

# TROPICAL NORTH AMERICAN SPECIES OF PANICUM.

By A. S. HITCHCOCK and AGNES CHASE.

## INTRODUCTION.

In a preceding paper<sup>1</sup> our knowledge of the North American species of *Panicum* was presented in a revision of the genus, based upon material in the United States National Herbarium. Since the publication of that paper a large amount of additional material from tropical North America has been accumulated. Mr. Hitchcock visited Mexico in 1910, Central America and Panama in 1911, and Jamaica and Trinidad in 1912. Mrs. Chase visited Sonora in 1910 and Porto Rico in 1913. The collections of Mr. H. Pittier in Panama, of Brother León of the Colegio de la Salle, Habana, in Cuba, and of several other collectors in tropical North America, besides specimens from various islands of the West Indies received through Dr. I. Urban, serve to augment the amount of material studied. As a result of these further studies in the genus the range of nearly all the tropical species described in the revision can be presented in much greater detail. Several South American species hitherto unknown from North America and several new species have been discovered, while a few doubtful species and a few referred to synonymy have by field work and further study been established as valid.

While the present paper is supplementary to the revision, it is designed to be of use for the region covered without necessarily referring to the main work. For this reason keys are given for all the tropical species, though descriptions are given of additional species only. A study in their native habitat of species before known from herbarium specimens alone, has necessitated in some cases a revision of the description of habit or of duration, or exceptions have been found to characters given as common for groups. Such notes are given without other description and are to be understood as additions to or corrections of the descriptions given in the revision. Following the reference to the original publication of each species is a reference

<sup>1</sup> Contr. U. S. Nat. Herb. 15. 1910.

to the description in the revision, if the species is there described. No synonymy is given except such as is additional to that cited in the previous work.

The distribution here given is based upon all the material at present in the National Herbarium, including that already cited. As in the earlier paper all specimens cited are in the United States National Herbarium, unless otherwise stated. Specimens from other herbaria are cited when such specimens add to the known range. Through the courtesy of Dr. I. Urban the grasses of the Krug and Urban Herbarium in the Berlin Museum were submitted for study. Many additional specimens are cited from this herbarium, such specimens being indicated by the abbreviation "K. U. Herb." The range within the region covered is graphically presented by maps. For the sake of comparison these maps indicate also the distribution in the southern border of the United States of such species as extend into this region. Trinidad and Tobago, though they are continental islands and their flora is essentially South American, are included in the West Indies because they are so included by Grisebach<sup>1</sup> and by Urban.<sup>2</sup> In order to connect Panama and Trinidad the detailed distribution includes Venezuela and Colombia.

### KEY TO SPECIES AND GROUPS.

Axis of branchlets produced beyond the base of the uppermost spikelet as a point or bristle 1 to 6 mm. long..... Subgenus PAUROCHAETIUM, p. 463.

Axis of branchlets not produced into a bristle. (In *P. geminatum* and *P. paludivagum* the somewhat flattened axis pointed but not bristle-form.)

Basal leaves usually distinctly different from those of the culm, forming a winter rosette; culms at first simple, the spikelets of the primary panicle not perfecting seed, later usually becoming much branched, the small secondary panicles with cleistogamous, fruitful spikelets.

Subgenus DICHANTHELIUM, p. 512.

Basal leaves similar to culm leaves, not forming a winter rosette; spikelets all fertile.

Plants annual.

Spikelets plano-gibbous, the second glume swollen, bristly and burlike at maturity; first glume nearly as long as the minute spikelet.

116. *P. hirtum*.

Spikelets not plano-gibbous nor burlike.

Panicles consisting of several more or less secund spikelike racemes; fruit transversely rugose; glumes and sterile lemma usually reticulate-veined..... See FASCICULATA, p. 467.

Panicles more or less diffuse (small and narrow in *P. vaseyanum*).

Blades ovate-lanceolate or elliptical, one-fifth to one-fourth as broad as long; plants low; spikelets minute, not over 1.5 mm. long.

Spikelets pyriform, attenuate at base, glabrous.

71. *P. pyrularium*.

Spikelets elliptic, pubescent..... 67. *P. trichoides*.

<sup>1</sup> Fl. Brit. W. Ind.

<sup>2</sup> Symb. Ant.

Blades linear, many times as long as broad; spikelets 1.7 mm. or more long.

First glume not over one-fourth the length of the spikelet, truncate or triangular-tipped.

See DICHOTOMIFLORA, p. 473.

First glume usually as much as half the length of the spikelet, acute or acuminate..... See CAPILLARIA, p. 476.

Plants perennial.

Spikelets short-pediceled along one side of the panicle branches, forming more or less spikelike racemes.

First glume nearly as long as the obtuse spikelets; plants with long wiry stolons with woolly nodes..... 111. *P. obtusum*.

First glume much shorter than the spikelet.

Spikelets more or less hispid.

Sterile lemma glandless; second glume inflated-gibbous.

73. *P. ineptum*.

Sterile lemma bearing a pair of crateriform glands.

See STOLONIFERA, p. 500.

Spikelets glabrous.

Blades lanceolate or ovate-lanceolate; glumes strongly carinate.

See STOLONIFERA, p. 500.

Blades linear, often elongated; glumes not carinate or but slightly so.

Fruit transversely rugose..... See GEMINATA, p. 465.

Fruit not rugose.

Second glume shorter than the spikelet; fertile lemma subindurate, inrolled only at base, scabrous at the acute apex.

112. *P. stagnatile*.

Second glume as long as the spikelet; fertile lemma indurate, inrolled to the summit..... See LAXA, p. 492.

Spikelets in open or sometimes in contracted or congested panicles, but not in 1-sided spikelike racemes.

Fruit transversely rugose..... See MAXIMA, p. 483.

Fruit not transversely rugose (minutely papillose-roughened in *P. millegrana*).

Culms more or less succulent; plants glabrous or nearly so throughout, aquatic or subaquatic.

First glume not over one-fifth the length of the spikelet.

See DICHOTOMIFLORA, p. 473.

First glume one-third to half the length of the spikelet.

Fruit indurate, the margins of the lemma inrolled; culms erect; panicle contracted..... 48. *P. condensum*.

Fruit subindurate, the margins of the lemma inrolled only at base; culms decumbent at base; panicles open.

Spikelets 1.8 mm. long; second glume shorter than the fruit; secondary panicle branches secund..... 112. *P. stagnatile*.

Spikelets 2.5 mm. long; second glume exceeding the fruit; panicle branches not secund..... 113. *P. grande*.

Culms not succulent.

First glume hyaline, inconspicuous; spikelets acuminate; lower blades with long petiole-like bases..... 114. *P. tuerckheimii*.

First glume evident.

First glume very small, not over one-fourth the length of the small obovate, blunt, glabrous spikelets.

See PARVIGLUMIA, p. 502.

First glume usually more than one-third the length of the spikelet, if shorter the spikelets not small and blunt.

Sterile palea enlarged and indurate at maturity, expanding the spikelet; blades scarcely wider than their sheaths.

See LAXA, p. 492.

Sterile palea if present not enlarged and indurate.

First glume short, blunt; spikelets pointed; base of culm usually decumbent and rooting.

See DICHOTOMIFLORA, p. 473.

First glume usually more than one-third the length of the spikelet.

Plants forming conspicuous hard creeping scaly rootstocks.

See VIRGATA, p. 486.

Plants not forming creeping scaly rootstocks.

Fruit crested at the apex; spikelets 5.5 to 6 mm. long.

115. *P. zizanioides*.

Fruit not crested.

Panicles narrow and few-flowered; culms erect and wiry; blades drying involute. . . See TENERA, p. 490.

Panicles open or contracted, many-flowered.

Panicles 40 to 60 cm. long, the numerous elongated branches in verticils. . . . . 77. *P. megiston*.

Panicles mostly much less than 40 cm. long; branches not verticillate.

Spikelets short-pediceled along the nearly simple panicle branches. . . . . 48. *P. condensum*.

Spikelets long-pediceled; panicle open at maturity.

Primary panicles open, the secondary reduced, narrow, partly inclosed in the sheaths.

First glume three-fourths as long as the elliptical spikelets; fruit apiculate.

See CORDOVENSIA, p. 525.

First glume one-third as long as the pyriform spikelets; fruit not apiculate.

104. *P. nodatum*.

Primary and secondary panicles alike, or the secondary wanting.

First glume not pointed, two-thirds the length of the spikelet or more; spikelets blunt.

Panicles not over 6 cm. long; plants somewhat glaucous, relatively small.

See PARVIFOLIA, p. 506.

Panicles 10 to 20 cm. long, very diffuse; plants tall, not glaucous.

Spikelets viscid, 3 mm. long.

75. *P. glutinosum*.

Spikelets not viscid, 2 to 2.3 mm. long.

74. *P. millegrana*.

First glume pointed, usually less than two-thirds as long as the pointed spikelets.

Spikelets more or less pubescent.

Culms slender, straggling; spikelets not turgid; glumes and sterile lemma hirsute along the margins.

72. *P. haenkeanum*.

Culms stout, erect or nearly so; spikelets turgid, sparsely hirsute.

76. *P. rudgei*.

Spikelets glabrous.

Culms straggling; spikelets minute.

68. *P. trichanthum*.

Culms erect or stiffly ascending; blades linear, usually elongated.

Sheaths glabrous; culms 1.5 to 2 meters high..... 40. *P. ichnanthoides*.

Sheaths hirsute, or if glabrous the culms less than 1 meter high.

See DIFFUSA, p. 480.

### ANNOTATED LIST OF THE SPECIES.

#### Subgenus PAUROCHAETIUM Hitchc. & Chase.

Blades less than 10 cm. long, not narrowed toward the base; spikelets about 2.5 mm. long..... 4. *P. ramisetum*.

Blades elongated, usually more than 15 cm. long, narrowed toward the base.

First glume rounded or truncate; second glume about as long as fruit..... 3. *P. chapmani*.

First glume acute; second glume about two-thirds as long as fruit.

Spikelets 1.5 mm. long; blades involute..... 1. *P. distantiflorum*.

Spikelets 2 mm. long; blades flat..... 2. *P. utowanæum*.

#### 1. *Panicum distantiflorum* A. Rich.

*Panicum distantiflorum* A. Rich. in Sagra, Hist. Cuba 11: 304. 1850; Contr. U. S. Nat. Herb. 15: 23. 1910.

#### DISTRIBUTION.

Limestone hills at low altitudes, Bahamas to Cuba and Haiti; Curaçao. The type specimen from Cuba.

BAHAMAS: Inagua, Hitchcock in 1890, Nash & Taylor 893 (both Field Mus. Herb.).

CUBA: Playa de Cojimar, Hitchcock 144, León 912. Near Habana, León 305 b, 567, 2382. Santiago, León 917. Silla de Cayo, Shafer 2512. Guanoroca, Wright 284. Hanábana, Wright 285. Playa de Marianao, León in 1909. Without locality, Wright 3452.



FIG. 11.—Distribution of *P. distantiflorum*.

SANTO DOMINGO: Naranjo, Fuertes 1284. Los Charcos, Fuertes 1427.

CURAÇAO: Britton & Shafer 3088. Bonaire, Suringar in 1885. (K. U. Herb.)<sup>1</sup>

<sup>1</sup> Krug & Urban Herbarium.

2. *Panicum utowanaeum* Scribn.

*Panicum utowanaeum* Scribn. in Millsp. Field Mus. Bot. 2: 25. 1900; Contr. U. S. Nat. Herb. 15: 24. 1910.

## DISTRIBUTION.

Open rocky soil, mostly near the coast, Cuba, Porto Rico, Guadeloupe, and Venezuela. The type specimen from Porto Rico.



FIG. 12.—Distribution of *P. utowanaeum*.

CUBA: Tricornia, *Hitchcock* 141, *Tracy* 9089. Cayo Guajaba, *Shafer* 2830. Playa Marianao, *Wilson* 9497. Eastern Cuba, *Wright* 3452.

SANTO DOMINGO: Azua, *Rose, Fitch & Russell* 3891.

PORTO RICO: Guanica, *Millspaugh* Pl. Utow. 702, *Sintenis* 3365, 3416, 3463, *Chase* 6520. Santa Rita, *Chase* 6535, Laguna Guanica, *Chase* 6533. Mona, *Hess* 431, 455, 457.

LEEWARD ISLANDS: Guadeloupe, *Duss* 3177.

VENEZUELA: Near Puerto Caballo, *Pittier* 6434.

3. *Panicum chapmani* Vasey.

*Panicum chapmani* Vasey, Bull. Torrey Club 11: 61. 1884; Contr. U. S. Nat. Herb. 15: 24. 1910.

## DISTRIBUTION.

Coral sand and shell mounds, southern Florida and the Bahamas. The type specimen from Florida.

BAHAMAS: New Providence, *Britton & Brace* 401. Rose Island, *Britton & Millspaugh* 2137. Great Exuma, *Britton & Millspaugh* 3076. (All in Field Mus. Herb.)

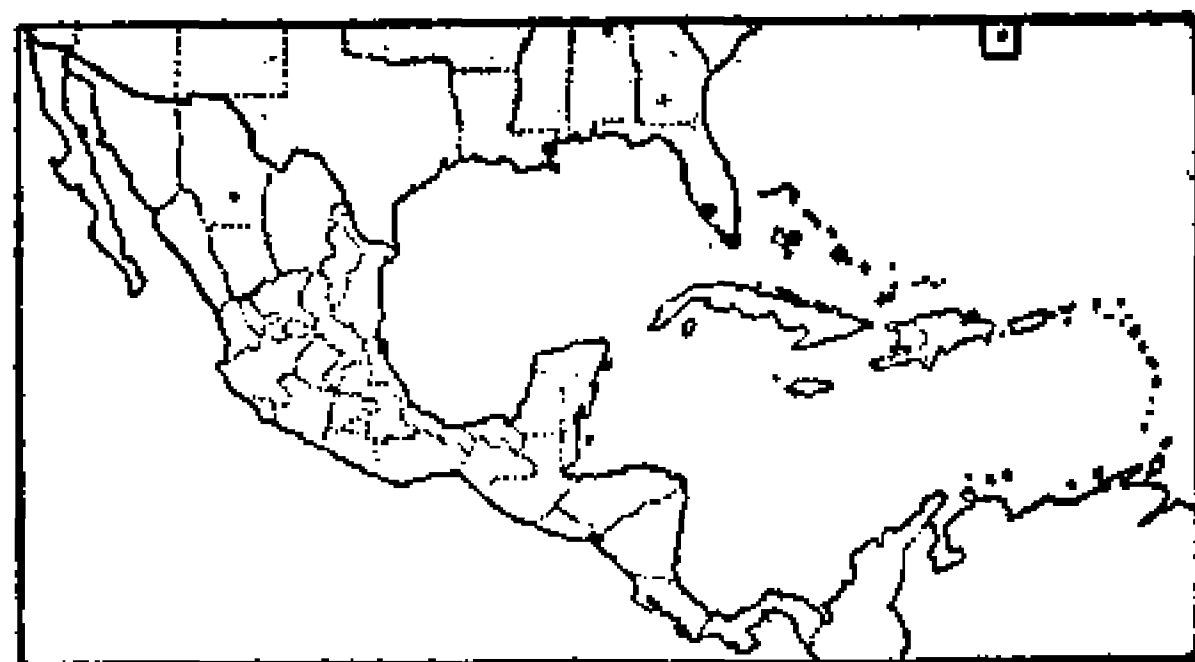


FIG. 13.—Distribution of *P. chapmani*.

4. *Panicum ramisetum* Scribn.

*Panicum ramisetum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 27: 9. 1900; Contr. U. S. Nat. Herb. 15: 25. 1910.

## DISTRIBUTION.

Sandy plains and prairies, southern Texas and northern Mexico. The type specimen from Texas.

COAHUILA: Near Díaz,<sup>1</sup> *Pringle* 8323.

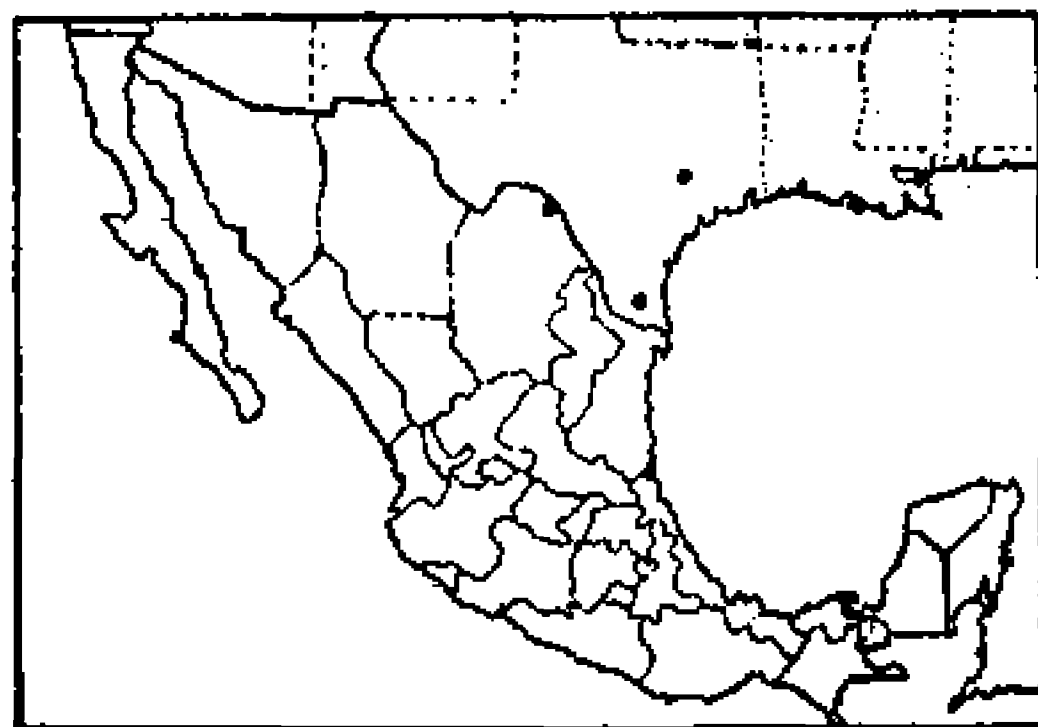


FIG. 14.—Distribution of *P. ramisetum*.

<sup>1</sup> The "Guía Postal de la República Mexicana" has been followed in the accenting of Mexican geographical names.

TRUE PANICUM.

GEMINATA.

- Nodes bearded..... 7. *P. barbinode*.  
 Nodes glabrous.  
     Spikelets 3 mm. long; glumes and sterile lemma papery..... 6. *P. paludivagum*.  
     Spikelets not over 2.4 mm. long; glumes and sterile lemma  
         not papery..... 5. *P. geminatum*.

5. *Panicum geminatum* Forsk.

*Panicum geminatum* Forsk. Fl. Aegypt. Arab. 18. 1775; Contr. U. S. Nat. Herb. 15: 30. 1910.

This species is described by Presl<sup>1</sup> under the name *Panicum brizoides* L. (as well as under *P. brizaeforme* Presl). The Haenke specimen from Mexico is in the herbarium of the National Museum at Prague.

DISTRIBUTION.

Moist ground, ditches and swamps, mostly near the coast, tropical regions of both hemispheres, in America extending north into southern Florida and Texas. Originally described from Rosetta, Egypt.

LOWER CALIFORNIA: El Tasto, *Brandegee* in 1893. San José del Cabo, *Brandegee* 14, 36.

SONORA: Yaqui River, *Palmer* 15 in 1869. Guaymas, *Palmer* 690 in 1887. Sierra de Alamos, *Rose, Standley & Russell* 12996.

SINALOA: Mazatlán, *Rose, Standley & Russell* 14109.

TAMAULIPAS: Tampico, *Hitchcock* 5796, *Palmer* 259 in 1910.

COLIMA: Manzanillo, *Hitchcock* 7032.

VERACRUZ: Veracruz, *Hitchcock* 6586.

GUERRERO: Acapulco, *Palmer* 289 in 1894.

YUCATÁN: Izamal, *Gaumer* 1027.

GUATEMALA: San José, *Kellerman* 6250.

SALVADOR: Lake Ilopango, *Hitchcock* 8920.

COSTA RICA: Bebedero, *Jiménez* 734.

PANAMA: Corozal, *Pittier* 2168, 2170. Pedro Miguel, *Hitchcock* 7956, *Pittier* 2509. Empire, *Pittier* 3714. Gatun, *Hitchcock* 7980.

BAHAMAS: Nassau, *Curtiss* 175. Fortune Island, *Eggers* 3992 (K. U. Herb.).

CUBA: Habana, *León* 769, 918. Corrientes Bay, *Britton & Cowell* 9931. Santiago de las Vegas, *Hitchcock* 143. Guanabacoa, *León* 920. Guantánamo, *Britton* 2281. Sancti Spiritus, *Sergius* 2789. Batabanó, *Hitchcock* 142. Hanábana, *Wright* 761. Palma Sola, *Wright* in 1860.

JAMAICA: Gordon Town, *Hart* 806. Ferry River, *Harris* 11352. Appleton, *Hitchcock* 9653. Palisadoes near Kingston, *Hitchcock* 9752. Black River, *Hitchcock* 9579. Savanna-la-Mar, *Hitchcock* 9877.



FIG. 15.—Distribution of *P. geminatum*.

<sup>1</sup> Presl, Rel. Haenk. 1: 302. 1830.

HAITI: La Coupe, *Buch* 975. Port-au-Prince, *Picarda* 1430. (Both in K. U. Herb.)

PORTO RICO: Guanica, *Chase* 6527, 6531, *Sintenis* 3367. Mayaguez, *Chase* 6288, 6318. Boqueron, *Chase* 6511. Coamo Springs, *Chase* 6552.

DANISH WEST INDIES: St. Croix, *Ricksecker* 212. St. Thomas, *Eggers* in 1882.

LEEWARD ISLANDS: Antigua, *Wulschlaegel* 614. Guadeloupe, *Duss* 2690, 3584, *L'Herminier*.

WINDWARD ISLANDS: Martinique, *Duss* 1293.

TRINIDAD: Icacos, *Hitchcock* 10158.

CURAÇAO: Aruba, *Suringar* in 1885.

VENEZUELA: Paparo, *Pittier* 6347.

COLOMBIA: Santa Marta, *Smith* 151.

### 6. *Panicum paludivagum* Hitchc. & Chase.

*Panicum paludivagum* Hitchc. & Chase, *Contr. U. S. Nat. Herb.* 15: 32. 1910.



FIG. 16.—Distribution of *P. paludivagum*.

#### DISTRIBUTION.

Fresh-water lakes and rivers, the base submerged, Florida and Texas, Mexico, Central America to Uruguay. The type specimen from Florida.

JALISCO: Guadalajara, *Palmer* 429 in 1886, *Hitchcock* 7294. Orozco, *Hitchcock* 7374.

MICHOACÁN: Lake Pátzcuaro, *Pringle* 3336. Zamora Valley, *Pringle* 9556. Morelia, *Arsène* in 1909.

GUATEMALA: Amatitlán, *Kellerman* 6253, 6254, *Pittier* 101, *Türckheim* 8790.

### 7. *Panicum barbinode* Trin.

*Panicum barbinode* Trin. *Mém. Acad. St. Pétersb. VI. Sci. Nat.* 1: 256. 1834; *Contr. U. S. Nat. Herb.* 15: 33. 1910.

Commercially known as "Pará grass"; called "malajilla" in Porto Rico.

#### DISTRIBUTION.

Cultivated and waste ground, especially in moist places, tropical America, extending into southern Florida and Texas; introduced in the warmer parts of the Old World. The type specimen from Bahia, Brazil.

LOWER CALIFORNIA: San José del Cabo, *Brandege* 46. La Paz, *Palmer* 131 in 1890.

CÓLIMA: Paso del Río, *Emrick* 8. Manzanilla, *Palmer* 1078.

MÉXICO: Cuantla, *Holway* 3045.

VERACRUZ: Veracruz, *Amer. Gr. Nat. Herb.* 4.<sup>1</sup>

OAXACA: Tomellín, *Hitchcock* 6227.

YUCATÁN: Mérida, *Collins* 27.

GUATEMALA: Mazatenango, *Maxon & Hay* 3476. Cubilquitz, *Türckheim* 7799, 8617. Escuintla, *Hitchcock* 9007.

SALVADOR: Without locality, *Renson* 214.

NICARAGUA: Jinotepe, *Hitchcock* 8701. Chinandega, *Baker* 2053.

COSTA RICA: Térraba, *Pittier* 412, 4090. Río Tuís, *Tonduz* 11393. Puntarenas, *Hitchcock* 8545. Taboga, Guanacaste, *Jiménez* 722. Turrialba, *Tonduz* 8401.

<sup>1</sup> American Grasses, exsiccatae distributed from the U. S. National Herbarium, Smithsonian Institution.



PANAMÁ: El Boquete, *Hitchcock* 8266. Gatun Lake, *Pittier* 2559, *Hitchcock* 8031. Pedro Miguel, *Hitchcock* 7931. Chepo, *Pittier* 4734. Culebra, *Pittier* 4807.

BAHAMAS: Nassau, *Curtiss* 115.

CUBA: Near Habana, *León* 568. Camaguey, *Shafer* 2881. Romelie, *Eggers* 4870. Cienfuegos, *Pringle* 26. Almendares River, *León* 283. Without locality, *Wright* 1545.

JAMAICA: Hope Gardens, *Harris* 11254, 10930. Mount Hybla, *Harris* 11565. Newcastle, *Hitchcock* 9339. Black River, *Hitchcock* 9580. Montego Bay, *Hitchcock* 9693.

PORTO RICO: Bayamon, *Hioram* 360, *Millsbaugh* 324, *Heller* 100. Aibonito, *Goll* 613. Playa de Fajardo, *Chase* 6657. Guanica, *Chase* 6528, *Millsbaugh* 727. Yauco, *Heller* 6293. Los Mameyes, *Eggers* 1328. Vieques, *Chase* 6679. Mona, *Hess* 450.

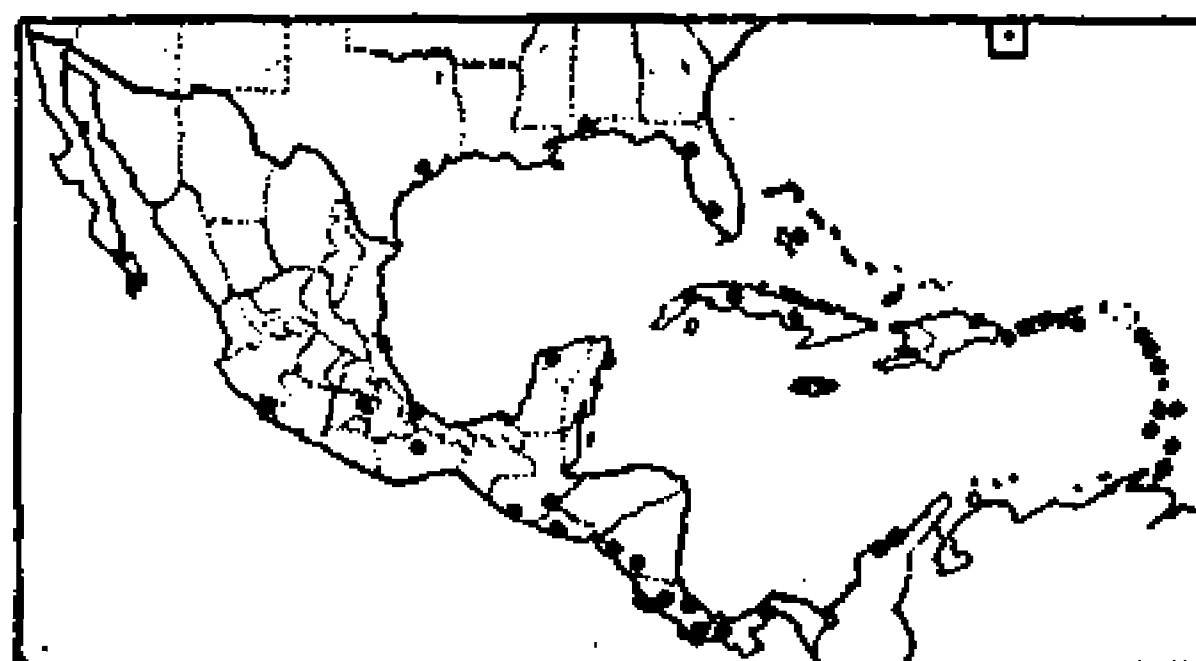


FIG. 17.—Distribution of *P. barbinode*.

DANISH WEST INDIES: St. Croix, *Ricksecker* 300.

LEEWARD ISLANDS: Guadeloupe, *Duss* 2689, *L'Herminier*. Dominica, *Eggers* 1030 (K. U. Herb.).

WINDWARD ISLANDS: Martinique, *Duss* 539. Grenada, *Buckmire* 1423, *Broadway* in 1904 and in 1905. St. Vincent, *Eggers* 6834 (K. U. Herb.). Barbados, *Eggers* 7079 (K. U. Herb.).

TRINIDAD: Port of Spain, *Hitchcock* 9941, 10044.

TOBAGO: Scarborough, *Hitchcock* 10204.

CURAÇAO: Santa Cruz, *Britton & Shafer* 3012.

COLOMBIA: Cartagena, *Hitchcock* 9901. Santa Marta, *Smith* 211. Without locality, *Lehmann* 5744.

FASCICULATA.

- Spikelets 5 to 6 mm. long..... 13. *P. texanum*.
- Spikelets 2 to 4 mm. long.
  - Spikelets strongly reticulate-veined, 2 to 3 mm. long; glabrous.
    - Panicle branches long and spreading; blades pubescent or glabrous..... 9. *P. fasciculatum*.
    - Panicle branches short, appressed; blades narrow, pubescent..... 9a. *P. fasciculatum reticulatum*.
  - Spikelets scarcely reticulate-veined or only near the apex.
    - Spikelets not over 2 mm. long, glabrous..... 8. *P. reptans*.
    - Spikelets over 3 mm. long, pubescent.
      - Rachis scabrous but not bristly ..... 11. *P. adpersum*.
      - Rachis pilose with bristly hairs.
        - Plant more or less velvety; sheaths not papillose. 10. *P. molle*.
        - Plant not velvety; sheaths papillose ..... 12. *P. arizonicum*.

8. *Panicum reptans* L.

*Panicum reptans* L. Syst. Nat. ed. 10. 2: 870. 1759; Contr. U. S. Nat. Herb. 15: 36. 1910

DISTRIBUTION.

Open ground at low altitudes especially near the coast, frequently a weed in waste places and cultivated soil, Gulf Coast of the United States and Atlantic slope of

Mexico through the West Indies to northern South America; also introduced in the warm regions of the Eastern Hemisphere. The type specimen from Jamaica.

TAMAULIPAS: Tampico, *Palmer* 153 in 1910.

VERACRUZ: Baños del Carrizal, *Purpus* 6213.

OAXACA: Tomellín, *Hitchcock* 6231. Cuicatlán, *Nelson* 1622.

CUBA: Habana, *Curtiss* 691, *Hitchcock* 146, *León* 3474. Habana Vedado, *León* 276, 292, 297, 566. Habana Vibora, *León* 906, 910c. El Caño, *León* 1980. Baracoa, *Shafer* 3955, *Palmer*, *Pollard & Palmer* 19. Buenaventura, *Wilson* 9243, 9399. Río Almendares, *Wilson* 9187. Cojimar, *Britton*, *Earle & Gager* 6295. Valley of Bacuranao River, *León & Wilson* 2869. Cienfuegos, *Pringle* 73. Herradura, *Tracy* 9103. San Antonio, *Hitchcock* 145. Madruga, *Curtiss* 536. Arroyo Apolo, *León* 576. La Magdalena, *Earle & Baker* 2455. Santiago de Cuba, *León* 910. Guayabal, *León* 910b. Guantánamo Bay, *Britton* 1933, 2245. Romelie, *Eggers* 5346. Without locality, *Wright* 762, 763, 3857.

JAMAICA: Prospect, *Harris* 11539. Black River, *Hitchcock* 9631. Montego Bay, *Hitchcock* 9689. Hope, *Harris* 6845. Gordon Town, *Hart* 838.



FIG. 18.—Distribution of *P. reptans*.

HART: Without locality, *Picarda* 1246 (K. U. Herb.).

SANTO DOMINGO: Rincón, *Fuertes* 1377, 1417. San Pedro de Macoris, *Rose, Fitch & Russell* 4171.

PORTO RICO: Guanica, *Chase* 6515, *Millsbaugh* 726, *Sintenis* 3368. Bayamon, *Chase* 6395. Joyuda, *Chase* 6305. Ponce, *Heller* 497,

*Chase* 6326. Cabo Rojo, *Sintenis* 847. Coamo Springs, *Goll* 662. Fajardo, *Chase* 6664. Vieques, *Chase* 6700.

DANISH WEST INDIES: St. Croix, *Ricksecker* 77. St. Thomas, *Eggers* 293.

LEEWARD ISLANDS: Antigua, *Wulschlaegel* 617. Guadeloupe, *Duss* 3529. St. Martin, *Boldingh* 3383 (K. U. Herb.).

WINDWARD ISLANDS: Martinique, *Duss* 1290. Grenada, *Broadway* 721. Bequia, *Smith & Smith* 19, 370 (K. U. Herb.). Barbados, *Eggers* 7081 (K. U. Herb.). *Bot. Sta. Herb.* 538.

TOBAGO: Scarborough, *Hitchcock* 10212.

CURACAO: Santa Cruz, *Britton & Shafer* 2987, 3002.

VENEZUELA: El Valle, Island of Margarita, *Miller & Johnston* 171.

COLOMBIA: Santa Marta, *Smith* 173, 2753. Cartagena, *Hitchcock* 9907. Puerto de Colombia, *Hitchcock* 9936.

### 9. *Panicum fasciculatum* Swartz.

*Panicum fasciculatum* Swartz, Prodr. Veg. Ind. Occ. 22. 1788; Contr. U. S. Nat. Herb. 15: 38. 1910.

*Panicum chartaginense* Swartz, Prodr. Veg. Ind. Occ. 22. 1788; Contr. U. S. Nat. Herb. 15: 40. 1910. "America meridionalis chartagena." A reconsideration of Swartz's type in the light of recent collections from the region whence it came leads to the conclusion that it is referable to *Panicum fasciculatum* rather than to the narrow-panicked form confined to the semiarid southwestern United States and Mexico, which was described by Torrey as *P. reticulatum*.

## DISTRIBUTION.

Moist open ground, often a weed in fields and waste places, southern Florida and Texas, through Mexico and the West Indies to central South America. The type specimen from Jamaica.

SONORA: Hermosillo, *Hitchcock* 3598. Imeris to Santa Ana, *Griffiths* 6857. Alamos, *Palmer* 694 in 1890. Guaymas, *Palmer* 158 and 207 in 1887.

CHIHUAHUA: Norogachi, *Palmer* 1a in 1885.

SINALOA: Rosario, *Rose* 1834, 1884. Topolobampo, *Palmer* 241 in 1897. Culiacán, *Palmer* 1557 in 1891.

SAN LUIS POTOSÍ: Rascón, *Purpus* 5418. Cárdenas, *Hitchcock* 5728.

QUERÉTARO: Querétaro, *Hitchcock* 5838.

COLIMA: Jala, *Hitchcock* 7011. Alzada, *Hitchcock* 7097, 7106. Without locality, *Palmer* 19 in 1897.

VERACRUZ: Misantla, *Purpus* 5979. Córdoba, *Finck* in 1893, *Hitchcock* 6448.

Baños del Carrizal, *Purpus* 6218. Santa María Tlatetla, *Liebmann* 279.

OAXACA: Tomellín, *Rose*, *Painter & Rose* 10077, *Hitchcock* 6214. Totalcingo, *Liebmann* 277.

CHIAPAS: Vicinity of Topana, *Nelson* 2874. Between San Ricardo and Ocozucuantla, *Nelson* 2958.

YUCATÁN: Mérida, *Schott* 384.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 317 (Gray Herb.).

GUATEMALA: Nenton, *Seler* 2704.

Gualán, *Deam* 6267. Finca

Trece Aguas, *Goll* 81. Chic-

arao, *Heyde & Lux* 6404. Es-

cuintla, *Smith* 2233.

HONDURAS: San Pedro Sula, *Thieme* 195, 5584. Highland Creek, *Wilson* 644.

SALVADOR: La Unión, *Hitchcock* 8778.

NICARAGUA: Jinotepe, *Hitchcock* 8670. Masaya, *Hitchcock* 8663. Without locality, *Flint* in 1868.

COSTA RICA: Puerto Viejo, *Biolley* 7471. Nuestro Amo, Alajuela, *Jiménez* 525.

Hacienda la Estrella, *Tonduz* 190. Puntarenas, *Hitchcock* 8552. Puerto de

Río Grande, *Pittier* 2035. Nicoya, *Tonduz* 13749. Matina, *Pittier* 9727.

PANAMA: Laguna de Chiriquí, *Hart* 78. Taboga Island, *Pittier* 3626, *Hitchcock*

8076, 8079. Gatun, *Hitchcock* 9185. Toro Point, *Hitchcock* 8057. Culebra,

*Hitchcock* 7908, 7932, *Pittier* 2117. David, *Hitchcock* 8358. Porto Bello,

*Pittier* 2478. Puerto Obaldía, *Pittier* 4375. Empire, *Pittier* 3718. Las

Cascadas, *Pittier* 3743. Chepo, *Pittier* 4695. La Sabana de Panama, *Gervais* 165.

CUBA: Hoyo Colorado, *León* 573. Herradura, *Tracy* 9091. Cienfuegos, *Pringle*

74, 124. San Antonio, *Eggers* 4875. Santiago de Cuba, *León* 813. Banao

Hills, *León* 3966. Sancti Spiritus, *León* 916. Sierra de Anafe, *León* 1979.

Santiago de las Vegas, *Wilson* 593. Without locality, *Wright* 754.

JAMAICA: Gordon Town, *Hart* 785, 840, *Harris* 11345, 11400. Bath, *Maxon* 2361.

Hope Gardens, *Maxon* 1659, *Harris* 11252, 11255, *Hitchcock* 9312, *Amer. Gr.*

*Nat. Herb.* 5. Flamstead, *Harris* 11470. Ferry River, *Harris* 11324,

*Hitchcock* 9747. Montego Bay, *Hitchcock* 9682. Savanna-la-Mar, *Hitchcock*

9870. Above Constant Spring, *Hitchcock* 9259. Ewarton to Linstead,

*Hitchcock* 9411. Without locality, *Lloyd* 1116, *Wilson* 322.

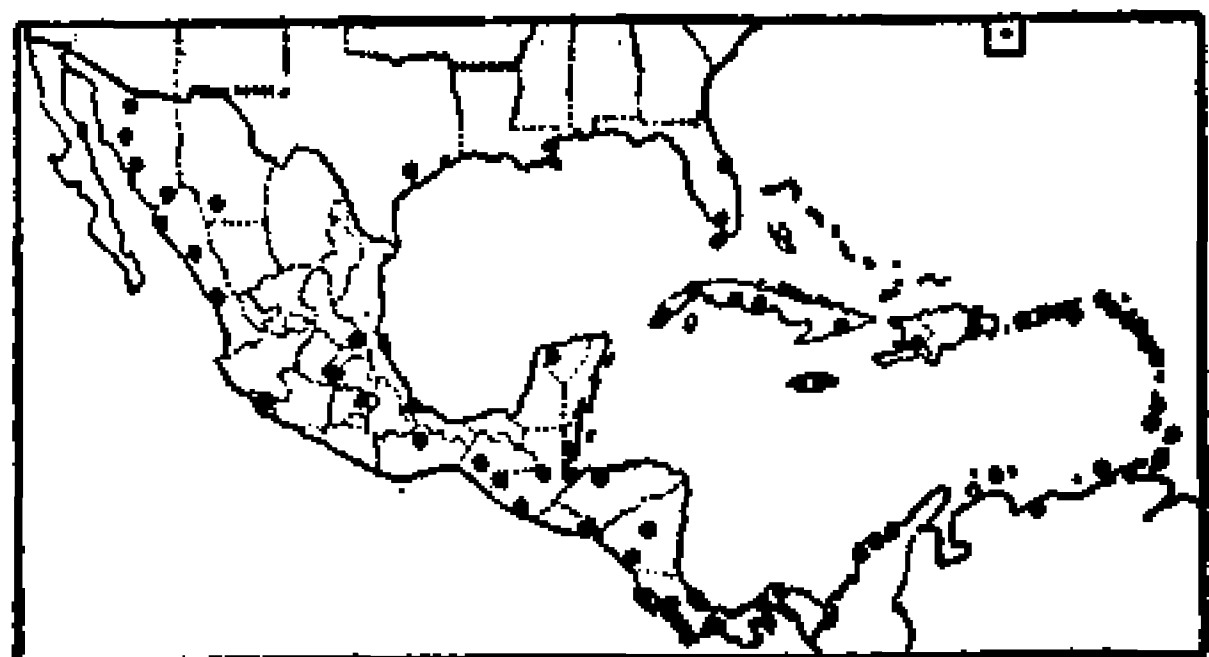


FIG. 19.—Distribution of *P. fasciculatum*.

HAITI: Labrante, *Buch* 48. Without locality, *Picarda* 409, *Christ* 2144. (All in K. U. Herb.).

SANTO DOMINGO: San Pedro de Macoris, *Rose, Fitch & Russell* 4440, 4174.

PORTO RICO: Aibonito, *Underwood & Griggs* 462. Monte Goyo, *Sintenis* 1901. Guanica, *Sintenis* 3647, *Chase* 6523. Rio Piedras, *Barrett* 63, *Heller* 135. Ponce, *Heller* 6226, 6302. Caguas, *Goll* 385. Guayama Road, *Goll* 588. Aguadilla, *Heller* 4528. Maricao, *Chase* 6197. Coamo Springs, *Chase* 6542. Bayamon, *Chase* 6376, *Hioram* 316. Mayaguez, *Chase* 6263. Sierra Luquillo, *Hioram* 357. Culebra, *Britton & Wheeler* 137. Vieques, *Chase* 6693. Without locality, *Fisher* 59, *Underwood & Griggs* 824.

DANISH WEST INDIES: St. Thomas, *Eggers* in 1880 and in 1882. St. Croix, *Ricksecker* 317.

LEEWARD ISLANDS: Guadeloupe, *Duss* 2691, *L'Herminier*. Montserrat, *Shafer* 584. St. Kitts, *Britton & Cowell* 269 (K. U. Herb.). Dominica, *Duss* (K. U. Herb.).

WINDWARD ISLANDS: Martinique, *Duss* 537, 538, *Hahn* in 1867-70. Grenada, *Broadway* in 1905. St. Vincent, *Smith & Smith* 565 (K. U. Herb.).

TRINIDAD: St. Joseph, *Hitchcock* 10014. Port of Spain, *Hitchcock* 9976. Without locality, *Bot. Gard. Herb.*<sup>1</sup> 2283, 3192.

TOBAGO: Mount Marie, *Broadway* 3977. Rockley Vale, *Broadway* 4630. Scarborough, *Hitchcock* 10216.

CURAÇAO: Santa Catherina, *Britton & Shafer* 3145. Bonaire, *Suringar* in 1885 (K. U. Herb.).

VENEZUELA: Paparo, *Pittier* 6336. Island of Margarita, *Miller & Johnston* 180.

COLOMBIA: Puerto de Colombia, *Hitchcock* 9934. Río Frío, State of Magdalena, *Pittier* 1610. Cartagena, *Hitchcock* 9911. Santa Marta, *Smith* 131, 208.

#### 9a. *Panicum fasciculatum reticulatum* (Torr.) Beal.

*Panicum reticulatum* Torr. in Marcy, Expl. Red Riv. 299. 1852.

*Panicum fasciculatum reticulatum* Beal, Grasses N. Amer. 2: 117. 1896.

For further treatment see Contr. U. S. Nat. Herb. 15: 40. 1910 (where this is included under *P. fasciculatum chartaginense* (Swartz) Doell); see also discussion under *P. fasciculatum*.

#### DISTRIBUTION.

Prairies, fields, and waste grounds, Texas to Arizona and southern Mexico. The type specimen from Texas.

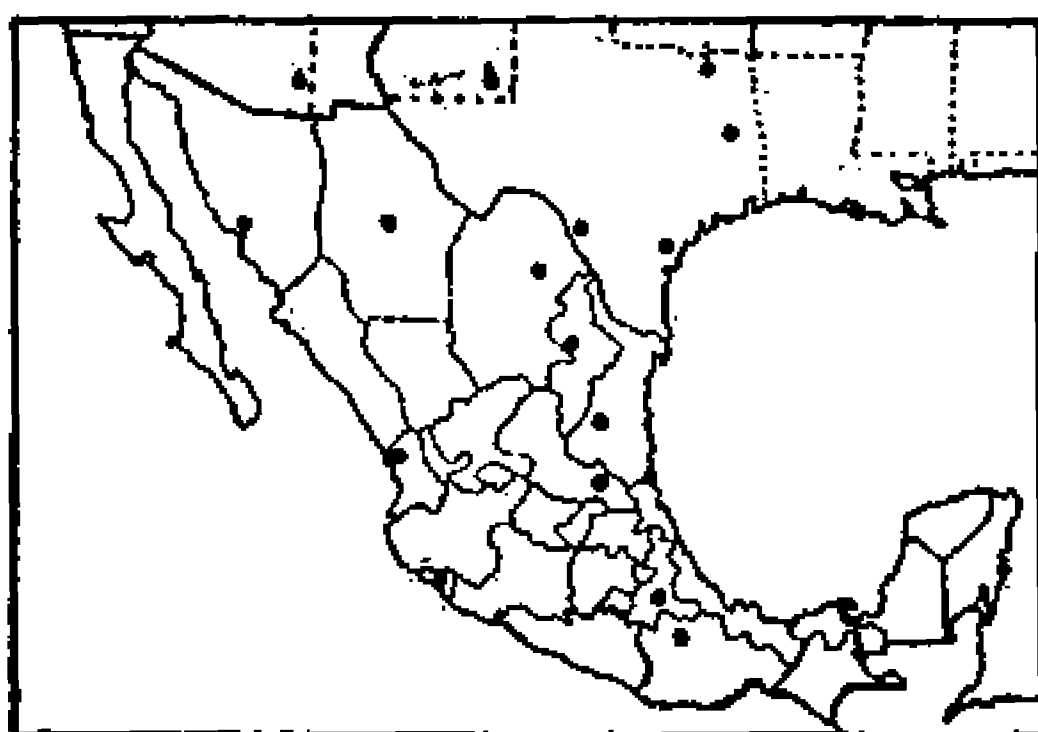


FIG. 20.—Distribution of *P. fasciculatum reticulatum*.

