
Novelties in *Panicum* Subg. *Dichanthelium* Sect. *Dichanthelium* (Poaceae: Panicoideae: Paniceae)

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Several new taxa of *Panicum* L. sect. *Dichanthelium* A. Hitchc. & Chase are described in this work, prior to the publication of some of these species in the treatment of *Panicum* for *Flora of Paraguay* and a paper in press on *Panicum sabulorum* Lam. and related species (Morrone & Zuloaga, in press).

Panicum surrectum Chase ex Zuloaga & Morrone, sp. nov. TYPE: Brazil. Minas Gerais: Barbacena, long and tangled in moist brushy base of higher slope, *Chase 8664* (holotype, US; isotypes, F, NY). Figure 1.

Laminae lineari-lanceolatae, 5–12 cm longae. Spiculae longe ellipsoideae, 1.8–2.2 mm longae; gluma inferiore 0.9–1.3 mm longa, glumae superioris basim non amplectente; gluma superiore 9-nervia; lemmate inferiore 9-nervio. Flos inferior masculinus vel carens. Anthoecium superior ellipsoideum, 1.6–1.8 mm longum; lemmate minute cristato.

Short-rhizomatous perennials. Culms decumbent to geniculate, then erect, 45–120 cm tall, branching at the upper nodes, scandent; internodes compressed to cylindrical, 7–13 cm long, glabrous; nodes compressed, glabrous, brownish. Sheaths 4–10.5 cm long, shorter than the internodes, glabrous to papillose-pilose toward the base, shiny, one margin ciliate, the other one ciliate toward the base, otherwise glabrous. Ligules 0.2 mm long, membranous-ciliate; collar pilose. Blades linear-lanceolate, 5–12 cm long, 0.6–1 cm wide, glabrous to short-hispid, attenuate at the base and apex, the margins scabrous, long-ciliate toward the base; midnerve conspicuous. Inflorescences terminal, exserted; panicles lax, diffuse, 3.5–15 cm long, 3–10 cm wide; main axis with or without glands, wavy, glabrous, the pulvini glabrous; first-order branches ascendent, whorled toward the base, then subopposite or alternate, the axis of the branches glabrous, flexuous, with or without glands; pedicels triquetrous, glabrous, with or without glands. Spikelets narrowly ellipsoid, 1 mm long, 0.8 mm wide, glabrous, greenish, non-stipitate; upper glume and lower lemma

subequal, the nerves manifest. Lower glume ovate, 0.9–1.3 mm long, $\frac{2}{5}$ – $\frac{1}{2}$ ($-\frac{3}{4}$) the length of the spikelet, not embracing the upper glume, (1–)3-nerved, the lateral nerves inconspicuous. Upper glume 1.6–2 mm long, not covering the apex of the upper antherium, 9-nerved. Lower lemma glumiform, 1.8–2.1 mm long, 9-nerved. Lower palea lanceolate, 1.5–1.8 mm long, 0.4 mm wide, shortly pilose near the apex, otherwise glabrous, hyaline. Lower flower male; stamens 3 or absent, anthers 1 mm long. Upper antherium ellipsoid, 1.6–1.8 mm long, 0.7 mm wide, pale, indurate, papillose, the apex of the lemma shortly crestate and pilose. Upper flower bisexual; lodicules 2, covering the lower margins of the palea; stamens 3, the anthers 1.2 mm long, purplish; styles 2, free, stigma purplish. Caryopsis ovoid, 1.3 mm long, 0.7 mm wide; hilum punctiform; embryo less than $\frac{3}{4}$ the length of the caryopsis.

Distribution and ecology. Brazil, occasionally present in Paraguay, forest edges, between 600 and 1,800 m.

Paratypes. BRAZIL. DISTRITO FEDERAL: ca. 35 km E of Brasília, *Irwin & Soderstrom 5419* (NY, UB, US). GOÍAS: Luziania, 15 km ao sul da cidade, *Heringer 18124* (IBGE, RB). MATO GROSSO DO SUL: Dourados, *Chase 11023* (IAN). MINAS GERAIS: 19 km NE of the intersection of highways 381 and 459, ca. 12 km SW of São Gonçalo do Sapucaí, 870 m, *Davidse & Ramamoorthy 10602* (MO, SI); 19 km SE of Consolheiro Lafaiete along highway 135 to Barbacena, 1,040 m, *Davidse & Ramamoorthy 10704* (MO, SI); Diamantina, Serra de San Antonio, 1,200–1,300 m, *Chase 10387* (US); Itacolumí, East of Ouro Preto, 1,400 m, culms ascending among bamboo and brush, *Chase 9380* (NY, US), *9407* (US); Juiz de Fora, *Krieger SVD 1227* (RB); Poços de Caldas, 1,100–1,500 m, *Chase 10677* (NY, SP, US); lower slopes of Serra da Caraça, ca. 10 km W of Barão de Cocais, ca. 1,400 m, *Irwin et al. 28942* (MO); Serra do Cipó, 1,200 m, *Anderson et al. 36397* (MO, NY, UB); Serra da Gramma, 1,700 m, erect among brush, slope above jungle, *Chase 9555* (F, GH, NY, US); without locality, *St. Hilaire 296* (P). PARANÁ: Mun. Gral. Carneiro, Rio Lageado, *Hatschbach et al. 13731* (K); Jaguariaiva, *Dusén 16390* (US); Ponta Grossa, *Dusén 2441* (R); Tres Barras, *Dusén 17531* (F, G, GH, NY, US); Capão da Imbuia, Curitiba, *Dombrowski 5835* (K); Road BR-2, Rio Palmatal, Mun. Colombo, *Clayton 4305* (K). RIO DE JANEIRO:

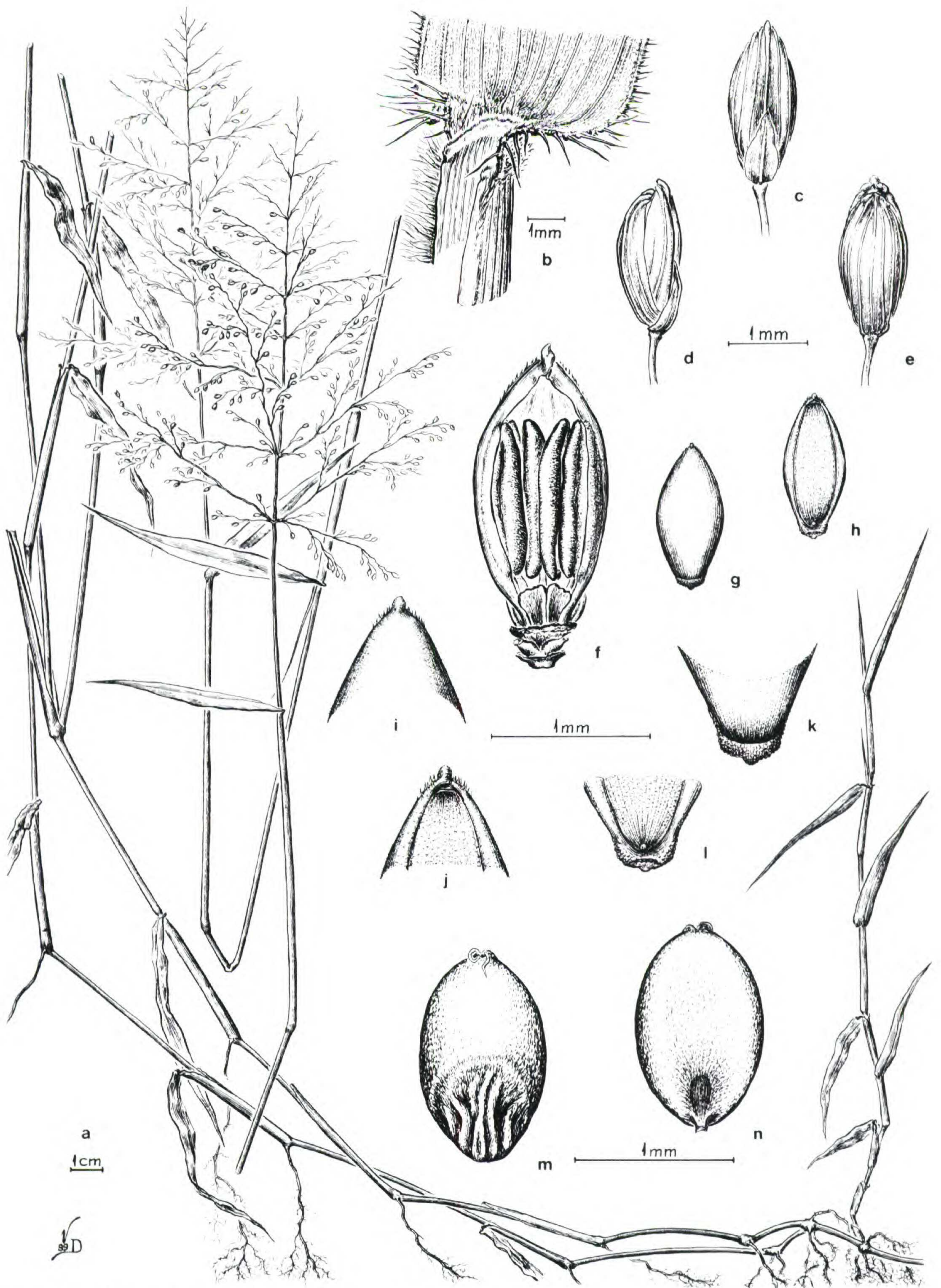


Figure 1. Holotype of *Panicum surrectum*. —a. Habit. —b. Detail of ligule. —c. Spikelet, ventral view. —d. Spikelet, lateral view. —e. Spikelet, dorsal view. —f. Lower palea with lower flower, stamens and lodicules. —g. Upper antherium, dorsal view. —h. Upper antherium, ventral view. —i. Detail of apex of the upper antherium, lemma side. —j. Detail of apex of the upper antherium, palea side. —k. Detail of base of the upper antherium, lemma side. —l. Detail of base of the upper antherium, palea side. —m. Caryopsis, embryo side. —n. Caryopsis, hilum side.

below Macieiras, Serra de Itatiaia, 1,700–1,800 m, open sunny place on mountain slope, *Chase* 8324 (GH, NY, US). RIO GRANDE DO SUL: Taimbezinho, pantano, *Boechat s.n.* (ICN 41.067). SANTA CATARINA: Rio Capinzal, *Dusén* 17876 (US); Santa Cecilia, 1,100 m, *Reitz & Klein* 11358 (US); Pôrto União, 750 m, *Reitz & Klein* 12796 (US); Mun. Pôrto União, Fazenda Frei Rogério, 12 km SE of Pôrto União, 750 m, *Smith & Reitz* 8710 (NY). SÃO PAULO: Serra Mantiqueira, Campos do Jordão, 1,580 m, ascending to erect from trailing base, open sandy campo, *Chase* 9815 (F, NY, US), 9839 (NY, US), *Holway* 1737 (US), *Leite* 3510 (GH). Without locality, *Sellow* 523 (US). PARAGUAY. CAAGUAZÚ: Caaguazú, *Balansa* 7 (G).

