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New Mesoamerican species of *Cyperus* (Cyperaceae)

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NEW MESOAMERICAN SPECIES OF
CYPERUS (CYPERACEAE)¹

GORDON C. TUCKER

ABSTRACT

Four species of the genus *Cyperus* are described, illustrated, and compared to their nearest relatives. These are: *C. matudae* and *C. breedlovei* (Subgenus *Protocyperus*) from the Pacific slope of Chiapas, Mexico; and *C. wilburii* and *C. svensoni* (Subgenus *Cyperus*) from the lowlands of the Isthmus of Tehuantepec, and from the uplands of Chiapas, Guatemala, Honduras, and Nicaragua, respectively.

Key Words: Cyperaceae, *Cyperus*, new species, Mexico, Central America

Four new species of *Cyperus* have been detected in a study of the genus in Mexico (Tucker, G. C. 1985. Unpubl. Ph. D. thesis, Duke University, Durham, N. C.). These new species are members of the two largest subgenera of *Cyperus*: subgenus *Protocyperus* K. A. Lye, in which the plants have trigonous achenes, digitate clusters of spikelets, and eucyperoid (non-Kranz) anatomy (Lye, 1981); and subgenus *Cyperus*, in which the plants have trigonous achenes, spicate inflorescences, and chlorocyperoid (Kranz) anatomy (Raynal, 1973). A detailed account of the characteristics of the subgenera appeared in Kükenthal (1935–36) and Tucker (1983).

Cyperus matudae G. C. Tucker *sp. nov.* TYPE: MEXICO. Chiapas, Mt. Ovando, pine land, 1250–2370 m, July 1938, *Matuda* 2553 (HOLOTYPE: MICH; ISOTYPES: F, GH, LL, NY). (Figure 1).

Plantae perennes, 50–75 cm alta. Culmi triquetri, scabri in angulis, 1.3–2.5 mm crassi. Bracteae 6–8, 3–30 cm longae, 2–10 mm latae. Radii 10 vel 11, ad 15 cm longi; radii secundarii ad 4 cm longi; radii tertiarum ad 15 mm longi. Spiculae digitatae, lineari-lanceolatae, compressae, 7–15 mm longae, 2.3–3.5 mm latae. Squamae deciduae, oblongo-ellipticae, 2.2–2.4 mm longae, cuspidae apicali 0.4–0.8 mm longo. Stamina tria. Stigmata tria. Achenia trigona, ellipsoidea, 1.8–2.0 mm longa, circa 1.2 mm lata. *Cypero chorisantho* C. B. Clarke affinis.