SONORA: Guaymas, *Hitchcock* 3561.

CHIHUAHUA: Chihuahua, *Pringle* 379, 380.

COAHUILA: Sabinas, *Nelson* 6818.

NUEVO LEÓN: Monterrey, *Hitchcock* 5535, 5541.

TAMAULIPAS: Victoria, *Palmer* 412 in 1907.

TEPIC: Acajoneta, *Rose, Standley & Russell* 14265.

SAN LUIS POTOSÍ: San Dieguito, *Palmer* 152 in 1904.

COLIMA: Manzanillo, *Hitchcock* 7029.

PUEBLA: Tehuacán, *Hitchcock* 6050.

OAXACA: Ignacia Mejía, *Hitchcock* 6115. Tomellín, *Hitchcock* 6195.

<sup>1</sup>Herbarium of the Botanical Garden, Trinidad. Many specimens are without data other than the number.

10. *Panicum molle* Swartz.

*Panicum molle* Swartz, Prodr. Veg. Ind. Occ. 22. 1788; Contr. U. S. Nat. Herb. 15: 42. 1910.

DISTRIBUTION.

Open ground, often a weed in fields, Cuba, Jamaica, Mexico, and Central America to Argentina. The type from the West Indies, probably Jamaica. Since at the time the revision of *Panicum*<sup>1</sup> was prepared we had no specimens of the species from the West Indies, we doubted the accuracy of the locality given by Swartz. This species proves, however, to be not uncommon in the vicinity of Kingston, Jamaica.

SINALOA: Lodiago, *Palmer* 1660 in 1891.

COLIMA: Manzanillo, *Amer. Gr. Nat. Herb.* 7. Alzada, *Hitchcock* 7107. Colima, *Palmer* 149 in 1897.

VERACRUZ: Without locality, *Galeotti* 5710.

GUERRERO: Balsas, *Hitchcock* 6813.

OAXACA: Tomellín, *Hitchcock* 6205, 6229.

GUATEMALA: Agua Caliente, *Deam* 6143.

SALVADOR: San Salvador, *Hitchcock* 8860.

COSTA RICA: Puntarenas, *Hitchcock* 8585.

PANAMA: Point Chamé, *Amer. Gr. Nat. Herb.* 8. Taboga Island, *Hitchcock* 8067.

CUBA: Without locality, *Reed*.

JAMAICA: Kingston, *Alexander* in 1849, *Hitchcock* in 1890. Gordon Town, *Harris* 11504, *Hitchcock* 9323. St. Andrew, *Harris* 11483. Healthshire Hills, *Hitchcock* 9758. Hope Gardens, *Amer. Gr. Nat. Herb.* 9.

CURAÇAO: Santa Cruz, *Britton & Shafer* 2986, 3004. Aruba, *Suringar* in 1885. (K. U. Herb.)

COLOMBIA: Santa Marta, *Smith* 209. Cartagena, *Hitchcock* 9922. Puerto de Colombia, *Hitchcock* 9940.



FIG. 21.—Distribution of *P. molle*.

11. *Panicum adpersum* Trin.

*Panicum adpersum* Trin. Gram. Pan. 146. 1826; Contr. U. S. Nat. Herb. 15: 43. 1910.

DISTRIBUTION.

Moist open ground, Florida and the West Indies. The type specimen from Santo Domingo.

BAHAMAS: Nassau, *Curtiss* 113. Anguilla Isles, *Wilson* 8066.

CUBA: Habana Vedado, *León* 291, 1978. Habana, *León* 570, *Curtiss* 748. Santiago de las Vegas, *Baker & Wilson* 512, *Tracy* 9109, *Hitchcock* 147, 148. Tricornia, *Hitchcock* 159. Cabanas, *Palmer & Riley* 746, 771. Herradura, *Tracy* 9102. Sancti Spiritus, *León* 925. Guines, *León* 924. Zaza del Sur, *Sergius* 2776. Without locality, *Wright* 3869.



FIG. 22.—Distribution of *P. adpersum*.

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 42. 1910.

JAMAICA: Black River, *Hitchcock* 9630. Hope Gardens, *Amer. Gr. Nat. Herb.* 10, 11, *Harris* 11247. Kingston, *Hitchcock* 9750. Alligator Pond, *Hitchcock* 9830. Gordon Town, *Harris* 11343, 11512. Yallahs Valley, *Harris* 11498.

HAITI: Gonaïves, *Buch* 23.

SANTO DOMINGO: Barahona, *Fuertes* 43.

PORTO RICO: Between Coamo and Aibonito, *Sintenis* 1957, *Chase* 6333. Joyuda, *Chase* 6302. Guanica, *Chase* 6514. Mayaguez, *Chase* 6286. Bayamon, *Hioram* 315. Viequea, *Chase* 6686.

DANISH WEST INDIES: St. Croix, *Eggers* in 1876, *Ricksecker* 66, 384.

LEEWARD ISLANDS: Antigua, *Wulfschlaegel* 615, 616. Guadeloupe, *Duss* 3180. Saba, *Boldingh* 1583 (K. U. Herb.). St. Eustatius, *Suringar* in 1885 (K. U. Herb.). St. Bartholomew, *Goës* (K. U. Herb.).

WINDWARD ISLANDS: *Duss* 537b (K. U. Herb.).

### 12. *Panicum arizonicum* Scribn. & Merr.

*Panicum arizonicum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. 32: 2. 1901; Contr. U. S. Nat. Herb. 15: 44. 1910.

#### DISTRIBUTION.

Open sandy or stony ground, southwestern United States and northern Mexico. The type specimen from Arizona.

LOWER CALIFORNIA: Arroyo San Lazaro, *Brandegee* in 1902. San José del Cabo, *Brandegee* in 1890.

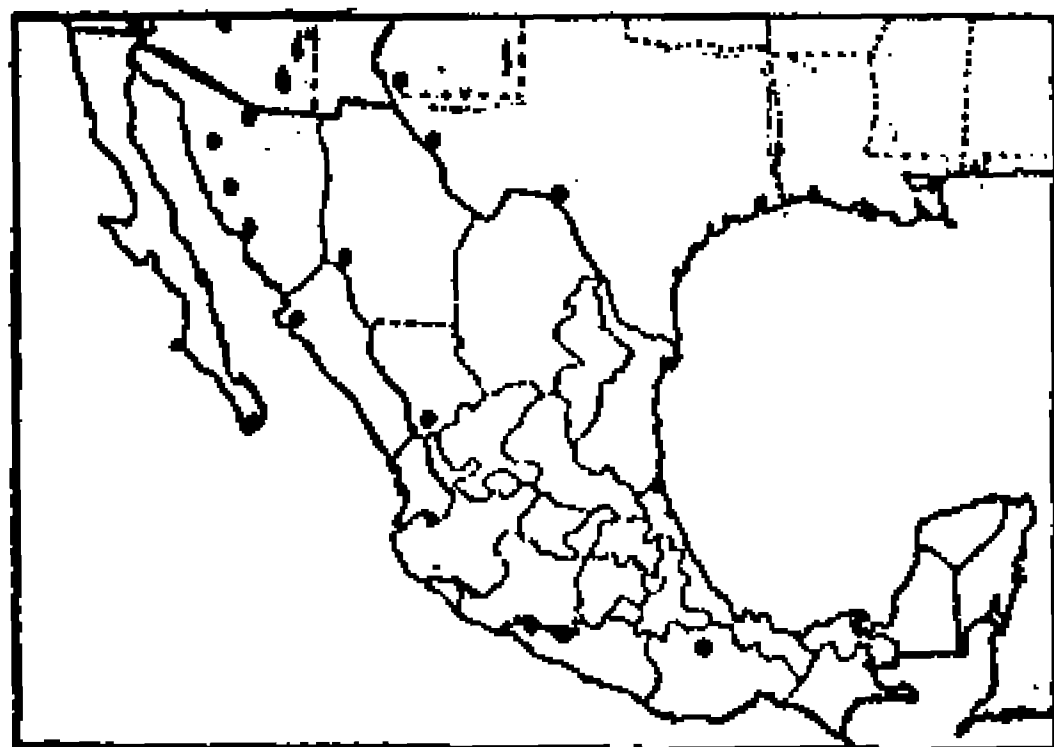


FIG. 23.—Distribution of *P. arizonicum*.

SONORA: Nogales, *Griffiths* 6747, 6759, *Hitchcock* 3637. Lokuka Ranch to Altar, *Griffiths* 6891. Guaymas, *Palmer* 159 and 208 in 1887. *Hitchcock* 3562. Hermosillo, *Hitchcock* 3542.

CHIHUAHUA: Norogachi, *Palmer* 1B in 1885. Chihuahua, *Pringle* 487.

SINALOA: Topolobampo, *Palmer* 250 in 1897.

DURANGO: Without locality, *Rose* 2280.

GUERRERO: Río Balsas, *Orcutt* 4195. Balsas, *Hitchcock* 6775.

OAXACA: Tomellín, *Hitchcock* 6192, *Amer. Gr. Nat. Herb.* 13.

### 13. *Panicum texanum* Buckl.

*Panicum texanum* Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 3. 1866; Contr. U. S. Nat. Herb. 15: 46. 1910.

#### DISTRIBUTION.

Prairies and open ground, often a weed in fields, Texas and northern Mexico. The type specimen from Texas.

NUEVO LEÓN: Monterrey, *Hitchcock* 5540.

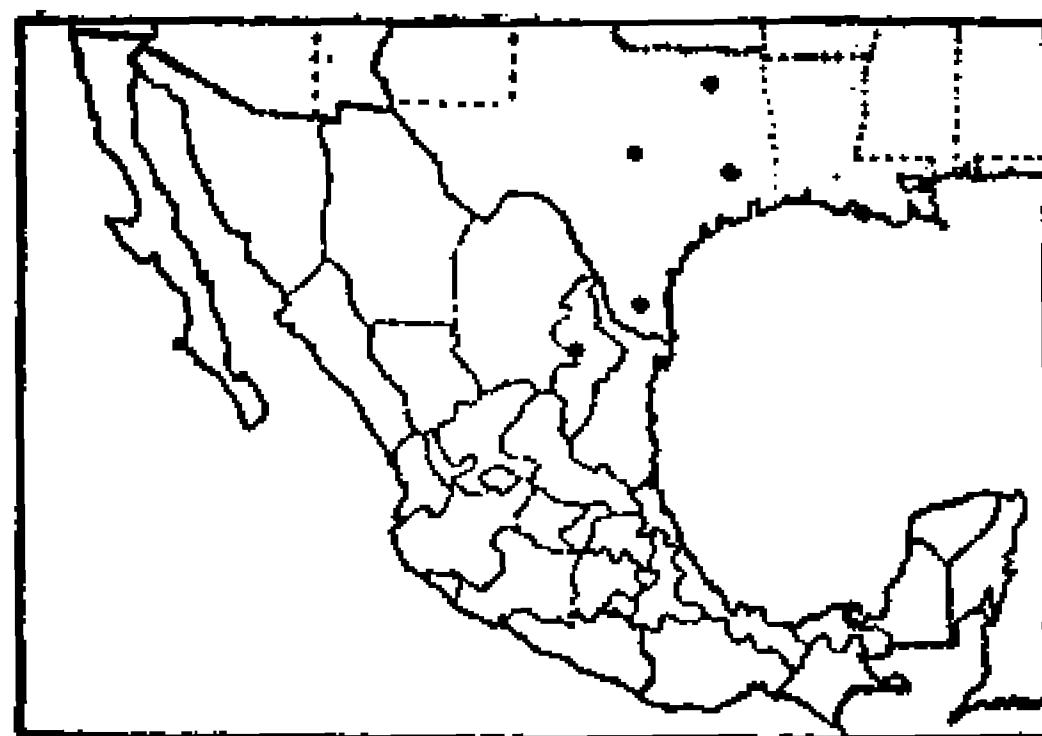


FIG. 24.—Distribution of *P. texanum*.

DICHOTOMIFLORA.

Three species of this group, *Panicum aquaticum*, *P. sucosum*, and *P. elephantipes*, are found to be perennial.

Plants annual.

- Panicles narrow, less than 1 cm. wide..... 14. *P. vaseyanum*.
- Panicles open, the branches ascending or spreading.
- Sheaths glabrous..... 15. *P. dichotomiflorum*.
- Sheaths papillose-hispid..... 16. *P. bartowense*.

Plants perennial.

- Fruit not acuminate; panicles rarely over 18 cm. long... 17. *P. aquaticum*.
- Fruit acuminate; panicles as much as 40 cm. long, rarely less than 20 cm.; culms succulent.
- Spikelets about 3.5 mm. long; fruit abruptly acuminate..... 18. *P. sucosum*.
- Spikelets 4 to 5 mm. long; fruit long-acuminate; culms very succulent..... 19. *P. elephantipes*.

14. *Panicum vaseyanum* Scribn.

*Panicum vaseyanum* Scribn.; Beal, Grasses N. Amer. 2: 140. 1896; Contr. U. S. Nat. Herb. 15: 47. 1910.

DISTRIBUTION.

Moist open ground, around ponds and depressions in prairies, northern Mexico. The type specimen from Chihuahua.

CHIHUAHUA: Base of Sierra Madre, Pringle 1415. Miñaca, Hitchcock 7757.

AGUASCALIENTES: Aguascalientes, Hitchcock 7491, Amer. Gr. Nat. Herb. 15.

JALISCO: Guadalajara, Hitchcock 7315.

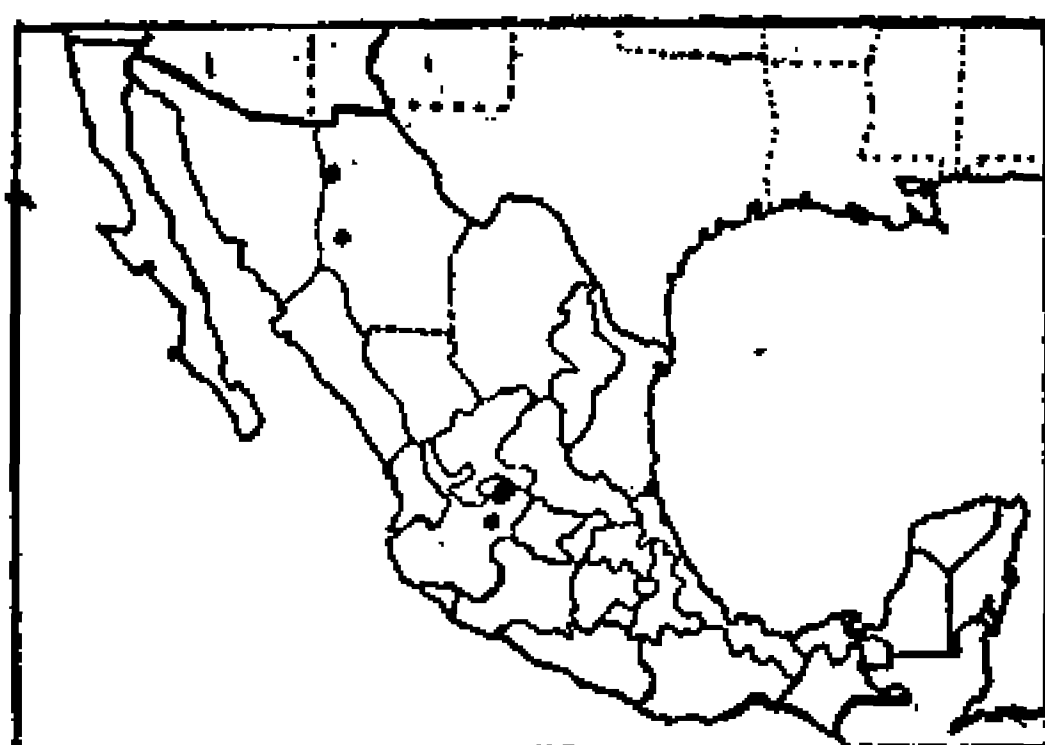


FIG. 25.—Distribution of *P. vaseyanum*.

15. *Panicum dichotomiflorum* Michx.

*Panicum dichotomiflorum* Michx. Fl. Bor. Amer. 1: 48. 1803; Contr. U. S. Nat. Herb. 15: 48. 1910.

The South American *Panicum chloroticum* Nees, included in the Revision in *P. dichotomiflorum*, is a distinct species, or possibly a subspecies. It is not known from north of Brazil.

DISTRIBUTION.

Moist ground along streams and a weed in waste places and in cultivated soil, Maine to Florida and California (rare in the West), and in the West Indies and Panama. The type specimen from the Alleghenies.

PANAMA: Near Chepo, Pittier 4614. Gatun, Hitchcock 7977.

BERMUDA: Hamilton, Millspaugh 126.

BAHAMAS: Hog Island, Eggers 4405, 4512. Watlings, Geogr. Soc. Baltimore 489. Nassau, Curtiss 177. Cat Cay, Brace 3742.

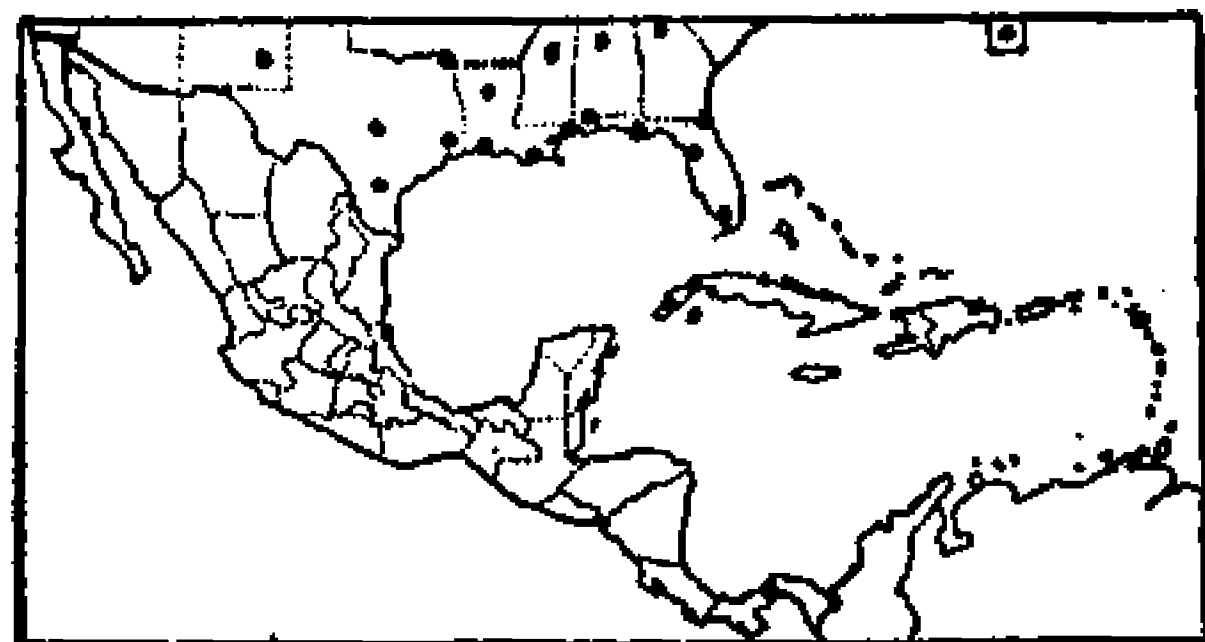


FIG. 26.—Distribution of *P. dichotomiflorum*.



CUBA: Herradura, *Tracy* 9055, 9342, *Britton & Earle* 6566. Ariguanabo, *León* 1975½, 2774, 2775. Santiago de las Vegas, *Hitchcock* 151. Batabanó, *Hitchcock* 150. LEEWARD ISLANDS: Guadeloupe, *Duss* 3178.

16. *Panicum bartowense* Scribn. & Merr.

*Panicum bartowense* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. 35: 3. 1901; Contr. U. S. Nat. Herb. 15: 52. 1910.

DISTRIBUTION.



FIG. 27.—Distribution of *P. bartowense*.

Low ground, often growing in shallow water, Florida, Bahamas, Cuba, and Jamaica. The type specimen from Bartow, Florida.

BAHAMAS: Great Bahama, *Britton & Millspaugh* 2706. North Bimini, *Brace* 3467 (Field Mus. Herb.).

CUBA: Batabanó, *Hitchcock* 149. Without locality, *Wright* 3860.

JAMAICA: Black River, *Amer. Gr. Nat. Herb.* 18.

17. *Panicum aquaticum* Poir.

*Panicum aquaticum* Poir. in Lam. Encycl. Suppl. 4: 281. 1816. "Cette plante croît à Porto-Ricco; elle m'a été communiquée par M. Ledru." The type is in the Cosson Herbarium. In the Revision<sup>1</sup> this species was included in *P. dichotomiflorum* Michx. Subsequent field study has shown it to be a perennial.

*Panicum chloroticum sylvestre* Nees; Trin. Gram. Pan. 236. 1826; Contr. U. S. Nat. Herb. 15: 48. 1910.

*Panicum hygrophilum* Salzm.; Steud. Syn. Pl. Glum. 1: 71. 1854; Contr. U. S. Nat. Herb. 15: 49. 1910.

*Panicum proliferum strictum* Griseb. Cat. Pl. Cub. 232. 1866; Contr. U. S. Nat. Herb. 15: 49. 1910.

DESCRIPTION.

Plants perennial, mostly aquatic, glabrous except as noted; culms usually decumbent at base, rooting at the nodes, erect branches often arising therefrom, the flowering culms erect, simple or sparingly branching, averaging lower and more slender than in *P. dichotomiflorum*; sheaths usually overlapping, rarely pilose at the junction with the blade; ligule a ring of hairs about 1 mm. long; blades commonly elongated, as much as 25 cm. long, but sometimes 5 to 10 cm. long and abruptly pointed, 5 to 10 mm. wide, linear, acute, occasionally sparsely pilose on the upper surface toward the base; panicles terminal and axillary, short-exserted or included at base, averaging smaller than those of *P. dichotomiflorum*, rarely as much as 20 cm. long, less freely branching and fewer flowered, the branchlets and pedicels smooth or nearly so on the angles; spikelets 3 to 3.4 mm. long, 1 mm. wide, more gradually pointed than those of *P. dichotomiflorum*, the fruit slightly larger and more pointed than in that species.

Herbarium specimens lacking basal parts are difficult to distinguish from *P. dichotomiflorum*.

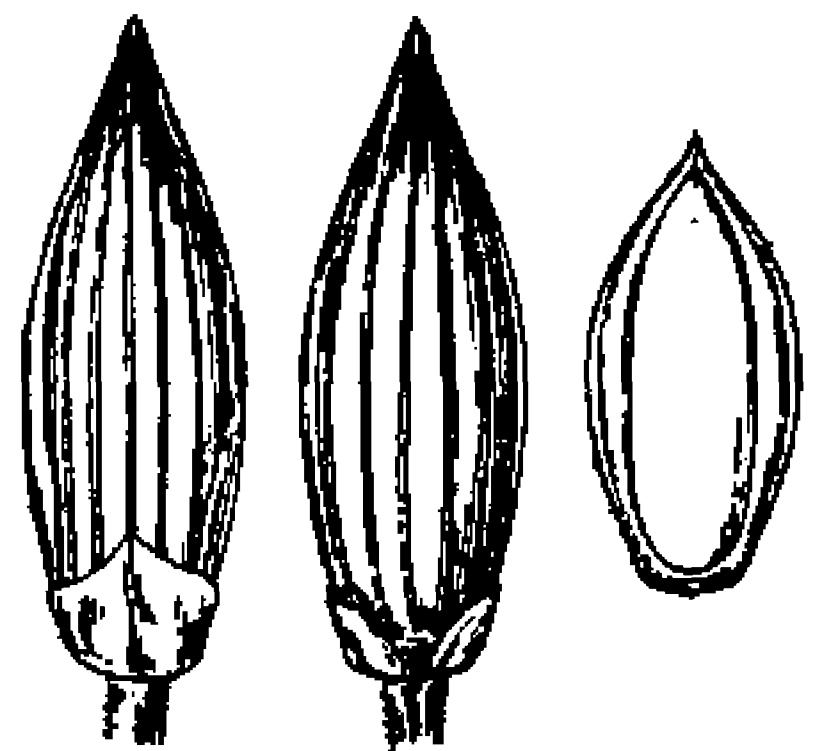


FIG. 28.—*P. aquaticum*. From type specimen.

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 48. 1910.



## DISTRIBUTION.

Wet places or in shallow water, margins of streams and ponds, mostly at low altitudes, Cuba, Porto Rico, and Mexico to Trinidad and Paraguay.

COLIMA: Alzada, *Hitchcock* 7067.

GUATEMALA: Puerto Barrios, *Hitchcock* 9147.

CUBA: Guanabacoa, *León* 919. Ariguanabo, *León* 1975, 1976. Habana, *León* 4155. El Caño, *León* 1974. Laguna Jovero, *Shafer* 10912. Without locality, *Wright* 3456 in part, 3861.

PORTO RICO: Laguna del Tortuguero, *Chase* 6804. Lake Loisa, *Chase* 6778. Alto de Bandera, *Chase* 6471. Utuado, *Britton & Cowell* 432.

LEEWARD ISLANDS: Guadeloupe, *Duss* 3178 (K. U. Herb.).

TRINIDAD: Pitch Lake, *Hitchcock* 10099.



FIG. 29.—Distribution of *P. aquaticum*.

18. *Panicum sucosum* sp. nov.

## DESCRIPTION.

Plants perennial, glabrous throughout except as noted; culms few to several in a tuft, 1 to 1.5 meters long, decumbent at base and rooting at the lower nodes, succulent; sheaths rather loose, about as long as the internodes; ligule a densely ciliate membrane about 1 mm. long; blades flat or somewhat involute in drying, 15 to 30 cm. long, 3 to 9 mm. wide, linear, acuminate, scaberulous on both surfaces, sparsely pilose above toward the base; panicle 15 to 30 cm. long, about half as wide, the axis and branches somewhat scabrous, the branches solitary or in pairs, rather stiffly spreading or finally horizontal, as much as 15 cm. long, naked at base for 1 or 2 cm., the internodes of the rachis mostly 3 to 5 cm. long, the branchlets appressed or ascending, mostly from the lower side; spikelets short-pedicelated, somewhat appressed to the rachis, 3.3 to 3.7 mm. long, about 1 mm. wide, lanceolate, acuminate, glabrous; first glume one-fourth to nearly one-third the length of the spikelet, broadly triangular, usually subacute, 3-nerved; second glume and sterile lemma subequal, exceeding the fruit and pointed beyond it, 7 to 9-nerved; fruit about 2.5 mm. long, 0.7 mm. wide, rather abruptly acuminate.

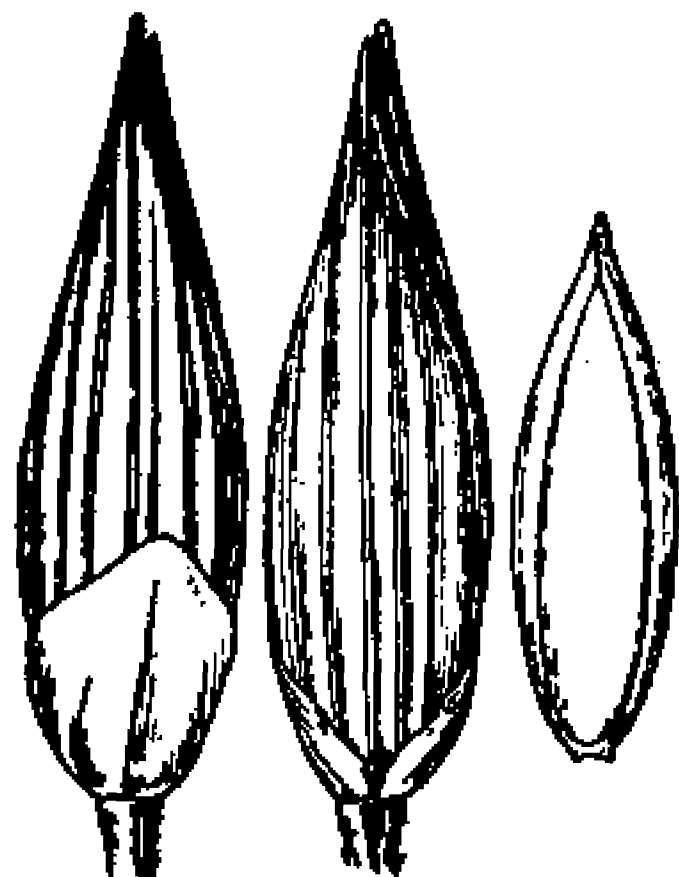


FIG. 30.—*P. sucosum*. From type specimen.

Type in the U. S. National Herbarium, no. 693325, collected in water of a pond at Orozco, near Guadalajara, Jalisco, Mexico, September 29, 1910, by A. S. Hitchcock (no. 7379).

This species, which in the Revision<sup>1</sup> was included in *P. elephantipes*, differs from *P. dichotomiflorum* in being perennial and in having larger spikelets; from *P. aquaticum* in its larger panicle and more pointed spikelets and fruit; from *P. elephantipes* in having smaller, less succulent culms with narrower blades and in having less acuminate fruit.

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 54. 1910.



FIG. 31.—Distribution of *P. sucosum*.

DISTRIBUTION.

In water of ponds at high altitudes, southern Mexico.

JALISCO: Orozco, *Hitchcock* 7379.

MÉXICO: Near Mexico City, *Orcutt* 4269, *Pringle* 6322, 9577, *Bourgeois* 529.

REPUBLIC OF MEXICO: Without locality, *Schaffner* 525

19. *Panicum elephantipes* Nees.

*Panicum elephantipes* Nees, *Agrost. Bras.* 165. 1829; *Contr. U. S. Nat. Herb.* 15: 53. 1910.

Field study has shown that this species is perennial.

DISTRIBUTION.

In ponds and shallow water at low altitudes, West Indies and Guatemala, south to Argentina. The type specimen from Brazil.

GUATEMALA: Nearmouth of Río Polochic, Alta Verapaz, *Goll* 35A.

CUBA: San Antonio, *Hitchcock* 152. Almendares River, *León* 335.

JAMAICA: Middle Quarters, on Black River, *Amer. Gr. Nat. Herb.* 19. Savanna-la-Mar, *Hitchcock* 9878.

PORTO RICO: Between Cataño and Bayamon, *Chase* 6407. Dorado, *Chase* 6415. Fajardo, *Sintenis* 938.



FIG. 32.—Distribution of *P. elephantipes*.

CAPILLARIA.

- Panicles more or less drooping..... 25. *P. sonorum*.
- Panicles erect.
  - Inflorescence elongated, composed of several approximate, implicate panicles..... 27. *P. cayennense*.
  - Inflorescence not composed of approximate nor implicate panicles.
    - Panicles more than half the length of the entire plant.. 20. *P. capillare*.
    - Panicles not more than one-third the entire height of the plant.
      - First glume about one-third the length of the spikelets, subacute or blunt..... 24. *P. stramineum*.
      - First glume usually more than half the length of the spikelet, acuminate.
        - Spikelets 4.5 to 6 mm. long.
          - Spikelets 6 mm. long, scattered..... 26. *P. parvum*.
          - Spikelets scarcely over 5 mm. long, approximate..... 23. *P. decolorans*.
        - Spikelets not over 4 mm. long.
          - First glume more than three-fourths the length of the spikelet; spikelets 4 mm. long ..... 22. *P. pampinosum*.
          - First glume half to two-thirds the length of the spikelet; spikelets not over 3.3 mm. long..... 21. *P. hirticaule*.

20. *Panicum capillare* L.

*Panicum capillare* L. Sp. Pl. 58. 1753;  
Contr. U. S. Nat. Herb. 15: 60. 1910.

DISTRIBUTION.

Open ground, common in eastern United States, introduced in Bermuda. The type specimen from Virginia.

BERMUDA: North Shore Road,  
*Brown & Britton* 21.



FIG. 33.—Distribution of *P. capillare*.

21. *Panicum hirticaule* Presl.

*Panicum hirticaule* Presl, Rel. Haenk. 1: 308. 1830; Contr. U. S. Nat. Herb. 15: 64. 1910.

DISTRIBUTION.

Rocky or sandy soil, southwestern United States and south through Mexico to South America; also in Haiti. The type specimen from Acapulco, Mexico.

LOWER CALIFORNIA: San José del Cabo, *Brandege* 42. Purísima, *Brandege* in 1889.

SONORA: Nogales, *Hitchcock* 3631, *Griffiths* 6758, 6799. Lokuka Ranch to Altar, *Griffiths* 6892. Llano, *Hitchcock* 3526. Johnstons Ranch, east of San Pedro River, *Merton* 1705. Guaymas, *Hitchcock* 3547, 3553, *Palmer* 208 and 346 in 1887. Alamos, *Palmer* 690, 695, and 750 in 1890. White Water, *Mearns* 2294. Sonora, *Hitchcock* 3541½. Hermosillo, *Hitchcock* 3541, 3573, 3604.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 1b in 1885. Between Casas Grandes and Sabinal, *Nelson* 6355. Sierra Madre, *Nelson* 6297.

SINALOA: Culiacán, *Palmer* 1544, 1545, and 1554 in 1891. Topolobampo, *Palmer* 249 and 251 in 1897.

TEPIC: Between Aguacate and Dolores, *Rose* 3351.

JALISCO: Guadalajara, *Hitchcock* 7357.

GUANAJUATO: Irapuato, *Hitchcock* 7424.

QUERÉTARO: Querétaro, *Hitchcock* 5846.



FIG. 34.—Distribution of *P. hirticaule*.

COLIMA: Alzada, *Hitchcock* 7089, 7096, 7104. Without locality, *Palmer* 14, 143, and 145 in 1897.

VERACRUZ: Baños del Carrizal, *Purpus* 6212.

GUERRERO: Balsas, *Hitchcock* 6773, 6814, 6815. Río Balsas, *Orcutt* 4197.

OAXACA: Tomellín, *Hitchcock* 6248, *Amer. Gr. Nat. Herb.* 28.

SALVADOR: La Unión, *Hitchcock* 8794. West side of Lake Ilopango, *Hitchcock* 8924.

NICARAGUA: Masaya, *Hitchcock* 8654. Without locality, *Flint* in 1868.

COSTA RICA: Atenas, *Hitchcock* 8517.

HAITI: Near the River Artibonite, *Picarda* 1654.

CURAÇAO: *Boldingh* 5379.

COLOMBIA: Puerto de Colombia, *Hitchcock* 9927.

22. *Panicum pampinosum* Hitchc. & Chase.

*Panicum pampinosum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 66. 1910.  
Culms 15 to 40 cm. high, ascending from a decumbent base or widely spreading.

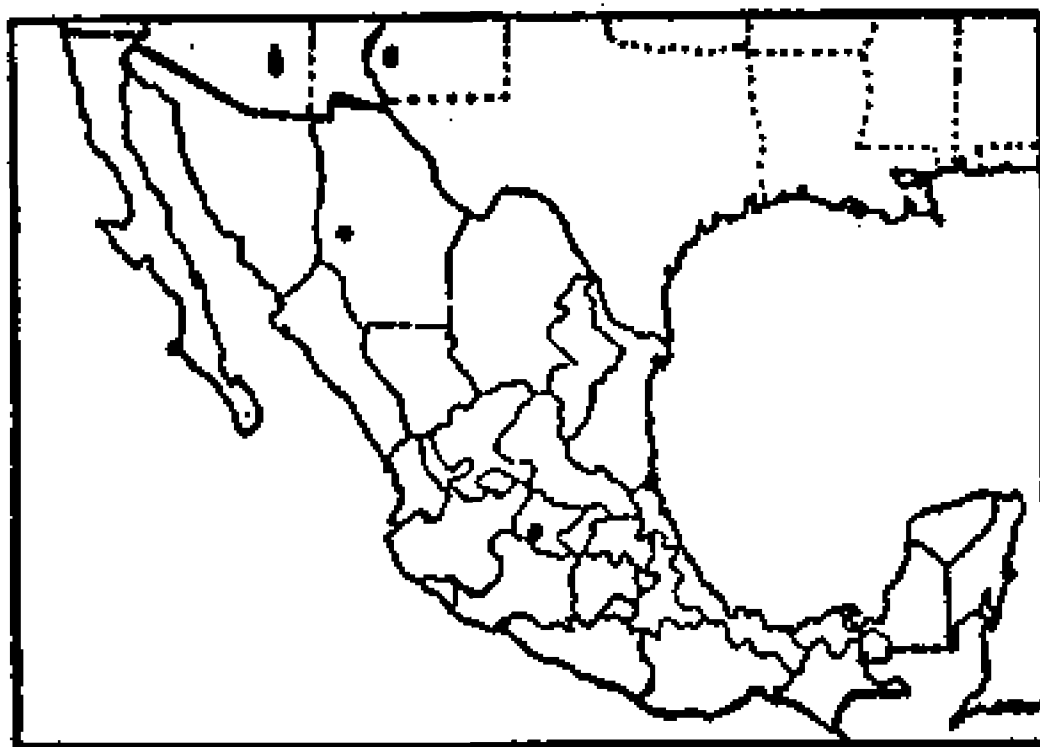


FIG. 35.—Distribution of *P. pampinosum*.

## DISTRIBUTION.

Open ground and depressions in mesas, southwestern United States to central Mexico. The type specimen from Arizona.

CHIHUAHUA: Miñaca, *Hitchcock* 7751, 7756.

GUANAJUATO: Acámbaro, *Hitchcock* 6952.

23. *Panicum decolorans* H. B. K.

*Panicum decolorans* H. B. K. Nov. Gen. & Sp. 1: 100. 1816; Contr. U. S. Nat. Herb. 15: 66. 328. 1910.

## DISTRIBUTION.

Fields and waste ground, central Mexico. The type specimen from Querétaro.

SAN LUIS POTOSÍ: Cárdenas, *Amer. Gr. Nat. Herb.* 29.

QUERÉTARO: Querétaro, *Basile* 51, 52, *Hitchcock* 5822, 5864.

PUEBLA: Tehuacán, *Hitchcock* 6057.



FIG. 36.—Distribution of *P. decolorans*.

24. *Panicum stramineum* Hitchc. & Chase.

*Panicum stramineum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 67. 1910.

This species was described as having glabrous (or sometimes ciliate) blades. Later collections show that the blades are sometimes sparsely papillose-pilose.

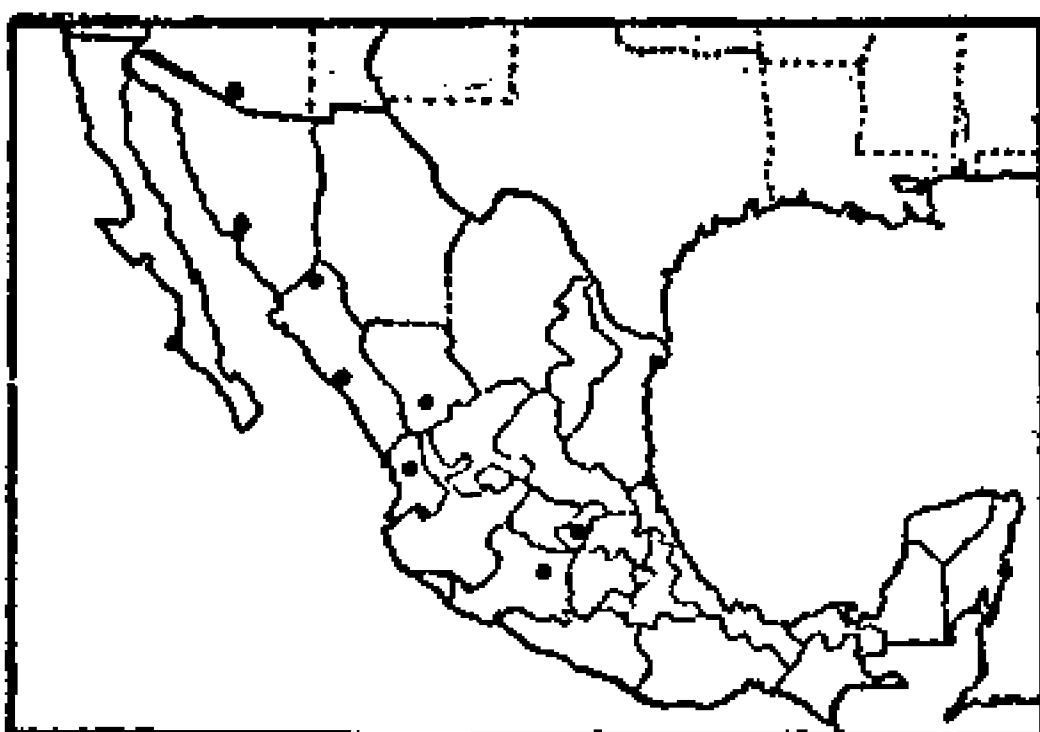


FIG. 37.—Distribution of *P. stramineum*.

## DISTRIBUTION.

Rich bottom lands and damp soil, Arizona to Michoacán. The type specimen from Guaymas.

SONORA: Guaymas, *Palmer* 168a and 206 in 1887.

SINALOA: Culiacán, *Palmer* 1538 in 1891. Between Rosario and Acaponeta, *Rose* 1878, 1883.

DURANGO: Durango, *Hitchcock* 7658.

TEPIC: Between Concepción and Acaponeta, *Rose* 1889. Acaponeta, *Rose* 3281.

MICHOACÁN: Morelia, *Arsène* 60, 2985.

GUERRERO: Lagunillas, *Langlasse* 263.<sup>1</sup>

<sup>1</sup> In the Revision this specimen was doubtfully referred to *P. filipes* Scribn. (Contr. U. S. Nat. Herb. 15: 74. 1910).

25. *Panicum sonorum* Beal.

*Panicum sonorum* Beal, Grasses N. Amer. 2: 130. 1896; Contr. U. S. Nat. Herb. 15: 67. 1910.

DISTRIBUTION.

Rich bottom land, northwestern Mexico. The type specimen from Lerdo.

SONORA: Lerdo, *Palmer* 947 in 1889.

Without locality, *Palmer* in 1885.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 1c in 1885.

SINALOA: Culiacán, *Palmer* 1539 and 1554 in 1891.

CHIAPAS: Between San Ricardo and Ocozucuantla, *Nelson* 2959.

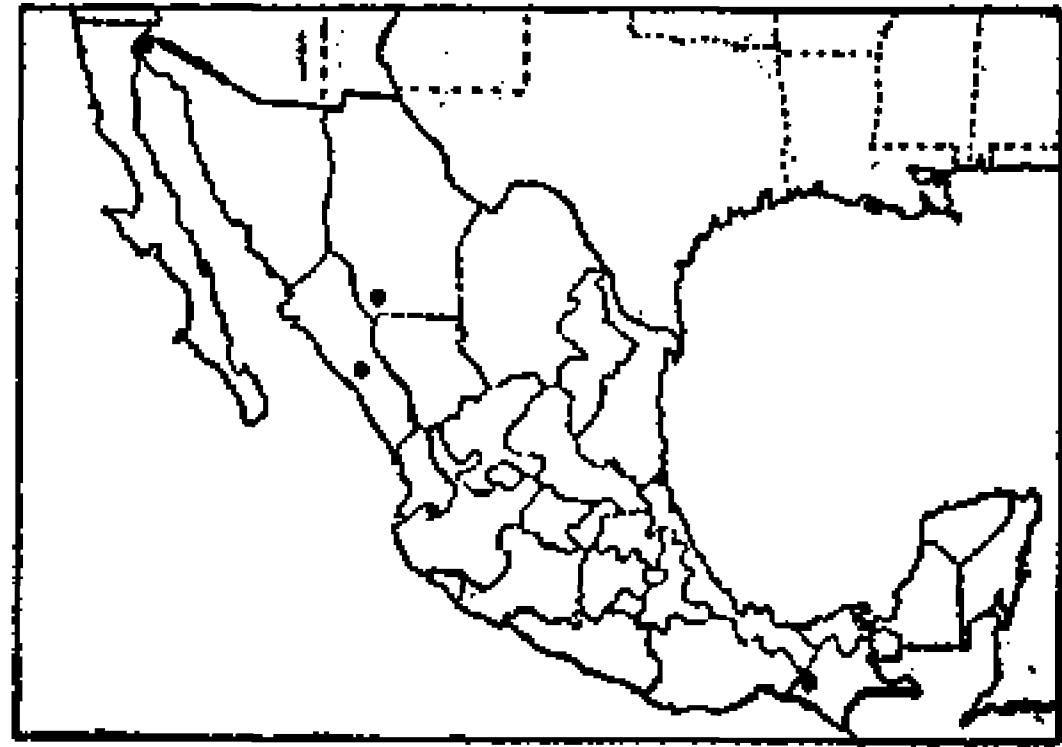


FIG. 38.—Distribution of *P. sonorum*.

26. *Panicum parcum* Hitchc. & Chase.

*Panicum parcum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 68. 1910.

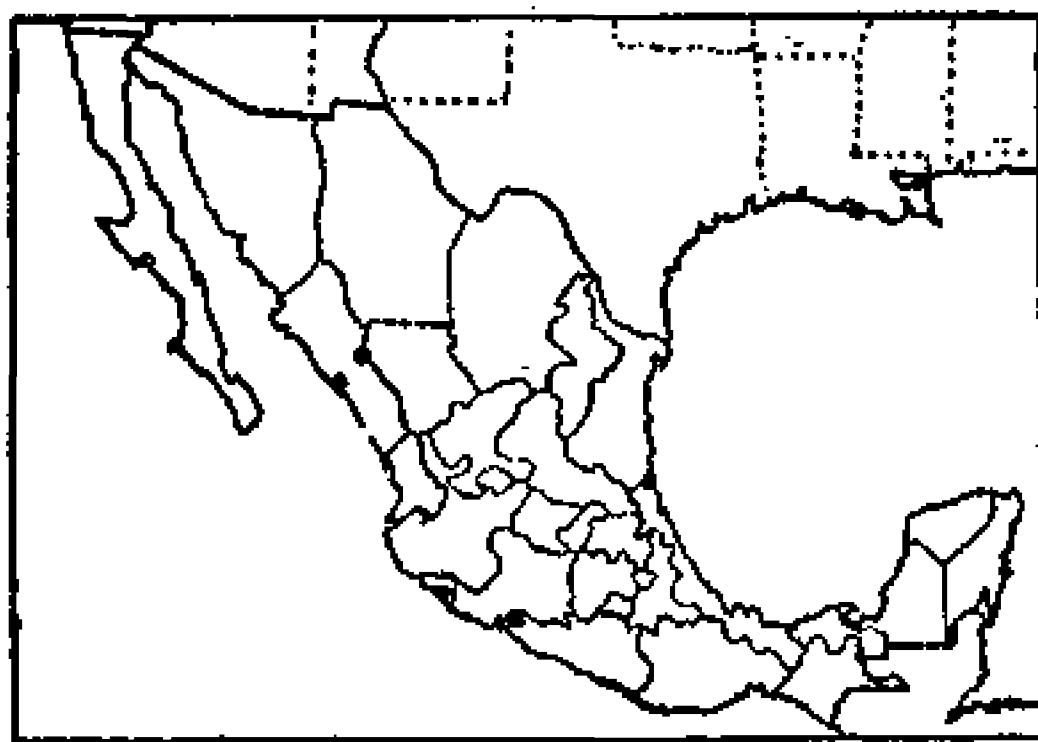


FIG. 39.—Distribution of *P. parcum*.

