

THE CYPERACEAE OF ILLINOIS. XII. CAREX, PART 1

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ABSTRACT.—This is the initial article in a series on the systematics of the genus *Carex* in Illinois. Treated in this paper are the sections *Divisae*, *Chordorrhizae*, and *Arenariae*. A new variety is named. Keys and descriptions are provided.

This is the first in a series of publications dealing with the genus *Carex* in Illinois. The other eleven genera of Cyperaceae in Illinois have been treated in prior issues of *The American Midland Naturalist* and *The Transactions of the Illinois State Academy of Science*. The illustrations are by Fredda Burton. One or more sections of *Carex* will be the subject of each of the papers. Keys to various groups will be provided when necessary. A key to all taxa of *Carex* in Illinois will follow the systematic account of the taxa.

Species of *Carex* are perennials with grass-like leaves. Their stems are frequently triangular and bear 3-ranked leaves. The leaves are composed of a blade, a sheath, and a ligule.

The flowers are borne in spikes or heads in the axils of bracts (scales). The flowers are unisexual and borne either in different parts of the spikes or in separate spikes on the same culm. Rarely are the plants dioecious.

Neither the staminate nor the pistillate flower has a perianth. The staminate flower merely consists of three stamens in the axil of a scale. The pistillate flower consists of one pistil which is enclosed in a sac (perigynium) in the axil of a scale. The style is either 2- or 3-cleft.

The fruit is an achene enclosed in the perigynium. It may be lenticular, plano-convex, or trigonous.

Carex in Illinois is generally considered to be divided into two subgenera. Subgenus *Vignea* has mostly

uniform and sessile spikes, two styles, and a lenticular or plano-convex achene. Subgenus *Carex* has at least some all-pistillate spikes, usually three styles, and a trigonous achene.

The Illinois species of *Carex* fall into eleven sections of subgenus *Vignea* and twenty-seven sections of subgenus *Carex*.

This paper is concerned with sections *Divisae*, *Chordorrhizae*, and *Arenariae* of subgenus *Vignea*.

In addition to having the usual characters of the subgenus, the taxa of these three sections all possess slender, well-developed rhizomes, have some or all spikes androgynous, and are monoecious.

SYSTEMATIC TREATMENT

§ *Divisae*

Rhizomatous perennials; culms mostly solitary; spikes androgynous, distinct or more often in interrupted or subcontinuous heads, the lowest bracts awned, awn-tipped, or bearing a short blade; styles 2; perigynia coriaceous, usually with a narrow margin, with an entire or serrulate short beak; achenes lenticular or plano-convex.

Key to the Taxa of § *Divisae* in Illinois

1. Rootstock wiry, with profuse fibrous roots; culms to 15 cm tall; leaves stiffly erect, to 12 cm long, with sharply triangular tips; inflorescence head-like, 0.8-1.3 cm long; perigynia 3-7 per spikelet, with wrinkled striations ventrally. . . . 1. *C. stenophylla* var. *enervis*
1. Rootstock stout, with few fibrous roots; culms to 65 cm tall; leaves ascending to spreading, to 35 cm long, flattened throughout; inflorescence spike-like, 2-4 cm long; perigynia 8-12 per spike-

