

ADDITIONAL NOTES ON THE ERIOCAULACEAE. LXXI

Harold N. Moldenke

SYNGONANTHUS FLAVIDULUS (Michx.) Ruhl.

Additional bibliography: Britton & Br., *Illustr. Fl.*, ed. 2, imp. 3, 1: 455 & 680, fig. 1144. 1936; Moldenke, *N. Am. Fl.* 19: 43 & 44. 1937; Moldenke, *Phytologia* 1: 336 & 343--344. 1939; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 2, 145. 1941; Worsdell, *Ind. Lond. Suppl.* 2: 426. 1941; Britton & Br., *Illustr. Fl.*, ed. 2, imp. 4, 1: 455 & 680, fig. 1144. 1943; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 2, 1: 878 & 879 (1946) and imp. 2, 2: 402. 1946; Moldenke, *Alph. List Cit.* 1: 17, 31, 35, 38, 42, 43, 45, 63, 90, 98, 99, 138-140, 152, 153, 164, 169, 191, 221, 234, 257, 275, 276, 283, 286, 290, & 292--295. 1946; Moldenke, *Known Geogr. Distrib. Erioc.* 2, 3, 29, 34, 40, 48, & 58. 1946; Britton & Br., *Illustr. Fl.*, ed. 2, imp. 5, 1: 455 & 680, fig. 1144. 1947; Moldenke, *Phytologia* 2: 350 (1947) and 2: 496. 1948; Moldenke, *Alph. List Cit.* 2: 377, 413, 460, 470, 480, 504, 507, 508, 511--513, 524, 545, 554, 572, 583, 617, 630, 639, & 641 (1948), 3: 660, 675, 697, 721, 725, 736, 741, 742, 756, 759, 760, 772, 774, 776--778, 787, 790, 806, 813, 822, 835, 841, 842, 850, 851, 895, 899, 917, 931, 937, 940, 943, 946, & 958 (1949), and 4: 1001, 1003, 1112, 1118, 1132, 1164, 1176, 1177, 1181, 1191, 1192, 1201, 1204, 1216, 1221, 1222, 1227, 1241, 1252, 1288, 1289, & 1292. 1949; E. D. Merr., *Ind. Rafin.* 82. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 7, 8, 10, 11, & 213. 1949; Gleason, *New Britton & Br. Illustr. Fl.*, imp. 1, 1: 372 & 481 (1952) and imp. 1, 3: 585 & 591. 1952; Moldenke, *Phytologia* 4: 313--316. 1953; Thorne, *Am. Midl. Nat.* 52: 282. 1954; Core, *Pl. Tax.* 268. 1955; Gleason, *New Britt. & Br. Illustr. Fl.*, imp. 2, 1: 372 & 418 (1958) and imp. 2, 3: 585 & 591. 1958; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 3, 145. 1959; Moldenke, *Résumé* 10, 11, 13, 14, 280, 282, 288, 292, 302, 325, 414, & 491. 1959; Moldenke, *Résumé Suppl.* 1: 2 & 16. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 3, 1: 878 & 879 (1960) and imp. 3, 2: 402. 1960; Moldenke, *Résumé Suppl.* 3: 3, 31, & 35 (1962), 4: [1]--3 (1962), 5: 2 (1962), and 6: 10. 1963; Gleason, *New Britt. & Br. Illustr. Fl.*, imp. 3, 1: 372 & 481 (1963) and imp. 3, 3: 585 & 591. 1963; Radford, Ahles, & Bell, *Guide Vasc. Fl. Carol.* 106 & 107. 1964; Thanikaimoni, *Pollen & Spores* 7: 183 & 187, tab. 1. 1965; Kral, *Sida* 2: 327--332. 1966; Shinners, *Sida* 2: 441 & 447. 1966; Grimm, *Recog. Flow. Wild Pl.* 36. 1968; Moldenke, *Résumé Suppl.* 16: [1] & 25 (1968) and 17: [1] & 9. 1968; Rickett, *Wild Fls. U. S.* 2 (1): [85] & 135, pl. 27 (1968) and 2 (2): 674. 1968; Moldenke, *Résumé Suppl.* 18: [1] & 13. 1969; Moldenke, *Phytologia* 18: 80, 369, 370, 379, & 380 (1969) and 19: 28 & 75. 1969; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 149, 156, 157, 161, 162, 168, 169, 172, 175, 182--186, 190, & 191, fig. 33 H, I, & K, 35 I, & 39 A--D. 1969; Britton & Br., *Illustr. Fl.*, ed. 2, imp. 6, 1: 455 & 680, fig. 1144. 1970; Moldenke, *Phytologia* 20: 41, 42, 52, & 424. 1970;

S. Ell., Sketch Bot., imp. 3, 2: 566—567 & 728. 1971; Long & Lakela, Fl. Trop. Fla., ed. 1, 259, 262, 930, & 958. 1971; Moldenke, Fifth Summ. 1: 23, 25, 26, 30, 32, 481, & 487 (1971) and 2: 496, 500, 513, 534, 578, 583, 593, 636, 764, & 962. 1971; Moldenke, Phytologia 25: 125 & 225 (1973), 26: 17, 27, & 179 (1973), and 29: 204. 1974; Michx., Fl. Bor.-Am., imp. 2, 2 [Ewan, Class. Bot. Am. 3]: 166. 1974; Moldenke, Phytologia 31: 375 (1975) and 34: 248, 277, & 486. 1976; Lakela, Long, Fleming, & Genelle, Fl. Tampa Bay, ed. 3 [Bot. Lab. Univ. S. Fla. Contrib. 73:] 39 & 180. 1976; Long & Lakela, Fl. Trop. Fla., ed. 2, 259, 262, 930, & 958. 1976; Moldenke, Phytologia 35: 304, 313, 346, 347, & 457—458. 1977.

Additional & emended illustrations: Britton & Br., Illustr. Fl., ed. 1, 1: 373, fig. 902 (1896), ed. 2, imp. 1, 1: 455, fig. 1144 (1913), and ed. 2, imp. 2, 1: 455, fig. 1144. 1923; M. F. Baker, Fla. Wild Fls. 122. 1926; J. K. Small, Man. Southeast. Fl. 257. 1933; Britton & Br., Illustr. Fl., ed. 2, imp. 3, 1: 455, fig. 1144 (1936), ed. 2, imp. 4, 1: 455, fig. 1144 (1943), and ed. 2, imp. 5, 1: 455, fig. 1144. 1947; Thanikaimoni, Pollen & Spores 7: 183, tab. 1. 1965; Kral, Sida 2: 328. 1966; Rickett, Wild Fls. U. S. 2 (1): [85] (in color). 1968; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 156, 168, & 182, fig. 32 H, I, & K, 35 I, & 39 A—D. 1969; Britton & Br., Illustr. Fl., ed. 2, imp. 6, 1: 455, fig. 1144. 1970.

Recent collectors describe this plant as a low herb, clump-forming or solitary, the leaves dense, recurved, rosette-forming, flattened against the substratum, with hairs tending to be pustulate-based, at least some of those on the upper portions of the peduncles clavate or gland-tipped, the flowers white, and the bracts straw-colored and shiny. D'Arcy refers to the heads as "bright white", but to me in the field they have usually had a yellowish cast.

Collectors have found the species growing in bogs, roadside swales, longleaf pine sandhill bogs and bog margins, clearings in longleaf pine - saw palmetto flats, and sandy arid pinelands, in open pine-palmetto forests, hillside bogs, cleared pinelands, railroad ditches, and low areas in sandhills, in sandy prairies, clearings in pine flatwoods, moist ground of pinelands, white sand scrub, roadside ditches, and moist broad shallow sandy-peaty ditches, under Taxodium in moist sedge associations, at pond edges, in wet sandy peat in bogs in longleaf pine - saw palmetto flatwoods, pine flatwoods ditches, moist areas in pineland bogs, and slash pine - saw palmetto flatwoods, in damp white sand along the borders of shallow ponds in sand barrens, in low and moist pinelands, low scrubland, sandy openings in scrub, boggy areas, and the sandy open scrub-covered edge of pinelands, at the edges of cutover pinewoods, in sandy or sandy-peaty soil, in the high pine borders of swamps, on the shores of sinkhole lakes, at the edge of cypress ponds and ponds with surrounding shrubbery, in the sandhills bordering bogs, in clearings in shrub bogs, and in sandy peat of seepage from hillside bogs, by ponds in pond cypress flatwoods, and in hammocks with Asimina, Blechnum, and Nephrolepis.

D'Arcy reports it "frequent in wet grassy ditches" in Florida, Wentz found it "common at edge of beach of 5-acre pond" and Tomlinson found it "abundant in sandy prairie and cutover pineland, forming dense tufts in drier areas" in the same state, but Myint refers to it as "occasional along streams and in grassy pinelands". It has been found in flower from March to July and in fruit in March, April, June, and July. Lakela and her associates (1976) aver that it flowers in the "summer".

Thorne (1954) refers to the species as "rare". Radford and his associates (1964) also report it as "rare" [in the Carolinas] in bogs, savannas, and low pinelands in Bladen, Brunswick, New Hanover, and Sampson Counties, North Carolina. Harper (1906) records it from Appling, Berrien, Coffee, Colquitt, Decatur, Dodge, Dooly, Emanuel, Irwin, Montgomery, Tattnall, Telfair, and Wilcox Counties, Georgia. The Masseys found it "abundant on low roadsides with Eriocaulon" in North Carolina. In some recent floras it is listed as occurring in Virginia, but as yet I have seen no material to substantiate this claim. Ruhland (1930) makes the remarkable assertion that its natural distribution is "an Flussufer von Pennsylvania bis Karolina" -- what the basis is of his Pennsylvania "record" is unknown to me. There is nothing in the Berlin herbarium of this species from Pennsylvania or Virginia. Certain species of Eriocaulon have also been reported from Pennsylvania, perhaps on the basis of unlabeled specimens in the Schweinitz herbarium.

Common names for Syngonanthus flavidulus are "bantum buttons", "bog-buttons", "dupatya", "shoe buttons", "shoe-buttons", and "yellow pipewort".

The specific initial letter is sometimes uppercased for no valid reason. The Eriocaulon caespitosum of Cabanis, listed in the synonymy, is based on a specimen in the Berlin herbarium from Ebenezer, Mississippi, inscribed "Eriocaulon caespitosum mihi, Restiaceae". The E. caespitosum of Poeppig, however, is a synonym of Paepalanthus bifidus (Schrad.) Kunth, while E. caespitosum Wikstr. is now known as Syngonanthus caespitosus (Wikstr.) Ruhl. Rafinesque (1840) described his Eriocaulon flavidulum var. ciner-eum from "Florida, Alabama, leaves broadly subulate 2 inches, scape 3 to 4, fls. dark gray, bracts greenish". Kunth (1841) drew up his description of S. flavidulus from a specimen in the Berlin herbarium labeled as from Palisot de Beauvois and originally from North America. He says "Descr. juxta specimen a Belvisio sub nomine Eriocauli setacei acceptum". He also asserts that his Paepalanthus nardifolius (now known as Syngonanthus fischerianus) of Brazil is "P. flavidulo proxima affinis, differt foliis angustioribus et rigidioribus, vaginis longioribus, sepalis masculis exterioribus angustato-acutatis, glabris".

Morong (1891) speaks of Körnicke's critical examination of the plants originally called Eriocaulon flavidulum by early writers on the American flora: "Körnicke (Linnaea, 27, 590) under the name Eriocaulon flavidulum, Mx., following Pursh (El. 1, 92) and Elli-

ott (Bot. ii, 566), states that two plants have been sent from North America under this name and that he regards Kunth's P. flavidulus as something distinct from the plant of Michaux. That which he describes is undoubtedly something distinct and is clearly an Eriocaulon, but, so far as I can judge, it corresponds very nearly, if not quite, to E. articulatum [now known as E. pellucidum]. The plant of Elliott is also, I think, that species. Michaux distinctly calls his species puberulent and the scapes aggregated and five striate, while his other characters correspond very well with our plant. There is not, so far as ascertained, any other in the habitat given by him, 'Carolina', that bears such characters."

