, 537. 1861; A. Gray, *Man. Bot.*, ed. 3, 298 (1862) and ed. 4, pr. 1, 298. 1863; A. Wood, *Class-book*, [ed. 42], pr. 2, 537. 1863; A. Gray, *Man. Bot.*, ed. 4, pr. 2, 298. 1864; A. Wood, *Class-book*, [ed. 42], pr. 3, 537 (1865) and [ed. 42], pr. 4, 537. 1867; A. Gray, *Man. Bot.*, ed. 5, pr. 1, 340 (1867) and ed. 5, pr. 2, 340. 1868; A. Wood, *Class-book*, [ed. 42], pr. 5, 537. 1868; Beck, *Bot.*, ed. 2, pr. 3, 285. 1868; A. Gray, *Field For. & Gard. Bot.*, ed. 1, pr. 1, 241--242 (1868) and ed. 1, pr. 2, 241--242. 1869; A. Wood, *Class-book*, [ed. 42], pr. 6, 537 (1869) and [ed. 42], pr. 7, 537. 1870; A. Gray, *Man. Bot.*, ed. 4, pr. 3, 298. 1870; A. Wood, *Am. Bot. & Flor.*, ed. 1, pr. 1, 236 (1870), ed. 1, pr. 2, 236 (1871), and ed. 1, pr. 3, 236. 1872; A. Wood, *Class-book*, [ed. 42], pr. 8, 537. 1872; A. Wood, *Am. Bot. & Flor.*, ed. 1, pr. 4, 236 (1873), ed. 1, pr. 5, 236 (1874), and ed. 1, pr. 6, 236. 1875; A. Wood, *Class-book*, [ed. 42], pr. 9, 537. 1876; A. Gray, *Man. Bot.*, ed. 5, pr. 8, 340. 1878; A. Gray, *Field For. & Gard. Bot.*, ed. 1, pr. 3, 241--242. 1880; A. Gray, *Man. Bot.*, ed. 5, pr. 8 [9], 340. 1880; A. Wood, *Class-book*, [ed. 42], pr. 10, 537. 1881; Meyncke, *Bull. Brooksville Soc. Nat. Hist.* 1: [Fl. Franklin Co.] 31. 1885; O. R. Willis in A. Wood, *Am. Bot. & Flor.*, ed. 2, 236. 1889; S. Wats. & Coult. in A. Gray, *Man. Bot.*, ed. 6, pr. 1, 402 (1889) and ed. 6, pr. 2, 402. 1890; Gattinger, *Med. Fl. Tenn.* 63--64. 1894; L. H. Bailey in A. Gray, *Field For. & Gard. Bot.*, ed. 2, 341. 1895;