DISTRIBUTION.

Open rocky soil, Sinaloa to Guerrero. The type specimen from Sinaloa.

SINALOA: Lodiago, *Palmer* 1657. Copradia, *Brandegge* in 1904.

COLIMA: Alzada, *Orcutt* 4687, *Hitchcock* 7081.

GUERRERO: Balsas, *Hitchcock* 6808, 6810, 6811, *Amer. Gr. Nat. Herb.* 30.

27. *Panicum cayennense* Lam.

*Panicum cayennense* Lam. Tabl. Encycl. 1: 173. 1791; Contr. U. S. Nat. Herb. 15: 70. 1910.

DISTRIBUTION.

Open ground and pine woods, Cuba, Costa Rica to Brazil. The type from French Guiana.

COSTA RICA: Buenos Aires, *Tonduz* 3685.

PANAMA: Dolega, *Hitchcock* 8335. David, *Amer. Gr. Nat. Herb.* 31.

CUBA: Isle of Pines, *Curtiss* 267, *Taylor* 34, *Palmer & Riley* 1086. Herradura, *Tracy* 9073, *Britton, Earle & Gager* 6520. Sierra de Cabra, *Britton, Earle & Gager* 7275. Laguna Jovero, *Shafer* 10910. Sumidero, *León & Shafer* 13717. Pinar del Río, *Wright* 3865.

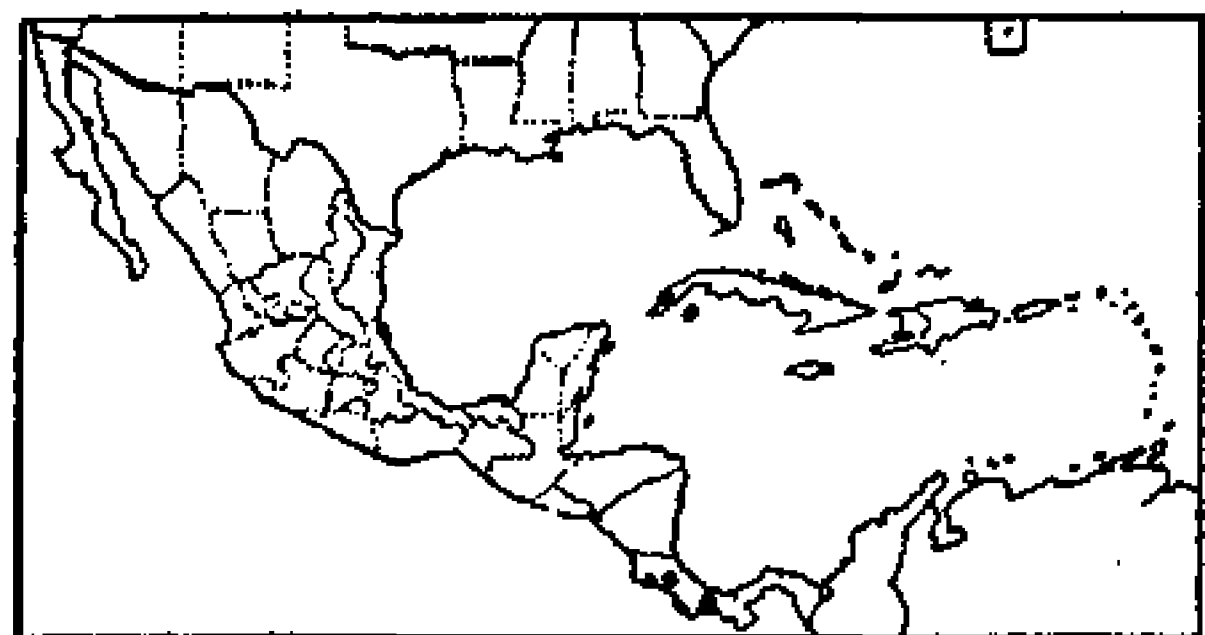
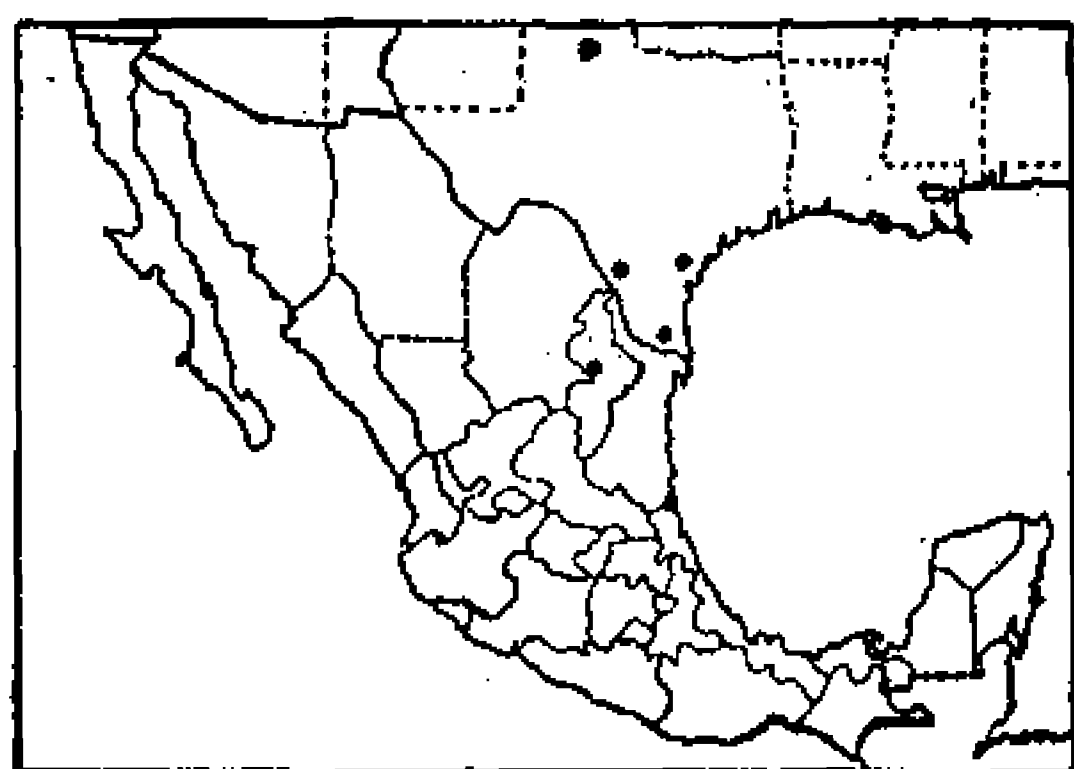


FIG. 40.—Distribution of *P. cayennense*.

## DIFFUSA.

- Second glume and sterile lemma elongated, at least three times as long as the fruit. . . . . 28. *P. capillarioides*.  
 Second glume and sterile lemma not elongated.  
 Culms as much as 1 cm. thick; blades 2 cm. or more wide.. 33. *P. hirsutum*.  
 Culms slender; blades not over 1 cm. wide.  
 Blades 1 to 3 mm. wide; plants spreading or ascending. 29. *P. diffusum*.  
 Blades mostly over 5 mm. wide; plants erect.  
 Spikelets 4 to 4.2 mm. long, the midnerves of glumes and sterile lemma scabrous toward the apex. . . . . 31. *P. lepidulum*.  
 Spikelets usually less than 3.5 mm. long.  
 Blades hirsute on both surfaces (sometimes glabrescent), not at all glaucous. . . . . 32. *P. ghiesbreghtii*.  
 Blades glabrous on both surfaces or with a few hairs on either surface, glaucous above.. 30. *P. hallii*.

FIG. 41.—Distribution of *P. capillarioides*.28. *Panicum capillarioides* Vasey.

*Panicum capillarioides* Vasey in Coulter, Contr. U. S. Nat. Herb. 1: 54. 1890; Contr. U. S. Nat. Herb. 15: 72. 1910.

## DISTRIBUTION.

Prairies, southern Texas and northern Mexico. The type specimen from Texas.

NUEVO LEÓN: Monterrey, Hitchcock 5547.

29. *Panicum diffusum* Swartz.

*Panicum diffusum* Swartz, Prodr. Veg. Ind. Occ. 23. 1788; Contr. U. S. Nat. Herb. 15: 72. 1910.

*Panicum guadalupense* Spreng.; Steud. Nom. Bot. ed. 2. 2: 257. 1841. This is a nomen nudum, ascribed to "Spr. hrb. Trin. mpt. Guadal." In the Krug & Urban Herbarium is a specimen of *Panicum diffusum*, collected by "Bertero, S. Domingo," marked in Sprengel's hand "*Panicum guadalupense*."

## DISTRIBUTION.

Banks, cliffs, and savannas, West Indies. The type specimen from Jamaica or Hispaniola.

BAHAMAS: New Providence, Britton & Brace 424.

CUBA: Campo Florido, León 3449.

Vibora Habana, León 2532.

Monte la Noria, León 2559.

Bahía Honda, Wilson 9443.

Holguin, Shafer 1512. La

Gloria, Shafer 385. Columbia,

León 305 in part, 923b. Ar-

royo Apolo, León 190, 923.

Province of Santa Clara, León

923c. Santiago de las Vegas,

Tracy 9111, Van Hermann 1444,

Baker & Wilson 511, Wilson 1405.

Hanábana, Wright in 1865. Tricornia,

Tracy 9082. Guanajay, Palmer & Riley 802. Isle of Pines, Curtiss 384, 494.

Without locality, Wright 1540, 3852, 3860 in part, 3877.

FIG. 42.—Distribution of *P. diffusum*.

JAMAICA: Ewarton to Linstead, *Hitchcock* 9463.

SANTO DOMINGO: Without locality, *Wright, Parry & Brummel* 627. Azua, *Rose, Fitch & Russell* 4410.

PORTO RICO: Quebradillas, *Chase* 6567, 6577. Joyuda, *Chase* 6308.

DANISH WEST INDIES: St. Thomas, *Eggers* in 1882.

LEEWARD ISLANDS: Antigua, *Wulfschlaegel* 64. Guadeloupe, *Duss* 3177, 3181 (K. U. Herb.). St. Bartholomew, *Goës* (K. U. Herb.).

WINDWARD ISLANDS: Martinique, *Duss* 536, *Hahn* 1232.

### 30. *Panicum hallii* Vasey.

*Panicum hallii* Vasey, Bull. Torrey Club 11: 64. 1884; Contr. U. S. Nat. Herb. 15: 74. 1910.

#### DISTRIBUTION.

Dry prairie, rocky and gravelly hills and canyons, and in irrigated fields, Texas to Arizona and south to central Mexico. The type specimen from Texas.

CHIHUAHUA: Santa Eulalia Mountains, *Pringle* 376.

DURANGO: Without locality, *Palmer* 525 in 1896.

COAHUILA: Monclova, *Palmer* 1338 in 1880. Saltillo, *Hitchcock* 5605.

NUEVO LEÓN: Monterrey, *Hitchcock* 5537.

TAMAULIPAS: Victoria, *Palmer* 554 in 1907.

SAN LUIS POTOSÍ: Las Canoas, *Hitchcock* 5756. Cárdenas, *Hitchcock* 5719½.

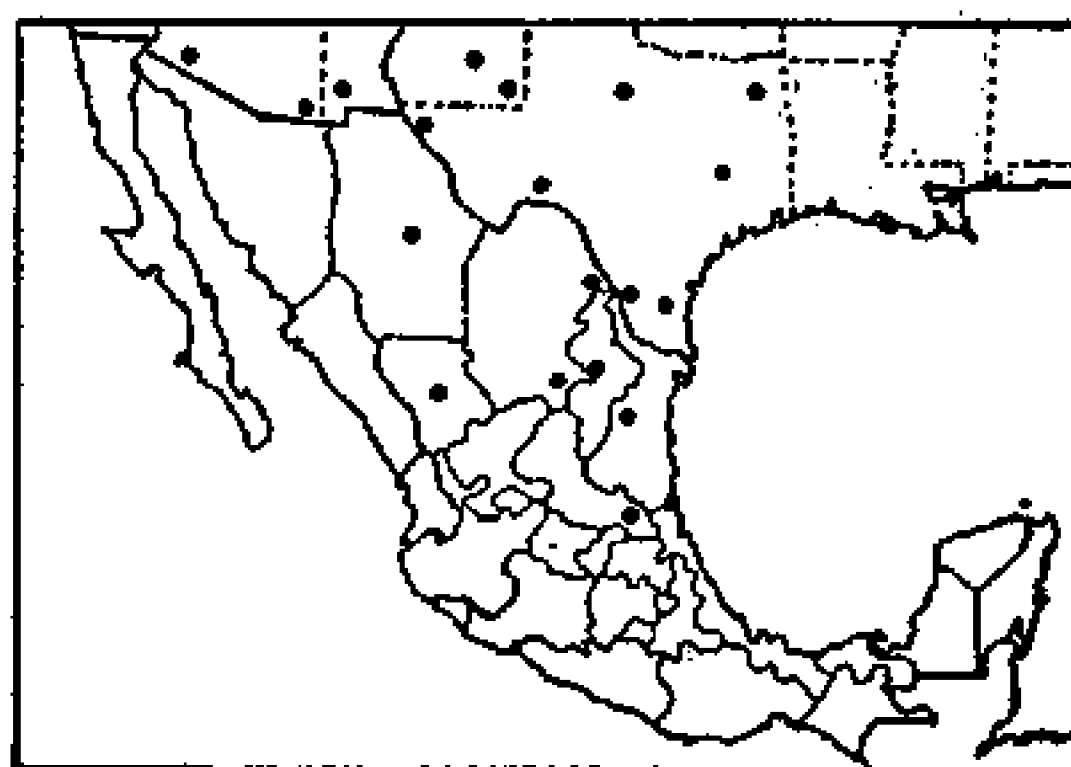


FIG. 43.—Distribution of *P. hallii*.

### 31. *Panicum lepidulum* Hitchc. & Chase.

*Panicum lepidulum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 75. 1910.

#### DISTRIBUTION.

Rocky hills and moist banks, Mexico to Panama. The type specimen from Chihuahua.

CHIHUAHUA: Chihuahua, *Pringle* 497.

DURANGO: Durango, *Palmer* 525 in 1896, *Hitchcock* 7591. Tobar, *Palmer* 533 in 1906.

ZACATECAS: Zacatecas, *Hitchcock* 7510.

SAN LUIS POTOSÍ: Cárdenas, *Hitchcock* 5719.

JALISCO: San Nicolás, *Hitchcock* 7199. Zapotlán, *Hitchcock* 7238.

QUERÉTARO: San Juan del Río, *Rose, Painter & Rose* 9555.

MÉXICO: Pedregal, Federal District, *Amer. Gr. Nat. Herb.* 35.

PUEBLO: Tehuacán, *Hitchcock* 6063.

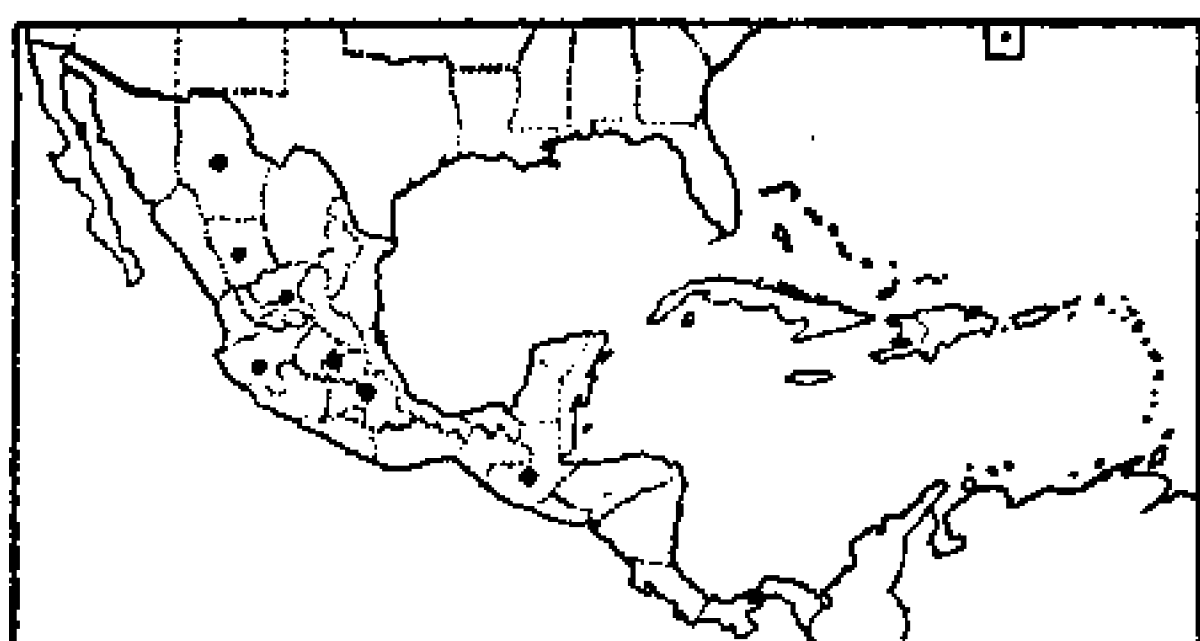


FIG. 44.—Distribution of *P. lepidulum*.

GUATEMALA: Guatemala City, *Hitchcock* 9014.

PANAMA: Sabano de Juan Corso, *Pittier* 4526.

32. *Panicum ghiesbreghtii* Fourn.

*Panicum ghiesbreghtii* Fourn. Mex. Pl. 2: 29. 1886; Contr. U. S. Nat. Herb. 15: 76. 1910.

## DISTRIBUTION.

Low moist ground, Mexico and West Indies to northern South America. The type specimen from Mexico.

JALISCO: Zapotlán, *Hitchcock* 7117.

VERACRUZ: Córdoba, *Hitchcock* 6418, 6426. Jalapa, *Hitchcock* 6546. Orizaba, *Bourgeau* 2751, *Hitchcock* 6363, *Amer. Gr. Nat. Herb.* 36.

OAXACA: Oaxaca, *Hitchcock* 6143.

YUCATÁN: Izamal, *Gaumer* 2477.

SALVADOR: Acajutla, *Hitchcock* 8993.

NICARAGUA: Corinto, *Hitchcock* 8755. San Juan del Sur, *Hitchcock* 8601. Jinotepe, *Hitchcock* 8687.

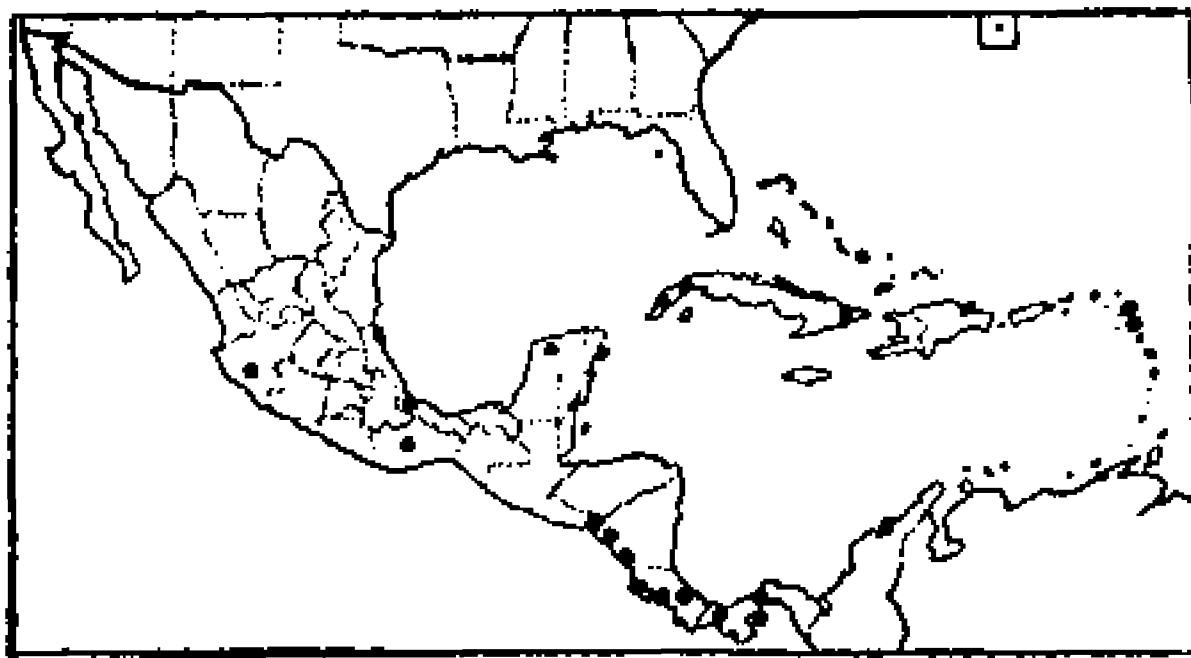


FIG. 45.—Distribution of *P. ghiesbreghtii*.

COSTA RICA: San José, *Hitchcock* 8452.

Guanacaste, *Jiménez* 730. Llano

Grande de Puriscal, *Jiménez* 880.

Nuestro Amo, *Jiménez* 530. Salinas

Bay, *Pittier* 2633, *Tonduz* 2858.

PANAMA: South of David, *Hitchcock*

8377. Balboa, *Hitchcock* 7997,

8014. Taboga Island, *Hitchcock*

8065, 8094.

BAHAMAS: Crooked Island, *Brace* 4812.

CUBA: La Soledad, *Eggers* 5406. Herra-

dura, *Tracy* 9068. Santiago de las Vegas, *Tracy* 9116. La Perla, *León* 3783.

El Calvario, *León* 922, 2674. Guayabal, *León* 922b. Without locality,

*Wright* 758. Eastern Cuba, *Wright*. Santiago de Cuba, *León* 3747.

PORTO RICO: Coamo Springs, *Chase* 6547. Cayey, *Chase* 6744. Tabucoa, *Sintenis* 4983.

LEEWARD ISLANDS: Guadeloupe, *Duss* 3184. Antigua, *Wulfschlaegel* 620, 621. (K. U. Herb.).

COLOMBIA: Santa Marta, *Smith* 165.

33. *Panicum hirsutum* Swartz.

*Panicum hirsutum* Swartz, Fl. Ind. Occ. 1: 173. 1797; Contr. U. S. Nat. Herb. 15: 77. 1910.

*Panicum elatum* Willd.; Steud. Nom. Bot. ed. 2. 2: 256. 1841. In the Willdenow Herbarium this unpublished name is written on a Humboldt collection from "America merid."

The sheaths, especially the lower, of this robust species are hirsute with spreading stiff hairs that cause mechanical irritation to the skin. The panicles are at first compact, with ascending branches, but become diffuse at maturity, the branches finally widely spreading.

## DISTRIBUTION.

Open moist soil, West Indies and central Mexico to northern South America. The type specimen from Jamaica.

COLIMA: Manzanillo, *Hitchcock* 7031.

OAXACA: San Antonio, *Pringle* 5573.

COSTA RICA: Port Limon, *Hitchcock* 8435. Along Bananita River, *Pittier* 3634.

Zent Farm, *Pittier* in 1904, *Tonduz* 266. Puerto Viejo, *Biolley* 7467.



PANAMA: Between Bohío and Frijoles, *Hitchcock* 8397. Near Bohío, *Hitchcock* 8392. Tabernilla, *Hitchcock* 8382. Gorgona, *Amer. Gr. Nat. Herb.* 37. Pedro Miguel, *Hitchcock* 7957. Puerto Obaldía, *Pittier* 4374. Culebra, *Pittier* 3441.

CUBA: Matanzas, *Wright* in 1865. Guantánamo, *León* 3913.

LEEWARD ISLANDS: Guadeloupe, *Duss* 3917.

WINDWARD ISLANDS: Martinique, *Duss* 768 (K. U. Herb.).

TRINIDAD: St. Margaritas, *Broadway* 2629. "Burke's pasture," *Bot. Gard. Herb.* 2295.

VENEZUELA: Río Grande del Tuy, *Paparo, Pittier* 6332. Bobures, *Jahn* 353, 355.

COLOMBIA: Santa Marta, *Smith* 164.

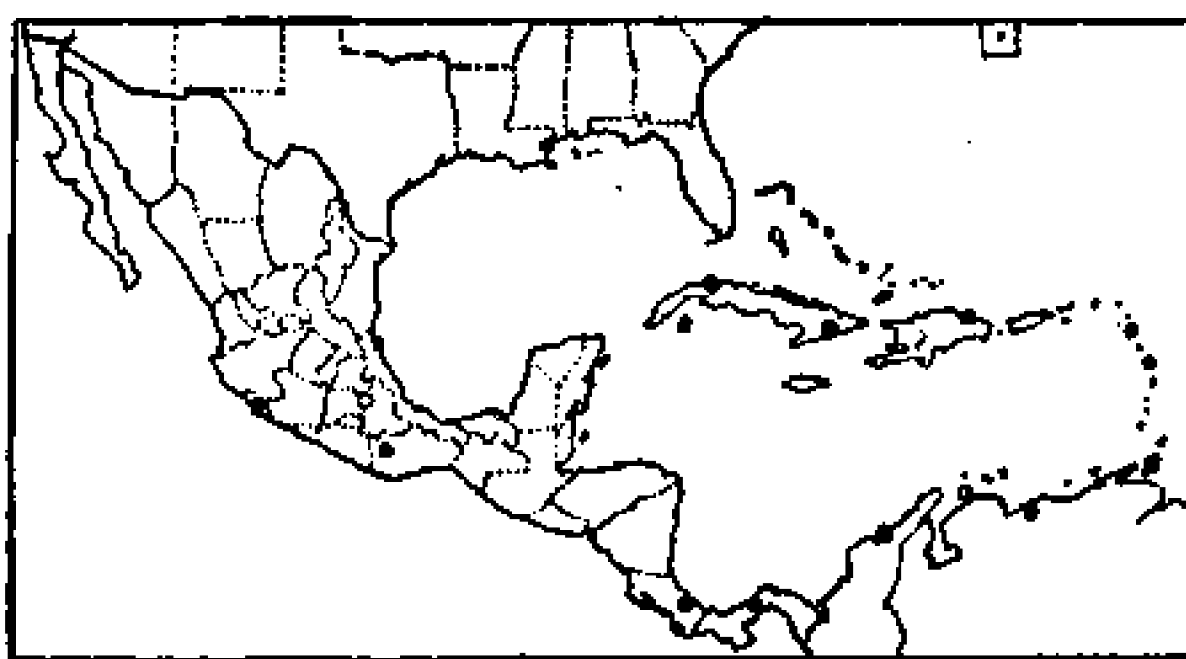


FIG. 46.—Distribution of *P. hirsutum*.

MAXIMA.

Culms with a cormlike base.

Blades mostly over 5 mm. wide; culms more than 1 meter high.....36. *P. bulbosum*.

Blades less than 5 mm. wide; culms rarely as much as 1 meter high.....36a. *P. bulbosum sciaphilum*.

Culms from a creeping rootstock, not cormlike at base.

Nodes hirsute; ligules 4 to 6 mm. long; fruit strongly rugose....34. *P. maximum*.

Nodes glabrous; ligules 2 mm. long; fruit very obscurely rugose.....35. *P. plenum*.

34. *Panicum maximum* Jacq.

*Panicum maximum* Jacq. *Coll. Bot.* 1: 76. 1786; *Contr. U. S. Nat. Herb.* 15: 78. 1910.

DISTRIBUTION.

Open ground, at low altitudes, escaped from cultivation, southern Florida through Mexico and West Indies to South America, a native of Africa and now widespread in the warmer parts of the Old World. Type locality, Guadeloupe.

SINALOA: Mazatlán, *Rose, Standley & Russell* 14121.

COLIMA: Paso del Río, *Emrick* 3.

VERACRUZ: Córdoba, *Hitchcock* 6410, *Finck* 8, *Kerber* 48. Jalapa, *Hitchcock* 6621. Huitamalco, *Liebmann* 425 in part. Veracruz, *Hitchcock* 6562. San Francisco, *Smith* 1409. Zacuapán, *Purpus* 3774.

YUCATÁN: Izamal, *Gaumer* 719.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 195 (Gray Herb.).

GUATEMALA: Escuintla, *Smith* 2705, 2706, *Hitchcock* 9001. Morales, *Kellerman* 6267. Gualán, *Deam* 6268. Finca Sepacuité, Alta Verapaz, *Cook & Griggs* 579.



FIG. 47.—Distribution of *P. maximum*.

HONDURAS: Puerto Cortez, *Kellerman* 4725.

SALVADOR: San Salvador, *Velasco* 2. Izalco, *Pittier* 1960. Without locality, *Renson* 293.

NICARAGUA: Corinto, *Hitchcock* 8762.

COSTA RICA: Zent Farm, *Pittier* in 1904. Boca Banana, *Tonduz* 9114. San José, *Pittier* 9050. Nuestro Amo, *Pittier* 2034, 16662. Alajuelita, *Tonduz* 2995.

PANAMA: Taboga Island, *Hitchcock* 8080. Caña, *Williams* 779. Culebra, *Pittier* 2088, 4806, *Amer. Gr. Nat. Herb.* 38.

BERMUDA: North Shore Road, *Brown & Britton* 20, *Harshberger* in 1905.

BAHAMAS: Nassau, *Curtiss* 124. Eleuthera, *Geogr. Soc. Baltimore* 338.

CUBA: Herradura, *Hitchcock* 156. Guines, *León* 427, *Liebmann* 445. Santiago de las Vegas, *Baker* 32, *Wilson* 438, *Hitchcock* 157. Santiago de Cuba, *León* 915, *Pollard & Palmer* 283. Guayabal, *León* 921. Marianao, *León* 957. Guana-jay, *Palmer & Riley* 816. San Diego de los Baños, *Palmer & Riley* 542, 545. El Guama, *Palmer & Riley* 178. Pinar del Río, *Palmer & Riley* 377. Sierra de Anafe, *León* 2871.

JAMAICA: Port Antonio, *Fredholm* 3319. Kingston, *Hitchcock* 9256, and in 1890. Gordon Town, *Hart* 797. Hope Gardens, *Harris* 11249.

HAITI: Gonaïves, *Buch* 468 (K. U. Herb.).

SANTO DOMINGO: Azua, *Rose, Fitch & Russell* 3949. San Pedro de Macoris, *Rose, Fitch & Russell* 4172.

PORTO RICO: Guanica, *Sintenis* 3366. Mayaguez, *Sintenis* 51, *Chase* 6256. Cayey, *Sintenis* 2468. Aibonito, *Chase* 6332. Sobrante, *Eggers* 1226. Martin Peña, *Heller* 377. Vieques, *Chase* 6669. Mona, *Hess* 449.

DANISH WEST INDIES: St. Croix, *Ricksecker* 200, 413. St. Thomas, *Millspaugh* 454, *Eggers* in 1887, *Rose* 3184.

LEEWARD ISLANDS: Antigua, *Wulfschlaegel* 623b, *Rose, Fitch & Russell* 3452. Dominica, *Jones* 10. Guadeloupe, *Duss* 3186. St. Bartholomew, *Goës* (K. U. Herb.). Saba, *Boldingh* 1580, *Suringar* in 1885 (both in K. U. Herb.)

WINDWARD ISLANDS: Martinique, *Duss* 1288. Barbados, *Dash* 259. Grenada, *Broadway* in 1905. St. Vincent, *Smith & Smith* 288 (K. U. Herb.).

TRINIDAD: Four Roads, *Hitchcock* 10049.

TOBAGO: Scarborough, *Broadway* 4081. Plymouth, *Hitchcock* 10239.

VENEZUELA: Caracas, *Pittier* 6163. Around Dos Caminos and Los Chorros, *Pittier* 5917. Río Grande del Tuy, *Pittier* 6327. Island of Margarita, *Miller & Johnston* 177.

COLOMBIA: Santa Marta, *Smith* 2153. Cartagena, *Hitchcock* 9917. Río Frío, *Pittier* 1617.

### 35. *Panicum plenum* Hitchc. & Chase.

*Panicum plenum* Hitchc. & Chase, *Contr. U. S. Nat. Herb.* 15: 80. 1910.

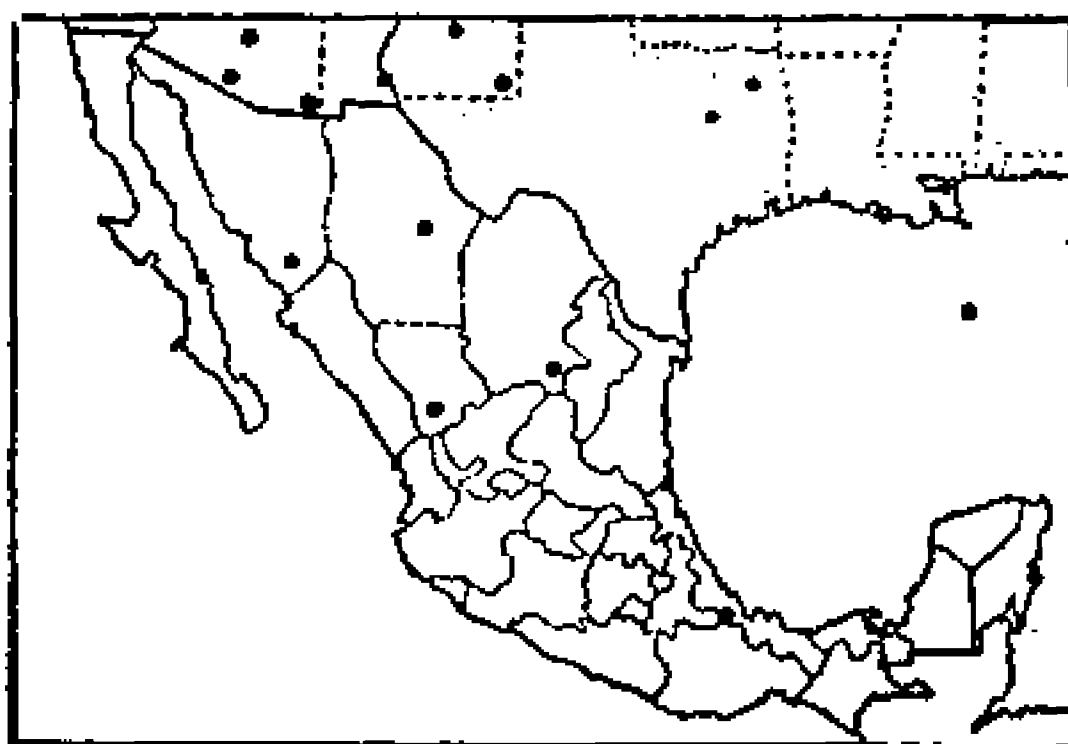


FIG. 48.—Distribution of *P. plenum*.

#### DISTRIBUTION

Moist places in rocky hills and canyons, southwestern United States to central Mexico. The type specimen from New Mexico.

SONORA: Las Cuevas, *Hartman* 170.

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* in 1885. Chihuahua, *Hitchcock* 7772.

DURANGO: Durango, *Palmer* 741 in 1896.

COAHUILA: Saltillo, *Hitchcock* 5609. Jaral, *Schumann* 1733.

VERACRUZ: Orizaba, *Botteri* 160.

**36. *Panicum bulbosum* H. B. K.**

*Panicum bulbosum* H. B. K. Nov. Gen. & Sp. 1: 99. 1816; Contr. U. S. Nat. Herb. 15: 81. 1910.

DISTRIBUTION.

Moist places in canyons and valleys, southwestern United States to southern Mexico. The type specimen from central Mexico.

CHIHUAHUA: Candelaria, *Stearns* 266. Chihuahua, *Pringle* 377. Colonia García, *Nelson* 6187, *Townsend & Barber* 221. Sierra Madre, *Nelson* 6301. Mount Mohinora, *Nelson* 4901. Cañon de San Diego, *Hartman* 790.

DURANGO: Otínapa, *Palmer* 340 in 1906. Durango, *Palmer* 525a in 1896. Without locality, *Palmer* 741 in 1896.

TEPIC: Between Aguacate and Dolores, *Rose* 3361. Between Pedro Paulo and San Blasito, *Rose* 1999.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 958. Las Canoas, *Hitchcock* 5754.

JALISCO: Road between Mexquitic and Monte Escobedo, *Rose* 2609. Nevada de Colima, *Hitchcock* 7150. Río Blanco, *Palmer* 207 in 1886.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Federal District, *Orcutt* 3518, *Hitchcock* 5932, 5941, 7835, *Amer. Gr. Nat. Herb.* 39, *Holway* 12, *Bourgeau* 235, *Rose & Painter* 9249, *Pringle* 9575, 6418. Valley of Toluca, *Pringle* 5207.

PUEBLA: Chinantla, *Liebmann* 441, 442. Cerro de Baxtla, *Purpus* 2908. Esperanza, *Seaton* 317. Bords de l'Atoyac, *Nicolas* in 1909.

VERACRUZ: Borrego, *Bourgeau* 2754. Orizaba, *Hitchcock* 6384.

OAXACA: Oaxaca, *Nelson* 1374. Cerro de San Felipe, *Conzatti & González* 243.

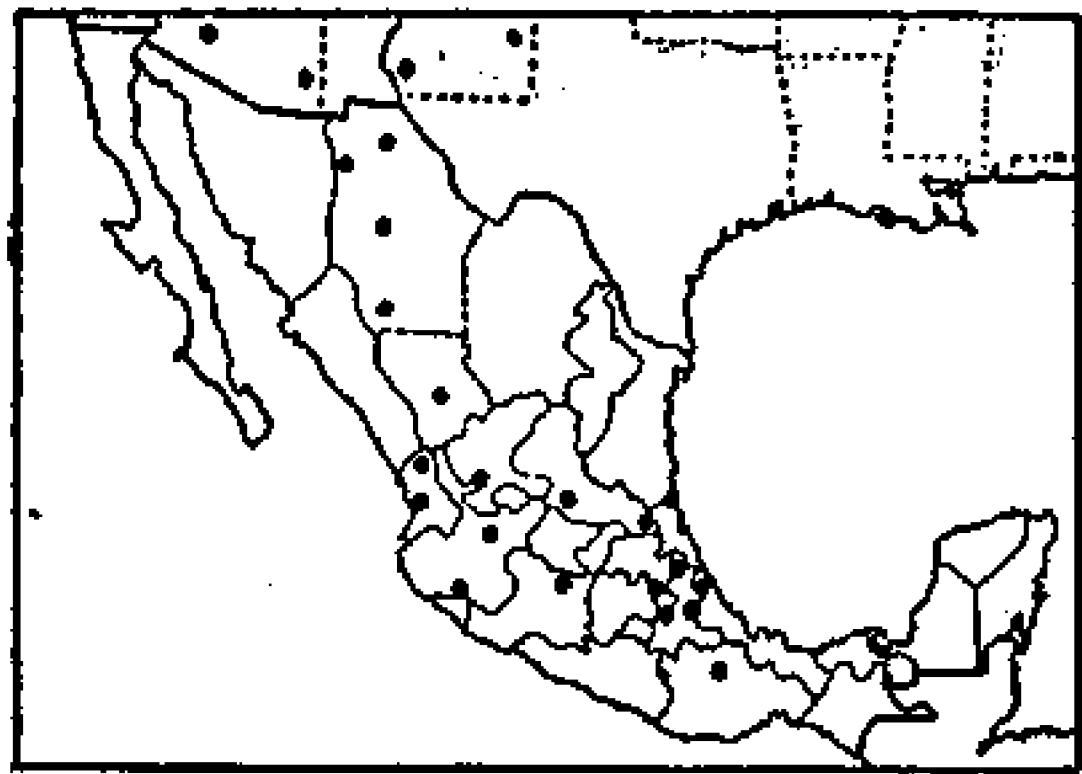


FIG. 49.—Distribution of *P. bulbosum*.

**36a. *Panicum bulbosum sciaphilum* (Rupr.) Hitchc. & Chase.**

*Panicum bulbosum sciaphilum* (Rupr.) Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 83. 1910.

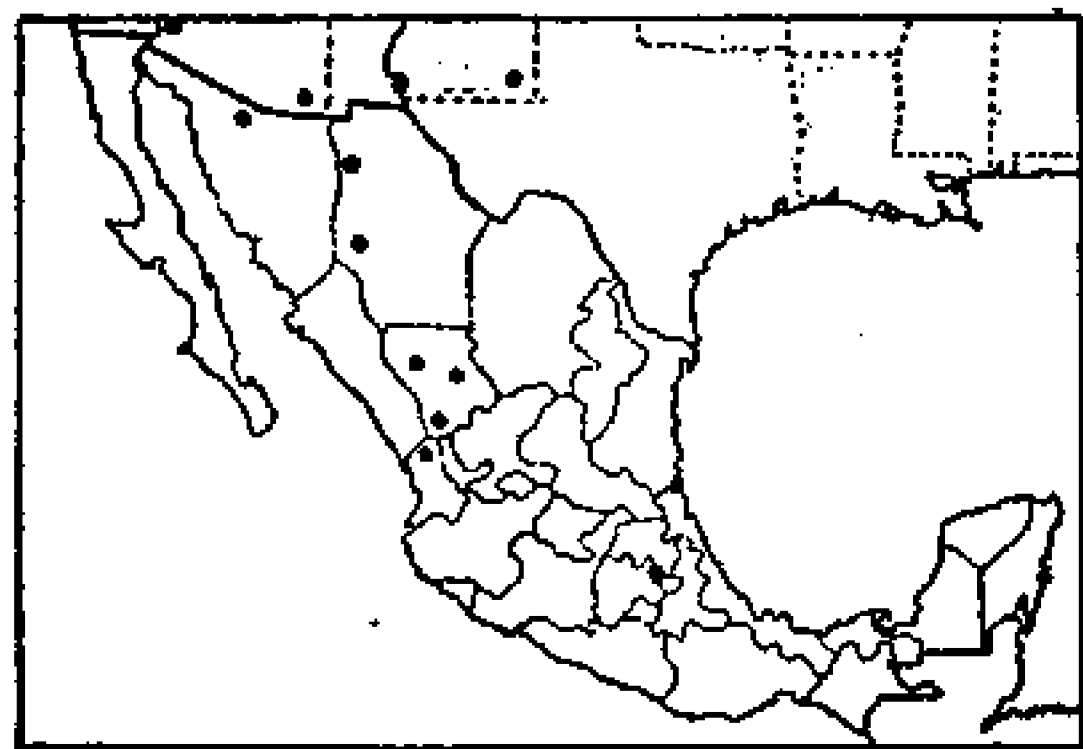


FIG. 50.—Distribution of *P. bulbosum sciaphilum*.

DISTRIBUTION.

Gravelly river banks, southwestern United States to central Mexico. The type specimen from central Mexico.

SONORA: Nogales to Cocospora Ranch, *Griffiths* 6785½.

CHIHUAHUA: Cusihuiriac, *Pringle* 1406. Sierra Madre, *Nelson* 6298. Sánchez, *Hitchcock* 7666.

DURANGO: Tejamén, *Palmer* 469 in 1906. Otínapa, *Palmer* 348, 349, and 554

in 1906. Santiago Papasquiaro, *Palmer* 467 in 1896. Iron Mountain, *Hitchcock* 7634.

TEPIC: Between Dolores and Santa Gertrudis, *Rose* 2053.

MÉXICO: Barranca de Río Aqueducto, *Rose & Painter* 8634.

## VIRGATA.

Perennials, mostly with stout rootstocks, one species, *P. ichnanthoides* found to be without rootstocks.

Creeping rootstocks wanting..... 40. *P. ichnanthoides*.

Creeping rootstocks present.

Spikelets not over 2.5 mm. long; first glume less than half the length of the spikelet.

Panicles loosely flowered; first glume truncate, about one-fifth the length of the spikelet..... 37. *P. repens*.

Panicles rather densely flowered; first glume triangular, about one-third the length of the spikelet..... 38. *P. gouini*.

Spikelets 3 to 7 mm. long (sometimes less than 3 mm. in *P. virgatum cubense*); first glume more than half the length of the spikelet.

Culms decumbent or creeping at base.

Spikelets 3.2 to 4 mm. long..... 41. *P. altum*.

Spikelets 6 to 8 mm. long..... 42. *P. havardii*.

Culms erect.

Panicles elongate, strongly contracted; seacoast plants..... 43. *P. amarulum*.

Panicles diffuse or only slightly contracted; plants sometimes of salt marshes but not littoral.

Panicles open, loosely-flowered; spikelets 3.5 to 5 mm. long, beaked; first glume two-thirds the length of the spikelet or more, acuminate-pointed..... 39. *P. virgatum*.

Panicles somewhat contracted; spikelets not over 3.2 mm. long, not beaked; first glume about half the length of the spikelet, not acuminate..... 39a. *P. virgatum cubense*.

37. *Panicum repens* L.

*Panicum repens* L. Sp. Pl. ed. 2. 87. 1762; Contr. U. S. Nat. Herb. 15: 85. 1910.



FIG. 51.—Distribution of *P. repens*.

## DISTRIBUTION.

Sea beaches, warmer regions of both hemispheres; in America from Alabama to Brazil. Originally described from the Old World.

NICARAGUA: Without locality, Flint 8.

CUBA: Arroyo Apol6, Le6n 296, 563. Habana, Le6n in 1909.

**38. *Panicum gouini* Fourn.**

*Panicum gouini* Fourn. Mex. Pl. 2: 28. 1886; Contr. U. S. Nat. Herb. 15: 86. 1910.

DISTRIBUTION.

Sea beaches along the Gulf of Mexico. The type specimen from Veracruz.

VERACRUZ: Veracruz, *Pringle* 5569, *Amer. Gr. Nat. Herb.* 40, *Müller* 2177. Antigua, *Liebmann* 450. Coatzacoalcos, *Smith* 913.

