

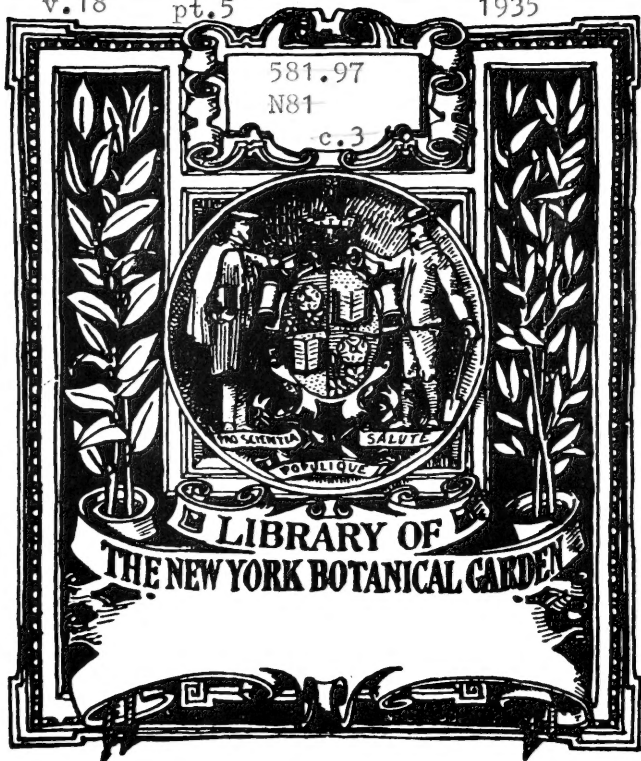
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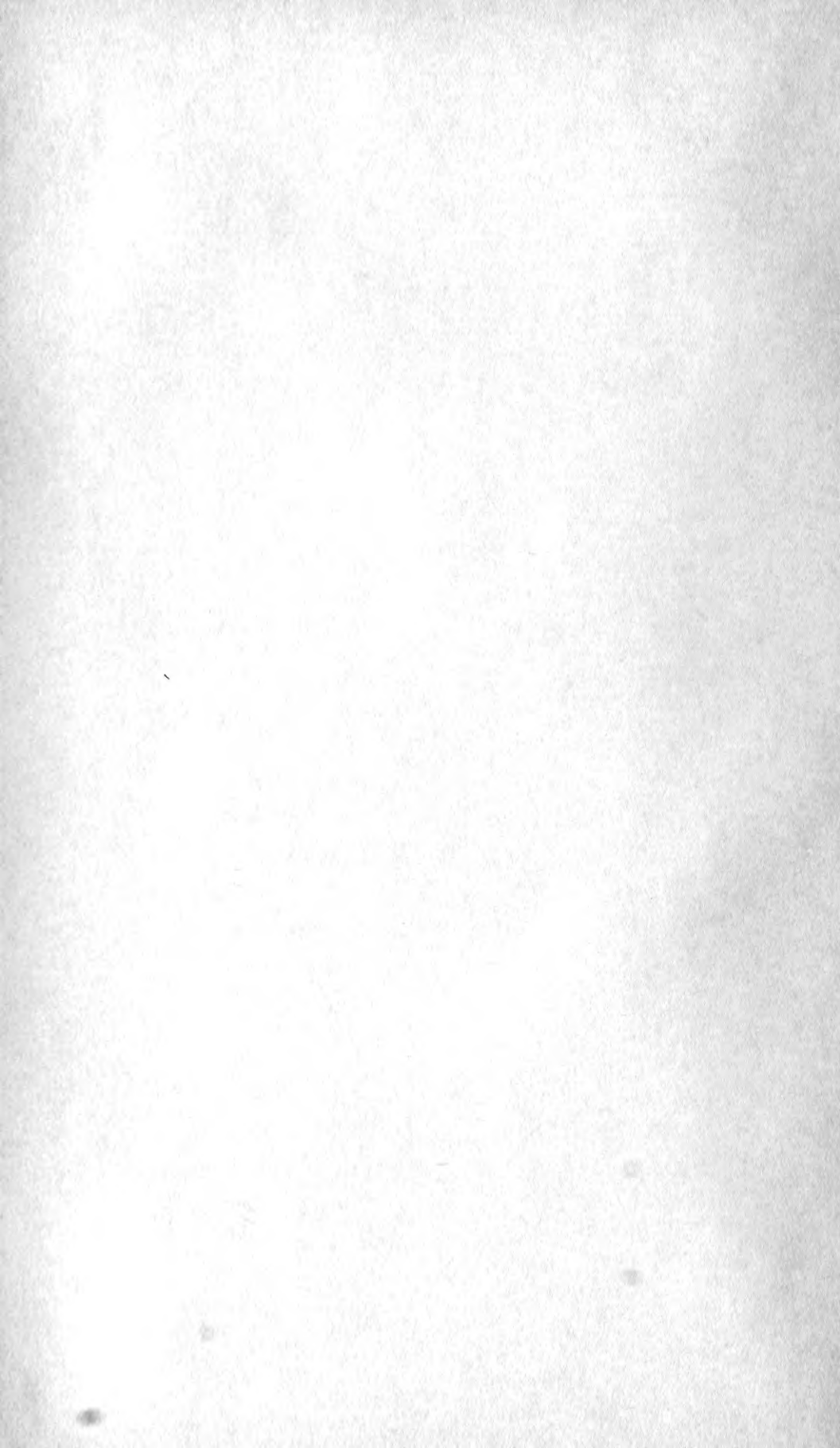
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NORTH AMERICAN FLORA

(POALES)

(CYPERACEAE)

CARICEAE (continuatio)

KENNETH KENT MACKENZIE



PUBLISHED BY

THE NEW YORK BOTANICAL GARDEN

JUNE 1, 1935

v. 18
pt. 5

279. *Carex saltuensis* L. H. Bailey, Mem. Torrey Club 1: 7. 1889.

Carex vaginata var. *allocaulis* Dewey, Am. Jour. Sci. II. 41: 227. 1866. (Type from Bergen, New York.)

"*Carex vaginata* Tauscher" Boott, Ill. Carex 148, as to American plant. 1867.

Carex allocaulis Britton; Britt. & Brown, Ill. Fl. 1: 326. 1896. (Based on *C. vaginata* var. *allocaulis* Dewey.)

Carex sparsiflora subsp. *allocaulis* "Britton" Kükenth. in Engler, Pflanzenreich 4²⁰: 513. 1909. (Based on *C. vaginata* var. *allocaulis* Dewey.)

Clumps small, very slenderly long-stoloniferous, the stolons horizontal, yellowish-brown, not scaly, the culms arising one to several together, slender, erect or ascending, 1.5-8 dm. high, triangular, smooth or nearly so, strongly exceeding the leaves, phyllopodic, brownish-tinged at base, the dried-up leaves of the previous year conspicuous; sterile shoots short; leaves with well-developed blades numerous, bunched at the base of the culms, the blades erect to widely spreading, dark-green or light-green or even glaucous-green, 0.5-4 dm. long, 1.5-5 mm. wide, flat or channeled at base, thickish or flaccid, roughened towards the apex, those of the sterile culms the largest; culm-leaves much reduced, their sheaths long, slightly yellowish-brown-tinged ventrally and soon ruptured, concave at mouth, the ligule longer than wide; terminal spikes staminate, erect, on a smooth peduncle 0.5-8 cm. long, linear, or linear-obclavate, 1-2 cm. long, 2-4 mm. wide, the scales oblong-obovate, obtuse to acute or the upper mucronate, purplish-brown, the margins hyaline, the center 3-nerved, yellowish or greenish; pistillate spikes 2 or 3, widely separate or the upper two approximate, erect or more or less spreading, the lower exerted on long, slender, smooth peduncles, the upper on shorter-exserted peduncles, the spikes linear, 8-20 mm. long, 3-5 mm. wide, loosely 3-20-flowered, with spreading or ascending perigynia in very few rows; bracts with sheaths long (usually 1.5-3 cm.), slightly enlarged upwards, convex at mouth, their blades rudimentary or very short, much shorter than the inflorescence, little if at all purplish-tinged; scales broadly ovate, obtuse or acute, or sometimes mucronate, brownish-purple with very narrow hyaline margins and conspicuous 3-nerved green center, narrower and usually much shorter than the perigynia; perigynia with obovoid body, slightly inflated, suborbicular-triangular in cross-section, 3.5-5 mm. long, 1.5-2 mm. wide, 2-keeled and indistinctly several-nerved when young, distinctly so at maturity, yellowish-green or yellowish-brown, submembranaceous, punctulate, substipitate, round-tapering to the base, tapering at apex into a short-cylindric, thick, excurved beak 1 mm. long, the orifice hyaline, usually purplish-tinged, sometimes slightly ciliate, obliquely cleft, at length strongly bidentate; achenes obovoid, nearly filling the perigynium, triangular with concave sides and blunt angles, 2.5-3 mm. long, 1.5 mm. wide, sessile, abruptly slenderly apiculate and jointed with the straight slender style; stigmas normally three, long, slender, blackish.

TYPE LOCALITY: *Carex saltuensis* may be regarded as based primarily on *Carex vaginata* var. *allocaulis* Dewey, the type locality of which is "Bergen, 20 miles west of Rochester," New York.

DISTRIBUTION: Boggy thickets and woods, in calcareous districts, Labrador and Newfoundland to Yukon, and southward to northern New England, northern New York, upper Michigan, northern Minnesota, and British Columbia. (Specimens examined from Newfoundland, Quebec, Maine, Vermont, northern New York, Ontario, Michigan, Wisconsin, Manitoba, Alberta, British Columbia, Mackenzie, Minnesota, Saskatchewan, Yukon, Keewatin.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 773; ed. 2. f. 983; Rob. & Fern. Man. f. 463; Boott Ill. Carex 4: 148 (in part), pl. 478 (longer beaked perigynia and achenes).

NOTE 1: The European *Carex vaginata* Tausch. (Jour. Russe Bot. 1911: 146. f. 122; Sturm. Deuts. Fl. 61: pl. 15; Ostenf. Fl. Arct. 81. f. 57; Reichenb. Ic. Fl. Germ. 8: pl. 246, f. 609; Anderss. Cyp. Scand. pl. 7, f. 75; Smith, Engl. Bot. Suppl. pl. 2731; ed. 2. pl. 1659, and 2293; Coste, Fl. Fr. f. 3890; Hegi, Ill. Fl. Mittel-Eur. f. 234; Hallier, Deuts. Fl. pl. 449; Engler, Pflanzenreich 4²⁰: 512; Boott, Ill. Carex 148. pl. 478, in greater part) has a shorter, more flattened, and less cylindrical perigynium-beak than its American ally; the bract-sheaths are more strongly enlarged upward, and the culms are stiffer and more compressed. The American plant is also more slenderly stoloniferous, and the staminate scales are less mucronate. For discussions see Fernald (Proc. Am. Acad. 37: 507. 1902) and L. H. Bailey (Mem. Torrey Club 1: 7. 1889).

