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GORDON C. TUCKER[1]

Notes on *Cyperus* sect. *Incurvi* (*Cyperaceae*) from the New World Tropics

Abstract

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Based on study of herbarium specimens of *Cyperus* sect. *Incurvi* Kük., three species are described from the lowlands of N South America and Mesoamerica: *C. conservator-davidii* G. C. Tucker is a new species occurring in several countries and is morphologically similar to *C. simplex* Kunth; *C. lacustris* Schrad. ex Nees is an overlooked species that has been confused with *C. miliifolius* Poepp. & Kunth; *C. altsonii* Kük. and *C. hoppiifolius* Uittien pertain to the same species, for which the former is the earlier name. An identification key is provided for all species of *C.* sect. *Incurvi* occurring in the New World.

Additional key words: taxonomy, biogeography, identification key, South America, Central America, Mesoamerica, Amazonia, Guianas, sedges

Introduction

The genus *Cyperus* L. includes about 800 species, occurring worldwide in tropical and warm-temperate regions (Tucker 1994, 2001). The distribution of individual species ranges from nearly cosmopolitan (e.g. *C. odoratus* L. and *C. squarrosus* L.) to regional and narrow endemics (Kükenthal, 1935–1936). In the New World, areas of high diversity and endemism include Mexico, the Greater Antilles and E Brazil (Alves & al. 2007; Tucker 2007, 2008). While examining unidentified South American specimens of *Cyperaceae* in the herbaria of the Missouri Botanical Garden, Harvard University and the Royal Botanic Gardens, Kew, as well as loans from several other institutions, a new species and an overlooked species were noted. Additionally, two validly published names were determined to represent the same taxon. All cited specimens have been seen by the author unless indicated otherwise.

These species find their place in *Cyperus* [subg. *Pycnostachyus* C. B. Clarke] sect. *Incurvi* Kük. This pantropical section occurs in wet lowland forests and comprises about 30 species, ten of which are found in the New World Tropics (Kükenthal 1935–1936). The plants are perennials with simple or capitate inflorescences, with a wingless rachilla and floral scales that are saccate basally with a prolonged incurved apex. Most species have a rough, granular or papillose achene surface and several have pseudopetiolate leaves (Kükenthal 1935–1936). A dichotomous identification key is provided for all species of this section occurring in the New World.

The current paper represents a contribution toward a taxonomic monograph of the c. 225 species of *Cyperus* occurring in the New World Tropics. The taxonomic section of this paper consists of three parts: the description of a new species related to *C. simplex* Kunth and *C. grandisimplex* C. B. Clarke; the recognition of an overlooked, widespread species, related to *C. miliifolius* Poepp. & Kunth; and, the status of *C. hoppiifolius* Uittien as a synonym of *C. altsonii* Kük.

Provisional IUCN conservation assessments are made for the three species discussed herein, using IUCN (2012) criteria.

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Results and Discussion

Cyperus conservator-davidii G. C. Tucker, **sp. nov.** – Fig. 1.

Holotype: French Guiana, Monts d'Arawa, savane-roche central, 8 Jul 2002, *J. J. de Granville & al. 15119* (US; isotypes: B, G, K, NY).

Diagnosis — Affinis *Cyperus simplex* Kunth sed radiis brevioribus, squamis angustis, acheniis oblongo-obovoideis et foliis bracteisque ventraliter papillosis differt.

Description — *Herbs* perennial, rhizomatous. *Culms* triquetrous, 10–22 cm tall, (0.7–)1–1.5 mm thick, scabrellate on angles just below bracts. *Leaves* 4–8, V-shaped to inversely W-shaped, 10–15 cm long, 3–4 mm wide, abaxial surface papillose distally, adaxial surface and margin scabrellate. *Inflorescence bracts* 5 or 6, ascendant at 45°–60°, V-shaped, 1–15 cm long, 1.5–4 mm wide, abaxial surface papillose, adaxial surface and margin scabrellate; *secondary bracts* absent. *Rays* 5–8, 4–10(–12) cm long (longest 0.45–0.8 × as long as culm), scabrellate on angles; *secondary rays* absent. *Heads* digitate, 2–3 cm wide. *Spikelets* 1–5, lanceolate, compressed, 12–14 mm long, (2.5–)3–4 mm wide; *rachilla* persistent, greenish, wingless, successive scale scars 1.1–1.5 mm apart. *Floral scales* 12–16, deciduous, whitish, somewhat reddish or greenish tinged especially on margin apically, lanceolate, (2.2–)2.5–2.9 mm long, 1–1.5 mm wide, smooth, laterally weakly 2-nerved, in middle 1–3-nerved, apical portion c. 0.2 mm long, incurved parallel to rachilla. *Stamen* 1; *filament* 2–3 mm long; *anther* c. 1.2 mm long, connective apex c. 0.1 mm long. *Styles* 1–1.2 mm long; *stigmas* 3, (1.7–)2–3 mm long. *Achenes* white (sometimes brownish or reddish brown), oblong-obovoid, trigonous, 0.8–1.2 mm long, 0.7–0.8(–0.9) mm wide, faces slightly concave, papillate, base broadly rounded to cuneate, apex rounded to sub-truncate, apiculate.