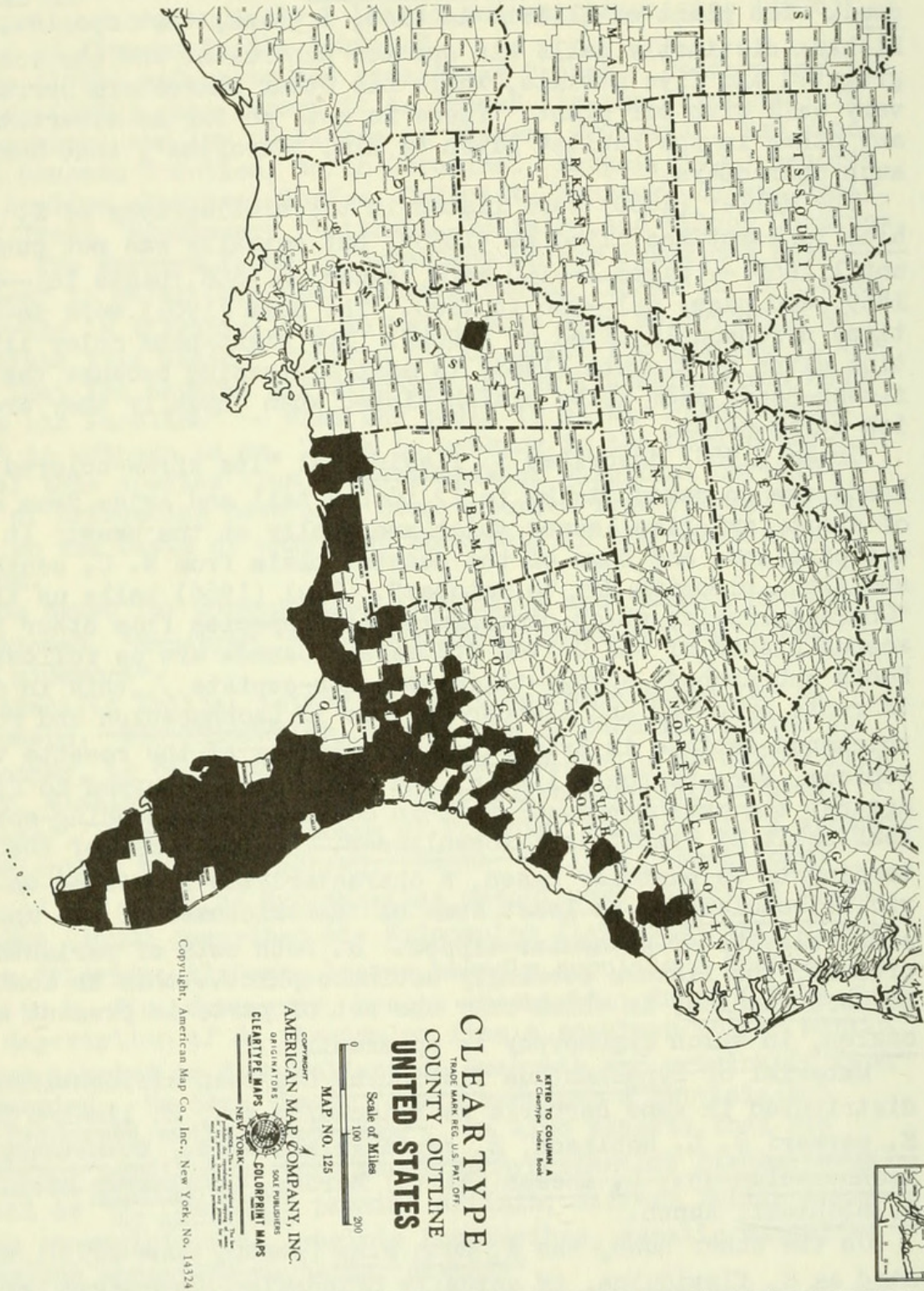
The Müller (1860) work listed in the bibliography of S. flavidulus is sometimes cited as "1858", but actually was not published until 1860 -- pages 1--160 were issued in 1858, pages 161--640 in 1859, and pages 641--966 in 1860. The Holm (1901) work is sometimes erroneously cited as "1904". The right-hand color illustration given by Rickett (1968) is most misleading because the flower-heads seem to be bluish-tinted when actually they are yellowish straw-color.

Grimm (1968) describes S. flavidulus: "Its straw-colored flower heads are on naked stalks to 12 inches tall and arise from a cluster of short, awl-like leaves which are woolly at the base. It grows in wet pinelands and bogs of the coastal plain from N. C. south to Fla. and Ala., blooming May to October". Kral (1966) tells us that "Characteristics which distinguish this species from other Eriocaulaceae plants of the United States and Canada are as follows: 1. Roots unbranched, spongy-thickened, non-septate....this in contrast to roots branched and slender-fibrous in Lachnocaulon and roots thickened-septate in Eriocaulon. 2. Leaves of the rosette very copious, very narrowly linear, and definitely recurved to flatten against the substratum....this in contrast to ascending-spreading leaf habit of sympatric Eriocaulaceae. 3. Trichomes of the leaves tending to be pustular based, a characteristic not found on sympatric Eriocaulaceae; at least some of the trichomes of the upper scape clavate or glandular-tipped. 4. Both sets of perianth parts present, the flowers seemingly actinomorphic....this in contrast to Lachnocaulon, in which only one set of parts is present or Eriocaulon, in which zygomorphy is apparent."

Material of Syngonanthus flavidulus has been misidentified and distributed in some herbaria as Eriocaulon sp., E. lineare Small, E. parkeri B. L. Robinson, E. septangulare With., E. setaceum L., Lachnocaulon sp., L. anceps (Walt.) Morong, L. glabrum Körn., and L. michauxii Kunth.

On the other hand, the A. Ruth s.n. [Jesup, June 1893], distributed as S. flavidulus, is actually Eriocaulon compressum Lam., while the Bernhardi s.n. [Philadelphia] is E. parkeri B. L. Robinson [as is also the "E. flavidulum Michx." recognized by Ruhland in his monograph (1903) as distinct from Syngonanthus flavidulus

Distribution of *Syngonanthus flavidulus*
(mapping by Andrew R. Moldenke)



(Michx.) Ruhl.], G. L. Fisher s.n. [Mobile, May 12, 1928], Herb. Umbach 10992, Lighthipe 173, and Perdue 1765 are Lachnocaulon anceps (Walt.) Morong, and J. Kohlmeyer 2034 is L. minus (Chapm.) Small. R. M. Harper 1608 is a mixture of S. flavidulus and Eriocaulon lineare Small, Schallert 16912 is a mixture with Lachnocaulon anceps, Meebold 28099 is a mixture with Lachnocaulon glabrum, and Dress & Read 7495 is a mixture with Xyris sp.

Additional citations: NORTH CAROLINA: Brunswick Co.: Massey & Massey 3284 (Mi, N). Sampson Co.: Ahles & Laing 24651 (Hi—97139). County undetermined: W. Bennett 417/73 [Jampon Beach] (Hm). SOUTH CAROLINA: Berkeley Co.: Ravenel s.n. [Santee Canal, Auh.] (Ms—15488). GEORGIA: Berrien Co.: R. Kral 24254 (N). Brantley Co.: Kuns 99 (Ws). Brooks Co.: R. Kral 28693 (W—2673941). Clinch Co.: R. Kral 24288 (N); A. R. Moldenke 332 (Fg). Early Co.: R. F. Thorne 4963 (Ca—906387, N). Effingham Co.: R. Kral 24103 (N). Irwin Co.: R. Kral 27121 (W—2673951). Jeff Davis Co.: A. R. Moldenke 350 (Z). Lanier Co.: R. Kral 24265 (N). Liberty Co.: R. Kral 24217 (N). Lowndes Co.: R. M. Harper 1608, in part (W—431916); A. R. Moldenke 314 (Fg, S). Miller Co.: R. F. Thorne 4194 (Vi). Pierce Co.: R. Kral 24149 (N). Screven Co.: R. Kral 24028 (N), 24051 (N). Tattnall Co.: Ahles & Mueller 54172 (Hi—202837). Ware Co.: R. Kral 25307 (N); Kuns 4 (Ws, Ws); A. R. Moldenke 340 (Fg). Wayne Co.: R. Kral 24184 (N), 24198 (N); A. E. Radford 7968 (Hi—129168), 7971 (Hi—57247). FLORIDA: Baker Co.: West & Arnold s.n. [Sapp, 25 Apr. 1940] (Ca—841820). Bay Co.: Moldenke & Moldenke 26700 (Ac). Clay Co.: W. M. Canby s.n. [Hibernia, March 1869] (Ca—405217, Dt). Collier Co.: Atwater M.210 (Hi—182373); Gillis 10425 (Ld); Meebold 28105 (Mu); H. E. Moore Jr. 7116 (Ba); Tomlinson 31-3-63 B (Ft—276, Ft, Ft). Duval Co.: Clausen & Trapido 3290 (Ca—841822); Curtiss 3020 (Ms—15491, Mu, S), 4140 (Ca—58580), 4786 (Ca—115159, Mm—7948), s.n. [May 1875] (Ms—15489, N); Faxon s.n. [Jacksonville, Mch. 1873] (Ws); Moldenke & Moldenke 26434 (Ld). Franklin Co.: Hunnewell 13208 (Ws); Moldenke & Moldenke 26627 (Ac), 26646 (Ld, Ws); A. Wood s.n. [Apalachicola] (Ws). Gilchrist Co.: D'Arcy 1508 (Sd—86713); A. E. Radford 8324 (Hi—129146). Gulf Co.: Godfrey & Triplett 59789 (Hi—156875). Highlands Co.: McFarlin 4340 (Mi); Small & DeWinkeler 9966 (S). Hillsborough Co.: Dress & Hansen 991 (Ba); Pollard s.n. [Tampa, March 7, 1898] (W—328233). Lake Co.: Moldenke & Moldenke 26492 (Ba); G. V. Nash 143 (Ca—115160, Mm—7947). Lee Co.: Craighead s.n. [28 April 1967] (Ft—13147); H. N. Moldenke 688 (S); Seibert 1371 (Ca—26154). Leon Co.: Godfrey 62901 (Bl—199118, Go, N). Levy Co.: Cooley, Wood, & Wilson 5984 (Hi—193977, N). Liberty Co.: A. R. Moldenke 282 (Fg), 284 (Fg). Manatee Co.: Friell s.n. [April 9, 1969] (Lc);

R. W. Hill s.n. [4/9/1969] (Lc); S. M. Tracy 6643 (Ca--181779, Mi, S). Marion Co.: Dress & Hansen 2013 (Ba). Nassau Co.: A. Ruth s.n. [March 1893] (Se--96013). Okaloosa Co.: Godfrey 56719 (Ca--112565, N). Orange Co.: F. S. Blanton 6491 (Mi, N); Moldenke & Moldenke 26548 (Ac); P. C. Schallert 6116 (Go); Wentz 624 (Mi). Osceola Co.: A. A. Eaton 1060 (Ld); Myint 964 (N); P. O. Schallert 16312 (S), 16912, in part (Ut--89890b). Palm Beach Co.: W. B. Fox s.n. [Delray Beach, April 2, 1945] (Ws). Pinellas Co.: M. S. Bebb s.n. [Clearwater, 1894] (Ok); Genelle & Fleming 143 (N). Polk Co.: Goodale s.n. [Conine, 9 April 1933] (Ms--69826); Meebold 28099, in part (Mu); Milligan s.n. [May 1890] (W--503998); P. O. Schallert 6116, in part (Ok), s.n. [May 2, 1941] (Ca--841821); Topping 2609 (Mi). Putnam Co.: Moldenke & Moldenke 29829 (Ac, Ld). Saint Johns Co.: Hunnewell 8656 (Ws); Owen s.n. [St. Augustine, May 1878] (Ca--67949); M. C. Reynolds s.n. [Mar.--July 1875] (Ca--2426). Santa Rosa Co.: A. R. Moldenke 267 (Fg). Sarasota Co.: R. Kral 2121 (Ms--44937). Seminole Co.: Cooley, Eaton, & Ray 7407 (Hi--204702); Foster, Smith, & Smith s.n. [Pl. Exsicc. Gray. 1334] (B, Ba, Bl--72361, Ca--717066, Gg--333524, Hi, N, Ok, S, St, Ut--889b, Vi, Ws); P. O. Schallert 6116, in part (Je--8761, Mu, Ws). Volusia Co.: H. C. Beardslee s.n. [New Smyrna, March 1925] (Ca--841824). Wakulla Co.: Godfrey 53293 (Hi--157562, N); N. C. Henderson 64-244 (Bl--208900); Moldenke & Moldenke 29392 (Ac, Gz, Kh, Ld, Tu). Walton Co.: A. R. Moldenke 269 (Fg). County undetermined: A. W. Chapman s.n. (Ws); Herb. Amherst Coll. s.n. [East Florida] (Ms--15490); Herb. Chapman s.n. [Fla.] (Ok). Marco Isl.: Silverstone 24 (Ws). Pine Isl.: Lakela, Long, & Broome 30560 (N); H. N. Moldenke 940 (S). ALABAMA: Baldwin Co.: Dress & Read 7495, in part (Ba, Ld, Mu); Iltis & Univ. Wisc. Pl. Geogr. Field Trip 25234 (Ws); S. B. Jones s.n. [8 May 1960] (Hi--210889); C. Mohr s.n. [July 1881] (Hi), s.n. [July 1882] (Hi); W. Wolf s.n. [Elberta, Aug. 21, 1925] (Ca--841823). Mobile Co.: F. W. Pennell 4509 [Herb. Dreisbach 1940] (Mi). MISSISSIPPI: Holmes Co.: Cabanis s.n. [Ebenezer] (B). NORTH AMERICA: Locality undetermined: Palisot de Beauvois s.n. (B). LOCALITY OF COLLECTION UNDETERMINED: Curtiss s.n. [Southern States, 1875] (Ws); Sprengel s.n. (B). MOUNTED ILLUSTRATIONS: floral diagrams by Körnicke & Kunth (B).