Perennials, 50–75 cm tall. Rhizomes horizontal, indurate, clothed

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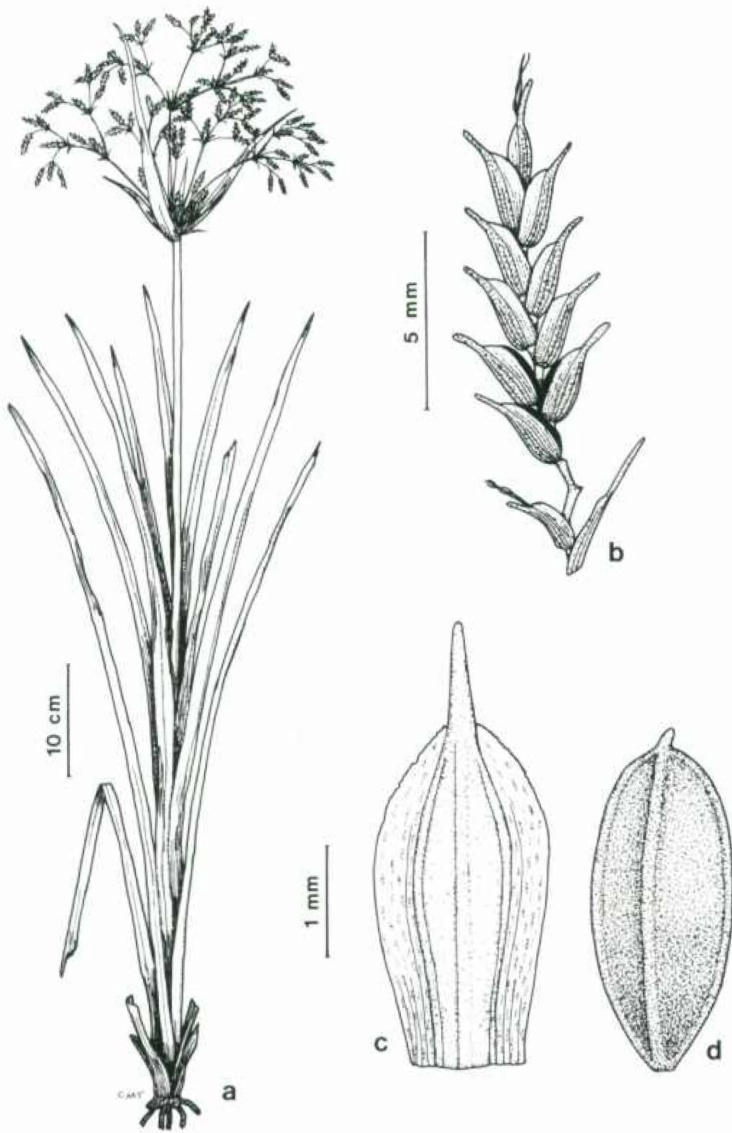


Figure 1. *Cyperus matudae*. a. plant; b. spikelet; c. scale (abaxial view); d. achene.

with fibrous leaf bases. Culms triquetrous, scabrous on the angles only, especially above, 1.3–2.5 mm thick. Leaves flat to subtly plicate, about as long as the culm, 5–15 mm wide, the margins and keels scabrellate. Inflorescence bracts 6–8, 3–30 cm long, 2–10 mm wide, vertical to ascendent at (60) 75°. Rays 10–11, up to 15 cm long; secondary rays 3–8 per primary ray, 10–40 mm long; tertiary rays 3–15 mm long. Spikelets digitate in groups of 1–3, linear-lanceolate, 7–15 mm long, 2.3–3.5 mm wide (including the apices of the scales), greenish brown, deciduous at maturity; rachilla slightly flexuous, wingless, persistent. Scales 8–16, oblong-elliptic, 2.2–2.4 mm long (the excurved cusp 0.4–0.8 mm long), 1.4–1.6 mm wide, laterally 3–4 nerved, reddish to brownish green, medially 3–7 nerved, the midvein green, smooth or scabrellate distally. Stamens 3; anthers 0.9–1.2 mm long, the setose apices of the connectives an additional 0.1–0.2 mm long. Styles 0.6–0.8 mm long; stigmas 3, (1.2) 1.6–2.6 mm long. Achenes trigonous, ellipsoid, 1.8–2.0 mm long, about 1.2 mm wide, sessile, apiculate, papillose, brown.

Endemic to southern Chiapas, Mexico, *Cyperus matudae* is known from only two collections made near the Guatemalan border. Plants with mature achenes have been collected in July and August. *Cyperus matudae* is placed in subgenus *Protocyperus* K. A. Lye, because of its trigonous achenes and digitately arranged spikelets. Both known collections of this new species had been identified previously as "*C. diffusus* Vahl" [= *C. laxus* Lam.], a widespread neotropical species (Tucker, 1983). *Cyperus matudae* differs strikingly from *C. laxus* in features of the achenes and scales, and in its more highly branched inflorescences. *Cyperus laxus* has only primary and secondary rays, while all available specimens of *C. matudae* have tertiary rays as well. This species is named for Professor Eizi Matuda (1894–1978), specialist on the flora of Mexico, who made both known collections of this species.

ADDITIONAL SPECIMEN: Mexico, Chiapas, Escuintla, Finca Juárez, 12 Aug. 1937, *Matuda 1937* (GH, MICH).