Graves, Eames, Bissell, Andrews, Harger, & Weatherby, *Bull. Conn. Geol. & Nat. Hist. Surv.* 14: [Cat. Flow. Fl.] 331. 1910; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 1, 3: 94 & 96, fig. 3555. 1913; Harshberger, *Veg. N. J. Pine Barrens*, pr. 1, 206, 254, & 257. 1916; Lowe, *Miss. State Geol. Surv. Bull.* 17: 237. 1921; Schnarf, *Öst. Bot. Zeit.* 74: 40--50. 1925; Tischler, *Tabul. Biol.* 4: 24. 1927; Harger, *Bull. Conn. Geol. & Nat. Hist. Surv.* 48: 74. 1930; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 2, 3: 94 & 96, fig. 3555. 1936; Noack, *Biol. Zentralbl.* 57: [383]—386, fig. 5. 1937; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 3, 3: 94 & 96, fig. 3555. 1943; Tatnall, *Fl. Del.* 218. 1946; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 4, 3: 94 & 96, fig. 3555. 1947; R. McVaugh, *Bull. N. Y. State Mus.* 360: 195. 1958; F. Bartley in J. C. Bartley, *Bull. Ohio Biol. Surv.*, new ser., 1: 181. 1959; Dobbs, *Fl. Henry Co.* 230. 1963; Padmanabhan, *Phytomorph.* 14: 449. 1964; Radford, Ahles, & Bell, *Guide Vasc. Fl. Carol.* 281 & 282. 1964; Rouleau in Marie-Victorin, *Fl. Laurent.*, ed. 2, 490. 1964; Hocking, *Excerpt. Bot.* A.9: 366 & 367. 1965; Hirata, *Host Range & Geogr. Distrib. Powd. Mild.* 276 & 277. 1966; Mohlenbrock, *Castanea* 31: 224 & 235. 1966; Bostick, *Castanea* 32: 150. 1967; Rickett, *Wild Fls. U. S.* 2 (2): 464, [465], & 686, pl. 171. 1967; Wherry, *Bartonia* 37: 13. 1967; Gunn, *Castanea* 33: 102. 1968; Lehr, *Bull. Torrey Bot. Club* 94: 544. 1968; Mohlenbrock, *Trans. Ill. Acad. Sci.* 61: 71. 1968; Moldenke, *Phytologia* 16: 202—203. 1968; Moldenke, *Résumé Suppl.* 16: 1 (1968) and 17: [1]. 1968; Peterson & McKenny, *Field Guide Wildfls.* 286, [287], & 418. 1968; Bolkh., Grif, Matvej., & Zakhar., *Chrom. Numb. Flow. Pl.* 716 & 717. 1969; W. E. Hopkins, *Castanea* 34: 46. 1969; Jervis, *Castanea* 34: 115. 1969; F. C. Seymour, *Fl. New Eng.* 456. 1969; Swink, *Pl. Chicago Reg.* 428. 1969; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 5, 3: 94 & 96, fig. 3555. 1970; Domville & Dunbar, *John Burroughs Nat. Hist. Soc. Bull.* 8: 94. 1970; El-Gazzar & Wats., *New Phytol.* 69: 456, 483, & 485. 1970; Harshberger, *Veg. N. J. Pine Barrens*, pr. 2, 206, 254, & 257. 1970; Joyal, *Natural. Canad.* 97: 564, 577, & 582, fig. 2 f. 1970; Anon., *Biol. Abstr.* 52: 3081. 1971; Anon., *Biol. Abstr.* 52 (6): B.A.S.I.C. S.245. 1971; Br. & Wherry, *Bartonia* 40: 13. 1971; Cochrane, W. E. Rice, & M. M. Rice, *Mich. Bot.* 10: 183. 1971; Moldenke, *Fifth Summ.* 1: 14—23, 25, 27, 31—36, 38—41, 44, 45, 47, 52, 53, & 372 (1971) and 2: 651, 652, 665, 672—675, 678, 679, 694, 695, 698, 769, & 920. 1971; Moldenke, *Phytologia* 23: 413 & 414. 1972.

Additional & emended illustrations: Britton & Br., *Illustr. Fl.*, ed. 2, pr. 1, 3: 96, fig. 3555 (1913) and ed. 2, pr. 2, 3: 96, fig. 3555. 1936; Noack, *Biol. Zentralbl.* 57: 386, fig. 5. 1937; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 3, 3: 96, fig. 3555 (1943) and ed. 2, pr. 4, 3: 96, fig. 3555. 1947; Peterson & McKenny, *Field Guide Wildfls.* 287. 1968; Rickett, *Wild Fls. U. S.* 2 (2): [465], pl. 171 (in color). 1967; Britton & Br., *Illustr. Fl.*, ed. 2, pr. 5, 3: 96, fig. 3555. 1970.

Recent collectors have found this plant growing in dry sunny or open ground, limestone or calcareous clay soil, open woods, poor soil, along black rocky limestone roadsides or roadsides over dia-

base soil, on tallgrass prairies, rocky bottoms, low ridges in marl regions, and chalk barrens, at altitudes of 320 to 2000 feet. McDaniel reports it as "occasional in open prairie on chalk" in Mississippi and Sudworth as "common in dry fields" in the District of Columbia. Cochrane & Rice (1971) report it from Rock County, Wisconsin, Brown & Wherry (1971) from Cape May County, New Jersey, Meyncke (1885) from Franklin County, Indiana, Lowe (1921) from Oktibbeha County, Mississippi, Gunn (1968) from Bullitt County, Kentucky, Mohlenbrock (1968) from Pope County, Illinois, Wherry (1967) from Delaware County, Pennsylvania, Bostick (1967) from Saint Clair County, Alabama, and Bartley (1959) from Jackson County, Ohio.