SYNGONANTHUS FLAVIPES Moldenke, Mem. N. Y. Bot. Gard. 8: 100--101. 1953.

Bibliography: Moldenke, Mem. N. Y. Bot. Gard. 8: 100--101. 1953; Moldenke, Phytologia 4: 316. 1963; Moldenke, Résumé 73 & 491. 1959; G. Taylor, Ind. Kew. Suppl. 12: 138. 1959; Moldenke, Fifth Summ. 1: 127 (1971) and 2: 952. 1971.

The type of this species was collected by B. Maguire, R. S. Cowan, & J. J. Wurdack (no. 30465) in wet places on Savanna No.

III, at 125 meters altitude, Cerro Yapacana on the Río Orinoco, Amazonas, Venezuela, on December 31, 1950, and is deposited in the Britton Herbarium at the New York Botanical Garden. Other collectors report it "locally frequent" or "locally abundant" at altitudes of 100--125 meters, referring to its "shining leaves", and found it in flower in December and in fruit in June.

Additional citations: VENEZUELA: Amazonas: Wurdack & Adderley 42860 (N, S). Bolívar: Wurdack & Monachino 39934 (N, S).

SYNGONANTHUS FLEXUOSUS Alv. Silv., Fl. Mont. 1: 393--395, pl. 252. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 393--395 & 417, pl. 202. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 478. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 213. 1949; Moldenke, Résumé 107 & 491. 1959; Moldenke, Fifth Summ. 1: 173 (1971) and 2: 962. 1971; Moldenke, Phytologia 35: 350. 1977.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 202. 1928.

The type of this species was collected by Dr. Joaquim Gomes Michaeli [Herb. A. Silveira 655] "In campis prope Barauna", Minas Gerais, Brazil, in April, 1918, and is deposited in the Silveira Herbarium. On page 417 of his work (1928) Silveira gives "Baraunas" as the type locality. Elsewhere he comments that the "Species S. squarrosus Ruhl. proxima, sed foliis pubescentibus facile distinguitur". It also closely resembles S. glaber Alv. Silv. in general habitat aspect.

Silveira, in his text, refers to "Tabula CCLIII" as illustrating S. flexuosus, but the actual illustration is labeled "TABULA CCLII". Thus far the species is known only from the original collection.

SYNGONANTHUS FUSCESCENS Ruhl. in Engl., Pflanzenreich 13 (4-30): 249. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 244, 249, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 417. 1928; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 213. 1949; Moldenke, Phytologia 4: 316. 1963; Moldenke, Résumé 107 & 491. 1959; Moldenke, Fifth Summ. 1: 173 (1971) and 2: 962. 1971.

This species is based on Sena s.n. [Herb. Schwacke 14569] from the Serra do Cipó, Minas Gerais, Brazil, deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10685. Hatschbach encountered the species on rocky campos and in "solo arenoso do campo, junta a afloramentos rochosos", at 1200 meters altitude, flowering in August and September and fruiting in September. Silveira (1928) cites A. Silveira 517 from the Serra do Riacho do Vento, collected in 1908.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27428 (Z),

30214 (Ld); Sena s.n. [Herb. Schwacke 14569; Macbride photos 10685] (B--type, N--photo of type, W--photo of type, Z--isotype).

SYNGONANTHUS GARIMPENSIS Alv. Silv., Fl. Mont. 1: 317--319, pl. 201 & 202. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 317--319 & 417, pl. 201 & 202. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 478. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 213. 1949; Moldenke, Résumé 107 & 491. 1959; Moldenke, Fifth Summ. 1: 173 (1971) and 2: 962. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 201 & 202. 1928.

This species is based on A. Silveira 543 from "In campis arenosis in Serra do Garimpo, inter Caeté et Santa Barbara", Minas Gerais, Brazil, collected in April, 1909, and deposited in the Silveira Herbarium. Silveira (1928) notes that the species "Ab affinibus indumento foliorum facile distinguitur". Thus far it is known only from the original collection.

SYNGONANTHUS GLABER Alv. Silv., Fl. Mont. 1: 388--390, pl. 248. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 388--390 & 417, pl. 248. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 478. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 213. 1949; Moldenke, Résumé 107 & 491. 1959; Moldenke, Fifth Summ. 1: 173 (1971) and 2: 962. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 248. 1928.

This species is based on A. Silveira 788 from "In campis prope Milho Verde, inter Serro et Diamantina, in Serra Geral", Minas Gerais, Brazil, collected in 1925, and deposited in the Silveira Herbarium. Silveira (1928) comments that the "Species ob magnitudinem foliorum pedunculorumque a S. squarroso Ruhl. proximo praecipue differt". It should be noted that in his text he refers to "Tabula CCXLIX" as illustrative of this species, but the actual plate is labeled "TABULA CCXLVIII". The species also resembles S. flexuosus Alv. Silv. in general habit. Thus far it is known only from the original collection.

SYNGONANTHUS GLANDULIFER Alv. Silv., Fl. Mont. 1: 321--322, pl. 204. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 321--322, pl. 204. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 478. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Alph. List Cit. 2: 412 (1948) and 3: 935. 1949; Moldenke, Known

Geogr. Distrib. Verbenac., [ed. 2], 91 & 213. 1949; Moldenke, *Phytologia* 4: 316. 1953; Mendes Magalhães, *Anais V Reun. Anual Soc. Bot. Bras.* 236--237. 1956; Moldenke, *Résumé* 107 & 491. 1959; Rennó, *Levant. Herb. Inst. Agron. Minas* 71. 1960; Moldenke, *Fifth Summ.* 1: 173 (1971) and 2: 962. 1971.

Illustrations: *Alv. Silv.*, *Fl. Mont.* 1: pl. 204. 1928.

This species is based on A. Silveira 549 from "In campis in Serra do Cipó, locis arenosis....Apr. 1909, in campis prope Itambé do Serro.....Apr. 1918", Minas Gerais, Brazil, deposited in the Silveira Herbarium. Mendes Magalhães (1956) also reports it collected in anthesis in March. Silveira (1928) comments that the species "*Ab affinibus (S. anthemidifloro et aliis) praecipue differt forma indumentoque bractearum involucrantium, foliorum, pedunculorum vaginarumque pilositate et sepalorum petalorumque colore*". Thus far it is known only from these three collections.

SYNGONANTHUS GLANDULOSUS Gleason, *Bull. Torrey Bot. Club* 56: 394--395. 1929.

Synonymy: *Syngonanthus oblongus* f. *abbreviata* Herzog ex Lützelb., *Estud. Bot. Nordést.* 149 & 151. 1923. *Syngonanthus oblongus* f. *abbreviatus* Herzog ex Moldenke, *Phytologia* 4: 328. 1953.

Bibliography: Lützelb., *Estud. Bot. Nordést.* 3: 149 & 151. 1923; Gleason, *Bull. Torrey Bot. Club* 56: 394--395. 1929; A. W. Hill, *Ind. Kew. Suppl.* 8: 231. 1933; Fedde & Schust. in Just, *Bot. Jahresber.* 57 (2): 16. 1937; Moldenke, *Known Geogr. Distrib. Erioc.* 6 & 58. 1946; Moldenke, *Phytologia* 2: 352. 1947; Moldenke, *Alph. List Cit.* 3: 975. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 65, 67, & 213. 1949; Moldenke, *Phytologia* 4: 316 & 328. 1953; Hocking, *Dict. Terms Pharmacog.* 284. 1955; Moldenke, *Résumé* 73, 76, 77, 107, 108, & 492. 1959; Moldenke, *Résumé Suppl.* 1: 6 (1959) and 12: 3. 1965; Lindeman & Gürts-van Rijn in Pulle & Lanjouw, *Fl. Surin.* 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11]: 335 & 339. 1968; Van Donselaar, *Meded. Bot. Mus. Rijksuniv. Utrecht* 306: 397 & 402. 1968; Moldenke, *Résumé Suppl.* 18: 4. 1969; Teunissen & Wildschut, *Verh. Konink. Nederl. Akad. Wet. Natuurk.* 59 (2): 23. 1970; Koyama & Oldenburger, *Rhodora* 73: 159. 1971; Moldenke, *Fifth Summ.* 1: 120, 127, 131, 133, & 173 (1971) and 2: 962 & 968. 1971; Teunissen & Wildschut, *Meded. Bot. Mus. Utr.* 341: 23. 1971; Anon., *Biol. Abstr.* 56 (10): B.A.S.I.C. S.265. 1973; Moldenke, *Biol. Abstr.* 56: 5366. 1973; Moldenke, *Phytologia* 26: 177. 1973; Hocking, *Excerpt. Bot. A.* 23: 293. 1974; Moldenke, *Phytologia* 28: 437 & 440 (1974), 30: 35 & 106 (1975), 31: 386 & 408 (1975), 34: 259 (1976), and 35: 112, 291, 306--308, 354, & 359. 1977.

This puzzling species is based on G. H. H. Tate 345, collected in Philipp Swamp in the Roraima district of Guyana, at 5100--5200 feet altitude, on November 11, 1927, and deposited in the Britton Herbarium at the New York Botanical Garden. Gleason (1929) comments that "The plant consists of a number of short erect stems which are densely leafy and send out numerous peduncles from the upper axils. In general habit it resembles *S. simplex*, *gracilis*, and *biformis*, and differs from the first in its appendaged style,

from the second in its narrow acute bracts, from the last in its symmetrical sepals, and from all three in the rounded sinuses of its peduncular sheaths." To me, it much more closely resembles very young forms of S. caulescens (Poir.) Ruhl. Lindeman &

Görts-van Rijn key out these perplexingly similar taxa as follows:

1. Peduncles glandular-pubescent, 7—11 cm. long; leaves 1.5 mm. wide, about 1 cm. long; peduncular sheaths with rounded sinus..
S. glandulosus Gleason.

- 1a. Peduncles pubescent to glabrous, their sheaths obliquely split; leaves 1—5 cm. long.

2. Stems floating, up to 3 dm. long; leaves fenestrate, 3—4.5 cm. long, 2 mm. wide; peduncles 2—4 together at the end of the stem, 3—6 cm. long; petals of the female florets slightly longer than the sepals; style without appendages.....
S. macrocaulon Ruhl.

- 2a. Stems to 8 dm. long, simple; leaves 1.5—4.5 cm. long, 1.5—4.5 mm. wide; peduncles 5—30 cm. long, in a terminal fascicle; petals of the female florets shorter than the sepals; style appendaged.....S. caulescens (Poir.) Ruhl.