NOTE 2: Boott (Ill. Carex 4: 148. pl. 478) reports 4 stigmas and 4-angled achenes as sometimes found in this species.

280. *Carex polymorpha* Muhl. Descr. Gram. 239. 1817.

Carex Halseyana Dewey, Am. Jour. Sci. 11: 313. pl. N, f. 43. 1826. (Type from Westfield, Massachusetts.)

"*Carex Halseyi* Dewey" Eaton, Man. ed. 5. 156. 1829. (Change of form of name.)

Loxotrema Halseyi Raf. Good Book 25. 1840. (Based on *Carex Halseyana* Dewey.)

"*Carex striata* Michx." Torr.; Boott, Ill. Carex 21. 1858.

Carex panicea var. *scariosa* Olney, Caric. Bor.-Am. 3. 1871. (Based on *C. polymorpha* Muhl.)

Forming large beds when well-developed, strongly stoloniferous, the stolons very stout, woody, scaly, much branched, ascending or horizontal; culms 3-6 dm. high, stiff, erect, sharply triangular, little roughened on the angles, strongly exceeding leaves, strongly aphyllopodic, fibrillose and strongly purple-tinged at base; sterile shoots more or less elongate; leaves numerous on the sterile culms, about 3 with well-developed blades on the fertile, the blades flat, with slightly revolute margins, green, thickish, 2.5-5 mm. wide, not noticeably attenuate, roughened towards the apex, those on the fertile culms 1-1.5 dm. long and much shorter than the culms, those on the sterile culms from 1-3.5 dm. long; sheaths prolonged upward beyond base of blade and continuous with the long conspicuous ligule; staminate spike solitary (or with an additional sessile short one at its base), erect, narrowly linear-oblong, long-peduncled, 1.5-3 cm. long, 3 mm. wide, the peduncle smooth, the scales obovate, very obtuse, purplish-brown, with yellowish-white center and narrow hyaline margin, the lowest amplexant; pistillate spikes 1 or 2, erect, exsert-peduncled, remote, oblong, 1.5-3.5 cm. long, 7.5-10 mm. wide, often staminate at apex, the perigynia ascending or widely spreading at maturity, 12-25 to a spike, in several rows, closely arranged above, or often more closely below; bracts long-sheathing, the sheaths loose, green-striate ventrally nearly to mouth, the blades leaflet-like, 1.5-7 cm. long, normally shorter than the culms; scales broadly ovate, acutish or obtusish, smooth or nearly so, purplish-brown with conspicuous, 3-nerved, green center, exceeded by and narrower than the perigynia; perigynia 4-5.5 mm. long, 2.5 mm. wide, the body ovoid-orbicular, somewhat inflated, suborbicular-triangular in cross-section, 2-keeled and obsoletely nerved, glabrous, punctulate, densely minutely granulose, submembranaceous, olive-green, round-tapering at base and abruptly contracted into a beak of about half its length (1.75 mm. long), cylindric, slender, purplish-tinged, excurved, the apex strongly oblique, hyaline, entire or nearly so; achenes broadly obovoid, 2.5 mm. long, 2 mm. wide, loosely enveloped, triangular with slightly concave sides and sharp angles, blackish, minutely papillate, sessile, abruptly slenderly apiculate, obscurely jointed with the somewhat upwardly enlarged style; stigmas three, slender, blackish.

TYPE LOCALITY: "Habitat in Pennsylvania."

DISTRIBUTION: Dry open woodlands, acid soils at low elevations, southern Maine to Maryland; rare and local. (Specimens examined from Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York (Long Island), New Jersey, Pennsylvania, Maryland.) The North Carolina record is based on *Carex Walleriana* L. H. Bailey, once confused with this species.

ILLUSTRATIONS: Am. Jour. Sci. 11: pl. N, f. 43 (*C. Halseyana*); Britt. & Brown, Ill. Fl. f. 774; ed. 2. f. 984; Rob. & Fern. Man. f. 462; Boott, Ill. Carex 21. pl. 57.

281. *Carex californica* L. H. Bailey, Mem. Torrey Club 1: 9. 1889.

"*Carex polymorpha* Muhl." W. Boott, in S. Wats. Bot. Calif. 2: 247. 1880.

Carex polymorpha var. *californica* Kükenth. in Engler, Pflanzenreich 4⁹⁰: 515. 1909. (Based on *C. californica* L. H. Bailey.)

Long-stoloniferous, the stolons rather stout, long, horizontal, scaly, the culms erect, 2-7 dm. high, slender, smooth or nearly so, strongly aphyllopodic, strongly purple-tinged at base, much exceeding the leaves; sterile shoots forming tufts; leaves (not bracts) with well-developed blades usually 3 or 4 to a fertile culm, clustered near the base, the blades green, stiffish, flat with revolute margins, more or less glandular-dotted beneath, 2-20 cm. long, 1.5-5 mm. wide, smooth or slightly roughened, those on the sterile shoots up to 5 dm. long; sheaths hispidulous dorsally, thin and quickly ruptured ventrally, prolonged upward beyond base of blade and continuous with the conspicuous ligule; terminal spike staminate (sometimes an additional short spike present at base), linear or linear-clavate, usually strongly peduncled, 1.5-3.5 cm. long, 2.5-4 mm. wide, the peduncle smooth or roughish, the scales oblong-obovate, obtuse, purplish-brown with hyaline margins and lighter center, the lowest amplexant; pistillate spikes 1-4, widely separate, the lower sometimes nearly basal, erect, the upper short-exsert-peduncled, the peduncles of the basal spikes when present exerted several times the length of the spike, the spikes linear-oblong, 1-4 cm. long, 3-5 mm. wide, often staminate

at apex, containing 7-25 appressed perigynia, closely or at base loosely arranged in few rows; bracts leaflet-like, sheathing, the sheaths rather loose, the blades usually exceeded by inflorescence; scales ovate, acute or short-cuspidate, purplish-brown with lighter, 3-nerved, hispidulous center and hyaline margins, narrower and somewhat shorter than the perigynia; perigynia 3.5-4 mm. long, 1.75-2 mm. wide, the body broadly ovoid, suborbicular-triangular in cross-section, somewhat inflated, yellowish-green, two-keeled and obscurely several-nerved, membranaceous, punctulate, densely minutely granulose, sessile, rounded at base, abruptly beaked, the beak 0.75 mm. long, prominently white-hyaline-tipped, the apex shortly oblique, entire or nearly so; achenes obovoid-orbicular, 2 mm. long, nearly as wide, rather loosely enveloped in lower half of perigynium-body, triangular with slightly concave sides and sharp angles, blackish, minutely papillate, substipitate, abruptly slenderly apiculate, obscurely jointed with the somewhat upwardly enlarged style; stigmas three, slender, blackish.

TYPE LOCALITY: "Mendocino, California, Bolander 4741."

DISTRIBUTION: Meadows and prairies, from northwestern California through western Oregon to southwestern Washington and eastward to Idaho; rare and local. (Specimens examined from northwestern California, Oregon, southwestern Washington, Idaho (Elk Prairie Ranger Station).)

ILLUSTRATIONS: *Erythraea* 8: 59. f. 29; Jepson, Fl. Calif. 1: f. 229, f. 33g-i; Jepson, Man. Fl. Pl. Calif. f. 187; Abrams, Ill. Fl. Pacif. St. f. 780.

282. *Carex Chapmanni* Steud. Syn. Cyp. 222. 1855.

Carex fusiformis Chapm.; Dewey, Am. Jour. Sci. II. 6: 244. 1848. (Type from Florida.) Not *C. fusiformis* Nees, 1834.

Carex ignola var. *fusiformis* Dewey, in Wood, Class-Book ed. 1861. 765. 1861. (Based on *C. fusiformis* Chapm.)

Carex debilis var. *fusiformis* Dewey, Am. Jour. Sci. II. 42: 244. 1866. (Based on *C. fusiformis* Chapm.)

Carex styloflexa var. *fusiformis* Wiegand, Rhodora 24: 200. 1922. (Based on *C. fusiformis* Chapm.)

In small clumps, the rootstocks sending forth long, slender, horizontal stolons, the culms 1-3 dm. high, central and phyllopodic, or lateral and aphylopodic, erect, sharply triangular, not winged, firm, minutely granular, not serrulate, exceeding the leaves, brownish-tinged at base; sterile shoots elongate, conspicuous; well-developed culm-leaves (not bracts) 2-6, the blades flat, thin but firm, light-green, 5-15 cm. long, 2.5-5 mm. wide, little roughened, the midrib prominent below and the two midlateral ribs prominent above, the sheaths not enlarged upward, minutely granulose, thin ventrally, the ligule about as long as wide; staminate spike linear, slightly subclavate, short-peduncled, overtopping the uppermost pistillate spikes, 7-20 mm. long, 2.5 mm. wide, the scales oblong-obovate, obtuse or mucronate, white-hyaline with 3-nerved green center, scarcely if at all yellowish-brown-tinged; pistillate spikes 2-4, the upper 1-3 and the staminate spike approximate, the lowermost near the base, the lower long- or short-exsert-peduncled, the upper not exsert-peduncled, the peduncles smooth, the spikes linear-oblong, 7-20 mm. long, 4-5 mm. wide, rather closely flowered, containing 8-18 ascending perigynia in few rows, the rachis smooth; bracts strongly sheathing, leaf-like, the best developed slightly exceeding the culm, the sheaths sparingly retrorsely serrulate on the margin near the mouth, greenish-hyaline and short-prolonged ventrally above base of blade; scales oblong-ovate or oblong-obovate, acute, mucronate or short-cuspidate, white with 3-nerved green center, much narrower and usually markedly shorter than the perigynia; perigynia obovoid-fusiform, not at all inflated, obtusely triangular below, more sharply so above, 4.5 mm. long, 1.75 mm. wide, glabrous, subcoriaceous, yellowish-green or brownish-green, finely many-nerved, stipitate, tapering to a spongy base 1 mm. long, tapering into a conspicuous beak 1.5 mm. long, straight or excurved, the orifice whitish-hyaline, truncate or slightly oblique; achenes obovoid, closely filling body of perigynium, 2.25 mm. long, 1.6 mm. wide, slightly granular, dull-yellowish-brown, triangular with concave sides and blunt angles, sessile, conspicuously short-apiculate, jointed with the short straight style; stigmas three, slender, reddish-brown, 2 mm. long; anthers 3.5-4 mm. long.

TYPE LOCALITY (of *C. fusiformis* Chapm., on which *C. Chapmanni* is based): "Floridas, Dr. Chapman."

DISTRIBUTION: Hammocks, and woodlands, Florida. (Specimens examined from Florida.)

NOTE: A species connecting the PANICEAE and the LAXIFLORAE.