Distribution — S Mexico; Central America: Costa Rica, Panama; South America: Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, Venezuela.

Habitat and ecology — Tropical lowland forests; 100–950 m (however, a single collection from 2000 m).

Proposed IUCN status — Least Concern (LC). Widely distributed; apparently not threatened. This species is known from more than 25 collections, over a wide range, with numerous recent collections.

Specimens examined — Bolivia: Pando: 80 km SW of Cobija, Limoero, 21 Jul 1989, *M. Prescott & J. M. Cardiel 13* (K).

Brazil: Acre: Jardin Zoobotanico of Federal Univ. of Acre, 15 Oct 1980, *Lowrie & al. 535* (EIU, NY); Mpio. Buari, basin of Rio Purus, Rio Antimari, Floresta Estadual do Antimari, 8 Mar 1997, *D. C. Daly & al. 9298* (EIU, NY). — Roraima: Posto Mucajaí, margin of Rio Mucajaí, 18 Mar 1971, *G. Prance & al. 11087* (AAU, NY, P).

Colombia: Antioquía: Mpio. Dabeiba, 32 km SE de Mutatá, en la via Mutatá-Dabeiba, 5 Aug 1987, *Callejas & al. 5090* (EIU, NY); Mpio. Nariño, Vereda Puente Linda, 12 Sep 1994, *Fonnegra*, *Estudiantes de Taxonomía Plant. Vasc. 5047B* (MO with *C. simplex*); Mpio. Urrao, Parque Nac. Natural Las Orquídeas, Vereda Calles, 8 Dec 1993, *J. Pipoly & al. 17928* (MO); ibid., 26 Jan 2011, *Pedras-Peñalosa & al. 1968* (GH, NY); Mpio. Frontino, road between Nutibara and La Blanquita, region of lower Murrí, 7 Feb 1989, *J. M. MacDougal & al. 3697* (MO). — Meta: 5 km arriba de la desembocadura de Caño Cabra en el Río Guayabero, 22 Feb 1969, *P. Pinto E. & C. Sastre 972* (COL, P).

Costa Rica: Heredia: Colonia Virgen del Socorro, 3 Feb 1984, *J. Gómez-Laurito 9870* (F); 3 miles S of Cariblanco, 760 m, 28 May 1976, *T. B. Croat 35838* (MO).

Ecuador: Imbabura: Lita, 25 Apr 1949, *M. Acosta-Solis 12253* (US). — Napo: along Río Cuyabeno, c. 1 hour in canoe below Puerto Bolívar, 26 Jan 1984, *S. Laegaard 51242* (AAU, MO). — Santiago-Zamora: Patuca, 11 Jun 1947, *G. Harling 1129* (MO).

French Guiana: Monts d'Arawa, savane-roche central, 8 Jul 2002, *J. J. de Granville & al. 15119* (B, G, K, NY, US) [type gathering]; Fleuve Approuague, Riviere Arataye, Saut Parare, 2 Sep 1977, *Sastre 5876* (P).

Guyana: Upper Takutu-Upper Essequibo: NW Kanuku Mtns., tributary of Nappi Creek, 14 Feb 1993, *Hoffmann & Artes 3769* (US); Sand Creek-Rupununi River confluence, 29 May 1996, *Clarke & McPherson 1809* (US); N Rupununi Savannas, 2.5 km S of Karanamb Ranch, 19 Feb 1992, *Hoffman & al. 999* (EIU, US); S Pakaraima Mtns., escarpment to foot of Kopinang Falls, 2 Sep 1961, *B. Maguire & al. 46077A* (NY, US).

Mexico: Chiapas: 3–5 km above Solosuchiapa along road to Tapilula, 26 July 1972, *Breedlove 26442* (DS, DUKE, MO) [cited by Tucker (1994), as *C. simplex*]. — Oaxaca: "Oaxaca," [no date], *Galeotti 5855* (P); ibid., 1845, *Buchinger s.n.* (P 01924897).

Panama: Colón: Brazos Brook Res., 22 Sep 1924, *Stevens 702* (ILL); Canal Area, Madden Forest (Parque Nacional Soberanía), 23 July 1994, *Croat & Zhu 77068* (MO).

Peru: Amazonas: Distrito Imaza, camino Putuim-Shimutaz, *R. Vasquez & al. 21294* (MO). — Loreto: Iquitos, 28 Nov 1940, *E. Asplund 14758* (P, S). — San Martín: Mariscal Cáceres, Tocache Nuevo, [no date], *J. Schunke V. 6508* (MO).

Suriname: fluv. Corantijne, *Hulke 88* (U); Zuid River, Kayser Airstrip, 26 Aug 1963, *H. S. Irwin & al. 55249* (NY, US), and 22 Feb 1961, *K. U. Kramer & W. H. A. Hekking 3000* (U); Nat. Res. Brownsberg, on border of plateau in line towards Weti Creek, 24 Oct 1918, *J. C. Lindeman & A. C. de Roon 691* (U).