Gleason, in his unpublished Flora of British Guiana, keys the related taxa as follows:

1. Petals of the pistillate florets shorter than the sepals.
2. Lateral sepals of the staminate florets strongly falcate and inequilateral.
3. Pistillate and staminate florets, including the pedicels, about equal in length.....S. simplex (Miq.) Ruhl.
- 3a. Pistillate florets about twice as long as the staminate.
S. biformis (N. E. Br.) Gleason
- 2a. Lateral sepals of the staminate florets not falcate, equilateral.
4. Bracts obovate, broadly rounded at the summit.....
S. gracilis (Bong.) Ruhl.
- 4a. Bracts oblong, acute to obtuse at the apex.
5. Leaves rosulate; peduncles not glandular; sinus of the sheaths, opposite the lamina, acute..S. eriophyllus (Mart.) Ruhl. [now regarded as S. gracilis (Bong.) Ruhl.]
- 5a. Leaves crowded on a very short stem; peduncles glandular; sinus of the sheaths broadly rounded.....
S. glandulosus Gleason

He describes S. glandulosus as having "Leaves densely cespitose, spreading or recurved, 1 cm. long, conspicuously pubescent; peduncles 7—11 cm. long, numerous, 3-costate, glandular-pubescent; sheaths twisted, about 1 cm. long, the lamina acuminate above a rounded sinus; heads about 5 mm. wide, white; bracts imbricate, scarious, lanceolate to elliptic, sharply acute, the longest 3 mm. long." He regarded it as endemic to the Mt. Roraima region.

Recent collectors refer to the flower-heads as "light-gray", "pale-gray", or "dull-white" and the flowers as white. They have encountered it in cerrado and Sphagnum bogs at altitudes of 115—2085 meters, flowering from July to April, fruiting in February,

April, and July to September. Wurdack and his associates found it "locally abundant on moist riverbanks". Goodland found it "in wet sandy open savanna grasslands with scattered trees, Curatella, Byrsonima, Trachypogon, and Fimbristylis dominant". Koyama & Oldenburger (1971) report it growing in association with Philodice hoffmannseggii, Diplacrum africanum, Syngonanthus gracilis var. koernickeanus, Bacopa monierioides, Centunculus pentander, Polygala paludosa, Utricularia adpressa, and Eleocharis nana. Donselaar encountered it "in wet valley floor with hummocks and channels ('hog-wallow structure')".

Syngonanthus oblongus f. abbreviatus of Herzog is based on Lützelburg 338 from Bahia, Brazil, in the Munich herbarium and seems to be conspecific with Gleason's plant.

Hocking (1955) reports the vernacular name, "guanak", and says that the entire plant is used in decoction form in the treatment of dentalgia in Venezuela. Lindeman & Gorts-van Rijn (1968) cite from Surinam: B.W. 7133, Rombouts 556, and Wessels Boer 800.

Material of what appears to be S. glandulosus has been misidentified and distributed in some herbaria as S. caulescens (Poir.) Ruhl., S. gracilis (Bong.) Ruhl., S. simplex var. appendiculifera Ruhl., S. xeranthemoides (Bong.) Ruhl., and Paepalanthus subtilis Miq. On the other hand, the Irwin, Grear, Souza, & Reis dos Santos 14410 and G. H. H. Tate 246, distributed as S. glandulosus actually seem to be immature S. caulescens (Poir.) Ruhl., Lützelburg 21036 is S. gracilis var. amazonicus Ruhl., and Cowan & Soderstrom is S. huberi Ruhl. Goodland 254 is a mixture of S. glandulosus and Paepalanthus lamarckii Kunth, while W. A. Egler 47650 is a mixture with Paepalanthus oyapockensis Herzog and Cordeiro 30 is a mixture with S. humboldtii var. glandulosus Gleason.

Additional citations: COLOMBIA: Santander: Barkley & Bouthillette 38C168 (Ld). VENEZUELA: Aragua: Pittier 5841 (W--601553). Bolívar: Bogner 1086 (Mu); Wurdack & Monachino 41048 (Mu, N, S). GUYANA: Goodland 254, in part (W--2546169); Irwin 501 (W--2212839); G. H. H. Tate 345 (N--type). SURINAM: Donselaar 3605 (Ut--320379); Stahel 7133 [574] (Ut--44056A); Rombouts 214 (Ut--44055A); Wildschut & Teunissen 11572 (Ld). BRAZIL: Amapá: W. A. Egler 47650, in part (N). Amazônas: Lützelburg 21036, in part (Mu); Prance, Maas, Atchley, Steward, Woolcott, Coêlho, Monteiro, Pinheiro, & Ramos 13822 (Ac, N). Bahia: Lützelburg 338 [N. Y. Bot. Gard. Type Photo new ser. 8832] (Mu, N--photo, Z--photo). Mato Grosso: Cordeiro 31, in part (Ld). Roraima: Ule 7929 [Herb. Mus. Goeldi 13021] (K, Z).

SYNGONANTHUS GLANDULOSUS var. EPAPILLOSUS Moldenke, Phytologia 26: 177--178. 1973.

Bibliography: Anon., Biol. Abstr. 56 (10): B.A.S.I.C. S.265. 1973; Moldenke, Biol. Abstr. 56: 5366. 1973; Moldenke, Phytologia 26: 177--178. 1973; Hocking, Excerpt. Bot. A.23: 293. 1974; Molden-

ke, *Phytologia* 28: 437 & 440 (1974) and 35: 359. 1977.

Recent collectors refer to the flower-heads of this plant as "white", "off-white", "creamish-white", or "light-gray" and the flowers as white. They have found the plant growing in very wet ground, in cerrado, on wet campos, in marshes in gallery forests, among rocks at streamsides, in swamps, and in wet sand in sedge-ericaul savannas, at altitudes of 230--1100 meters, flowering and fruiting from November to June and in September. Ratter and his associates found it "in a stream, the leaves submerged, the flower-heads held above the surface of the water". Anderson found it at the "edge of brejo in an area of gallery forest, adjacent brejo, and nearby cerrado and campo limpo"; Cowan & Soderstrom refer to it as a "locally common herb in boggy patches atop rocks in constant mist of [water]falls", while Steyermark & Wurdack found it a "locally abundant depressed form near water level on rocky edge of river". The Eitens encountered it "at water level", "in soaking soil at brookside in light shade of narrow gallery scrub", and "in lower part of a natural grassy campo at valley head next to its border with swampy gallery forest, ground soaking, with grass clumps and puddles between clumps, soil black humusy-clay; the plant rooted in soaking soil, the base in air or covered with 1 cm. of water". Dombrowski reports it frequent in "banhado".

Anderson 9564 has very much the general appearance of a variety of *S. gracilis* (Bong.) Ruhl. Material of *S. glandulosus* var. *epapillosus* has been widely misidentified and distributed in herbaria as *S. caulescens* (Poir.) Ruhl. or as typical *S. glandulosus* Gleason. Philcox, Ferreira, & Bertoldo 3431 is a mixture with *S. nitens* (Bong.) Ruhl.; Cowan & Soderstrom 2154 is *S. huberi* Ruhl., while Ratter, Santos, Souza, & Ferreira R.1723 is a mixture of *S. huberi* and *S. huberi* f. *viviparus* Moldenke.

Citations: VENEZUELA: Bolívar: Hamann 2896 (Hm); Koyama & Agostini 7285 (N); Steyermark & Wurdack 45a (N--tyoe); Vareschi & Folds 4743 (N). SURINAM: Rombouts 556 (N, Ut--44057A). BRAZIL: Amapá: Black 49-8256 (N). Goiás: W. R. Anderson 9564 (N); Hatschbach 36947 (Ld). Mato Grosso: Eiten & Eiten 8579 (W--2757729), 8626 (W--2757731), 9145 (W--2757737); Philcox & Ferreira 3412 (K), 3431, in part (K), 3505 (K). Minas Gerais: Mello Barreto 25682 (N). Paraná: Dombrowski 6764 (Z); Hatschbach 33470 (Ld). PARAGUAY: Pedersen 9399 (N), 10095 (N).

SYNGONANTHUS GLAUCUS Alv. Silv., Fl. Mont. 1: 373--374, pl. 237. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 373--374 & 418, pl. 237, 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 478. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 92 & 213. 1949; Moldenke, Résumé 107 & 492. 1959; Moldenke, Fifth Summ. 1: 173

(1971) and 2: 962. 1971; Moldenke, Phytologia 35: 431. 1977.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 237. 1928.

This species is based on A. Silveira 669 from "In campis prope Diamantina", Minas Gerais, Brazil, collected in April, 1918, and deposited in the Silveira herbarium. In his text Silveira (1928) refers to "Tabula CCXXXVIII" as illustrating this species, but the plate that actually does so is labeled "TABULA CCXXXVII". Thus far the species is known only from the original collection.

SYNGONANTHUS GOYAZENSIS (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 255. 1903.

Synonymy: Paepalanthus goyazensis Körn. in Mart., Fl. Bras. 3 (1): 453. 1863. Dupatya goyazensis (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya goyazensis Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus goyazensis Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. Syngonanthus goyazensis (Bong.) Ruhl. ex Moldenke, Résumé 361, in syn. 1959.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 453 & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 215, 245, 255, 290, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 418. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 18, 30, 49, & 58. 1946; Moldenke, Phytologia 2: 498. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 92 & 213. 1949; Moldenke, Phytologia 4: 316. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 107, 280, 325, 351, 419, & 492. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960; Moldenke, Fifth Summ. 1: 173 & 481 (1971) and 2: 583, 636, 778, & 962. 1971.

The type of this species was collected by George Gardner (no. 4384) in Goiás, Brazil, deposited in the Berlin herbarium where Macbride photographed it as his type photograph number 10696. Ruhland (1903) cites only the type collection and Glaziou 22310, both from Goiás. He suggests that S. sclerophyllus Alv. Silv. may actually only be a variety of S. goyazensis. Silveira (1928) cites A. Silveira 740, also from Goiás.

Hunt & Ramos refer to S. goyazensis as having white inflorescences and found it growing in waterlogged ground by a small stream in campo cerrado, at 600--1000 meters altitude, in flower and fruit in June. Glaziou collected it in anthesis in October.

Additional citations: BRAZIL: Goiás: G. Gardner 4384 [Macbride photos 10696] (B--type, N--isotype, N--photo of type, W--photo of type); Glaziou 22310 (B, W--1124171); Hunt & Ramos 6275 (N). Minas Gerais: Héringer 7057 (Z); Santos & Castellanos 24182 (Bd--28328). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

SYNGONANTHUS GRACILIS (Bong.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 249. 1903; Uittien & Heyn in Pulle, Fl. Surin. 1: 220. 1938 [not *S. gracilis* Molfino, 1945].

Synonymy: *Eriocaulon gracile* Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 634, pl. 46. 1831 [not *E. gracile* Heyne, 1946, nor Mart., 1832, nor Mart. & Wall., 1852]. *Eriocaulon glabrum* Steud., Syn. Pl. Glum. 2: [Cyp.] 281. 1855 [not *E. glabrum* Pennell, 1959, nor Salzmann, 1959]. *Paepalanthus eriophyllus* Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 463. 1863. *Paepalanthus glanduliferus* Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 464 & 560, in syn. 1863. *Paepalanthus gracilis* (Bong.) Körn. in Mart., Fl. Bras. 3 (1): 460, pl. 59, fig. 1. 1863; Malme, Svensk. Vet. Akad. Handl. 27 (3): no. 11: 31. 1901. *Paepalanthus gracilis* Körn. in Mart., Fl. Bras. 3 (1): 460. 1863. *Paepalanthus gracilis* var. α subvar. ϕ Körn. in Mart., Fl. Bras. 3 (1): 460, 461, & 463. 1863. *Paepalanthus gracilis* var. c Körn. in Mart., Fl. Bras. 3 (1): 460, in part. 1863. *Paepalanthus eriophyllus* var. α Körn. in Mart., Fl. Bras. 3 (1): 463--464. 1863. *Paepalanthus eriophyllus* var. ϕ Körn. in Mart., Fl. Bras. 3 (1): 464. 1863. *Dupatya eriophylla* (Mart.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. *Dupatya gracilis* ([Bong.] Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. *Dupatya eriophylla* Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. *Dupatya gracilis* Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. *Paepalanthus glandulifer* Mart. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 249, in syn. 1903. *Paepalanthus pohlianus* Mart. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 250, in syn. 1903. *Syngonanthus eriophyllus* var. *calvescens* Ruhl. in Engl., Pflanzenreich 13 (4-30): 249. 1903. *Syngonanthus gracilis* var. *olivacea* Ruhl. in Engl., Pflanzenreich 13 (4-30): 250. 1903. *Syngonanthus eriophyllus* (Mart.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 249. 1903. *Syngonanthus eriophyllus* Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. *Syngonanthus gracilis* Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. *Syngonanthus gracilis* var. *a* (Kunth) Ruhl. ex Alv. Silv., Fl. Mont. 1: 418. 1928. *Syngonanthus gracilis* var. *microphylla* Alv. Silv., Fl. Mont. 1: 418, nom. nud. 1928. *Syngonanthus gracilis* var. *olivaceus* Ruhl. ex Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946. *Syngonanthus gracilis* (Körn.) Ruhl. ex Reitz, Sellowia 7: 125, sphalm. 1956. *Paepalanthus hirtellus* Körn. ex Moldenke, Résumé Suppl. 1: 21, in syn. 1959. *Paepalanthus hirtellus* var. α Körn. ex Moldenke, Résumé Suppl. 1: 21, in syn. 1959. *Paepalanthus olivaceus* Körn. ex Moldenke, Résumé Suppl. 1: 21, in syn. 1959. *Syngonanthus graciis* (Körn.) Ruhl. ex Reitz, Sellowia 11: 31, sphalm. 1959. *Syngonanthus gracilis* Körn. ex Moldenke, Résumé Suppl. 1: 23, in syn. 1959. *Dupatya gracilis* (Körn.) Kuntze ex Moldenke, Fifth Summ. 1: 481, in syn. 1971. *Syngonanthus gracilis*

(Bong.) Ruhl ex J. A. Steyerl., *Biotropica* 6: 7 & 10, sphalm.
 1974. Paepalanthus eriophyllus "Mart. ex Körn." apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 101, in syn. 1976. Paepalanthus hirtellus "Körn. ex Moldenke" apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 101, in syn. 1976. Paepalanthus hirtellus var. α "Körn. ex Moldenke" apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 101, in syn. 1976. Paepalanthus olivaceus "ex Moldenke" apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 102, in syn. 1976. Paepalanthus pohlianus "Mart. ex Ruhl." apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 102, in syn. 1976. Syngonanthus eriophyllus "(Mart. ex Körn.) Ruhl." apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 103, in syn. 1976. Syngonanthus gracilis var. a "Ruhl. ex Moldenke" apud Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 103, in syn. 1976. Syngonanthus gracilis var. microphylla Alv. Silv. ex Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 103, in syn. 1976.