40. *Laxiflorae* Kunth, Enum. Pl. 2: 452, in part. 1837; L. H. Bailey, Proc. Am. Acad. 22: 114. 1886; Mackenzie, in Rydb. Fl. Rocky Mts. 133. 1917; Mackenzie, *Erythra* 8: 60. 1922; CAREYANAE Tuckerm. Enum. Caric. 15, in greater part. 1843; Kükenth. in Engler, Pflanzenreich 4²⁰: 522. 1909. PLANTAGINEAE Carey, in A. Gray, Man. 554. 1848. DIGITALES Carey, in A. Gray, Man. 554. 1848. LEJOCHLAENAE Holm, Am. Jour. Sci. IV. 16: 458, mostly. 1903.

Cespitose; fertile culms usually lateral, sometimes central, the sterile shoots leafy, conspicuous; basal sheaths brownish-tinged or purple-tinged; terminal spike staminate, linear; lateral spikes 2-5, pistillate or androgynous, loosely to closely few-many-flowered, in few to several rows, on erect to drooping, included or exerted peduncles; bracts sheathing, the sheaths green or purplish-tinged, the blades leaf-like or sometimes reduced; scales green with hyaline margins or more or less colored; perigynia erect-ascending to spreading, membranaceous or subcoriaceous, triangular, 2-ribbed and usually nerved, generally strongly so, closely enveloping the achene, glabrous or hispidulous, tapering at the base, short-beaked or beakless, the orifice entire; achenes triangular, jointed with the straight, usually slender style; stigmas three.

A group best developed in the wooded districts of eastern North America, east of the high plains, and represented by numerous species. One species occurs in the northwestern United States and British Columbia; and several are found in eastern Asia. The south European *C. obiensis* Jord. seems better referable to the TRIQUETRAE Carey.

Bract-sheaths and base of culms and staminate scales strongly purple-tinged.

Pistillate spikes 2-6-flowered on long very capillary peduncles; leaf-blades 3-12 mm. wide; bracts short-bladed. 283. *C. austro-caroliniana*.

Pistillate spikes 3-12-flowered on erect peduncles; leaf-blades 7-25 mm. wide.

Perigynia 4-5 mm. long; leaf-blades of fertile culms rudimentary, the sheaths deeply concave at mouth; bracts bladeless. 284. *C. plantaginea*.

Perigynia 5.5-6 mm. long; leaf-blades of fertile culms developed, the sheaths strongly prolonged upward ventrally at mouth beyond base of blade; bracts with well-developed blades. 285. *C. Careyana*.

Bract-sheaths not purple-tinged, the base of the culms but rarely so; staminate scales greenish-white or reddish-brown-tinged, or dull-purplish-brown-tinged.

Perigynia sharply triangular, short-tapering at base, hispidulous or minutely asperulous.

Leaf-blades very smooth (except edges), the larger 12-25 mm. wide, those of the fertile culms much smaller than those of the sterile. 286. *C. platyphylla*.

Leaf-blades hispidulous on the veins, 2.5-12 mm. wide, those of the fertile culms moderately smaller than those of the sterile.

Staminate spike sessile, or nearly so, inconspicuous, it and the approximate upper pistillate spikes subtended by a sub-spathaceous bract.

Perigynia 4-4.5 mm. long, the beak 1 mm. long; leaf-blades 1.5-3.5 dm. long, strongly glaucous; rootstocks short-creeping. 287. *C. magnifolia*.

Perigynia 2.5-3.5 mm. long, essentially or nearly beakless; leaf-blades 1-3 dm. long, light-green or somewhat glaucous-green; culms densely cespitose. 288. *C. abscondita*.

Staminate spike peduncled, conspicuous; pistillate spikes scattered; bracts not at all spathaceous.

Lowest scale of pistillate spikes with a pistillate flower; leaf-blades erect, 2.5-5 mm. wide. 289. *C. digitalis*.

Lowest scale or scales of pistillate spikes empty or with a staminate flower; leaf-blades weak, 4-12 mm. wide.

Perigynia elliptic-obovoid to broadly obovoid, tapering at apex and short-beaked, olive-green, 3-4 mm. long; culm angles blunt, not white, subserrulate only below bracts; edges of bract-sheaths entire; leaf-blades glaucous-green or light-green, spreading, strongly punctate. 290. *C. laxiculmis*.

Perigynia broadly obovoid, rounded or round-tapering at apex and blunt or abruptly very short-beaked, deep-green, 2.75-3.5 mm. long; culm angles sharp, white, subserrulate; edges of bract-sheaths subserrulate; leaf-blades green, erect-ascending, punctate. 291. *C. copulata*.

Perigynia obtusely triangular (at least below), long-stipitate, glabrous.

Bract-sheaths smooth on edges or shallowly serrulate; beak of perigynium straight or nearly so.

Perigynia rather sharply angled above; pistillate spikes 4-15-flowered.

Perigynia 3.5-5 mm. long; pistillate scales acute to short-awned, more or less strongly reddish-tinged; fertile culms mostly lateral, few-leaved; pistillate spikes oblong to linear-oblong.

292. *C. styloflexa*.

Perigynia 5-6 mm. long; pistillate scales broadly ovate, mucronate, chestnut-brown-tinged; fertile culms mostly central, leafy at base; pistillate spikes linear.

293. *C. Hendersonii*.

Perigynia obtusely triangular.

Perigynia alternately arranged, not overlapping; culms strongly purple-tinged at base; sterile shoots forming conspicuous culms.

294. *C. purpurifera*.

Perigynia closely arranged at least above, overlapping.

Culms usually sparingly purplish at base; sterile shoots forming short culms; beak of perigynium minute or very short.

295. *C. ormostachya*.

Culms brownish at base; sterile shoots reduced to tufts of leaves, not forming culms; beak of perigynium conspicuous.

Leaf-blades beneath and culms conspicuously white-striolate; perigynia appressed-ascending, 3-4.25 mm. long, membranaceous, the body obovoid, abruptly beaked; fertile culms lateral (infrequently central), narrowly winged; plant densely cespitose.

296. *C. laxiflora*.

Leaf-blades beneath (except near apex) and culms not white-striolate; perigynia ascending or somewhat spreading, 4-5 mm. long, subcoriaceous, the body elliptic-obovoid, tapering or somewhat abruptly narrowed into the beak; fertile culms lateral and central, not winged; plant loosely cespitose.

297. *C. striatula*.

Bracts-sheaths strongly serrulate on edges.

Perigynia elliptic-obovoid or fusiform, rather sharply angled above, the beak straight or oblique; sterile shoots developing conspicuous culms.

Perigynia nerveless or faintly nerved, membranaceous; culms minutely serrulate on angles.

298. *C. leptonevia*.

Perigynia conspicuously many-nerved, 3.5-4.5 mm. long, subcoriaceous; culms retrorsely serrulate.

299. *C. crebriiflora*.

Perigynia obovoid, very obtusely triangular, the beak abruptly bent.

Leaf-blades 7-30 mm. wide; sterile shoots reduced to tufts of leaves, not forming culms; pistillate scales broadly obovate-orbicular, very truncate; culms conspicuously narrowly wing-margined.

300. *C. albursina*.

Leaf-blades 3.5-15 mm. wide; sterile shoots developing conspicuous culms; pistillate scales mucronate to long-awned.

Culms brownish at base; leaf-sheaths conspicuously whitish dorsally; perigynia obovoid, 3-4 mm. long; staminate scales usually greenish-white, slightly reddish-brown-tinged.

301. *C. blanda*.

Culms purplish-tinged at base; leaf-sheaths greenish-white dorsally; perigynia obovoid or broadly obovoid, 2.5-3.5 mm. long; staminate scales strongly reddish-brown-tinged.

302. *C. gracilescens*.

283. *Carex austro-caroliniana* L. H. Bailey, Bull. Torrey Club
20: 428. 1893.

Carex caroliniana Buckl. Am. Jour. Sci. 45: 173. 1843. (Type from South Carolina.) Not *C. caroliniana* Schw. 1824.

Loosely cespitose, the rootstocks slender, prolonged, yellowish-brown, the culms 2-4.5 dm. high, very slender, triangular, not winged, weakly ascending or reclining, slightly roughened, about the length of or exceeding the leaves, strongly purple-tinged and fibrillose at base, mostly lateral; sterile shoots elongate, erect; stem-leaves on the fertile culms reduced to blade-

less sheaths or bearing rudimentary blades 1 cm. long, the sheaths varying from 1-4 cm. long, deeply concave at mouth, the lower usually strongly tinged with purple, the ligule longer than wide; blades of basal leaves green, not glaucous, stiffish, flat, erect, strongly nerved, the two mid-lateral nerves very prominent, short-acuminate, glabrous, slightly roughened on the margins and towards the apex, when well developed 3-3.5 dm. long, 3-12 mm. wide; those of the sterile shoots similar; staminate spike solitary, usually very long-peduncled, linear-subclavate, 1-2 cm. long, 2-3 mm. wide, the scales ovate or obovate, acuminate to obtuse, purplish-tinged, with narrow hyaline margin and lighter midvein; pistillate spikes about 3, drooping, very widely separated, the lower nearly basal, on very capillary rough peduncles 6-12 cm. long (rarely with an additional nearly sessile erect spike at the base of the staminate one), loosely 2-6-flowered, with ascending perigynia; bracts long-sheathing, short-bladed, purple-tinged, the upper much shorter than the culms; scales broadly ovate, sharply keeled, several-nerved, the lower cuspidate, the upper obtuse, narrower than and about half the length of the perigynia, thin, reddish-tinged, with greenish midvein; perigynia broadly ovoid, not at all inflated, sharply triangular, hispidulous, submembranaceous, olive-green, finely many-nerved, 2.5-3.75 mm. long, 2 mm. wide, substipitate, short-tapering at base, contracted at the apex into a very short beak, erect or nearly so, with entire orifice; achenes orbicular, sharply triangular with deeply concave sides, closely filling the perigynium, 2 mm. long, nearly as wide, light-brown, substipitate, minutely bent, subapiculate, and jointed with the very short slender style; stigmas three.

TYPE LOCALITY (of *C. caroliniana*, on which *C. austro-caroliniana* is based): Table Mountain, Pickens County, South Carolina (*Buckley*).

DISTRIBUTION: Mountain gorges, western North Carolina, eastern Tennessee, and extreme northwestern South Carolina. Very well-marked; one of our rarest and most local species. (Specimens examined from western North Carolina, eastern Tennessee, and northwestern South Carolina.)

ILLUSTRATIONS: *Am. Jour. Sci.* 48: *pl. DD, f. 102*; *Bull. Torrey Club* 21: *pl. 208*.

284. *Carex plantaginea* Lam. *Encyc.* 3: 392. 1791.

Carex latifolia Moench, *Meth.* 324. 1794. (Type locality not given.) Not *C. latifolia* J. F. Gmel. 1791.

Anthista latifolia Raf. *Good Book* 26. 1840. (Based on *Carex latifolia* Moench.)

Deweya plantaginea Raf. *Good Book* 26. 1840. (Based on *Carex plantaginea* Lam.)