Cyperus breedlovei G. C. Tucker *sp. nov.* TYPE: MEXICO, Chiapas, on Hwy. 211 about 25 km N of Huixtla, in crevices on rocky roadcut in forest with *Bursera*, 700 m, 28 July 1984, *Tucker & Schwartz 2686* (HOLOTYPE: DUKE; ISOTYPES: BH, CAS, ENCB, F, GH, K, MEXU, MICH, MO, NY, US, WIS). (Figure 2).

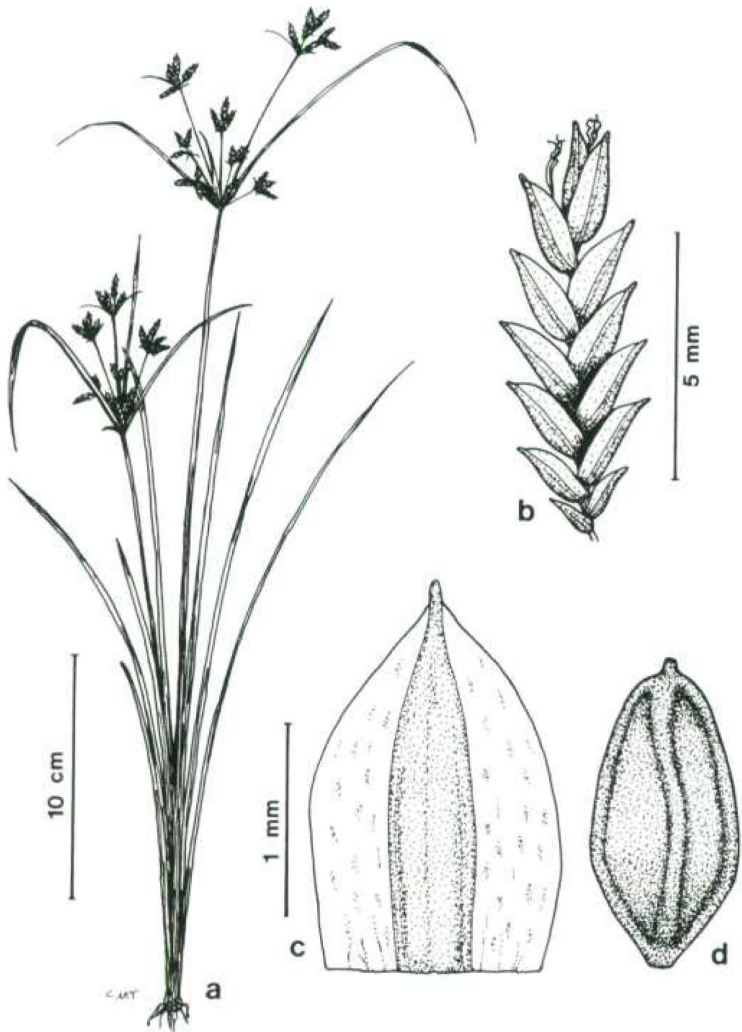


Figure 2. *Cyperus breedlovei*. **a.** plant; **b.** spikelet; **c.** scale (abaxial view); **d.** achene.

Plantae perennes, 25-50 cm alta. Bracteae 3-5, ad 12 cm longae; bractea longissima erecta vel valde adscendens. Spiculae digitatae, 1-5 (7), lineari-oblongae, 4-15 mm longae, 1.8-2.4 mm latae.

Squamae oblongo-lanceolatae, mucrone apicali 0.2–0.4 mm longo. Stamina tria. Stigmata tria. Achenia trigona, ellipsoidea, 1.2–1.4 mm longa, usualiter 0.6 mm lata. *Cypero chalarantho* Presl affinis.