Within section *Dichantherium*, *P. surrectum* is related to *P. sabulorum* Lam., *P. stigmosum* Trin., and *P. superatum* Hackel. It differs by its narrowly ellipsoid spikelets and a usually smaller lower glume that does not embrace the upper glume. In *P. stigmosum*, *P. sabulorum*, and *P. superatum* the lower glume is $\frac{1}{2}$ to $\frac{3}{4}$ the length of the spikelet and it covers the base of the upper glume, and the spikelets are ellipsoid to obovoid. Additionally, in *P. superatum* the panicles are contracted, with the spikelets congested on the branches, and *P. stigmosum* has usually larger spikelets, (2–)2.4–3.2 mm long, and leaves (8.3–)10–22 cm long.

Panicum surrectum has, as do other species of subgenus *Dichantherium* (Morrone & Zuloaga, in press), conspicuous glands on the axis and pedicels of some individuals. Cleistogamous flowers with anthers 0.6 mm long were observed in the specimen *Chase* 9815. Cleistogamy is frequent in species of subgenus *Dichantherium* from North America.

Renvoize (1988) misidentified the specimen *Hatschbach et al.* 13731 and included it in *P. subtiliracemosum* Renvoize.

Mez described *P. missionum* in 1917 on the basis of the following specimens:

Panicum missionum Mez, Notizbl. Bot. Gart. Berlin 7: 74. 1917. Not Ekman 1912. SYNTYPES: Argentina. Misiones: San Pedro, cabeceras del Río Yobatí-Guazú, 9 Nov. 1886, *Niederlein* 2062 (fragment US). Paraguay. Caaguazú: ad Caaguazú, *Balansa* 7 (specimens at G, K, P). Brazil. Minas Gerais: in Sierra d'Estrella, *Beyrich s.n.* (fragment US); ad Contendas, *Kuntze s.n.*. Without locality, *Sellow* 523 (fragment US).

The specimen *Niederlein* 2062 from Argentina is *P. sabulorum* Lam. var. *polycladum* (E. Ekman) Palacios. The syntype *Beyrich s.n.* is *P. schawckeanum* Mez, a species of section *Parvifolia*. In US there is a fragment from B of *Sellow* 523, and A. Chase wrote a note on the specimen stating that

the original citation of *Sellow* 323 is probably a mistake; this fragment corresponds to *P. surrectum*. The original specimen was not found at B (H. Scholz, pers. comm.).

Regarding *Balansa* 7, the syntype of P is a mixture of material; a portion of the material is *P. sabulorum* and the other portion is *P. surrectum*. The syntype of this material from G is *P. surrectum*.

We were not able to locate the specimen collected by Kuntze.

Panicum peristypum Zuloaga & Morrone, sp. nov. TYPE: Brazil. Espírito Santo: Mun. Domingos Martins, Domingos Martins, selva en cerro del Dr. Kautsky, 600–850 m, 7 May 1985, *Zuloaga et al.* 2398 (holotype, RB; isotypes, MO, SI, US). Figure 2.

Laminae ovatae-lanceolatae, basi cordatae, amplexicaules. Spiculae anguste ellipsoideae, 2.4–2.5 mm longae; gluma inferiore 1.2–1.4 mm longa, glumae superioris basim non amplectente; gluma superiore (7–)9-nervia; lemmate inferiore 9-nervio. Flos inferior absens. Anthoecium superior ellipsoideum, 2.2 mm longum, lemmate minute cristato.

Shortly rhizomatous perennials. *Culms* decumbent and rooting at the lower nodes, then erect, ca. 80 cm tall; internodes 7–12 cm long, compressed, striate, glabrous; nodes compressed, glabrous, brownish. *Sheaths* striate, 5–9(–18) cm long, usually shorter than the internodes, glabrous, shiny, the margins membranous, ciliate toward the distal portion. *Ligules* 0.3 mm long, membranous at the base, then shortly ciliate; collar shortly pubescent. *Blades* ovate-lanceolate, 7–15 cm long, 1.5–3 cm wide, cordate, amplexicaulous, acute, velutinous, the lower margins long-ciliate, otherwise ciliate. *Inflorescences* terminal, exserted; *panicles* lax, diffuse, 15 cm long, 8 cm wide; *main axis* sparsely pilose, without glands, the pulvini pilose; first-order branches alternate to subopposite, the axis of the branches scabrous, flexuous, without glands; pedicels claviform, flexuous, scaberulous. *Spikelets* narrowly ellipsoid, 2.4–2.5 mm long, 1 mm wide, non-stipitate, glabrous, greenish or tinged with purple; upper glume and lower lemma subequal. *Lower glume* ovate, 1.2–1.4 mm long, $\frac{1}{2}$ or a little more the length of the spikelet, glabrous, 1–3-nerved, not embracing the upper glume. *Upper glume* 1.9–2.3 mm long, (7–)9-nerved, with manifest nerves, not covering the tip of the upper antherium. *Lower lemma* glumiform, 2–2.3 mm long, 9-nerved. *Lower palea* lanceolate, 1.7 mm long, 0.4 mm wide, hyaline, glabrous. *Lower flower* absent. *Upper antherium* ellipsoid, 2.2 mm long, 0.8 mm wide, indurate, papillose; lemma crestate, scaberulous. *Upper flow-*



Figure 2. Isotype of *P. peristypum*. —A. Habit. —B. Spikelet, ventral view. —C. Spikelet, dorsal view. —D. Lower palea. —E. Upper antherium, dorsal view. —F. Upper antherium, ventral view.

er bisexual; stamens 3, the anthers 1.4 mm long; styles 2, free; stigma pink. *Caryopsis* not seen.