Cespitose, the rootstocks very short, the culms lateral, slender, erect or ascending, 2.5-6 dm. high, asperulous, somewhat flattened in drying, not winged, strongly triangular, exceeding the leaves, strongly purple-tinged at base, the lower bladeless sheaths conspicuous; sterile shoots elongate, erect; foliage green, not glaucous except in age, the blades of the basal leaves and those of the sterile culms long persistent, 1.5-3.5 dm. long, 10-25 mm. wide, thin, flat, the midnerve strongly developed on the lower and two of the lateral nerves on the upper surface, acute or short-acuminate, roughened on the margins and hispidulous on the veins towards the apex; fertile-culm leaves reduced to bladeless (or nearly so) sheaths 3-5 cm. long, acuminate, deeply concave at mouth and strongly tinged with purple, the upper third or fourth free but not expanding into a blade, the ligule long; staminate spike oblong-clavate, strongly peduncled, 1-2 cm. long, 3-4 mm. wide, the broadly obovate scales obtusish to short-acuminate, deep-purple, the white filaments conspicuous against them, the midvein largely obsolete; pistillate spikes about 3, widely separated, the lower on slender, erect, asperulous peduncles, the upper not exert-peduncled, linear, 1.5-2.5 cm. long, 4-5 mm. wide, loosely alternately about 4-12-flowered; bracts long-sheathing, bladeless, spathaceous, purple-tinged; scales broadly ovate-triangular, white-hyaline with green midrib, somewhat purplish-tinged, the lower cuspidate, the upper acuminate, shorter and narrower than the perigynia; perigynia oblong-obovoid, sharply triangular, 4-5 mm. long, 1.75 mm. wide, not at all inflated, asperulous, finely but not conspicuously many-nerved, substipitate, short-tapering at base, abruptly contracted at apex into a short beak about 1 mm. long, erect or slightly curved, with entire hyaline orifice; achenes broadly oval, sharply triangular with deeply concave sides, closely filling the perigynium, 2.5 mm. long, 1.5 mm. wide, brownish, substipitate, short-apiculate, jointed with the slender style; stigmas three, slender, 3 mm. long.

TYPE LOCALITY: "Je crois qu'elle est originaire de l'Amerique septentrionale."

DISTRIBUTION: Dry rich woods, Quebec to Saskatchewan, and southward to North Carolina and Kentucky. (Specimens examined from Quebec, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, Pennsylvania, Virginia, West Virginia, North Carolina, Ohio, Ontario, Michigan, Wisconsin, Minnesota, Indiana, Kentucky, Manitoba, Saskatchewan.)

ILLUSTRATIONS: Britt. & Brown, III. Fl. f. 782; ed. 2. f. 985; Rob. & Fern. Man. f. 476; Boott, III. Carex 38. pl. 94; Am. Jour. Sci. 11: pl. N, f. 46.

NOTE: Whether *Carex latifolia* Wahl. (Sv. Vet.-Akad. Nya Handl. 24: 156. 1803) is the same as *Carex latifolia* Moench (Meth. 324. 1794) is doubtful. Wahlenberg's plant has been identified as *Carex plantaginea* Lam., and his description applies. Moench's description reads more like *Carex platyphylla* Carey. Wahlenberg does not cite Moench, although he does cite *Carex latifolia* Gaertner.

285. *Carex Careyana* Torr.; Dewey, Am. Jour. Sci.
30: 60. pl. BB, f. 88. 1836.

Cespitose, the rootstocks very short, the culms lateral, weak, 3-6 dm. high, erect or ascending, asperulous, triangular, somewhat flattened in drying, not winged, strongly exceeding the leaves, strongly purple-tinged at base; lower bladeless sheaths conspicuous; sterile shoots elongate, erect; basal leaves and those of the sterile shoots with blades 7-25 cm. long, 7-12 mm. wide, glabrous, not glaucous except in age, thin, short-acute, rather tapering at the base; strongly nerved, the two mid-lateral nerves very prominent; upper blades much shorter, with purplish-tinged sheaths often 3 cm. long; sheaths white-hyaline ventrally, strongly prolonged upward beyond base of blade and continuous with the long ligule; staminate spike solitary, from nearly sessile to strongly peduncled, oblong-clavate, 1-2 cm. long, 3-4 mm. wide, the scales obovate, obtuse to acutish, finely nerved, purplish with a green midrib; pistillate spikes 2 or 3, very widely separated, 8-20 mm. long, loosely 3-8-flowered, with ascending perigynia, erect, the lower on asperulous slender peduncles often 5 cm. long, the upper sessile or nearly so; bracts long-sheathing, the sheaths purple-tinged, with well-developed, leaf-like blades exceeded by the culms; scales ovate, very sharply keeled, the lower awned or cuspidate and the upper acute, narrower than and about half the length of the perigynia, greenish-white and purplish-tinged with green midnerve; perigynia ovoid, sharply triangular, not at all inflated, 5.5-6 mm. long, 2.5 mm. wide, finely many-nerved, hispidulous, submembranaceous, olive-green, short-stipitate, short-tapering at the base, tapering at apex into a very short erect beak with entire hyaline orifice; achenes broadly oval, sharply triangular with deeply concave sides, closely filling the perigynium, 3.5 mm. long and nearly 2.5 mm. wide, yellowish-brown, substipitate, short-bent-apiculate, jointed with the short slender style; stigmas three, slender, 3 mm. long.

TYPE LOCALITY: "Auburn, New York; in the herbarium of Dr. Torrey."

DISTRIBUTION: Dry rich woods, New York to Michigan, and southward to Virginia and extreme southern Missouri. A rather local and uncommon species. (Specimens examined from New York, Pennsylvania, District of Columbia, Virginia, Ontario, Ohio, Michigan, Indiana, Missouri.)

ILLUSTRATIONS: Torr. Fl. N. Y. pl. (second number) 145; Am. Jour. Sci. 30: pl. BB, f. 88; Britt. & Brown, III. Fl. f. 780; ed. 2. f. 986; Rob. & Fern. Man. f. 477; Kunze, Suppl. Riedgr. pl. 27; Boott, III. Carex 39. pl. 95.

286. *Carex platyphylla* Carey, Am. Jour. Sci. II. 4: 23. 1847.

"*Carex plantaginea* Lam." Michx. Fl. Bor. Am. 2: 173. 1803.

Carex anceps Muhl. var. *latifolia* Boott, III. Carex 1: 39, as synonym. 1858.

Carex digitalis var. *latifolia* A. Gray; Boott, III. Carex 1: 39, as synonym. 1858.

Carex platyphylla var. Dudley, Bull. Cornell Univ. 2: 115. 1886. (Type from Cayuga Lake, New York.)

Densely cespitose, the rootstocks very short, the culms lateral, very numerous, slender, erect or ascending or at length decumbent, 15-30 cm. high, asperulous, triangular, not winged, much exceeding the leaves, yellowish-brown at base, the basal sheaths edged with cinnamon-brown; sterile shoots reduced to tufts of leaves or nearly so; foliage glaucous, the basal blades and those of the sterile culms 1-2 dm. long, 9-25 mm. wide, flat, thin, but long-persistent, strongly nerved, the midnerve strongly developed on the lower and the two mid-lateral nerves on the upper surface, acute, minutely roughened on the margins, but otherwise very glabrous, prominently reticulate-veined; blades of fertile culms 5 cm. long or less and 5 mm. wide or less, their sheaths 2-5 cm. long, conspicuously white-hyaline ventrally, red-dotted towards

the mouth, prolonged upward beyond base of blade and continuous with the long ligule; staminate spike linear-clavate, short- to long-peduncled, 8–15 mm. long, 1.5–2.5 mm. wide, the scales obovate, obtusish or acutish with 3-nerved green center and white-hyaline margins, usually strongly reddish-brown-tinged; pistillate spikes usually 2–4, widely separated, the lower nearly basal, on short, erect, slender, rough peduncles, exerted 1 cm. long or less, or not exerted, linear-oblong, 1–2.5 cm. long, 4–5 mm. wide, loosely and alternately 4–10-flowered; bracts leaflet-like, exceeded by the culms, exceeding their own spikes; long-sheathing, the sheaths entire or undulate on the margins, not purple-tinged; scales ovate or obovate, white-hyaline with green midrib, more or less cinnamon-brown-tinged, short-awned, cuspidate, or acuminate, narrower and shorter than the perigynia; perigynia obovoid, appressed-ascending, early deciduous, not at all inflated, sharply triangular, 2.5–3.5 mm. long, 1.75 mm. wide, finely but not conspicuously many-nerved, minutely asperulous, membranaceous, olive-green, short-stipitate, tapering at base, tapering at apex into a short, erect or slightly excurved beak, with entire hyaline orifice; achenes broadly oval, sharply triangular with deeply concave sides, closely filling the perigynium, 2.5 mm. long, 1.5 mm. wide, short-stipitate, short-apiculate, jointed with the short, slender, deciduous style; stigmas three, slender, 2.5 mm. long.

TYPE LOCALITY: "Hab. in declivibus umbrosis, Nov. Angl. et Nov. Ebor."

DISTRIBUTION: Dry open, wooded slopes, Quebec and Ontario, and southward to North Carolina and Illinois. (Specimens examined from Quebec, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, West Virginia, Ohio, Indiana, North Carolina, Ontario.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 785; ed. 2. f. 987; Rob. & Fern. Man. f. 478; Schkuhr, Riedgr. pl. U. f. 70 (as *C. latifolia*); Engler, Pflanzenreich 4²⁰: 530. f. 84; Boott, Ill. Carex 39. pl. 96; Am. Jour. Sci. IV. 1: pl. 9, f. 1.

287. *Carex magnifolia* Mackenzie; Small, Fl. SE. U. S.
ed 2. 1325. 1913.

Carex digitalis var. *glauca* Chapm. Fl. S. U. S. 541. 1860. (Type from Florida.)

Carex psychocarpa var. *macrophylla* L. H. Bailey, Mem. Torrey Club 1: 48. 1889. (Based on *C. digitalis* var. *glauca* Chapm.)