Venezuela: Aragua: along ascent from Maracay to

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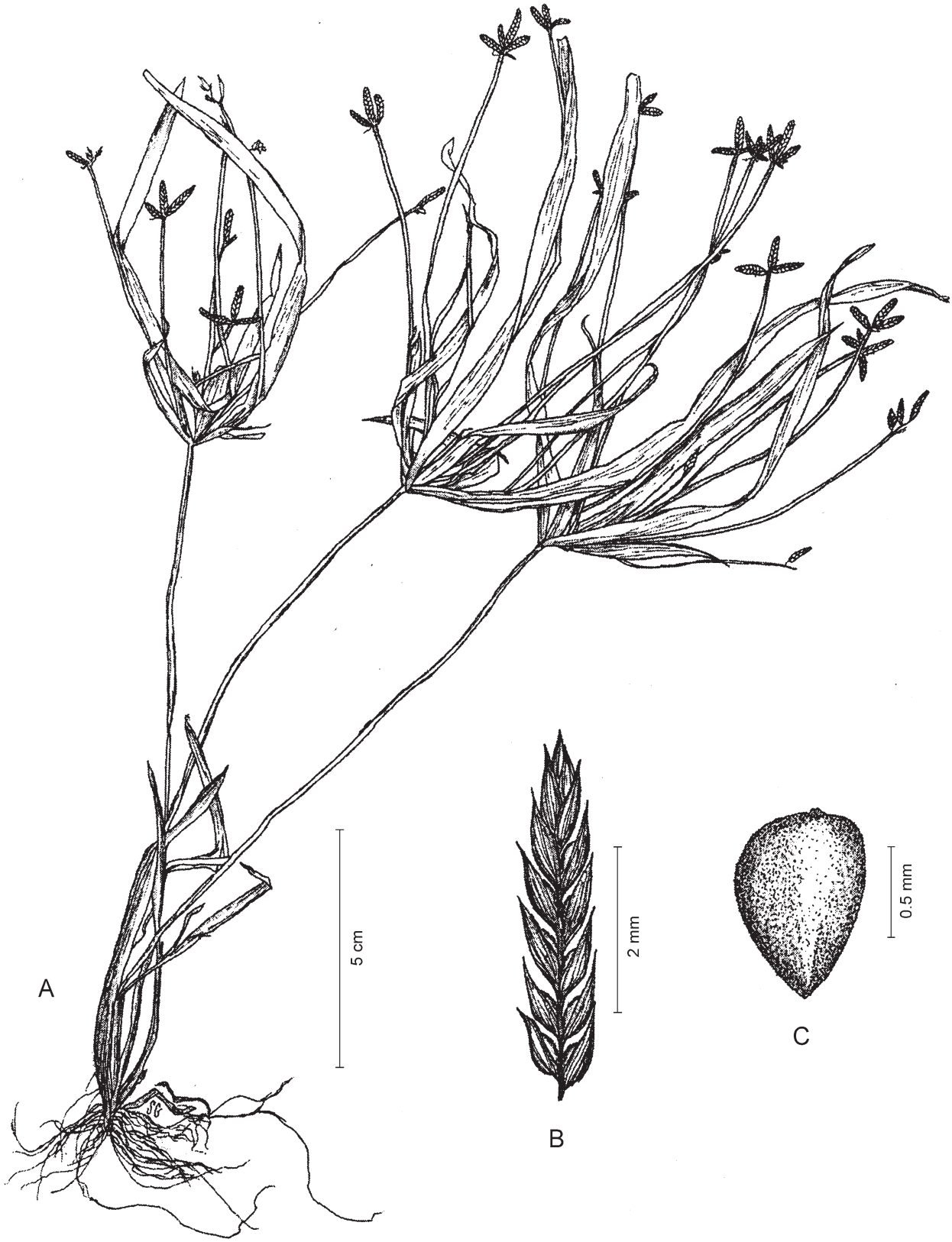


Fig. 1. *Cyperus conservator-davidii* – A: habit; B: spikelet; C: achene. – Based on several cited specimens including the holotype. – Original artwork by Sarah Gillespie.

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summit of Alto Choroni, 8 Feb 1973, *T. B. Croat 21500* (MO). — Miranda: Cerros de Bachiller, near E end, 16–17 Mar 1978, *J. A. Steyermark & G. Davidse 116310* (MO). — Portuguesa: Distrito Sucre en el limite con Estado Lara, Fila El Helechal, al norte de Chabasquén, 9 Feb 1984, *B. Stergios & al. 6712* (MO). — Táchira: Distrito Córdoba, Cerro La Camiri, 6 Nov 1982, *G. Davidse & A. C. González 21597* (MO).