Domville & Dunbar (1970) report the species as "rare in dry or sandy soil" in Ulster County, New York, where they say it blooms in the summer; Harger (1930) cites M. Hitchcock s.n. [Cromwell, 1881] from Middlesex County, Connecticut, in the Wesleyan University herbarium; Hopkins (1969) cites W. E. Hopkins 356 from Pope County, Illinois; while McVaugh (1958) cites R. McVaugh 2239 and Hoysradt s.n. from Columbia County, New York, where he found it "appearing as if adventive". Rouleau (1964) records it from St. Hélène Island, Quebec, while Joyal (1970) cites Rouleau 1124 from nearby Soeur Island, where he says it was collected in 1943 and 1944 but is apparently extinct now due to urbanization of the area. Swink (1969) notes that in the Chicago region it is "Locally frequent in open ground, especially where limestone is near the surface, here associating with Amorpha canescens, Asclepias verticillata, Echinacea pallida, Petalostemon purpureum, Psoralea tenuiflora, and Verbena stricta. It sometimes grows on exposed limestone with Arenaria patula, Isanthus brachiatus, Satureja arkansana, and Scutellaria parvula. It also grows on the shoulders of gravel roads, often associating with Sporobolus vaginiflorus."

Tatnall (1946) avers that it is still "rather frequent" in the Piedmont of New Castle County, Delaware, and in the sandy fields and roadsides of the Coastal Plain southward to Sussex County, Delaware, and Dorchester County, Maryland, flowering from late May to July. Radford, Ahles, & Bell (1964) record the species from roadsides, meadows, and thickets, usually associated with basic soils, infrequent in the Piedmont in North Carolina south into Abbeville and York Counties, South Carolina, flowering there from May to September. Dobbs (1963) states that in Henry County, Illinois, it is "Infrequent to rare along railroad tracks where I have found it only in Sections 17 and 22, Geneseo Township. I also once found specimens on the high terrace border of the Illinois and Mississippi Canal in Section 15 of the same township."

Gattinger (1894) tells us that Verbena simplex is "A common weed along roadsides in the limestone regions of Middle Tennessee", flowering there from May to August, and that it "has locally gained some reputation used in infusion as a remedy in chronic dysentery". Hausman (1948) describes it as "Similar to Blue Verbain. Flowers pale bluish-violet, 1/4" across; clusters 2-4"

long. Leaves 1 1/2 -- 3" long. Plant 1--2' high, rough-hairy; stems simple or branched, 4-sided above. Dry sandy fields. Massachusetts south to Florida; west to Minnesota, Kansas, Arkansas", flowering from June to August.

The corollas are described as having been "purple" on S. McDaniel 2597 and "pale blue-lavender" on Cronquist 5280. Dermen (1936), Noack (1937) and Bolkhovskikh & his associates (1969) report the chromosome number as  $2n = 14$ . Hirata (1966) records the powdery mildew, Erysiphe cichoracearum P. DC., as parasitizing Verbena simplex in various parts of the United States.

The Tischler (1927) reference in the bibliography of this species is sometimes cited as "Pflanzliche Chromosomenzahlen".

Material of V. simplex has been misidentified and distributed in some herbaria as V. scabra Vahl.

Additional citations: NEW YORK: Queens Co.: A. Brown s.n. [Richmond Hill] (N). NEW JERSEY: Bergen Co.: Denslow s.n. [Lodi, July 1850] (Pa). Hudson Co.: A. Brown s.n. [Homestead] (N). PENNSYLVANIA: Delaware Co.: Canby s.n. [June 25, 1878] (Pa). Lehigh Co.: R. L. Schaeffer Jr. 35931 (W-2388866). DISTRICT OF COLUMBIA: Chickering s.n. [9-25-1873] (W-254982); Sudworth 538 (Mi), 750 (Mi). VIRGINIA: Amherst Co.: Canby s.n. [Monroe, Aug. 1858] (Pa). NORTH CAROLINA: Durham Co.: A. E. Radford 44754 (Au--250912, W--2499508). Granville Co.: A. E. Radford 43888 (Se--212829); Radford & O'Briant 45472 (Au--272510, N). SOUTH CAROLINA: Aiken Co.: Canby s.n. [Aiken, May 1869] (Pa). GEORGIA: Walker Co.: Cronquist 5280 (Mi). ALABAMA: Dallas Co.: Small & Wherry 12584 (N). Hale Co.: L. C. Crawford 1053 (Au--122684). MISSISSIPPI: Noxubee Co.: S. McDaniel 2597 (N). ILLINOIS: Marion Co.: M. S. Bebb s.n. [Salem, 1860] (Pa, W--2549483). Marshall Co.: V. H. Chase 10660 (N). INDIANA: Porter Co.: H. R. Bennett s.n. [August 18, 1957] (Se--178916). Warren Co.: R. C. Friesner 22854 (Au--122683). KENTUCKY: Boyle Co.: M. E. Wharton 1002 (Mi). Henry Co.: J. L. Gentry Jr. 200 (N). Madison Co.: Fothergill s.n. [May 30, 1937] (Mi). Nelson Co.: M. E. Wharton 2058 (Mi). Rockcastle Co.: M. E. Wharton 2595 (Mi). County undetermined: Engelmann s.n. [Central Kentucky, Aug. 1876] (Pa). WISCONSIN: Sauk Co.: T. J. Hale s.n. [Baraboo, 1861] (Pa). KANSAS: Coffey Co.: Birkholz 2419 (N). Douglas Co.: W. H. Horr E.76 (N, Se--183522). Labette Co.: S. Stephens 11037 (N). ARKANSAS: Clark Co.: Demaree 58441 (Rf). Stone Co.: Demaree 58201 (Ac). OKLAHOMA: Cherokee Co.: C. S. Walker 535 (Au--122685). Rogers Co.: Stratton 7004 (Lk). LOCALITY OF COLLECTION UNDETERMINED: J. Macoun s.n. [Dry rocky ground, June 1865] (Pa).