In large clumps, from short creeping rootstocks, the culms 1–2 dm. high, phyllopodic, mostly central, very slender, sharply triangular, smooth, 2–3 times exceeded by the very long basal leaves, light-brownish-tinged at base, the sterile shoots elongate, conspicuous; leaves usually 4–7 to a culm, clustered near the base, the blades flat, thin, strongly glaucous, 1.5–3.5 dm. long, 5–8 mm. wide, hispidulous on the veins towards the acute apex, the midnerve prominent on the lower surface, and the two mid-lateral nerves on the upper, the sheaths thin ventrally, the ligule long and conspicuous; staminate spike sessile or nearly so, narrowly linear, about length of upper pistillate spike, about 1 cm. long, 1.5 mm. wide, the scales closely appressed, oblong-obovate, obtuse, white-hyaline with greenish 3-nerved center, somewhat reddish-brown-tinged; pistillate spikes usually 3, erect, the lowest widely separate, nearly basal, and slenderly long-peduncled, the upper two and the staminate closely approximate, sessile or short-peduncled, often exceeding the staminate, the spikes 8–20 mm. long, about 5 mm. wide, rather loosely 5–14-flowered, the perigynia ascending in few rows; lowest bracts of the non-basal spikes leaf-like, subspathaceous, several times exceeding the culm, short-sheathing, the sheaths with entire edges, the blade 4–7 mm. wide, the uppermost much smaller; scales very broadly ovate, small, spreading, 2 mm. long, obtuse or acutish, whitish-hyaline, with colored 3-nerved center, narrower than and about one fourth the length of the perigynia; perigynia broadly fusiform, not inflated, sharply triangular, 4–4.5 mm. long, the sides nearly 2 mm. wide, finely many-nerved, hispidulous, membranaceous, light-olive or yellowish-green, broadly stipitate, contracted into the base and into a straight or slightly oblique beak 1 mm. long, the orifice oblique, hyaline, entire; achenes obovoid, triangular with concave sides, filling perigynium, 3 mm. long, nearly 2 mm. wide, substipitate, short-apiculate, jointed with the very short slender style; stigmas three, slender, short, 1.5 mm. long, reddish-brown.

TYPE LOCALITY (of *C. digitalis* var. *glauca*, on which *C. magnifolia* is based): Shaded swamps, middle Florida (*Chapman*, 1842).

DISTRIBUTION: Shaded swamps, middle Florida. (Specimens examined from middle Florida.)

288. *Carex abscondita* Mackenzie, Bull. Torrey Club
37: 244. 1910.

Carex ptychocarpa Steud. Syn. Cyp. 234. 1855. (Type from New Orleans, Louisiana.) Not *C. ptychocarpa* Link, 1799.

Densely cespitose, the rootstocks short, the culms mostly central, low, erect but weak, 0.5–2 dm. high, usually much hidden by and from little exceeding to much shorter than the strongly developed leaves, hispidulous, triangular-compressed, light-brownish-tinged at base, the sterile shoots elongate, conspicuous; foliage light-green or somewhat glaucous, the blades of the lower leaves and those of the sterile culms 1–3 dm. long, 4–9 mm. wide, flat, thin, from erect to recurving-spreading, the midnerve strongly developed on the lower and the two mid-lateral nerves on the upper surface, acute or short-acuminate, roughened on the margins and hispidulous on the veins towards the apex, the upper blades shorter, the sheaths very thin and white-hyaline ventrally, the ligule long and conspicuous; staminate spike largely hidden, narrowly linear, sessile or nearly so, about the length of the upper pistillate one, 4–9 mm. long, 0.5–1.5 mm. wide, the scales obovate, closely appressed, obtusish to acuminate, greenish-white-hyaline, with 3-nerved green center, yellowish-brown-tinged and red-dotted; pistillate spikes 1–4, linear or linear-oblong, often staminate at apex, the lowest scale not empty, 0.5–1.5 cm. long, 2.5–3.5 mm. wide, the lower widely separated, the lowest nearly basal on very slender smooth peduncles 1–8 cm. long, erect, ascending, or drooping, the upper on short-exserted erect peduncles or not exsert-peduncled, contiguous with the staminate spike, alternately and rather loosely 3–10-flowered, the perigynia erect-appressed; upper bracts short-sheathing, that of the second pistillate spike much developed, subspathaceous, 3.5 cm. long and exceeding the culm and uppermost bract, the sheaths green, the edges entire, hispidulous; scales small, ovate-triangular, the margins white-hyaline, the center green, 3-nerved, slightly brownish-yellow-tinged, the lower cuspidate, the upper acute or obtuse, narrower and much shorter than the perigynia; perigynia obovoid, sharply triangular, not at all inflated, hispidulous, membranaceous, light-olive or yellowish-green, 2.5–3.5 mm. long, 1.5 mm. wide, finely many-nerved, substipitate, short-tapering at base, tapering at apex or contracted into a very short erect or slightly bent beak or point, with entire hyaline orifice; achenes broadly obovoid, sharply triangular with deeply concave sides, closely filling the perigynium, 2–2.5 mm. long, 1.5 mm. wide, brownish, reticulate, substipitate, short-apiculate, jointed with the very short slender style; stigmas three, short, 1.5 mm. long, slender, reddish-brown.

TYPE LOCALITY (of *C. ptychocarpa*, on which *C. abscondita* is based): New Orleans, Louisiana (Drummond 424).

DISTRIBUTION: Dry woodlands (usually beech), Florida and Louisiana, and northward mostly on the coastal plain to Massachusetts, and in the interior to Indiana. (Specimens examined from Massachusetts, Connecticut, New York (Long Island), New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Louisiana, Missouri, Indiana.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 784; ed. 2. f. 988; Rob. & Fern. Man. f. 481; Rep. N. J. Mus. 1910; pl. 24, f. 8.

NOTE: Type verified by L. H. Bailey (Mem. Torrey Club 1: 48. 1889).

289. *Carex digitalis* Willd. Sp. Pl. 4: 298. 1805.

"*Carex oligocarpa* Schkuhr" Muhl. Descr. Gram. 242. 1817.

Carex Van-Vleckii, Schw. Ann. Lyc. N. Y. 1: 69. 1824. (Type from Bethlehem, Pennsylvania.)

Carex oligocarpa var. *Van-Vleckii* Dewey, Am. Jour. Sci. 10: 280. pl. F, f. 20. 1826. (Based on *C. Van-Vleckii* Schw.)

"*Carex Vleckii* Schw." Spreng. Syst. 3: 821. 1826. (Error in name.)

Edlirria digitalis Raf. Good Book 26. 1840. (Based on *Carex digitalis* Willd.)

Carex podostachys Steud. Syn. Cyp. 232. 1855. (Type from New Orleans, Louisiana.)

Carex digitalis f. *podostachys* Kükenth. in Engler, Pflanzenreich 4²⁰: 528. 1909. (Based on *C. podostachys* Steud.)

Densely cespitose, the rootstocks very short, the culms central and lateral, triangular, not winged, erect but rather weak, 1–5 dm. high, hispidulous, usually surpassed by the bracts or leaves, light-brownish-tinged at base; sterile shoots elongate, conspicuous; leaves of the fertile and sterile culms about equally developed, the blades erect, flat, thin, green, not glaucous, long-tapering, typically 1–2 dm. long, 2.5–5 mm. wide, smooth below, roughened on

the margins and hispidulous on the veins towards the apex above, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; sheaths 1.5–4 cm. long, tight, hyaline ventrally, the basal at least cinnamon-brown-tinged and red-dotted, the ligule long and conspicuous; staminate spike linear, from short- to long-peduncled, 1–2 cm. long, 2–3 mm. wide, the peduncle smooth, the scales obovate, acute, whitish-hyaline with 3-nerved green center, reddish- or yellowish-brown-tinged; pistillate spikes 2–5, often staminate at apex, the basal scales not empty, linear, 0.5–3 cm. long, 3–4 mm. wide, very widely separated, the lower often nearly basal, varying from borne on long, very slender, often recurving, nearly smooth peduncles sometimes 8 cm. long (the lower), to erect and slightly exsert-peduncled (the upper), loosely and alternately 3–12-flowered, the perigynia ascending; bracts leaflet-like, long-sheathing, the sheaths green, slightly scabrous, the margins entire, the upper bracts exceeding the culms; scales small, ovate, sharply keeled, spreading, acute or the lower cuspidate, half the length of the perigynia, and much narrower, white-hyaline, with green midrib and 3-nerved center, slightly cinnamon-brown-tinged; perigynia obovoid, sharply triangular, not at all inflated, hispidulous, membranaceous, deep-green, finely many-nerved, usually 2.5–3 mm. long, but sometimes even 4 mm. long, 1.5 mm. wide, substipitate, short-tapering at the base, tapering at the essentially beakless apex into a short, erect or slightly bent point with entire hyaline orifice; achenes broadly obovoid, triangular with concave sides, closely filling the perigynium, 2 mm. long, 1.5 mm. wide, substipitate, short-apiculate, jointed with the very short, slender style; stigmas three, slender, 1.5 mm. long, reddish-brown, long-persistent.

TYPE LOCALITY: "Habitat in Pennsylvania."

DISTRIBUTION: Dry woods and thickets, Maine and Southern Ontario to Minnesota, and southward to Florida and Texas. (Specimens examined from Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Ontario, Ohio, Michigan, Kentucky, Indiana, Wisconsin, Missouri, Tennessee, Mississippi, Louisiana, Arkansas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 779; ed. 2. f. 989; Rob. & Fern. Man. f. 480; Boott, Ill. Carex 40. pl. 98; Am. Jour. Sci. 10: pl. F, f. 20.

290. *Carex laxiculmis* Schw. Ann. Lyc. N. Y. 1: 70. 1824.

Carex oligocarpa var. *latifolia* A. Gray (N. Am. Gram. no. 178 ex. syn. 1835); Torr. Ann. Lyc. N. Y. 3: 415. 1836. (Type from Watertown, New York.)

Carex retrocurva Dewey, in Wood, Class-Book 423. 1845. (Type from the eastern United States.)

Carex laxiculmis var. *floridana* L. H. Bailey, Mem. Torrey Club 1: 47. 1889. (Type from Florida.)

Carex laxiculmis f. *serotina* Howe, Ann. Rep. N. Y. State Mus. 48: 169. 1897. (Type from New York.)

Carex retrocurva var. *floridana* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich, 4²⁰: 529. 1909. (Based on *C. laxiculmis* var. *floridana* L. H. Bailey.)

Densely caespitose, the rootstocks very short, the culms lateral, weak and slender, 1.5–6 dm. high, erect, ascending or spreading, strigillose, bluntly triangular, not winged, the angles not white, subserrulate only below; bracts exceeding the leaves, cinnamon-brown-tinged at base; sterile shoots elongate, conspicuous; foliage glaucous-green or light-green, strongly punctate, the basal blades and those of the sterile culms 1–3 dm. long, 4–12 mm. wide, flat, thin, weak, spreading, the mid-nerve strongly developed on the lower and the two mid-lateral nerves on the upper surface, acute or acuminate, roughened on the margins and hispidulous on the veins towards the apex; fertile-culm blades much shorter with long sheaths (1.5–4 cm.) more or less cinnamon-brown-tinged and red-dotted ventrally, convex at mouth, the ligule 1½–2½ times as long as wide; staminate spike linear, long-peduncled, 8–20 mm. long, 2–3 mm. wide, the peduncle smooth, the scales obovate-obtusish to short-acuminate, whitish-hyaline with green or light-colored midrib, more or less strongly reddish-brown or brownish-tinged and red-dotted; pistillate spikes usually 2–4, 5–20 mm. long, 4–5 mm. wide, very widely separated, often staminate at summit, the lower one to several scales empty, the lowest spike nearly basal, on very long, capillary, smooth, drooping peduncles 2–10 cm. long, the uppermost erect on shorter peduncles, alternately and rather loosely 5–10-flowered, the perigynia ascending; bracts leaflet-like, exceeded by the culms, the blade longer than the spike, long-sheathing, the sheath-edges entire; scales ovate-triangular, sharply keeled, spread-

ing, white-hyaline with 3-nerved green center, more or less cinnamon-brown-tinged and red-dotted, the lower cuspidate, the upper acute, much narrower and shorter than the perigynia; perigynia elliptic-obovoid to broadly-obovoid, sharply triangular, not at all inflated, 3-4 mm. long, 1.75-2.25 mm. wide, membranaceous, olive-green, hispidulous, finely but not conspicuously many-nerved, substipitate, short-tapering at base, and tapering at apex into a short, erect or slightly bent beak, with entire hyaline orifice; achenes very broadly obovoid, sharply triangular with deeply concave sides, closely filling the perigynium, 2.5 mm. long, 1.5-1.75 mm. wide, yellowish-brown, substipitate, short- (often bent-) apiculate, jointed with the very short, slender style; stigmas three, reddish-brown, 2-2.5 mm. long.