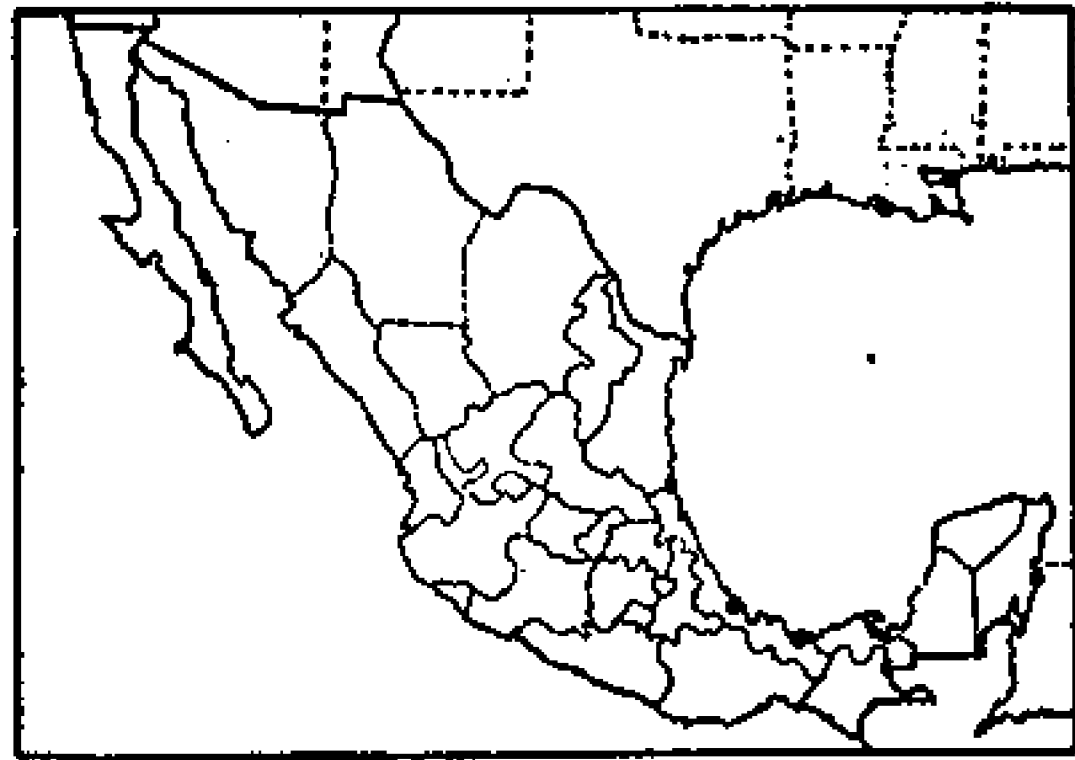


FIG. 52.—Distribution of *P. gouini*.

**39. *Panicum virgatum* L.**

*Panicum virgatum* L. Sp. Pl. 59. 1753; Contr. U. S. Nat. Herb. 15: 87. 1910.

DISTRIBUTION.

Prairies and open woods, eastern and central United States, south to northern South America. The type specimen from Virginia.



FIG. 53.—Distribution of *P. virgatum*.

JALISCO: Río Blanco, *Palmer* 207 and 510 in 1886.

CHIAPAS: Between San Ricardo and Ocozucuantla, *Nelson* 2975.

HONDURAS: Santa Anna, *Thieme* 532.

VENEZUELA: Alto Apure, *Jahn* 198.

COLOMBIA: Santa Marta, *Smith* 166.

**39a. *Panicum virgatum cubense* Griseb.**

*Panicum virgatum cubense* Griseb. Cat. Pl. Cub. 233. 1866; Contr. U. S. Nat. Herb. 15: 92. 1910.

DISTRIBUTION.

Pine woods, Atlantic Coastal Plain, Bermuda and Cuba. The type specimen from Cuba.

BERMUDA: *Stone* in 1888 (*Acad. Phil. Herb.*).

CUBA: Batabanó, *Hitchcock* 153, *Palmer & Riley* 1134. Be-

tween Laguna Jovero and Laguna Herradura, *Shafer* 10927. Without locality, *Wright* 3873.



FIG. 54.—Distribution of *P. virgatum cubense*.

40. *Panicum ichnanthoides* Fourn.

*Panicum ichnanthoides* Fourn. Mex. Pl. 2: 30. 1886; Contr. U. S. Nat. Herb. 15: 88. 1910, as synonym under *P. virgatum*. The type specimen, Müller 2002, in the herbarium of the Botanical Garden in St. Petersburg, was collected at Orizaba.

*Panicum buchingeri* Fourn. Mex. Pl. 2: 30. 1886. "Orizaba (Thomas in herb. Buchinger)." Contr. U. S. Nat. Herb. 15: 329: 1910. We have been unable to find the type. From the description it is evident that the species is allied to *P. virgatum* L., while the locality would indicate *P. ichnanthoides*.

## DESCRIPTION.

Plants in large clumps with knotted crowns, without creeping rootstocks; culms 1.5 to 2 meters high, erect or decumbent at base, smooth, firm, and hard, more or less glaucous about the nodes; sheaths shorter than the internodes, pubescent on the overlapping margin toward the apex, otherwise glabrous; ligule about 3 mm. long, membranaceous-ciliate; blades elongate, mostly 8 to 15 mm. wide, flat except at the narrowed and usually inrolled base, scabrous on the margins, villous on the upper surface near the base, otherwise glabrous; panicle 20 to 40 cm. long, one-fourth to one-third as wide, the long slender branches ascending; spikelets 3.5 to 4.2 mm. long, about 1.5 mm. wide, similar to those of *P. virgatum*.

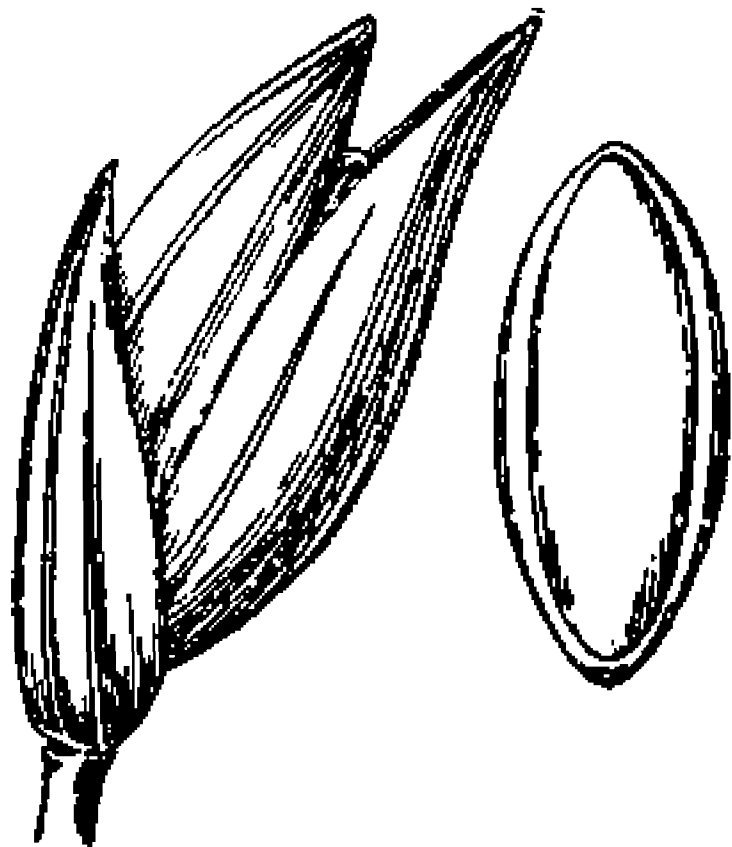


FIG. 55.—*P. ichnanthoides*.  
From type specimen.

This species is closely allied to *P. virgatum* L., from which it differs in the absence of creeping rootstocks and in the narrow panicle. The patch of plants from which was collected Hitchcock's no. 6364 is probably that from which Botteri, Müller, and Thomas obtained their specimens. This patch lies along a trail leading up a prominent hill at the western edge of the city of Orizaba, a locality likely to be visited by all botanists collecting in that region.

## DISTRIBUTION.

Open rocky hillsides, southern Mexico, British Honduras, and Nicaragua.

PUEBLA: Tehuacán, *Endlich* 1938.

VERACRUZ: Orizaba, *Botteri* 648,  
*Hitchcock* 6364, *Müller* 2002.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 73 (Gray Herb.).

NICARAGUA: Jinotepe, *Hitchcock* 8685.

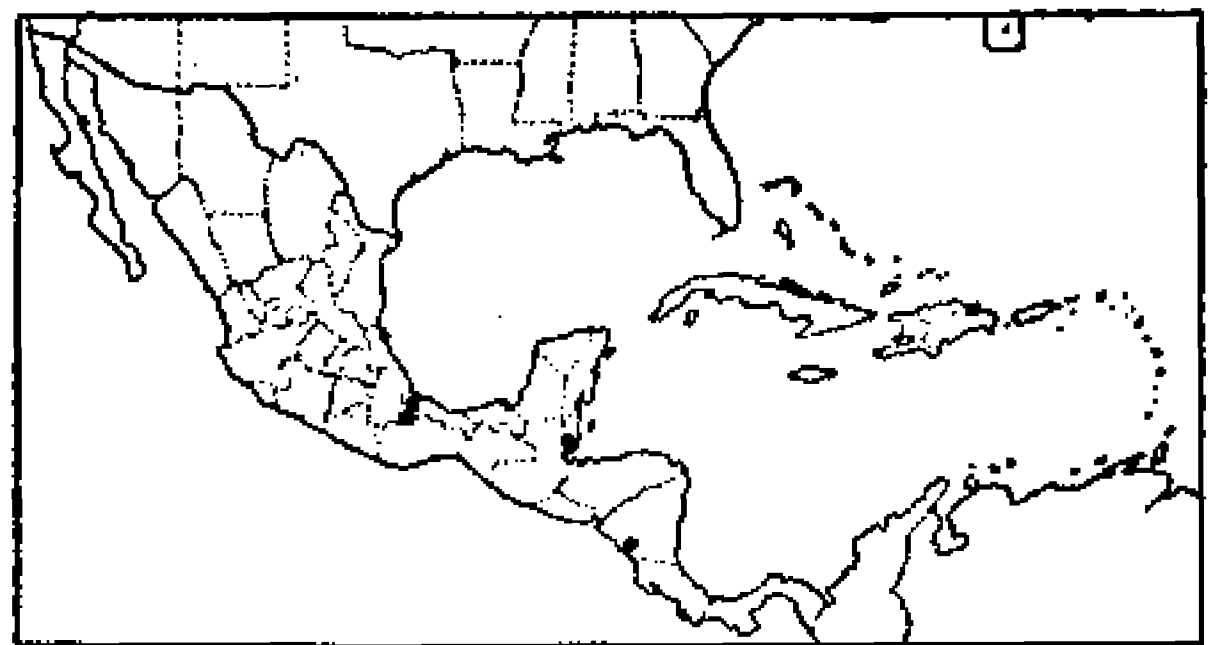


FIG. 56.—Distribution of *P. ichnanthoides*.

41. *Panicum altum* sp. nov.

## DESCRIPTION.

Plants perennial, in tangled masses, the culms decumbent and straggling at base stout, reedlike, as much as 6 mm. in diameter, ascending to a height of 2 to 4 meters, smooth and glaucous, simple or with extravaginal, mostly erect, sterile branches from the swollen nodes; sheaths smooth; ligule a short membrane less than 1 mm. long, the ciliate fringe once or twice as long; blades flat, firm, not greatly elongated, mostly 30 to 45 cm. long, 8 to 15 mm. wide, smooth except the scabrous margins, panicles rather more densely flowered than in *P. virgatum*, 20 to 30 cm. long, narrowly ovoid in out-

line, open, the slender scabrous branches ascending and spreading, fascicled, some naked at base, with short branchlets intermixed; spikelets rather short-pediceled, 3.2 to 4 mm. long, about 1.2 mm. wide, turgid, glabrous, the glumes and sterile lemma strongly nerved, pointed, somewhat keeled, usually widely gaping, the first glume about two-thirds the length of the spikelet, the second glume and sterile lemma exceeding the fruit, subequal; fruit 2 to 2.2 mm. long, 1 mm. wide, elliptic.

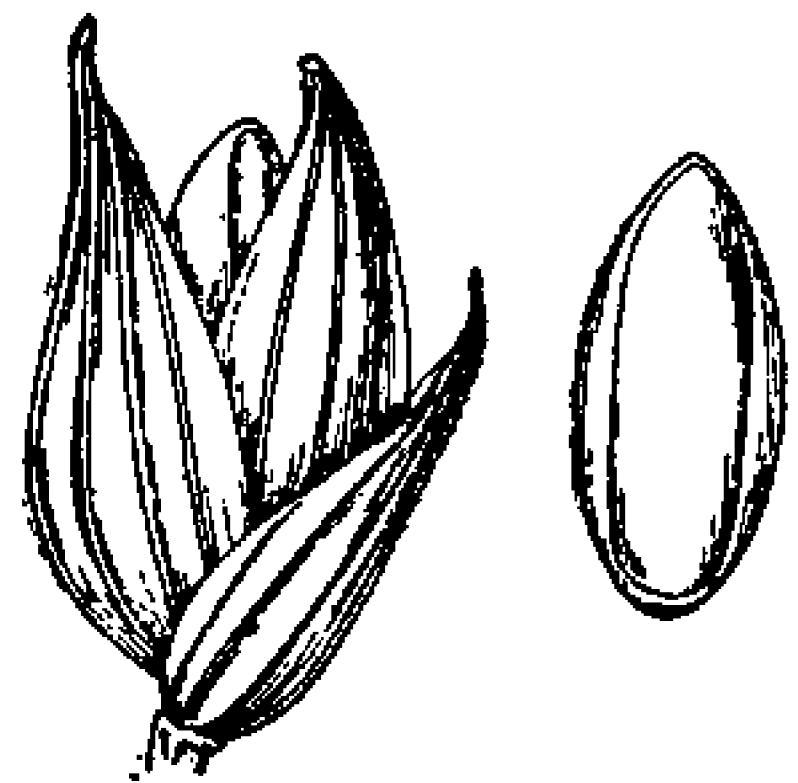


FIG. 57.—*P. altum*. From type specimen.

Type in the U. S. National Herbarium, no. 693326, collected in moist sandy soil, near sea beach on Point Chamé, Province of Panama, September 18, 1911, by A. S. Hitchcock (no. 8167).

In the inflorescence this species closely resembles *P. virgatum*, but in habit it differs distinctly. It grows in masses like large reeds such as *Phragmites* but is straggling and much tangled at base.

DISTRIBUTION.

Sandy marshes or flats near the seacoast, British Honduras to Trinidad.

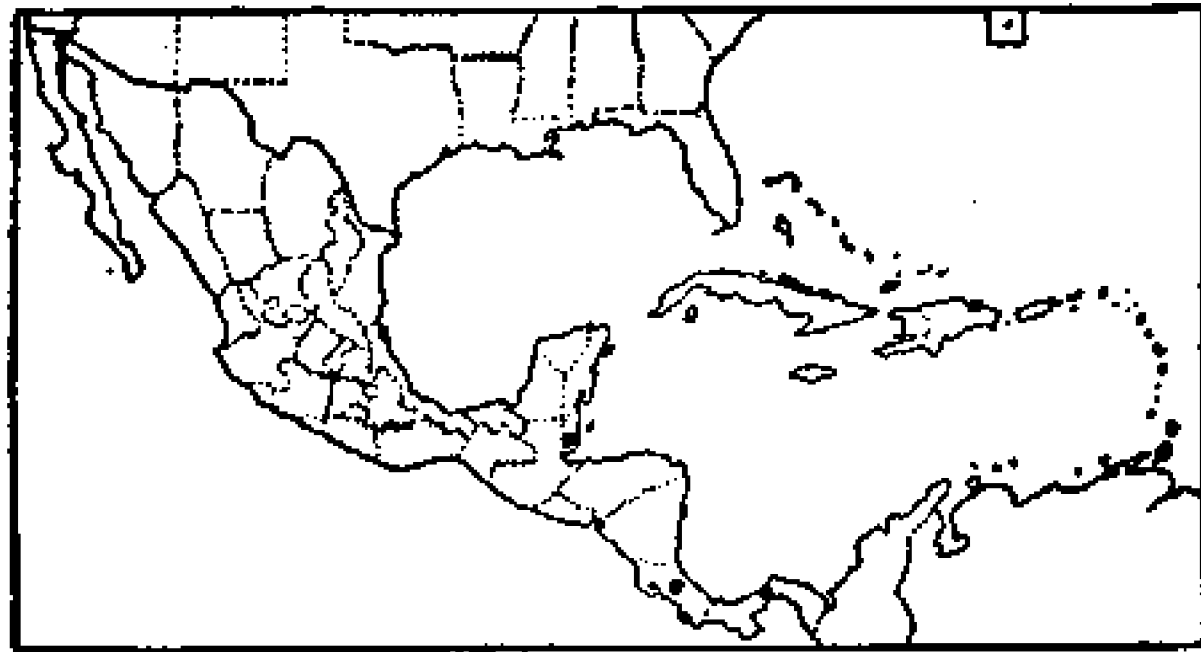


FIG. 58.—Distribution of *P. altum*.

BRITISH HONDURAS: Manatee Lagoon, Peck 123 (Gray Herb.).

COSTA RICA: Buenos Aires, *Tonduz* 3619.

PANAMA: Point Chamé, *Hitchcock* 8167.

TRINIDAD: Near Port of Spain, *Hitchcock* 10053. Icacos, *Hitchcock* 10154. Three miles south of Cedros, *Hitchcock* 10159.

TOBAGO: Plymouth, *Hitchcock* 10233. Pigeon Point, *Broadway* 3068.

42. *Panicum havardii* Vasey.

*Panicum havardii* Vasey, Bull. Torrey Club 14: 95. 1887; Contr. U. S. Nat. Herb. 15: 93. 1910.

DISTRIBUTION.

Arroyos and sand hills, southwestern United States and northern Mexico. The type specimen from Texas.

CHIHUAHUA: Paso del Norte (Juárez), *Pringle* 1124.

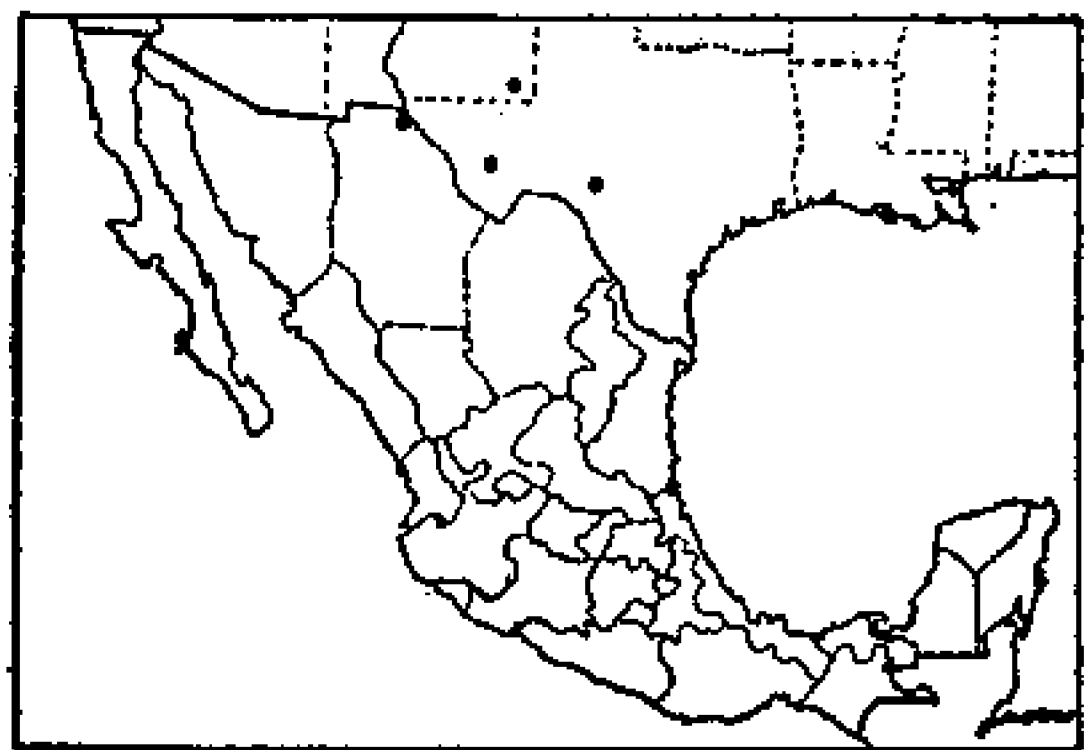


FIG. 59.—Distribution of *P. havardii*.

43. *Panicum amarulum* Hitchc. & Chase.

*Panicum amarulum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 96. 1910.

DISTRIBUTION.

Sandy seashores and coast dunes, southeastern United States, Bahamas, and Cuba. The type specimen from Virginia.

BAHAMAS: Great Bahama, *Britton & Millspaugh* 2739. New Providence, *Britton & Brace* 307, 493 (all Field Mus. Herb.).

CUBA: Camaguey, *Shafer* 2735.



FIG. 60.—Distribution of *P. amarulum*.

TENERA.

- Second glume and sterile lemma exceeding the fruit; spikelets pointed.....44. *P. tenerum*.
- Second glume and sterile lemma not exceeding the fruit; spikelets rather blunt.
- Pedicels bearing long stiff erect hairs at the summit.....46. *P. caricoides*.
- Pedicels not hairy.
- Spikelets attenuate at base, about 2 mm. long; leaves more or less pilose.....45. *P. stenodoides*.
- Spikelets not attenuate at base, about 1.5 mm. long; leaves glabrous.....47. *P. stenodes*.

44. *Panicum tenerum* Beyr.

*Panicum tenerum* Beyr. in Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 341. 1834; Contr. U. S. Nat. Herb. 15: 97. 1910.



FIG. 61.—Distribution of *P. tenerum*.

DISTRIBUTION.

Margins of sandy swamps and ponds and in wet places in sandy woods, southeastern United States, Cuba, and Porto Rico. The type specimen from Georgia.

CUBA: Herradura, *Hitchcock* 154, *Tracy* 9080. Laguna Jovero, *Shafer* 10750. Laguna Los Indios, *Shafer* 10807. Pinar del Río, *Wright* 3870 in part.  
 PORTO RICO: Campo Alegre, *Chase* 6617.

45. *Panicum stenodoides* Hubbard.

*Panicum stenodoides* Hubbard, Proc. Amer. Acad. 49: 497. 1913. "Type (in the Gray Herb.) and only specimen seen, low pine ridge, Yeacos Lagoon, March 5, 1907, M. E. Peck, no. 681." A portion of the type in Hubbard's herbarium has been examined.

DESCRIPTION.

Plants perennial in dense tufts; culms erect, slender and wiry, glabrous or sparsely pilose below the glabrous nodes, 20 to 40 cm. high, producing from the upper nodes slender leafless panicle-bearing branches; sheaths papillose or more or less papillose-pilose, the lowermost bladeless, glabrous, in age fibrous; ligule membranaceous, about 0.3 mm. long; blades erect, flat at base, involute toward the apex, 3 to 8 cm. long, 1 to 2 mm. wide, more or less papillose or papillose-pilose, at least on the upper surface, sometimes glabrous; panicles short-exserted, usually exceeded by the uppermost blade, about 1 cm. long, narrow, bearing 3 to 7 spikelets on appressed scabrous pedicels, rarely a few delicate hairs at the apex of the pedicels; spikelets 2 to 2.1 mm. long, 0.9 mm. wide, turgid, attenuate at base, glabrous; first glume about half as long as the spikelet; second glume and sterile lemma subequal, barely covering the fruit, strongly nerved; fruit 1.7 mm. long, 0.8 mm. wide.

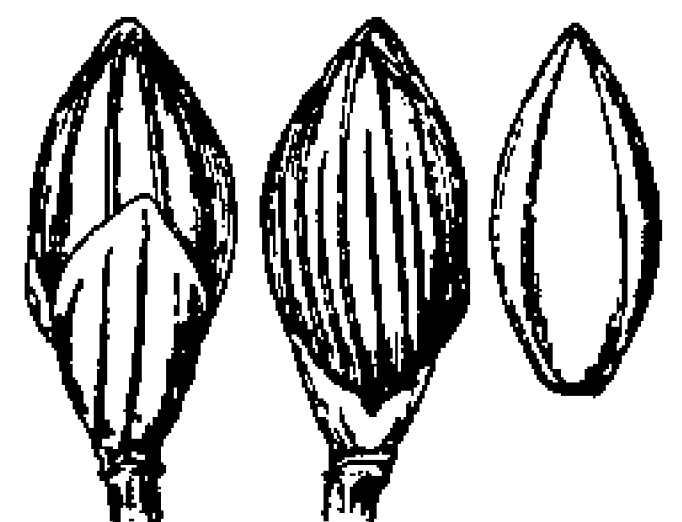


FIG. 62.—*P. stenodoides*. From type specimen.



This species resembles *P. stenodes*, but differs in having larger spikelets and papillose-pilose or at least papillose sheaths. The type specimen and Hitchcock's no. 8147 are conspicuously pilose on sheaths and blades, but the other specimens of this little-known species are papillose only or have a few hairs on the upper surface of the blades.

DISTRIBUTION.

Open grass land and moist savannas, Central America and northern South America.

BRITISH HONDURAS: Ycacos Lagoon, *Peck* 681 (Gray Herb.).

COSTA RICA: Buenos Aires, *Tonduz* 3583.

PANAMA: Chorrera, *Hitchcock* 8147.  
Near Corozal, *Hitchcock* 9207.

TRINIDAD: Piarco Savanna, south of Arouca, *Hitchcock* 10346.



FIG. 63.—Distribution of *P. stenoides*.

46. *Panicum caricoides* Nees.

*Panicum caricoides* Nees; Trin. Gram. Pan. 149. 1826. Trinius received the type specimen from Nees, "V. spp. Brazil. (N. ab Esenb.)" Nees<sup>1</sup> afterwards describes the species more fully and gives the original locality as "provincia Paraensi." The type specimen is in the Trinius Herbarium at the St. Petersburg Academy of Science. It is evidently a portion of the specimen at the Munich Herbarium. This specimen, which is the basis of Nees's later description, was collected in Pará by Martius.

*Panicum junciforme* Steud. Syn. Pl. Glum. 1: 82. 1854. Given as a synonym of *P. caricoides*.

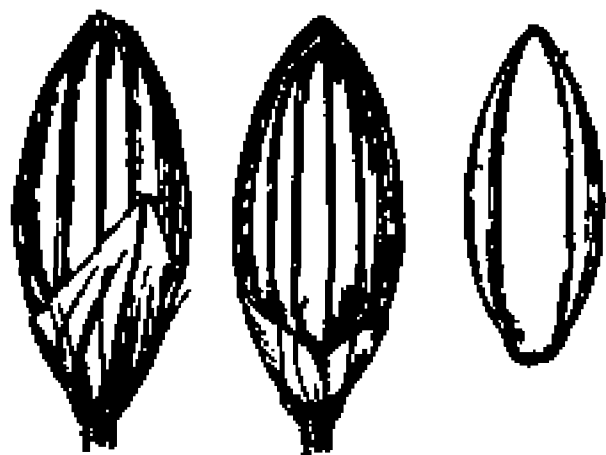


FIG. 64.—*P. caricoides*.  
From type specimen.

DESCRIPTION.

Perennial, in tufts; culms erect, slender, glabrous, stiff and wiry, as much as 90 cm. high; sheaths smooth; ligule membranaceous, lacerate, minute; blades appressed, narrower than the sheath, involute, glabrous, 1 to 5 cm. long, the lower rarely longer; panicles terminal and axillary from the upper sheaths, short-exserted, 1 to 1.5 cm. long, narrow, nearly simple, the later panicles smaller, in fascicles of 2 or 3, at first partially inclosed by the somewhat inflated sheaths, the pedicles bearing long erect white hairs just below the rather crowded spikelets; spikelets 1.5 to 1.8 mm. long, about 0.8 mm. wide, turgid, glabrous; first glume about half as long as the spikelet, subacute; second glume and sterile lemma equal, covering the fruit, strongly nerved; fruit 1.4 to 1.5 mm. long, 0.6 mm. wide.

DISTRIBUTION.

Wet savannas, Trinidad to Brazil.

TRINIDAD: Aripo Savanna, Cumuto Station, *Hitchcock* 10069.



FIG. 65.—Distribution of *P. caricoides*.

<sup>1</sup>Agrost. Bras. 108. 1829.

47. *Panicum stenodes* Griseb.

*Panicum stenodes* Griseb. Fl. Brit. W. Ind. 547. 1864; Contr. U. S. Nat. Herb. 15: 98. 1910.



FIG. 66.—Distribution of *P. stenodes*.

## DISTRIBUTION.

Borders of ponds and wet savannas, West Indies and Costa Rica to Brazil. The type specimen from Jamaica.

COSTA RICA: Buenos Aires, *Pittier* 10589, *Tonduz* 3583.

CUBA: Herradura, *Hitchcock* 155. Without locality, *Wright* 3871.

JAMAICA: Bull Head Mountain, *Amer. Gr. Nat. Herb.* 46.

SANTO DOMINGO: Without locality, *Wright, Parry & Brummel* 624.

PORTO RICO: Trujillo Alto, *Chase* 6769.

TRINIDAD: Cumuto Station, *Hitchcock* 10069. Piarco Savanna, *Hitchcock* 10347.

## AGROSTOIDIA.

48. *Panicum condensum* Nash.

*Panicum condensum* Nash in Small, Fl. Southeast. U. S. 93. 1903; Contr. U. S. Nat. Herb. 15: 102. 1910.

## DISTRIBUTION.

Swamps and borders of ponds and streams, Pennsylvania to Florida and Texas near the coast, south into Mexico and the West Indies. The type specimen from Florida.

VERACRUZ: Without locality, *Gouin* 10.

BAHAMAS: Nassau, *Curtiss* 174.

CUBA: Banks of Guanabo River, *León* 4141. Along Gibora carretera north of Holguin, *Shafer* 1438. Hanábana, *Wright* 184 in 1865. Without locality, *Wright* 3862 in part.

JAMAICA: Savanna-la-Mar, *Hitchcock* 9884. Black River, *Amer. Gr. Nat. Herb.* 47.

PORTO RICO: Santurce, *Chase* 6351. Campo Alegre, Laguna del Tortuguero, *Chase* 6802.

LEEWARD ISLANDS: Guadeloupe, *Duss* 3919.



FIG. 67.—Distribution of *P. condensum*.

## LAXA.

All the species are perennial.

Spikelets not expanded at maturity by an enlarged sterile palea, pointed.

Nodes glabrous; spikelets 2.5 mm. long. . . . . 49. *P. longum*.

Nodes densely pubescent; spikelets not over 1.5 mm. long. . . . . 50. *P. polygonatum*.

Spikelets expanded at maturity by the enlarged sterile palea, usually blunt.

Panicle branches not racemose; blades scarcely wider than their sheaths; sterile palea conspicuously enlarged.

Spikelets 3 mm. long, congested; panicles dark purple.. 58. *P. cupreum*.

Spikelets not over 2.4 mm. long; panicles green or pale.

Panicle branches spikelet-bearing or branchlet bearing along the upper half or toward the ends only ..... 57. *P. hians*.

Panicle branches branchlet-bearing throughout their length or nearly so..... 56. *P. exiguiflorum*.

Panicle branches subracemose, the spikelets secund; blades at least 5 mm. wide; enlarged sterile palea not conspicuous.

Blades narrowed toward the base..... 54. *P. laxum*.

Blades cordate or truncate at base.

Spikelets 2 mm. long; panicle branches erect or nearly so..... 55. *P. stevensianum*.

Spikelets not over 1.6 mm. long, usually less; panicle branches spreading or ascending.

Panicles one-third to half as wide as long; spikelets not conspicuously secund, somewhat irregularly disposed; blades cordate-clasping..... 53. *P. boliviense*.

Panicles rarely one-fourth as wide as long; spikelets conspicuously secund and regularly disposed.

Culms as much as 2 meters long; panicles 25 to 30 cm. long..... 51. *P. milleflorum*.

Culms not over 1 meter long; panicles 5 to 15 cm. long..... 52. *P. pilosum*.

**49. *Panicum longum* Hitchc. & Chase.**

*Panicum longum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 111. 1910.

DISTRIBUTION.

Swamps, State of Veracruz. The only collections known are from near Jalapa, Pringle 8195 (the type) and Schiede & Deppe 674 (Halle Herb.).

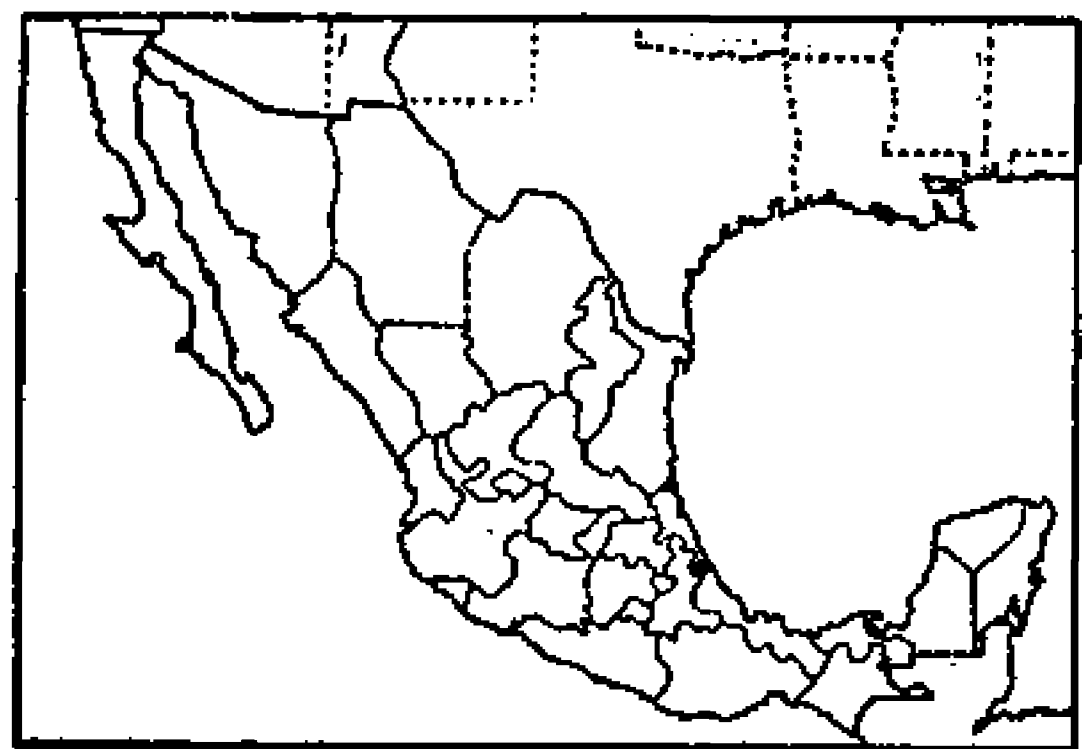


FIG. 68.—Distribution of *P. longum*.

**50. *Panicum polygonatum* Schrad.**

*Panicum polygonatum* Schrad. in Schult. Mant. 2: 256. 1824; Contr. U. S. Nat. Herb. 15: 112. 1910.

DISTRIBUTION.

Swamps and moist soil, Mexico to Paraguay. The type specimen from Brazil.

VERACRUZ: Córdoba, Bourgeau 1662 in part.

GUATEMALA: Sepacuité, Collins & Goll 08, Cook & Griggs 530. Cubilquitz, Türckheim 7797, 8795. Puerto Barrios, Kellerman 5114.

HONDURAS: San Pedro Sula, Thieme 781, 5578, 5587 in part.

COSTA RICA: Boruca, *Tonduz* 4460. Puerto Limon, *Hitchcock* 8421. Llano Grande de Puriscal, *Jiménez* 881. Hacienda de Guácimo, *Tonduz* 27. San José, *Pittier* 1183. Echeverría, *Pittier & Tonduz* 2479. Carrillo, *Biolley* 3107, *Pittier* 1182. Talamanca, *Tonduz* 8557. River Tórres, San Francisco, *Jiménez* 126. Tuís, *Tonduz* 11396.



FIG. 69.—Distribution of *P. polygonatum*.

Turrialba, *Tonduz* 4092, 8244. Buenos Aires, *Tonduz* 4042. Río Tuís, *Tonduz* 8187. Boca Zhorquín, *Tonduz* 8557. Quebrada de Tocorí, *Tonduz* 7542. Santo Domingo de Golfo Dulce, *Tonduz* 10099. Piedra del Convento, *Pittier* 3650.

PANAMA: Boca del Toro, *Hart* 73. Mount Hope, *Hitchcock* 9172. Between Mindí and Colón, *Hitchcock*

7943. Between Bohío and Frijoles, *Hitchcock* 8395. Gorgona, *Amer. Gr. Nat. Herb.* 58.

TRINIDAD: Arima, *Hitchcock* 10297, 10306. Cumuto Station, *Hitchcock* 10077. Port of Spain, *Hitchcock* 9953. Tabaquite, *Hitchcock* 10132. Caparo, *Broadway* 2837.

TOBAGO: Mason Hall, *Broadway* 4476.

COLOMBIA: Santa Marta, *Smith* 206, 2190, 2747.

### 51. *Panicum milleflorum* sp. nov.

#### DESCRIPTION.

Plants perennial; culms ascending or erect from an elongated creeping base, rooting at the nodes, glabrous, 0.8 to 2 meters high, 4 to 5 mm. thick, compressed, the nodes pubescent or glabrous, usually with one to several long erect panicle-bearing branches; sheaths about as long as the internodes, keeled toward the summit, ciliate on the margin and puberulent at the junction with the blade, otherwise glabrous or sparsely papillose-hispid; ligule wanting, the ligular region puberulent; blades flat, 20 to 40 cm. long, 1 to 2 cm. wide, rarely wider, long-acuminate, somewhat narrowed to the subcordate base, glabrous or very sparsely hirsute, the margin scabrous; panicles 20 to 35 cm. long, about 6 cm. wide, in outline tapering to both ends, consisting of numerous ascending or spreading, often curving, slender spikelike branches, solitary or in fascicles along an elongated glabrous axis, the lower distant, the upper approximate, the scabrous-angled, often sparsely pilose rachises bearing throughout their length along their lower side evenly disposed short approximate densely flowered branchlets, those of the lower branches sometimes as much as 15 mm. long, the others 1 or 2 mm. long; spikelets sessile, 1.3 mm. long, about 0.5 mm. wide, glabrous, the first glume about one-third the length of the spikelet, the second glume and sterile lemma equal, the lemma inflated boat-shaped with a large membranaceous palea; fruit 1.2 mm. long, 0.4 mm. wide, acute, the lemma boat-shaped.

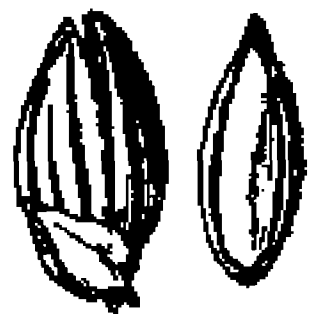


FIG. 70.—*P. milleflorum*. From type specimen.

Type in the U. S. National Herbarium, no. 693327, collected in water of swamp, Frijoles, Canal Zone, Panama, October 12, 1911, by A. S. Hitchcock (no. 8387).

This species differs from *Panicum pilosum* in its larger size, its strong decumbent rooting base, and its longer blades and panicles. It appears to be the same as *Panicum distichum lancifolium* Griseb.<sup>1</sup> which was previously included<sup>2</sup> under *P. pilosum*.

<sup>1</sup> Fl. Brit. W. Ind. 548. 1864.

<sup>2</sup> Contr. U. S. Nat. Herb. 15: 114. 1910.

Grisebach's variety was based upon *Crueger* 84 from Trinidad. This has strongly appressed-hispid nodes and sparsely pilose panicle branches. Hitchcock's no. 8387, the type, has only moderately pubescent nodes and no hairs on the branches of the panicle. Hitchcock's no. 7942 has glabrous nodes, evidently, though sparsely, pilose blades, and strongly pilose panicle branches. The three collections appear, however, to belong to the same species. Frijoles, the type locality, is now covered by the water of Gatun Lake.

DISTRIBUTION.

Swamps, Panama to Trinidad.

PANAMA: Frijoles, Canal Zone, *Hitchcock* 8387. Between Mindí and Colón, Canal Zone, *Hitchcock* 7942.

TRINIDAD: Without locality, *Crueger* 84.

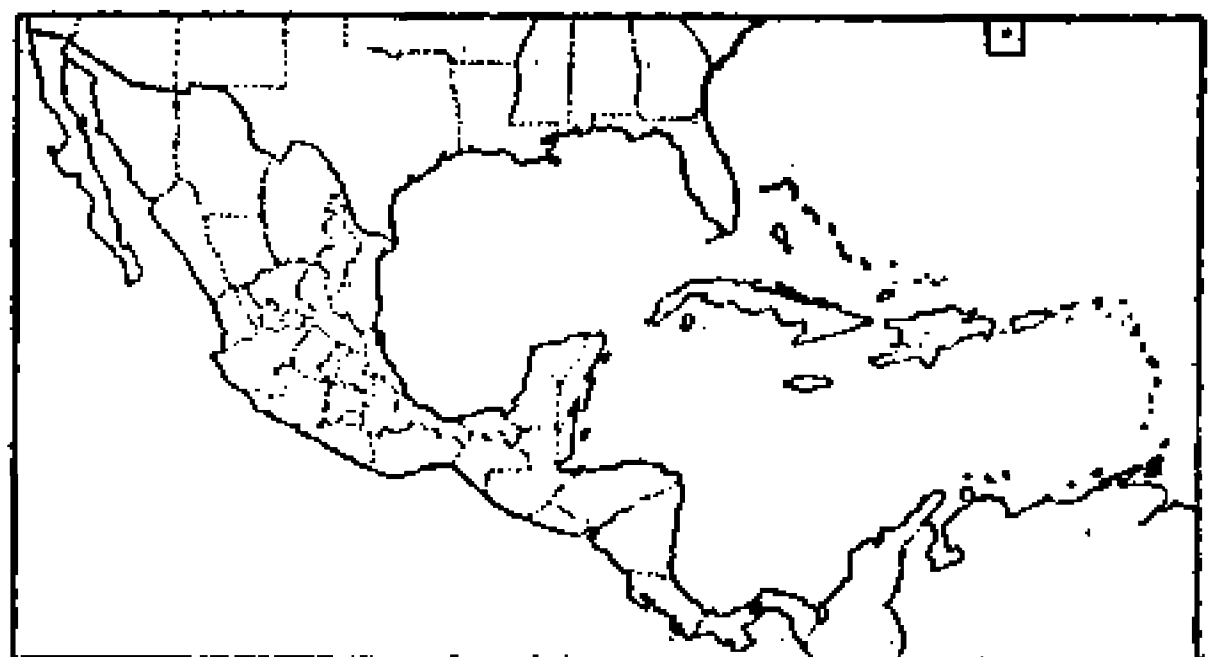


FIG. 71.—Distribution of *P. milleflorum*.

52. *Panicum pilosum* Swartz.

*Panicum pilosum* Swartz, Prodr. Veg. Ind. Occ. 22. 1788; Contr. U. S. Nat. Herb. 15: 113. 1910.

DISTRIBUTION.

Moist ground, ditches, and swamps, Mexico and the West Indies to Paraguay. The type specimen from Jamaica.

VERACRUZ: Córdoba, *Amer. Gr. Nat. Herb.* 60. Mirador, *Liebmann* 411.

TABASCO: San Juan Bautista, *Rovirosa* 599.

CHIAPAS: Ocuilapa, *Nelson* 3056.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 28 (*Gray Herb.*).

GUATEMALA: Finca Trece Aguas, *Goll* 11. Cubilquitz, *Türkheim* 8797. Puerto Barrios, *Hitchcock* 9159. Los Andes, *Kellerman* 5119.

HONDURAS: San Pedro Sula, *Thieme* 5587 in part. Bonacco Island, *Gaumer* in 1887.

NICARAGUA: *Wright*, U. S. Pacific Expl. Exped. 1853-56.

COSTA RICA: Río Hondo, *Cook & Doyle* 499. Talamanca, *Tonduz* 9495. Puerto Viejo, *Biolley* 7463. Puntarenas, *Hitchcock* 8564.



FIG. 72.—Distribution of *P. pilosum*.

PANAMA: Chagres, *Fendler* 368. Chepo, *Pittier* 4536. Puerto Obaldía, *Pittier* 4371. Toro Point, *Hitchcock* 8044. Taboga Island, *Hitchcock* 8083. Balboa, *Hitchcock* 8016. Gatun, *Hitchcock* 8029. Caña, *Williams* 776. David, *Hitchcock* 8347. Culebra, *Hitchcock* 7897, 9208, *Pittier* 2082. Between Bohío and Frijoles, *Hitchcock* 8390. Between Pedro Miguel and Corozal, *Hitchcock* 7992. Chorrera, *Hitchcock* 8139. Porto Bello, *Pittier* 2481.

CUBA: Dayaniguas, *Wright* 3451 in part. Sancti Spiritus, *León* 908. Herradura, *Van Hermann* 763, *Tracy* 9063. Isle of Pines, *Curtiss* 305, *Taylor* 36. Sumidero, *Shafer* 13505, 13533. Buenaventura, *Wilson* 9444. Banao Hills, *León* 3982. Near Marianao, *León* 1977. Without locality, *Pöppig* 1834.

JAMAICA: Troy, *Hitchcock* 9782. Ramble, *Hitchcock* 9517. Bull Head Mountain, *Hitchcock* 9548. Castleton Gardens, *Hitchcock* 9407. Ewarton to Linstead, *Hitchcock* 9423. Ipswich, *Hitchcock* 9626. Navy Island, *Millspaugh* 1859. Port Morant, *Hitchcock* in 1890. Portland, *Harris* 11524. Castleton, *Harris* 11280a. Gordon Town, *Hart* 732. Cedar Hurst, *Harris* 11547.

LEEWARD ISLANDS: St. Kitts, *Britton & Cowell* 287 (K. U. Herb.). Guadeloupe, *Duss* 4154. Dominica, *Imray* 151312, *Jones* 20.

WINDWARD ISLANDS: St. Vincent, *Eggers* 6562, 6633 (K. U. Herb.). Grenada, St. Georges, *Broadway* in 1904. Martinique, *Duss* 534, 4018 (both in K. U. Herb.). Barbados, *Eggers* 7195 (K. U. Herb.).

TRINIDAD: Piarco Savanna, *Hitchcock* 10358. Port of Spain, *Hitchcock* 9961, 10045, *Hart* 3293. Tabaquite, *Hitchcock* 10121. Cedros, *Amer. Gr. Nat. Herb.* 59. Arima, *Hitchcock* 10309.

TOBAGO: Brushfield, *Eggers* 5534. Scarborough, *Hitchcock* 10208. Castara, *Broadway* 4063. Center of island, *Hitchcock* 10265. Spey Side, *Hitchcock* 10242.

COLOMBIA: Córdoba, *Pittier* 557. Santa Marta, *Smith* 203.