Distribution and ecology. Known only from the type collection on forest edges in the state of Espírito Santo, Brazil, 650–800 m.

Related to *P. sciurotooides*, *P. peristypum* has leaves 1.5–3 cm wide and amplexicaulous, spikelets 2.4–2.5 mm long, and a lower palea 1.7 mm long. It differs from *P. sabulorum* and *P. stigmosum* in its narrowly ellipsoid spikelets (obovoid in *P. sabulorum* and *P. stigmosum*), lower glume not embracing the upper glume at its base, and the lack of a short stipe between the lower and upper glume. Furthermore, *Panicum peristypum* lacks the foliar dimorphism present in *P. sabulorum* and, in contrast to *P. stigmosum*, has amplexicaulous leaves.

Panicum sabulorum Lam., *Encycl.* 4: 744. 1798.
Dichanthelium sabulorum (Lam.) Gould & C. A. Clark, *Ann. Missouri Bot. Gard.* 65: 1112. 1978. TYPE: Uruguay. Montevideo: Montevideo, *Commerson s.n.* (holotype, P; isotypes, R, US, fragment BAA).

Short-rhizomatous perennials. *Culms* dimorphic: young culms simple, erect and with broad, cordate, lanceolate leaves, older culms erect to decumbent, occasionally rooting and profusely branching at the lower and upper nodes, up to 1 m long, with the leaves smaller than those of the simple culms; internodes hollow, cylindrical, hirsute; nodes densely pilose to glabrous, dark. *Sheaths* 2.5–6 cm long, hirsute to glabrous, the margins ciliate, glands present or absent, more conspicuous toward the distal portion. *Ligules* membranous-ciliate, 0.4–1.1 mm long; collar pilose or glabrous. *Leaves* lanceolate, 1–9(–15) cm long, 0.2–1.4(–2) cm wide, flat, subcordate to cordate, amplexicaulous, acuminate, rigid to herbaceous, pubescent, with short, stiff hairs or with papillose-pilose hairs or glabrous, the lower margins long-ciliate, otherwise scabrous, the mid-nerve inconspicuous. Primary *inflorescences* lax, diffuse, few to multiflowered, 2–10 cm long, 2–8 cm wide; *main axis* hirsute or glabrous, with or without glands; first-order branches alternate, divergent, the axis of the branches long-hirsute to scabrous and with or without glands; spikelets paired or solitary on claviform pedicels; pedicels hirsute and with or without glands. Axillary panicles similar to the terminal one but smaller. *Spikelets* obovoid, biconvex, 1.9–3 mm long, 0.9–1.4 mm wide, shortly stipitate, greenish and tinged with purple, hirsute to glabrous; glumes and lower lemma with manifest nerves. *Lower glume* 3–5-nerved, $\frac{1}{2}$ – $\frac{3}{4}$ the length

of the spikelet, ovate, obtuse to acute and embracing the upper glume on its base, the nerves anastomosed toward the apex. *Upper glume* 7–9-nerved, obtuse, not covering the apex of the upper antherium. *Lower lemma* glumiform, 7–9-nerved. *Lower palea* ovate, 1.6 mm long, 0.8 mm wide, hyaline, the margins short-ciliate. *Lower flower* male or absent. *Upper antherium* broadly ellipsoid, 1.8–2.5 mm long, 0.7–1.2 mm wide, stramineous, shiny, shortly apiculate, with simple papillae in regular rows; lemma 5-nerved. *Upper flower* bisexual; lodicules 2, truncate and embracing the lower margins of the palea; stamens 3, styles 2, free, stigma purplish. *Caryopsis* broadly ellipsoid, 1.5 mm long, 1 mm wide; hilum punctiform; embryo less than half the length of the caryopsis.

Key to the Varieties

- 1a. Blades amplexicaulous var. *cordatum*
- 1b. Blades not amplexicaulous.
 - 2a. Spikelets (2.2–)2.4–3 mm long, pilose; blades pilose; plants growing in open, dry places var. *sabulorum*
 - 2b. Spikelets 1.9–2.3(–2.6) mm long, glabrous or sparsely pilose; blades glabrous; plants growing at edge of forest in humid places var. *polycladum*