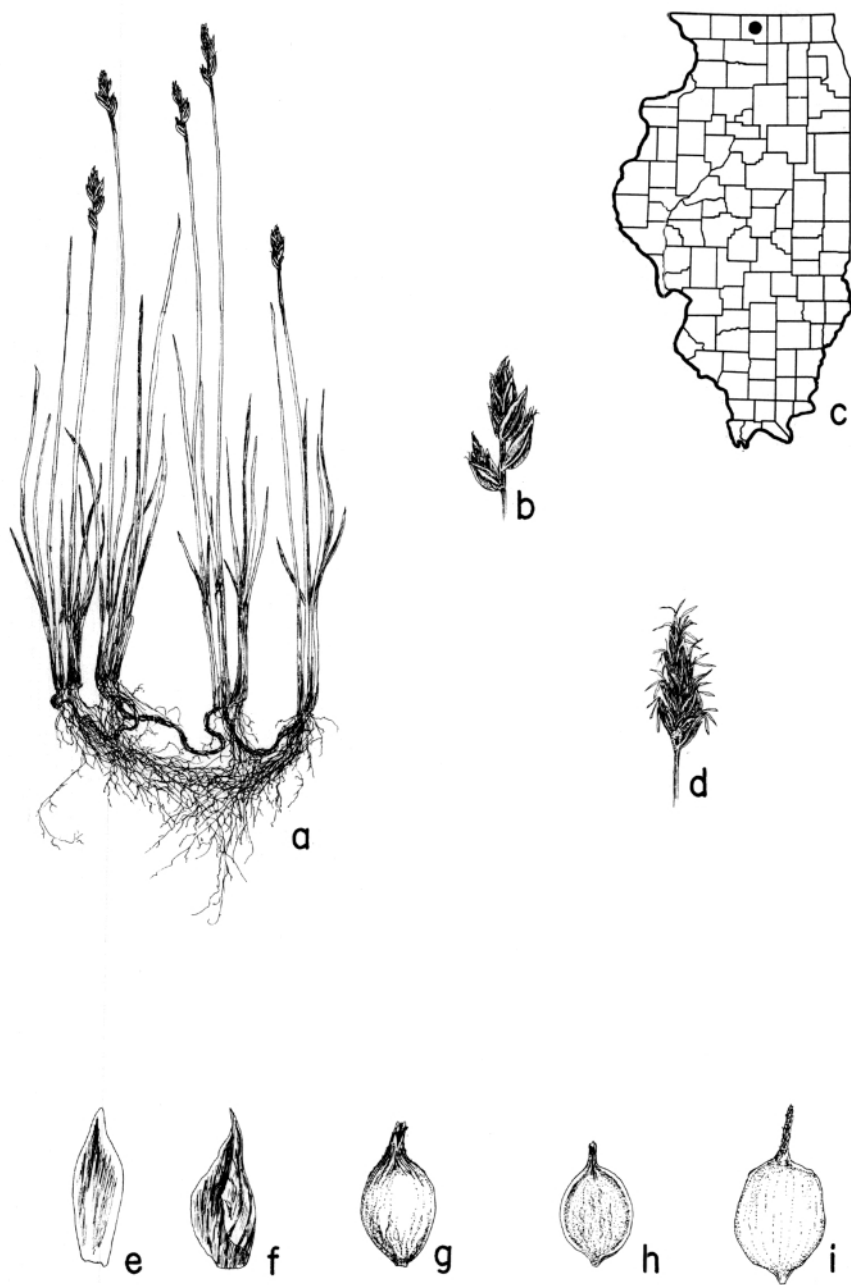


FIGURE 1. *Carex stenophylla* var. *enervis*. a. Habit, x 1/2. b. Inflorescence, x 1-1/2. c. Map. d. Inflorescence, x 1-1/2. e. Staminate scale, x 7-1/2. f. Pistillate scale, x 7-1/2. g. Perigynia, dorsal view, x 7-1/2. h. Perigynia, ventral view, x 7-1/2. i. Achene, x 7-1/2.

let, without ventral nerves and wrinkles. 2. *C. praegracilis*

1. *Carex stenophylla* Wahlenb. var. *enervis* (C.A.Mey.) Kükenth. in Engl. Das Pflanzenreich 4(20):122. 1909. Fig. 1.

Carex enervis C.A.Mey. in Ledeb. Fl. Altaica 4:29. 1833.

Carex eleocharis Bailey, Mem. Torrey Club 1:6. 1889.

Plants caespitose, from fibrous roots with scaly, wire-like rootstocks; culms slender, smooth, canaliculate, (3-) 6-15 cm tall, slightly exceeding the leaves with the base fibrillose; leaves 2-4, (2-) 6-12 cm long, 0.75-1.50 mm wide, arising near the base, canaliculate, ascending, becoming triangular at the tip with the margins subscabrous; sheath apex truncate, the old sheaths persistent; inflorescence androgynous, 8-13 mm long, 3-5 mm wide; spikelets 4-7, scarcely distinguishable; pistillate scales ovate, 2.5-3.5 mm long, 1.5-2.0 mm wide, acuminate, reddish-brown, margins hyaline, completely concealing the perigynia; staminate scales narrow-lanceolate, 3-4 mm long, 1.0-1.5 mm wide, acuminate, reddish-brown in upper half, hyaline in the lower half; bracts encircling the culm with the lowest awn-tipped; perigynia 3-7 per spikelet, 2.5-3.0 mm long, 1.25-1.50 mm wide, plano-convex, ovate-acuminate, the margins elevated ventrally with the upper half serrate, obscurely striate ventrally and dorsally, greenish-brown, substipitate, finely reticulate throughout with the bidentate beak 1 mm long, serrate, hyaline-tipped and obliquely cleft dorsally; achene 1.50-1.75 mm long, 1.25-1.50 mm wide, lenticular, yellow-green, finely punctulate, jointed to a short style; stigmas 2.

Habitat: Gravel-bluff prairie.

Range: Manitoba northwest to Yukon, south to eastern Oregon, Utah, New Mexico, Iowa, and northern Illinois.

Both Eurasian and American material were originally called *Carex stenophylla* Wahlenberg. However, Eurasian material tends to have perigynia 3.0-3.5 mm long and nerved, while American material has perigynia 2.5-3.0 mm long and essentially nerveless. American material was first segregated as *Carex enervis* C.A. Mey., then as *Carex stenophylla* var. *enervis* (C.A. Mey.) Kükenth., and finally as *Carex eleocharis* Bailey.

Carex stenophylla var. *enervis* is best distinguished by its leaf shape. The leaf tip becomes triangular, stiff, and sharp-pointed, accounting for its common name, the Needleleaf Sedge. Its short, erect stature, fibrous roots with wiry rootstock, and nerveless perigynia provide good identifying characters as well.

Although Fernald (1950) remarks that the spikelets appear in a definitely interrupted head, the Illinois material examined had spikelets that were scarcely distinguishable from each other.

Carex stenophylla var. *enervis* is primarily a western and northern sedge and can be found in abundance in the mixed prairie states. Hanson and Churchill (1961) remark that *C. eleocharis* is considered a dominant in the blue grama-grass-needlegrass-sedge communities on the upland plateaus of western North Dakota. Weaver and Albertson (1956) report that this taxon ranks high among the species of the mixed prairie where it occurs in dense patches and provides early grazing.

This taxon is rare in Illinois, the easternmost limit of its range, and may be limited to Winnebago County where Fell (1958) reports the only known location.

Specimens Examined: WINNEBAGO: Camp Grant, S. of Rockford, gravel-bluff prairie, April 29, 1957, *Fell 57-9* (ISM, ILL); Camp Grant, S. of Rockford, gravel-bluff prairie, May 6, 1957, *Fell 57-68* (ISM, ILL); Camp Grant, S. of Rockford, May 18, 1957, *Fell 57-157* (ISM, ILL); Camp Grant, S. of Rockford, gravel-bluff prairie, May 26, 1957, *Fell 57-248* (ISM, ILL).

2. *Carex praegracilis* W. Boott in Coult. Bot. Gaz. 9:87. 1864. Fig. 2.

