Carex pigra, a New Species of Carex Section Griseae (Cyperaceae) from the Southeastern United States of America

Robert F. C. Nacci
Department of Biological Sciences, Northern Kentucky University, Highland Heights, Kentucky 41099-0400, U.S.A.

ABSTRACT. Carex pigra is described as new from Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. Loosely and few-flowered pistillate spikes, long staminate spike peduncles, perigynia usually 3.9–4.5 mm long, and schemes occupying most of the space within the perigynia are among the characters distinguishing C. pigra from what are probably its closest relatives, C. flauccperma and C. glaucescens. Carex pigra occurs mostly in moist to wet deciduous forests.

Carex sect. Griseae (L. H. Bailey) Kükenthal is a group of sedges endemic to eastern North America that is most diverse in mesic deciduous forests of the southeastern United States. Numerous (usually 40 or more), longitudinal sclerenchyma traces ("serves" of earlier authors, e.g., Fernald, 1950; Gleason & Cronquist, 1991) that are impressed in living and dried perigynia are apomorphies diagnosing the section. Additional characters shared by members of section Griseae, though not unique to them, include glabrous leaf and bract blades, long-sheathing lower bracts, usually unisexual spikes with only the terminal one staminate, and glabrous perigynia with entire apices. This section (including Oligochara (Carex) Mackenzie) contains twenty-one species, one of which I describe here as new. This new species is more widespread and frequent than any of the six other species recently described as new in section Griseae, which are rare endemics or rare (Bryson et al., 1987; Kral et al., 1967; Bridges & Overholt, 1989; Nacci, 1989, 1995).

Carex pigra Nacci, sp. nov. TYPE: U.S.A. Mississippi: Loxoeudes County, 1.8 mi. W of Mayhew, ca. 0.3 mi. E of Otikilleha County border, ca. 0.5 mi. W of junction of routes 45 Alternate and Old 122, 15 May 1989, Nacci 2175A & Bryson (holotype, MICHE; isotypes, K, KC, NY, US, herb. Bryson). Figure 1.

A Carex flauccperma spicis feminis angustioribus, perigynis brevieribus et ascendentioribus, perigynis (1.7–1.9–2.0 mm) longioribus quam corollis acheniorum, stipitis acheniorum brevioribus, rotis acheniorum flexum differ; a Carex glaucescens perigynis pueriisibus, laetioribus, longioribus, et (1.9–2.1–2.6–2.8 mm) longioribus quam latioribus dexter, et specimina umbilici pedunculis nuncius terminalis longioribus differ.

Perennial herb, densely caespitose. Rhizomes short, 0.2–6 mm long between shoots or branches of the rhizomes, with internodes 0.2–4.2 mm long, 1.2–2.8 mm thick, covered with cataphylls 2–5 mm long. Shoot bases usually surrounded by cataphylls but not by bases of old leaves, stramineous. Reproductive shoots 10–51 cm tall, erect to spreading, elongating slightly in fruit; calyx 0.6–1.3 mm wide at mid-height, smooth throughout, obtusely trigonous. Cataphylls glabrous, stramineous to whitish, multicostate. Leaves of reproductive shoots 2–5, arising in basal 0.004–0.15 cm of calyx, the longest 0.37–0.85 times as long as calyx; blades 4.8–20 cm long, 3.6–12.3 mm wide, the widest 6.1–12.3 mm wide, glaucous, flat to barely plicate, margins smooth or narrowly scabrous, abaxial surface smooth or sparsely antrorse scabrous on main veins, abaxial surface smooth; leaf sheaths 1.7–4.7 cm long, loose, glabrous, glaucous with bases whitish or stramineous; adaxial face of sheaths with hyaline and glabrous band, hyaline band with apex slightly concave to slightly convex; ligules 3.0–6.5 mm long, linearate with apex obtuse. Vegetative shoots 13–33 cm tall, 0.50–0.82 times as tall as calyx; leaves 4–6, similar to those of calyx except blades 0.3–27 cm long; pseudobulbs 2.1–6.9 cm tall, 3.2–5.2 mm wide, 0.15–0.22 of vegetative shoot height. Inflorescences 8.7–47 cm long, 0.71–0.93 of calyx height, usually with the upper 2–3 spikes overlapping, rarely with all spikes separate; the uppermost lateral spikes 0.3–11.4 cm distant; the lower spikes separate, 4.0–18 cm distant; lowest bract with blade 6.2–11 cm long and 0.31–0.70 times as long as calyx, sheath 0.9–4.7 cm long, apical face of sheath with glabrous and hyaline band occupying full length or a portion of sheath, hyaline band with apex slightly convex and elongated 0.2–2.2 mm above sheath apex, sheath glabrous abaxially, ligule (3.0–10.2 mm long.