### 53. *Panicum boliviense* Hack.

*Panicum boliviense* Hack. Repert. Nov. Sp. Fedde 11: 19. 1912. "Bolivia: Antahuacana, Espirito Santo in alveo arenoso fluminis \* \* \* leg. Dr. O. Buchtien no. 2501." A portion of the type was sent by Prof. Hackel for deposit in the National Herbarium.

#### DESCRIPTION.

Plants perennial with long decumbent or creeping bases, rooting and branching at the lower nodes; flowering culms ascending, 0.5 to 1.5 meters high, glabrous, the nodes glabrous; sheaths short, glabrous below, usually hirsute toward the summit, especially at the junction with the blade, the margins ciliate; ligule a ciliate membrane about 0.5 mm. long; blades flat, 8 to 15 cm. long, 1 to 2 cm. wide, gradually narrowed from the cordate-clasping base to an acuminate apex, ciliate at base, otherwise glabrous, obscurely cross-nerved between the veins, the margins scabrous; panicle usually short-exserted, 10 to 25 cm. long, one-third to half as wide, the solitary or fascicled branches increasingly approximate toward the summit of the slender angled scabrous axis, usually pilose in the axils, the lowermost branch solitary and remote, all but the uppermost compound, the branchlets somewhat spikelike, rather distant, usually along the lower side of the rachis, the axils pilose; spikelets subsessile, clustered, 1.5 to 1.6 mm. long, about 0.7 mm. wide, turgid, the first glume nearly half the length of spikelet, the second glume and sterile lemma equal, the sterile lemma somewhat inflated, subtending a membranaceous palea; fruit 1.4 mm. long, 0.6 mm. wide, subacute.

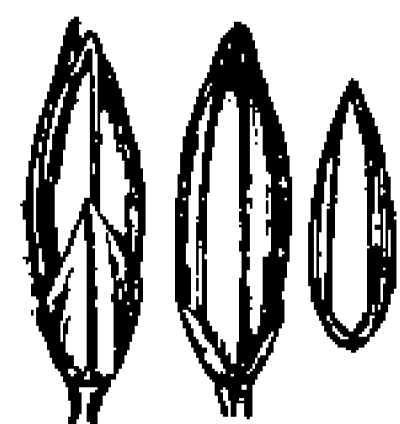


FIG. 73.—*P. boliviense*. From type specimen.

Several collections of this species were referred in the Revision<sup>1</sup> to *P. laxum* as exceptionally robust specimens with cordate blades and turgid spikelets.

#### DISTRIBUTION.

Ditches, banks of streams, moist open or wooded ground, southern Mexico and Cuba to Paraguay.

VERACRUZ: Veracruz, *Hitchcock* 6582. Mirador, *Liebmann* 419. Córdoba, *Finck* 3, *Hitchcock* 6435, 6457. Zacuapán, *Purpus* 2159, 2160. Misantla, *Purpus* 5980. Jalapa, *Hitchcock* 6666.

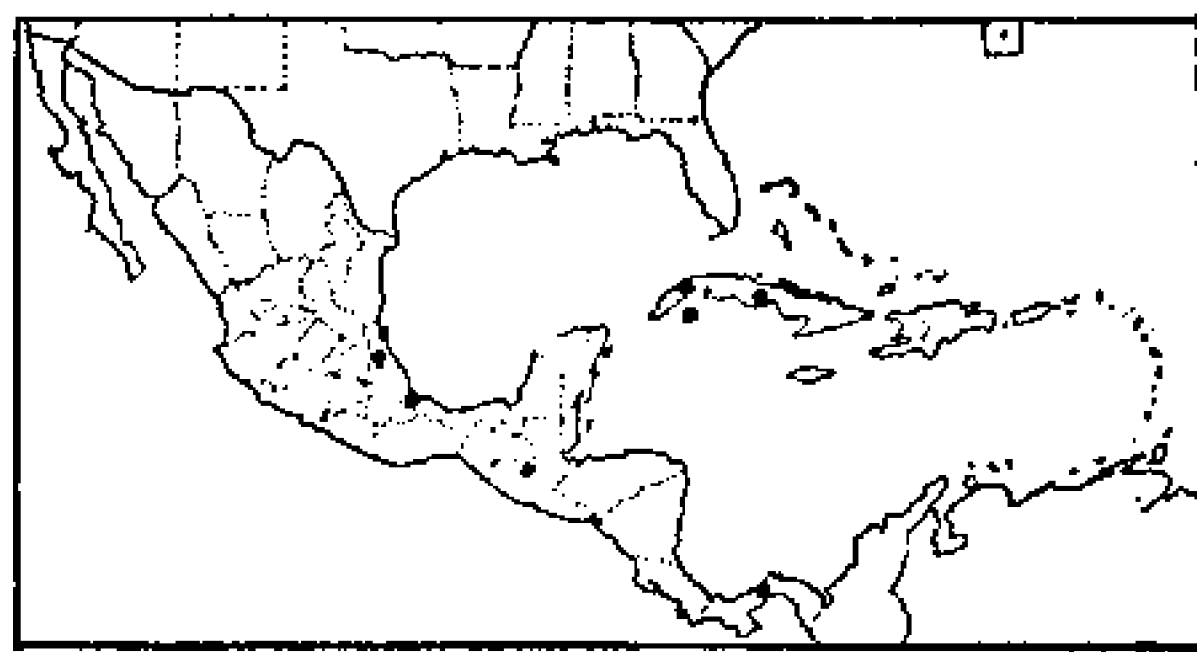


FIG. 74.—Distribution of *P. boliviense*.

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 116. 1910.

GUATEMALA: Cobán, *Türckheim* 1254.

PANAMA: Along ditch to Old Panama, *Hitchcock* 8400.

CUBA: Sancti Spiritus, *León* 909. Isle of Pines, *Curtiss* 464. Baños San Vicente, *Britton & Gager* 7452.

54. *Panicum laxum* Swartz.

*Panicum laxum* Swartz, Prodr. Veg. Ind. Occ. 23. 1788; Contr. U. S. Nat. Herb. 15: 115. 1910.

DISTRIBUTION.

Ditches, banks, moist woods and wet savannas, Mexico and West Indies to Paraguay. The type specimen from Jamaica.

SINALOA: Culiacán, *Palmer* 1558 in 1891.

VERACRUZ: Coatepec, *Hitchcock* 6665. Jalapa, *Hitchcock* 6624. Córdoba, *Hitchcock* 6421, 6433. Veracruz, *Hitchcock* 6583. Sanborn, *Orcutt* 3238. Mirador, *Liebmann* 412. Orizaba, *Botteri* 688.

TABASCO: Mayito, *Roviroso* 427.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 60 (Gray Herb.).

GUATEMALA: Puerto Barrios, *Pittier* 361, *Hitchcock* 9160. Cubilquitz, *Türckheim* 8803. Santa Rosa, *Heyde & Lux* 3900. Cobán, *Türckheim* 3832.

HONDURAS: San Pedro Sula, *Thieme* 5587.

SALVADOR: Sonsonate, *Hitchcock* 8971.

NICARAGUA: Corinto, *Hitchcock* 8748.

COSTA RICA: Buenos Aires, *Tonduz* 4864, 4868, 4871, *Pittier* 3657. Río Birris, *Pittier* 3117. Turrialba, *Tonduz* 8267, *Pittier* 16123. Río Grande de Térraba, *Tonduz* 3622. Boruca, *Tonduz* 4473. Carrillo, *Biolley* 3107. Port Limon, *Hitchcock* 8429. San José, *Hitchcock* 8455. Río Maravilla, Alajuela, *Jiménez* 141. Puntarenas, *Hitchcock* 8566. Río Bebedero, *Jiménez* 740. Río Tilirí, *Tonduz* 3071.



FIG. 75.—Distribution of *P. laxum*.

PANAMA: Gatun, *Hitchcock* 7968, 8027. Boca del Toro, *Hart* 86. Porto Bello, *Pittier* 2443. Culebra, *Hitchcock* 7900. David, *Hitchcock* 8346, 8350. Chepo, *Pittier* 4615. Vicinity of Olá, *Pittier* in 1911. Gamboa, *Pittier* 4789. Along Sambú River, *Pittier* 5234. Chorrera, *Hitchcock* 8134. Between Pedro Miguel and Corozal, *Hitchcock* 7993. Dolega, *Hitchcock* 8334.

CUBA: Sancti Spiritus, *León* 907, *Sergius* 2781, *Pöppig* 6. Hanábana, *Wright* 189, 196, 197. Isle of Pines, *Taylor* 37, *Palmer & Riley* 1069. Herradura, *Caldwell & Baker* 7136, *Tracy* 9054, 9062, 9072, 9099, *Hitchcock* 177. Santiago de las Vegas, *Hitchcock* 178, *Tracy* 9114. Banao Hills, *León* 3982½. Guanabacoa, *León* 914. Wajay, *Earle & Wilson* 343. Zaza del Sur, *Sergius* 2780. Camaguey, *Shafer* 217. Sumidero, *Shafer* 13724. Los Palacios, *Shafer* 11793. La Gloria, *Shafer* 174. Without locality, *Wright* 759, 3451, 3863.

JAMAICA: Bull Head Mountain, *Hitchcock* 9539, 9545. Castleton Gardens, *Hitchcock* 9397. Ewarton to Linstead, *Hitchcock* 9461. Appleton, *Hitchcock* 9658. Gordon Town, *Hitchcock* 9333. Troy, *Hitchcock* 9786. Castleton, *Harris* 11285. Below Flamstead, *Harris* 11466.

SANTO DOMINGO: Jarabacoa, *Eggers* 2120.



PORTO RICO: Between Aibonito and Cayey, *Chase* 6341, *Heller* 522. Arecibo, *Chase* 6440. Sierra Luquillo, *Hioram* 368, *Chase* 6713. Adjuntas Road, *Heller* in 1902. Cataño, *Heller* 1378. Utuado, *Britton & Cowell* 394. Mayaguez, *Chase* 6155, 6185, *Sintenis* 360. Along Rio Coamo, *Chase* 6549. Trujillo Alto, *Chase* 6363, 6775. Jajome Alto, *Chase* 6753. Santurce, *Chase* 6354. Mount Morales, *Britton & Marble* 1068. Fajardo, *Sintenis* 1254.

DANISH WEST INDIES: St. Thomas, *Eggers* 874 (K. U. Herb.).

LEEWARD ISLANDS: Antigua, *Wulfschlaegel* 623. Guadeloupe, *Duss* 3179. Dominica, *Jones* 21, 25.

WINDWARD ISLANDS: Martinique, *Duss* 535, 716 (K. U. Herb.). Barbados, *Dash* 450. St. Lucia, *Voyage of the Albatross* in 1887-88. Grenada, *Broadway* 1870, 3712, 4668.

TRINIDAD: Port of Spain, *Hitchcock* 9984. Piarco Savanna, *Hitchcock* 10343, 10351, 10361. Brighton, *Hitchcock* 10098. Pitch Lake, *Hitchcock* 10091. Cumuto Station, *Hitchcock* 10068. Cedros, *Hitchcock* 10149, *Bot. Gard. Herb.* 2177, 2289.

TOBAGO: Center of island, *Hitchcock* 10272. Spey Side, *Hitchcock* 10245.

VENEZUELA: Llanos del Alto Apure, *Jahn* 201.

COLOMBIA: Córdoba, *Pittier* 521, 553. Cali, *Pittier* 665. Santa Marta, *Smith* 202, 204.

### 55. *Panicum stevensianum* sp. nov.

#### DESCRIPTION.

Plants perennial, tufted, glabrous throughout; culms compressed, 30 to 60 cm. long, spreading, prostrate, rooting at the nodes, the flowering ends and the branches ascending;

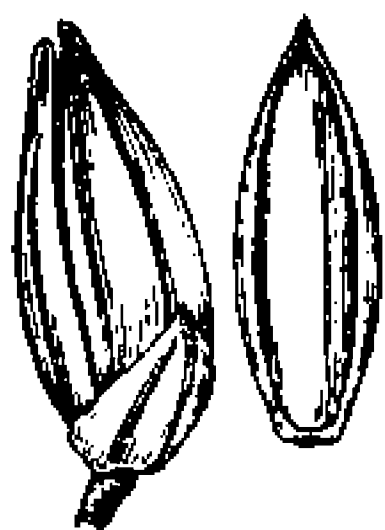


FIG. 76.—*P. stevensianum*.  
From type specimen.

sheaths loose, much shorter than the internodes, compressed, keeled, ciliate on the overlapping margin; ligule a delicate membrane about 0.5 mm. long; blades flat, rather firm, more or less spreading, 4 to 10 cm. long, 5 to 10 mm. wide, tapering from a little above the sparsely ciliate, truncate-cordate base to an acuminate apex; panicles terminal on the culm and branches, short-exserted, 6 to 10 cm. long, narrow, consisting of several appressed or ascending spikelike branches along an angled axis, the lower branches somewhat remote, 1.5 to 3 cm. long, usually longer than the internodes, the upper approximate, all spikelet-bearing to the base, the short-pedicelled spikelets in crowded clusters, not secund, along a slender scabrous rachis; spikelets about 2 mm. long and 0.8 mm. wide, acute,

somewhat inflated and gaping; first glume about one-fourth the length of the spikelet, subacute, 3-nerved; second glume and sterile lemma equal, pointed, slightly exceeding the fruit, 3 to 5-nerved, the lemma inclosing a large palea and abortive perfect flower; fruit 1.9 mm. long, 0.6 mm. wide, minutely scabrous at the acute apex.

Type in the U. S. National Herbarium, no. 693323, collected "on wet sand around pool, forming a dense carpet, white sand region, Campo Alegre near Laguna del Tortuguero," Porto Rico, November 25, 1913, by Agnes Chase (no. 6616).



FIG. 77.—Distribution of *P. stevensianum*.

This species appears to be most nearly related to the South American *P. milioides* Nees, from which it differs in the short erect panicle branches, spikelet-bearing to the base.



None of the specimens collected is mature. It may be that the large sterile palea becomes indurated at maturity as in *P. hians* and its close allies. The species is named in honor of Dr. F. L. Stevens of the University of Illinois, who, during the three years he was dean of the College of Agriculture and Mechanic Arts of Porto Rico, was an ardent student of the flora of the island and who contributed greatly to the success of a botanical trip made by one of the authors to Porto Rico in 1913.

Since this work went to press a second collection of this species has been received: *Wilson* 9558, Laguna de Castellano, Cuba.

**56. *Panicum exiguiflorum* Griseb.**

*Panicum exiguiflorum* Griseb. Cat. Pl. Cub. 234. 1866; Contr. U. S. Nat. Herb. 15: 117, 1910.

DISTRIBUTION.

Savannas and moist sandy woods, Bahamas and Cuba. The type specimen from Cuba.

BAHAMAS: Fortune Island, *Hitchcock* in 1890.

CUBA: Hanábana, *Wright* in 1865. Sancti Spiritus, *Sergius* 2566. Obispo Hill, *León* 902b. Zaza del Medio, *León* 902. Guanabacoa, *León* 911, 913. Chirigote, *Wright* 3450. Herradura, *Hitchcock* 179, *Tracy* 9075. Isle of Pines, *Taylor* 35. Without locality, *Wright* 755, 3450, 3877.



FIG. 78.—Distribution of *P. exiguiflorum*.

**57. *Panicum hians* Ell.**

*Panicum hians* Ell. Bot. S. C. & Ga. 1: 118. 1816; Contr. U. S. Nat. Herb. 15: 118. 1910.

DISTRIBUTION.

Savannas and moist soil along ponds and streams, North Carolina to New Mexico and in Veracruz, Mexico. The type specimen from South Carolina.

VERACRUZ: Jalapa, *Schiede*. Without locality, *Müller* 2095.

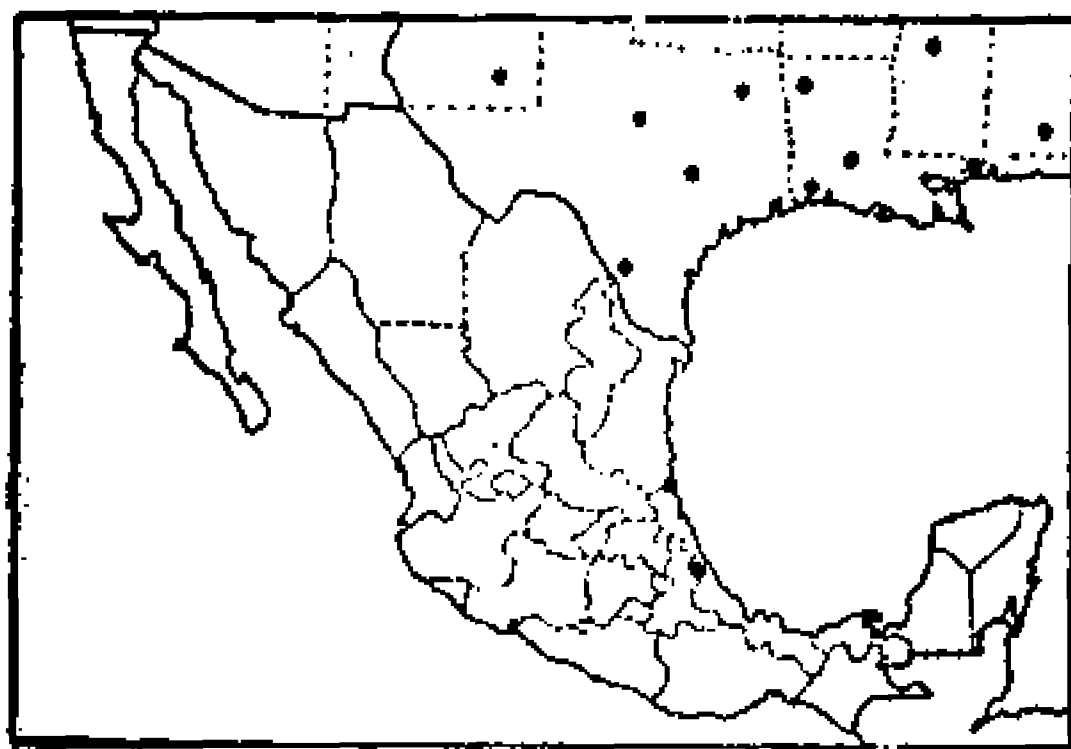


FIG. 79.—Distribution of *P. hians*.

**58. *Panicum cupreum* Hitchc. & Chase.**

*Panicum cupreum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 120. 1910.

DISTRIBUTION.

Only known from the type collection, in "wet hollows in prairies of Flor de Maria, State of Mexico," *Pringle* 3449.

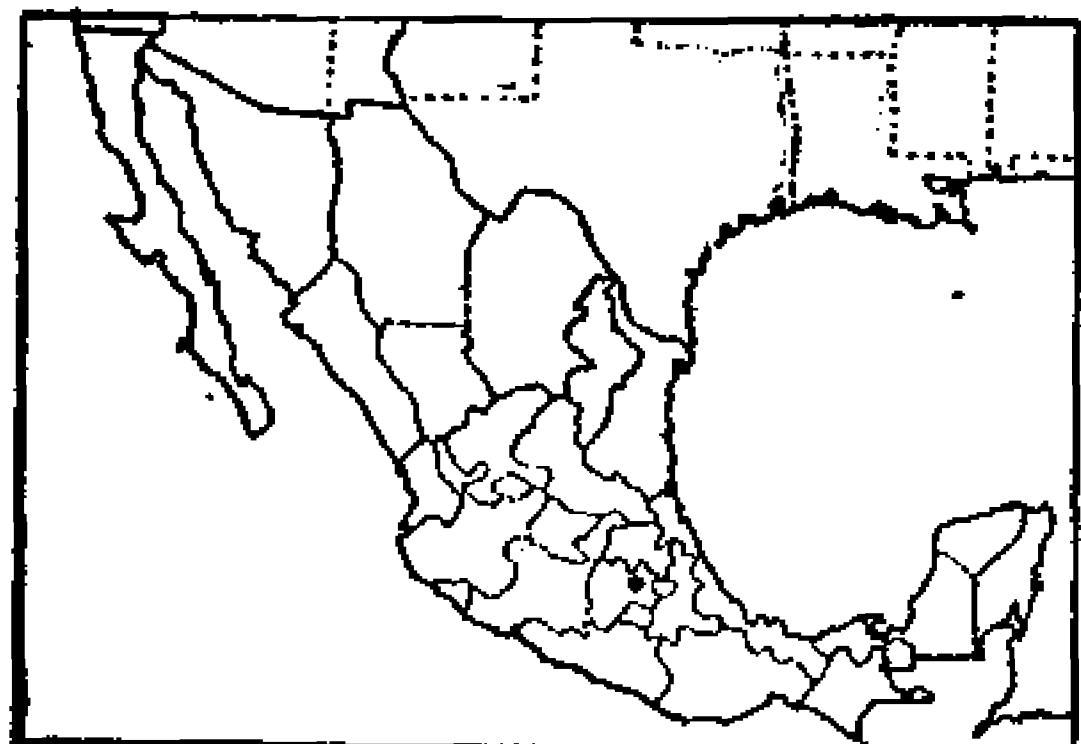


FIG. 80.—Distribution of *P. cupreum*.

## STOLONIFERA.

Spikelets hispid and with 2 crateriform glands on the sterile lemma; second glume and sterile lemma not boat-shaped.

Spikelets not over 2 mm. long; blades not over 4 cm. long.. 61. *P. pulchellum*.

Spikelets 3.6 mm. long; blades 4 to 10 cm. long..... 62. *P. biglandulare*.

Spikelets glabrous, glandless; second glume and sterile lemma boat-shaped.

Blades not over 5 cm., usually 2 or 3 cm., long; second glume rather blunt and shorter than the sterile lemma. . . . 59. *P. stoloniferum*.

Blades 5 to 11 cm. long; second glume acute, nearly equaling the sterile lemma. . . . . 60. *P. frondescens*.

59. *Panicum stoloniferum* Poir.

*Panicum stoloniferum* Poir. in Lam. Encycl. Suppl. 4: 274. 1816; Contr. U. S. Nat. Herb. 15: 121. 1910.

## DISTRIBUTION.

Moist shady places, Guatemala to Brazil. The type specimen from Cayenne.



FIG. 81.—Distribution of *P. stoloniferum*.

GUATEMALA: Puerto Barrios, *Pittier* 364.

PANAMA: Frijoles, *Amer. Gr. Nat. Herb.* 62.

WINDWARD ISLANDS: Martinique, *Duss* 1291 (K. U. Herb.).

TRINIDAD: St. Ann's Valley, *Bot. Gard. Herb.* 2293. Aqua Santa Arima, *Broadway* 2370. Without locality, *Crueger* 79.

60. *Panicum frondescens* Meyer.

*Panicum frondescens* Meyer, Prim. Fl. Esseq. 56. 1818; Contr. U. S. Nat. Herb. 15: 121. 1910.

*Hymenachne frondescens* Fourn. Mex. Pl. 2: 36. 1886. Based on *Panicum frondescens* Meyer.

A specimen in the Berlin Herbarium, *Seler* 5024, without locality other than Mexico and Central America, is exceptionally lax and is peculiar in having occasional spikelets with glands on the sterile lemma as in *P. pulchellum* and *P. biglandulare*. In most of the spikelets there are a few hairs along the margin of the sterile lemma. Further collections may show this to be a distinct species. In *Pittier* 6328, cited below, a few spikelets bear glands, but all are glabrous.

## DISTRIBUTION.

Moist woods, Mexico to Brazil. The type specimen from British Guiana.

VERACRUZ: Papantla, *Liebmann* 405.

TABASCO: Sebastián, *Rovirosa* 497.

GUATEMALA: Dept. Petén, *Walker* 1138.

COSTA RICA: Hacienda de Zent, *Tonduz* 259.

PANAMA: Trinidad Basin, *Pittier* 4027.

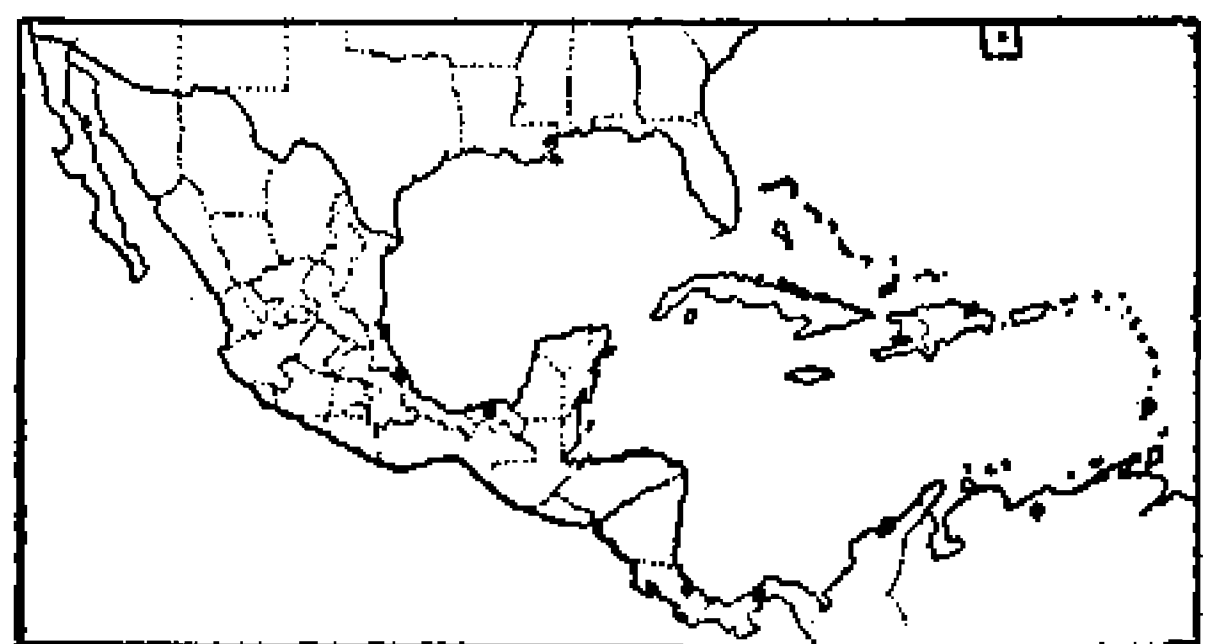


FIG. 82.—Distribution of *P. frondescens*.

WINDWARD ISLANDS: *Smith & Smith* 187 (K. U. Herb.).

TRINIDAD: Aqua Santa Arima, *Broadway* 2371. Blanchisseuse, *Broadway* 2390. Without locality, *Crueger* 85.

VENEZUELA: Above Paparo, *Pittier* 6328.

COLOMBIA: Santa Marta, *Smith* 2126, 2571.

61. *Panicum pulchellum* Raddi.

*Panicum pulchellum* Raddi, *Agrost. Bras.* 42. 1823; *Contr. U. S. Nat. Herb.* 15: 123. 1910.

*Hymenachne leptostachya* Fourn. *Mex. Pl.* 2: 36. 1886. Based on *Panicum leptostachyum* Presl.

DISTRIBUTION.

Moist shady places, southern Mexico and the Windward Islands to Brazil. The type specimen from Rio de Janeiro.

VERACRUZ: Córdoba, *Hitchcock* 6444, *Bourgeau* 1455. Minatitlán, *Smith* 589.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 279 (Gray Herb.).

GUATEMALA: Cubilquitz, *Türckheim* 7702, 8794. Secanquím, *Cook & Griggs* 284, *Maxon & Hay* 3153. El Palmar, *Kellerman* 6246.

COSTA RICA: San Francisco, *Jiménez* 162. San Mateo, *Biolley* 7001. Desamparados, *Tonduz* 1482. Boruca, *Tonduz* 4459, 4460. El General, *Pittier* 3362. Piedra del Convento, *Pittier* 3656. Cañas Gordas, *Pittier* 7360. Buenos Aires, *Tonduz* 4881.



FIG. 83.—Distribution of *P. pulchellum*.

PANAMA: Between Panama and

Corozal, *Amer. Gr. Nat. Herb.* 63. Culebra, *Pittier* 2226. Cerro Vaca, *Pittier* 5375.

WINDWARD ISLANDS: Martinique, *Duss* 767 (K. U. Herb.).

VENEZUELA: Cárdenas, *Pittier* 5975.

COLOMBIA: Santa Marta, *Smith* 2127.

62. *Panicum biglandulare* Scribn. & Smith.

*Panicum biglandulare* Scribn. & Smith, *U. S. Dept. Agr. Div. Agrost. Bull.* 4: 13. *pl.* 4. 1897; *Contr. U. S. Nat. Herb.* 15: 123. 1910.



FIG. 84.—Distribution of *P. biglandulare*.

DISTRIBUTION.

Among bushes, southern Mexico and Guatemala. The type specimen from Chiapas.

CHIAPAS: Pinabete, *Nelson* 3781.

GUATEMALA: Cobán, *Türckheim* II. 1342, II. 1956.

## PARVIGLUMIA.

- Fruit glabrous..... 66. *P. parviglume*.  
 Fruit with scattered appressed silky hairs.  
 Culms creeping, with ascending flowering branches, not over  
 0.5 meter high; blades falcate..... 64. *P. schmitzii*.  
 Culms clambering, usually 1 to 3 meters long; blades not  
 falcate.  
 Panicles 2.5 to 7 cm. long; blades not over 1 cm. wide,  
 symmetrical at base..... 63. *P. virgultorum*.  
 Panicles 10 to 15 cm. long; blades 1.2 to 2.5 cm. wide,  
 unsymmetrical at base..... 65. *P. schiffneri*.

**63. *Panicum virgultorum* Hack.**

*Panicum virgultorum* Hack. Oesterr. Bot. Zeitschr. 51: 369. 1901; Contr. U. S. Nat. Herb. 15: 125. 1910.

## DISTRIBUTION.

Hedge rows, brushy banks, and cultivated fields, southern Mexico to Panama. The type specimen from Costa Rica.

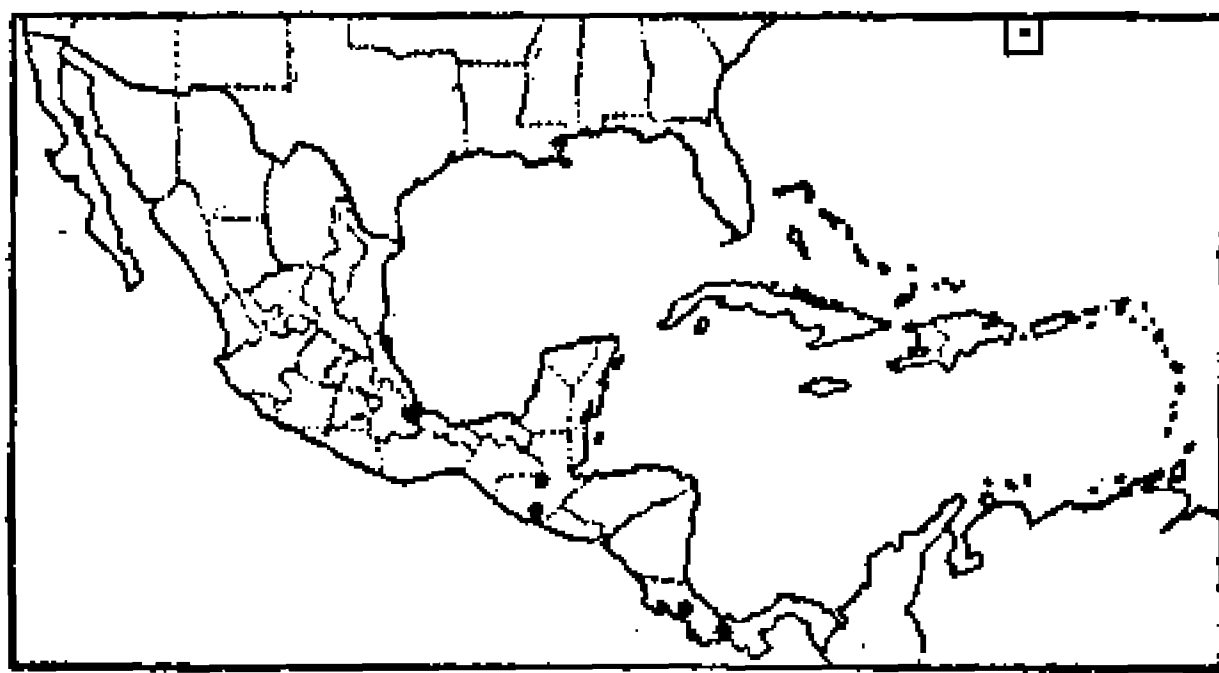


FIG. 85.—Distribution of *P. virgultorum*.

VERACRUZ: Jalapa, *Hitchcock* 6630. Córdoba, *Hitchcock* 6441. Orizaba, *Amer. Gr. Nat. Herb.* 64.

GUATEMALA: Guatemala City, *Hitchcock* 9074. Chacula, *Seler* 2708. Cobán, *Türkheim* 3788.

COSTA RICA: San José, *Hitchcock* 8490. Alajuelita, *Tonduz* 8818, 8829. Tres Ríos, *Pittier &*

*Tonduz* 4326. San Francisco, Río Torres, *Jiménez* 49. San Juan, *Jiménez* 919.

PANAMA: El Boquete, *Hitchcock* 8317.

**64. *Panicum schmitzii* Hack.**

*Panicum schmitzii* Hack. Ann. Naturhist. Hofm. Wien 17: 254. 1902; Contr. U. S. Nat. Herb. 15: 125. 1910.

## DISTRIBUTION.

Shaded rocky slopes, central and southern Mexico. The type specimen from Mexico.

SAN LUIS POTOSÍ: Las Canoas, *Pringle* 3817.

VERACRUZ: Córdoba, *Hitchcock* 6423, 6446. Orizaba, *Amer. Gr. Nat. Herb.* 65.



FIG. 86.—Distribution of *P. schmitzii*.

**65. *Panicum schiffneri* Hack.**

*Panicum schiffneri* Hack. Ergeb. Bot. Exped. Akad. Wiss. Südbras. 11. 1906; Denkschr. Kais. Akad. Wiss. Wien 79: 72. 1908. The type specimen, in Hackel's herbarium, was collected in southern Brazil by Wettstein and Schiffner in 1901.

## DESCRIPTION.

Plants perennial with long branching decumbent base, rooting at the nodes; culms straggling, ascending, 2 to 3 meters long, slender, more or less compressed, smooth or hirsute or roughened below the nodes, producing long divaricate branches; sheaths papillose-hispid especially toward the summit, sometimes glabrate below, densely pubescent at the junction with the blade; ligule membranaceous-ciliate, about 0.5 mm. long; blades flat, rather firm, usually horizontally spreading, 10 to 15 cm. long, 1.2 to 2.5 cm. wide (rarely larger), narrowed to the usually unsymmetrical base, gradually tapering from below the middle to an acuminate apex, scabrous and sometimes sparsely hispid on the upper surface, pubescent above the ligule, scaberulous or puberulent beneath or sometimes sparsely hispid, especially along the midnerve, the fine white margin undulate, scabrous; panicle 10 to 15 cm. long, usually about as wide, the few slender scabrous branches remote, pilose in the axils, the lower branches solitary or in pairs, widely spreading or reflexed, more than half as long as the very scabrous main axis, naked at the base, the upper branches much shorter, ascending, the rather densely flowered short branchlets appressed along the upper half or two-thirds of the branches, the bract at the base of inflorescence usually well developed; spikelets short-pediceled, aggregated, scarcely 2 mm. long, 1 mm. wide, turgid, glabrous; first glume less than one-fourth as long as the spikelet; second glume and sterile lemma equal, exceeding the fruit, obscurely nerved; fruit about 1.5 mm. long, 0.9 mm. wide, elliptical, sparsely covered with long appressed silky hairs.

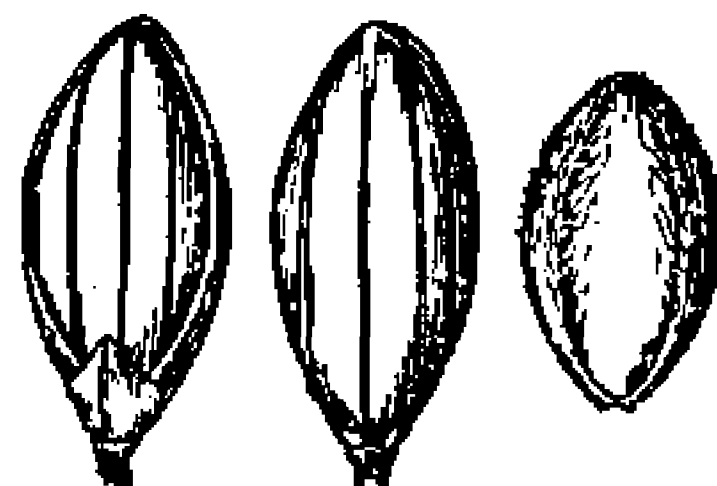


FIG. 87. — *P. schiffneri*. From type specimen.

This species resembles *Panicum parviglume* in habit and *P. schmitzii* and *P. virgulatorum* in spikelet characters. It has longer, more straggling culms than has any other species of this group, and larger blades than any except *P. parviglume*.

## DISTRIBUTION.

Wet shady banks and slopes, Porto Rico, Windward Islands, and southern Mexico to southern Brazil.



FIG. 88.—Distribution of *P. schiffneri*.

VERACRUZ: Córdoba, *Amer. Gr. Nat. Herb.* 66, distributed as *P. parviglume*.

GUATEMALA: Cobán, *Turckheim* II. 1326.

COSTA RICA: San Francisco de Guadalupe, *Jiménez* in 1910.

PANAMA: El Boquete, *Hitchcock* 8278, 8305.

PORTO RICO: Maricao, *Chase* 6198. Indiera Fria, *Chase* 6247. Vicinity of Cayey, *Chase* 6745. Alto de Bandera, *Chase* 6474.

WINDWARD ISLANDS: Martinique, *Hahn* 616. St. Vincent, *Eggers* 6653, *Smith & Smith* 1099 (K. U. Herb.).

66. *Panicum parviglume* Hack.

*Panicum parviglume* Hack. *Oesterr. Bot. Zeitschr.* 51: 429. 1901; *Contr. U. S. Nat. Herb.* 15: 126. 1910.

*Panicum conchatum* Fourn. *Mex. Pl.* 2: 25. 1886. This was previously included among the doubtful species.<sup>1</sup> A few spikelets from Schaffner's no. 204 (the type

<sup>1</sup>*Contr. U. S. Nat. Herb.* 15: 329. 1910.

collection) in the Berlin Herbarium are in the National Herbarium. A restudy of these together with later collections show that they are referable to *P. parviglume*. Fournier's description is vague and inadequate and appears to have been based on more than one species, the vegetative characters as described being unlike those of any species in this group. Because of this uncertainty the name *P. conchatum* is not taken up to replace *P. parviglume*.

*Panicum arundinariae* Trin.; Fourn. Mex. Pl. 2: 25. 1886. This name is also included among the doubtful species.<sup>1</sup> Müller's no. 2018, one of the specimens cited by Fournier, is *P. parviglume*, while another, *Schaffner* 279, also cited, is *Panicum virgultorum*. As in the preceding case, the description is inadequate, for which reason the name *P. arundinariae* is not taken up.



FIG. 89.—Distribution of *P. parviglume*.

Guadalupe, *Tonduz & Pittier* 8448, *Jiménez* 113. San José, *Hitchcock* 8487.

#### DISTRIBUTION.

Banks and ditches, southern Mexico to Costa Rica. The type specimen from San José, Costa Rica.

VERACRUZ: Orizaba, *Bourgeau* 3197, *Müller* 2018. Borrego, *Botteri* 150, 152.

COSTA RICA: Alajuelita, *Jiménez* 403. San Francisco de

#### TRICHOIDIA.

One of the two species of this group, *Panicum trichanthum*, is found to be a perennial.

- Blades more than one-fourth as wide as long; spikelets pubescent; plants annual..... 67. *P. trichoides*.  
Blades less than one-eighth as wide as long; spikelets minutely bullate-rugose; plants perennial..... 68. *P. trichanthum*.

#### 67. *Panicum trichoides* Swartz.

*Panicum trichoides* Swartz, Prodr. Veg. Ind. Occ. 24. 1788; Contr. U. S. Nat. Herb. 15: 129. 1910.

#### DISTRIBUTION.

Damp shady places, often a weed in fields and groves, tropical America. The type specimen from Jamaica.

SINALOA: Imala, *Palmer* 1758 in 1891.

TEPIC: María Madre Islands, *Nelson* 4257.

JALISCO: Guadalajara, *Amer. Gr. Nat. Herb.* 70, *Pringle* 2618, 3828.

COLIMA: Manzanillo, *Palmer* 1083 in 1890. Colima, *Orcutt* 4515. Alzada, *Hitchcock* 7110.

MICHOACÁN: La Correa, *Langlassé* 380. Hacienda Coahuayula, *Emrick* 53.

VERACRUZ: Zacuapán, *Purpus* 2902. Minatitlán, *Smith* 601. Córdoba, *Finck* in 1893. Sanborn, *Orcutt* 3241.

GUERRERO: Acapulco, *Palmer* 287 in 1894.

OAXACA: Guatulco, *Liebmann* 317.

TABASCO: Mayito, *Roviroso* 434. San Juan Bautista, *Roviroso* 598.

YUCATÁN: Izamal, *Gaumer* 522. San Anselmo, *Gaumer* 895, 2027.

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 329. 1910.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 314. Toledo, *Peck* 637 (both in Gray Herb.).

GUATEMALA: El Palmar, *Kellerman* 6263. Santa Rosa, *Heyde & Lux* 4299. Cubilquitz, *Türckheim* 7801. Morales, *Deam* 6041. Rinconcito, *Heyde & Lux* 4299.

HONDURAS: Amapala, *Hitchcock* 8768. Puerto Sierra, *Wilson* 89, 188.

SALVADOR: Sonsonate, *Hitchcock* 8981. San Salvador, *Velasco* 10. La Unión, *Hitchcock* 8791.

NICARAGUA: Jinotepe, *Hitchcock* 8693. San Juan del Sur, *Hitchcock* 8604. Masaya, *Hitchcock* 8631.

COSTA RICA: Hacienda de Zent, *Tonduz* 363, *Pittier* in 1904. Atenas, *Hitchcock* 8521. Puntarenas, *Hitchcock* 8555. Alajuela, *Jiménez* 145. San José, *Tonduz* 3133. Buenos Aires, *Tonduz* 4865, *Pittier* 3651. Matina, *Pittier* 9754. Nicoya, *Cooper* 10379, *Tonduz* 13754. Boruca, *Pittier* 4458. Hacienda de Chirripó, *Pittier* 16081. Carrillo, *Biolley* 3111.

PANAMA: Culebra, *Hitchcock* 7933, 8022. Alajuela, *Pittier* 2352. Puerto Obaldía, *Pittier* 4284. Below Chepo, *Pittier* 4696. Culebra, *Pittier* 2083. Tabernilla, *Hitchcock* 8384. Taboga Island, *Celestine* 84.

CUBA: Habana, *León* in 1910, *Curtiss* 714. Monte Verde, *Wright* 1538. Sancti Spiritus, *León* 4105.

JAMAICA: Ramble, *Hitchcock* 9475. Cedar Hurst, *Harris* 11566. Castleton, *Harris* 11299, 11328.

Kingston, *Hitchcock* 9281. Port Antonio, *Fredholm* 3282. Gordon Town, *Hitchcock* 9332.

PORTO RICO: Maricao, *Chase* 6191. Vega Baja, *Chase* 6417. Mayaguez, *Chase* 6167, *Sintenis* 160, *Cowell* 522, 583. Ponce, *Heller* 6094. Luquillo Mountains, *Wilson* 283. Martin Peña, *Heller* 387. Between Aibonito and Cayey, *Heller* 531. Mount Morales, *Britton & Cowell* 444. Santurce, *Heller* 157. Rio Piedras, *Barrett* 61.

LEEWARD ISLANDS: St. Kitts, *Britton & Cowell* 295. Guadeloupe, *Duss* 2681. Dominica, *Eggers* in 1881. Montserrat, *Shafer* 337, 706. Saba, *Suringar* in 1885, *Boldingh* 2122 (K. U. Herb.).

WINDWARD ISLANDS: Martinique, *Hahn* 1047, *Duss* 1321. Grenada, *Broadway* in 1905, *Eggers* 5987. St. Vincent, *Smith & Smith* 185 (K. U. Herb.).

TRINIDAD: Port of Spain, *Hitchcock* 9946.

VENEZUELA: Above Paparo, *Pittier* 6494. Tovar, *Fendler* 2499.

COLOMBIA: Santa Marta, *Smith* 167. Sevilla, *Pittier* 1621. Cali, *Pittier* 971.



FIG. 90.—Distribution of *P. trichoides*.

### 68. *Panicum trichanthum* Nees.

*Panicum trichanthum* Nees, *Agrost. Bras.* 210. 1829; *Contr. U. S. Nat. Herb.* 15: 131. 1910.

The habit of this species as studied in the field indicates that it is a perennial. The culms are long and straggling with rootlets at the nodes and form a tangled mass among shrubs or vines.



## DISTRIBUTION.

Moist thickets and river banks, Mexico, and the West Indies to Paraguay. The type specimen from Mexico.

SAN LUIS POTOSÍ: San Luis Potosí to Tampico, *Palmer* 1151 in 1879.

COLIMA: *Palmer* 1257 in 1891.

VERACRUZ: Motzorongo, *Smith* 585. Veracruz, *Hitchcock* 6584. Jicaltepec, *Liebmann* 320. Colipa, *Liebmann* 432. Without locality, *Müller* 2172.

CAMPECHE: Near Champotón, *Collins* 37.

BRITISH HONDURAS: Tolédo, *Peck* 775 (Gray Herb.).

GUATEMALA: Gualán, *Deam* 424. Puerto Barrios, *Hitchcock* 9149. Morales, *Kellerman* 6272. Finca Trece Aguas, *Lewton* 377. Cubilquitz, *Türkheim* 7798.

HONDURAS: San Pedro Sula, *Thieme* 5587.

NICARAGUA: Jinotepe, *Hitchcock* 8669, 8682.

COSTA RICA: Port Limon, *Hitchcock* 8434. Talamanca, *Tonduz* 8600, 8670.

PANAMA: Laguna de Chiriquí, *Hart* 87. Culebra, *Hitchcock* 7895.