Plants from stout, horizontal, brown to black, scaly and fibrillose rootstocks; culms slender, sharply angled and scabrous above, less angled and smooth below, (15-) 30-65 cm tall, usually equalling or slightly exceeding the upper leaves, the base scaly; leaves 2-4, 5-35 cm long, flattened, canaliculate, 2-3 mm broad, ascending to spreading with the margins scabrous; sheath apex truncate, the old sheaths persistent; inflorescence androgynous, narrowly cylindric to slightly spreading, 2-4 cm long, 3-5 mm broad; spikelets 5-12, the upper ones crowded, interrupted in the lower half; pistillate scales ovate, 3.5-4.0 mm long, 1.5-2.0 mm broad, acuminate, pale to brown with a darker keel, margins hyaline, concealing the perigynia; staminate scales narrowly lanceolate, inconspicuous, 3-4 mm long, 1-2 mm broad, acuminate, pale, margins hyaline; bracts lanceolate, the lowest enlarged and scabrous-awned, becoming smaller and less awned toward the apex, often encircling the culm with a dark ring at the base; perigynia 8-12 per spikelet, 2.8-3.75 mm long, 1.25-1.50 mm broad, plano-convex, stipitate, ovate-lanceolate, sparsely nerved dorsally, nerveless ventrally, thin-winged and serrulate above, brownish-black with the 1 mm long serru-

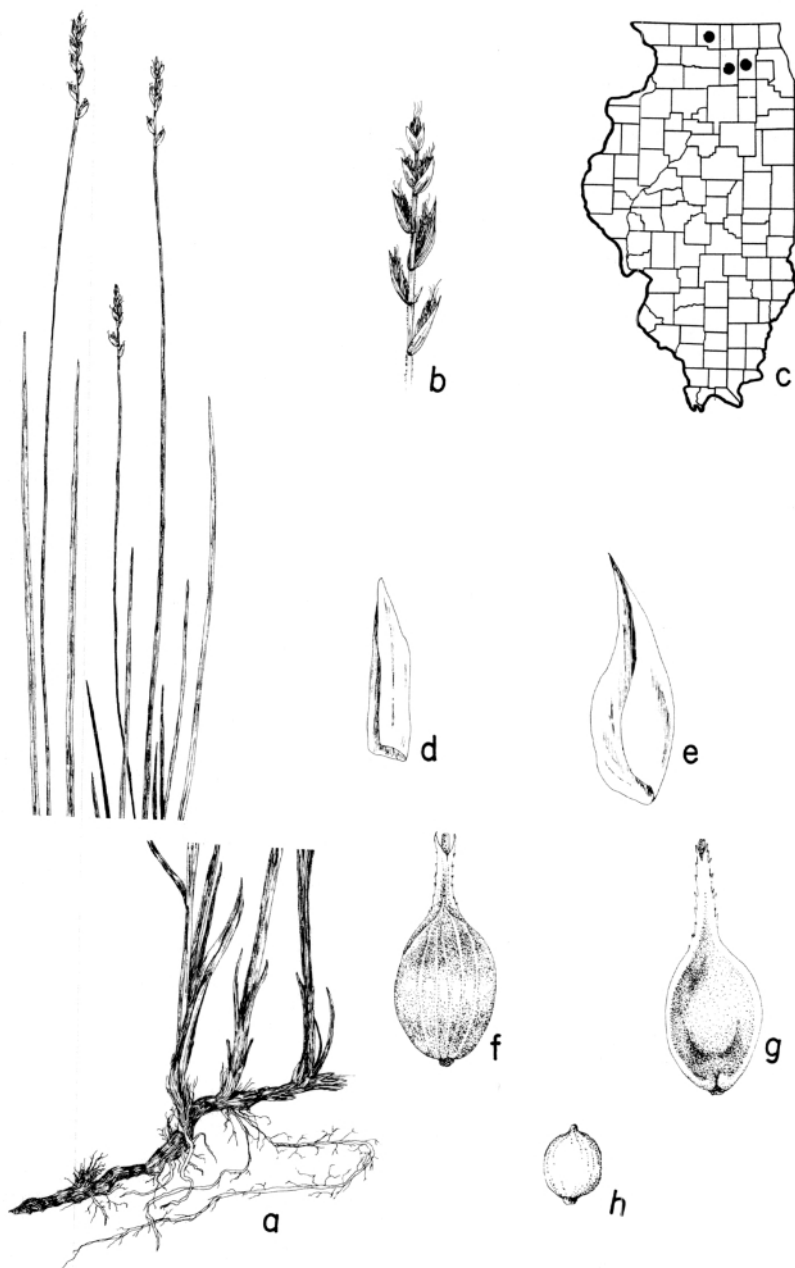


FIGURE 2. *Carex praegracilis*. a. Habit, x 1. b. Inflorescence, x 1. c. Map. d. Staminate scale, x 7-1/2. e. Pistillate scale, x 7-1/2. f. Perigynia, dorsal view, x 7-1/2. g. Perigynia, ventral view, x 7-1/2. h. Achene, x 7-1/2.

late beak cleft dorsally; achene 1.5-2.0 mm long, 0.75-1.25 mm broad, lenticular, dark brown, polished, finely punctulate, jointed to a short style; stigmas 2.

Habitat: Low prairies, roadsides, and dry sterile soil.

Range: Manitoba northwest to Yukon, south to Mexico, Missouri, Iowa, northern Illinois, and northern Michigan.

Carex praegracilis W. Boott is a most variable species and without striking characteristics. The inflorescence may be linear-cylindric with appressed spikelets or with a short-spreading head. The color of the inflorescence varies from pale to dark brown. The species, though usually tall, slender, and sometimes lax, may also be short and stiffly erect. *Spongberg 61/38* and *61/38A* collected from Bell Bowl Prairie show evidence of burning and therefore the short, erect stature of that material may be anomalous.

Carex praegracilis, especially immature material, may be confused with *C. sartwellii* Dew. or *C. foenea* Willd. However, the combination of brownish-black perigynia without ventral nerves and the often tall, triangular and scabrous culms provides identifying characters.

Fernald (1950) equates *Carex marcida* Boott with *C. praegracilis*; however, Boott's illustration of *C. marcida* shows a thicker inflorescence and a markedly winged perigynia. Such characters are not present in Illinois material.