Perennials, 25–50 cm tall. Rhizomes indurate, about 2 mm thick. Culms solitary or 2–3 together, trigonous and smooth below, triquetrous and scabrellate (or smooth) above, 0.8–1.2 mm thick. Leaves 1–5, conduplicate, 10–40 cm long, 2–3.5 mm wide, the margins and keels scabrellate. Inflorescence bracts 3–5, up to 12 cm long, 1–2.5 mm wide, the margins and keels scabrellate, the longest erect or strongly ascendent (appearing as a continuation of the culm). Rays 2–8, up to 4 cm long, scabrellate; secondary rays absent or 1–4, up to 1 cm long. Spikelets digitate, 1–5 (7), linear-oblong, compressed, reddish brown, 4–15 mm long, 1.8–2.4 mm wide; rachilla straight, wingless, persistent. Scales 7–16, oblong-lanceolate, 1.8–2.3 mm long (including the mucronate apex of 0.2–0.4 mm), 1–1.2 mm wide, laterally reddish brown, 2–3 nerved, the margins sometimes sparsely ciliate-scabrellate, medially green, 3–5 nerved, the midvein scabrellate, deciduous. Stamens 3; anthers about 1 mm long, the setose connective apices about 0.2 mm long. Styles 0.2–0.4 (0.6) mm long; stigmas 3, 2.3–2.5 mm long. Achenes trigonous, ellipsoid, 1.2–1.4 mm long, about 0.6 mm wide, apiculate, cuneate to substipitate, punctulate, brown.

Endemic to southern Chiapas, *Cyperus breedlovei* is known from only three collections from the type locality: crevices in steep moist ledges in tropical forest at about 700 m elevation. Flowering and fruiting collections have been made in July and October. *Cyperus breedlovei* is distinguished from all other Mexican and Central American species of subgenus *Protocyperus* by the combination of linear-oblong spikelets, reddish brown mucronate scales, and ellipsoid apiculate achenes. The oblong-lanceolate scales nerved nearly to the margins, the straight mucronate apices of the scales, and the ellipsoid achenes indicate that the new species is most closely related to *C. chalaranthus* Presl of northwestern South America (Tucker, 1983). *Cyperus breedlovei* differs from *C. chalaranthus* in having the longest inflorescence bract erect to ascendent (at 60°), and the scales reddish brown and scabrellate along the midvein; in *C. chalaranthus* the bracts are horizontal to ascendent (at 30°) and the scales light green and smooth. This species is named for Dennis E. Breedlove, diligent investigator and collector of the flora of Chiapas, who gathered the first collection.

ADDITIONAL SPECIMENS: **Mexico.** CHIAPAS: Mpio. Motozintla, 25–27 km NE of Huixtla on the road to Motozintla [Hwy. 211], 7 Oct. 1972, *Breedlove 28603* (DS); 15 miles N of Huixtla on Rte. 211, 28 July 1984, *Wilbur 35843* (DUKE).

Cyperus wilburii G. C. Tucker *sp. nov.* TYPE: MEXICO. Oaxaca, 8.5 km W of Niltepec on Hwy. 200 at the turnoff to Cerro Iguana, 31 July 1984, *Tucker 2756* (HOLOTYPE: DUKE; ISOTYPES: BH, C, CAS, ENCB, F, GH, K, MICH, MO, NY, US). (Figure 3).

Plantae annuae caespitosae, (5) 10–25 (30) cm alta. Rarii simplices; spicae subdigitatae. Spiculae compressae, (3.5) 5–6.5 (7) mm latae, stramineae vel fulvae. Squamae (3.8) 4–4.6 mm longae, (2.4) 2.6–3.2 (3.6) mm latae, cuspidae apicali (1.1) 1.3–1.5 (1.6) mm longa. Achenia obovoidea, stipitata, trigona, apiculata, 1.7–2.2 mm longa, 1–1.4 mm lata. *Cypero compresso* L. affinis.