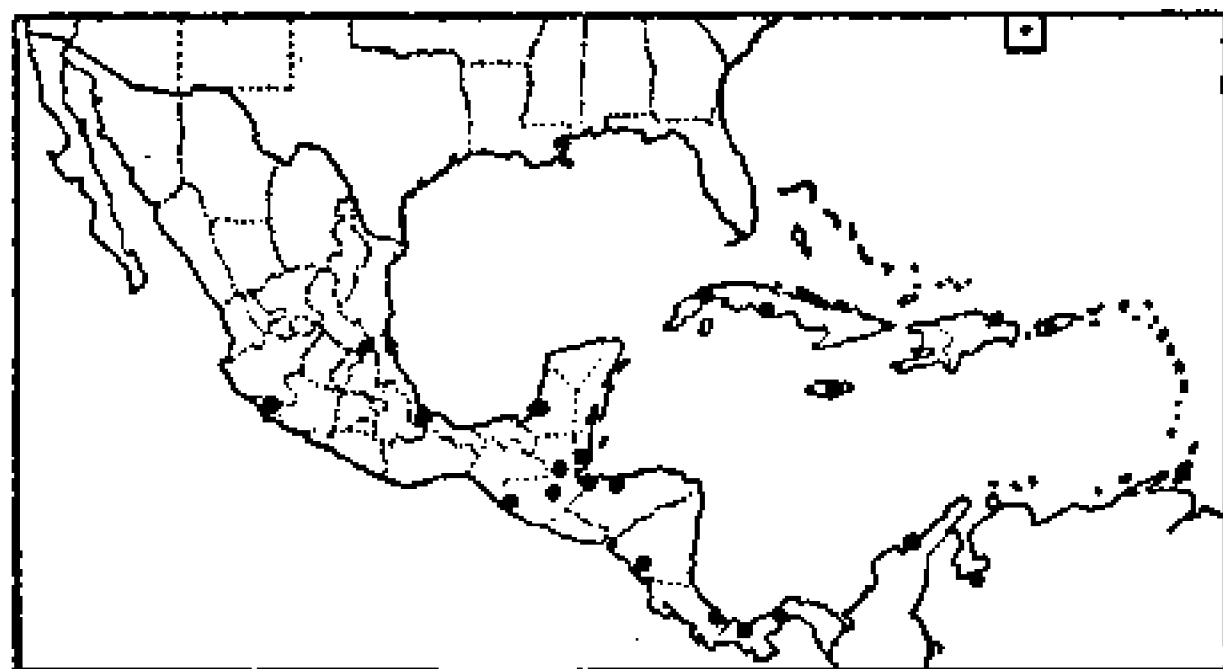


FIG. 91.—Distribution of *P. trichanthum*.

Frijoles, *Maxon* 4703. Panama, *Hitchcock* 9212. Tabernilla, *Pittier* 3824, *Hitchcock* 8383. Gamboa, *Pittier* 4798. Balboa, *Hitchcock* 8015.

CUBA: Trinidad, *Wright* 753. Vento, *Curtiss* 598, *León* 557. Romelie, *Eggers* 5350.

JAMAICA: Port Antonio, *Hitchcock* in 1890.

PORTO RICO: Cayey, *Sintenis* 2471, *Chase* 6748. Peñuelas, *Chase* 6487. Rio Piedras, *Johnston* 143.

TRINIDAD: Port of Spain, *Hitchcock* 9943. Cedros, *Hitchcock* 10146.

VENEZUELA: Tovar, *Fendler* 1443.

COLOMBIA: Santa Marta, *Smith* 2151.

## PARVIFOLIA.

Perennials, usually glaucous; culms more or less decumbent; panicles small, diffuse, the spikelets small, turgid or subglobose, glabrous, the first glume more than half the length of the spikelet.

Culms very slender, decumbent or creeping; blades 1 to 3 cm.

long..... 69. *P. parvifolium*.

Culms firm, erect or decumbent at base only; blades 3 to 8 cm.

long..... 70. *P. cyanescens*.

69. *Panicum parvifolium* Lam.

*Panicum parvifolium* Lam. Tabl. Encycl. 1: 173. 1791; Contr. U. S. Nat. Herb. 15: 134. 1910.

The blades in this species vary in shape from oblong or ovate-lanceolate to narrowly lanceolate, in surface from glabrous to densely appressed-hirsute, and in texture from thin to firm. One form, in aspect approaching *P. cyanescens*, has firm pubescent erect blades, as much as 5 mm. wide and 4.5 cm. long. This is represented by *Broadway* 2372 in part and *Hitchcock* 10065, both from Trinidad. *Panicum brasiliense* Spreng. is a pubescent form with oblong-lanceolate moderately firm blades. It does not appear possible to recognize this form as a distinct species.



DISTRIBUTION.

Wet savannas and margins of ponds and streams, Costa Rica and the West Indies to Paraguay. The type specimen from tropical America.

COSTA RICA: Buenos Aires, *Tonduz* 3631, 3659, *Pittier* 10594.

CUBA: Los Almacigos, *Wright* 3458. Herradura, *Baker* 2078, *Tracy* 9060, 9079, *Hitchcock* 181, *Britton*, *Earle & Gager* 6494. Pinar del Río, *Britton & Gager* 7075. Guane, *Shafer* 10659. Laguna Los Indios, *Shafer* 10803.

PORTO RICO: Lake Loisa, *Chase* 6786. Campo Alegre, *Chase* 6615, 6788. Aguada, *Sintenis* 5719. Guainabo, *Chase* 6630. Cataño, *Sintenis* 5719. Martín Peña, *Chase* 6358. Trujillo Alto, *Chase* 6763. Vega Baja, *Chase* 6796, *Heller* 1316.

TRINIDAD: Cumuto Station, *Hitchcock* 10065, *Amer. Gr. Nat. Herb.* 72. Pitch Lake, *Hitchcock* 10100. Arima, *Broadway* 2372. Without locality, *Crueger*, 224.



FIG. 92.—Distribution of *P. parvifolium*.

70. *Panicum cyanescens* Nees.

*Panicum cyanescens* Nees, *Agrost. Bras.* 220. 1829. "Habitat in Brasilia meridionali (Sellow)." The type is in the Berlin Herbarium.

*Panicum firmifolium* Trin.; Nees, loc. cit. A herbarium name given as a synonym of *P. cyanescens*.

DESCRIPTION.

Plants perennial, bluish or glaucous; culms tufted, erect or with a decumbent base rooting at the nodes, slender, smooth, leafy, 30 to 50 cm. high, branching from the middle and upper nodes; sheaths striate, glabrous, rarely ciliate on the overlapping margin; ligule minute, membranaceous, sparsely ciliate with long hairs or sometimes naked; blades flat, rather firm, erect, spreading or reflexed, 3 to 8 cm. long, 4 to 5 mm. wide,

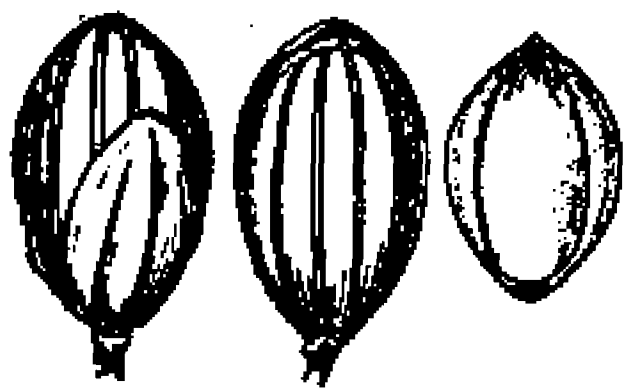


FIG. 93.—*P. cyanescens*.  
From type specimen.

oblong-lanceolate, slightly narrowed to the base, acute, glabrous; panicles short-exserted, terminal and often from the upper sheaths, 3 to 6 cm. long, as wide or wider, open, the slender flexuous branches rather remote, stiffly ascending or spreading, naked below, branching and spikelet-bearing toward the ends, the spikelets on slender divaricate pedicels; spikelets about 1.5 mm. long, 0.9 mm. wide, turgid or subglobose, obtuse, glabrous; first glume two-thirds to three-fourths as long as the spikelet; second glume and sterile lemma equal, covering the fruit, or at maturity the glume wrinkled because of the turgidity of the fruit, exposing the summit; fruit 1.2 mm. long, 0.8 mm. wide, very turgid, subacute, the lemma and palea cellular-roughened as seen under a lens, bearing a few very obscure appressed hairs toward the summit.

This species resembles *P. parvifolium*, but differs in the less slender, more erect culms, longer blades, and stiffly ascending panicle branches, naked below.

FIG. 94.—Distribution of *P. cyanescens*.

## DISTRIBUTION.

Swamps and wet savannas, British Honduras and Trinidad to Brazil.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 271 (Gray Herb.).

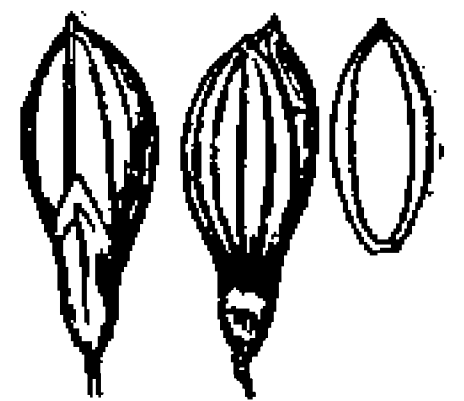
TRINIDAD: Piarco Savanna, *Hitchcock* 10349, 10354, 10364. Cumuto Station, *Hitchcock* 10067.

Aripo Savanna, *Broadway* 2377.

## UNGROUPED SPECIES OF TRUE PANICUM.

71. *Panicum pyrularium* sp. nov.

Plants annual; culms delicate, 10 to 13 cm. high, at first erect and simple, finally decumbent and branching, often rooting at the nodes, more or less zigzag, sometimes elongating to 25 or 30 cm.; nodes sparsely pilose or glabrous; sheaths shorter than the blades, glabrous or sparsely pilose; ligule membranaceous, about 0.5 mm. long; blades thin, flat, spreading, 1 to 3 cm. long, 2 to 7 mm. wide (the lower sometimes smaller), narrowly elliptical, somewhat clasping at base, obtuse or acutish at the apex, scabrous on the margins, glabrous or sparsely pilose on both surfaces, sometimes glaucous; panicles terminating the culm and branches, loose and open, 2 to 5 cm. long, about as wide, oval or pyramidal in outline, the delicate flexuous branches and branchlets spreading or reflexed, smooth, the capillary divaricate pedicels several times longer than the spikelets; spikelets 1.5 mm. long, 0.6 mm. wide, turgid, pyriform, long-attenuate at base, glabrous; first glume about half as long as the spikelet, acute; second glume and sterile lemma 5-nerved, not exceeding the fruit, the glume slightly shorter than the sterile lemma; fruit 1 mm. long, 0.5 mm. wide, turgid.

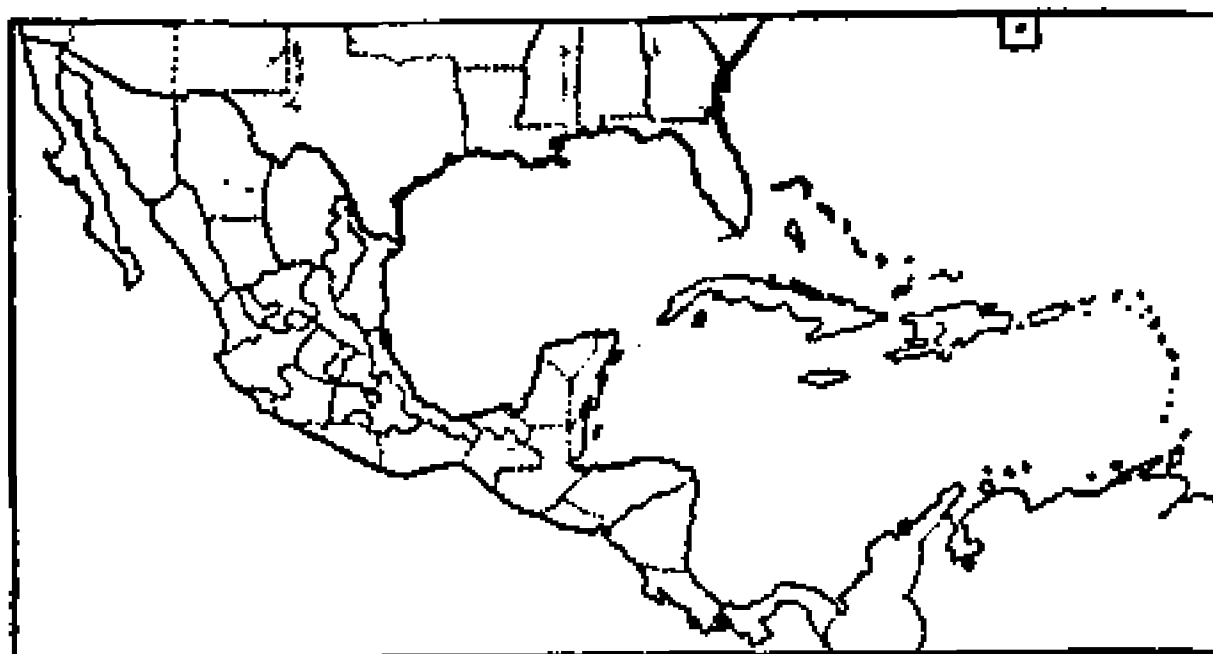
FIG. 95.—*P. pyrularium*. From type specimen.

Type in the U. S. National Herbarium, no. 715639, collected between Hato del Jobo and Cerro Vaca, eastern Chiriquí, Panama, altitude 700 to 1,000 meters, December 25 to 28, 1911, by H. Pittier (no. 5416).

*Panicum pyrularium*, one of the smallest and most delicate species in the genus, is not related to any North American species.

The South American *Panicum polycomum* Trin. is an allied species of more tufted habit, with much narrower blades, smaller panicles, and smaller pubescent spikelets not attenuate at base.

None of the labels with the specimens cited below indicates the habitat.

FIG. 96.—Distribution of *P. pyrularium*.

## DISTRIBUTION.

Panama to Venezuela.

PANAMA: Between Hato del Jobo and Cerro Vaca, Chiriquí, *Pittier* 5416.

VENEZUELA: Tovar, *Fendler* 2502.

COLOMBIA: Santa Marta, *Smith* 2570. Without locality, *Triana* 281 (2811?).

72. *Panicum haenkeanum* Presl.

*Panicum haenkeanum* Presl, Rel. Haenk. 1: 304. 1830. "Hab. in Mexico." The type specimen is in the herbarium of the National Museum at Prague. The only datum on the label is the word "Mexico."

*Panicum costaricense* Hack. Oesterr. Bot. Zeitschr. 51: 428. 1901; Contr. U. S. Nat. Herb. 15: 134. 1910.

For discussion of *Panicum expansum* Fourn., mentioned in the Revision under *P. costaricense*, see page 525 under *P. cordovense*.

Field study of this species shows that it is a perennial with straggling culms as much as 2 meters long, often rooting at the lower nodes.

DISTRIBUTION.

Moist wooded or grassy banks and slopes, Mexico to Panama.

COSTA RICA: Térraba, *Tonduz* 3628, 3636, 3673. Boruca, *Pittier* 4626. Cordoncillal, *Pittier* 3640. Buenos Aires, *Tonduz* 3687, 4860, *Pittier* 3661.

PANAMA: Culebra, *Hitchcock* 9168. Between Corozal and Ancon, *Pittier* 2169, 2636. San Felix, *Pittier* 5247. Between Panama and Corozal, *Hitchcock* 9206.



FIG. 97.—Distribution of *P. haenkeanum*.

73. *Panicum ineptum* sp. nov.

DESCRIPTION.

Plants perennial (?); culms slender, apparently ascending, probably 50 cm. or more long, slender, striate-fluted, glabrous or the upper internodes sparsely pilose,



FIG. 98.—*P. ineptum*. From type specimen.

producing nearly simple branches as much as 25 cm. long; nodes retrorsely pubescent; sheaths loose, shorter than the internodes, pilose, the margins densely ciliate; ligule ciliate, about 0.5 mm. long; blades spreading, flat, 3 to 7 cm. long, 3 to 6 mm. wide, tapering from the truncate base to an acuminate apex, softly pilose on both surfaces; panicles terminal, those of the branches short-exserted, 3 to 5 cm. long, consisting of few to several short spreading densely flowered branches, remote along the slender pilose axis, the branches 4 to 6 mm.

long, bearing 1 to 8 subsessile spikelets, the rachis pilose; spikelets 2.5 to 2.7 mm. long, 1.1 mm. wide, blunt; first glume about half as long as the spikelet, 3-nerved,

obtuse, pubescent; second glume and sterile lemma equal, inflated, much larger than the fruit, the glume gibbous in the middle, 7-nerved, pubescent, the sterile lemma 3-nerved, glabrous, inclosing a membranaceous palea; fruit 1.6 mm. long, 0.9 mm. wide, elliptical, smooth and shining, the lemma strongly convex.

Type in the herbarium of Krug & Urban in the Berlin Botanical Museum, the ticket reading "817 Panicum—S. Domingo, Bertero. Hb. Spr."

A slip in Sprengel's hand bears the name "*Panicum nemorosum* Sw." [*Ichnanthus nemorosus*].

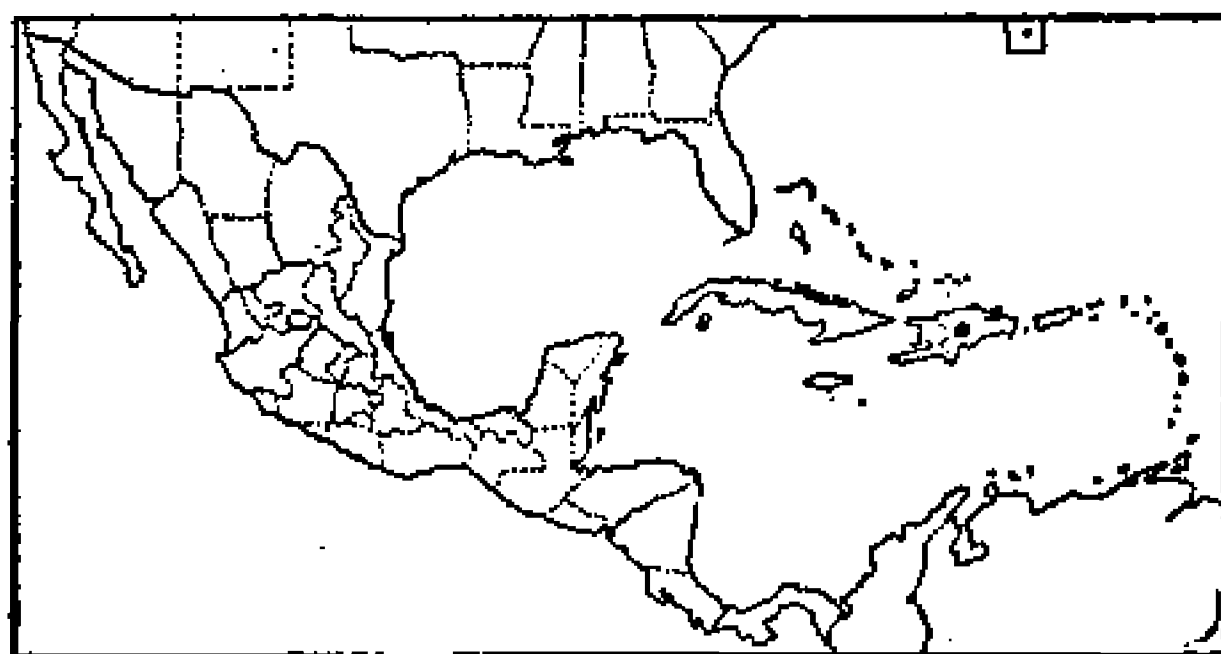


FIG. 99.—Distribution of *P. ineptum*.

The type specimen, consists of a culm with four internodes, the base and summit wanting, bearing two flowering branches. No other collection of the species is known. It appears to be related to *Panicum venesuelae* Hack., from which it differs in the smaller panicle and in the smaller and pubescent instead of bristly hispid spikelets.

#### 74. *Panicum millegrana* Poir.

*Panicum millegrana* Poir. in Lam. Encycl. Suppl. 4: 278. 1816; Contr. U. S. Nat. Herb. 15: 135. 1910.

*Panicum patentissimum* Desv.; Poir. in Lam. Encycl. Suppl. 4: 283. 1816. "Cette plante croît à Saint-Dominique & à la Nouvelle-Espagne." The type from the herbarium of Desvaux in the Paris Herbarium is a fragmentary specimen consisting of a panicle with immature glabrous spikelets together with a few broken leaves.

#### DISTRIBUTION.

Damp woods and shady banks, Mexico and the West Indies to Paraguay. The type specimen from tropical America, probably from Cayenne.

VERACRUZ: Córdoba, *Amer. Gr. Nat. Herb.* 73. Jalapa, *Hitchcock* 6605, *Holway* 3083. Mirador, *Liebmann* 275.

OAXACA: Without locality, *Galeotti* 5728.

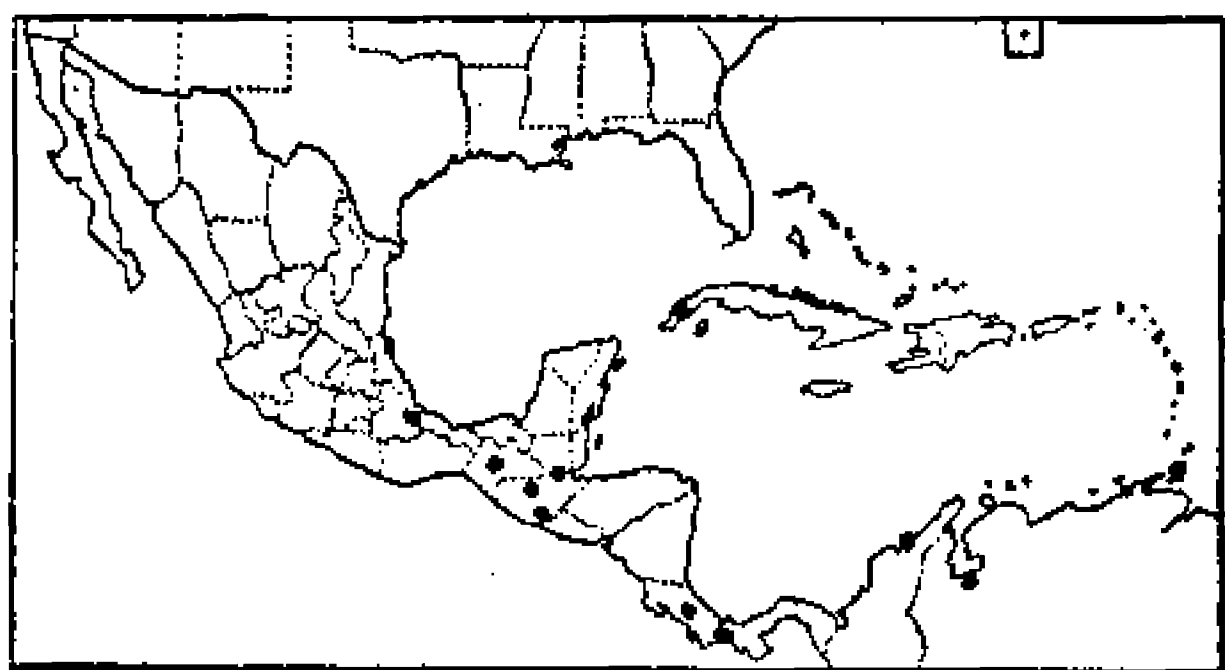


FIG. 100.—Distribution of *P. millegrana*.

CHIAPAS: Santa Rosa, *Heyde & Lux* 3927.

GUATEMALA: Cubilquitz, *Türckheim* 8783, 8784. Cobán, *Türckheim* 657. Guatemala City, *Hitchcock* 9056.

COSTA RICA: El General, *Pittier* 10615.

PANAMA: El Boquete, *Hitchcock* 8299.

CUBA: Herradura, *Hitchcock* 180, *Tracy* 9098. La Catalina,

*Wright* 3455. Pinar del Río, *Wright* 3855. Sumidero, *Shafer* 13562. Sierra de Cabra, *Britton & Gager* 7201.

TRINIDAD: Pitch Lake, *Hitchcock* 10087. Port of Spain, *Hitchcock* 9979.

VENEZUELA: Tovar, *Fendler* 1641.

COLOMBIA: Santa Marta, *Smith* 168, 2146.

#### 75. *Panicum glutinosum* Swartz.

*Panicum glutinosum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788; Contr. U. S. Nat. Herb. 15: 138. 1910.

#### DISTRIBUTION.

Mountain woods, throughout tropical America. The type specimen from Jamaica.

VERACRUZ: Mirador, *Liebmann* 428, *Ross* 701. Orizaba, *Bourgeau* 3192, *Botteri*. Jalapa, *Amer. Gr. Nat. Herb.* 74. Zacuapán, *Purpus* 2156, 2903.

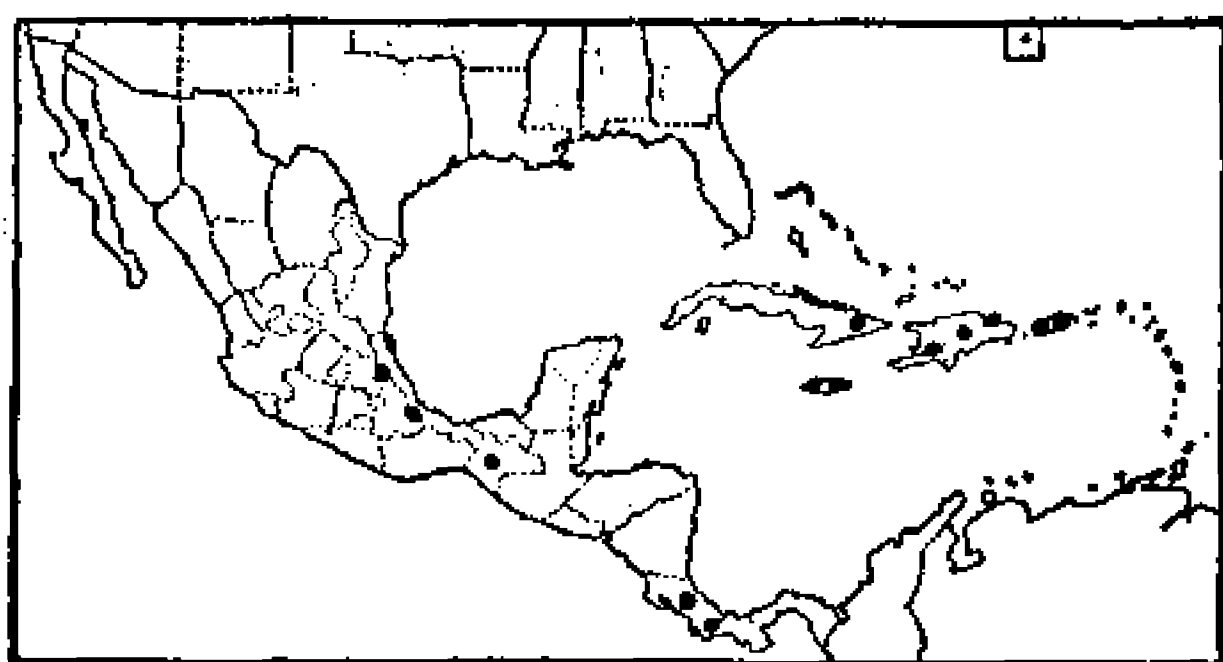


FIG. 101.—Distribution of *P. glutinosum*.

CHIAPAS: Turubula, *Nelson* 3357.

COSTA RICA: Helechales del General, *Pittier* 12002. Cañas Gordas, *Pittier* 11017. Cabagra, *Tonduz* 6547. Río Birris, *Pittier* 3118.

CUBA: Loma Pelada, *Wright* 757. La Perla, *León* 3790. Banao Hills, *León* 3998. Gran Piedra, *Shafer* 9014. Without locality, *Linden* 2143.

JAMAICA: Gordon Town, *Hart* 792, *Hitchcock* 9321. Troy, *Maxon* 2816, *Hitchcock* 9785. Abbey Green, *Hitchcock* 9370. Cinchona, *Hitchcock* 9708, *Harris* 11264, 11440, 11508. Ewarton, *Hitchcock* 9451. Ipswich, *Hitchcock* 9627. Newport, *Britton* 3193. Road to Salt Hill, *Harris* 11395. Without locality, *Wulfschlaegel* 1163.

HAITI: Kenskoff, *Buch* 956.

SANTO DOMINGO: *Picarda* 620 (K. U. Herb.).

PORTO RICO: Sierra de Yabucoa, *Sintenis* 2609, Mayaguez, *Sintenis* 357. Alto de Bandera, *Chase* 6469. Maricao, *Chase* 6199, 6250.

VENEZUELA: Caracas, *Pittier* 5910.

**76. *Panicum rudgei* Roem. & Schult.<sup>1</sup>**

*Panicum rudgei* Roem. & Schult. Syst. Veg. 2: 444. 1817; Contr. U. S. Nat. Herb. 15: 139. 1910.

DISTRIBUTION.

Savannas, Jamaica and British Honduras to Brazil. The type specimen from British Guiana.

BRITISH HONDURAS: Monkey River, *Peck* 588 (Gray Herb.).

COSTA RICA: Buenos Aires, *Pittier* 10576, *Tonduz* 3679, 4875.

Los Palmares, *Pittier* 10588.

Helechales del General, *Pittier* 12064.

JAMAICA: Bunkers Hill Savanna, *Harris* 11170.

TRINIDAD: Pitch Lake, *Amer. Gr. Nat. Herb.* 75. St. Joseph, *Hitchcock* 10181. Without locality, *Crueger*.



FIG. 102.—Distribution of *P. rudgei*.

**77. *Panicum megiston* Schult.**

*Panicum megiston* Schult. Mant. 2: 248. 1824; Contr. U. S. Nat. Herb. 15: 141. 1910.

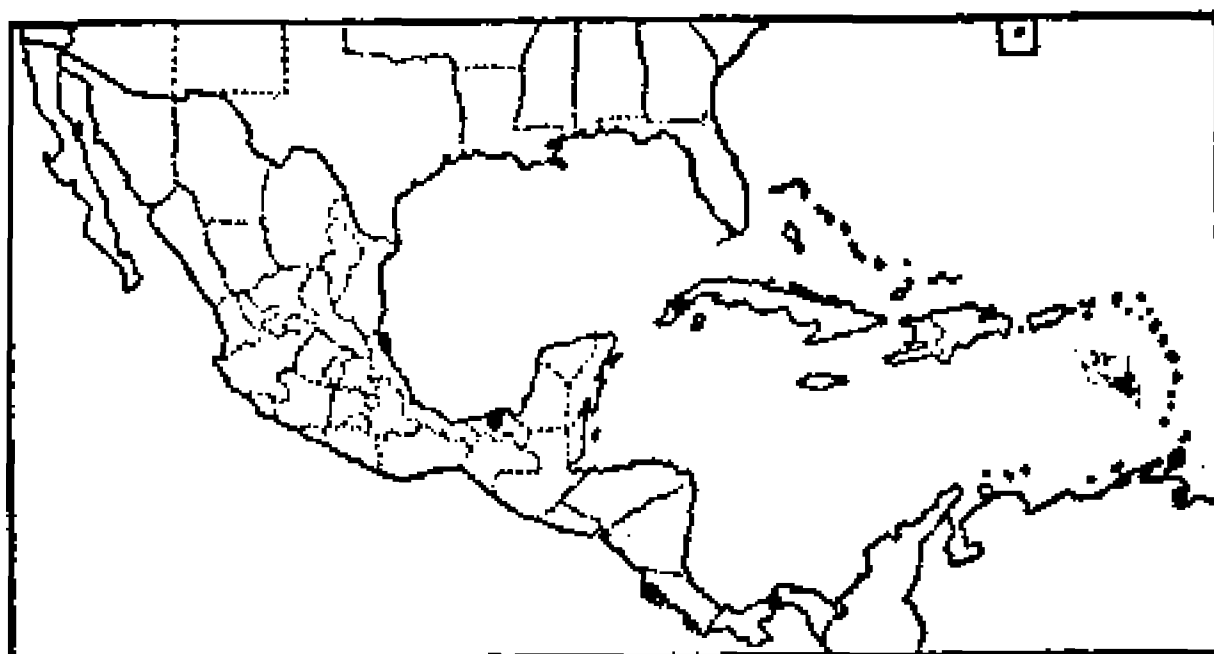


FIG. 103.—Distribution of *P. megiston*.

DISTRIBUTION.

Swamps, Mexico and Cuba to Paraguay. The type specimen from British Guiana.

TABASCO: San Juan Bautista, *Ro-virosa* 532.

COSTA RICA: Guanacaste, *Jiménez* 727.

PANAMA: Empire, *Pittier* 3726. Bohío, *Amer. Gr. Nat. Herb.* 76.

CUBA: Santa Cruz de los Piños, *Wright* 3872.

TRINIDAD: Caroní Savanna, *Hart* 4197. Without locality, *Crueger*.

VENEZUELA: Santa Catalina, *Rusby & Squires* 355.

<sup>1</sup> The South American species described as *Panicum rotundum* Hitchc. & Chase (Contr. U. S. Nat. Herb. 15: 139. 1910) proves to be the same as *Panicum campestre* Nees (Trin. Gram. Pan. 197. 1826).

*Panicum trigonum* Retz.,<sup>1</sup> an East Indian perennial with low creeping and branching culms and spreading pilose blades 2 to 4 cm. long, contracted panicles of short-pedicelled hispidulous spikelets about 1.7 mm. long, the second glume keeled, the fruit slightly compressed laterally, has been found "under the shade of a shrub," Port of Spain, Trinidad, *Broadway* 4891.

**Subgenus DICHANTHELIUM** Hitchc. & Chase.

- Foliage soft and lax, the flat blades prominently ciliate; plants branching from the base, finally forming rosettes or cushions. . . . . See LAXIFLORA, p. 513.
- Foliage not soft and lax; plants branching from the culm nodes.
- First glume nearly as long as the spikelet. . . . . See CORDOVENSIA, p. 525.
- First glume much shorter than the spikelet.
- Spikelets glabrous; plants glabrous throughout; autumnal form erect, not bushy-branching. See DICHOTOMA, p. 516.
- Spikelets pubescent.
- Sheaths glabrous or minutely puberulent only; ligules minute or obsolete.
- Spikelets attenuate at base, mostly prominently pustulose; blades narrow, stiff, strongly nerved, tapering from base to apex. . . . . See ANGUSTIFOLIA, p. 514.
- Spikelets not attenuate at base, not pustulose.
- Spikelets subglobose or pyriform.
- Blades spreading, rarely over 5 cm. long and 5 mm. wide, spikelets pyriform; autumnal form bushy-branching. . . . . See LANCEARIA, p. 522.
- Blades erect, 7 to 13 cm. long, 7 to 14 mm. wide; spikelets spheroid. . . . . See SPHAEROCARPA, p. 521.
- Spikelets not subglobose nor pyriform.
- Spikelets 2.8 mm. or more long. See COMMUTATA, p. 524.
- Spikelets not over 2 mm. long.
- Blades with a cartilaginous white margin; spikelets not over 1.5 mm. long. . . . . 101. *P. albomarginatum*.
- Blades not white-margined; spikelets 2 mm. long. See DICHOTOMA, p. 516.
- Sheaths pubescent.
- Spikelets 4 mm. long, pyriform. . . . . 104. *P. nodatum*.
- Spikelets not over 2.6 mm. long.
- Spikelets attenuate at base, mostly prominently pustulose; blades narrow, stiff, strongly nerved, tapering from base to apex; autumnal form often bushy-branched. . . . . See ANGUSTIFOLIA, p. 514.

<sup>1</sup>Obs. Bot. 3: 9. 1783.

Spikelets not attenuate at base.

Culms tall, usually 75 cm. high or more; foliage velvety-pubescent..... See SCOPARIA, p. 523.

Culms not over 50 cm. high.

Spikelets not over 1.3 mm. long; sheaths and culms appressed-pubescent..... See SPRETA, p. 518.

Spikelets 1.7 to 2.4 mm. long; plants conspicuously pubescent, at least on the sheaths. See LANUGINOSA, p. 519.

LAXIFLORA.

Spikelets papillose-pilose; sheaths retrorsely pilose..... 78. *P. xalapense*.

Spikelets glabrous; sheaths not retrorsely pilose.

Blades glabrous on the surface..... 79. *P. polycaulon*.

Blades pilose on the surface..... 80. *P. strigosum*.

78. *Panicum xalapense* H. B. K.

*Panicum xalapense* H. B. K. Nov. Gen. & Sp. 1: 103. 1816; Contr. U. S. Nat. Herb. 15: 159. 1910.

DISTRIBUTION.

Moist banks and rich woods, southeastern United States to Guatemala; also Santo Domingo. The type specimen from Jalapa.

HIDALGO: Trinidad Iron Works, Pringle 13250.

PUEBLA: Chinantla, Liebmann 328.

VERACRUZ: Jalapa, Pringle 8083, Hitchcock 6587, Amer. Gr. Nat. Herb. 84, Smith 1752. Córdoba, Bourgeau 2162. Boca del Monte, Nelson 201, Seler 2160.

GUATEMALA: Cobán, Türkheim 3831.

SANTO DOMINGO: Constanza, Türkheim 3059. Río Yaqui near Jarabacoa, Eggers 2129.

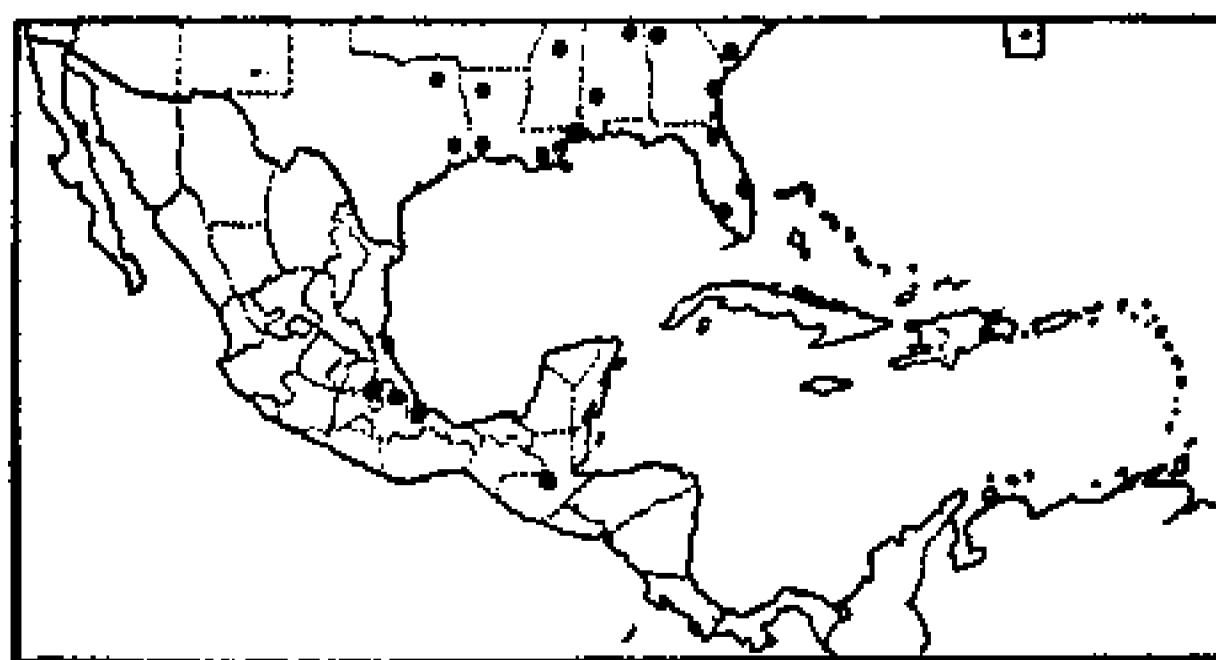


FIG. 104.—Distribution of *P. xalapense*.

79. *Panicum polycaulon* Nash.

*Panicum dichotomum*  $\beta$  *glabrescens* Griseb. Fl. Brit. W. Ind. 553. 1864. "*Pd.* [Purdie], in mountain-savannahs [Jamaica]." The type specimen is in the Kew Herbarium.

*Panicum polycaulon* Nash, Bull. Torrey Club 24: 200. 1897; Contr. U. S. Nat. Herb. 15: 163. 1910.

## DISTRIBUTION.

Open moist woods and savannas, Florida and the Greater Antilles. The type specimen from Florida.



FIG. 105.—Distribution of *P. polycaulon*.

CUBA: Sierra Nipe near Woodfred, *Shafer* 3083. Herradura, *Hitchcock* 115. Isle of Pines, *Palmer & Riley* 990. Without locality, *Wright* 3875 in part.

JAMAICA: Hills back of Barican, *Hitchcock* 9561. Bull Head Mountain, *Hitchcock* 9550.

PORTO RICO: Aguada, *Sintenis* 5724. Monte Mesa, *Chase* 6276.

Trujillo Alto, *Chase* 6767. Campo Alegre, *Chase* 6621.

80. *Panicum strigosum* Muhl.

*Panicum strigosum* Muhl. in Ell. Bot. S. C. & Ga. 1: 126. 1816; Contr. U. S. Nat. Herb. 15: 164. 1910.

## DISTRIBUTION.

Sandy woods and open moist ground, southeastern United States to Colombia and in the Greater Antilles. Type specimen from South Carolina or Georgia.

VERACRUZ: Minatitlán, *Smith* 555.

GUATEMALA: Road from Gualán to Copán, *Pittier* 1800. Secanquím, *Pittier* 257.

COSTA RICA: Between De Candelaria and San Cristobal, *Jiménez* 459.

CUBA: El Guama, *Palmer & Riley* 213. Without locality, *Wright* 3875 in part.

JAMAICA: Bull Head Mountain, *Hitchcock* 9551.

SANTO DOMINGO: Without locality, *Eggers* 2045 (K. U. Herb.).

COLOMBIA: Santa Marta, *Smith* 163.



FIG. 106.—Distribution of *P. strigosum*.

## ANGUSTIFOLIA.

- Nodes bearded; plants grayish-villous; autumnal blades flat, rather soft. . . . . 82. *P. chrysopsidifolium*.
- Nodes not bearded; plants villous only at base, or nearly glabrous; autumnal blades involute.
- Spikelets 3 to 3.5 mm. long, pointed. . . . . 83. *P. fusiforme*.
- Spikelets less than 3 mm. long, not pointed or obscurely so.
- Plants glabrous or nearly so; autumnal culms erect.
- Spikelets subsecund along the suberect panicle branches. . . . . 86. *P. neuranthum*.
- Spikelets not subsecund; panicle loose and open. . . . . 85. *P. ovinum*.
- Plants pubescent, at least on the lower half.
- Spikelets about 2.4 mm., rarely only 2.1 mm., long; vernal blades 7 to 12 cm. long; autumnal blades not falcate. . . . . 84. *P. arenicoloides*.
- Spikelets not over 2 mm. long; vernal blades 4 to 6 cm. long; autumnal blades much crowded, falcate. . . . . 81. *P. aciculare*.



**81. *Panicum aciculare* Desv.**

*Panicum aciculare* Desv.; Poir. in Lam. Encycl. Suppl. 4: 274. 1816; Contr. U. S. Nat. Herb. 15: 166. 1910.

In the discussion of the type specimen it is stated that it probably came from the southeastern United States. As the species is now known to occur in Porto Rico, it becomes probable that this island is the type locality, since Deavaux described many species from there.

DISTRIBUTION.

Grassy slopes and sandy woods, southeastern United States, Cuba, and Porto Rico.

CUBA: Pinar del Río, *Britton & Gager* 7064. Sierra Nipe, *Shafer* 2968. Laguna Jovero, *Shafer* 10733, 10873. Without locality, *Wright* 3454, 3461.

PORTO RICO: Monte Mesa, *Chase* 6273. Campo Alegre, *Chase* 6624.

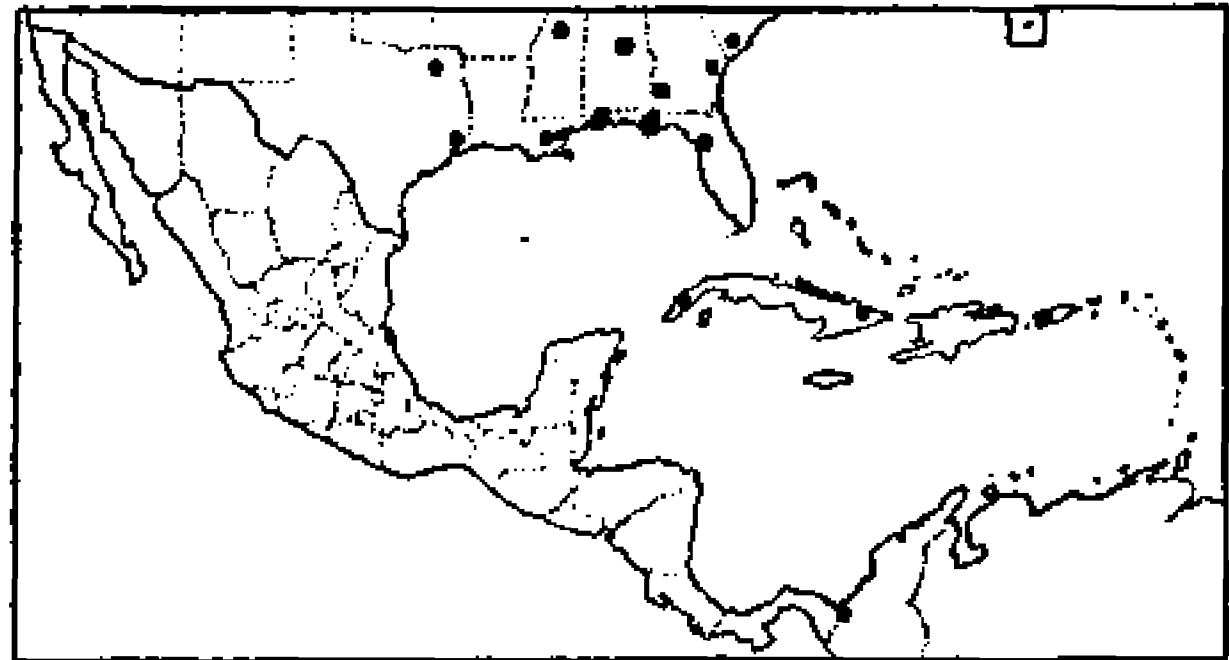


FIG. 107.—Distribution of *P. aciculare*.

**82. *Panicum chrysopsidifolium* Nash.**

*Panicum chrysopsidifolium* Nash in Small, Fl. Southeast. U. S. 100. 1903; Contr. U. S. Nat. Herb. 15: 168. 1910.

DISTRIBUTION.

Sandy woods and open moist ground, Florida, Louisiana, and the Greater Antilles. The type specimen from Florida.



FIG. 108.—Distribution of *P. chrysopsidifolium*.

HAITI: Without locality, *Christ* 1744 (K. U. Herb.).

SANTO DOMINGO: Without locality, *Bertero* 818 (K. U. Herb.).