Remarks — The type specimen, together with many collections of *Cyperus conservator-davidii*, were originally identified as *C. simplex*, from which the new species is quickly separated by its rays being shorter than the culms, its lanceolate floral scales and its ellipsoid achenes. Among *Cyperus* worldwide, *C. simplex* is one of only three species in which the rays (primary branches) of the inflorescence are longer than the culm. The other two species, *C. blysmoides* Hochst. of tropical Africa (Haines & Lye 1983) and *C. radians* Nees & Meyen of SE Asia (Dai & al. 2010), are members of *C.* subg. *Cyperus* and are not close relatives of *C. simplex*. In examining materials of *C. simplex* from throughout its range (Mexico to Brazil), I noted that numerous specimens have rays shorter than the culms. Other consistent differences were noted as well.

Cyperus conservator-davidii is also similar to *C. grandisimplex*, an uncommon species of E Brazil, in having rays shorter than the culm, but it can be distinguished by its lanceolate (rather than ovate-deltate) scales and papillate (rather than smooth) achenes. The presence of papillae on the leaves and bracts in *C. conservator-davidii* is a feature not otherwise known in *C.* subg. *Pycnostachyus*. In view of the large number of collections and the wide range over several countries, it is surprising that this species has gone unrecognized.

Eponymy — This new species is named for David A. Simpson (b. 1955), currently Keeper of the Herbarium at the Royal Botanic Gardens, Kew, and fellow specialist on the *Cyperaceae*.

Status of *Cyperus lacustris*

Cyperus miliifolius Poepp. & Kunth is a distinctive species of *Cyperaceae*, occurring in wet lowland and premontane forests from Costa Rica to Bolivia. In the most recent monograph of the genus, Kükenthal (1935–1936) cited several collections from the lowlands of N South America. As I have had the opportunity to observe numerous specimens from the region, it became apparent that these lowland plants were readily separable from typical *C. miliifolius* (Fig. 2) and should be called *C. lacustris* Schrad. ex Nees.

The lectotype of *Cyperus lacustris* has leaves and bracts 4–7 mm wide, clearly within the range of the lowland plants rather than typical *C. miliifolius*. Under the synonymy of *C. miliifolius*, Kükenthal also included "?*C. tenuispicatus* Boeck." He did not elaborate on the dubious status of this name. Boeckeler's name was, in fact, validly published and I believe it applies to this lowland relative of *C. miliifolius*. I have been unable to locate a type specimen, but its origin, French Guiana, as well as features of the protologue, such as acuminate leaf tips, support this interpretation. Below is provided a detailed description of *C. lacustris* based on numerous specimens cited below.

Cyperus lacustris Schrad. ex Nees in Martius, Fl. Brasil. 2(1): 31. 1842. – **Lectotype (designated here):** Brazil, Amazonas [Prov. Rio Negro], ripa fluv. Solimões et Rio Japurá (M not seen [photo F negative no. 18874!]). – Fig. 2. = *Cyperus tenuispicatus* Boeckeler in Linnaea 35: 525. 1868 – Type: "Guiana gallica. (Ex herb. Musei Paris.)", [collector unknown], (B†; no corresponding collection located at P).

Description — *Herbs* perennial, 15–30 cm tall. *Rhizome* oblique. *Culms* triquetrous, 1–2 mm thick, smooth. *Leaves* 5–12, V-shaped to inversely W-shaped or plicate, 10–25 cm long, 4–8.5 mm wide, margin and veins scabrellate. *Inflorescence* bracts 3–6, horizontal to ascendent at 45°–60°, V-shaped, inversely W-shaped, or plicate, 5–15 cm long, 3–7 mm wide, margin and veins scabrellate; *secondary bracts* absent. *Rays* 3–8, 2–6 cm long, sometimes absent and then inflorescence capitate; *secondary rays* sometimes present, 1–5 mm long. *Heads* digitate, 4–10 mm wide. *Spikelets* 1–3(–5), linear to slightly oblong-lanceolate, compressed ellipsoid in cross-section, 7–17 mm long, 2–3 mm wide; *rachilla* persistent, wingless, successive scale scars 1.2–1.5 mm apart. *Floral scales* 10–22(–50), deciduous, dusky whitish greenish brown, ovate to ovate-lanceolate, 1.75–2 mm long, 1.5–1.7 mm wide, laterally weakly 1–4-nerved, in middle nerveless or faintly 1–3-nerved, base saccate, apical portion 0.3–0.5 mm long, incurved parallel to rachilla. *Stamen* 1; *anther* 0.7–1 mm long. *Styles* 0.5–0.8 mm long; *stigmas* 3, 0.5–0.7 mm long. *Achenes* only partly covered by edge of scale at maturity, brown, ovoid, trigonous, (0.9–)1–1.2 mm long, (0.5–)0.65–0.7 mm wide, faces concave, surface papillose or granular, base stipitate, apex subacute, apiculate.

Distribution — N South America: N Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, Venezuela.

Habitat and ecology — River banks, trailsides and moist shaded soils of lowland forests, from near sea level to 300 m.

Proposed IUCN status — Least Concern (LC). Widely distributed; apparently not threatened. This species is known from about 70 collections, over a wide range, with numerous recent collections.