Carex praegracilis, found commonly in the western states and Canada, is reported from only two areas east of the Mississippi River, northern Illinois and northern Michigan. In Illinois this very rare sedge is limited to Winnebago, Kane, and DeKalb counties.

Specimens Examined: DEKALB: Near Kingston, June 8, 1953, *Fell 53371* (ISM); W. edge of Kingston, June 2, 1956, *Fell 56-91* (ILL); W. edge of Kingston, May 13, 1955, *Fell 55-144* (ILL.) KANE: Elgin, April 27, 1919, *Benke 3591* (F) [previously determined as *C. siccata* Dew.]. WINNEBAGO: Camp Grant, June 14, 1955, *Fell & Fuller 17200* (ILL, ISM, SIU); Camp Grant, August 2, 1953, *Fell 53856* (ISM) [originally determined *C. sartwellii* Dew.]; S. of Rockford, May 21, 1952, *Fell 52105* (ISM); Bell Bowl Prairie, May 10, 1961, *Spongberg 61/38, 61/38A, 61/41, 61/41A* (ISM); Perryville Road, June 6, 1955, *Fell 55-440* (ILL); Camp Grant, May 29, 1955, *Fell 55-318* (ILL); Camp Grant, June 5, 1956, *Fell 56-113* (ILL); Perryville Road, May 29, 1956, *Fell 56-73* (ILL); S. of Cherry Valley, June 6, 1951, *Fell & Fell 51-149* (ILL).

§ Chordorrhizeae

Rhizomatous perennials with cord-like roots; culms mostly solitary, with secondary culms axillary and decumbent at the base; spikes androgynous, head-like, the lowest bracts awn-tipped; styles 2; perigynia spongy, without wings, distinctly nerved, short-beaked; achenes plano-convex.

Only the following species occurs in Illinois.

3. *Carex chordorrhiza* Ehrh. in L. f. Suppl. Pl. Syst. Veg. 414. 1781. Fig. 3.

Culms slender, subscabrous, canaliculate, 10-35 cm tall, exceeding the leaves, base reclining with the nodes bearing fertile and sterile culms; leaves 1-4, 2-20 cm long, 1-2 mm broad, canaliculate, ascending to appressed with scabrous margins becoming smooth near the base; sheath apex concave, the old sheaths persistent; inflorescence androgynous, 1.00-1.75 cm long, 0.5-1.0 cm wide; spikelets 3-5, crowded into a head with staminate flowers conspicuous; pistillate scales ovate, 3-4 mm long, 1.5-2.5 mm wide, acute to acuminate, reddish-brown with hyaline margins; staminate scales narrowly lanceolate, 3-4 mm long, 1.0-1.5 mm wide, reddish-brown to hyaline; bracts (at least the lowest) awn-tipped; perigynia 2-6 per spikelet, 2.5-3.5 (-4.0) mm long, 1.5-2.0 mm wide, plano-convex, margins smooth and thickened, strongly nerved on both sides, glossy, yellow-brown, stipitate, coriaceous and spongy throughout with the beak 0.5 mm long, hyaline-tipped and slightly emarginate dorsally; achene 1.75-2.00 mm long, 1.25-1.75 mm wide, plano-convex, yellow-brown, punctulate (except margins), continuous with the short style; stigmas 2.

Habitat: Sphagnous swamps.

Range: Newfoundland and eastern Quebec to Alaska, south to Saskatchewan, northern Iowa, northern Illinois, northern Indiana, central New York, southwestern Vermont, and central Maine.

Carex chordorrhiza Ehrh. is best distinguished by the reclining base that gives rise to secondary culms in the axils of the previous year's leaves. The strongly nerved and otherwise distinctive perigynia provide good identifying characters as well.

Although Fernald (1950) remarks that the perigynia have serrulate beaks, and Mackenzie (1940) illustrates serrations, no Illinois specimens examined exhibited this character.



FIGURE 3. *Carex chordorrhiza*. a. Habit, x 1/4. b. Inflorescence, x 1-1/2. c. Map. d. Staminate scale, x 7-1/2. e. Pistillate scale, x 7-1/2. f. Perigynia, dorsal view, x 7-1/2. g. Perigynia, ventral view, x 7-1/2. h. Achene, x 7-1/2.

The roots, lacking in most Illinois collections, appear wiry and cord-like and can be found at the nodes on some decumbent bases.

This species is rare in Illinois and may be limited to the boggy areas of the northeastern part of the state as indicated by the four Vasey collections. It apparently has not been collected in Illinois since the last half of the nineteenth century.

Specimens Examined: LAKE: Without locality, 1862, *Vasey s.n.* (F 25933); without locality, 1862, *Vasey 29371* (ILL); sphagnum swamps, no date, *Vasey s.n.* (F 211538); Wauconda, May 30, 1905, *Hill s.n.* (ILL). MCHENRY: Ringwood, no date, *Vasey s.n.* (F 25937); Ringwood, no date, *Vasey s.n.* (ILL). NORTHERN ILLINOIS: No specific location, no date, *Vasey 18408* (ILL).

§ Arenariae

Rhizomatous perennials; culms mostly solitary; spikes androgynous, distinct or continuous, elongate, the lowest bract scabrous-awned; styles 2; perigynia nerveless ventrally to distinctly nerved on both faces, with a narrow margin or wing, with a serrulate, sharply bidentate beak; achenes lenticular or plano-convex.

Key to the Species of § Arenariae in Illinois

1. Rootstock black, fibrillose; culms 50-80 cm tall; inflorescence 2.5-6.5 cm long; pistillate scales 2.5-3.6 mm long; perigynia (3-) 10-25 per spikelet, 2.0-4.1 mm long, narrowly winged to the base; beak 0.75 mm long; achene 1.30-1.75 mm long, without striations. . . . 4. *C. sartwellii*
1. Rootstock brown, scaly; culms 6-30 cm tall; inflorescence 1-4 cm long; pistillate scales 3.5-4.75 mm long; perigynia 3-12 per spikelet, 4.50-5.25 mm long, the upper two-thirds narrowly winged; beak 2-3 mm long; achene 1.90-2.25 mm long, finely striate. . . . 5. *C. foenea*
4. *Carex sartwellii* Dew. Am. Jour. Sci. 43:90. 1842. Fig. 4.