bract blade of uppermost lateral spike 1.3–9.1 mm long and slightly shorter than terminal spike to much exceeding terminal spike, sheath 1.4–0.8 mm long and glabrous; uppermost bract scale-like, sheathless, body 3.2–6.7 mm long and awn 0–13.6 mm long. Spikes (3–)4–6, simple, single at nodes, erect; terminal spike 0.6–3.2 cm long, the longest 0.9–3.2 cm long, 1.5–3.3 mm wide, entirely staminate, 0–95-flowered, on erect and smooth peduncle 1.5–37(–62) mm long, usually overlapping uppermost lateral spike and slightly exceeding it or slightly exceeded by it, rarely exceeding uppermost lateral spike and separate from it; lowest spike 0.8–2.3 cm long, 3.3–4.6 mm wide, entirely pistillate, 5–16-flowered, the perigynia spirally and loosely imbricate, the internode between the lowest perigynia 0.6–3.3 mm long, on erect, smooth peduncle 1.8–11 cm long; upper lateral spikes 0.8–3.9 cm long, 4.0–6.1(–6.8) mm wide, entirely pistillate and 9–25%–20(–80)-flowered, the perigynia spirally and loosely imbricate, spike length (in mm/number of flowers ratio (0.97–1.0–1.3X–1.6), on erect and smooth peduncles 0.4–3.4 cm long. Staminate scales (3.7–)3.5–5.3 mm long, 1.0–2.0 mm wide, narrowly elliptic to elliptic, acute to acuminate, awnless, center green and 1-nerved, margins hyaline and whitish or whitish with ferruginous speckles and streaks. Pistillate scales 1.9–3.2(–4.5) mm long, 1.5–2.2 mm wide; body (1.7–)1.9–2.4(–2.6) mm long, 0.40–0.45–0.5X–0.67 times as long as perigynium, broadly ovate or ovate, awnless or with midrib prolonged as sparsely antromously scabrous (0.1–0.9(–1.9) mm long, center green and 1–3–6-nerved, margins entire, hyaline, pale ferruginous to whitish. Anthers 3, 1.6–2.6 mm long. Styles jointed with achene, portion distal to achene withering with age, portion proximal to achene persistent and becoming achene beak; base 0.15–0.20 mm wide. Stigmas 3, 1.0–1.6 mm long, withering with age. Perigynia (3.7–)3.5–4.5(–4.7) mm long, 1.5–2.2 mm wide, (1.9–)2.1–2.6(–2.8) times as long as wide, (1.7–)1.9–2.0 times as long as achene body, ascending, obtusely triangular in cross section, faces slightly convex to flat, nerves shallowly impressed and 42–56, glabrous, glaucous to red-brown, narrowly ovate or lance-ovoid, very gradually tapered from widest point to broad and truncate base, gradually tapered to straight and subacute or acute apex, beakless or with minute beak; beaks 0–0.2(–0.4) mm long, 0–0.45(–0.11) of perigynium length, straight, smooth, entire. Achenes 2.6–3.1 mm long, (1.3–)1.4–1.6 mm wide, loosely enveloped by perigynia, glabrous, obtusely trigonous, faces slightly concave to flat, brown, basally abruptly contracted to beak; stipe 0.1–0.3(–0.5) mm long, usually vertical; body (2.0–)2.1–2.4(–2.5) mm long, with widest point 0.7–1.1 mm from body apex; beak (0.1–)0.2–0.4(–0.5) mm long, bent (0–30–90°) from vertical.

Carex pigra appears to be most closely related to C. flaccosperma Dewey and C. glaucoceda Tuckerman. All of these species have glaucous and relatively wide foliage (widest leaf 0.9–1.0–1.1×13.3–13.5 mm wide), as well as awnless or short-awned pistillate scales (awn 0–0.9(–1.9) mm long). The rest of the species of Carex sect. Greene have foliage that is green (except C. brysonii Nacci, which has glaucous or foliage) and narrower (widest leaf 2.0–6.0(–9.1) mm wide), as well as long-awned pistillate scales (awn 0–3.1–4.3X–13.7 mm long).

Carex pigra differs from C. flaccosperma in having narrower pistillate spikes, shorter perigynia that spread less in the spikes, achene bodies that occupy more of the space within the perigynia, shorter achene stipes, and bent achene beaks. Relative to C. glaucoceda, C. pigra has fewer and longer perigynia with higher length/width ratios that are more loosely overlapping in each spike. In addition, C. pigra has longer staminate spike peduncles than either C. flaccosperma or C. glaucoceda. The key below highlights the distinctive features of C. pigra. Mature, complete, and ample specimens are necessary for identification. Depauperate specimens are difficult to identify. Because ranges of measurements of key characters overlap somewhat among the species, one often must consider all key characters when attempting to identify C. pigra, C. flaccosperma, and C. glaucoceda. Despite this overlap, I have seen no specimens that simultaneously overlap in more than one or two key characters between C. pigra and C. flaccosperma or C. pigra and C. glaucoceda.