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Fig. 2. *Cyperus lacustris* – A: representative specimen, *R. Spruce s.n.* (E 153064) from Pará, Brazil. – *Cyperus miliifolius* – B (inset): detail of representative specimen showing leaves, bracts and inflorescence, *L. Holm-Nielsen & al. 19880* (EIU) from Ecuador. – Scale bars: A & B = 2 cm.

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Specimens examined — Brazil: Amapá: Santo Antonio da Cachoeira, 30 Jul 1961, *Egler & Irwin 46049* (MG, MO, NY); Rio Oiapoque, opposite Pedra Alice, 17 Aug 1960, *Irwin & al. 47582* (MO, NY); Rio Araguari, between Camps 3 and 4 [01°55'N, 51°59'W], 6 Sep 1961, *Pires & al. 50733* (MO, NY). — Amazonas: basin of Rio Demeni, vicinity of Tototobí, 27 Feb 1969, *G. T. Prance & al. 10279* (K, M, MO, NY, P); Rio Cauabury, 3 Nov 1930, *E.G. Holt & E. R. Blake 449* (F); Rio Purus S of Lago Prêto, 25 Jun 1971, *G. T. Prance & al. 13652* (K, NY, P); Mpio. Itapiranga, Rio Uatumã, 21 Aug 1979, *C. A. Cid & al. 634* (NY, US); Rio Branco, Jarú, *Kuhlmann 361* (EIU, K, NY, RJ); Rio Curuquetê, São Paulo, 20 Jul 1971, *G. T. Prance & al. 14437* (GH, K, MO, NY, P, US). — Pará: ad cataractas fl. Aripecuru, Dec 1849, *R. Spruce s.n.* (E 153064 [Fig. 2A]); banks of Rio Piria, N of km 90, road BR 22, "1965", *G. T. Prance & T. D. Pennington 1751* (US); Mpio. Oriximiná, Rio Paru do Oeste, cachoeira Pancada, 5 Sep 1980, *C. A. Cid & al. 2105* (US); Rio Plumina, 26 Nov 1928, *de Sampaio s.n* (F, RDJ). — Rondônia: margen do Rio Urupá, 8 Aug 1975, *M. R. Cordeiro 470* (MO); Rio Demeni, vicinity of Tototobí, 27 Feb 1969, *G. T. Prance & al. 10279* (MO, NY).

Colombia: Meta: Río Guayabero, a 10 km de Caño Lozada, 17 Jan 1959, *E. Pinto & al. 226* (COL, P). — Vaupes: Río Pacoa (tributary of Río Apaporis), 7–12 Feb 1952, *R. E. Schultes & I. Cabrera 15249* (COL, K, P, US); margen del Río Cananarí, affluente del Apaporis, 29 Feb 1952, *L. E. Mora-O. & van der Hammen APA-182* (COL).

Ecuador: Napo: near Puerto Montúfar, 17 Feb 1980, *L. Holm-Nielsen & al. 21240* (AAU); Río Tiputini, 10 km upstream from Río Napo, 24 Aug 1979, *L. Holm-Nielsen & al. 19796* (AAU, MO).

French Guiana: Cayenne, 1819, *Perollet s.n.* (P 01732973); Rivière Camopi, camp ORSTOM, 12 Feb 1968, *Oldeman & Sastre* 211 (P, U); Maroni River above mouth of Marouini River, 18 Aug 1987, *A. Weitzman 212b* (US); Bassin du Haut Marouini, camp no. 3 Akouba Booka goo Soula, 27 Aug 1987, *J. J. de Granville 9788* (CAY, US); Bassin du Haut Marouini, Monpé Soula, 6 Sep 1987, *J. J. de Granville & al. 10092* (NY, US); Roche Koutou, Bassin du Haut Marouini, 16 Aug 1987, *J. J. de Granville & al. 9352* (CAY, NY, US); Grand Inini, aval de Bicade, *de Granville* C-18 (P, U); Saut Dalles, Bassin du Sinnamary, 20 Oct 1990, *M. Hoff 6769* (CAY, MO, NY, P, U, US); Saut Takari-Tanté, Bassin du Sinnamary, 18 Nov 1989, *M. Hoff 5909* (CAY, P, US); Grand Inini, en amont de l'embouchure de la Crique Saï, 27 Aug 1970, *Oldeman 3587* (P, US); Haute Camopi-Mont Belvédère, 22 Nov 1984, *J. J. de Granville 6949* (CAY, US); camp no. 1 Ouman fou Langa Soula, Bassin du Haut Marouini, 12 Aug 1987, *J. J. de Granville & al. 9192* (CAY, NY, P, US); Saut Mapaou, Nov. 1955, *Hock s.n.* (P, U).