Panicum sabulorum Lam. var. ***sabulorum***

- P. acutatum* Steudel, *Syn. Pl. Glumac.* 1: 86. 1854. TYPE: Chile. Concepción: Concepción, *D'Urville s.n.* (holotype, P, fragments BAA, US-80445).
- P. latiglume* Doell, in C. Martius, *Fl. Bras.* 2 (2): 257. 1877. *P. latiglume* var. *villosum* Doell, in C. Martius, *Fl. Bras.* 2 (2): 257. 1877. *P. latiglume* Doell f. *villosum* (Doell) E. Ekman, *Ark. Bot.* 13(10): 28. 1913. TYPE: Brazil. Santa Catarina: Isla de Santa Catarina, *Gaudichaud 90* (isotype, P, fragment US-80869).
- P. latiglume* Doell var. *decalvatum* Doell, in C. Martius, *Fl. Bras.* 2 (2): 257. 1877. *P. demissum* Trin. f. *decalvatum* (Doell) E. Ekman, *Ark. Bot.* 13(10): 28. 1913. TYPE: Brazil. Santa Catarina: Isla de Santa Catarina, *Gaudichaud 91* (fragment US-80869).
- P. fultum* Hackel, *Repert Spec. Nov. Regni Veg.* 6: 342. 1909. SYNTYPES: Uruguay. Montevideo: Montevideo, arenas de la Barra de Santa Lucía, *Archavaleta s.n.* (syntype, W; isosyntype, G, fragment of the syntype, BAA). Paraguay. Cordillera: in campis prope Caraguatay, *Hassler 3124* (syntype, W; isosyntypes, G, NY, fragment of the syntype, BAA).

Selected specimens examined. ARGENTINA. BUENOS AIRES: Balcarce, *Hunziker 2166* (SI). CORRIENTES: La Cruz, *Burkart 7943* (SI); ruta nac. 12, 20 km E de Ituzaingó, *Zuloaga et al. 3231* (SI); Cuay Grande, *Lourteig et al. 2884* (CTES, SI). ENTRE RÍOS: Colón, Ea. La Poli, *Troncoso et al. 2670* (SI); Arroyo El Palmar, *Burkart & Crespo 22927* (SI), *Zuloaga & Morrone 3857* (MO, SI); Palmar Grande, *Nicora 3067* (LIL, SI); Ayuí,

Troncoso et al. 2020, 2707, 2709, 2802 (all SI); Colonia Ayuí, *Bacigalupo et al.* 1031 (SI), *Zuloaga & Morrone* 3852 (MO, SI); Concordia, *Parodi* 3922 (P, SI); ruta 12, desvío a Holt, Arroyo El Cuartillo, *Zuloaga* 3864 (MO, SI); Santa Ana, *Renvoize et al.* 2929 (MO, P, SI); Calabacilla, desvío a Nueva Escocia, *Bacigalupo et al.* 847 (SI). CHACO: Isla del Cerrito, *Krapovickas et Cristóbal* 20048 (CTES). BRAZIL. PARANÁ: Colônia Orleas, Curitiba, *Dombrowski* 1958 (CTES); Mun. 4 Barras, Rio Taquarí, prox. Estr. Graciosa, *Hatschbach* 35525 (K). RIO DE JANEIRO: Petrópolis, Carangola, *Goes & Dionisio* 417 (US). RIO GRANDE DO SUL: Taimbesinho, prope São Francisco de Paula, *Rambo* 54532 (US); Mun. Rio Pardo, Fazenda Soledad, *Jürgens* 109 (US, W); 3 km W of Torres, *Beetle* 1911 (MO); Vila Diehl, São Leopoldo, *Dutra* 646 (R, US), *Canisio* 365 (R, US), *Rambo* 44279 (LIL, NY); Rio Grande, *Swallen* 9252 (US); Fazenda Leitão, *Jürgens* 9327 (US); Porto Alegre, *Malme* 422, 435 (US), *Orth* 5 (US); São Leopoldo, Collegio Cristo Rei, *Beetle* 1972 (MO); Lages, *Swallen* 8140 (US). SANTA CATARINA: Sombrío, *Reitz* 1978 (NY); Serra dos Ilheos, *Smith & Klein* 15464 (NY, SI). SÃO PAULO: Cananeia, Ilha do Cardoso, Praia do Marujá, *da Silva* 249 (MO); São Paulo, Parque do Estado, *Sendulsky* 842 (SI, SP); Santos, *Sendulsky* 739 (SI, SP). CHILE. CONCEPCIÓN: Concepción, *D'Urville* 1821 (P), *Gay s.n.* (P). MAULE: without locality, Dec. 1911, *Fuentes s.n.* (W). PARAGUAY. Cordillera de Piribebuy, au desus de Mbatobí, *Balansa* 4202 (P). PARAGUARÍ: Paraguarí, *Balansa* 8, (G, K, P). URUGUAY. CANELONES: Ruta Interbalmearia Km 51, Arroyo Solís Chico, *Dubcovsky* 834, 835, 836, 837 (all SI); Carrasco, *Burkart* 19982 (SI), *Osten* 6917 (W); *Herter* 324 (G, MO, NY, SI); Bañado del Negro, cerca del Arroyo Pando, *Rosengurtt* 11329 (NY). MONTEVIDEO: Montevideo, *Arechavaleta* 144 (W), *Montoro* 2667 (P); Montevideo, *D'Orbigny* 8 (W). ROCHA: La Paloma, *Zuloaga & Deginani* 1081 (SI). SALTO: Granja Catáneo, *Rosengurtt B-6217* (SI). TACUAREMBÓ: Camino a Ribera, a 32 km de Tacuarembó, *Cabrera & Zuloaga* 32424, 32425 (both SI); Estancia El Rincón, *Galland* 55 (G).

In variety *sabulorum* the spikelets are pilose and (2.2–)2.4–3 mm long, the axis of the inflorescence is hirsute, and the blades are rigid and hirsute. Variety *sabulorum* usually inhabits open and dry places, in sandy soils.