VERBENA SIMPLEX f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 13: 264. 1966;

Moldenke, Fifth Summ. 1: 44 (1971) and 2: 920. 1971.

VERBENA SIMPLEX var. EGGERTI Moldenke

Additional bibliography: Moldenke, Phytologia 11: 480. 1965; Moldenke, Fifth Summ. 1: 18, 38, 44, & 46 (1971) and 2: 695 & 920. 1971.

Lehr found this plant in flower and fruit in August.

Additional citations: NEW YORK: Rockland Co.: Lehr 1203 (N).

VERBENA SINUATA Grieve & Leyal

Additional bibliography: Moldenke, Phytologia 16: 203. 1968; Moldenke, Résumé Suppl. 16: 13. 1968; Moldenke, Fifth Summ. 1: 375 (1971) and 2: 920. 1971.

xVERBENA SOLBRIGII Moldenke

Emended synonymy: Glandularia laciniata x peruviana Schnack & Solbrig, Revist. Fac. Agron. La Plata 29: [255]—266, fig. 1—4. 1953.

Additional & emended bibliography: Schnack & Solbrig, Revist. Fac. Agron. La Plata 29: [255]—266, fig. 1—4. 1953; Schnack, Fahleisen, & Cocucci, Revist. Argent. Agron. 24: 135. 1957; Moldenke, Phytologia 14: 297. 1967; Solbrig, Passani, & Glass, Am. Journ. Bot. 55: 1239. 1968; Moldenke, Fifth Summ. 1: 372 (1971) and 2: 521, 689, 700, & 920. 1971.

Emended illustrations: Schnack & Solbrig, Revist. Fac. Agron. La Plata 29: 257, 259, & 261, fig. 1—4. 1953.

VERBENA SPECTABILIS Moldenke

Additional bibliography: Moldenke, Phytologia 11: 181—182. 1964; Moldenke, Fifth Summ. 1: 202 (1971) and 2: 920. 1971.

In addition to months previously reported by me, this species has been collected in anthesis in March. The corollas are described as having been "purple" on Pedersen 4484 and "red" on Krapovickas, Cristóbal, Maruffak, Pire, & Tressens 44985.

Additional citations: ARGENTINA: Corrientes: Pedersen 4484 (Au—246077). Misiones: Krapovickas, Cristóbal, Maruffak, Pire, & Tressens 44985 (Z); G. J. Schwarz 789 (N).

VERBENA SPHAEROCARPA Perry

Additional bibliography: Moldenke, Phytologia 11: 182—183. 1964; Moldenke, Fifth Summ. 1: 78 (1971) and 2: 920. 1971; Moldenke, Phytologia 23: 293. 1972.

This species has been found growing on rocky slopes, at altitudes of 900—1030 meters, flowering and fruiting in March. The corolla is described as having been "light-pink" on R. V. Moran 5793.

Additional citations: MEXICAN OCEANIC ISLANDS: Socorro: R. V. Moran 5793 (Sd—49484), 5817 (Sd—49485).