Guyana: "British Guiana," [no date], *R. Schomburgk 339* (US). — Upper Takutu-Upper Essequibo: basin of Kuyuwini River (Essequibo tributary), about 150 miles from mouth, 21 Nov 1937, *A. C. Smith 2576* (NY, US); S Rupununi Savanna, Takutu River, 16 Sep 1997, *M. J. Jansen-Jacobs & al. 5522* (MO, U); near Aishalton Hospital, 19 Nov 1982, *A. L. Stoffers & al. 479* (U, US); Kamoa River, 20 Sep 1989, *M. J. Jansen-Jacobs & al. 1720* (K, U, US); Rupununi, Kuyuwini Landing, 7 Feb 1991, *M. J. Jansen-Jacobs 2450* (MO, U, US); Kassakaityu River 15–20 km from juncture with Essequibo River, 22 Mar 1994, *T. W. Henkel & al. 5289* (MO, US); Kanuku Mtns., Rupununi River, Puwib River, 13 Feb 1985, *M. J. Jansen-Jacobs & al. 194* (MO, P, U, US); Kamoa River, 0–6 km W of camp, 9 Nov 1996, *D. Clarke 3016* (MO, US); Upper Essequibo River, 1–4 km upstream from mouth of Kuyuwini River, 3 Oct 1993, *T. W. Henkel & al. 3343* (MO, US). — Potaro-Siparuni: Kurupukari Falls, 11 Dec 1994, *P. Mutchnick & V. Funk 635* (US); Pakutan Falls, 10 Nov 1995, *D. Clarke 472* (US); Mazaruni River, sandy islands in the falls, 28 Oct 1952, *Forest Department F3538* (U). — Cuyuni-Mazaruni: Aurora, 9 Oct 1989, *L. J. Gillespie 2229* (US).

Peru: Loreto: Maynas, Río Yaguasyacu, below Brilla Nueva, 7 Nov 1977, *A. Gentry & J. Revilla 20377* (MO).

Suriname: Toekoemoetoe-Kreek, fluv. Saramacca, 1 km S of Base Camp, 12 Oct 1959, *A. G. H. Daniëls & F. P. Jonker 1318* (U, US); Saut Paloulou Icholi, bassin du haut-Maroni, 16 Sep 1994, *J. J. de Granville 12513* (CAY, P, U, US); Avanavero vallen, 19 Mar 1920, *G. Stahel 4615* (U); Lucie River, 2 km below affluence of Oost River, 22 Aug 1963, *H. S. Irwin & al. 55198* (MO, NY); Lucie River, 2–10 km below Oost River, 10 Sep 1963, *H. S. Irwin & al. 55561* (COL, NY, US); Zuid River, 2 km above confluence with Lucie River, 15 Sep 1963, *H. S. Irwin & al. 55739* (F, NY, US); Coppenam River near Raleighfalls, 11 Sep 1933, *J. Lanjouw 761* (U); Zuid R., nabij samevl. met Lucie R., 2 Jul 1963, *J. P. Schulz 10015* (U); Suriname River below Kabelstation, 24 Jul 1953, *J. C. Lindeman 4428* (U); Sipalwini savanna area on the Brazilian frontier, 29 Oct 1968, *F. H. F. Oldenburger & al. 384* (U); Kabalebo, 20 km downstream of Kabalebo airstrip, 29 Dec 1964, *P. A. Florschütz & P. J. M. Maas 2567* (U); distr. Brokopondo, inter Paranam et Afobaka, 27 Mar 1961, *Kramer & Hekking 3181* (U); distr. Brokopondo, 2.4 km S of Gansee, 21 Apr 1964, *van Donselaar 1231a* (U); on the Tanjimama at Kamp VI, 19 Nov 1954, *A. M. W. Mennega 472* (U); fluv. Suriname, 4 Oct 1901, *Went 503* (U).

Venezuela: Amazonas: Río Casiquiare entre la boca del Siapa y el caño Momoni, 18 Feb–4 Mar 1986, *B. Stergios & G. Aymardo 9184* (MO, NY, PORT not seen); Río Orinoco, Tamatama, 12–24 Jan 1930, *E. G. Holt & W. Gehriger 265* (US). — Apure: Misión Río Mavaca, *B. Stergios & Yánez 15021* (MO, PORT not seen); ibid., *B. Stergios & Yánez 15083* (MO, PORT not seen). — Bolívar: Río Caura, arriba del Salto Para, 14 & 17 Jan 1977, *J. A. Steyermark & al. 112919* (MO); Mpio. Foráneo Aripao, 1 km aguas abajo de Araguaña, 1 May 1988, *G. Aymard & L. Delgado 6747* (MO); Río Casiquiare entre la boca del Siapa y el caño Momoni, 18 Feb–4 Mar 1986, *B. Ster-*

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gios & G. Aymard 9184 (MO); Reserva Forestal Imataca, Río Cuyuni, Isla Anacoco, 22 May 1982, *B. Stergios & al. 3957* (MO); ibid., *B. Stergios & al. 4979* (MO); bords de l'Orénoque [no date], *Chaffanjon 512* (P). — Tachira: domingo del Tachira-Barinas, 7 km al E de El Pinal, 2 Oct 1967, *G. S. Bunting* 2400 (MO, VEN not seen).