TYPE LOCALITY: "Carol." Schweinitz's own specimens in Herb. Acad. Philadelphia are labeled "Salem," North Carolina.

DISTRIBUTION: Dry woods and thickets, Maine to southern Ontario and Wisconsin, and southward to North Carolina and Missouri. (Specimens examined from Maine, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Ontario, Michigan, Wisconsin, Indiana, Missouri.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 783; ed. 2. f. 990; Rob. & Fern. Man. f. 479; Rep. N. J. Mus. 1910: pl. 24, f. 6; Boott, Ill. Carex 39. pl. 97.

NOTE: See W. DeW. Miller in Rhodora (21: 23. 1919) as to the value of the empty basal scales of the pistillate spikes as a diagnostic character; also Dudley, in Cayuga Flora (Bull. Cornell Univ. 2: 115. 1886).

291. *Carex copulata* (L. H. Bailey) Mackenzie.

Carex digitalis var. *copulata* L. H. Bailey, Mem. Torrey Club 1: 47. 1889. (Type from central Michigan.)

Carex laxiculmis var. *copulata* Fernald, Rhodora 8: 183. 1906. (Based on *C. digitalis* var. *copulata* L. H. Bailey.)

Carex platyphylla var. *longepedunculata* Kükenth. in Engler, Pflanzenreich 4²⁰: 529. 1909. (Type from Ontario.)

Cespitose, the rootstocks short, the culms lateral, very slender, sharply triangular, the angles white, not winged, subserrulate, hispidulous, weakly ascending or reclining, 1.5-6 dm. high, hispidulous, surpassing the leaves, the basal sheaths cinnamon-brown-tinged; sterile shoots elongate, conspicuous; basal leaves and those of the sterile culms about equally developed, the blades green, not glaucous, punctate, typically 1-2 dm. long, 4-8 mm. wide, flat, weak but erect-ascending, acute or acuminate, roughened on the margins and hispidulous on the veins towards the apex, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; fertile-culm blades shorter, with sheaths 1.5-4 cm. long, more or less cinnamon-brown-tinged and red-dotted ventrally, convex at mouth, the ligule 2-4 times as long as wide; staminate spike linear, from short- to long-peduncled, 1-2 cm. long, 2-3 mm. wide, the peduncle nearly smooth, the scales obovate, acutish, white-hyaline with green midrib and more or less chestnut- or reddish-brown-tinged and red-dotted; pistillate spikes 2-4, 5-20 mm. long, 4-5 mm. wide, very widely separated, the lower often nearly basal, often staminate at apex, the lower one to several scales empty, the spikes varying from borne on long, slender, often recurving, smooth peduncles sometimes 7-8 cm. long (the lower), to erect and little exsert-peduncled (the upper), rather loosely 3-8-flowered, the perigynia ascending; bracts leaflet-like, from shorter than to slightly exceeding the culms, the blades exceeding the spikes, long-sheathing, the sheath-edges subserrulate; scales broadly ovate, sharply keeled, spreading, acute or the lower cuspidate, half the length of the perigynia and much narrower, white-hyaline with 3-nerved green center and more or less cinnamon-brown-tinged margins; perigynia broadly obovoid, sharply triangular, not at all inflated, hispidulous, finely many-nerved, membranaceous, deep-green, 2.75-3.5 mm. long, 1.5 mm. wide, substipitate, short-tapering at base, rounded or round-tapering to a blunt or abruptly very short-pointed, straight or slightly bent, beakless or short-beaked apex, the orifice hyaline, entire; achenes orbicular-obovoid, sharply triangular with deeply concave sides, closely filling the perigynium, 2-2.5 mm. long, 2 mm. wide, brownish and often red-dotted, substipitate, short-apiculate, jointed with the very short slender style; stigmas three, slender, brownish, 1.5-2 mm. long.

TYPE LOCALITY (of *C. digitalis* var. *copulata*, on which *C. copulata* is based): Central Michigan.

DISTRIBUTION: Dry woodlands in limestone districts, New Jersey and Pennsylvania to Michigan

and Missouri. (Specimens examined from New Jersey, Pennsylvania, Ohio, Michigan, Indiana, Iowa, Missouri.)

ILLUSTRATION: Bull. Lab. Nat. Hist. Univ. Iowa 4: pl. 5.

NOTE: This species has the appearance of *Carex digitalis* Willd., but the spikes of *Carex laxiculmis* It is widely distributed and is certainly not a hybrid.

292. *Carex styloflexa* Buckl. Am. Jour. Sci. 45: 174. 1843.

Carex acuminata Schw. Ann. Lyc. N. Y. 1: 69. 1824. (Type from Carolina.) Not *C. acuminata* Willd. 1805.

Olotrema acuminata Raf. Good Book 25. 1840. (Based on *Carex acuminata* Schw.)

Carex protracta Steud. Syn. Cyp. 234. 1855. (Type from New Orleans, Louisiana.)

Carex laxiflora var. *styloflexa* Boott, Ill. Car. 1: 37. pl. 90. 1858. (Based on *C. styloflexa* Buckl.)

Carex styloflexa var. *remotiflora* Wiegand, Rhodora 24: 200. 1922. (Type from Chattahoochee, Florida.)

Cespitose, the rootstocks slender, more or less strongly elongate, light-brown, the clumps medium-sized, the culms 2–8 dm. high, mostly lateral and aphyllopodic, or sometimes central and phyllopodic, slender, erect, or decumbent, sharply triangular, not winged, minutely roughened above, exceeding the leaves and usually the bracts, brownish-tinged at base; sterile shoots elongate, conspicuous; well-developed fertile-culm leaves (not bracts) 1 or 2, the blades flat, thin, light-green, 5–15 cm. long, 2.5–3.5 mm. wide, little roughened, the mid-vein prominent on the lower surface and the two mid-lateral veins on the upper; blades of the sterile shoots and the basal leaves 1–3 dm. long, 3–7 mm. wide, rougher; sheaths tight, slightly yellowish-brown-tinged, prolonged upward at mouth beyond base of blade and continuous with the long prominent ligule; staminate spike usually long-peduncled, occasionally nearly sessile, linear, 1–4 cm. long, 2.5 mm. wide, the peduncle up to 8 cm. long, roughish, the scales oblong-obovate, obtuse, white-hyaline, usually strongly yellowish-brown-tinged with green 3-nerved center; pistillate spikes 1–4, usually 2 or 3, widely separated, the lowest and often the second on long, capillary, nodding or weak, slightly roughened peduncles, 5–9 cm. long, the upper erect, not or shortly exsert-peduncled, the spikes oblong to linear-oblong, 0.5–2 cm. long, 4–5 mm. wide, rather loosely 4–15-flowered in few rows, the perigynia ascending or somewhat spreading; lower bracts leaf-like, strongly sheathing, minutely roughened on the margins, the upper shorter and usually exceeded by the culm; scales broadly ovate, short-awned to acute, narrower than and only half the length of the perigynia, white-hyaline with 3-nerved green center, usually more or less strongly reddish-brown-tinged; perigynia narrowly obovoid, not at all inflated, obtusely triangular below, rather sharply so above, 3.5–5 mm. long, 1.5–2 mm. wide, glabrous, finely many-nerved, subcoriaceous, greenish-straw-colored, short-stipitate, long-tapering and spongy at base, tapering at apex into a conspicuous, more or less oblique beak 0.5–1 mm. long, with entire hyaline orifice; achenes obovoid, sharply triangular with concave sides, nearly filling perigynium-body, 2–2.5 mm. long, 1.5 mm. wide, sessile, granular, yellowish-brown, short-apiculate, jointed with the slender, short, bent style; stigmas three, slender, reddish-brown; anthers 4 mm. long.

TYPE LOCALITY: "Hab. mountains, Macon County, North Carolina."

DISTRIBUTION: Dry woodlands, mostly on the coastal plain, Texas to Florida, and northward to Connecticut. (Specimens examined from Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Mississippi, Louisiana, Texas.)

ILLUSTRATIONS: Boott, Ill. Carex 37. pl. 90; Britt. & Brown, Ill. Fl. f. 778; ed. 2. f. 996; Rob. & Fern. Man. f. 486; Ann. Rep. N. J. Mus. 1910: pl. 24, f. 7; Am. Jour. Sci. 48: pl. DD, f. 101.

293. *Carex Hendersonii* L. H. Bailey, Proc. Am. Acad. 22: 115. 1886.

"*Carex laxiflora* var. *plantaginea* Boott" Olney; A. Gray, Proc. Am. Acad. 8: 407. 1872.

Loosely cespitose, the rootstocks slender, usually short, the clumps medium-sized, the culms 4–9 dm. high, leafy throughout, erect or decumbent, stoutish, mostly central and phyllopodic, sharply triangular, scarcely winged, exceeding the leaves, roughened on the angles, brownish at base; sterile shoots elongate, conspicuous; leaves (not bracts) with well-developed blades 3–5 to a fertile culm, mostly towards the base, the blades 5–25 cm. long, 3–10 mm.

wide, light-green, flat, thin, the midvein prominent on the upper surface and the two mid-lateral veins on the lower, roughened towards the apex; blades of the sterile culms more numerous, 2-5 dm. long, 4-15 mm. wide; sheaths enlarged upward, yellowish-brown-tinged at mouth, prolonged upward beyond base of blade and continuous with the ligule; staminate spike more or less peduncled, linear, 1.5-3 cm. long, 2-3 mm. wide, the scales oblong-obovate, acute to obtuse, whitish-hyaline with green or straw-colored 3-nerved center, usually more or less strongly brownish-red-tinged; pistillate spikes 2-4, erect, the upper two contiguous and little or not at all exsert-peduncled, the lower one or two widely separate, erect on slender, slightly roughened, elongate peduncles, all linear, 1-4 cm. long, 4-6 mm. wide, containing 5-12 alternate ascending perigynia, in few rows; lower bracts leaf-like with long, nearly smooth sheaths, the upper much reduced and from shorter than to exceeding the inflorescence; scales broadly obovate, mucronate, white-hyaline with 3-nerved green center, usually chestnut-brown-tinged, as wide as but much shorter than the perigynia; perigynia narrowly obovoid, not at all inflated, obtusely triangular below, more sharply so above, 5-6 mm. long, 2 mm. wide, many-nerved, the keels prominent, light-green or greenish-straw-colored, submembranaceous, glabrous, punctulate, substipitate, long-tapering and spongy at base, tapering at apex into a straight beak nearly 1 mm. long, obliquely cut, minutely bidentate, hyaline-tipped; achenes obovoid, triangular with concave sides, filling the perigynium, 3 mm. long, 2 mm. wide, substipitate, brownish, more or less granular, short-apiculate, and jointed with the straight slender style; stigmas three, slender, reddish-brown; anthers 4 mm. long.

