



Panicum sciurotoides, a New Species of *Panicum*
(Poaceae: Paniceae) from America

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During a revision of Central and South American species of *Panicum* subg. *Dichanthelium*, the new species *P. sciurotoides* was discovered and is described below. This species will be included in the treatments of *Panicum* for the *Flora of the Guianas* and the *Flora of the Venezuelan Guayana*.

Panicum sciurotoides Zuloaga & Morrone, sp. nov. TYPE: Brazil. Minas Gerais: Districto Diamantina, Christais, near Corrígua duas Pontes, 1,160 m, 13 May 1931, *Mexía 5819* (holotype, MO; isotypes, G, K, M, P, R). Figure 1a–h.

Species nostra *Panico sciurotidi* Trin. proxima, sed gluma inferiore $\frac{1}{3}$ – $\frac{1}{2}$ spiculae longitudine, 1–3(–7)-nervia, gluma superiore 7–9(–11)-nervia, lemma inferiore 7–9-nervia, basi non incrassata, et anthoecio superiore basi inserto notanda.

Annual. Culms decumbent, geniculate, rooting and branching at the lower nodes, erect portion 10–85 cm tall, branching at the upper nodes; internodes 2.5–11.5 cm long, terete, hollow, hispid to glabrous; nodes dark, compressed, densely pilose with retrorse whitish hairs. *Sheaths* striate, 3–6.5 cm long, sparsely papillose-pilose to glabrous, the margins ciliate or one margin ciliate and the other one membranous. *Ligules* membranous-ciliate, small, surmounted by long hairs at the base of the blade; collar pilose. *Blades* ovate-lanceolate, 3–10 cm long, 0.8–2 cm wide, flat, cordate, amplexicaulous and asymmetric basally, densely hirsute, with short to long appressed tuberculate hairs, to short-hispid on the abaxial surface or glabrous, the margins ciliate toward the base, otherwise scabrous. *Inflorescence* terminal, lax, diffuse, pyramidal, 2.5–9 cm long,

1.5–8.5 cm wide; *main axis* wavy, hirsute, with long papillose-pilose hairs; branches alternate, flexuous, the axis of the branches smooth, glabrous; pedicels long, glabrous. *Spikelets* solitary, long-ellipsoid, 1.5–1.9 mm long, 0.5–0.7 mm wide, greenish, short-hispid; upper glume and lower lemma subequal. *Lower glume* ovate, 0.4–0.9 mm long, usually $\frac{1}{3}$ – $\frac{1}{2}$ or more the length of the spikelet, acute to truncate, 1–3(–7)-nerved. *Upper glume* 7–9(–11)-nerved, not embracing the lower lemma. *Lower lemma* glumiform, 7–9-nerved, acute, not inflated at the base. *Lower palea* lanceolate to truncate, small, 0.7–1 mm long, 0.2–0.3 mm wide, hyaline, glabrous; lower flower absent. *Upper antheridium* ellipsoid, 1.2–1.7 mm long, 0.4–0.6 mm wide, smooth, shiny, short-apiculate, with simple papillae over its surface, inserted basally. *Caryopsis* 1.1 mm long, 0.7 mm wide.

Distribution and ecology: Widely distributed from Panama to Bolivia and Brazil; common at edge of forests, with the culms straggling in low vegetation, or in disturbed and open places in sandy soils; from 100 to 1,400 m.

Chromosome number: $2n = 18$ (Dubcovsky & Zuloaga, in prep.).

Additional specimens examined. BOLIVIA. LA PAZ: Hacienda Canana, sobre el camino a Tipuani, *Buchtien 7115* (BAA, G, US), *7116* (MO); 13.7 km NW of San Pedro on road through Incahuara-Mejillones, *Solomon 9523* (MO); Hacienda Simaco sobre el camino a Tipuani, *Buchtien 5319* (M, MO, US); San Carlos, Mapiri, *Buchtien 26* (BAA, US), *46* (US); Sinupaya bei Yanacachi, *Buchtien 414* (US); Prov. Murillo, 45.5 km below the dam at Lago Zongo, Zongo Valley, *Solomon 1300* (MO). BRAZIL. ALAGOAS: Porto de Pedras, Fazenda Canada, *Campelo 1444* (CTES). BAHIA: Bom Jesús, *Luetzelburg*