Plants from thick, fibrous-scaly, horizontal, black rootstocks; culms subcanaliculate, sharply triangular, scabrous, 5-8 dm tall with the inflorescence well-exceeding the leaves; leaves 3-5, 9-23 cm long, 2.30-4.25 mm broad, arising from the lower half of the culm, ascending to spreading, with the margins scabrous; sheaths often striate ventrally, apex trun-

cate to concave, some old sheaths persisting; inflorescence androgynous, 2.5-6.5 cm long, 0.5-1.2 cm wide; spikelets 10-35, the upper often entirely staminate and crowded, the lower mostly pistillate and often interrupted; pistillate scales ovate, 2.5-3.6 mm long, 1.20-1.75 mm wide, acute to acuminate, reddish-brown, margins hyaline, not concealing the perigynia; staminate scales narrowly lanceolate, 2.5-4.0 mm long, 0.5-1.2 mm wide, acuminate, mostly hyaline throughout; bracts lanceolate, the lowest scabrous-awned; perigynia (3-) 10-25 per spikelet, 2.0-4.1 mm long, 1.2-1.6 mm wide, plano-convex, substipitate, ovate-lanceolate, distinctly nerved dorsally and ventrally, narrowly winged to the base with the upper 1/3 serrate, light brown, with the bidentate beak 0.75 mm long, serrate and hyaline-tipped; achene 1.30-1.75 mm long, 0.9-1.0 mm wide, plano-convex, reddish-brown, punctulate, margins single-nerved, jointed to a short style; stigmas 2.

Habitat: Low wet prairies and meadows, creek and river bottoms, marshes, dunes, peaty swamps, and open cold bogs.

Range: Southwest Quebec to northern British Columbia, south to Colorado, Nebraska, Missouri, Illinois, Indiana, Ohio, and western New York.

Boott (1865), apparently seeing no characters to distinguish *Carex sartwellii* Dew. from European *Carex disticha* Huds., illustrates both as *C. disticha*. However, Boott's figures 2a,b of perigynia and achenes from French material are considerably different from those of *C. sartwellii*. We feel the difference is enough to consider both as distinct species.

Carex disticha Huds. is not accurately reported from Illinois. The Illinois collections reported to be *C. disticha* are actually *C. sartwellii*. These are noted in the list of specimens examined for this species.

Carex sartwellii has an extremely variable inflorescence. The spikelets of the linear to ellipsoid-cylindric head vary from very crowded to much interrupted. The upper half of the inflorescence is often entirely staminate (*Bebb s.n.* [F 32311]) with the spikelets much smaller and more sharply pointed and hyaline than the lower, subglobose, pistillate ones. In other material, pistillate spikelets occur throughout the inflorescence with a few staminate scales occurring in the tips of the spikelets. Further still, some specimens (*Wolf s.n.* [F 211662] and *Fell 533098* [ISM]) have spikelets aggregated into a short, compact head.

Standley and Steyermark have determined their collection 28138 (F) as *C. sartwellii* Dew. var. *stenorrhyncha* Hermann. However, the perigynia length of