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Illustrations: Körn. in Mart., *Fl. Bras.* 3 (1): pl. 59, fig. 1. 1863; Moldenke & Sm. in Reitz, *Fl. Ilust. Catar. I Erio*: 63, pl. 8, fig. 27—31. 1976.

This is a very widespread and extremely variable species. No

less than 16 rather poorly defined subspecific taxa have been proposed. The typical form apparently is found from Colombia and Venezuela, through the Guianas, to Brazil and Uruguay. Bongard's original (1831) description is "Acaule; foliis vaginas subaequantibus, confertis, linearibus, acutis, pilosiusculis; pedunculis caespitosis, filiformibus, pubescentibus; vaginis pilosiusculis. In umbrosis siccis montis Itacolumi." It is probably based on a Riedel collection in the Leningrad herbarium. Kunth (1841) adds: "A specie homonyma Martiana longe diversum".

Recent collectors describe the plant as growing 6 inches tall, with dark-green leaves, white or gray-white flower-heads, and white flowers. Tutin says: "bracts round the flowers paleaceous", while Huinink (1966) calls it a "hemixerophyte, scleromorphic, nanophyll", with a "hemispherical-shaped root-system" and inhabiting the Xyrido-Paspaletoecologic association. Other collectors have encountered it on savannas, wet-sand savannas, white-sand savannas, savannas with a quartzite base, and dry sandy uplands, in swamps, sandy swamps, and "swamps on open level portions of plateaus", on large mesas, in moist depressions in llanos, along railroad tracks, in sand and white sand, and swampy ground by streamlets, in damp seepage patches on white-sand campinas, and in dry sandy or gravelly places in general, at altitudes of 30--2000 meters, flowering in April, May, and July to November, and fruiting in January, July to September, and November. In southern Brazil and Uruguay it is said to flower mostly in January and February.

McKee encountered S. gracilis "in dry sand in area of sandhills with low forest or scattered shrubs". Murça Pires & Cavalcante report it "common on savannas"; Goodland & Persaud "in grassland with scattered trees, Curatella, Brysonima, Trachypogon, and Fimbristylis dominant". The Maguires aver that it is "locally frequent in moist sand among rocks", "frequent in wet places along brooks", and "locally frequent annual in marshy places along streamsides". Malme (1901) reports it from "supra saxa tempore hiemali irrigata" and "in loco aperto, arenoso, humido, parce graminoso". Ruiz-Terán & López-Palacios describe it as an "Hierba rosulada, cespitosa, a la sombra de laja, en suelo húmedo. Roseto de unos 2 cm. de alto. Hojas finas, flexibles, verde sub-intensas, no espenescentes en al ápice. Escapos de 12--15 cm. Capítulos hemisféricos. Flores blancas."

Aristeguieta (1968) records this species from Guárico, Venezuela; Herter (1954) gives its distribution as "Sudamérica cálida". Malme (1901) cites Regnell III.1266 & III.1801 from Minas Gerais and Mato Grosso, Brazil. Silveira (1928) cites A. Silveira 216 from Serra do Lenheiro, Minas Gerais, collected in 1896, as typical S. gracilis, but A. Silveira 227, from the Serra de Ibitipoca, collected in the same year, as his var. a.

Vernacular names reported for the species are "capim manso", "capipoatinga", "capipoatinga-mimosa", "gravatá manso", "semprevivas do campo", and "sempre-viva-do-campo".

Bongard's plate 46, often cited as illustrative of this species,

apparently was never actually published and probably is available only in the Leningrad herbarium or library. Bongard's discussion of the species is sometimes cited to various dates, but was actually published in 1831. The Malme (1901) work is sometimes incorrectly cited as "1903".

Paepalanthus eriophyllus Mart. and Syngonanthus eriophyllus var. calvescens Ruhl. seem to be based, in part, at least, on Kegel 231 in the Berlin herbarium. Uittien & Heyn (1938) aver that Paepalanthus eriophyllus Mart. and P. glanduliferus Mart. are typified, respectively, by Wullschlägel 763 and 762 from the "Pará distr., plant. Berlijn", Surinam. These latter workers include S. biformis (N. E. Br.) Gleason and S. simplex (Miq.) Ruhl. in the synonymy of S. gracilis. My disposition of the extraneous synonyms which they list is as follows: Paepalanthus biformis N. E. Br. is Syngonanthus biformis (N. E. Br.) Gleason, a valid species; Paepalanthus gracilis var. c Körn. is in part typical Syngonanthus gracilis (Bong.) Ruhl. and in part S. gracilis var. hirtellus Ruhl.; Eriocaulon brizoides (Kunth) Steud. is Syngonanthus gracilis var. koernickeanus Ruhl.; Paepalanthus brizoides Kunth is in part S. gracilis and in part S. gracilis var. koernickeanus; and Dupatya simplex Kuntze, Eriocaulon hostmanni Steud., E. simplex (Miq.) Steud., Paepalanthus hispidus Klotzsch, and P. simplex Miq. are all Syngonanthus simplex (Miq.) Ruhl.

The Eriocaulon gracile credited to Heyne, to Martius, and to Martius & Wallich, referred to in the synonymy of S. gracilis (above), are all synonyms of Eriocaulon infirmum Steud.; E. glabrum Pennell is E. peruvianum Ruhl.; E. glabrum Salzm. is Syngonanthus gracilis var. glabriusculus Ruhl.; and Syngonanthus gracilis Molino is a synonym of Eriocaulon argentinum Castell.

The name, Syngonanthus gracilis, as applied to the present taxon, is very widely credited to "(Körn.) Ruhl.", but Ruhland (1903) was in error when he wrote it thus because Körnicke (1863) plainly cites Eriocaulon gracile Bong. as the name-bringing synonym, even though Ruhland does so only in the discussion of his S. gracilis var. olivacea Ruhl. This so-called var. olivacea is, therefore, the actual typical variety of the species and the names given in its synonymy therefore belong in the synonymy of this typical form of S. gracilis. Ruhland cites for it only Pohl s.n. and Widgren s.n. from Minas Gerais, Brazil. Silveira (1928) cites A. Silveira 651 from Diamantina (also in Minas Gerais), collected in 1908, as this "var. olivacea".

Macbride (1936) distinguishes S. gracilis from the closely related S. nitens (Bong.) Ruhl. by stating that in the former the heads are smaller, only 3--5 mm. in diameter, while in the latter they are 5--8.5 mm. thick. This, in general, is a quite valid distinction.

Ruhland's other varieties are tentatively maintained by me and

will be discussed hereinafter separately although they are, at best, rather difficult to distinguish in all cases.

Körnigke's (1863) varieties and subvarieties are being treated by me as follows: Paepalanthus eriophyllus var. α and var. β , P. gracilis var. α subvar. β , and P. gracilis var. c are typical Syngonanthus gracilis (Bong.) Ruhl.; Paepalanthus gracilis var. α is S. gracilis var. glabriusculus Ruhl.; P. gracilis var. α subvar. α is S. gracilis var. subinflatus Ruhl.; P. gracilis var. β and var. β subvar. α are S. gracilis var. koernickeanus Ruhl.; and P. gracilis var. β subvar. β is S. gracilis var. setaceus Ruhl. Ruhland's (1903) Syngonanthus eriophyllus var. glanduliferus is S. gracilis var. koernickeanus Ruhl. Paepalanthus brizoides Kunth is apparently in part typical S. gracilis and in part var. koernickeanus. It is based on two Sellow collections from "Brasilia meridionalis, inter Rio Janeiro at Campos et inter Victoria et Bahia" and one by Luschnath from "Campos prope St. Joao". He describes it as "Acaulis; caespitosus; foliis setaceo-linearibus, obtusiusculis, rigidis, glabris, recurvatis; vaginis glanduloso-pilosis, folia superantibus; pedunculis subcapillaceis, trisulcatis, vix puberulis; bracteis involucrantibus ellipticis, obtusis, aridis, stramineo-albidis, glabris, flores superantibus; sepalis exterioribus masculis et femineis angustato-acutis, glabris." He comments that it is "Affinis P. tenui".

Körnigke's var. α subvar. β is based on Clausen 68, 164, & s.n. [Cachoeira do Campo], Houliet s.n., Martius 1083 & s.n. [Itambé], and Riedel s.n. from Minas Gerais; his var. c is based on Salzmann s.n. from Bahia, Spruce s.n. from Amazonas, Pohl s.n. and Weddell 2136 from Goiás, Gardner s.n., Martius s.n., and Widgren s.n. from Minas Gerais, Martius s.n. and Vauthier s.n. from Rio de Janeiro, and Riedel 2304 from São Paulo. His Paepalanthus eriophyllus var. α is based on Kegel s.n. and Wulfschlägel 762 from Surinam, while P. eriophyllus var. β is based on Wulfschlägel 763, also from Surinam.

Gleason, usually most conservative in his treatment of species, still maintains S. eriophyllus as distinct from S. gracilis in his unpublished "Flora of British Guiana", citing for the former only Jenman 3768 and giving its overall distribution as only Surinam and Guiana. For S. gracilis he cites Appun 1526, Gleason 652, Linder 40, Lloyd s.n., Loyed s.n., and Parker s.n., giving its overall distribution as "Venezuela to French Guiana and Uruguay". He describes S. eriophyllus as "Leaves densely rosulate, narrowly linear, recurved, densely and persistently white-lanate, 1--2 cm. long; peduncles few, slender, 4--6 cm. high, sparsely hirtellous; sheaths glandular-hirtellous, prominently striate and twisted, the lamina acuminate; heads 3--5 mm. wide, subglobose; bracts oblong, obtuse, soon glabrous." He describes S. gracilis as "Leaves densely cespitose, often more or less recurved, narrowly linear, hirsute, 10--25 mm. long; peduncles several or many, 8--15 cm. high,

glabrous or nearly so; sheaths equaling the leaves; heads hemispheric, 3--5 mm. wide, white; bracts obovate, broadly rounded, glabrous, silvery and scarious." In his key he distinguishes these and some other taxa as follows:

1. Lateral sepals of the staminate florets strongly falcate and inequilateral.
2. Pistillate and staminate florets, including the pedicels, about equal in length. S. simplex
- 2a. Pistillate florets about twice as long as the staminate. S. biformis
- 1a. Lateral sepals of the staminate florets not falcate, equilateral.
3. Bracts obovate, broadly rounded at the summit. S. gracilis
- 3a. Bracts oblong, acute to obtuse at the apex.
4. Leaves rosulate; peduncles not glandular; sinus of the sheaths, opposite the lamina, acute. S. eriophyllus
- 4a. Leaves crowded on a very short stem; peduncles glandular; sinus of the sheaths broadly rounded. S. glandulosus

Ruhland (1903) also keeps the two taxa separate, distinguishing them as follows:

1. Folia dense rosulata, anguste linearia, rigida. Plantae in Guyana collectae. S. eriophyllus
- 1a. Folia plusminusve caespitosa, rarius rosulato-caespitosa. Species brasilienses. S. gracilis

Lindeman & Görts-van Rijn (1968) key out some of these thus:

1. Male and female flowers not very unequal in size or shape. Involucral bracts about the same length as the flowers.
2. Leaves about 5 mm. long, densely rosulate, white-villous and pilose, later glabrous. Peduncles 5--7 cm. long. Involucral bracts glabrous, the inner ones ciliate. Style without appendages. S. simplex
- 2a. Leaves 1--3 cm. long, caespitose, glabrous or slightly puberulous. Peduncles 6--30 cm. long. Involucral bracts longer than or equaling the flowers. Sepals at first puberulous in the middle, later glabrous. S. gracilis

Also quite similar in habit, at least, to S. gracilis are S. llanorum Ruhl., S. pauciflorus Alv. Silv., and S. planus Ruhl.