Núñez (1952) reported a chromosome number of $2n = 54$ for one of the synonyms of this variety, *P. fultum*. A similar chromosome number was found in several populations of variety *sabulorum* from Argentina and Uruguay by Dubcovsky & Zuloaga (in press).

***Panicum sabulorum* Lam. var. *polycladum* (E. Ekman) Palacios**, in *Burkart*, Fl. Il. Entre Ríos, 6(2): 316. 1969. *P. polycladum* E. Ekman, Ark. Bot. 11(4): 24. 1912. TYPE: Argentina. Misiones: Bonpland, 27 Jan. 1908, *Ekman* 651 (holotype, S, fragment US-80923; isotype, CORD).

P. demissum Trin., Sp. Gram. 3: pl. 319. 1836. *Panicum demissum* Trin. f. *genuinum* (Doell) E. Ekman, Ark. Bot. 13(10): 28. 1913, nom. illeg. TYPE: Brazil. Rio de Janeiro: Rio de Janeiro, *Martius s.n.* (holotype, LE, fragment US-557430).

P. ramosissimum Trin., Mém. Acad. Imp. Sci. St.-Petersbourg., Sér. 6, Sci. Math. 1: 312. 1834. TYPE: Brazil: without locality, *Sellow s.n.* (holotype, LE, fragment US-974731).

P. pencanum Philippi, Anales Univ. Chile 93: 713. 1896. TYPE: Chile. Concepción: Concepción, 1888, *Philippi s.n.* (isotype, CORD, fragments BAA, US).

P. deltae L. Parodi ex *Burkart*, Bol. Soc. Argent. Bot. 12: 291. 1968. TYPE: Argentina. Buenos Aires: Delta del Paraná inferior bonaerense, arroyo Chaná Miní, 14 Jan. 1923, *Parodi* 4928 (holotype, SI; isotypes, BAA, US-1160950).

Selected specimens examined. ARGENTINA. BUENOS AIRES: Tigre, *Burkart* 275 (SI); Isla Santiago, *Spegazzini s.n.* (SI-13457); Delta of Río Paraná, sec. I, Las Palmas, Recreo Naón, *Eyerdam et al.* 23132 (G, US); Punta Lara, *Zuloaga & Deginani* 1891, 3085 (both SI), 3859, 3861 (both SI); Cerro La Peregrina, 20 km N of Mar del Plata, *Eyerdam et al.* 23678 (MO, SI, US); Escobar, Paraná de Las Palmas, *Zuloaga & Morrone* 3079, 3860 (both SI), 4543, 4544 (both MO, SI); La Movediza, *Pastore* 1227 (SI). CÓRDOBA: Pie de los Gigantes, camino a Taninga, *Burkart* 20801 (SI); W of Tanti at Rancho Alegre, *Renvoize* 3743 (K, SI); between Cerro Blanco and La Hollada, ruta nac. 20, km 767, *Solomon* 4091 (MO). CORRIENTES: Puente Pesoa, *Quarín* 1744 (CTES, SI); Isla Apipé Grande, Puerto San Antonio, *Krapovickas et al.* 23817 (CTES, SI); ruta nac. 12, 20 km E de Ituzaingó, *Zuloaga et al.* 3228 (SI); 75 km N de Mercedes, Laguna Trin, *Quarín et al.* 3171 (CTES, SI); San Cosme, *Parodi* 12032 (BAA, SI); Santo Tomé, Río Aguapey y ruta 14, *Quarín et al.* 2655 (CTES, SI). DISTRITO FEDERAL: Belgrano, *Burkart* 3617 (SI). ENTRE RÍOS: Colón, Concordia, Est. Exp. INTA, *Burkart et al.* 29692 (SI); Brazo Largo inferior, Delta del Paraná, Isla la Chilena, *Burkart* 8936, 8937 (both SI); Pto. Constanza, *Burkart & Troncoso* 26208 (SI); Concepción del Uruguay, Arroyo La China, *Zuloaga et al.* 3088 (SI); de Calabacilla a Nueva Escocia, *Zuloaga & Morrone* 3846 (SI); Nueva Escocia, *Bacigalupo et al.* 871 (SI). FORMOSA: without locality, *Kermes* 346 (SI). JUJUY: Yala, cerros, *Burkart & Troncoso* 11280 (SI), *Zuloaga & Deginani* 3409 (SI); Quebrada de Yala, *Cabrera et al.* 23574 (SI); Santa Bárbara, *Venturi* 9545 (SI, US, W), 9691 (US). MISIONES: Apóstoles, *Renvoize* 3150 (K, MO, P); Jardín América, *Zuloaga & Deginani* 463 (SI); Villa Venecia, *Renvoize et al.* 3034 (P, SI); ruta prov. 105, entre Santa Ana y Oberá, *Mroginski* 435 (CTES, G), 437 (CTES, MO), 441 (CTES); camino a Loreto, 2 km de la ruta nacional 12, *Zuloaga et al.* 3189 (SI); casa de Horacio Quiroga, *Zuloaga et al.* 3191 (MO, SI); La Granja, Posadas, *Ekman* 645 (G, US); ruta nac. 14, pasando San Pedro, *Zuloaga et al.* 765 (SI). SALTA: Cerro Pelado Chiquito, Parque Nac. El Rey, *Malmierca* 2006 (SI); Depto. Rosario de Lerma, Campo Quijano, *Venturi* 8428 (US); Campo Quijano, *Burkart* 13029 (SI). BOLIVIA. COCHABAMBA: Comarapa to Cochabamba, *Renvoize & Cope* 4072 (K, US). SANTA CRUZ: entre Comarapa y Pojo, *Zuloaga et al.* 1579 (SI). BRAZIL. ESPÍRITO SANTO: Serra do Caparão, *Chase* 9680 (MO), 9731 (US, W). MINAS GERAIS: Serra do Itabirito, ca. 50 km SE of Belo Horizonte,