VERBENA STACHYS Raimondi

Additional bibliography: Moldenke, Phytologia 11: 183—184.

1964; Moldenke, Fifth Summ. 1: 144 (1971) and 2: 920. 1971.

VERBENA STELLARIOIDES Cham.

Additional & emended synonymy: Verbena decurrens (Cham.) Kuntze, Rev. Gen. Pl. 3 (2): 257. 1898 [not V. decurrens Moench, 1821, nor Steud., 1968]. Glandularia stellaroides Covas & Schnack ex Solbrig, Passani, & Glass, Am. Journ. Bot. 55: 1235. 1968. Glandularia stellatioides (Cham.) Schnack & Covas ex Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 715, sphalm. 1969.

Additional bibliography: Steud., Nom. Bot. Phan., ed. 1, 807 & 873 (1821) and ed. 2, 2: 629. 1841; Moldenke, Phytologia 16: 203. 1968; Moldenke, Résumé Suppl. 17: 3. 1968; Solbrig, Passani, & Glass, Am. Journ. Bot. 55: 1235—1237. 1968; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 715. 1969; Solbrig, Passani, & Glass, Biol. Abstr. 50: 4151. 1969; Moldenke, Fifth Summ. 1: 179, 188, 190, & 202 (1971) and 2: 522, 665, 684, 695, 697, & 920. 1971; Moldenke, Phytologia 23: 226—228 & 431. 1972.

Steudel (1821, p. 873) lists a "Verbena decurrens" without authority or description and says of it "vid. Stachytarpheta mexicana" (also without authority). He fails to list the latter binomial in his treatment of the genus Stachytarpheta on page 807 of the same work. In his second edition (1841) he omits the binomial from his treatment of Verbena (page 750), and, again, lists no Stachytarpheta mexicana in his treatment of Stachytarpheta on page 629. The "Index Kewensis" accounts for neither binomial either in its original edition or any supplement (although the much later Stachytarpheta mexicana Moldenke is duly recorded). I am assuming that Steudel's two binomials refer to the Verbena decurrens Moench, which is a synonym of Stachytarpheta jamaicensis (L.) Vahl and so I have reduced them to the synonymy of that taxon. I am making this assumption because of Steudel's reference of the Verbena name to the genus Stachytarpheta. If he had been referring to Chamisso's plant he would hardly have referred it to the very different genus Stachytarpheta, which it does not resemble.

Verbena stellaroides has been found growing on swampy campos, flowering in August and in both flower and fruit in July and September. The corollas are described as "lilac-purple" on Woolston 306. According to Solbrig and his associates (1968), V. stellaroides has been crossed artificially with V. elegans H.B.K. [see under "Verbena elegans H.B.K. x V. stellaroides Cham." in this series of notes]. The Morel 4200, cited below, was previously misidentified and cited by me as V. sessilis (Cham.) Kuntze.

Additional citations: PARAGUAY: Woolston 306 (N). ARGENTINA: Formosa: I. Morel 3623 (N), 4200 (N), 5935 (N, N).

VERBENA STEWARTII Moldenke

Additional bibliography: Moldenke, Phytologia 11: 187—188

(1964) and 16: 342. 1968; Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 503, 506, & 508. 1971; Moldenke, Fifth Summ. 1: 138 (1971) and 2: 920. 1971; Wiggins & Porter, Fl. Galáp. Isls. 997. 1971.

VERBENA STOREOCLADA Briq.

Additional synonymy: Verbena soreoclada Briq. ex Moldenke, Fifth Summ. 2: 696, in syn. 1971.

Additional bibliography: Angely, Fl. Anal. Paran., ed. 1, 573. 1965; Moldenke, Phytologia 13: 265. 1966; Moldenke, Fifth Summ. 1: 179, 188, 190, & 202 (1971) and 2: 667, 675, 696, & 920. 1971; Moldenke, Phytologia 22: 491. 1972.

The Lourteig 2041, distributed as V. storeoclada, is actually V. calliantha Briq.

VERBENA STRICTA Vent.