Material of S. gracilis has been misidentified and distributed in some herbaria as Paepalanthus exiguus (Bong.) Körn. and P. subtilis Miq. On the other hand, the Robertson & Austin 268, distributed as S. gracilis, is actually Comanthera kegeliana (Körn.) Moldenke; Alston & Lutz 33 and B. Lutz 668 are Leiostrix dielsii Ruhl.; Mexia 5882 is Leiostrix fulgida Ruhl.; Alston & Lutz 133 is Paepalanthus tortilis (Bong.) Mart.; Williams & Assis 6885 is Syngonanthus biformis (N. E. Br.) Gleason; A. R. Schultz 324 is S. chrysanthus (Bong.) Ruhl.; Donselaar 3605 is S. glandulosus Gleason; Hunt & Ramos 6140, Malme 1653, and Swallen 4912 are S. gracilis var. aureus Ruhl.; Hermann 11054 and Tutin 619 are S. gracilis

var. koernickeanus Ruhl.; B. Lutz 602 is S. gracilis var. setaceus Ruhl.; Hassler 9430 is S. nitens var. hirtulus Ruhl.; Hassler 9436, 9436a, & 9436b are S. nitens var. koernickei Ruhl.; Brade 6578 and N. A. Rosa 477 [Herb. IPEAN 149907] are S. nitens f. pilosus Moldenke; and G. A. Black 54-16734 is S. tenuis (H.B.K.) Ruhl. Lockhart s.n. [Caracas] is a mixture of S. gracilis with Comanthera kegeliana (Körn.) Moldenke; J. A. Steyermark 57804 is a mixture with Paepalanthus lamarckii Kunth; Black 48-3050 is a mixture with P. fasciculatus (Rottb.) Kunth and P. fasciculatus f. sphaerocephalus Herzog; Mexia 5756 is a mixture with P. tortilis (Bong.) Mart.; Phelps & Hitchcock s.n. [February 12, 1949] is a mixture with S. gracilis var. glabriusculus Ruhl.; Lanjouw & Lindeman 860 is a mixture with S. gracilis var. koernickeanus Ruhl.; F. Lima s.n. [Herb. Mus. Goeldi 12173] is a mixture with S. umbellatus (Lam.) Ruhl.; and Vareschi & Maegdefrau 6613 is a mixture with S. yapacanensis Moldenke.

Additional citations: COLOMBIA: Magdalena: C. Allen 527 (E--1014370, F--1391643, F--1391775). Meta: F. W. Pennell 1427 (N, W--1041737); Smith & Idrobo 1395 (Ca--1147411). Santander: Fassett 25068 (W--2166142, Ws). Vaupés: Schultes, Baker, & Cabrera 18093 (W--2172073), 18114 (Ss), 18539 (S, Ss); Schultes & Cabrera 14238 (Z), 14337 (Ss), 14376 (Ss), 18390 (Ss, W--2198900), 19178 (Ss), 19749b (Ss), 19918c (Ss). VENEZUELA: Amazonas: Maguire & Maguire 35022 (N); Phelps & Hitchcock s.n. [February 12, 1949] (N); J. A. Steyermark 105141a (Ft), 57804, in part (N); G. H. H. Tate 216 (N), 259 (N); Vareschi & Maegdefrau 6613, in part (Ve--42532). Bolívar: Bernardi 6608 (N); Merxmüller 22955 (Mu); Pannier & Schwabe s.n. [Auyantepui] (Ve); Ruiz-Terán & López-Palacios 11336 (Mi); J. A. Steyermark 89672 (Mi); G. H. H. Tate 813 (N); Wurdack & Guppy 9 (Mu, N). Federal District: Lockhart s.n. [Caracas] (K). Guárico: Aristeguieta 4492 (N). GUYANA: C. W. Anderson 512 (K); Carrick 973 (Kl--3973); H. A. Gleason 652 (N, W--1191105); Goodland & Persaud 791 (W--2546171); Linder 40 (N); McKee 10681 (Ws); Tutin 483 (Ut--39644A, W--1743597); Whitton 213 (K). SURINAM: Donselaar 3661 (Ut--320401); Florschütz & Florschütz 616 (Ut--80218B); Kegel 231 (B); Lanjouw & Lindeman 128 (N), 860, in part (Ut--17894B), 1792 (Ut--17893B), 1855 (Ut--17895B), 3013 (N); Wulfschlägel 762 (E--photo, F--photo, N--photo, Z--photo). BRAZIL: Amapá: Irwin & Westra 47259a (N); Murça Pires & Cavalcante 52274 (N). Amazonas: G. A. Black 48-3050, in part (N, W--2655155); Prance 23528 (Ld); Prance, Maas, Atchley, Steward, Woolcott, Coêlho, Monteiro, Pinheiro, & Ramos 13836 (Ac, N); Prance, Pena, Forero, Ramos, & Monteiro 4790 (N); Spruce 1502 (P). Ceará: Herb. Mus. Goeldi 49 (Gl). Minas Gerais: P. Clausen 1831 (N); Martius s.n. [in udis irreguis prov. Rio de Janeiro et Minarum passim] (Mu); Mexia 5756, in part

[Herb. Leonard 7656] (B). Pará: Black & Ledoux 50-10407 (Z), 50-10631 (Ca--28245, Z); W. A. Egler 160 (Bs); F. Lima s.n. [Herb. Mus. Goeldi 12173] (Bs); E. Pereira 5022 (Bd--12468). Rio de Janeiro: Martius s.n. [in udis irreguis prov. Rio de Janeiro et Minarum passim] (Mu). Roraima: G. A. Black s.n. [Herb. Inst. Agron. Norte 77605] (Z); Maguire & Maguire 40101 (N, Sm). Santa Catarina: Reitz 4735 [Herb. Reitz 4737] (S); Smith & Klein 10679 (Ok).
 MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 59, fig. 1. 1863 (B, N, Z); drawings & notes by Körnicke (B, B, B, B).

SYNGONANTHUS GRACILIS var. AMAZONICUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 250 [as "amazonica"]. 1903; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946.

Synonymy: Syngonanthus gracilis var. amazonica Ruhl. in Engl., Pflanzenreich 13 (4-30): 250. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 250 & 293. 1903; Alv. Silv., Fl. Mont. 1: 418. 1928; Herzog in Fedde, Repert. Spec. Nov. 29: 212. 1931; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Phytologia 2: 493. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 92, 95, & 213. 1949; Moldenke, Phytologia 4: 317--318. 1953; Moldenke, Résumé 107, 112, 351, & 492. 1959; Moldenke, Fifth Summ. 1: 174 & 180 (1971) and 2: 636 & 962. 1971; Moldenke, Phytologia 25: 230 (1973) and 34: 259. 1976.

This variety is based on Huber 351 from the "Mündungsgebiet des Amazonas, Marajó, in einem Campos-wäldchen" and Burchell 8911 from "zwischen Junil und São João am Tocantins", Pará, Brazil, in the Berlin herbarium.

Ruhland's original (1903) description is "Differt foliis suberecto-recurvatis, 2 cm. longis, basi vix vel non ampliatis, juventute leviter puberulis, cito glaberrimis; vaginis laxiusculis, striatis, patenti-puberulis, calvescentibus; pedunculis erectis, valde tortis, fusco-stramineis, 3-costatis, apice breviter rigido-pilosa excepta glabriusculis; capitulis pallide cinereo-stramineis, duriusculis, 15--16 cm longis; bracteis involucrantibus obovatis vel ovatis, obtusis, capitulum 3--4 mm latum vix aequantibus, glabris."

Recent collectors describe the plant as an herb, 15 cm. tall, the inflorescences grayish-white, and have found it growing on moist or marshy campos, and in coarse white sand on disturbed white-sand savannas, flowering in February, May, August, and September, and fruiting in September. Silveira (1928) cites Huber 437 from Marajó island, collected in 1896, deposited in the Silveira herbarium.

Material of this variety has been misidentified and distributed in some herbaria as Paepalanthus nitens Körn. and Syngonanthus elegans (Bong.) Ruhl. Lützelburg 21036 is a mixture with S. glandulosus Gleason.

Additional citations: BRAZIL: Amazonas: Maas & Maas 454 (Ld, N);

Ule 6177 (B). Maranhão: Murça Pires & Black 2537 (Z). Mato Grosso: Irwin & Soderstrom 6477 (N). Minas Gerais: Lützelburg 21150 (Mu). Pará: G. A. Black 55-18613 (N); Ducke 8403 (Bs), 11656 (Bs), s.n. [Herb. Mus. Goeldi 10676] (Bs); Spruce 610 (Mu). Rio de Janeiro: Jobert 1227 (P). Roraima: M. Silva 122 [Herb. Brad. 47002] (Ld). State undetermined: Lützelburg 20548a [Igarapé] (Mu), 21003 [Maruay] (Mu), 21004 [Rio Cotim Contã] (Mu), 21036, in part [Vera Cruz] (Mu), 21132 [Maruay], 21156 [Maruay], 21289 [Serra da Lua] (Mu).

SYNGONANTHUS GRACILIS var. *ARAXAENSIS* Alv. Silv., Fl. Mont. 1: 347. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 347 & 418. 1928; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 92 & 213. 1949; Moldenke, Résumé 107 & 492. 1959; Moldenke, Fifth Summ. 1: 174 (1971) and 2: 962. 1971.

This variety is based on an unnumbered specimen collected by Dr. J. Michaeli "In campis prope Araxá", Minas Gerais, Brazil, in April, 1919, and is no. 715 in the Silveira herbarium. Silveira's original (1928) description is "Folia glabra, rigidula, 1 cm. longa. Pedunculi glabri, 20--30 cm alti. Vaginae arctae oblique fissae, glabrae, folia duplo superantes striatae, lamina erecta instructae, 2--2,5 elatae. Capitula albido-flavida, 5 mm lata. Bracteae involucrantés obovato-rotundatae, glabrae. Bracteae flores stipantes nullae. Sepala floris masculi utrinque pilosa, cito calvescentia. Sepala floris feminei illis floris masculi similia." Thus far it is known only from the original collection.

SYNGONANTHUS GRACILIS var. *AUREUS* Ruhl. in Engl., Pflanzenreich 13 (4-30): 251 [as "aurea"]. 1903; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946.

Synonymy: *Syngonanthus gracilis* var. aurea Ruhl. in Engl., Pflanzenreich 13 (4-30): 251. 1903.

Bibliography: Chod. & Hassl., Bull. Herb. Boiss., ser. 2, 3: 1034. 1903; Chod. & Hassl., Pl. Hassler. 2: 256. 1903; Ruhl. in Engl., Pflanzenreich 13 (4-30): 251 & 293. 1903; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Alph. List Cit. 4: 1301. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 92 & 213. 1949; Moldenke, Phytologia 4: 318. 1953; Moldenke, Résumé 73, 107, 351, & 492. 1959; Moldenke, Résumé Suppl. 12: 4 (1965) and 15: 5. 1967; Moldenke, Fifth Summ. 1: 127, 174, 180, & 184 (1971) and 2: 636 & 962. 1971; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1162 & Ind. 28. 1972; Moldenke, Phytologia 31: 386 (1975), 34: 260 (1976), and 35: 456. 1977.