Irwin et al. 19715 (MO, NY); Barbacena, Serra Mantiqueira, *Chase* 8646 (NY, US), 8674 (US); Hargreaves, 1,300–1,400 m, *Chase* 10253 (US); ca. 30 km SW of Campanha along highways 267 and 381 to São Paulo, *Davidse & Ramamoorthy* 10620 (MO). PARANÁ: Serra do Mar, *Dusén* 16127 (K, MO); Passa Vinte, *Clayton* 4269 (K, NY, US); Mun. São Jose dos Pinhais, Guaricana, *Hatschbach* 38037 (K); 10 km from Passa Vinte on Curitiba road, *Clayton* 4280 (K); Mun. Jaguariaiva, Rio Jaguariaiva, Barra do Mortes, *Hatschbach* 12293 (K); Mun. Matinhos, Praia dos Ferroviários, *Kummrov* 829 (K); Bariguy, *Dusén* 15766 (MO); 8 km of the Paraná–Santa Catarina border at the Rio Negro, *Davidse et al.* 11020A (MO); 2 km E of Cascavel along highway BR-277 to Curitiba, *Davidse et al.* 11255 (MO, SI, US); Curitiba, Serrinha, *Dusén* 15565 (MO, US), 10 km NW of Palmas, *Smith et al.* 15629 (P, R, US); Baryguy, in campo, *Dusén* 15767 (US); Ponta Grossa, *Swallen* 8419 (US); Porto Amazonas, 5 km N, *Hatschbach* 43562 (NY). RIO GRANDE DO SUL: Morro Santa Teresa, Porto Alegre, *Clayton* 4371 (K); 12 km N of Santa Ana, *Archer* 4440 (K, NY); São Francisco de Paula, *Clayton* 4466 (K, NY); Arroio Grande, Canela, *Barreto* 2003, 2008 (both SI); Ilha dos Marmheiros, *Capanema* 5396 (RB, US); Pelotas, *Costa Sacco* 202 (HB, SI), *Swallen* 7034, 7211 (both US); Porto Alegre, Morro da Gloria, *Rambo* 29194 (US); Nova Petrópolis, km 100 da BR-116, ao N da ponte sobre o Rio Caí, *Valls et al.* 1664 (CEN, ICN, SI); Mun. Rio Pardo, Fazenda Boa Esperança, *Jürgens* 61b (W); Rosario do Sul, Rio Santa Maria, *Krapovickas et al.* 22801 (CTES); Bom Jesus-Borda dos Aparados da Serra, *Valls & Arzivenco* 1398 (CTES, US); Canela, Sitio, *Valls* 1178 (CTES); entre Sta. Rosa e Giruá, 13 km apos Sta. Rosa, *Valls et al.* 1809 (CEN, CTES); Parecí Novo, *Schnem* 1605 (SI); Taimbesinho, *Rambo* 54088 (US); Arroio Grande, *Pereira* 6732 (RB). RIO DE JANEIRO: Petrópolis, *Sucre et al.* 4187 (SI); Corcovado, *Boelcke* 6795 (SI), *Chase* 8159 (MO, NY); Petrópolis, Grota do Jaco; Patí do Alferes, *Sucre et al.* 9087 (RB); Petrópolis, estrada Fazenda Inglesa-Patí do Alferes, *Plowmann & Martinelli* 10139 (MO); S of Petrópolis, Alto da Serra, *Chase* 9769 (US); Parque Nac. Itatiaia, picada Macieiras, *Zuloaga et al.* 2352 (RB, SI, US), *Chase* 8267 (RB, US), 8268 (US); Parque Nac. Itatiaia, Rio Campo Belho, *Zuloaga et al.* 2361 (RB, SI, US); Serra dos Orgãos, 16 km S of Itaipara, *Davidse et al.* 11422 (MO); Teresópolis, *Sampaio* 1608 (R); Rio de Janeiro, *Riedel s.n.* (W); Chemin de Nova Friburgo, *Glaziou* 4305 (MO, US). SANTA CATARINA: 4 km S of Xanxeré, *Smith & Klein* 13066 (K, SI); Campo Alegre, *Reitz & Klein* 5157 (US) Barra Macaco Branco, *Smith & Reitz* 12712 (K, P, US); 3 km W of Campo Alegre, *Smith & Klein* 12792 (US); W of Chapecó on road to Guatambú, *Smith & Reitz* 12534 (K, R, US); 18 km N of Curitiba, *Smith & Klein* 15491 (K, R, US); Marombinhas, *Smith & Klein* 15478 (K, SI, US); 10 km E of Poco Preto, *Smith & Klein* 15737 (K, SI, US); 10 km S of São Joaquim, *Smith & Reitz* 14305 (K, NY, SI, US); Campo dos Padres, Bom Retiro, *Reitz* 2595 (SI, US). SÃO PAULO: Campos do Jordão, Serra Mantiqueira, *Chase* 9894 (US); city of São Paulo, bairro of Agua Funda, *Eiten & Eiten* 6236 (MO); São Paulo, Parque do Estado, *Sendulsky* 711, 1058 (SI, SP); Campos da Bocaina; Campos do Jordão, Umuarama, *Kuhlmann* 2044 (SI); Apiahy, *Glaziou* 16555 (P, US). CHILE. Taleamavida, *Barros* 291 (SI). MAULE: ad rivulos pr. Constitución, *Reiche s.n.* (W). PARAGUAY. Encarnación, *Pavetti & Rojas* 10855 (US). CA-