Caespitose annuals, (5) 10–25 (30) cm tall. Roots fibrous, rhizome none. Culms trigonous, smooth, 0.5–1.5 mm thick. Leaves (1) 3–4, (1) 12–20 (30) cm long, 0.5–3 mm wide, conduplicate, the margins and keels scabrelate distally. Inflorescence bracts (2) 3–5 (6), (2) 8–15 (25) cm long, 0.5–4 mm wide, the margins and keels scabrelate, ascendent at 45–60° (the longest bract in some plants erect, looking like a continuation of the culm). Rays 1–3 (5), unbranched, smooth, 1.5–5 cm long, occasionally lacking, the inflorescence in such plants a loose cluster of 3–6 spikelets; rachis smooth, 1.5–3.5 (6) mm long. Spikelets (1) 3–7 (10), oblong to oblong-lanceolate, strongly compressed, (10) 14–20 (32) mm long, (3.5) 5–6.5 (7) mm wide, stramineous to tawny brown; rachilla slightly geniculate, brown to reddish brown, persistent, 0.5–0.8 mm wide, 0.2–0.3 mm thick, the hyaline wings 0.1 (–0.2) mm wide, successive scale scars 2–2.4 (2.6) mm apart on the same side. Scales 10–16 (30), ovate-oblong, (3.8) 4–4.6 mm long, (2.4) 2.6–3.2 (3.6) mm wide, the cusp straight to slightly excurved (1.1) 1.3–1.5 (1.6) mm long, the medial part of the scale greenish, smooth, weakly 3–5 nerved, laterally stramineous to reddish brown, conspicuously 2-nerved midway between the center and margins, deciduous. Stamens 3; filaments 4–5 mm long; anthers oblong, 0.8–0.9 mm long, the connective apices minute. Styles 2–2.5 mm long; stigmas 3, about 0.6 mm long. Achenes trigonous, obovoid, stipitate, 1.7–2.2 mm long, 1.0–1.4 mm wide, apiculate, the base 0.3–0.4 mm long and about as wide, the angles acute, the faces concave, puncticulate, brownish.

Endemic to Mexico, *Cyperus wilburii* occurs in the Pacific Coastal lowlands of the Isthmus of Tehuantepec in the State of Oaxaca.