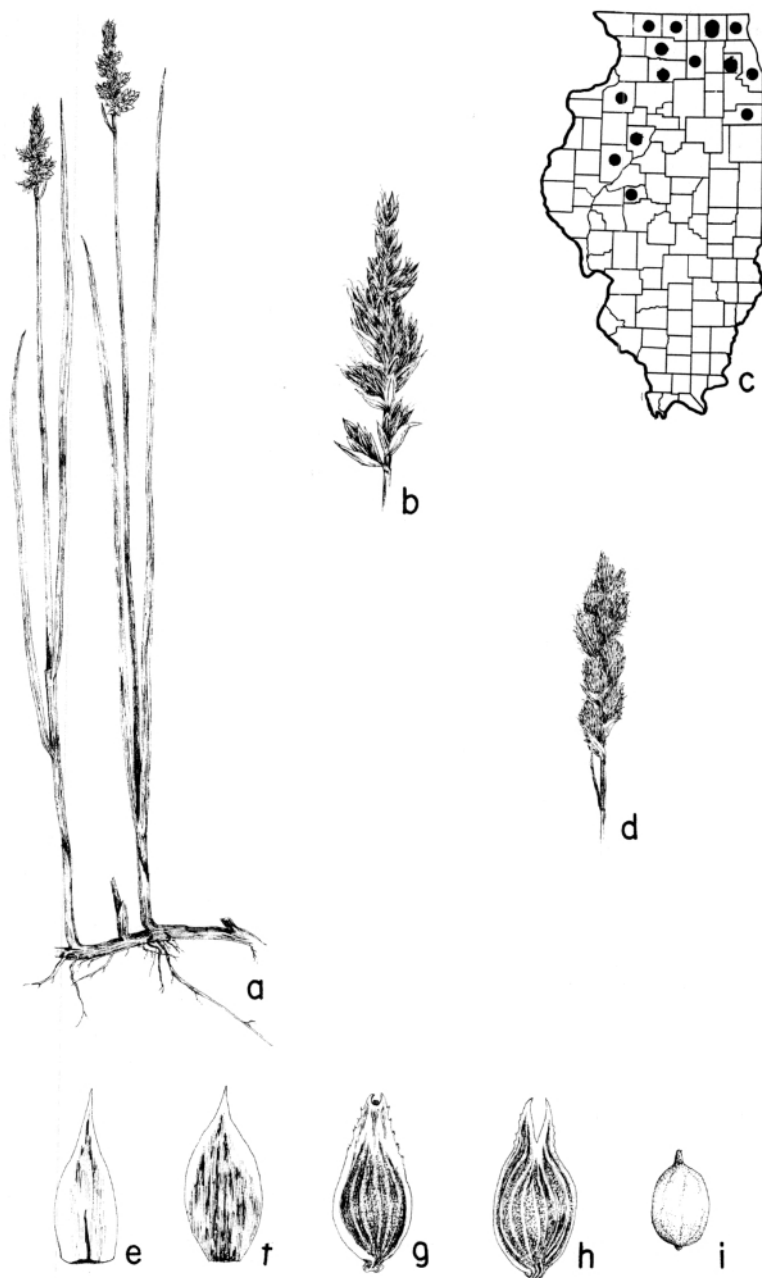


FIGURE 4. *Carex sartwellii*. a. Habit, x 1/4. b. Inflorescence, x 1. c. Map. d. Inflorescence, x 1. e. Staminate scale, x 7-1/2. f. Pistillate scale, x 7-1/2. g. Perigynia, ventral view, x 7-1/2. h. Perigynia, dorsal view, x 7-1/2. i. Achene, x 7-1/2.

this material falls within the variable limits of typical *C. sartwellii*, not 4.0-4.5 mm long as Hermann (1938) describes in the variety *stenorrhynca*. Thus this variety should be excluded from Illinois.

The continuous black rootstock combined with scabrous culms and distinctly nerved perigynia provide good identifying characters.

Although Fernald (1950) remarks that the pistillate scales are obtuse or mucronate, all Illinois material examined and Mackenzie's illustrations show the scales to be acute to acuminate. Also, the green-striate sheath mentioned by Fernald and Mackenzie, although occurring often, is not present in all Illinois material (Dobbs s.n. [ILLS 18511, 10030]).

Carex sartwellii, a common sedge in the northern United States and southern Canada, is found only occasionally in the bottoms, swamps, and bogs of the northern third of the state. However, it does occur as far south as Fulton and Menard counties. The Jones and Fuller (1950) report of its occurrence in Will County is not verified by this study.

Specimens Examined: COOK: Ashburn, May 26, 1906, *Cowles 8172-0* (ILLS); northeast of Bartlett, May 21, 1956, *Bennett s.n.* (ILLS 69232); east side of Calumet Lake, June 2, 1948, *Steyermark 68221* (F, ILL); Chicago, no date, *Monroe s.n.* (F 68997) [originally determined *C. disticha* Huds.]; Chicago, June, 1891, *McDonald s.n.* (F 398474 [originally determined *C. disticha* Huds.]; near Colehour, April 29, 1876, *Hill 122* (ILL); near Chicago, June 5, 1890, *Moffatt 156* (ILL); near Chicago, June 7, 1890, *McDonald s.n.* (ILL). DEKALB: W. of Kirkland, June 7, 1961, *Evers 69180* (ILLS); north of Fairdale, June 1, 1953, *Fell 53276* (ISM, SIU); near Kirkland, June 10, 1953, *Fell 53396* (ISM), *53398* (ISM). DUPAGE: N. of Wheaton, May 22, 1894, *Moffatt 94* (ILL); N. of Wheaton, May 2, 1894, *Moffatt 142* (ILL). FULTON: Canton, no date, *Wolf s.n.* (F 211662), (F 211663); without location, no date, *Brendel s.n.* (ILL) [originally determined *C. disticha* Huds.]. HENRY: E. of Geneseo, May 30, 1937, *Dobbs s.n.* (ILLS 10030). KANKAKEE: Kankakee, May 17, 1870, *Hill s.n.* (F 206465) [originally determined *C. disticha* Huds.]; Kankakee, May 29, 1870, *Hill s.n.* (ILL) [originally determined *C. disticha* Huds.]. LAKE: Waukegan dunes, June 13, 1940, *Standley & Steyermark 28138* (F); Waukegan, June 5, 1916, *Benke 1512* (F) [originally determined *C. siccata* Dew.]. LEE: Near Amboy, June 8, 1959, *Long 939* (ILL). MACON: Decatur, May 22, 1899, *Clokey 31235* (ILL). MENARD:

Athens, 1861, *Hall s.n.* (F 32212), (F 45050). MCHENRY: Ringwood, no date, *Vasey s.n.* (ILL). OGLE: N. of Davis Junction, May 24, 1953, *Fell 53396* (ISM), *53398* (ISM). PEORIA: Peoria, no date, *Brendel s.n.* (ILL). STEPHENSON: Northeast of Ridott, June 28, 1953, *Fell 53202* (ISM), *53-203* (SIU). WINNEBAGO: Near Rockford, May 28, 1952, *Fell 52-126* (ILLS), *52-136* (ISM); Fountaindale, 1870, *Bebb s.n.* (F 32331) [originally determined *C. disticha* Huds.]; Rockton Township, June 10, 1952, *Fell 52306* (ISM); N. of Shirland, June 8, 1952, *Fell 52268* (ISM); Kent Creek, July 1, 1951, *Fell 51251* (ISM); North Central Avenue, Rockford, June 14, 1952, *Fell 52356* (ISM, SIU). WITHOUT PRECISE LOCALITY: No date, *Vasey s.n.* (F 32741, 32742, 32743) [F 32742 apparently cited in Boott as *C. disticha* Huds.]; no date, *Vasey 18425* (ILL); June, 1860, *Hall s.n.* (F 206219) [originally determined *C. disticha* Huds.].

5. *Carex foenea* Willd. Enum. Hort. Berol. 2:957. 1809. Fig. 5.

Carex siccata Dew. Am. Journ. Sci. 10:278. 1826.