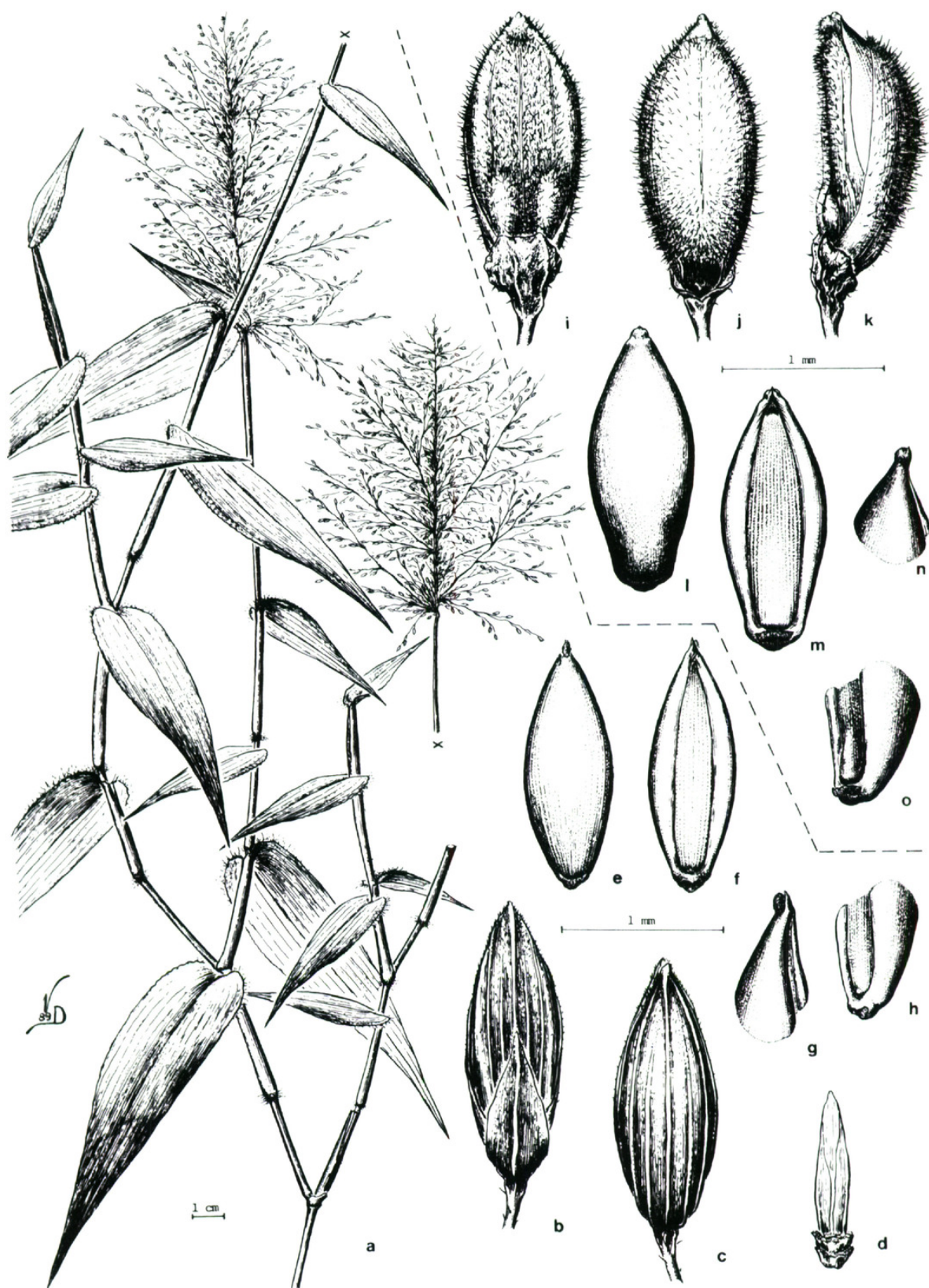


Figure 1. *Panicum sciurotoides* Zuloaga & Morrone —a. Habit. —b. Spikelet, ventral view. —c. Spikelet, dorsal view. —d. Lower palea. —e. Upper antherium, dorsal view. —f. Upper antherium, ventral view. —g. Upper portion of lemma. —h. Basal portion of lemma and palea. *Panicum sciurotis* Trin. —i. Spikelet, ventral view. —j. Spikelet, dorsal view. —k. Spikelet, lateral view. —l. upper antherium, dorsal view. —m. upper antherium, ventral view. —n. Upper portion of lemma. —o. Lower portion of lemma and palea. (a–h based on *Hatschbach* 14758 US; i–o based on *Emygdio* 1663 R.)