CUBA: Consolación del Sur, *Palmer & Riley* 481. Isle of Pines, *Palmer & Riley* 982. Herradura, *Hitchcock* 116.

JAMAICA: Pedro Morass, *Harris* 11163. Bull Head Mountain, *Amer. Gr. Nat. Herb.* 89.

PORTO RICO: Las Marias, *Sintenis* 5985. Trujillo Alto, *Chase* 6766. Santurce, *Heller* 982.

**83. *Panicum fusiforme* Hitchc.**

*Panicum fusiforme* Hitchc. Contr. U. S. Nat. Herb. 12: 222. 1909; 15: 172. 1910.

DISTRIBUTION.

Sandy pine woods and open moist ground, Florida, Cuba, Jamaica, and British Honduras. The type specimen from Cuba.

BRITISH HONDURAS: Manatee Lagoon, *Peck* 453a (Gray Herb.).

CUBA: Herradura, *Hitchcock* 117, *Caldwell & Baker* 7139, *Tracy* 9074. Nueva Gerona, *Curtiss* 406. Western Cuba, *Wright* 3453, 3454.

JAMAICA: Bull Head Mountain, *Hitchcock* 9552.



FIG. 109.—Distribution of *P. fusiforme*.

84. *Panicum arenicoloides* Ashe.

*Panicum arenicoloides* Ashe, Journ. Elisha Mitchell Soc. 16: 89. 1900; Contr. U. S. Nat. Herb. 15: 173. 1910.



FIG. 110.—Distribution of *P. arenicoloides*.

## DISTRIBUTION.

Sandy pine woods, southeastern United States; also in Guatemala. The type specimen from North Carolina.

GUATEMALA: Cuesta de Peinha, between Gualán and Copán, Pittier 1805b.

85. *Panicum ovinum* Scribn. & Smith.

*Panicum ovinum* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Circ. 16: 3. 1899, Contr. U. S. Nat. Herb. 15: 174. 1910.

## DISTRIBUTION.

Open prairie and meadows, Southern States and in Veracruz. The type specimen from Texas.

VERACRUZ: Hacienda de la Laguna, near Jalapa, Schiede (Berlin Herb.).

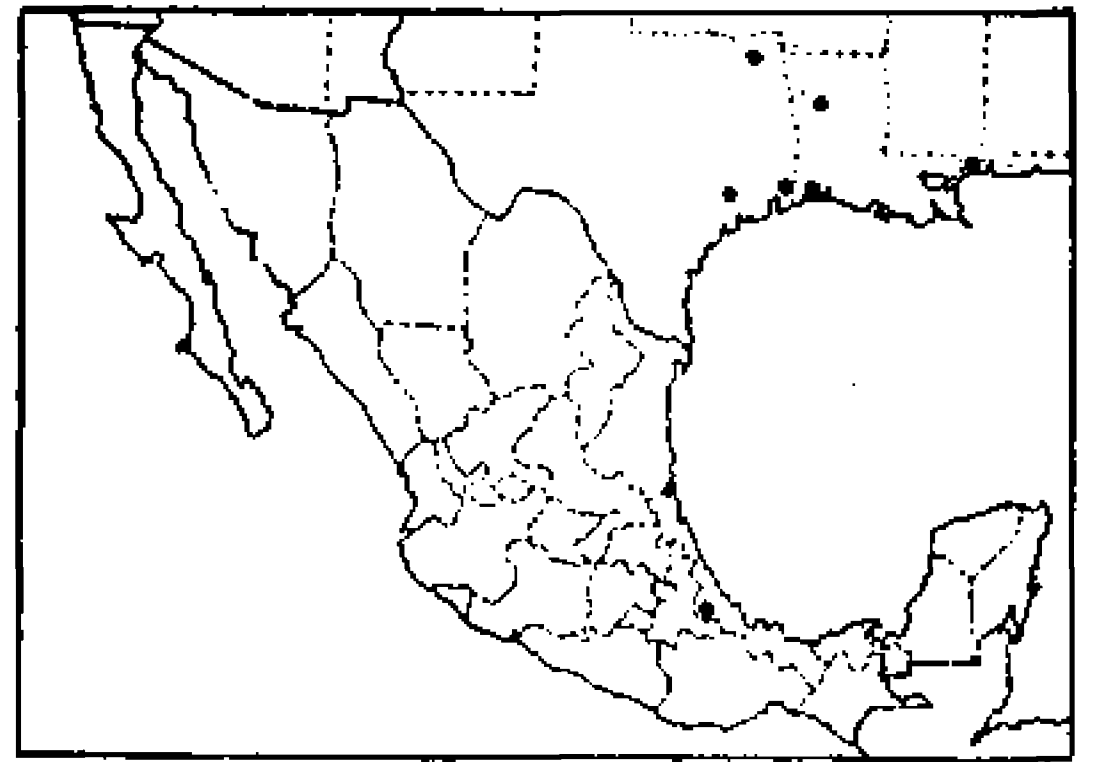


FIG. 111.—Distribution of *P. ovinum*.

86. *Panicum neuranthum* Griseb.

*Panicum neuranthum* Griseb. Cat. Pl. Cub. 232. 1866; Contr. U. S. Nat. Herb. 15: 175. 1910.

## DISTRIBUTION.

Moist savannas, Florida and Cuba. The type specimen from Cuba.

CUBA: Hanábana, Wright 3453 in part. Without locality, Wright 3454a.



FIG. 112.—Distribution of *P. neuranthum*.

## DICHOTOMA.

Nodes, at least the lower, bearded; spikelets pubescent.

Fruit slightly exposed at maturity; upper sheaths viscid-spotted; autumnal form erect or reclining. . . . . 87. *P. nitidum*.

Fruit covered at maturity; sheaths not viscid-spotted; autumnal form decumbent, with flabellate-fascicled branches. . . . . 88. *P. multirameum*.

Nodes not bearded; spikelets glabrous.

Spikelets not over 1.6 mm. long; panicles narrow; plants glaucous bluish green. . . . . 91. *P. caerulea*.

Spikelets 2 mm. or more long; panicles open.

Blades erect, firm; spikelets turgid, strongly nerved; plants grayish olive green; spikelets turgid, blunt..... 90. *P. roanokense*.

Blades spreading; spikelets not turgid, 2.2 mm. or more long, pointed; sheaths bearing pale glandular spots..... 89. *P. yadkinense*.

**87. *Panicum nitidum* Lam.**

*Panicum nitidum* Lam. Tabl. Encycl. 1: 172. 1791; Contr. U. S. Nat. Herb. 15: 183. 1910.

DISTRIBUTION.

Moist ground and wooded swamps, southeastern United States, Bahamas, and Cuba. The type specimen from [South?] Carolina.

BAHAMAS: Great Bahama, Golden Grove, Britton & Millspaugh 2736.

CUBA: Sierra Nipe, Shafer 2999, 3001.



FIG. 113.—Distribution of *P. nitidum*.

**88. *Panicum multirameum* Scribn.**

*Panicum multirameum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 2. 1900; Contr. U. S. Nat. Herb. 15: 185. 1910.

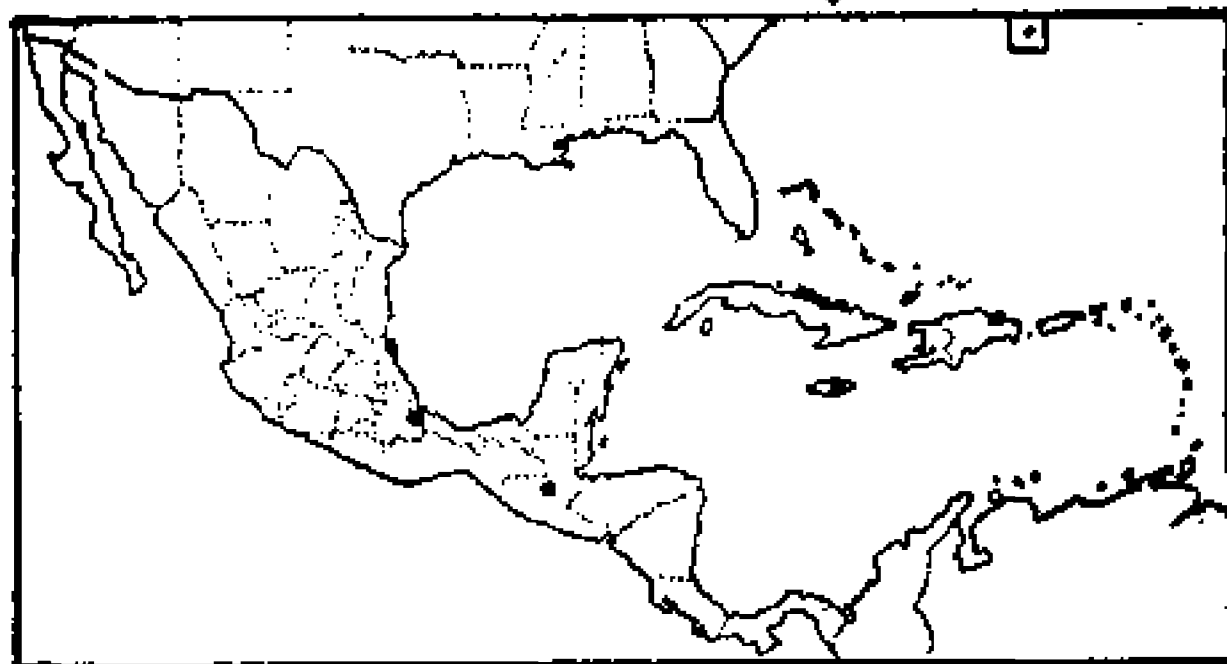


FIG. 114.—Distribution of *P. multirameum*.

GUATEMALA: Cobán, Türckheim II. 1322.

JAMAICA: Bull Head Mountain, Hitchcock 9532.

DISTRIBUTION.

Banks and dry open ground, southern Mexico to Guatemala; also in Jamaica. The type specimen from Jalapa.

VERACRUZ: Orizaba, Bourgeau 2383, Smith 593, Amer. Gr. Nat. Herb. 98. Jalapa, Hitchcock 6610, 6639, Pringle 7882, 8339a, 9209, 9210.

**89. *Panicum yadkinense* Ashe.**

*Panicum yadkinense* Ashe, Journ. Elisha Mitchell Soc. 16: 85. 1900; Contr. U. S. Nat. Herb. 15: 195. 1910.

DISTRIBUTION.

Moist woods and thickets, southeastern United States to Mexico. The type specimen from North Carolina.

PUEBLA: Without locality, Nicolas in 1909.



FIG. 115.—Distribution of *P. yadkinense*.

90. *Panicum roanokense* Ashe.

*Panicum roanokense* Ashe, Journ. Elisha Mitchell Soc. 15: 44. 1898; Contr. U. S. Nat. Herb. 15: 196. 1910.

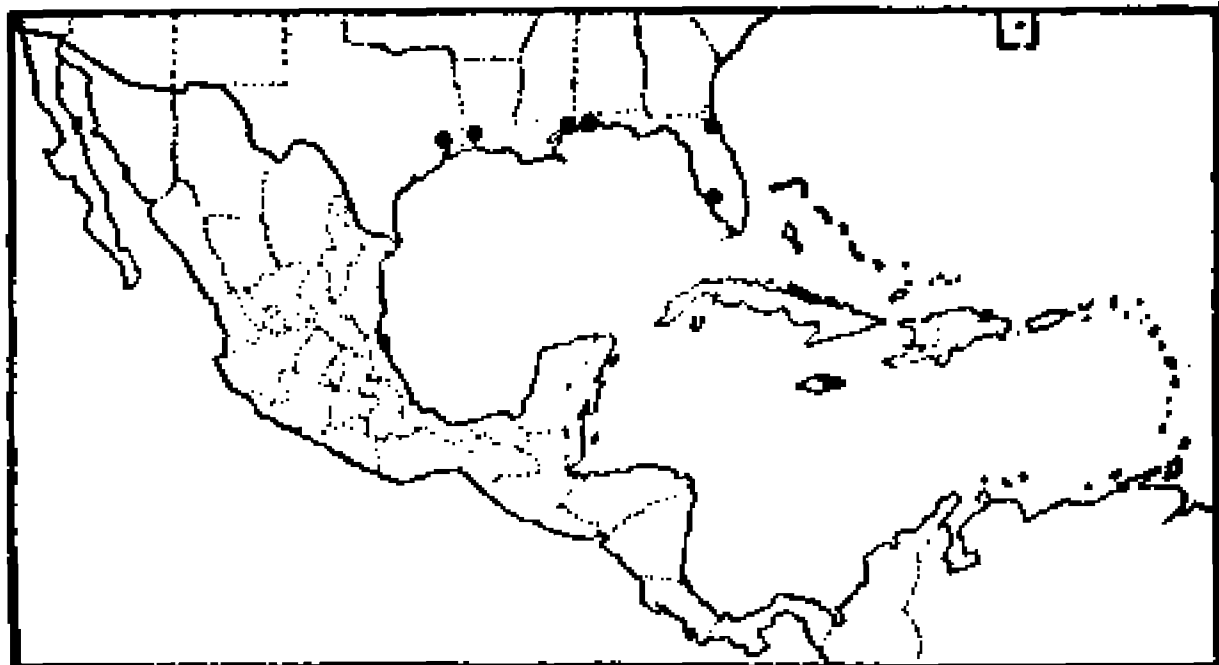


FIG. 116.—Distribution of *P. roanokense*.

## DISTRIBUTION.

Open swampy woods and wet meadows, Virginia to Texas; also in Jamaica. The type specimen from North Carolina.

JAMAICA: Bull Head Mountain, Hitchcock 9530.

91. *Panicum caerulescens* Hack.

*Panicum caerulescens* Hack.; Hitchc. Contr. U. S. Nat. Herb. 12: 219. 1909; 15: 197. 1910.

## DISTRIBUTION.

Marshes and swampy woods, New Jersey to Florida and Mississippi, Bahamas and Cuba. The type specimen from Florida.

BAHAMAS: Great Bahama, *Brace* 3524, *Britton & Millspaugh* 2506, 2668. Andros, *Brace* 7015 (all in Field Mus. Herb.). New Providence, *Britton & Brace* 597, 599, *Millspaugh* 2182, *Northrup* 248, *Eggers* 4305 (Hackel Herb.), *Eggers* 4312 (K. U. Herb.).

CUBA: Without locality, *Wright* 3463 in part.



FIG. 117.—Distribution of *P. caerulescens*.

## SPRETA.

Spikelets 1.2 to 1.3 mm. long..... 92. *P. leucothrix*.  
Spikelets not over 1 mm. long..... 93. *P. wrightianum*.

92. *Panicum leucothrix* Nash.

*Panicum leucothrix* Nash, Bull. Torrey Club 24: 41. 1897; Contr. U. S. Nat. Herb. 15: 205. 1910.



FIG. 118.—Distribution of *P. leucothrix*.

## DISTRIBUTION.

Pine woods and moist open ground, New Jersey to Louisiana, Cuba, and Porto Rico. The type specimen from Florida.

CUBA: Herradura, *Hitchcock* 554, 560. Without locality, *Wright* 3460, 3463.

PORTO RICO: Trujillo Alto, *Chase* 6770.

93. *Panicum wrightianum* Scribn.

*Panicum wrightianum* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 11: 44. f. 4. 1898. Contr. U. S. Nat. Herb. 15: 207. 1910.

DISTRIBUTION.

Moist sandy soil, Massachusetts to Texas and Cuba. The type specimen from Cuba.

CUBA: Pinar del Río, Britton & Gager 6952. Without locality, Wright 3463 in part.

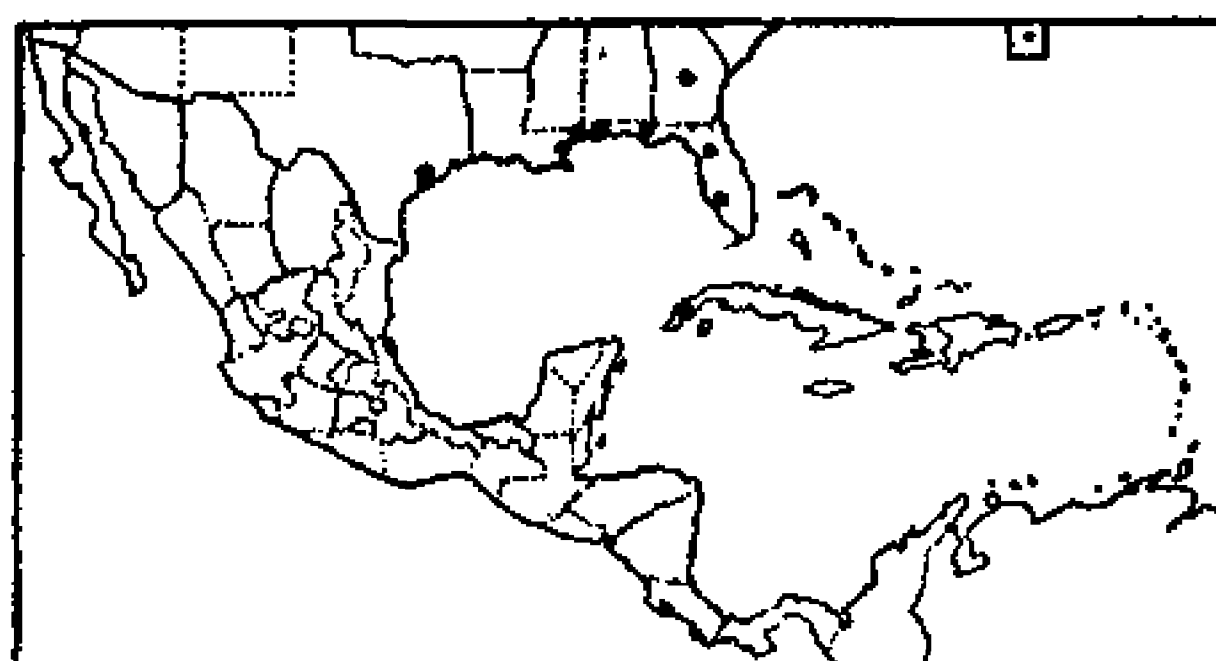


FIG. 119.—Distribution of *P. wrightianum*.

LANUGINOSA.

Spikelets 2.2 mm. or more long.

Pubescence on culms horizontally spreading; autumnal form freely branching. . . . . 97. *P. villosissimum*.

Pubescence on culms appressed or ascending; autumnal form rather sparingly branching. . . . . 98. *P. pseudopubescens*,

Spikelets not over 2 mm. long.

Plants not velvety; blades usually glabrous on the upper surface. . . . . 94. *P. tennesseense*.

Plants velvety; blades softly pubescent on both surfaces.

Plants light or yellow green when dry. . . . . 95. *P. acuminatum*.

Plants dark or olive green when dry. . . . . 96. *P. olivaceum*.

94. *Panicum tennesseense* Ashe.



FIG. 120.—Distribution of *P. tennesseense*.

*Panicum tennesseense* Ashe, Journ. Elisha Mitchell Soc. 15: 52. 1898; Contr. U. S. Nat. Herb. 15: 218. 1910.

DISTRIBUTION.

Open ground, Atlantic States to Utah; also in southern Mexico. The type specimen from Tennessee.

VERACRUZ: Orizaba, Botteri 101. Jalapa, Hitchcock 6632.

95. *Panicum acuminatum* Swartz.

*Panicum acuminatum* Swartz, Prodr. Veg. Ind. Occ. 23. 1788; Contr. U. S. Nat. Herb. 15: 222. 1910.

*Panicum ornatum* Desv.; Hamilt. Prodr. Pl. Ind. Occ. 11. 1825. "Herb. Prof. Desv. Porto Rico."

In the Revision<sup>1</sup> this was listed among the doubtful species. The inadequate description indicates the common *P. acuminatum*.

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 331. 1910.

## DISTRIBUTION.

Sandy pine woods, moist banks and open ground, Greater Antilles; also Colombia. The type specimen from Jamaica.

CUBA: Isle of Pines, *Palmer & Riley* 989, 1083, *Curtiss* 307, 328, *Taylor* 3873. Pinar del Río, *Palmer & Riley* 447. Herradura, *Britton, Earle & Gager* 6505, *Hitchcock* 140, *Tracy* 9078. Río Guao, *Britton & Cowell* 9673. Cuchillas de San Sebastián, *León & Shafer* 13719. Sumidero, *León* 3472, *Shafer* 13544. Without locality, *Wright* 3874.

JAMAICA: Clyde River, *Harris* 11444. Cinchona, *Harris* 11315, 11371, 11435, 11494, *Hitchcock* 9697, 9722. Hills back of Barican, *Hitchcock* 9564. Bull Head Mountain, *Hitchcock* 9538. Gordon Town, *Hart* 736. Abbey Green, *Amer. Gr. Nat. Herb.* 133. Catherines Peak, *Harris* 11554, *Hitchcock* 9738. Below Sir Johns Peak, *Harris* 11597. Upper Clarendon, *Harris* 11109.



FIG. 121.—Distribution of *P. acuminatum*.

HAITI: Morne la Sette, *Christ* 1850.

SANTO DOMINGO: Without locality, *Eggers* 2021, 2028, 2333 (all in K. U. Herb.).

PORTO RICO: Santurce, *Heller* in 1903. Maricao, *Sintenis* 355. Bayamon, *Chase* 6378. Alto de Bandera, *Chase* 6475. Sierra de Luquillo, *Chase* 6719. Between Guainabo and Cataño, *Chase* 6647. Indiera Fria, *Chase* 6249. Trujillo Alto, *Chase* 6765. Jajome Alto, *Chase* 6752. Lares, *Sintenis* 5908. Fajardo, *Sintenis* 1224.

COLOMBIA: La Esmeralda near Jamundí, *Pittier* 932, 982a. Santa Marta, *Smith* 2140.

96. *Panicum olivaceum* Hitchc. & Chase.

*Panicum olivaceum* Hitchc. & Chase, *Contr. U. S. Nat. Herb.* 15: 225. 1910.

## DISTRIBUTION.

Clay slopes and open ground, Mexico to Venezuela. The type specimen from Guatemala.

VERACRUZ: Orizaba, *Bourgeau* 2383 in part, *Botteri* 99, 100, 101. Minatitlán, *Smith* 571. Jalapa, *Hitchcock* 6631, 6646, 6651, 6667, *Amer. Gr. Nat. Herb.* 134, *Pringle* 8339.

GUATEMALA: Cobán, *Türkheim* 428. Without locality, *Seler* 3235.

COSTA RICA: San Pedro de la Calabaza, *Tonduz* 10745.

PANAMA: El Boquete, *Maxon* 5136, *Hitchcock* 8189, 8252, 8280.

VENEZUELA: Tovar, *Fendler* 1638b. Pico de Naiguatá, *Pittier* 6252.

COLOMBIA: La Esmeralda, near Jamundí, *Pittier* 946.

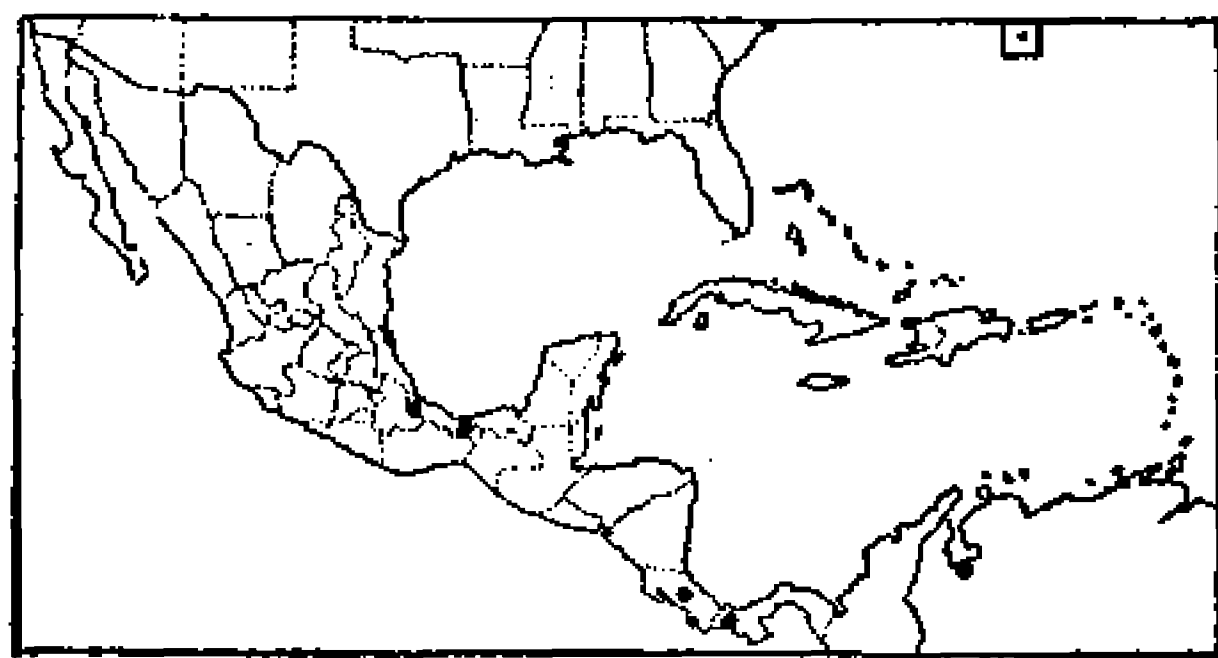


FIG. 122.—Distribution of *P. olivaceum*.

97. *Panicum villosissimum* Nash.



FIG. 123.—Distribution of *P. villosissimum*.

*Panicum villosissimum* Nash, Bull. Torrey Club 33: 149. 1896; Contr. U. S. Nat. Herb. 15: 233. 1910.

DISTRIBUTION.

Dry open woods, eastern United States; also in Guatemala. The type specimen from Georgia.

GUATEMALA: Guatemala City, Hitchcock 9106.

98. *Panicum pseudopubescens* Nash.

*Panicum pseudopubescens* Nash, Bull. Torrey Club 26: 577. 1899; Contr. U. S. Nat. Herb. 15: 235. 1910.

DISTRIBUTION.

Sandy open woods eastern United States; also in San Luis Potosí. The type specimen from Alabama.

SAN LUIS POTOSÍ: Without locality, Schaffner 146.



FIG. 124.—Distribution of *P. pseudopubescens*.

SPHAEROCARPA.

- Culms spreading; panicle nearly as broad as long; spikelets 1.6 to 1.8 mm. long. . . . . 99. *P. sphaerocarpon*.
- Culms erect or ascending; panicle never more than two-thirds as broad as long; spikelets 1 to 1.2 mm. long. . . . . 100. *P. erectifolium*.

99. *Panicum sphaerocarpon* Ell.

*Panicum sphaerocarpon* Ell. Bot. S. C. & Ga. 1: 125. 1816; Contr. U. S. Nat. Herb. 15: 251. 1910.

DISTRIBUTION.

Sandy soil and gravelly banks, eastern United States through Mexico to northern South America. The type specimen from Georgia.

SAN LUIS POTOSÍ: Without locality, Schaffner 147.

MICHOACÁN: Sierra de San Andrés, Ross 381.

PUEBLA: Chinantla, Liebmann 327. Teziutlán, Orcutt 3952.

VERACRUZ: Orizaba, Amer. Gr. Nat. Herb. 155, Botteri. Jalapa, Pringle 7883, 8344, Hitchcock 6607, 6633.

BRITISH HONDURAS: Manatee Lagoon, Peck 61 (Gray Herb.).

GUATEMALA: Guatemala City, Hitchcock 9105. Cobán, Türckheim 56, 3829. Volcano Pacaya, Kellerman 6236.

COSTA RICA: Copey, Tonduz 11866.

San Pedro de la Calabaza, Tonduz 10745. Páramos del Abejónal, Tonduz 7878.

PANAMA: El Boquete, Hitchcock 8172. Dolega, Hitchcock 8343.

VENEZUELA: Without locality, Fendler 1638.



FIG. 125.—Distribution of *P. sphaerocarpon*.



100. *Panicum erectifolium* Nash.FIG. 126.—Distribution of *P. erectifolium*.

*Panicum erectifolium* Nash, Bull. Torrey Club **23**: 148. 1896; Contr. U. S. Nat. Herb. **15**: 256. 1910.

## DISTRIBUTION.

Moist pine woods, southeastern United States and Cuba. Type specimen from Florida.

CUBA: Vuelta Abaja, *Wright* 3462. Laguna Santa María, *Britton & Gager* 7170.

## ENSIFOLIA.

101. *Panicum albomarginatum* Nash.

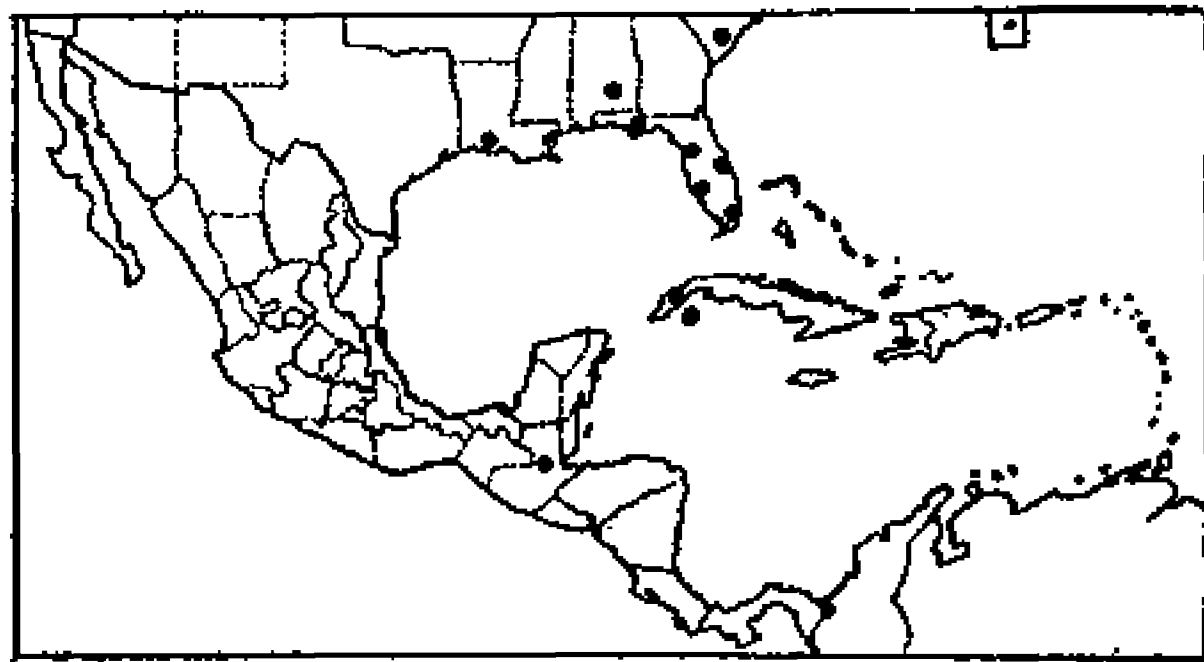
*Panicum albomarginatum* Nash, Bull. Torrey Club **24**: 40. 1897; Contr. U. S. Nat. Herb. **15**: 260. 1910.

## DISTRIBUTION.

Moist sandy woods, southeastern United States, Cuba and Guatemala. Type specimen from Florida.

GUATEMALA: Gualán to Copán, *Pittier* 1805a.

CUBA: Between Sumidero and Pinar del Río, *León* 3466. Herradura, *Hitchcock* 555. Isle of Pines, *Taylor* 32.

FIG. 127.—Distribution of *P. albomarginatum*.

## LANCEARIA.

Spikelets 1.5 to 1.6 mm. long. .... 102. *P. portoricense*.  
Spikelets 2 mm. long. .... 103. *P. lancearium*.

102. *Panicum portoricense* Desv.

*Panicum portoricense* Desv.; *Hamilt. Prodr. Pl. Ind. Occ.* 11. 1825. "Herb. Prof. Desv. Porto Rico." We have been unable to find the type of this and in the Revision<sup>1</sup> placed it among doubtful species. Recent study of the grasses of Porto Rico, however, leaves no doubt that Desvaux's description was drawn from a specimen in the autumnal phase of *P. pauciciliatum* Ashe, which is found to be common in the vicinity of San Juan Bay, the region most likely to have been visited by early botanists.

*Panicum pauciciliatum* Ashe, *Journ. Elisha Mitchell Soc.* **16**: 87. 1900; Contr. U. S. Nat. Herb. **15**: 272. 1910.

<sup>1</sup> Contr. U. S. Nat. Herb. **15**: 331. 1910.

DISTRIBUTION.

Moist sandy woods, southeastern United States, Cuba and Porto Rico.

CUBA: Without locality, *Wright* 3876.

PORTO RICO: Martin Peña, *Chase* 6357. Between Cataño and Guainabo, *Chase* 6631. Lake Loisa, *Chase* 6783. Santurce, *Heller* 982b, 6442. Vega Baja, *Heller* 639, *Underwood & Griggs* 955. Campo Alegre, *Chase* 6434.



FIG. 128.—Distribution of *P. portoricense*.

103. *Panicum lancearium* Trin.

*Panicum lancearium* Trin. Gram. Pan. 223. 1826; Contr. U. S. Nat. Herb. 15: 273. 1910.

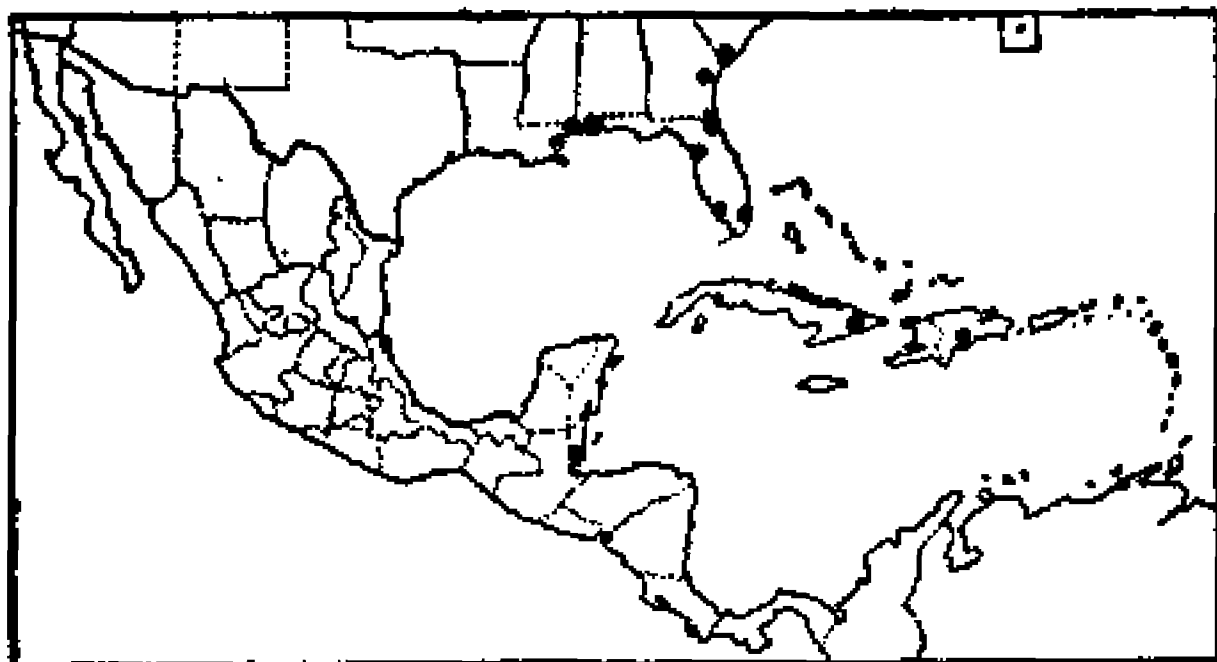


FIG. 129.—Distribution of *P. lancearium*.

DISTRIBUTION.

Sandy pine woods, southeastern United States, British Honduras, Cuba, and Santo Domingo. The type specimen from North America, the exact locality not known.

BRITISH HONDURAS: Sibune River, *Peck* 425 (Gray Herb.).

CUBA: San Juan de Buenavista, *Wright* 3460 (Gray Herb.).

SANTO DOMINGO: Constanza, *Türckheim* 3321.

PEDICELLATA.

104. *Panicum nodatum* Hitchc. & Chase.

*Panicum nodatum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 293. 1910.

DISTRIBUTION.

Oak woods and wooded sand dunes, along the coast of Texas and adjoining Mexico. The type specimen from Texas.

MEXICO: Matamoros, *Berlandier* 988, 2418 (Gray Herb.).



FIG. 130.—Distribution of *P. nodatum*.

SCOPARIA.

- Vernal culms erect or ascending; plants velvety throughout; spikelets about 2.5 mm. long..... 105. *P. scoparium*.
- Vernal culms decumbent at base; upper sheaths more or less glabrate; spikelets less than 2 mm. long..... 106. *P. viscidellum*.

105. *Panicum scoparium* Lam.FIG. 131.—Distribution of *P. scoparium*.

*Panicum scoparium* Lam. Encycl. 4: 744. 1798; Contr. U. S. Nat. Herb. 15: 294. 1910.

## DISTRIBUTION.

Wet places, southeastern United States and Cuba. The type specimen from South Carolina.

CUBA: Road to Pinal Mayarí, Wright 3467. Sierra Nipe, Shafer 2997, 3018.

106. *Panicum viscidellum* Scribn.

*Panicum viscidellum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 2. 1900; Contr. U. S. Nat. Herb. 15: 296. 1910.

## DISTRIBUTION.

Open woods and slopes, Mexico to Colombia; also in Cuba. The type specimen from Jalapa.

VERACRUZ: Córdoba, Hitchcock 6425. Orizaba, Amer. Gr. Nat. Herb. 179. Jalapa, Hitchcock 6606, 6673, Smith 1617, Pringle 8089. Mirador, Liebmann 323. Zacuapán, Purpus 2160.

GUATEMALA: Cobán, Türkheim 3836, 3829 in part. Sierra del Mico, Kellerman 6231, 6249.

NICARAGUA: U. S. Pacific Expl. Exped. Wright.

COSTA RICA: Asserí, Tonduz 1244. El General, Pittier 3358.

PANAMA: El Boquete, Hitchcock 8178, Pittier 3043.

CUBA: Managua, Palmer & Riley 1065.

COLOMBIA: La Esmeralda, near Jamundí, Pittier 940.

FIG. 132.—Distribution of *P. viscidellum*.

## COMMUTATA.

Blades unsymmetrical and falcate; culms decumbent; first glume about one-third as long as the spikelet . . . . . 107. *P. jooirii*.

Blades symmetrical, nearly linear; culms erect; first glume about half as long as the spikelet . . . . . 108. *P. albomaculatum*.

107. *Panicum jooirii* Vasey.FIG. 133.—Distribution of *P. jooirii*.

*Panicum jooirii* Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 31. 1889; Contr. U. S. Nat. Herb. 15: 308. 1910.

## DISTRIBUTION.

Damp woods, southeastern United States; also in southern Mexico. The type specimen from Louisiana.

VERACRUZ: Jalapa, Hitchcock 6650.

REPUBLIC OF MEXICO: Without locality, Pringle 13290.

108. *Panicum albomaculatum* Scribn.

*Panicum albomaculatum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 2. 1900; Contr. U. S. Nat. Herb. 15: 311. 1910.

Autumnal form leaning or ascending, with geniculate nodes, branching from the lower and middle nodes, the branches nearly as long as the primary culm, erect, simple or sparingly branching, the sheaths overlapping, the blades scarcely reduced, the panicles short-exserted; apparently no winter rosette developed.

One specimen, *Hitchcock* 6979, has harshly pilose foliage, but in all other respects its characters are those of *P. albomaculatum*.

DISTRIBUTION.

Shady banks and wooded slopes, Mexico and Guatemala. The type specimen from Pátzcuaro.

JALISCO: Zapotlán, *Hitchcock* 7170, *Amer. Gr. Nat. Herb.* 193.

MICHOACÁN: Pátzcuaro, *Pringle* 5203. Uruápan, *Hitchcock* 6979. Jorullo, *Humboldt* (Willd. Herb.).

GUATEMALA: Antigua, *Hitchcock* 9139.



FIG. 134.—Distribution of *P. albomaculatum*.

CORDOVENSIA.

Plants perennial, straggling, the culms decumbent at base, rooting at the nodes; ligules membranaceous, minute; spikelets elliptical, the first glume two-thirds the length of the spikelet or more; fruit smooth and shining, apiculate.

This group, to which are apparently allied the South American *Panicum phragmites* Nees (*P. discolor* Trin., not Spreng.) and *P. ovuliferum* Trin., appears to be intermediate between true *Panicum* and the subgenus *Dichanthelium*, having the sterile primary panicles and secondary panicles with fruitful, probably cleistogamous, spikelets, but not forming a winter rosette.

- Plants glabrous or the leaves sparsely pilose . . . . . 109. *P. cordovense*.
- Plants velvety pubescent . . . . . 110. *P. chiriquiense*.

109. *Panicum cordovense* Fourn.

*Panicum cordovense* Fourn. Mex. Pl. 2: 26. 1886. "Cordova (Schaffn. n. 293 in herb. FRANQ.)." The type specimen in the herbarium of Drake de Castillo, now a part of the herbarium of the Jardin des Plantes, Paris, has glabrous spikelets (like that shown in Fig. 135). This in the Revision was listed among the doubtful species.<sup>1</sup>

*Panicum expansum* Fourn. Mex. Pl. 2: 26. 1886 (following *P. cordovense*). "Huitamalco (Liebm. n. 426)." The type specimen, in the Copenhagen Herbarium, has a large immature primary panicle, the spikelets glabrous. In the Revision<sup>2</sup> it was suggested that this unknown species was related to *P. costaricense*.

*Ichnanthus apiculatus* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 30: 1. 1901. "Type specimen from near Jalapa, State of Vera Cruz. C. G. Pringle, no. 9208." In the type specimen, in the United States National Herbarium, the spikelets are glabrous.

*Panicum missionum* Ekman, Ark. för Bot. 11<sup>4</sup>: 19. pl. 3. f. 1. 1912. "Bonpland, ad rivulum prope praedium 'Almacén finlandesa,' 26. 12. 07. N. 632.", collected by E. L. Ekman, in the State of Misiones, Argentina. An immature specimen of the type collection is in the U. S. National Herbarium, received from Dr. Ekman. The

<sup>1</sup> Contr. U. S. Nat. Herb. 15: 329. 1910.

<sup>2</sup> Contr. U. S. Nat. Herb. 15: 134. 1910.

photograph of the type specimen (plate 3, figure 1) shows the large open primary panicle, like that of the type of *P. expansum*, which is characteristic of the early phase of the species.

## DESCRIPTION.

Plants perennial in tangled masses; culms slender, subcompressed, a line of pubescence down one side or glabrous, rarely sparsely pilose, straggling, widely creeping, rooting at the lower nodes, as much as 2 meters long, freely branching, the branches

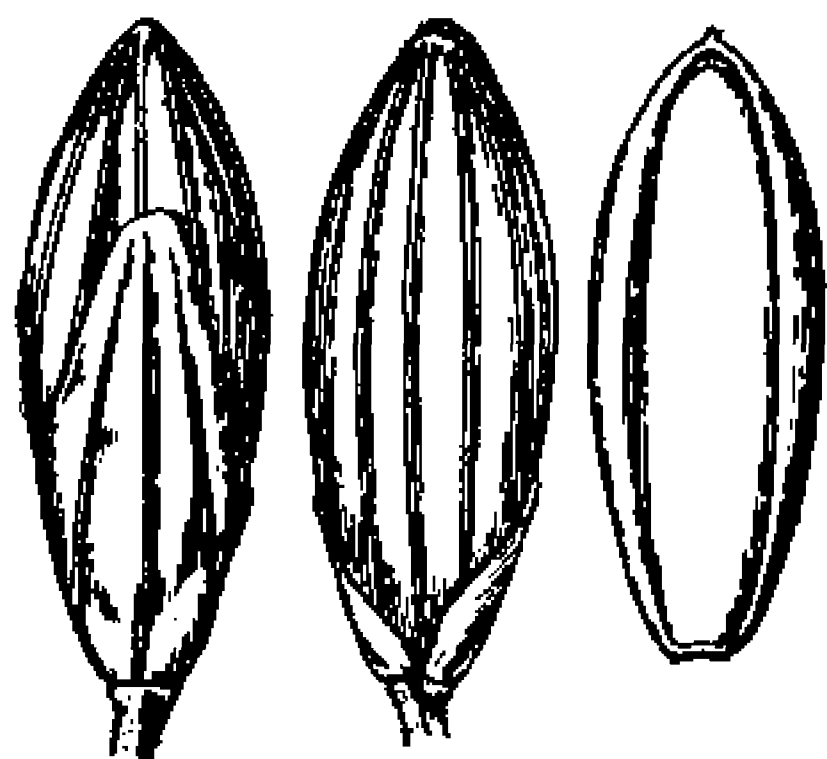


FIG. 135.—*P. cordovense*. From Hitchcock 8328.

usually divergent, becoming nearly as long as the primary culm; nodes puberulent or glabrate; sheaths much shorter than the usually elongate internodes, sparsely papillose-pilose or papillose only, densely ciliate on the margin, puberulent at the junction with the blade; ligule about 0.3 mm. long; blades thin, flat, spreading, 5 to 10 cm. (rarely as much as 15 cm.) long, 5 to 10 mm. wide, narrowly lanceolate, acuminate, rounded and usually ciliate at base, scaberulous on both surfaces at least on the midnerve, usually papillose-hispid above the ligule, sometimes sparsely so throughout; panicles of two kinds, the primary short-exserted or included at base, loose and

open, 10 to 15 cm. long, half to two-thirds as wide, the axis and branches slender, subflexuous, scaberulous, pubescent in the axils, the few branches solitary or in pairs, remote, simple or nearly so, finally spreading, few-flowered, the branchlets and short-pedicelled, apparently unfruitful spikelets more or less appressed to the rachis, the secondary panicles terminal on the branches, reduced, narrow, few-flowered, partially inclosed in the sheath, the crowded apparently cleistogamous spikelets fruitful; spikelets 3 to 3.5 mm. long, 1.2 to 1.4 mm. wide, those of the primary panicles usually glabrous, those of the secondary panicles usually pustulose-villous, turgid; first glume about two-thirds as long as the spikelet, obtuse, 3 to 5-nerved, the second glume and sterile lemma equal, covering the fruit, 7-nerved, the middle internerves of the sterile lemma in the pubescent spikelets usually glabrous, the midnerve sometimes indistinct; fruit 2.8 to 2.9 mm. long, 1.1 to 1.2 mm. wide, apiculate.