Roots from brown, scaly, slender, horizontal rootstock; culms slender, mostly fertile, 15-75 cm tall, sharply angled and scabrous at the apex, becoming rounded, canaliculate and smooth near the base, equalling or exceeding the leaves; leaves 3-5, 6-30 cm long, 2-3 mm broad, flattened, becoming triangular at the tip, ascending to spreading with the margins scabrous; sheath apex truncate to concave; inflorescence androgynous, 1-4 cm long, 0.5-1.0 cm broad; spikelets 4-8, slightly interrupted to widely spaced at the base, becoming indistinguishable at the apex, the lower 1-3 spikelets usually pistillate, the middle spikelets staminate and the terminal gynecandrous and larger; pistillate scales lanceolate, 3.50-4.75 mm long, 1.5-2.0 mm broad, acute to mostly acuminate, light reddish-brown with hyaline margins, shorter than the perigynia; staminate scales acuminate, 3.5-4.2 mm long, 1.0-1.5 mm broad, light brown to hyaline; bracts lanceolate, the lowest encircling the culm with scabrous awns; perigynia 3-12 per spikelet, 4.50-5.25 mm long, 1.5-1.8 mm broad, plano-convex, cuneate, substipitate, ovate-lanceolate, light reddish-brown, coriaceous, distinctly nerved on both faces, rarely nerveless ventrally, the upper 2/3 narrowly winged and serrulate with the beak 2-3 mm long, serrulate, sharply bidentate and obliquely cleft dorsally; achene 1.90-2.25 mm long, 1.25-1.50 mm broad, lenticular, substipitate, yellow-brown, finely striate, punctulate, jointed to the style; stigmas 2.

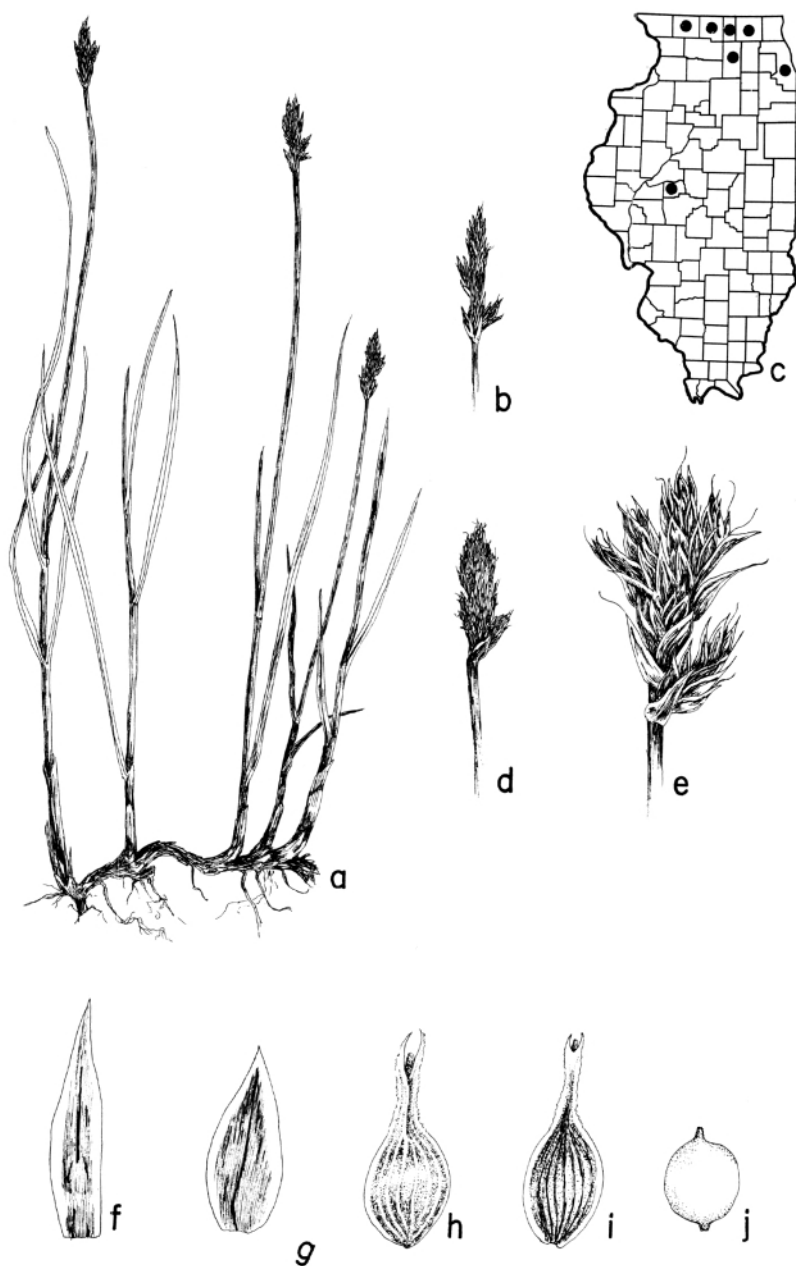


FIGURE 5. *Carex foenea* var. *foenea*. a. Habit, x 1/2. b. Inflorescence, x 1. c. Map. d. Inflorescence, x 1. e. Inflorescence, x 1-1/2. f. Staminate scale, x 7-1/2. g. Pistillate scale, x 7-1/2. h. Perigynia, dorsal view, x 7-1/2. i. Perigynia, ventral view, x 7-1/2. j. Achene, x 7-1/2.

Habitat: Mostly prairie or sandy soil, sometimes sandy woods and roadsides.

Range: Southwest Quebec to Mackenzie, south to Arizona, New Mexico, Illinois, northern Indiana, Ohio, New Jersey, and New York.

Although this species has been called *Carex siccata*, Svenson (1938) has given reasons for accepting *C. foenea* as the proper binomial.

Two varieties may be recognized.

1. Perigynia nerved on both faces, tapering gradually to the beak. 5a. *C. foenea* var. *foenea*
1. Perigynia nerveless on the ventral face, tapering abruptly to the beak. 5b. *C. foenea* var. *enervis*

5a. *Carex foenea* Willd. var. *foenea*

Perigynia nerved on both faces, tapering gradually to the beak.