135a (M); São Bento das Lages, *Luetzelburg* 133 (K, M); 12 km N of Cachoeira, 225 m, *Chase* 8082 (MO, US); sudoeste C.M., 12°29'S, 38°20'W, *Noblick et al.* 2472 (CEPEC); Cruz das Almas, *Pinto* 117 (US); Itiruçu, km 7 da Rodovia Itiruçu-Maracas (BA 554), *dos Santos et al.* 3430 (CEPEC, MO); Olivença, *Renvoize & Carvalho* 4307 (CEPEC); Santa Cruz Cabralia, Estação Ecológica do Pau-Brasil, cerca de 16 km W de Porto Seguro, *dos Santos* 33 (CEPEC), *Souza Santos & Euponino* 88 (CEPEC), *Brito & Vinha* 26 (CEPEC, K, MO); Mun. Una, Fazenda Carsata, km 4 da rod. Una/Santa Luzia, *Hage et al.* 1691 (CEPEC, K); Serra do Tombador, NW of Jacobina, on BR 234 highway to Ouro Branco, *Harley et al.* 16636 (CEPEC, K, US); Olivença, *Renvoize & Carvalho* 4307 (K); Serra da Agua de Rega, ca. 27 km N of Seabra, road to Agua de Rega, 1,000 m, *Irwin et al.* 31023 (MO); Taperoa, Fazenda Bomfim, *Barbosa* 18 (MO); without locality, *Salzmann* 697 (G, P). CEARÁ: Barra do Cocó, *Black* 55-18336 (IAN); Praia Náutica de Fortaleza, *Black* 55-18347 (IAN). ESPÍRITO SANTO: Alfredo Chaves, Vila São Bento de Uranio, *Zuloaga et al.* 2409 (RB, SI, US); Santa Teresa, Reserva Biológica de Nova Lombardia, Picada da Cachoeira, *Zuloaga et al.* 2427 (RB, SI, US). MINAS GERAIS: Capão, Engenho Magueira, *Magalhaes* s.n. (IAN 13866); Diamantina, Serra de San Antonio, *Chase* 10373 (US); ca. 1 km S of São Pedro do Suaçui along Highway MG-3, 520 m, *Davidse et al.* 11495 (MO); Santana do Riacho, na estrada p/Lapinha, 4 km da cidade, 1,000 m, *Muniz et al.* s.n. (K); entre km 996-997, 5 de antigua linha de ferrovia Diamantina-Corinto, *Burman & Sendulsky* 754, 778 (SP); Hargreaves, *Chase* 10251 (US); Juiz de Fora, Morro do Imperador, *Chase* 8571 (US); ao longo da rodovia Lagoa Santa-Conceição do mato Dentro, entre Alto dos Palácios e Conceição, *Burman* 201, 208, 211 (SP); Mun. Ouro Preto, Ouro Preto, *Eiten* 6929 (US); abandoned diamond mines, steep slopes of Rio Jequití, ca. 15 km E of Diamantina, *Irwin et al.* 27933 (MO, P); SE drainage of Pico de Itambé, *Anderson et al.* 35729 (MO); ca. 15 km N of São João da Chapada, *Irwin et al.* 28151 (F, K, MO, UB, US); Serra do Curral, SE of Belo Horizonte, *Chase* 8958 (US); Serra do Espinhaço, ca. 8 km E of Diamantina, *Irwin et al.* 27666 (K, MO, UB, US); Serra do Espinhaço, ca. 14 km E of Diamantina, *Irwin et al.* 27543 (UB); Serra do Espinhaço, 15 km S of Diamantina, *Anderson et al.* 35542 (MO, UB, US); Serra Sapucaia, *Magalhaes* 15584 (IAN); Viçosa, *Chase* 10187 (K, US), *Irwin* 2311 (F, R, SI), *Kuhlmann* 1948 (RB); *Mexía* 4738 (G, K, MO, US); without locality, *St. Hilaire* 323 (P), *Gaudichaud* 12 (P). PARANÁ: Paranaçuá, *Dombrowski* 277 (K, US); Antonina, *Kuniyoshi* 1612 (CTES, K); Sertão de Indaial, *Hatschbach* 2496 (SI); Pinheirinho, Mun. Antonina, *Hatschbach* 14758 (K, US); Porta do Sul, *Moreira Filho* 416 (US); Mun. Antonina, Sapitanduva, *Hatschbach* 32663 (K, MO); Pinhaes, *Dusén* 14522 (MO). PERNAMBUCO: Dois Irmaos, vicinity of Pernambuco, *Chase* 7732 (MO, US); SW of Garanhuns, 300-400 m, *Chase* 7828 (MO); Itambé, *Vasconcellas & Sobrinho* s.n. (IAN 375003). RIO DE JANEIRO: Monte Serrat, Serra da Itatiaia, *Chase* 8246 (IAN, MO, US); Parque Nac. Itatiaia, Picada Macieiras, *Zuloaga et al.* 2349 (MO, RB, SI, US), 2354 (RB, SI, US); Resende, *Kuhlmann* 276 (IAN, RB); Serra do Itatiaia, *Sampaio* 4699 (IAN, R); without locality, *Glaziou* 13316 (K). SANTA CATARINA: Piloas, *Reitz & Klein* 3626 (G); Azambuja, Brusque, *Klein* 2646 (HB); Mont. Iurapé, *Schwacke* 13153 (RB); Mun. Brusque, Beco Osvaldo