Additional & emended bibliography: Balbis, Cat. Pl. Hort. Bot. Taur. 48. 1804; Balbis, Cat. Stirp. Hort. Acad. Taur. 80. 1813; Pers., Sp. Pl. 3: 347—348. 1819; Steud., Nom. Bot. Phan., ed. 1, 873 & 874. 1821; Jan, Elench. Fl. 1. 1824; A. Wood, Class-book, ed. 2, pr. 1, 412 (1847), ed. 2, pr. 2, 412 (1848), and ed. 10, pr. 1, 412. 1848; A. Gray, Man. Bot., ed. 1, 312. 1848; A. Wood, Class-book, ed. 10, pr. 2, 412 (1849), ed. 10, pr. 3, 412 (1850), ed. 17, 412 (1851), ed. 23, 412 (1851), ed. 29, 412 (1853), ed. 35, 412 (1854), ed. 41, pr. 1, 412 (1855), and ed. 41, pr. 2, 412. 1856; A. Gray, Man. Bot., ed. 2, pr. 1, 298 (1856), ed. 2, pr. 2, 298 (1858), and ed. 2, pr. 3, 298. 1859; A. Wood, Class-book, [ed. 42], pr. 1, 537. 1861; A. Gray, Man. Bot., ed. 3, 298 (1862), and ed. 4, pr. 1, 298. 1863; A. Wood, Class-book, [ed. 42], pr. 2, 537. 1863; A. Gray, Man. Bot., ed. 4, pr. 2, 298. 1864; A. Wood, Class-book, [ed. 42], pr. 3, 537 (1865) and [ed. 42], pr. 4, 537. 1867; A. Gray, Man. Bot., ed. 5, pr. 1, 340 (1867) and ed. 5, pr. 2, 340. 1868; A. Wood, Class-book, [ed. 42], pr. 5, 537. 1868; A. Gray, Field For. & Gard. Bot., ed. 1, pr. 1, 242 (1868) and ed. 1, pr. 2, 242. 1869; A. Wood, Class-book, [ed. 42], pr. 6, 537 (1869) and [ed. 42], pr. 7, 537. 1870; A. Gray, Man. Bot., ed. 4, pr. 3, 298. 1870; A. Wood, Am. Bot. & Flor., ed. 1, pr. 1, 236 (1870), ed. 1, pr. 2, 236 (1871), and ed. 1, pr. 3, 236. 1872; A. Wood, Class-book, [ed. 42], pr. 8, 537. 1872; A. Wood, Am. Bot. & Flor., ed. 1, pr. 4, 236 (1873), ed. 1, pr. 5, 236 (1874), and ed. 1, pr. 6, 236. 1875; A. Wood, Class-book, [ed. 42], pr. 9, 537. 1876; A. Gray, Man. Bot., ed. 5, pr. 8, 340 (1878) and ed. 5, pr. 8 [9], 340. 1880; A. Gray, Field For. & Gard. Bot., ed. 1, pr. 3, 242. 1880; A. Wood, Class-book, [ed. 42], pr. 10, 537. 1881; Meyncke, Bull. Brooksville Soc. Nat. Hist. 1: [Fl. Franklin Co.] 31. 1885; O. R. Willis in A. Wood, Am. Bot. & Flor., ed. 2, 236. 1889; S. Wats. & Coult. in A. Gray, Man. Bot., ed. 6, pr. 1, 402 (1889) and ed. 6, pr. 2, 402. 1890; Gattinger, Med. Pl. Tenn. 64. 1894; L. H. Bailey in A. Gray, Field For. & Gard. Bot., ed. 2, 341. 1895; W. A. Wheeler, Minn. Bot. Stud. 2: 403. 1900; Graves, Eames, Bissell, Andrews, Harger, & Weatherby, Bull. Conn. Geol. & Nat. Hist. Surv. 14: [Cat. Flow. Pl.] 331. 1910; Britton & Br., Illustr. Fl., ed. 2, pr. 1, 3: 94—96, fig.