Carex foenea Willd. var. *foenea* strongly resembles *Carex praegracilis* Dew. because of the more slender inflorescence. However, *C. foenea* is distinguished by its perigynia which are many-nerved on both faces and are larger with a proportionately longer beak, by its rhizomes brown and scaly, and by its middle spikelets usually wholly staminate.

Some variation can be found in this taxon. *Fell* 211 (SIU) contains one culm bearing perigynia with widely divergent teeth while the other characters are typical.

A few collections have been erroneously identified as this taxon. These are *Benke* 3591 (F) from Elgin in Kane County, previously determined as *C. siccata* Dew., which actually is *C. praegracilis* Dew., and *Cowles* 8007-0 (ISM) from South Chicago, Cook County, determined as *C. siccata* Dew., which actually is *C. bebbii* Olney.

Specimens Examined: BOONE: Northeast of Belvidere, May 10, 1954, *Fell* 54214 (ISM). COOK: Lakeview, May 15, 1884, *Ohlendorf* s.n. (F 1358087). DEKALB: Near Fairdale, May 20, 1953, *Fell* 53112 (ISM). MENARD: Without specific locality, 1876, *Hall* s.n. (F 206244); Athens, 1861, *Hall* s.n. (F 32213). MCHENRY: Ringwood, no date, *Vasey* s.n. (F 32745, F 325742). STEPHENSON: Northeast of Ridott, May 28, 1953, *Fell* 53211 (ISM, SIU). WINNEBAGO: E. of Rockford, June 5, 1952, *Fell* 52-228 (ILLS), 52-227 (ISM); S. of Rockford, May 20, 1951, *Fell* 5153 (ISM); S. of Rock Cut, June 23, 1952, *Fell* 52473 (ISM); River Road S. of Cherry Valley, May 31, 1952, *Fell* 52176 (ISM); Sugar Creek Forest Preserve, May 18, 1952, *Fell* 5286 (ISM); Sugar Creek Forest Preserve, May 19, 1951, *Fell* 5140 (ISM). WITHOUT

PRECISE LOCALITY: 1896, *Dewey* s.n. (F 467223).

5b. *Carex foenea* Willd. var. *enervis* Evans & Mohlenbr., var. nov. Fig. 6.

Perigynium enerve ventrali superficie, rostro abrupte decrescenti.

Type: *French* s.n. (SIU), from Illinois.

The type collection was made in 1869 by G. H. French in "sandy plains Ill." Although Irvington, Illinois [Washington County] is written on the label, the collection is probably not from there since Washington County seemingly is a little too far south. French, who lived for a while in Irvington, is known to have written Irvington on the labels of other specimens which were actually collected elsewhere in Illinois.

The lack of nerves on the ventral face of the perigynia and the more abruptly tapering beak differentiate this taxon from *C. foenea* var. *foenea*.

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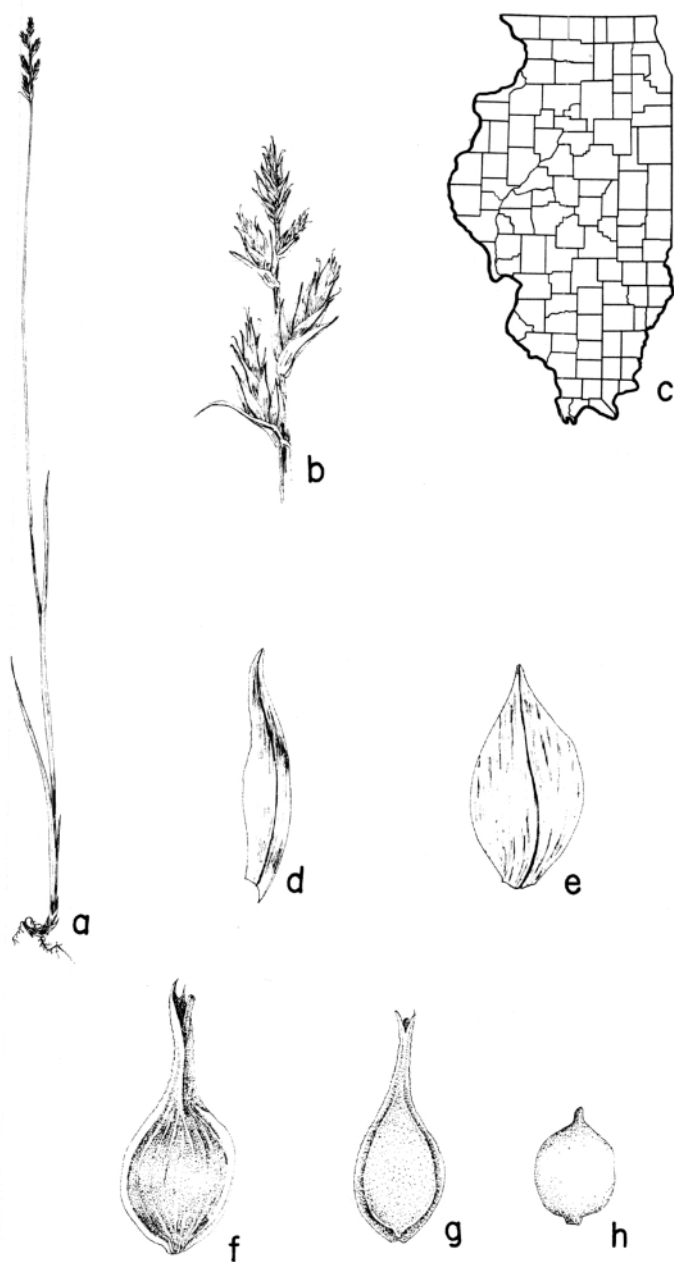


FIGURE 6. *Carex foenea* var. *enervis*. a. Habit, x 1/2. b. Inflorescence, x 2. c. Map. d. Staminate scale, x 7-1/2. e. Pistillate scale, x 7-1/2. f. Perigynia, dorsal view, x 7-1/2. g. Perigynia, ventral view, x 7. h. Achene, x 15.

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