Carex pigra usually inhabits moist to wet deciduous forests, forest openings, and forest edges. Occasionally, it grows in seasonally moist to wet prairies, especially in the western part of its range. Its substrates are acidic to slightly alkaline clays and loams. Carex pigra ranges from southeastern Virginia west to eastern and southern Tennessee and south to northern Florida, southern Alabama, and northeastern Mississippi. It occurs in several physiographic provinces, but most of its range lies in the Piedmont and the Coastal Plain. Range-wide, it is an infrequent species. It appears to be most common in central North Carolina. The paratypes cited below are a representative sample of 110 records (about 250 total specimens) I have studied. Flowering plant species that frequently associate with C. pigra include Acer rubrum L., C. flava Dewey,
C. amphíloca var. amphíloca ser. Fernald (1950), Coroïs flora L., and Liquidambar styraciflua L. Nearly throughout its range, Carex pigra is sympatric with C. flaccosperma. Carex pigra tends to grow in slightly drier soils than C. flaccosperma. Nevertheless, plants of the two species occasionally grow sympatrically. In such situations, C. flaccosperma usually grows low on a floodplain, with C. pigra low on a slope adjacent to the floodplain or on the upper portion of the floodplain. I have never detected intermediates or hybrids between C. pigra and C. flaccosperma. Carex pigra is sympatric with C. glaucodes only at the northern and western edges of the range of the former, the bulk of the range of C. pigra being more southeastern than that of C. glaucodes. Rarely, plants of these two species do grow sympatrically. In localities of sympatry, C. pigra tends to grow in moister soils than C. glaucodes. As with C. flaccosperma, I have seen neither intermediates nor hybrids between C. pigra and C. glaucodes.

Botanists have collected C. pigra since 1868 (Mehr s.n. in Montgomery County, Alabama), usually identifying it as C. flaccosperma. The fact that C. pigra is intermediate in perigynium length between C. flaccosperma and C. glaucodes probably accounts for why earlier botanists did not recognize the uniqueness of C. pigra. This intermediacy probably also accounts for earlier confusion between C. flaccosperma and C. glaucodes, which often resulted in lumping of the two species (e.g., Radford et al., 1968; Godfrey & Wooten, 1979; Gleason & Cronquist, 1991). Evidence from morphology, ecology, geography, natural hybridization, and cytology suggests that both C. flaccosperma and C. glaucodes deserve specific status (Naczi, 1991).

Because Carex pigra produces fewer pistillate flowers per spike and more loosely flowered spikes than C. glaucodes, I have named it pigra, meaning "lazy" or "slow."

Key to Carex pigra and Related Species

1a. Perigynia (4.0–4.2–5.0–6.0 mm long, (2.0–2.1–2.7 times as long as achene bodies, usually in ascending; achene spikes 0.2–4.6–0.5–0.6 mm wide; achene spikes (0.5–)1.5–3.5–7.5 times as long as achene bodies, usually bent 0–30° from vertical; C. flaccosperma.

1b. Perigynia 3.2–4.3–4.5 mm long, 1.6–2.0–2.5 times as long as achene bodies, usually in ascending; achene spikes 0.05–0.5–0.5 mm wide; achene spikes bent slightly to recurved, usually bent 30–90° from vertical.

2a. Perigynia 3.2–4.5–4.7 mm long, 1.6–2.0–2.5 times as long as achene bodies, usually in ascending; achene spikes 0.05–0.5–0.5 mm wide; achene spikes bent slightly to recurved, usually bent 30–90° from vertical.

2b. Perigynia 3.2–4.6–4.1 mm long, (1.5–)1.8–2.3–2.5 times as long as achene bodies, longest pistillate spike (14–39–4–65 mm), flowered, densely flowered with spike length (in mm) number of flowers ratio (0.56–0.67–1.1–1.30), longest peduncle of staminate spike 0.3–1.2–3.1 mm long; C. glaucodes.