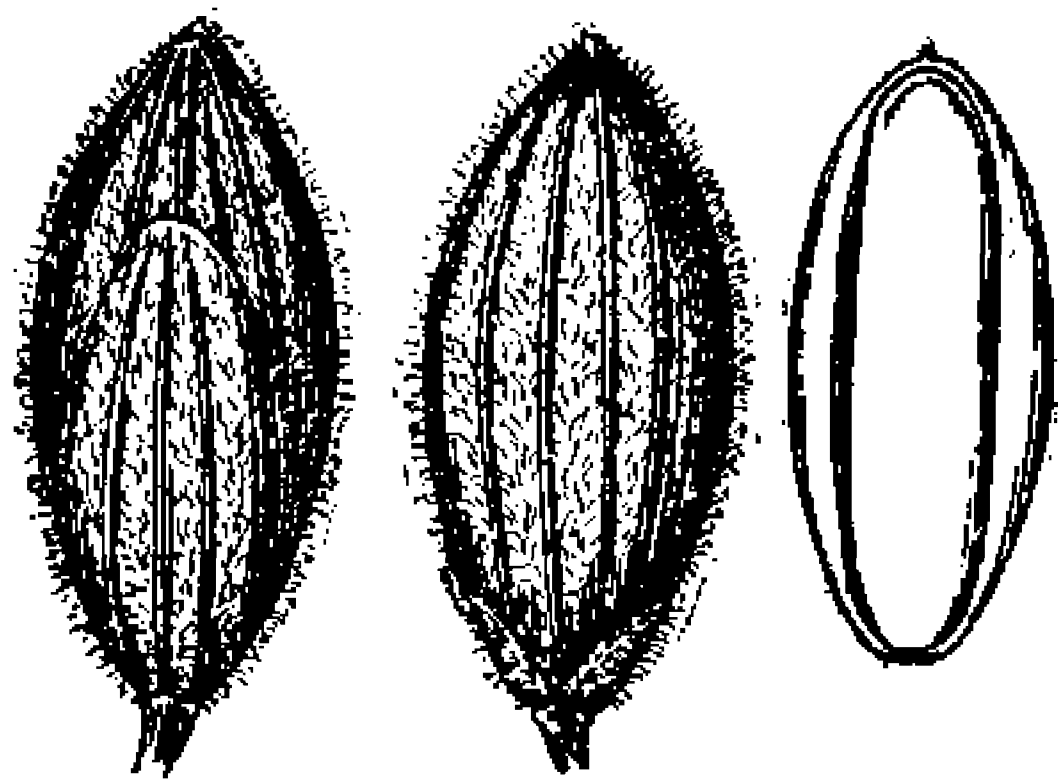


FIG. 136.—*P. cordovense*. From Hitchcock 8328.

The spikelets shown in figures 135 and 136 are from the terminal and lateral panicles respectively of the same individual.

## DISTRIBUTION.

Shady banks and in deep woods, southern Mexico to Argentina.



FIG. 137.—Distribution of *P. cordovense*.

VERACRUZ: Córdoba, *Schaffner* 293.  
Jalapa, *Pringle* 9208, *Hitchcock* 6611. Huitmalco, *Liebmann* 426.

COSTA RICA: Piedra del Convento, *Pittier* 3655.

PANAMA: Chiriquí Volcano, *Hitchcock* 8196. El Boquete, *Hitchcock* 8271, 8275, 8303, 8328.

110. *Panicum chiriquiense* sp. nov.

## DESCRIPTION.

Plants perennial, olivaceous; culms straggling, creeping and rooting at the lower nodes, softly papillose-pilose, freely branching, the leafy fertile branches ascending, 20 to 30 cm. high; nodes pilose; sheaths nearly as long as the internodes or the upper overlapping, softly papillose-pilose; ligule about 0.5 mm. long; blades flat, somewhat spreading, 4 to 7 cm. long, 7 to 10 mm. wide, narrowly lanceolate, unsymmetrical at base and often somewhat falcate, acuminate, softly papillose-villous beneath, rather sparsely pilose on the upper surface; panicles short-exserted or included at base, 2.5 to 3.5 cm. long, half to two-thirds as wide, the few branches ascending, the axis and few nearly simple branches slender, villous; spikelets short-pedicelcd, 2.6 to 2.8 mm. long, about 1.1 mm. wide, elliptical; first glume about three-fourths as long as the spikelet, acute, 3-nerved, villous; second glume and sterile lemma equal, covering the fruit, the glume villous, minutely apiculate, the lemma usually subindurate, smooth and shining in the two middle internerves, the midnerve suppressed or evident at the summit only, the lateral internerves villous; fruit 2.1 mm. long, 1 mm. wide, minutely apiculate.

Type in the U. S. National Herbarium, no. 725186, collected "in shade along trail, hillside jungle, foothills, vicinity of El Boquete, province of Chiriquí, Panama, altitude 1,000 to 1,300 meters, October 4, 1911," by A. S. Hitchcock (no. 8313).

Known only from the type collection. This species differs from *P. cordovense* in the villous foliage with shorter, unsymmetrical blades, the less elongate culms, and the smaller spikelets. In the specimens collected all the panicles are terminal on the branches. Whether or not the plants at an earlier season bear large panicles



FIG. 138.—*P. chiriquiense*. From type specimen.

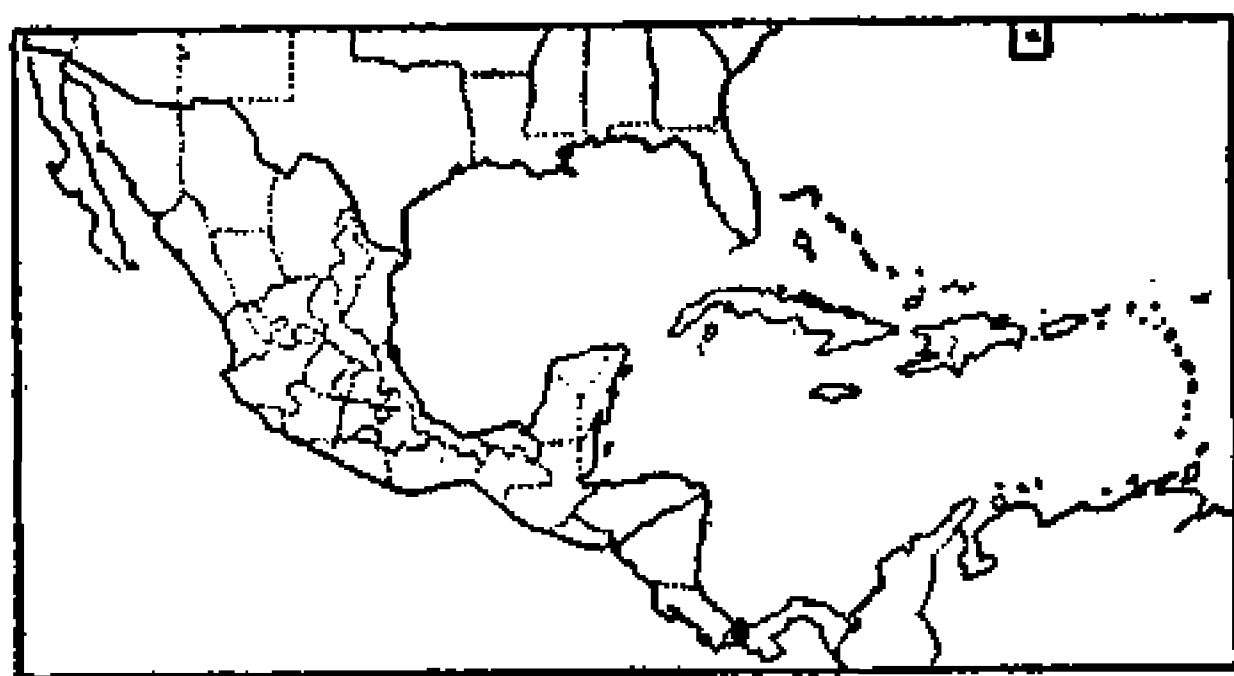


FIG. 139.—Distribution of *P. chiriquiense*.

on a primary culm is not known. The character of the suppressed midnerve and smooth middle internerves, rare in *P. cordovense*, is usual and emphasized in *P. chiriquiense*. Only an occasional spikelet in panicles with the usual form has undifferentiated middle internerves.

## MISCELLANEOUS SPECIES.

111. *Panicum obtusum* H. B. K.

*Panicum obtusum* H. B. K. Nov. Gen. & Sp. 1: 98. 1816; Contr. U. S. Nat. Herb. 15: 321. 1910.

## DISTRIBUTION.

Moist sandy or gravelly soil, southwestern United States to central Mexico. The type specimen from Guanajuato.

SONORA: Nogales to Cocospora Ranch, *Griffiths* 6800.

CHIHUAHUA: Between Casas Grandes and Sabinal, *Nelson* 6352. Chihuahua, *Pringle* 476. Mifaca, *Hitchcock* 7734.

DURANGO: Durango, *Palmer* 175 in 1896, *Hitchcock* 7618. Torreón, *Hitchcock* 7563.  
 COAHUILA: Saltillo, *Palmer* 394 and 504 in 1898, *Hitchcock* 5582. La Ventura,  
*Nelson* 3908. Jaral, *Schumann* 1714.  
 NUEVO LEÓN: Monterrey, *Hitchcock* 5533.



FIG. 140.—Distribution of *P. obtusum*.

ZACATECAS: Concepción del Oro, *Palmer* 266 in 1904. Zacatecas, *Hitchcock* 7525.  
 AGUASCALIENTES: Aguascalientes, *Rose & Hay* 6231, *Hitchcock* 7456.  
 SAN LUIS POTOSÍ: San Luis Potosí, *Palmer* 590 in 1898, *Parry & Palmer* 960 in 1878, *Schaffner* 148, *Hitchcock* 5657.  
 GUANAJUATO: Obregón, *Hitchcock* 5801. Irapuato, *Hitchcock* 7407.  
 QUERÉTARO: San Juan del Río, *Rose, Painter & Rose* 9552, 9594. Querétaro, *Hitchcock* 5813, 5863.  
 HIDALGO: Tula, *Rose, Painter & Rose* 8356. Ixmiquilpan, *Rose, Painter & Rose* 9057.  
 PUEBLA: Tehuacán, *Hitchcock* 6060.  
 REPUBLIC OF MEXICO: Without locality, *Hartweg* 244.

### 112. *Panicum stagnatile* sp. nov.

#### DESCRIPTION.

Plants perennial, gregarious; culms erect from an ascending or decumbent base rooting at the nodes, somewhat lush, 1 to 2 meters high, about 5 mm. thick, glabrous, simple or occasionally with sterile branches; nodes glabrous or the lower retrorsely appressed-pubescent; sheaths usually about as long as the internodes or the upper overlapping, ciliate on the margin, otherwise glabrous or pubescent on the sides at the junction with the blade; ligule membranaceous, less than 1 mm. long; blades flat, 20 to 35 cm. long, 1.5 to 3 cm. wide, slightly narrowed to the rounded base, tapering from below the middle to an acuminate apex, sparingly pilose above the ligule, otherwise glabrous, the margins scabrous; panicle 20 to 40 cm. long, about half as wide, fusiform in outline, the main axis and rachises strongly angled, scabrous, usually sparsely pilose in the lower axils, the numerous slender, compound branches rather stiffly ascending or spreading, solitary or irregularly fascicled, bearing from near the base and usually along the lower side rather stiffly spreading slender secondary branchlets, the lower 1 to 2 cm. long; spikelets loosely clustered, short-pedicelcd, glabrous, 1.8 mm. long, about 0.6 mm. wide, acute; first glume about one-third as long as the spikelet, acute, scabrous on the keeled midnerve, the second glume two-thirds as long as the spikelet, somewhat boat-shaped, scabrous on the keel, the sterile lemma slightly exceeding the fruit, boat-shaped and scabrous on the midnerve at the apex; fruit 1.6 mm. long, 0.4 mm. wide, lanceolate, scabrous at the acute apex, the lemma and palea subindurate, the margins of the lemma inrolled only at the base.

Type in the U. S. National Herbarium, no. 693328, collected in water of swamp, Frijoles, Canal Zone, Panama, October 12, 1911, by A. S. Hitchcock (no. 8388).

This species is allied to *P. rivulare* Trin. but differs in the broader blades, less densely flowered panicle branches, and smaller spikelets. The numerous small spikelets and slender branchlets give the panicle a lacelike appearance. The type locality is now covered by the water of Gatun Lake.



FIG. 141.—*P. stagnatile*.  
 From type specimen.



DISTRIBUTION.

Swamps, growing in the water, southern Mexico to Panama.

TABASCO: Between San Juan Bautista and San Sebastián, *Rovirosa* 625.

GUATEMALA: Puerto Barrios, *Hitchcock* 9153.

PANAMA: Frijoles, *Hitchcock* 8388.



FIG. 142.—Distribution of *P. stagnatile*.

113. *Panicum grande* sp. nov.

Plants perennial, gregarious, producing extensively creeping or floating leafy stolons about 5 mm. thick; culms 1.5 to 2 meters or more high, erect from a long decumbent base with papery sheaths and tufts of fibrous roots, 1 to 2 cm. thick, simple or sparingly branching, succulent, the nodes densely appressed-hirsute; sheaths overlapping except toward the summit, glabrous, the junction with the blade in drying presenting a darkened triangle on each side; ligule membranaceous, about 2 mm. long; blades flat, as much as 1 meter long and 6 cm. wide (the upper and lower smaller), at base narrower than the sheath, gradually widening to about the middle, narrowing rather abruptly to the acuminate apex, glabrous, striate, somewhat plicate, the margins strongly serrulate; panicle as much as 60 cm. long and 40 cm. wide, the axis and branches strongly several-angled, scaberulous, the prominent pulvilli minutely pubescent, the branches stiffly spreading, naked at base, the lower in whorls, the short ultimate branchlets and the pedicels appressed along the rather loose secondary branchlets, the pedicels mostly 1 to 2 mm. long; spikelets 2.5 mm. long, 0.9 mm. wide, nearly terete, pointed, glabrous; first glume slightly over half the length of the spikelet, the second glume and sterile lemma equal, exceeding the fruit, somewhat beaked beyond it; fruit 1.8 mm. long, 0.7 mm. wide, narrowly obovate, smooth and shining, the lemma and palea indurate but the lemma margins flat.

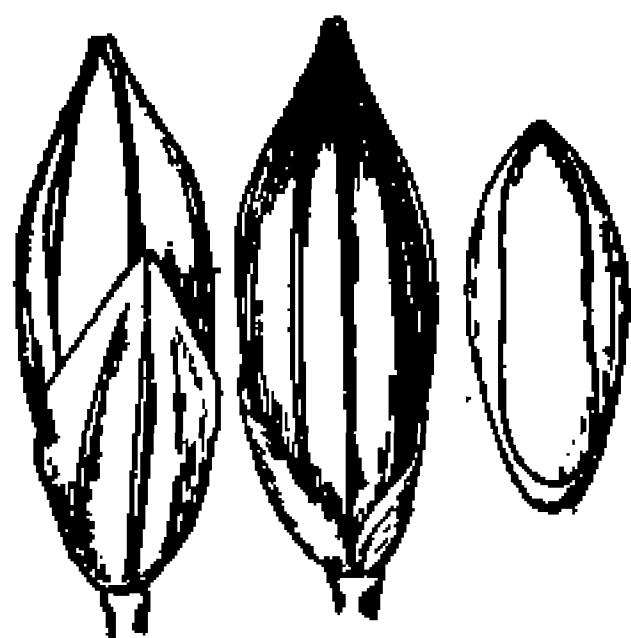


FIG. 143.—*P. grande*. From type specimen.

Type in U. S. National Herbarium, nos. 693329, 693330, 693331 (parts of the same individual), collected in the water of a swamp along the margin of Gatun Lake, Canal Zone, Panama, December 15, 1911, by A. S. Hitchcock (no. 9178).

This species grows in large masses in swamps, flowering in December. The broad blades give a lily-like aspect to the plants earlier in the season. In Gatun Lake, Panama, plants were found growing in 10 feet of water.

Doell<sup>1</sup> describes this species under the name *Panicum multiflorum* Poir.,<sup>2</sup> but the latter name applies to a different species.<sup>3</sup> *Panicum grande* is allied to the South American *P. grumosum* Nees, *P. rivulare* Trin., and *P. prionitis* Nees, from all of which it differs in its aquatic habit and open panicle and in the more indurate fertile lemma and palea; from *P. rivulare* and *P. prionitis* in the equal second glume and fertile lemma.

<sup>1</sup> Mart. Fl. Bras. 2<sup>2</sup>: 215. 1877.

<sup>2</sup> Encycl. 4: 282. 1816.

<sup>3</sup> See Contr. U. S. Nat. Herb. 15: 48. 1910.

FIG. 144.—Distribution of *P. grande*.

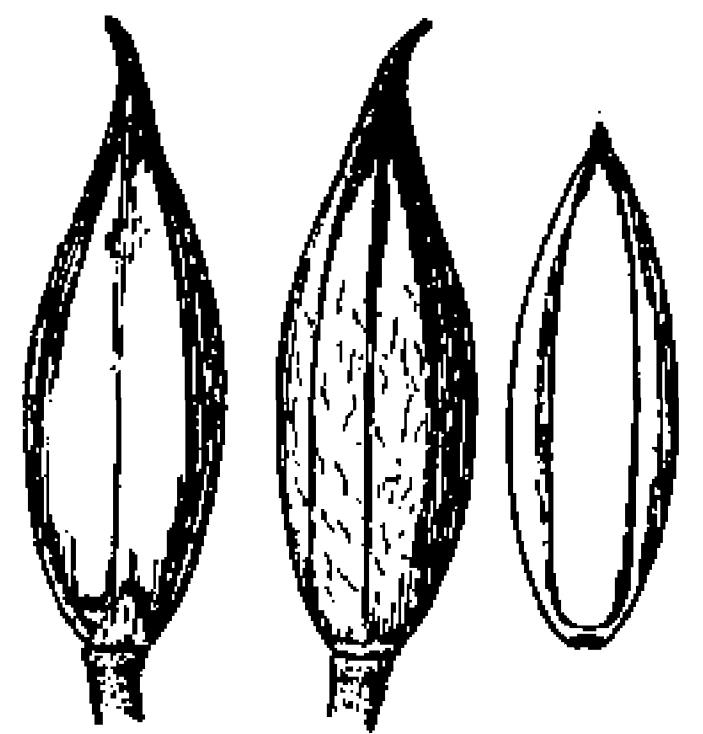
VENEZUELA: Bobures, *Jahn* 353.

#### 114. *Panicum tuerckheimii* Hack.

*Panicum tuerckheimii* Hack. Oesterr. Bot. Zeitschr. 12: 60. 1906. Guatemala, Cubilgütz [Cubilquitz] im Hochwald, 350 m s m. leg H. v. Türckheim (1903 sub nr. II. 820)."

#### DESCRIPTION.

Plants perennial from a firm knotty base with strong roots; culms erect or ascending, simple, 30 to 50 cm. high, compressed, glabrous, the nodes appressed-hirsute, few to several long erect leaves borne at the base; sheaths compressed-keeled, more or less hispidulous at the junction with the blade, otherwise glabrous, those of the basal leaves loose, overlapping, those of the culm about as long as the internodes; ligule membranaceous-ciliate, scarcely 0.5 mm. long; blades thin, flat, 10 to 25 cm. long, 2 to 2.5 cm. wide, gradually tapering from about the middle to an acuminate apex, the uppermost rather abruptly narrowed to a somewhat rounded ciliate base, the lower and especially the basal blades gradually tapering into a narrow, more or less folded, petiole-like base, ciliate on the margins, puberulent on the upper surface at the very base; panicle short exserted, 15 to 20 cm. long, less than one-fourth as wide, the slender angled axis and branches glabrous, the branches remote, rather stiffly ascending, with short ascending remote branchlets, these spikelet-bearing from the base, more or less pilose in the axils, the lower branches about 10 cm. long; spikelets rather short-pedicelled, russet brown, 2.5 to 3 mm. long, about 0.9 mm. wide, acuminate, very sparsely appressed-pilose; first glume minute, hyaline; second glume and sterile lemma rather faintly nerved, subequal, or the acuminate tip of the glume exceeding the lemma; the sterile palea wanting; fruit 2.4 mm. long, 0.8 mm. wide, the lemma and palea not greatly indurated, the lemma minutely pubescent at the pointed apex, the palea at the very tip not inclosed.

FIG. 145.—*P. tuerckheimii*.  
From type specimen.FIG. 146.—Distribution of *P. tuerckheimii*.

In the original description Professor Hackel states that the first glume is altogether wanting. This appeared to be the case and, failing to note the obscure organ, we excluded this species from the genus *Panicum* in the Revision.<sup>1</sup> The first glume is present, but is so thin in texture and so closely appressed that the nerves and the base of the sterile lemma are obscurely visible through it.

This species, known only from the type collection, has no close allies.

<sup>1</sup>Contr. U. S. Nat. Herb. 15: 16. 1910.

115. *Panicum zizanioides* H. B. K.

*Panicum zizanioides* H. B. K. Nov. Gen. & Sp. 1: 100. 1816; Contr. U. S. Nat. Herb. 15: 325. 1910.

## DISTRIBUTION.

Moist usually shaded places, Mexico and the West Indies to Paraguay. The type locality, Colombia.

VERACRUZ: Córdoba, *Hitchcock* 6436.

OAXACA: Trapeche de la Concepción, *Liebmann* 394.

TABASCO: San Juan Bautista, *Roviroso* 624.

CHIAPAS: Ocuilapa, *Nelson* 3023.

GUATEMALA: Cubilquitz, *Türkheim* 7699, 7700, 8785, 8796. Cobán, *Türkheim* 3828.

NICARAGUA: Jinotepe, *Hitchcock* 8680.

COSTA RICA: Hacienda de Zent, *Tonduz* 302. La Florida, *Pittier* 11276. Matina, *Pittier* 10307. Talamanca, *Tonduz* 8566. San Rafael, *Pittier* 2598.

PANAMA: David, *Hitchcock* 8351. Tabernilla, *Hitchcock* 8112, 8385. Gatun, *Hitchcock* 7974. Gamboa, *Pittier* 4790. Between Gamboa and Cruces, *Pittier* 3781. Along the Río Sirrí, *Pittier* 4026.

CUBA: Sancti Spiritus, *León* 903. Laguna Castellano, *Baker* 4334, *Wilson* 9567. Puentes Grandes, *León* 2743. Sumidero, *León* 13635. Without locality, *Wright* 3466.



FIG. 147.—Distribution of *P. zizanioides*.

JAMAICA: Gordon Town, *Hart* 726. Port Antonio, *Maxon* 2109. Ramble, *Hitchcock* 9513. Castleton Gardens, *Hitchcock* 9398. Above Constant Spring, *Hitchcock* 9278. Buff Bay, *Hitchcock* 9779. Ipswich, *Hitchcock* 9609. Ewarton to Linstead, *Hitchcock* 9419. St. Georges, Portland, *Harris* 11420. Temple Hall, *Harris* 11385. Troy, *Hitchcock* 9781. Montego Bay, *Hitchcock* 9684. Without locality, *Alexander Prior* in 1850, *Wulfschlaegel* 1108.

TRINIDAD: Port of Spain, *Hitchcock* 9958. Mount Pleasant Estate, *Bot. Gard. Herb.* 2286. Toco, *Broadway* 2563. Without locality, *Bot. Gard. Herb.* 3188.

TOBAGO: Great Dog River, *Eggers* 5810. Roxburgh, *Hitchcock* 10258. Easterfield, *Broadway* 4556.

116. *Panicum hirtum* Lam.

*Panicum hirtum* Lam. Encycl. 4: 741. 1798. Lamarck states that "Cette plante croît à Cayenne, d'où elle a été envoyée par Jos. Martin." The type specimen in the Lamarck Herbarium is marked "*Panicum hirtum* Lam. dict. Cayenne. Martin."

## DESCRIPTION.

Plants annual, at first simple and erect, later branching and decumbent, rooting at the lower nodes; culms slender, puberulent, the fertile branches 20 to 40 cm. high; sheaths shorter than the internodes, loose, short-villous, densely ciliate on the margin; ligule a delicate toothed membrane less than 0.5 mm. long; blades flat, thin, 2 to 6 cm. long, 0.8 to 2 cm. wide, ovate to lanceolate, cordate-clasping at base, rather abruptly acuminate, scabrous on the upper surface, sparsely hispid on both surfaces, ciliate at the base; panicles exserted or included at base, 3 to 7 cm. long, half to two-thirds as

wide, ovoid in outline, the main axis pilose, the numerous delicate but rather stiff branches ascending at a uniform angle (in herbarium specimens the branches conspicuously parallel), the numerous but not crowded



FIG. 148.—*P. hirtum*. From type specimen.

spikelets recurved at right angles on capillary pedicels; spikelets 1.2 mm. long, about 0.7 mm. wide, strongly plano-convex, turgid; first glume nearly as long as the spikelet, 3-nerved, narrow, covering the middle internerves of the sterile lemma, thin in texture and so closely appressed as to be usually invisible, sparsely hispid; second glume inflated, gibbous, pointed, 5-nerved, papillose-hispid, at maturity subindurate, the hairs stiffening and as much as 1 mm. long; sterile lemma equaling the second glume and inclosing a 2-keeled palea, 5-nerved, glabrous, the two middle internerves thin; fruit 1 mm. long, 0.6 mm. wide, very turgidly plano-convex, at first white, at maturity brown, sparsely sprinkled with minute globular hairs.

The spikelets of this unique species at maturity look like tiny burs or, as Lamarck says, like the "seeds of *Daucus*." The bristly second glume sometimes falls, leaving the turgid fruit, together with the first glume and sterile lemma, attached to the pedicel.

#### DISTRIBUTION.

Damp shady places, Trinidad to Brazil.

TRINIDAD: Arima, *Hitchcock* 10310. Piarco Savanna, *Hitchcock* 10363. St. Joseph, *Hitchcock* 10177. Port of Spain, *Hitchcock* 10320. Without locality, *Bot. Gard. Herb.* 3194.

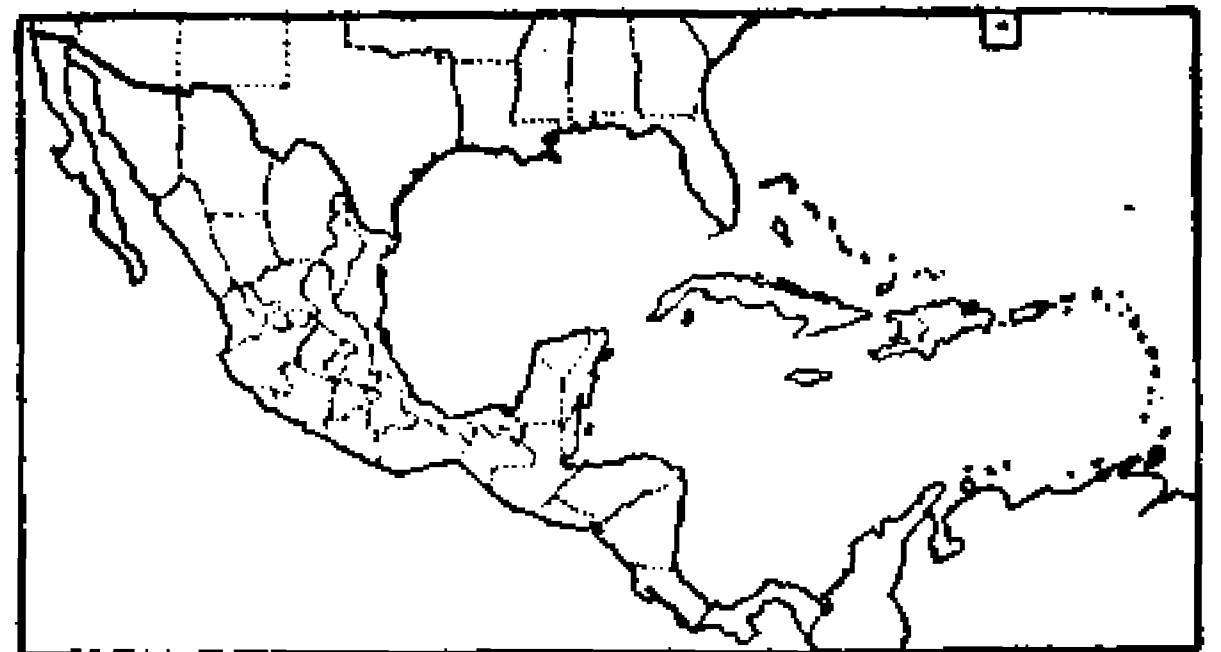


FIG. 149.—Distribution of *P. hirtum*.

#### EXCLUDED SPECIES.

The study of genera allied to *Panicum* and the examination of a large number of type specimens has resulted in the identification of most of the species of North America included now or in the past by some authors in *Panicum*. Besides the valid species and the names accounted for in synonymy within the genus *Panicum* there are a great many names that, according to our present conception of the genera of Paniceae, are referable to other genera. While the list is not complete it is so nearly complete as to enable us to account for almost all the names of North American species that have been referred to *Panicum*. The second name in the column merely indicates the genus to which the species belongs. In no case is any name in the following list a transfer of a species or a new combination. In many cases the name, if transferred to the genus indicated, would be untenable.

- Panicum acutum* Rasp. Reimarochloa.  
*adscendens* H. B. K. Syntherisma.  
*adustum* Nees. Syntherisma.  
*africanum* Trin. Oplismenus.  
*agglutinans* Kunth. Lasiacis.  
*alabamense* Trin. Paspalum.  
*aloppecuroides* L. Pennisetum.  
*aloppecuroideum* L. Pennisetum.  
*aloppecuroideum* Walt. Chaetochloa.  
*aloppecurus* Lam. Pennisetum.  
*alsinoides* Griseb. Ichnanthus.  
*americanum* L. Pennisetum.  
*amphistemon* Wright. Scutachne.  
*amplexicaule* Rudge. Hymenachne.  
*amplifolium* Steud. Chaetochloa.  
*anomalum* Walt. Chaetochloa.  
*anthaenantia* Kuntze. Anthaenantia.  
*antillarum* Poir. Pennisetum.  
*aquaticum* Bosc. Sacciolepis.  
*aquaticum* Muhl. Sacciolepis.  
*arborescens* Sieber. Lasiacis.  
*arbusculum* Sieber. Isachne.  
*aristatum* Macf. Echinochloa.  
*arundinaceum* Swartz. Isachne.  
*aturense* H. B. K. Homolepis.  
*aureum* Trin. Axonopus.  
*auriculatum* Willd. Hymenachne.  
*autumnale* Bosc. Leptoloma.  
*badium* Scribn. & Merr. Syntherisma.  
*bambusioides* Desv. Lasiacis.  
*barbatum* Lam. Chaetochloa.  
*berchtholdiae* Doell. Chaetium.  
*bermudianum* Steud. Sacciolepis.  
*berteronianum* Schult. Chaetochloa.  
*bifidum* Bertol. Paspalum.  
*blepharophorum* Presl. Homolepis.  
*brachiatum* Poir. Chaetochloa.  
*brachyphyllum* Steud. Syntherisma.  
*brevifolium* Kunth. Syntherisma.  
*buckleyanum* Vasey. Error in Index Kewensis for Paspalum.  
*californicum* Benth. Valota.  
*campylostachyum* Hack. Thrasya.  
*caudatum* Lam. Chaetochloa.  
*caudatum* Salzm. Sacciolepis.  
*cenchroides* Rich. Pennisetum.  
*cenchroides* Ell. Cenchrus.  
*cernuum* Willd. Chaetochloa.  
*chaetium* Steud. Chaetium.  
*chauvinii* Steud. Lasiacis.  
*chrysites* Steud. Axonopus.  
*chrysolephare* Steud. Axonopus.  
*chrysodactylon* Trin. Axonopus.  
*cognatum* Schult. Leptoloma.

- Panicum colonum* L. Echinochloa.  
*compactum* Swartz. Lasiacis.  
*compositum* Nees. Chaetochloa.  
*compressum* Balb. Chaetochloa.  
*ceresia* Kuntze. Paspalum.  
*ciliatiflorum* Wood. Anthaenantia.  
*cirrhosum* Scribn. & Merr. Chaetochloa.  
*confertum* Desv. ? Isachne.  
*corrugatum* Ell. Chaetochloa.  
*crinitum* Willd. Pennisetum.  
*crusardeae* Willd. Chaetochloa.  
*cruscorvi* L. Echinochloa.  
*crusgalli* L. Echinochloa.  
     *aristatum* Pursh. Echinochloa.  
     *hispidum* Ell. Echinochloa.  
     *mite* Pursh. Echinochloa.  
     *muticum* Ell. Echinochloa.  
     *purpureum* Pursh. Echinochloa.  
     *sabulicola* Trin. Echinochloa.  
*cruspavonis* Nees. Echinochloa.  
*cubense* Steud. Oplismenus.  
*cultratum* Trin. Thrasya.  
*curvinerve* Hack. Syntherisma.  
*dactylon* L. Capriola.  
*decumbens* Roem. & Schult. Paspalum.  
*densispica* Poir. Pennisetum.  
*digitarioides* Rasp. Paspalum.  
*dispermum* Lam. Isachne.  
*dissectum* L. Paspalum.  
*dissitiflorum* Steud. Chaetochloa.  
*divaricatum* Kunth. Lasiacis.  
*divaricatum* L. Lasiacis.  
     *glabrum* Kuntze. Lasiacis.  
     *latifolium* Fourn. Lasiacis.  
     *puberulum* Griseb. Lasiacis.  
     *stenostachyum* Griseb. Lasiacis.  
*divaricatum* Michx. Festuca.  
*divergens* Muhl. Leptoloma.  
*domingense* Zucc. Syntherisma.  
*drummondii* Vasey. Error in Index Kewensis for Paspalum.  
*duchaissingii* Steud. Valota.  
*dumetorum* A. Rich. Chaetochloa.  
*durum* Griseb. Scutachne.  
*echinatum* Willd. Echinolaena.  
*echinolaena* Nees. Echinolaena.  
*eggersii* Hack. Valota.  
*elliottianum* Schult. Sacciolepis.  
*erianthum* Poir. Anthaenantia.  
*falsum* Steud. Valota.  
*fasciculatum* Lam. Oplismenus.  
*fasciculiflorum* Steud. Oplismenus.  
*filiforme* L. Syntherisma.

- Panicum fimbriatum* Presl. *Syntherisma*.  
*setigerum* Fourn. *Syntherisma*.  
*firmum* Kunth. *Oryzopsis*.  
*flavescens* Sieb. *Eriochloa*.  
*floridanum* Trin. *Paspalum*.  
*fluviatilis* Nees. *Sacciolepis*.  
*fragile* Kunth. *Leptoloma*.  
*francoi* Steud. *Oplismenus*.  
*frumentaceum* Roxb. *Echinochloa*.  
*frumentaceum* Salisb. *Holcus*.  
*furcellatum* S. Moore. *Paspalum*.  
*fuscescens* Willd. *Chaetochloa*.  
*fusciflorum* Steud. *Leptocoryphium*.  
*fuscum* Sieber. *Lasiacis*.  
*gavanianum* Steud. *Valota*.  
*geniculatum* Lam. *Chaetochloa*.  
*georgicum* Spreng. *Eriochloa*.  
*gibbum* Ell. *Sacciolepis*.  
*glaberrimum* Ell. *Chaetochloa*.  
*glabrum* Gaud. *Syntherisma*.  
*mississippiense* Gattinger. *Syntherisma*.  
*glandulosum* Nees. *Echinolaena*.  
*glaucescens* H. B. K. *Isachne*.  
*glaucescens* Nees. *Syntherisma*.  
*glaucescens* Salzm. *Chaetochloa*.  
*glaucescens* Willd. *Isachne*.  
*glaucum* L. *Pennisetum*.  
*glaucum* Rupr. *Chaetochloa*.  
*glaucum* Steud. *Chaetochloa*.  
*flavescens* Ell. *Chaetochloa*.  
*purpurascens* Ell. *Chaetochloa*.  
*glutinosum* Lam. *Lasiacis*.  
*gracilentum* Poir. *Festuca*.  
*gracillimum* Scribn. *Syntherisma*.  
*grisebachii* Nash. *Lasiacis*.  
*grossum* Salisb. *Echinochloa*.  
*hamiltonii* Kunth. *Syntherisma*.  
*heteranthum* Link. *Echinolaena*.  
*hirtellum* L. *Oplismenus*.  
*hirtellum* Walt. *Echinochloa*.  
*hirticalycinum* Bosc. *Anthaenantia*.  
*hirticalycum* Bosc. *Echinochloa*.  
*hirtum* Willd. *Isachne*.  
*hispidum* Muhl. *Echinochloa*.  
*holciforme* Steud. *Echinochloa*.  
*horizontale* G. F. W. Meyer. *Syntherisma*.  
*horridum* Salzm. *Echinochloa*.  
*humboldtianum* Kuntze. *Paspalum*.  
*humifusum* Kunth. *Syntherisma*.  
*hydrophilum* Schult. *Sacciolepis*.  
*hymenachne* Desv. *Hymenachne*.  
*ichnodes* Griseb. *Ichnanthus*.  
*ignoratum* Kunth. *Anthaenantia*.

- Panicum imberbe* Poir. *Chaetochloa*.  
*immersum* Trin. *Axonopus*.  
*inaequivalve* Kuntze. *Paspalum*.  
*incertum* Bosc. *Echinochloa*.  
*insulare* G. F. W. Meyer. *Valota*.  
*ischaemum* Schreb. *Syntherisma*.  
*isocalycinum* Meyer. *Homolepis*.  
*italicum* L. *Chaetochloa*.  
*jurgensenii* Scribn. & Merr. *Chaetochloa*.  
*lachnanthum* Torr. *Valota*.  
*laevigatum* Lam. *Chaetochloa*.  
*laevigatum* Ell. *Chaetochloa*.  
*laevigatum* Muhl. *Chaetochloa*.  
*lagascae* Kuntze. *Paspalum*.  
*lagopus* Willd. *Eriochrysis*.  
*lagotis* Trin. *Ichnanthus*.  
*lanatum* Rottb. *Valota*.  
*lanatum* Swartz. *Lasiacis*.  
     *sorghoideum* Hamilt. *Lasiacis*.  
*langei* Fourn. *Homolepis*.  
*laterale* Presl. *Olyra*.  
*leandri* Trin. *Brachiaria*.  
*leucites* Trin. *Syntherisma*.  
*leucocomum* Scribn. *Syntherisma*.  
*leucophaeum* H. B. K. *Valota*.  
*liebmannianum* Fourn. *Lasiacis*.  
     *depauperatum* Fourn. *Lasiacis*.  
*lindeni* Fourn. *Ichnanthus*.  
*lineare* L. *Syntherisma*.  
*lineare* Krock. *Syntherisma*.  
     *mississippiense* Gattinger. *Syntherisma*.  
*linkianum* Kunth. *Syntherisma*.  
*litorale* Kuntze. *Paspalum*.  
*loliaceum* Lam. *Oplismenus*.  
*loliiforme* Hochst. *Mesosetum*.  
*longiflorum* Trin. *Homolepis*.  
*longisetum* Torr. *Echinochloa*.  
*longispicula* Doell. *Homolepis*.  
*lutescens* Weigel. *Chaetochloa*.  
*macrostachya* Nees. *Chaetochloa*.  
*maculatum* Aubl. *Lasiacis*.  
     *pilosum* Fourn. *Lasiacis*.  
*malacophyllum* Kuntze. *Paspalum*.  
*martinicense* Griseb. *Lasiacis*.  
*mayarense* Wright. *Ichnanthus*.  
*melicarium* Michx. *Panicularia*.  
*melicarium* Muhl. *Sporobolus*.  
*melinis* Trin. *Melinis*.  
*mexicanum* Scribn. & Merr. *Chaetochloa*.  
*michauxianum* Schult. *Eriochloa*.  
*michauxii* Poir. *Eriochloa*.  
*minutiflorum* Rasp. *Melinis*.  
*molle* Michx. *Eriochloa*.



- Panicum mollissimum** Kunth. *Syntherisma*.  
*monobotrys* Trin. *Paspalum*.  
*monostachyum* H. B. K. *Paspalum*.  
*montanum* Poit. *Ichnanthus*.  
*multinerve* Desv. *Isachne*.  
*muricatum* Michx. *Echinochloa*.  
*myosurus* Rich. *Sacciolepis*.  
*myurus* Lam. *Sacciolepis*.  
*neesii* Kunth. *Syntherisma*.  
*nemorale* Schrad. *Ichnanthus*.  
*nemorosum* Swartz. *Ichnanthus*.  
*nemorosum* Willd. *Echinolaena*.  
*nudum* Walt. *Leptoloma*.  
*nuttallianum* Steud. *Oplismenus*.  
*oaxacense* Steud. *Lasiacis*.  
*obtectum* Presl. *Paspalum*.  
*occidentale* Nieuwl. *Chaetochloa*.  
*onurus* Willd. *Chaetochloa*.  
*orinocense* Willd. *Lasiacis*.  
*oxyanthum* Steud. *Reimarochloa*.  
*pallens* Swartz. *Ichnanthus*.  
*palmeri* Vasey. *Ixophorus*.  
*palmifolium* Poir. *Chaetochloa*.  
*paniculatum* Kuntze. *Paspalum*.  
*paniculiferum* Steud. *Chaetochloa*.  
*paractaenoides* Trin. *Chaetochloa*.  
*parciflorum* Steud. *Oplismenus*.  
*patentissimum* Roem. & Schult. *Festuca*.  
*penicillatum* Willd. *Chaetochloa*.  
*petrosum* Trin. *Thrasya*.  
*phaeocarpum drummondianum* Nees. *Syntherisma*.  
*phaeothrix* Scribn. *Syntherisma*.  
*phleiforme* Presl. *Sacciolepis*.  
*pittieri* Hack. *Valota*.  
*plantagineum* Link. *Brachiaria*.  
*platyphyllum* Munro. *Brachiaria*.  
*plicatulum* Kuntze. *Paspalum*.  
*polyrrhizum* Presl. *Paspalum*.  
*polystachion* Muhl. *Chaetochloa*.  
*polystachyum* Presl. *Hymenachne*.  
*praegnans* Steud. *Lasiacis*.  
*pringlei* Vasey. *Ixophorus*.  
*procerrimum* Hack. *Lasiacis*.  
*prorepens* Steud. *Oplismenus*.  
*pulchrum* Willd. *Axonopus*.  
*pungens* Poir. *Echinochloa*.  
*purpurascens* H. B. K. *Chaetochloa*.  
*radicosum* Presl. *Syntherisma*.  
*rariflorum* Lam. *Orthoclada*.  
*rariflorum* Presl. *Chaetochloa*.  
*restitutum* Steud. *Chaetochloa*.  
*rhizophorum* Fourn. *Lasiacis*.  
*rigens* Swartz. *Isachne*.

- Panicum rigidifolium* Kunth. Isachne.  
*rigidifolium* Trin. Sacciolepis.  
*roseum* Steud. Tricholaena.  
*rottboellioides* H. B. K. Mesosetum.  
*rufum* Kunth. Anthaenantia.  
*rugelii* Griseb. Lasiacis.  
*ruscifolium* H. B. K. Lasiacis.  
*sabulicola* Nees. Echinochloa.  
*saccharatum* Buckl. Valota.  
*sacchariflora* Steud. Valota.  
*saccharoides* A. Rich. Valota.  
*saccharoides* Kunth. Paspalum.  
*saccharoides* Trin. Tricholaena.  
*sanctae-marthae* Steud. Oplismenus.  
*sanguinale* L. Syntherisma.  
*simpsoni* Vasey. Syntherisma.  
*scabrifolium* Nees. Chaetochloa.  
*scandens* Trin. Chaetochloa.  
*scariosum* Trin. Lasiacis.  
*schaffneri* Kuntze. Paspalum.  
*scheelii* Steud. Chaetochloa.  
*schiedeanum* Trin. Paspalum.  
*schiedei* Spreng. Senites.  
*schlechtendalii* Fourn. Ichnanthus.  
*monstrosum* Fourn. Ichnanthus.  
*schultesii* Steud. Oplismenus.  
*scindens* Nees. Echinochloa.  
*semirugosum* Nees. Chaetochloa.  
*senescens* Trin. Paspalum.  
*sericatum* Steud. Eriochloa.  
*serotinum* Trin. Syntherisma.  
*setarium* Lam. Oplismenus.  
*setosum* Swartz. Chaetochloa.  
*simpsoni* Beal. Syntherisma.  
*sloanei* Griseb. Lasiacis.  
*sorghoideum* Desv. Lasiacis.  
*speciosum* Nees. Chaetochloa.  
*spectabile* Nees. Echinochloa.  
*squamatum* Fourn. ? Paspalum.  
*stipatum* Presl. Syntherisma.  
*striatum* Lam. Sacciolepis.  
*strumosum* Presl. Sacciolepis.  
*subspicatum* Desv. ? Sacciolepis.  
*sulcatum* Aubl. Chaetochloa.  
*swartzianum* Hitchc. Lasiacis.  
*sylvaticum* Lam. Oplismenus.  
*tenax* Rich. Chaetochloa.  
*thrasya* Trin. Thrasya.  
*thrasyoides* Trin. Thrasya.  
*trachyspermum* Nees. Isachne.  
*trinii* Kunth. Sacciolepis.  
*trinii* Mor. Error in Index Kewensis for Echinolaena.  
*triquetrum* Willd. Chaetochloa.  
*triticeum* Willd. Cyperaceae.

- Panicum tumescens* Trin. Homolepis.  
*uncinatum* Raddi. Echinolaena.  
*unispicatum* Scribn. & Merr. Paspalum.  
*velutinum* Bosc. Syntherisma.  
*ventenatii* Steud. Chaetochloa.  
*versicolor* Nieuwl. Chaetochloa.  
*verticillatum* L. Chaetochloa.  
*vestitum* Kunth. Valota.  
*vilvoides* Trin. Sacciolepis.  
*viride* L. Chaetochloa.  
*viridiflorum* Nees. Homolepis.  
*vulpisetum* Lam. Pennisetum.  
*walteri* Pursh. Echinochloa.

LIST OF NEW SPECIES.

	Page
<i>Panicum sucosum</i> Hitchc. & Chase.....	475
<i>Panicum altum</i> Hitchc. & Chase.....	488
<i>Panicum milleflorum</i> Hitchc. & Chase.....	494
<i>Panicum stevensianum</i> Hitchc. & Chase.....	498
<i>Panicum pyrularium</i> Hitchc. & Chase.....	508
<i>Panicum ineptum</i> Hitchc. & Chase.....	509
<i>Panicum chiriquiense</i> Hitchc. & Chase.....	527
<i>Panicum stagnatile</i> Hitchc. & Chase.....	528
<i>Panicum grande</i> Hitchc. & Chase.....	529