Nieburg, *Klein & Bresolin* 11718 (HB); Barra Velha, arredores, *Paciornik* 117 (K); without locality, *D'Urville* s.n. (P), *Schenck* 229 (W). SÃO PAULO: halfway between Canasveia and Jacapiranga, *Davis et al.* s.n. (SP 146087); Caraguatuba, *Rombouts* s.n. (SP); Iguapé, Morro das Pedras, *Brade* 7837 (R), 20368 (IAN); Campos do Jordão, *Hashimoto* 331 (SP); 19 km SW of Juitituba, along BR-2, *Clayton & Eiten* 4666 (K, SP, US); São Jose do Barreiro, *Hoehne & Eiten* 4741 (SP); Cananeia Island, 1 km NE of city along E shore of island, *Clayton & Eiten* 4743 (K); near Santos, *Rose & Russell* 21134 (US); Cananeia, Ilha do Cardoso, praia de Marujá, *da Silva* 284 (MO); without state and locality, *Riedel* 228 (G, K). ECUADOR. EL ORO: between La Chonta and Portovelo, *Hitchcock* 21211 (US). TUNGURAHUA: Baños, *Pachano* 228 (US). GUYANA. Forest along Potaro River, 4 mi. above Kaieteur Falls, *Cowan & Soderstrom* 2109 (K, P, US). PANAMA. COCLÉ: trail from Caño Blanco del Norte to continental divide N of El Copé, *Davidse & Hamilton* 23657 (SI); El Copé, along gravel road to the right, *Antonio* 2194 (SI); along continental divide near sawmill above El Copé, *Knapp* 3822 (SI). VENEZUELA. BOLÍVAR: 12 km al norte de La Ciudadela, Gran Sabana, 5°50'N, 61°27'O, *Zuloaga et al.* 4475 (MO, SI, VEN); Salto El Dante, 35 km N of La Ciudadela on way down from La Gran Sabana, along highway to El Dorado, *Davidse* 4951 (MO, SI, VEN); Gran Sabana, ca. 10 km SW of Karaurín tepui at junction of Río Karaurín and Río Asadón, *Liesner* 23580 (MO); km 132.5 al S de El Dorado, 1,370 m, *Steyermark et al.* 117547 (F, MO, VEN); bosque húmedo, La Escalera, km 126-134 sur de El Dorado, *Morillo et al.* 8150 (VEN); entre Piedra de la Virgen y la parte alta de la Escalera, carretera a la Gran Sabana, 6°01'N, 61°25'O, *Zuloaga et al.* 4399 (MO, SI, VEN); rocky exposed southwest-facing escarpment between Cerro Rancho Carata and Cerro El Picacho, *Steyermark* 88596 (K, VEN); along road from Icabarú to Santa Elena, 70 km NE of Icabarú, 790 m, *Croat* 54243 (MO). FALCÓN: cerca de Maraparari, *Lasser & Foldats* 3005 (VEN). YARACUY: 7.5 km N of Salom, cloud forest, 10°15'N, 68°29'W, *Liesner & Steyermark* 12373 (MO); 5 km N of Salom, transition between savanna and forest, *Davidse et al.* 20674 (MO); Distrito Nirguá-Distrito San Felipe border, Cerro La Chapa, 7 km N of Nirguá by road, 68°35'W, 10°12'N, cloud forest, *Davidse et al.* 20799 (MO); Cerro Picacho, norte de Nirguá, *Steyermark & Bunting* 97638 (US); selva nublada virgen en la fila de la cumbre, El Amparo hacia Candelaria, a 7 km al norte de Salom, *Steyermark* 106199 (MO, VEN).