This variety is based on Burchell 7177 from Goiás and G. Gardner 5270, Glaziou 15680, and Sena s.n. [Herb. Schwacke 14556] from Minas Gerais, Brazil, all deposited in the Berlin herbarium. The original description is: "Differt foliis caespitosis, erecto-patentibus, rigidulis, obtusiusculis, saepe olivaceo-viridibus, puberulis, mox

calvescentibus, ad 2 cm longis, medio usque $2/3$ mm latis; vaginis folia paullo modo superantibus, olivaceis, arctis, vix striatulis, patentissimo-puberulis; pedunculis profunde 3 sulcatis, saepe tortis, stramineo-flavidis, pilis brevibus, sparsis, vix puberulis, cito glabriusculis, 16--18 cm altis; capitulis globosis, duriusculis, majusculis, latitudine demum interdum 5 mm excedentibus; bracteis involucrentibus florum discum vix aequantibus, concavis, glabris, ovatis, aureo-flavis, exterioribus saepe subacutis. [An fortasse species distincta?]. Varietas habitu S. nitenti similis, valde insignis."

Recent collectors describe this plant as to 20 cm. tall, the inflorescences 10--15 cm. tall, gray or grayish, the flower-heads white or grayish, and the flowers white. They have found it growing in sandy soil, in cerrado, at gallery margins, in moist open ground and boggy ground near streamlets, on savannas and savanna-margins, on sandy open ground, in wet sand close to streams, and on periodically flooded campos, at altitudes of 200--1700 meters, flowering in January, March to August, and October, and in fruit in January, May, June, and August. Irwin and his associates refer to it as "locally common in cerrado"; Murça Pires & Cavalcante found it "frequent in wet sandy savannas"; Argent encountered it "on open ground between grass tussocks". Ratter and his associates found it "in damp cerrado between tufts of tall grasses and sedges which shade it", while Anderson found it in grass of "gallery forest, adjacent brejo, and nearby cerrado and campo limpo" and in similar areas but the "higher drier slopes with grassy campo or rocky cerrado". Hatschbach reports it it "cerrado pequeno brejo".

The Angely (1972) work cited in the bibliography is often referred to as having been published in 1970, the title-page date, but was not actually issued until 1972.

Material of this variety has been misidentified and distributed in some herbaria as Paepalanthus hirtellus Körn., Syngonanthus fischerianus (Bong.) Ruhl., typical S. gracilis (Bong.) Ruhl. and its var. setacea Ruhl. On the other hand, the Hassler 4671, distributed as S. gracilis var. aureus, actually is S. nitens var. koernickei Ruhl.

Additional citations: BRAZIL: Alagoas: Mendes Magalhães 162 [Herb. Jard. Bot. Belo Horiz. 32594] (N). Amapá: Murça Pires & Cavalcante 52380 (N). Amazonas: Fromm 1455 [E. Santos 1477; Sacco 1712; Trinta 381] (Bd--25617). Bahia: Lützelburg 241a (Mu). Goiás: W. R. Anderson 9567 (Ld, N), 10387 (Ld, N); Fróes 30116 (Hk, Z), 30183 (Be--79494); Hunt & Ramos 6140 (N); Irwin, Souza, Grear, & Reis dos Santos 17600 (Ld, N); Macedo 3333 (S), 3355 (S); Ule 233 (P). Maranhão: Lisboa 2333 (Bs). Mato Grosso: Argent in Richards 6454 (Ld, N); M. A. Chase 11905 (W--1470136); Hatschbach 24343 (Ld), 38622 (Ld); Hunt & Ramos 5711 (N); Irwin, Grear, Souza, & Reis dos Santos 16285 (Ac, N), 16346 (Ld, N, W--2769018); Irwin, Souza, Grear, & Reis dos Santos 16976 (Ac, N, W--2759017),

16978 (Ac, N, W--2759031), 17365 (Ac, N); Kuntze s.n. [200 m., VII.92] (N); Maguire, Murça Pires, Maguire, & Silva 56231 (N); Malme 1653 (W--1483435); Ratter, Santos, Souza, & Ferreira R.1686a (K); Santos, Souza, Ferreira, & Andrelinho R.1783 (Ac, N). Minas Gerais: Glaziou 15680 (W--1124144--cotype); Occhioni 5615 [Herb. Fac. Nac. Farmac. 14309] (Ld); J. E. Oliveira 1317 [Herb. Jard. Bot. Belo Horiz. 45187] (N). Pará: Spruce s.n. [In vicinibus Santarem, Aug. 1850] (N). Piauí: Lützelburg 233 (Mu). Rondônia: Prance, Forero, Coêlho, Ramos, & Farias 5765 (Ac, N, S). Roraima: Ule 7665 [Herb. Mus. Goeldi 12774] (Bs, K, N). São Paulo: Eiten, Eiten, Felipe, & Freitas Campos 3028 (N). State undetermined: G. Gardner 2748 bis (W--936284); Glaziou s.n. (P); J. E. Pohl s.n. [in Brasilia] (Mu). MARAJÓ ISLAND: Swallen 4912 (W--1592046).

SYNGONANTHUS GRACILIS var. BOLIVIANUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 252 [as "boliviana"]. 1903; Moldenke, Known Geogr. Distrib. Erioc. 19, 29, & 58. 1946.

Synonymy: Syngonanthus gracilis var. boliviana Ruhl. in Engl., Pflanzenreich 13 (4-30): 252. 1903. Dupatya fischeriana Kuntze ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 252, in syn. 1903 [not D. fischeriana Kuntze, 1902]. Paepalanthus gracilis var. boliviana Ruhl. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Syngonanthus gracilis boliviana Ruhl. ex Moldenke, Résumé Suppl. 12: 13, in syn. 1965. Syngonanthus gracilis bolivianus Ruhl. ex Moldenke, Fifth Summ. 2: 637, in syn. 1971.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 252 & 293. 1903; Moldenke, Known Geogr. Distrib. Erioc. 19, 29, & 58. 1964; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 97 & 213. 1949; R. C. Foster, Contrib. Gray Herb. 184: 39. 1958; Moldenke, Résumé 115, 280, 351, & 492. 1959; Moldenke, Résumé Suppl. 1: 20 (1959) and 12: 12. 1965; Moldenke, Fifth Summ. 1: 184 & 480 (1971) and 2: 583, 636, 637, & 962. 1971; Moldenke, Phytologia 35: 454. 1977.

This variety is based on Otto Kuntze 455 from an altitude of 200 meters in east Velasco, Santa Cruz, Bolivia, collected in July of 1892 and deposited in the Berlin herbarium. The unnumbered specimen in the New York Botanical Garden herbarium is probably an isotype. Ruhl. in Engl. (1903) description is "Differt foliis diffuso-caespitosis, in sicco pallide stramineis, vix puberulis, obtusis, setaceo-linearibus, supra concaviusculis, subtus nervo uno valde prominente quasi bisulcatis, 1--1,5 cm longis; vaginis folia superantibus, oblique fissis, arctis, striatis, lamina paulo recurva, acuta instructis; capitulis bracteisque involucrentibus ut in varietate antecedente [var. recurvifolius Ruhl.]; pedunculis gracilibus, costatis, tortis, subflexuosis, 12 cm longis."

The variety has been encountered on "campos cienagosas" at 200--500 meters altitude, flowering in April and July. The Dupatya fischeriana Kuntze (1902), referred to in the synonymy above, is a

synonym of Syngonanthus fischerianus (Bong.) Ruhl. and is based on a misidentification by Kuntze of the type specimen in the Berlin herbarium. Steinbach describes the flowers of S. gracilis var. bolivianus as "flor paposa blanca".

Citations: BOLIVIA: Santa Cruz: Kuntze 455 (B-type), s.n. [Ost Velasco, VII.92] (N, N); Perrottet 766 (V-143602); J. Steinbach 5507 (N, W-1472861).

SYNGONANTHUS GRACILIS var. GLABRIUSCULUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 251 [as "glabriuscula"]. 1903; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946.

Synonymy: Eriocaulon glabrum Salzm. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 281 & 334. 1855. Paepalanthus gracilis var. a Körn. in Mart., Fl. Bras. 3 (1): 460-463. 1863. Eriocaulon glabrum Steud. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 878, in syn. 1893. Limnoseranthemum glabrum Salzm. ex Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 84. 1894. Syngonanthus gracilis var. glabriuscula Ruhl. in Engl., Pflanzenreich 13 (4-30): 241. 1903. Limnoseranthemum (Eriocaulon) glabrum Salzm. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 251, in syn. 1903. Paepalanthus gracilis var. α Körn. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 251, in syn. 1903. Paepalanthus glaber Körn. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Syngonanthus gracilis var. glabriusculis Ruhl. ex Moldenke, Fifth Summ. 2: 962, sphalm. 1971.

Bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 280, 281, & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 460-463. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 878 (1893) and imp. 1, 2: 84. 1894; Ruhl. in Engl., Pflanzenreich 13 (4-30): 251, 285, 290, & 293. 1903; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 878 (1946) and imp. 2, 2: 84. 1946; Moldenke, Known Geogr. Distrib. Erioc. 18, 35, 44, 49, & 58. 1946; Moldenke, Phytologia 2: 352 & 374. 1947; Moldenke, Alph. List Cit. 3: 710 & 975. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 65, 92, & 213. 1949; Moldenke in Maguire, Mem. N. Y. Bot. Gard. 9: 101. 1953; Moldenke, Phytologia 4: 318. 1953; Moldenke in J. A. Steyerl., Fieldiana Bot. 28: 824. 1957; Moldenke, Résumé 73, 107, 288, 310, 325, 351, & 492. 1959; Moldenke, Résumé Suppl. 1: 20 (1959) and 2: 5. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 878 (1960) and imp. 3, 2: 84. 1960; Moldenke, Résumé Suppl. 3: 14 (1962) and 12: 3. 1965; J. A. Steyerl., Act. Bot. Venez. 1: 247. 1966; Moldenke, Résumé Suppl. 16: 6. 1968; Moldenke, Phytologia 18: 388. 1969; Moldenke, Fifth Summ. 1: 127, 133, & 174 (1971) and 2: 501, 549, 583, 636, & 962. 1971; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1162 & Ind. 28. 1972; Moldenke, Phytologia 28: 440 (1974), 30: 52 (1975), 31: 383 & 408 (1975), 34: 487 (1976), and 35: 18 & 125. 1976.

This variety is apparently based on the Paepalanthus gracilis var. a of Körnicke (1863) and that, in turn, is presumably based

on Salzmann s.n. from "auf feuchten Wiesen" in Bahia, Brazil, and P. Clausen 68 and Martius 1083 from Minas Gerais, Brazil, all deposited in the Berlin herbarium. Ruhland (1903) describes it as follows: "Differt foliis irregulariter caespitosis, fere latiuscule linearibus, chartaceo-membranaceis, pallide olivaceo-vel glaucescenti-viridibus, obtusis, glabris, vel supra dense hirtopuberulis, dein glabriusculis et albo-punctulatis, 1--1,5 cm longis, interdum $2/3$ mm latis; vaginis arctis, leviter striatulis, vix puberulis vel glabriusculis; pedunculis plerumque valde tortis, erectis, 3-costatis, in sulcis arcte appresso-incanis, ceterum sparse et longiuscule pilosis, mox glabris, 20 cm saepe excedentibus; bracteis involucrantibus rotundato-obtusis, aureo-flavidis, glabris, capitulum plus minus concavo-includentibus." He cites from Bahia Salzmann s.n. and from Minas Gerais P. Clausen 68, Glaziou 11845 & 17308, Martius 1083, Sena s.n. [Herb. Schwacke 12828], and A. Silveira 1415.

Recent collectors refer to this plant as a rosette herb "bearing a single head", the inflorescences to 15 cm. tall, the flower-heads grayish, and the flowers white. They have found it growing in sandy soil, on wet campos, in moist meadows, on sandy dry or white-sand savannas, and in Vellozia associations, at altitudes of 200--1980 meters, flowering from April to August and in November, in fruit in May, August, and November. Irwin and his associates found it "locally common in wet places on creek margins"; Maguire and his associates found it "frequent on open banks" and "common on savannas"; Murça Pires & Cavalcante refer to it as "frequent on wet sandy savannas".

Ruiz-Terán and López-Palacios describe it as "Hierba rosulada. Hojas hasta 10 mm. de largo. Escapos hasta de 8 cm. de longitud, cilíndricos. Capítulos globosos [or "hemisféricos"] 2--6 mm. de diámetro. Flores blanquecinas". They have encountered it on "orillas de la carretera". Mori 829 is placed here only tentatively -- it is obviously very immature, the flower-heads are very small and too pointed to be typical. It was found growing in "open barrows of white sand with many lichens and Eriocaulaceae along ponds in open sand."