Remarks — The small dark spikelets and narrow but obviously plicate leaves are good points of recognition for this species. It appears to be restricted to moist forests in N South America, especially the Guiana Shield region. With nearly 50 collections known, it is surprising it has gone essentially unrecognized. This species has long been included in *Cyperus miliifolius*, but can be readily distinguished in flower or fruit, as follows:

1. Culms 10–30 cm tall; leaves 4–8.5 mm wide; stamen 1; achenes stipitate . . . . . ***C. lacustris***
– Culms 36–60 cm tall; leaves 12–16(–22) mm wide; stamens 3; achenes sessile . . . . . ***C. miliifolius***

Status of *Cyperus hoppiifolius*

In studies of the preceding two species, I noted that many specimens of both *Cyperus lacustris* and *C. conservator-davidii* had been determined as "*C. hoppiifolius* Uittien". This prompted the question of what the correct application of Uittien's name might be. The type of *C. hoppiifolius* is conserved at Utrecht (U). The plant has broad leaves and very large spikelets with up to 50 floral scales. It is a striking plant and not to be confused with *C. lacustris* or *C. conservator-davidii*, or with any neotropical *Cyperus*. Later, examining some specimens borrowed from Kew, I realized that the type of *C. altsonii* was the same distinctive species, with broad leaves and large spikelets (Fig. 3). The name *C. altsonii* has priority by less than a year. Evidently this is a rare species, known only from the type gatherings of these two names, and five fairly recent collections. A detailed description and synonymy follow.

The unusually wide spikelets are very distinctive among neotropical species. Denton (1978) noted that: "The spikelets and scales of the type collection [of *Cyperus altsonii*] are larger than those of the Luzulae Group, and the scales have many nerves rather than just three." The species appears properly placed in *C.* sect. *Incurvi*. The distinctive broad pseudopetiolate leaves are a conspicuous feature of this striking, apparently rare, species. Only six species of *Cyperus* have such leaves; all the others are in tropical Africa, except *C. pseudopetiolatus* G. C. Tucker of Bahia, Brazil (Tucker 2007).

Cyperus altsonii Kük. in Bull. Misc. Inform. Kew 1932[7]: 322. 1932 [21 Sep 1932]. – Holotype: Guyana, Maicwac River at Kopinang River, 480 m, Apr 1926, *Altson 492* (K; isotypes: BR, NY). – Fig. 3.

= *Cyperus hoppiifolius* Uittien in Recueil Trav. Bot. Néerl. 30[2–4]: 186. 1933 [Jul 1933]. – Holotype: Suriname, Suriname River at Goddo, 26 Jan 1926, *Exped. Wilhelmina-Gebergte 99* (U).

Description — *Herbs* perennial, glaucous. *Rhizome* ± erect, 1–2 cm long. *Culms* trigonous to triquetrous, 22–32 cm tall, 1.3–3.2 mm thick, scabrid on angles. *Leaves* 8–10, flat, 30–55 cm long (longer than culm), 10–14 mm wide, base narrowed to a conduplicate reddish pseudopetiole 7–15 cm long, margin and 3 main veins scabrellate, apex attenuate-acuminate. *Inflorescence bracts* 3 or 4, spreading, flat, 3–9 cm long, 3–12 mm wide, both surfaces and margin scabrellate, base narrowed but not pseudopetiolate; *secondary bracts* absent. *Rays* 5–7, compressed trigonous, 2–7.5 cm long, scabrellate (or smooth) on angles; *secondary rays* absent. *Heads* digitate, 20–60 mm wide. *Spikelets* 3–5(–10), linear-oblong, flattened, 22–34 mm long, 4–6 mm wide; *rachilla* persistent, wingless, c. 0.75 mm wide, c. 0.5 mm thick, successive scale scars 0.8–1.2 mm apart. *Floral scales* 45–65, deciduous, greenish white to light brown, ovate-lanceolate, 3.4–3.7 mm long, 1.4–2 mm wide, ± spinulose-scabrellate, laterally 4- or 5-nerved, in middle 3–5-nerved, narrow apical portion c. 1 mm long, straight to incurved. *Stamen* 1; *filament* 3.5–4.5 mm long, c. 0.2 mm wide; *anther* not observed. *Styles* 1.2–1.8 mm long; *stigmas* 3, 1–2 mm long. *Achenes* dark brown to black, obovoid, trigonous, 1–1.2 mm long, 0.75–0.9 mm wide, faces flat or slightly convex especially apically, surface coarsely papillose, base broadly cuneate, stipitate, apex obtuse, apiculate.

Distribution — Guianas Region of N South America: French Guiana, Guyana, Suriname.

Habitat and ecology — River banks, among moist rocks, trailsides and moist shaded soils of lowland forests, from 60–500 m.

Proposed IUCN status — Although the species occurs in all three countries of the Guiana region, apparently only seven collections exist; only five are recent, the most recent made nearly 20 years ago. The status of Endangered EN: B1a is suggested because the species is "known to exist at no more than five locations".