Panicum sciurotoides is related to *P. sciurotis* Trin., from which it differs by having the lower glume $\frac{1}{3}$ - $\frac{1}{2}$ or more the length of the spikelet, 1-3(-7)-nerved, upper glume 7-9(-11)-nerved, lower lemma 7-9-nerved, not inflated at base, and upper antherium inserted basally.

Panicum sciurotis Trin., Gram. Panic.: 228. 1826. TYPE: Brazil: "V. sp. Brasil," *Chamisso* s.n. (holotype, LE). Figure 1i-o.

Panicum rostellatum Trin., Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 3(2): 288. 1834. TYPE: Brazil. Bahia: "In

- arenosis prope Ilheos (Brasil) Sep. 1821," without collector, 232 (holotype, LE; fragment US-974732).
- P. cordifolium* Steudel, Syn. Pl. Glumac. 1: 85. 1854. Not Desv. 1831. *Panicum sciurotis* Trin. var. *breviglume* Doell, in C. Martius, Fl. Bras. 2(2): 250. 1877. TYPE: Paraguay, without locality, *Rengger s.n.* (holotype, P).
- P. diffusulum* Salzm. ex Steudel, Syn. Pl. Glumac. 1: 89. 1854. TYPE: Brazil. Bahia: without locality, in sabulosis umbrosis, *Salzmann 684* (holotype, P; fragments, US-967933, 974705, 2903510; isotypes, G, K, MO, P, W).
- P. trichopiptum* Steudel, Syn. Pl. Glumac. 1: 85. 1854. TYPE: Brazil. Bahia: without locality, *Salzmann s.n.* (lectotype, here designated, P; fragment, US-2903508).
- P. sciurotis* Trin. var. *molliusculum* Doell, in C. Martius, Fl. Bras. 2(2): 250. 1877. TYPE: Brazil: "in Insula S. Catharinae," *Chamisso s.n.* (lectotype, here designated, LE).

Annual. Culms geniculate, decumbent, rooting and branching at the lower nodes, then becoming erect, 5–25 cm tall; internodes hollow, compressed, hirsute, 2–8 cm long; nodes dark, densely pilose with retrorse whitish hairs. *Sheaths* striate, 1–5 cm long, hirsute, with long whitish hairs, the borders ciliate. *Ligules* membranous-ciliate, ca. 0.4 mm long; collar pilose, brownish. *Blades* ovate-lanceolate, 1.5–9 cm long, 0.8–2.8 cm wide, herbaceous, flat, hirsute, with papillose-pilose, rigid and short hairs, amplexicaulous, the margins ciliate, the midnerve inconspicuous. *Inflorescence* terminal, exserted; peduncle 5–7.5 cm long, wavy, hirsute; panicles lax, diffuse, 2–7 cm long, 1–5 cm wide; *main axis* wavy, papillose-pilose with long hairs; pulvini pilose; first-order branches divergent, alternate to opposite, the axis of the branches flexuous, smooth, glabrous or with scattered long hairs; pedicels smooth, glabrous. Axillary panicles present, similar to the terminal one. *Spikelets* solitary, ellipsoid, 1.5–1.7 mm long, 0.7–0.8 mm wide, hirsute, with short hairs; upper glume and lower lemma subequal or the upper glume shorter, with inconspicuous nerves. *Lower glume* 0.3–0.4 mm long, ¼ or less the length of the spikelet, nerveless, truncate, not embracing the upper glume at the base. *Upper glume* obtuse, 5(–7)-nerved, with the nerves anastomosed, obtuse, not covering the apex of the anthercium. *Lower lemma* glumiform, obtuse, slightly inflated at the base, 5-nerved, the nerves anastomosing toward the distal portion. *Lower palea* lanceolate, 0.9 mm long, 0.2 mm wide, hyaline, glabrous; lower flower absent. *Upper anthercium* ellipsoid, 1.4–1.5 mm long, 0.5–0.7 mm wide, glabrous, smooth and shiny, short-apiculate, with simple papillae over its surface, inserted laterally. *Caryopsis* obovoid; hilum punctiform; embryo ⅓ the length of the caryopsis.