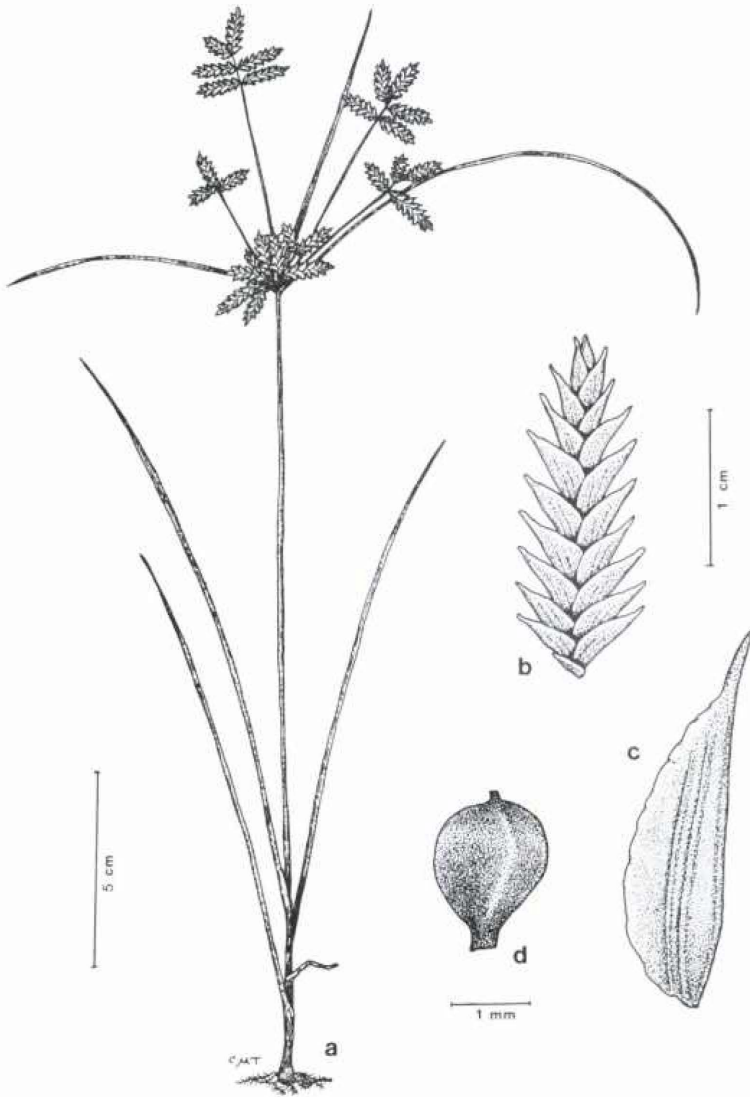


Figure 3. *Cyperus wilburii*. a. plant; b. spikelet; c. scale (abaxial view); d. achene.

Apparently uncommon and known from only five collections, it grows in disturbed open soil among thorny shrubs and cacti and in pastured thorn savannas from sea level to about 100 m. A single

flowering collection has been made in June; collections made from July through October have mature achenes.

Cyperus wilburii is classified in subgenus *Cyperus*, as indicated by its trigonous achenes and spicate inflorescences. It is closely related to the pantropical and warm temperate *C. compressus* L., as clearly indicated by its annual habit, loosely clustered spikelets, cuspidate scales, and trigonous obovoid achenes. To the unaided eye, *C. wilburii* is easily distinguished from *C. compressus* by its wide (5.0–6.5 mm), stramineous to tawny spikelets; in *C. compressus* the spikelets are only 2.0–3.0 (3.6) mm wide and greenish white. In addition, the achenes of *C. wilburii* are stipitate and larger (1.7–2.2 mm long, 1–1.4 mm wide) than the sessile achenes of *C. compressus* (1–1.5 mm long, 0.9–1.1 mm wide). This new species is named for Robert L. Wilbur, Professor of Botany at Duke University.

ADDITIONAL SPECIMENS: **Mexico.** OAXACA: Ixtepec, 200 ft., 17 Aug. 1935, *Fisher 35258* (ARIZ, F, MO, NY, SMU, TEX, US); along the hwy. to Tehuantepec, 6 km N of Salina Cruz, 30 June 1958, *King 917* (MICH, TEX, US); San Gerónimo, 5 Oct. 1933, *Mell 2115* (NY, US); Route 200, about 5.3 miles W of Nilttepec near turnoff to Cerro Iguana, *Wilbur 35922* (DUKE, ENCB).

***Cyperus svensonii* G. C. Tucker sp. nov.** TYPE: MEXICO, Chiapas, just E of Colonia Aztlán on Hwy. 195 about 1.7 km N of the Pan American Hwy., along gully in cornfield at about 1000 m, 24 July 1984, *Tucker 2661* (HOLOTYPE: DUKE; ISOTYPES: CAS, ENCB, F, GH, K, MEXU, MICH, MO, NY, US, WIS.) (Figure 4).

Plantae perennes, caespitosae. Culmi trigoni, lacvi. Bractee horizontales vel reflexae. Spicae sessiles, dense cylindricae, albae. Spiculae ellipsoideae vel oblongo-ellipsoideae, deciduae; rachillae alatae. Squamae obovatae. Achenia trigona, oblongo-ellipsoidea usque ellipsoidea, brunnea usque rubro-brunnea. *Cypero regiomontano* Britt. affinis.