Specimens examined — French Guiana: Massif des Emerillons, au bord de la Haute Approuague, 18 Sep 1980, *J. J. de Granville 3899* (P, U); Bassin du Haut Inipi, à 7 km WSW du Pic Coudreau, 29 Sep 1980, *J. J. de Granville 4019* (P); Bassin du Haut-Marouini, Roche Koutou, pied du versant sud, 16 Aug 1987, *J. J. de Granville & al. 9352* (P); Bassin du Sinnamary, Camp Eugène, 9 Feb 1995, *J. J. de Granville & G. Cremers 12814* (K, P).
Guyana: Maicwac River at Kopinang River, Apr 1926, *Altson 492* (K, NY).

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Fig. 3. *Cyperus altsonii* – close-up of inflorescence, *J. Florschütz & P. A. Florschütz 1414* (U) from Suriname. – Scale bar = 2 cm.

Suriname: Suriname River at Goddo, 26 Jan 1926, *Exped. Wilhelmina-Gebergte 99* (U [2 sheets]); Van Asch Van Wijcks Mountains, near Ebba Top base, 14 Feb 1951, *J. Florschütz & P. A. Florschütz 1414* (U [Fig. 3]).

Key to species of *Cyperus* sect. *Incurvi* in the New World Tropics

1. Inflorescence capitate-contracted (without elongated primary rays; sometimes 1 short ray present); anther apex smooth **2**
– Inflorescence expanded, with primary and sometimes secondary rays; spikelets solitary or digitate in groups of 2–6; anther apex setose **5**
2. Spikelets dull white; inflorescence bracts lanceolate, 2–4 mm wide . . . . . ***C. dichromeniformis*** Kunth
– Spikelets light to dark reddish or purplish brown; inflorescence bracts linear, 0.1–2 mm wide **3**
3. Spikelets 2–4 mm long; scales obtuse; achenes narrowly obovoid; S Brazil (Minas Gerais, São Paulo, Santa Catarina) . . . . . ***C. inops*** C. B. Clarke
– Spikelets 5–9 mm long; scales acute; achene lanceolate-ellipsoid or ovoid to obovoid; E Brazil (Bahia) to Guianas and Amazonia **4**
4. Inflorescence bracts 1 or 2, strongly reflexed; achenes lanceolate-ellipsoid . . . . . ***C. consors*** C. B. Clarke
– Inflorescence bracts 3–6, ascendent; achenes ovoid to obovoid . . . . . ***C. lacustris***
5. Leaves linear-lanceolate, 10–25 mm wide **6**
– Leaves linear, (0.7–)2–6(–8.5) mm wide **7**
6. Leaves 10–14 mm wide, with pseudopetiolate base; spikelets 4–6 mm wide . . . . . ***C. altsonii***
– Leaves without pseudopetiolate base; spikelets 2–3 mm wide . . . . . ***C. miliifolius***

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7. Longest ray longer than culm; often proliferous . . . . . ***C. simplex***
– Longest ray shorter than the culm; rarely proliferous **8**
8. Scales ovate-lanceolate, ovate or suborbicular; stamens 3 per flower **9**
– Scales ovate; stamen 1 per flower **11**
9. Culms 1.7–4 mm thick; successive scale scars c. 0.6 mm apart; anthers 0.4–0.5 mm long; achenes trigonous but dorsiventrally flattened . . . . . ***C. lundellii*** O'Neill
– Culms 0.5–1.2(–2) mm thick; successive scale scars 0.7– 1.5 mm apart; anthers 0.9–2.2 mm long; achenes trigonous, not compressed **10**
10. Successive scale scars 0.7–0.9 mm apart; anthers c. 0.9 mm long; achenes ellipsoid, 0.4–0.5 mm wide . . . . . ***C. almensis*** D. A. Simpson
– Successive scale scars 1.1–1.5 mm apart; anthers 1.5–2.2 mm long; achenes obovoid, 0.7–0.8 mm wide . . . . . ***C. subcastaneus*** D. A. Simpson
11. Rays compressed quadrate in cross-section **12**
– Rays trigonous in cross-section **13**
12. Culms smooth; anthers 0.6–0.8 mm long; achenes broadly obovoid . . . . . ***C. grandisimplex***
– Culms scabrous on angles just below bracts; anthers c. 1.2 mm long; achenes ellipsoid . . . . . ***C. conservator-davidii***
13. Spikelets 2–3 mm wide; achenes ovoid to obovoid, 0.9–1.2 mm long; widespread: Amazonia and Guianas . . . . . ***C. lacustris***
– Spikelets 2–2.5 mm wide; achenes ovoid-ellipsoid, 1.2–1.6 mm long; widespread: Paraguay, Bolivia, and SC Brazil (Goias) **14**
14. Spikelets oblong-ovate, 4–6 mm long, with 10–12 scales; scales laxly imbricate, deep brown, 3-nerved medially . . . . . ***C. anisitsii*** Kük.
– Spikelets linear, linear-oblong to slightly linear-lanceolate, 12–24 mm long, with 12–30 scales; scales densely imbricate, dull white, 9–11-nerved medially and laterally . . . . . ***C. pearcei*** C. B. Clarke

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