Distribution and ecology: restricted to north-

eastern Brazil, where it grows in sandy soils, in open places or forest edges.

Additional specimens examined. BRAZIL. BAHIA: Bahia, *Chase 7901* (F, RB, SI, US, W); Cruz das Almas, *Pinto 941* (US); BR-116 area brejosa entre o retorno da C. Nova/Cidade Feira de Santana, *Noblick 2735* (K); Ilheos, *Riedel s.n.* (W); without locality, *Blanchet 193* (G, P), *Blanchet s.n.* (G); without collector (MO-2098691). CEARÁ: Campo Grande, *Swallen 4539* (RB, SI, SP, US); Campo Salles to Crato, *Swallen 4303* (K, R, SP); Serra do Araripe, *Luetzelburg 26101* (M, US); Serra do Araripe, Novo Exú, *Luetzelburg 26141* (M). PERNAMBUCO: Carvaru, *Tenorio 66-197* (US); Garanhuns, *Chase 7791* (US); vicinity of Recife, *Chase 7732 1/2* (US); Recife, *Tavares 788* (US). RIO GRANDE DO NORTE: Natal, *Swallen 4677* (SP, US); Nova Cruz to Montanhas, *Swallen 4823* (RB, SP, US); entre Parnamirim e S. José de Mipibú, *Emygdio 1663* (R, US); without locality, *Riedel s.n.* (K, M, P, US-974737).

The type locality of the species, Santa Catarina, Brazil, is probably erroneous, since *P. sciurotis* has only been found in northeastern Brazil in Ceará, Pernambuco, Bahia, and Rio Grande do Norte. The same is probably also true for the type material of one of its synonyms, *P. cordifolium*, which was originally cited as originating in Paraguay.

Panicum sciurotis differs from *P. sciurotoides* in having spikelets with the lower glume nerveless and truncate, the upper glume and lower lemma 5(–7)-nerved, with nerves not manifest, the upper anthercium inserted laterally in relation to the axis of the rachilla, and the lower lemma inflated at the base.

Panicum sciurotis and *P. sciurotoides* also have different anatomical features: in the first species the leaf thickness at mid-lamina is 90–130 µm, ribs and furrows are inconspicuous, contiguous vascular bundles are separated by 260–340 µm, and the bulliform cells are flattened and disposed in long groups, with all cells at the same level. In *P. sciurotoides* the leaf thickness at mid-lamina is 150–215 µm, ribs and furrows are conspicuous at the adaxial surface, contiguous vascular bundles are separated by 160–230 µm, and the bulliform cells are fan-shaped, with one or more large, inflated central cell or cells.

When describing *P. trichopiptum*, Steudel cited three specimens, one from Bahia collected by Salzmann, which conforms to the diagnosis of the species and is, therefore, designated as the lectotype. According to notes by Doell (1877: 251), the second specimen is probably *P. brevifolium* L. When describing *P. sciurotis* var. *molliusculum*, Doell cited five specimens for this variety, of which *Chamisso s.n.* is selected as the lectotype.

Panicum litigosum Steudel, a species often associated with *P. sciurotis*, is a synonym of *P. brev-*

ifolium L., an African species in Bahia, Brazil. The following type material of *P. litigosum* has been examined: "Bahia, in umbrosis, *Panicum diffusum*, Salzmann s.n." (holotype, P; isotypes, P, W).

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