The Angely (1972) reference in the bibliography is often cited as "1970", the title-page date, but was not actually issued until 1972.

Material of this variety has been misidentified and distributed in some herbaria under the names, Eriocaulon repens Lam., Paepalanthus sp., and Syngonanthus nitens Kunth. On the other hand, Glaziou 15680, distributed as S. gracilis var. glabriusculus, is actually var. aureus Ruhl. Phelps & Hitchcock s.n. [February 12, 1949] is a mixture with typical S. gracilis (Bong.) Ruhl., while Hallé 512 is a mixture with something not eriocaulaceous.

Additional citations: VENEZUELA: Amazonas: Foldats 3545 (Ve); Phelps & Hitchcock s.n. [February 12, 1949], in part (N, N). Bolívar: Ruiz-Terán & López-Palacios 10979 (Mi), 11421 (Ld). SURINAM: Maguire, Schulz, Soderstrom, & Holmgren 54216 (N). FRENCH GUIANA:

Hallé 512, in part (P). BRAZIL: Amapá: W. A. Egler 1453 [Herb. Mus. Goeldi 24609] (Mi); Irwin & Westra 47259 (N); Murça Pires & Cavalcante 52405 (N). Amazonas: Mori 829 (Ws). Goiás: Irwin, Souza, & Reis dos Santos 9756 (N). Mato Grosso: Irwin, Grear, Souza, & Reis dos Santos 15954 (Ld, N). Minas Gerais: P. Clausen 68 (B--cotype), 164 (B), s.n. (P); Martius 1083 (B--cotype, Mu--cotype), s.n. [In uvidis altis herbaceis et turfosis prope Itambé] (Mu). Paraíba: Coelho de Moraes 2210 (Z), 2212a (Mm). Roraima: G. A. Black 51-13126 (Be--70882); Prance, Forero, Pena, & Ramos 4490 (Ld, N, S). State undetermined: J. F. T. Müller 90 (P).
MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

SYNGONANTHUS GRACILIS var. GRISEUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 251 [as "grisea"]. 1903; Moldenke, known Geogr. Distrib. Erioc. 18 & 58. 1946.

Synonymy: Syngonanthus gracilis var. grisea Ruhl. in Engl., Pflanzenreich 13 (4-30): 251. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 251 & 293. 1903; Alv. Silv., Fl. Mont. 1: 418. 1928; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 92 & 213. 1949; Angely, Fl. Paran. 10: 12 & 15. 1957; Moldenke, Résumé 107, 352, & 492. 1959; Angely, Fl. Anal. Paran., ed. 1, 201. 1965; Moldenke, Fifth Summ. 1: 174 (1971) and 2: 636 & 962. 1971.

This variety is based on three collections in the Berlin herbarium: Herb. Bernhardi s.n. from Bahia, Burchell 5764 from Minas Gerais, and Schwacke 2483 from Santa Catarina, Brazil. The last-mentioned is cited by Ruhland (1903) as from Paraná, but according to a letter to me from Dr. Angely, dated December 3, 1957, the locality of collection was, indeed, in the state of Paraná in 1903, but in 1919 the boundaries of Paraná and Santa Catarina were officially changed and the locality in question is now definitely in Santa Catarina.

Ruhland's original (1903) description of the variety is: "Differt foliis linearibus, obtusiusculis, subtus plerumque plurinerviis, glabris vel pilis longis hinc inde conspersis deinceps glabriusculis, apice semper recurvatis; vaginis laxiusculis, folia vix vel non superantibus, glabriusculis, striatulis; pedunculis erectis, interdum acutangulo-3-costatis, pilis brevissimis sparse instructis, cito omnino glabris, tortis, brunneo-fuscis; capitulis globosis, griseis, pallidis, densifloris; bracteis involu-crantibus obovatis, obtusiusculis, glabris, concavis, pallidis." Silveira (1928) cites A. Silveira 847 from Itacambira, Minas Gerais, collected in 1926.

SYNGONANTHUS GRACILIS var. HIRTELLUS (Steud.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 249 [as "hirtella"]. 1903; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946.

Synonymy: Eriocaulon hirtellum Steud., Syn. Pl. Glum. 2: [Cyp.]

280. 1855. Limnoxeranthemum pubescens Salzm. ex Steud., Syn. Fl. Glum. 2: [Cyp.] 280, in syn. 1855. Paepalanthus gracilis var. c Körn. in Mart., Fl. Bras. 3 (1): 461, in part. 1863. Syngonanthus gracilis var. hirtella (Steud.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 249. 1903. Eriocaulon hirtellus Steud. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 249, in syn. 1903. Paepalanthus hirtellus var. ♀ Körn. ex Moldenke, Résumé Suppl. 1: 21, in syn. 1959. Paepalanthus pohlianus var. ♀ Mart. ex Moldenke, Résumé Suppl. 1: 22, in syn. 1959. Paepalanthus tristis Körn. ex Moldenke, Résumé Suppl. 1: 22, in syn. 1959.

Bibliography: Steud., Syn. Fl. Glum. 2: [Cyp.] 280 & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 461. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 878. 1893; Ruhl. in Engl., Pflanzenreich 13 (4-30): 249--251, 286, 290, & 293. 1903; Herzog in Fedde, Repert. Spec. Nov. 29: 212. 1931; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 878. 1946; Moldenke, Known Geogr. Distrib. Erioc. 18, 35, 49, & 58. 1946; Moldenke, Phytologia 2: 352 & 374. 1947; Moldenke, Alph. List Cit. 3: 975. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 65, 92, & 213. 1949; Moldenke, Phytologia 4: 318. 1953; Moldenke in J. A. Steyerm., Fieldiana Bot. 28: 824. 1957; Moldenke, Résumé 73, 107, 289, 325, 352, & 492. 1959; Moldenke, Résumé Suppl. 1: 21 & 22. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 878. 1960; J. A. Steyerm., Act. Bot. Venez. 1: 247. 1966; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1162 & Ind. 28. 1972; Moldenke, Phytologia 30: 318 (1975), 31: 383 (1975), 34: 275 (1976), and 35: 338. 1977.

Steudel's original (1855) description of this taxon is: "Caespitosum subacaule pusillum; foliis angustissimis linearibus scabrusculis brevibus (vix 1/2" longis, 1/3" latis); vaginis quam folia duplo longioribus scapisque patenti glanduloso-pilosis; scapis solitariis 1--4-pollicaribus; capitulo hemisphaerico glabro; bracteis involucrentibus ovatis obtusis (piso parum majoribus); flosculis ipsis basi nudis; receptaculo piloso. Limnoxeranthemum pubescens Salzm. Bahia." Limnoxeranthemum pubescens Salzm. is regarded by Ruhland as a synonym of Syngonanthus gracilis var. koernickeanus Ruhl., but it certainly has to go wherever the name, Eriocaulon hirtellum Steud., goes and that is the name-bringing synonym of Syngonanthus gracilis var. hirtellus (Steud.) Ruhl.

Ruhland (1903) cites no specimens for this variety, but implies that it is very widely distributed in the states of Amazonas, Bahia, Goiás, Minas Gerais, Rio de Janeiro, and São Paulo, Brazil. He comments that "Varietas latissime divulgata et habitu constante est. Sed species non habenda est, quod indumentum foliorum et vaginae valde variabilis transitum ad sequentum [vars. tenuissimus, olivaceus, subinflatus, pallidus, amazonicus, koernickeanus, glabrusculus, aureus, griseus, setaceus, recurvifolius and bolivianus Ruhl.] faciunt." He describes it as "Differt styli appendicibus nullis; bracteis involucrentibus fuscescenti-flavidis, capitulum vix includentibus; pedunculis apicem versus glandulifero-pilosis."

Recent collectors refer to the plant as having inflorescences to 8 cm. tall and the flower-heads yellow-brown. Davidse and his associates speak of it having "spikelets white", but there are no spikelets -- the flowers are in heads. Collectors have encountered it on "campo cerrado", among rocks, in large swampy savannas, "in sand along streamlet at top of waterfall", and in wet places in rocky campo, at 125--1250 meters altitude, flowering from March to May and in July, August, and December, in fruit in March and December. Wurdack & Adderley refer to it as "occasional", while Anderson found it "on grassy campo with scattered trees on crystal sand, wet in places". Ruiz-Terán & López-Palacios describe the plant as "Hierba mínima, en suelo húmedo e musgoso, a la sombra de rocas de arenítica. Roseta de 7--10 mm. de largo. Escapos erectos, 5--6 cm." and found it growing on the "orillas de la carretera".

Paepalanthus hirtellus var. β is based on Widgren s.n. [1845] in the Berlin herbarium. Körnicke's P. gracilis var. c was based by him on Spruce s.n. from Amazonas, Salzmann s.n. from Bahia, Pohl s.n. and Weddell 2136 from Goiás, Gardner 2748 from Piauí, Gardner s.n., Martius s.n., and Widgren s.n. from Minas Gerais, Martius s.n. and Vauthier s.n. from Rio de Janeiro, and Riedel 2304 from São Paulo.

It should be noted here again that the Angely (1972) reference in the bibliography of this taxon is often cited as "1970", the title-page date, but the work was not actually issued until 1972. On the other hand, the Steyermark (1966) reference is sometimes cited as "1967", but actually was published in 1966.

Prance, Pennington, & Murça Pires 1283 & 1284 are mixtures with Paepalanthus polytrichoides Kunth and Syngonanthus bellus Moldenke.

Additional citations: VENEZUELA: Amazonas: Wurdack & Adderley 43697 (N, S). Bolívar: Davidse, Ramia, & Montes 4846 (Ld); Merxmüller 22955 (Mu); Ruiz-Terán & López-Palacios 11288 (Mi). BRAZIL: Goiás: W. R. Anderson 8065 (Ld, N); Irwin, Grear, Souza, & Reis dos Santos 13341 (N), 13388a (N). Maranhão: Murça Pires & Black 2251 (Ss), 2266 (Z). Minas Gerais: Widgren s.n. [1845] (B). Pará: Ducke s.n. [Herb. Mus. Goeldi 16257] (Bs); Murça Pires & Silva 4204 (N), 4718 (Ca--28212, N); E. Pereira 5109 [Herb. Brad. 12471] (Lw); Prance, Pennington, & Murça Pires 1283, in part (N), 1284, in part (N, S). State undetermined: G. Gardner s.n. (B). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B, B, B).

SYNGONANTHUS GRACILIS var. KOERNICKEANUS Ruh. in Engl., Pflanzenreich 13 (4-30): 250--251 [as "koernickeana"]. 1903; Moldenke, Known Geogr. Distrib. Erioc. 18 & 58. 1946.

Synonymy: Paepalanthus brizoides Kunth, Enum. Pl. 3: 534, in part. 1841. Eriocaulon brizoides Kunth ex D. Dietr., Syn. Pl. 5: 262. 1852. Eriocaulon brizoides (Kunth) Steud., Syn. Pl. Glum. 2: [Cyp.] 281. 1855; Moldenke, Résumé 286, in syn. 1959. Paepalanthus gracilis var. β Körn. in Mart., Fl. Bras. 3 (1): 460--463. 1863.

Paepalanthus gracilis var. β subvar. α Körn. in Mart., Fl. Bras. 3 (1): 460, 461, & 463. 1863. Paepalanthus glandulifer Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 464, in syn. 1863. Eriocaulon brizoides Steud. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 877, in syn. 1893. Paepalanthus glanduliferus Mart. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402, in syn. 1894. Paepalanthus gracilis var. β subvar. α Körn. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 250, in syn. 1903. Syngonanthus gracilis var. koernickeana Ruhl. in Engl., Pflanzenreich 13 (4-30): 250. 1903. Paepalanthus gracilis var. β var. α Körn. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 290, sphalm. 1903. Syngonanthus eriophyllus var. glanduliferus Ruhl. ex Moldenke in Gleason & Killip, Brittonia 3: 159. 1939. Syngonanthus eriophyllus var. glandulifer Ruhl. ex Moldenke, Known Geogr. Distrib. Erioc. 57, in syn. 1946. Paepalanthus filiformis Mart. ex Moldenke, Résumé 325, in syn. 1959. Paepalanthus filiformis var. minor Mart. ex Moldenke, Résumé 325, in syn. 1959. Paepalanthus gracilis var. γ Körn. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Syngonanthus gracilis var. koernickeanus Ruhl. ex Moldenke, Fifth Summ. 2: 636, in syn. 1971.

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[to be continued]



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