AGUAZU: in viciniis Caaguazú, *Balansa* 4a (K, P), Mar. 1905, *Hassler* 9212 (G, K, NY, US). CORDILLERA: Eusebio Ayala, *Schinini* 2583 (CTES, SI); San Bernardino, costa del Lago Ypacaraí, *Quarín et al.* 1593 (G, K, SI). GUAIRÁ: Villa Rica, *Balansa* 5 (G), 5a (P). SAN PEDRO: Primavera, *Woolston* G-117 (NY). URUGUAY. CANELONES: Toledo, *Osten* 20083 (US). FLORIDA: Río Yí y Arroyo Mansavillagra, *Rosengurt* B-739 (US); La Palma, *Herter* 1153 (US). MALDONADO: Cerro Pan de Azucar, *Rosengurt* B-2722 (US); Cerro Animas, *Rosengurt* B-5077 (US). MONTEVIDEO: Montevideo, Barra del Santa Lucía, *Arechavaleta* 267 (US); Montevideo, balneario Carrasco, *Osten* 6511 (SI). ROCHA: Parque San Miguel, *Rosengurt & Del Puerto* 9253 (US). SAN JOSÉ: Río Santa Lucía, próximo al pueblo “25 de Agosto,” *Rosengurt* B-247 (US); Arazatí, *Rosengurt s.n.* (US). SORIANO: Isla Redonda, *Berrio* 6350 (W); Ea. Juan Jackson, *Rosengurt* B-241 (US). TACUAREMBÓ: Ruta 5, al norte de la ruta a Clara, *Rosengurt* 6930 (SI); Gruta de los Cuervos, *Cabrera & Zuloaga* 32393 (SI).

This variety differs from variety *sabulorum* by its smaller spikelets, 1.9–2.3(–2.6) mm long and glabrous or with scattered hairs toward the apex, blades herbaceous and usually glabrous, and panicles with the main axis and branches commonly glandular. It usually grows in humid and shady places, on forest edges or near streams.

Variety *polycladum* has a chromosome number of $2n = 36$ (Dubcovsky & Zuloaga, in press, and Nuñez, 1952, under *P. sabulorum*).

***Panicum sabulorum* Lam. var. *cordatum* Zuloaga & Morrone, var. nov.** TYPE: Brazil. Paraná: Carvalho, *Dusén* 13336 (holotype, US; isotype, W).

A var. *sabulorum* laminis cordatis, amplexicaulibus differt.

Paratypes. BRAZIL. PARANÁ: Serrinha, *Jönsoon* 1076a (US), *Dusén* 15596 (NY, US); Trancheira, *Jönsoon* 1099a (US). SANTA CATARINA: Mun. Praia Grande, *Valls* 10087 (CEN, SI).

Variety *cordatum* has spikelets glabrous, 2–2.2 mm long, axis of the inflorescences glabrous and with glands, sheaths with glands and blades amplexicaulous, cordate, asymmetric at base, glabrous, up to 15 cm long and up to 2 cm wide.

Distinctions among the new species and related ones are summarized in the following key:

- 1a. Spikelets narrowly ellipsoid, not globose and without a stipe between the lower and upper glume; lower glume $\frac{1}{3}$ (– $\frac{3}{4}$) the length of the spikelet, not embracing the upper glume 2
- 2a. Blades linear-lanceolate, 5–12 cm long, 0.6–1 cm wide, attenuate at the base, not amplexicaulous *P. surrectum*
- 2b. Blades ovate-lanceolate, 3–15 cm long, 0.8–3 cm wide, cordate, amplexicaulous 3

- 3a. Inflorescences 15 cm long; spikelets 2.4–2.5 mm long, glabrous
 *P. peristypum*
- 3b. Inflorescences 2.5–9 cm long; spikelets 1.5–1.9 mm long, shortly hispid
 *P. sciurotooides*
- 1b. Spikelets ellipsoid to obovoid, shortly stipitate between the lower and upper glume; lower glume $\frac{1}{2}$ – $\frac{3}{4}$ the length of the spikelet, embracing the upper glume 4
- 4a. Inflorescences contracted, spiciform or with the branches divergent and the spikelets congested on the branches *P. superatum*
- 4b. Inflorescences lax, diffuse, the branches divergent and the spikelets not congested ... 5
- 5a. Plants leaning on vegetation, without foliar dimorphism; blades (8–)10–22 cm long; inflorescences 9–21 cm long, spikelets (2–)2.4–3.2 mm long, glabrous *P. stigmatosum*
- 5b. Culms erect to decumbent, not leaning

on vegetation, with foliar dimorphism; blades 1–9(–15) cm long, inflorescences 2–10 cm long; spikelets 1.9–3 mm long, pilose or glabrous
 *P. sabulorum*

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