3556. 1913; Lowe, Miss. State Geol. Surv. Bull. 17: 237. 1921; Rydb., Fl. Rocky Mtns., ed. 1, 739 & 740. 1922; Pammel & King, Iowa Geol. Surv. Bull. 4 (rev.): 269--271, fig. 153, 153A, & 153B. 1926; Tischler, Tabul. Biol. 4: 24. 1927; Harger, Bull. Conn. Geol. & Nat. Hist. Surv. 48: 74. 1930; Pellett, Nat. Mag. 18: 185. 1931; Britton & Br., Illustr. Fl., ed. 2, pr. 2, 3: 94--96, fig. 3556. 1936; Noack, Biol. Zentralbl. 57: 384--386, fig. 7. 1937; Cheymol, Bull. Soc. Chim. Biol. 19: 1647--1653. 1937; F. H. & H. H. Hilman, Seed Trade Buyers Guide 1938: 137, pl. 12, fig. 7. 1938; Cheymol, Chem. Abstr. 32: 2977. 1938; Britton & Br., Illustr. Fl., ed. 2, pr. 3, 3: 94--96, fig. 3556. 1943; Zufall & Richtm., Pharm. Arch. 15: 1--9. 1944; Zufall & Richtm., Chem. Abstr. 38: 4092. 1944; Harvey, Erickson, & Larson, Seed Trade Buyers Guide 1945: 86. 1945; Britton & Br., Illustr. Fl., ed. 2, pr. 4, 3: 94--96, fig. 3556. 1947; King & al., Journ. Am. Pharm. Assoc., Sci. Ed., 39: 595--596. 1950; King & al., Chem. Abstr. 44: 11028--11029. 1950; Abrams, Illustr. Fl. Pacif. States, pr. 1, 3: 611. 1951; R. J. Davis, Fl. Ida. 596. 1952; Hitchc., Cronq., & Ownbey, Vasc. Pl. Pacif. Northwest 4: 244, 245, & 247. 1959; Winter, Winter, & VanBruggen, Check List Vasc. Pl. S. D. 124. 1959; Ferris in Abrams, Illustr. Fl. Pacif. States, pr. 1, 4: 730. 1960; H. H. Iltis, Prelim. Check List Ferns Seed Pl. Upham Woods, ed. 1, 12. 1960; Rattenbury, Madroño 15: 220. 1960; Martin & Barkley, Seed Ident. Man. 37, pl. 236. 1961; Dobbs, Fl. Henry Co. 230. 1963; Radford, Ahles, & Bell, Guide Vasc. Fl. Carol. 281 & 282. 1964; Ferris in Abrams, Illustr. Fl. Pacif. States, pr. 2, 4: 730. 1965; H. S. Fitch, Univ. Kans. Nat. Hist. Reserv. 49. 1965; Hocking, Excerpt. Bot. A. 8: 537. 1965; Lakela, Fl. Northeast. Minn. 110. 1965; Hirata, Host Range & Geogr. Distrib. Powd. Mild. 277. 1966; Mohlenbrock, Castanea 31: 224. 1966; F. H. Montgomery, Plants from Sea to Sea 262. 1966; Thornberry, U. S. Dept. Agr. Agric. Handb. 165: 479. 1966; Abrams, Illustr. Fl. Pacif. States, pr. 2, 3: 611. 1967; Shinn, Univ. Kans. Sci. Bull. 46: 790, 791, 881, 886, & 887. 1967; W. A. Weber, Rocky Mtn. Fl. 306. 1967; Beebe & Hoffm., Am. Midl. Nat. 80: 96, 99, 101, & 103. 1968; Burlage, Ind. Pl. Tex. 184, 206, 221, 224, & 238. 1968; W. C. Grimm, Recog. Flow. Wild Pl. 228. 1968; H. H. Iltis, Prelim. Check List Ferns Seed Pl. Upham Woods, ed. 2, 12. 1968; Mohlenbrock, Trans. Ill. Acad. Sci. 61: 71. 1968; Moldenke, Phytologia 16: 203--205. 1968; Moldenke, Résumé Suppl. 16: 1 & 2. 1968; Peterson & McKenny, Field Guide Wildfls. 286, [287], & 418. 1968; J. E. Weaver, Prairie Pl. 204, 206, & 275. 1968; Beebe & Hoffm., Biol. Abstr. 50: 1653. 1969; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 717. 1969; Farnsworth, Blomster, Quimby, & Schermerh., Lynn Index 6: 267. 1969; McCarthy & Morrow, Proc. 24th N. Cent. Weed Control Conf. 64. 1969; A. L. Moldenke, Phytologia 18: 127. 1969; Nicholson & Hulett, Journ. Ecol. Brit. 57: 607. 1969; Rickett, Wild Fls. U. S. 3 (2): [363] & 365, pl. 110. 1969; Rydb., Fl. Rocky Mtns., ed. 2, 739 & 740. 1969; F. C. Seymour, Fl. New Eng. 456. 1969; O. A. Stevens, Castanea 34: 196. 1969; Swink, Pl. Chicago Reg. 427 & 428. 1969.

[to be continued]