TYPE LOCALITY: Bogs at Portland, Oregon (*L. F. Henderson*).

DISTRIBUTION: Damp woods in the Coast Ranges, from southwestern British Columbia to Sonoma County, California. (Specimens examined from British Columbia (including Vancouver Island) Washington, Oregon, northern California.)

ILLUSTRATIONS: *Erythea* 8: 60. f. 30; *Abrams*, Ill. Fl. Pacif. St. f. 781; *Jepson*, Man. Fl. Pl. Calif. f. 188.

294. *Carex purpurifera* Mackenzie, sp. nov.

Cespitose, the rootstocks very short-prolonged, the clumps medium-sized, the culms largely lateral and aphyllopodic, 2-4 dm. high, not strict, erect, ascending or decumbent, exceeding the leaves, slender, triangular, not at all flattened in drying, the angles irregularly and sharply papillose, very strongly bright-purple-tinged at base; sterile shoots elongate, forming conspicuous culms; leaf-blades of the sterile shoots erect, flat, thin, not semi-evergreen, green or in age yellowish-green, 3-8 mm. wide, the longer 1.5-2.5 dm. long, roughened on the margins and towards the apex on the veins, sharp-pointed, conspicuously whitish-striolate beneath, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; leaves with well-developed blades 3 to several to a fertile culm, the blades similar but smaller, the sheaths long, only slightly enlarged upwards, not strongly serrulate, very thin and whitish-hyaline ventrally, conspicuously prolonged at mouth, the ligule conspicuous, longer than wide; staminate spike long-peduncled, linear, 2-3 cm. long, 3.5 mm. wide, strongly overtopping the pistillate spikes and their bracts, the scales oblong-obovate, obtuse, or slightly mucronate, dull-purplish-brown with several-nerved lighter center and narrow hyaline margins, the peduncle minutely serrulate; pistillate spikes 2 or 3, all widely separate, the upper erect and slightly or not at all exsert-peduncled, the lower strongly exsert-peduncled, the peduncles very slender, weak, terete, slightly roughened, the spikes 2.5-5 cm. long, 3-4 mm. wide, very loosely 4-15-flowered, the perigynia alternately arranged in few rows, strongly separate and not overlapping, erect, the uppermost scales often empty, the rachis granular, sharp-edged, the joints enlarged upwards; bracts strongly sheathing, not purple-tinged nor strongly serrulate-margined, the blades rather short, much exceeded by the culm; scales obovate or oblong-obovate, very thin and membranaceous, more or less purplish-tinged, often retuse, usually whitish-hyaline with 3-nerved green center excurrent as a conspicuous rough awn, as wide below as the perigynia but usually shorter; perigynia oblong-obovoid, not at all inflated, obtusely triangular, 3.75-4.25 mm. long, nearly 2 mm. wide, membranaceous, glabrous, many-nerved, dull-green, in age greenish, stramineous, strongly stipitate, contracted into a spongy base (the stipe 0.5-1 mm. long), tapering into the straight or slightly excurved beak

0.25 mm. long, the orifice oblique; achenes obovoid, closely filling the upper part of perigynium-body, 2.5 mm. long, 1.5 mm. wide, triangular with concave sides and blunt angles, granular, dull-yellowish-brown, subsessile, short-apiculate, jointed with the very short style; stigmas three, slender, reddish-brown.

Rhizomata brevissima; culmi cespitosi 2-4 dm. alti triangulares, basi valde purpurascens; culmi steriles elongati; vaginae bractearum vix serrulatae; spicae stamineae pedunculatae lineares 2-3 cm. longae, squamis oblongo-obovatis viridi-albis vel fuscotinctis; spicae femineae lineares 2.5-5 cm. longae laxissime 4-15-florae; perigynia alterna pauciseriata oblongo-obovoidea obtuse triangularia valde stipitata circ. 4 mm. longa, rostro recto vel paullo excurvato.

Type collected in open woods on hillsides and tops of cliffs, one mile south of Morley station, Campbell County, Tennessee; the region is strongly calcareous. (*John Bright*, May 18, 1923, in the Britton Herbarium.)

DISTRIBUTION: Known only from the type locality, and from Mount Guyot, Cosby, Cocke County, Tennessee.

295. *Carex ormostachya* Wiegand, *Rhodora* 24: 196. 1922.

Carex laxiflora var. *intermedia* Boott, Ill. *Carex* 37. 1858. (As to Quebec specimens only.)
 "Carex laxiflora var. *intermedia* Boott" L. H. Bailey, Proc. Am. Acad. 22: 115, in small part. 1886.
 "Carex laxiflora Lam." L. H. Bailey, Mem. Torrey Club 1: 31, in small part. 1889.
 "Carex laxiflora Lam." Rob. & Fern. Man. 242, in very small part. 1908.

Densely cespitose, the rootstocks very short, the clumps medium-sized, the culms 2-6 dm. high, slender to base, 0.7-1.5 mm. thick, erect, sharply triangular, leafy, not winged, not coarsely cellular and not flattening in drying, minutely granular, crenulate on the angles, mostly central and phyllopodic, exceeding leaves (not bracts), purplish at base, usually sparingly so; sterile shoots forming short-elongate culms; leaf-blades thin, flat, flaccid, light-green, drying yellowish-green, 0.5-2 dm. long, 2-8 mm. wide, the midvein prominent on the lower surface and the two mid-lateral veins on the upper, sharp-pointed, slightly roughened on the veins towards the apex; sheaths tight, not whitish and not septate-nodulose dorsally, the ligule wider than long and not conspicuous; staminate spike linear or linear-clavate, more or less strongly peduncled, 1-2 cm. long, 2-3 mm. wide, the scales oblong-obovate, obtuse or acute, very light reddish-brown or yellowish-brown with 3-nerved green center and hyaline margins; pistillate spikes 3-5, erect, the upper approximate and little exsert-peduncled, the lower widely separate and often strongly exsert-peduncled, linear, 1-4 cm. long, 3-4 mm. wide, 10-20-flowered, in few rows, the perigynia appressed-ascending, arranged closely above, loosely and alternately towards the base, the rachis smooth, not winged, the peduncles slender, not two-edged, minutely serrulate; bract-sheaths tight, slightly or not at all enlarged upward, the margins not serrulate nor crinkled, prolonged upward ventrally at mouth, the upper 1 or 2 bracts exceeding the culm; scales broadly ovate or broadly obovate, mucronate to awned, appressed, thin, hyaline with 3-nerved greenish center, at times somewhat light-reddish-brown-tinged, shorter and narrower above than the perigynia; perigynia obovoid, very obtusely triangular, 2.5-3.5 mm. long, 1.5 mm. wide, membranaceous, smooth, dull-brownish, strongly many-nerved, strongly stipitate, spongy and constricted at base, plump and round-tapering at apex into a minute or very short, straight or slightly bent beak, the orifice hyaline, truncate or somewhat oblique; achenes obovoid, very closely enveloped in the upper part of perigynium-body, triangular with concave sides and blunt angles, 2.25 mm. long, nearly 1.5 mm. wide, yellowish, substipitate, minutely apiculate, jointed with the very short oblique style; stigmas three, reddish-brown, slender, rather short.

TYPE LOCALITY: Littleton Hill, Franconia, New Hampshire (*E. & C. E. Faxon*, 1896).

DISTRIBUTION: Woods and banks, mostly in dry soil, eastern Quebec to Minnesota, and southward to Massachusetts and Pennsylvania. (Specimens examined from Quebec, Maine, New Hampshire, Vermont, Massachusetts, New York, Pennsylvania, Ontario, Michigan, Wisconsin.)

296. *Carex laxiflora* Lam. *Encyc.* 3: 392. 1791.

Carex heterosperma Wahl. Sv. Vet.-Akad. Nya Handl. 24: 151. 1803. (Type from Pennsylvania.)
Carex anceps Muhl.; Willd. Sp. Pl. 4: 278. 1805. (Type from North America.)

- "*Carex plantaginea* Lam." Schkuhr, Riedgr. Nachtr. 63. f. 195 (in part, and excl. f. 70). 1806.
Carex nematoslachya Willd.; Schlecht. Linnaea 10: 264. 1835. (Type from eastern North America.)
Carex "*nematosperma* Willd." Kunth, Enum. Pl. 2: 456. 1837. (Misprint only.)
Deweya anceps Raf. Good Book 26. 1840. (Based on *Carex anceps* Muhl.)
Carex anceps var. *patulifolia* Dewey, in Wood, Class-Book 423. 1845. (Type Schkuhr f. 195 from Pennsylvania.)
Carex anceps var. *angustifolia* Dewey, in Wood, Class-Book 423. 1845. (Type Schkuhr f. 128 from Pennsylvania.)
Carex patulifolia Dewey, Am. Jour. Sci. II. 8: 350. 1849. (Based on *C. anceps* var. *patulifolia* Dewey.)
Carex laxiflora var. *patulifolia* Carey, in A. Gray, Man. ed. 2. 524. 1856. (Based on *C. anceps* var. *patulifolia* Dewey.)
Carex laxiflora var. *plantaginea* Boott, Ill. Carex 37. 1858. (Based on Schkuhr, f. 128, from Pennsylvania.)
Carex laxiflora var. *intermedia* a Boott, Ill. Carex 1: 37. 1858. (Based on Schkuhr, f. 195, from Pennsylvania.)
Carex laxiflora var. *heterosperma* B. S. P. Prel. Cat. N. Y. 63. 1888. (Based on *C. heterosperma* Wahl.)