Perennials, 15–55 cm tall. Rhizomes indurate. Culms loosely caespitose, trigonous, smooth, 1–2 mm thick. Leaves 3–9, plicate, 10–35 cm long, 2.5–4 mm wide, the margins and veins scabrous. Inflorescence bracts (3) 4–6, horizontal to reflexed downward parallel to the culm, 3–15 (25) cm long, 1–5 mm wide, the margins and veins scabrous. Inflorescence composed of (2) 4–5 (8) oblong-ellipsoid to oblong-ovoid, densely cylindrical spikes (3) 10–15 (25) mm long, 5–12 mm wide. Spikelets (30) 60–120, ellipsoid to oblong-ellipsoid, subterete, 2–4.5 mm long, (0.7) 0.8–1.2 mm wide; rachilla deciduous, with hyaline wings 0.3–0.4 mm wide. Scales 2 (–4), obovate,



Figure 4. *Cyperus svensonii*. a. plant; b. spikelet; c. achene.

mucronulate, 2.2–3.2 mm long, 1.2–2 mm wide, 3-nerved and greenish (rarely off-white) medially, 3–4 nerved and whitish (greenish-white when immature) laterally, persistent. Stamens 3; anthers oblong to oblong-ellipsoid, 0.4–0.5 (0.7) mm long, the connective apices at most 0.1 mm long. Styles (0.4) 0.6–0.8 (1.2) mm long; stigmas 3, 0.8–1.4 mm long. Achenes trigonous, oblong-ellipsoid to ellipsoid, 1.5–1.8 mm long, 0.6–0.7 mm wide, stipitate to substipitate, acuminate, apiculate, puncticulate, brown to reddish brown.

The known stations of *Cyperus svensonii* include the uplands of Chiapas, Guatemala, Honduras, and Nicaragua, in moist open situations in pine or oak forests, from (800) 1200–2300 m. The species is frequent throughout its range, especially in the montane valleys of Chiapas. Fruiting specimens have been collected from late June until November.

Cyperus svensonii is the only species of the genus in the New World that has densely cylindrical whitish spikes. The densely cylindrical sessile spikes indicate a close relationship with *C. regiomontanus* Britt. In fact, several collections of this species were previously identified as "*C. regiomontanus*." However, *C. svensonii* has ellipsoid to oblong-ellipsoid spikelets with obovate scales that are laterally whitish; *C. regiomontanus* has subulate-lanceolate spikelets and ovate scales that are laterally greenish to brownish. The two species are clearly allopatric: *C. svensonii* occurs in moist upland sites from (800) 1200–2300 m from Chiapas to Nicaragua; *C. regiomontanus* occurs in beach thickets and brushy pastures at or near sea level along the Pacific from Sinaloa, Mexico to Ecuador. The new species is named for Henry K. Svenson (1902–1986), lifelong student of the Cyperaceae and author of several works on the North American and neotropical genera of the family.

ADDITIONAL SPECIMENS: **Mexico.** CHIAPAS: Mpio. Tenejapa, paraje of Sibaniil Ha', *Breedlove 6073D* (DS, NY); just W of San Cristobál, *King 3001* (MICH, TEX, UC); 20 km S of Tapilula, *Tucker 2630* (DUKE); near Huixtan, *Tucker 2209* (DUKE, ENCB); 20 km W of Comitán, *Tucker 2679* (DUKE, ENCB); San Benito, *Miranda 1889* (MEXU); 5 km N of Bochil, *Tucker 2635A* (DUKE). **Guatemala.** Depto. Huehuetenango, "Los Pinitos," *Steyermark 48192* (F, LL); Depto. Santa Rosa, Santa Rosa, *Heyde & Lux 3542* (M, MICH, US); Depto. Chimaltenango, near Chimaltenango, *Standley 59055* (F). **Honduras.** Depto. Morazán, Río Yeguaré, *Glassman 1817* (F); Depto. Comayagua, vicinity of Siguatepeque, *Yuncker 5631* (F, GH, MICH); Depto. Morazán, Montaña Uyuca, *Molina R. 12789* (F). **Nicaragua.** Depto. Estelí, along road from Hwy. 1 to San Nicolás, *Kral 69478* (MO) and *Stevens 17860* (MO); Depto. Jinotega, Mesas Moropotente, *Henrich & Stevens 429* (DUKE, MO).

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