Paratypes. U.S.A. Alabama: Bibb County, 6 mi. SE of Centreville, 3 May 1988, Bryson 5823 (herb. Bryson); Dallas County, ca. 3 mi. SW of Caroillesville, 25 Apr. 1977, Harper 12 (NY, US); Franklin County, ca. 2 mi. N of Russellville, 17 May 1986, Knol 30180 (SMU, VD); Lawrence County, ca. 10 mi. SW of West, along Boulder Creek, 25 May 1993, Naczi 3149 (U.S.), NW, Michigan, NCU, NY, USA, US, VIB, herb. Bryson); Madison County, K. of Huntsville, Huntsville Mts., 25 May 1986, Bryant 4590 (herb. Bryson); Marion County, ca. 9 mi. SE of Demopolis, 17 May 1989, Naczi 21984 (MICH); Montgomery County, Pintallla Creek, 1 May 1988, Mehr s.n. (AL); Morgan County, 2 mi. N of Falkville, 5 May 1971, Knol 24283 (VIB); St. Clair County, 5 mi. SE of Ashville, 25 Apr. 1972, Knol 40269 (VIB), Tuscumbia County, ca. New Emelle, 20 Apr. 1974, Harper 3107 (BH, GH, MO, NY, US); Florida: Gadsden County, Chattahoochee, Apalachicola River landing, 14 Apr. 1982, Gholson 3035 & Manhart (FLAS); Jackson County, Three Rivers State Park, near Lake Seminole, 30 Apr. 1980, Gholson 3254 (FLAS). Georgia: Baker County, along Flint River, Ichotuchneum Plantation, 4 Apr. 1986, Gholson 11587 & Jackson (FLAS, herb. Bryant), Gwinnett County, 1.7 mi. E of D. Olympic, 19 May 1951, DONN 12427 (CA, NY, TENN, USA); DeKalb County, 1 mi. N of Chattanooga, along Flint River, 14 Apr. 1947, Thurman 3005 & Manhart (CI, GA, GRO, GH, NY, U.S.); Elbert County, near Anthony Shoals of Broad River, 25 Apr. 1981, Manhart 234 & (herb. Bryson); Floyd County, Mount Berry, 27 Apr. 1938, Jones 563 (VIB); Johnson County, N of Whiteville, along Cedar Creek, 16 June 1901, Harper 1337 (GH, MO, NY, US); Mississippi: Benton County, 0.1 mi. W of Benton Union County line, N of US Hwy, 28, 18 May 1990, Bryson 9927 (MICH, herb. Bryson); Claiborne County, ca. 3 mi. N of Houston, along Hotka Creek, 21 Apr. 1973, McDaniell 15005 & Childress (herb. Bryson); Clay County, 3 mi. SW of Montpelier, 5 May 1955, Ray 4245 (USP); Kemper County, ca. 4 mi. S of Scooba, 10 May 1989, Naczi 3148 & Bryson (MICH, Lee County, 5 mi. SW of Topeka, 1 May 1962, Bryson 2229 (TENN, WARM, herb. Bryson); Monroe County, W of Amory, 17 May 1990, Bryson 9697 (Luedtke), Okolona County, near Starkeville, 30 Apr. 1898, Tracy 32 (BH), Ponder County, ca. 10 mi. E of Ponder, 19 May 1990, Naczi 2465 (KKN, MICH, US, herb. Bryson); Winston County, 2.5 mi. N of New Orleans, 3 May 1973, Bryson 146 (herb. Bryson), North Carolina: no locality data other than state, 12 May 1874, Corner s.n. (OM); Allegheny County, Susanville, near Haw River, 27 May 1960, Radford 43046 (NCC); Bertie County, WNW of Woodard, 29 May 1996, Atlee 41230 & Duke (FLAS); Caswell County, 1 mi. N of Fragrance Springs, 30 May 1976, Radford 43257 (NCB); Chowan County, near Mt. Carmel Church-Farrington Road, along Fox Creek, 7 May 1949, Radford 4058 (NCN). Chowan Cound...
Naczi

Carex pigra from the U.S.A.

Literature Cited


Acknowledgements. I thank Anton A. Reinick for much assistance with various aspects of this paper; Charles T. Bryson and Angus K. Glosston, Jr. for help with fieldwork; Charles T. Bryson and Angus K. Glosston, Jr. for sending me some of their collections for study; Susan A. Reinick for drawing the new species; and Charles T. Bryson for reviewing the manuscript. I also thank the curators of ACAD, ALU, AUB, BH, CAN, CITI, CLEMS, CSM, CM, CU, DAO, DOX, DUKE, DUR, D, FARM, FLAS, FSA, FU, GAO, GH, ILL, LLSU, MICI, MIN, MO, MISC, MT, NCU, NEBR, NLE, NY, OC.LA, OK, OLA, OS, PAC, PENN, PH, QFA, SB, SBCS, SCS, SMI, TENN, TEX, TRU, UARK, UNA, UNB, US, USAG, USCH, USF, VDB, VSC, WARM, WVA, WTR. hrb. Bryson (Charles T. Bryson personal herbarium) for loans of specimens or assistance during my visits. National Science Foundation Doctoral Dissertation Improvement Grant BSR-0001260 and Block Grants from the Horace H. Rackham School of Graduate Studies of the University of Michigan provided financial support for fieldwork.