Densely caespitose, the rootstocks usually very short, the clumps medium-sized, the culms 1.5-4 dm. high, lateral and aphyllopodic, infrequently central, erect or ascending, sharply triangular, leafy throughout, narrowly winged, smooth or nearly so on the angles, conspicuously white-striolate, more or less flattened in drying, usually noticeably exceeding the leaves and exceeding or moderately exceeded by the upper bracts, brownish at base; sterile shoots reduced to tufts of large leaves and not forming long conspicuous culms; leaf-blades of the sterile shoots ascending, flat, thin, flaccid, or in age stiffer, long-persistent, usually 1-2.5 dm. long, 7-20 mm. wide, roughened on the margins and towards the apex on the veins, short-acute, the edges rarely strongly parallel, conspicuously white-striolate beneath, the midvein prominent on the lower surface and the two mid-lateral veins on the upper, the superficial cells usually not prominent; well-developed fertile-culm leaves usually about 2, the blades similar but smaller, 7-15 cm. long, 5-8 mm. wide; sheaths long, enlarged upward, very minutely serrulate, appearing smooth, very thin ventrally, the ligule very long and prominent; staminate spike linear, more or less strongly peduncled, exceeding the uppermost pistillate one, 1-2 cm. long, 2-3 mm. wide, the scales oblong-obovate, obtuse to short-acuminate, white-hyaline with green, three-nerved center, often strongly tinged with yellowish-brown, the peduncle slightly ancipital, nearly smooth; pistillate spikes usually 3 or 4, erect, the lower two distant, the lower at least long-peduncled (the peduncles smooth, ancipital), the upper sessile or nearly so, narrowly linear, 1.5-4.5 cm. long, 2-3 mm. wide, loosely and alternately 5-15-flowered, the perigynia appressed-ascending; bracts strongly sheathing, the lower leaf-like, the upper smaller, the sheaths slightly roughened on the margins, prolonged at mouth beyond base of blade; scales broadly ovate to oblong-obovate, the lower awned or cuspidate, the upper sometimes obtuse, white-hyaline with strong, 3-nerved, green center, narrower than and usually about half the length of the perigynia; perigynia obovoid, not at all inflated, obtusely triangular below, 3-4.25 mm. long, 1.5 mm. wide, membranaceous, light-green, punctulate, glabrous, finely many-nerved, strongly stipitate, narrowed into a spongy base and abruptly narrowed at apex into a prominent but short beak, 0.5 mm. long, straight or slightly curved, with entire white-hyaline orifice; achenes broadly obovoid, closely filling body of perigynium, 1.75 mm. long, 1.5 mm. wide, triangular with concave sides and blunt angles, granular, yellowish-brown, substipitate, short-apiculate, jointed with the very short, often bent, slender, style; stigmas three, slender, reddish-brown, rather short; anthers 2-3.5 mm. long.

TYPE LOCALITY: "Cette espèce bien distincte croit dans le New-York, la Pensylvanie & la Virginie."

DISTRIBUTION: Dry woods, Nova Scotia to Michigan, and southward, mostly in the mountains, to North Carolina and Kentucky. Erroneously recorded from Oregon. (Specimens examined from Quebec, Nova Scotia, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Ontario, Ohio, Michigan, Indiana, Kentucky.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 994; Rob. & Fern. Man. f. 484; Schkuhr, Riedgr. pl. Fff, f. 128; pl. Kkkk, f. 195 (as *C. plantaginea* Lam.); Am. Jour. Sci. 11: pl. N, f. 47.

297. *Carex striatula* Michx. Fl. Bor.-Am. 2: 173. 1803.

Carex anceps var. *striatula* Carey, in A. Gray, Man. 554. 1848. (Technically based on *C. striatula* Michx.)

Carex ignota Dewey, Am. Jour. Sci. II. 8: 348. 1849. (Type from Louisiana.)

- Carex laxiflora* var. *striatula* Carey, in A. Gray, Man. ed. 2. 524. 1856. (Technically based on *C. striatula* Michx.)
 “*Carex laxiflora* Lam.” Boott, Ill. *Carex* 35. pl. 89. 1858.
Carex laxiflora var. *Michauxii* L. H. Bailey, Mem. Torrey Club 1: 32. 1889. (Based on *C. striatula* Michx.)
Carex laxiflora var. *divaricata* L. H. Bailey, Mem. Torrey Club 1: 33. 1889. (Type from District of Columbia.)
Carex laxiflora f. *striatula* Kükenth. in Engler, Pflanzenreich 4^o: 526. 1909. (Based on *C. striatula* Michx.)
 “*Carex laxiflora* var. *patulifolia* Dewey” W. Stone, Rep. N. J. Mus. 1910: 302. 1911.

Rather loosely caespitose, the rootstocks more or less prolonged, the clumps medium-sized, the culms lateral and aphyllopodic, and some central and phyllopodic, 2–6 dm. high, exceeding leaves, erect or ascending, comparatively stout, sharply triangular, not winged, smooth or nearly so, not white-striolate, not flattened in drying, brownish at base; sterile shoots reduced to tufts of large leaves and not forming long conspicuous culms; leaf-blades of the sterile shoots ascending, flat, thickish, stiff, long-persistent, 7–14 mm. wide, the well-developed ones 2.5–3.5 dm. long, roughened on the margins and towards the apex on the veins, acute, the edges usually strongly parallel, the midvein prominent on the lower surface and the two mid-lateral veins on the upper, the superficial cells often very prominent, not white-striolate except near apex; leaves (not bracts) with well-developed blades 2–4 to a fertile culm, the blades similar but smaller, the sheaths long, enlarged upward, very minutely serrulate, appearing smooth, very thin ventrally, the ligule very long and prominent; staminate spike linear, subclavate, usually strongly peduncled, 2–4 cm. long, 2–3.5 mm. wide, the scales oblong-obovate, obtuse or acutish, white-hyaline with 3-nerved green center, more or less yellowish-brown-tinged, the peduncle slightly ancipital, nearly smooth; pistillate spikes 2 or 3, widely separate, erect, the upper short-exsert-peduncled, the lower on peduncles exserted $1\frac{1}{2}$ –3 times the length of the spikes, the peduncles ancipital, smooth, the spikes linear-oblong, 1.5–5 cm. long, 5 mm. wide, containing 6–20 loosely arranged, ascending or somewhat spreading perigynia in few rows; bracts strongly sheathing, leaf-like, usually shorter than culms, their sheaths smooth, often yellowish-brown-tinged ventrally at mouth and prolonged beyond base of blade; scales ovate, awned, cuspidate or acuminate, white-hyaline with 3-nerved green center, narrower than and about half the length of the perigynia; perigynia elliptic-obovoid, not at all inflated, obtusely triangular below, 4–5 mm. long, 2 mm. wide, glabrous, subcoriaceous, yellowish-green or brownish-green, strongly many-nerved, stipitate, tapering to a spongy base 0.5–1.5 mm. long, and tapering or somewhat abruptly narrowed into a straight or slightly excurved conspicuous beak 0.5–1 mm. long, the orifice oblique, whitish; achenes oblong-obovoid, closely filling body of perigynium, 2.5 mm. long, 1.75 mm. wide, triangular with concave sides and blunt angles, granular, brownish, sessile, short-apiculate, jointed with the very short, often bent, slender style; stigmas three, slender, reddish-brown; anthers 4–5 mm. long.

TYPE LOCALITY: “Hab. in Carolina.”

DISTRIBUTION: Dry woodlands, largely on the coastal plain, Florida to Texas, northward to Connecticut and southern New York, and in the interior to Indiana. (Specimens examined from Connecticut, New York (Staten Island), New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, Texas, Tennessee, Kentucky, Indiana.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 995; Rob. & Fern. Man. f. 485; Rep. N. J. Mus. 1910: pl. 24, f. 3; Boott, Ill. *Carex* 35. pl. 89; Am. Jour. Sci. IV. 2: pl. 2, f. 2–3 (as *C. laxiflora*).

298. *Carex leptonevia* Fernald, *Rhodora* 16: 214. 1914.

“*Carex laxiflora* var. *intermedia* Boott” L. H. Bailey; Arth. Bull. Geol. Nat. Hist. Surv. Minn. 3: 22. 1887. (Minnesota; see Wiegand, *Rhodora* 24: 201.)

Carex laxiflora var. *varians* L. H. Bailey, Mem. Torrey Club 1: 32. 1889. (In large part; type from Minnesota. See Wiegand, *Rhodora* 24: 201. 1922.)

Carex varians Hay, Palmer & White, Proc. Biol. Soc. Wash. 14: 196. 1901. In a volume index; not regarded by me as publication.

Carex laxiflora var. *leptonevia* Fernald, *Rhodora* 8: 184. 1906. (Type from Fort Fairfield, Maine.)

Carex blanda var. *varians* Burnham, *Torreyana* 19: 133. 1919. (Based on *C. laxiflora* var. *varians* L. H. Bailey.)

Cespitose, the rootstocks slender, the culms 1.5–7 dm. high, mostly lateral and aphyllopodic, evenly leafy, weakly erect or decumbent, sharply triangular but not winged, the angles

minutely serrulate, exceeding the leaves, brownish at base; sterile shoots elongate, conspicuous; leaf-blades deep-green, flat, flaccid, 1-3.5 dm. long, 3-10 mm. wide, roughened towards the apex on the margins, the midvein prominent on the lower surface and the two mid-lateral veins on the upper, the sheaths enlarged upward, strongly retrorsely serrulate towards the mouth, short-prolonged upward beyond base and continuous with the long conspicuous ligule; staminate spike narrowly linear, sessile or nearly so, 1-2.5 cm. long, 2 mm. wide, the scales oblong-obovate, mucronate, white-hyaline with green, scabrous, 3-nerved center; pistillate spikes 2-4, the upper 1 or 2 and the staminate approximate, sessile or short-exsert-peduncled, the lower 1 or 2 more or less strongly separate, exsert-peduncled, linear, 1-3 cm. long, 3-4 mm. wide, loosely 10-20-flowered in few rows, the perigynia erect-ascending, the peduncles rough, somewhat ancipital; bracts long-sheathing, the sheath-margins strongly serrulate, the upper blades at least exceeding the culm; scales oblong-obovate, mucronate to obtuse, about width of but much shorter than the perigynia, white-hyaline and more or less strongly brownish-tinged, with conspicuous 3-nerved green center; perigynia elliptic-obovoid, not at all inflated, obtusely triangular below, more sharply so above, 3.5-4.5 mm. long, 1.5 mm. wide, deep-green or in age light-green, membranaceous, glandular-punctulate, 2-ribbed, otherwise nerveless or faintly nerved, stipitate, long-tapering and spongy at base, contracted into a short, straight or oblique beak 0.5 mm. long, with entire oblique orifice; achenes obovoid, filling perigynium-body, sharply triangular with concave sides, 2 mm. long, 1.5 mm. wide, brownish, granular, substipitate, short-apiculate, jointed with the short slender style; stigmas three, reddish-brown, slender; anthers 1.5 mm. long.

TYPE LOCALITY (of *C. laxiflora* var. *leptonervia* on which *C. leptonervia* is based): Ft. Fairfield, Maine (Fernald 146).

DISTRIBUTION: In woodlands, Newfoundland to Minnesota, and southward to northern New Jersey and Ohio, and in the mountains to North Carolina and Tennessee. (Specimens examined from Newfoundland, Quebec, Nova Scotia, Prince Edward Island, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Virginia, North Carolina, Tennessee, Ohio, Ontario, Michigan, Wisconsin, Minnesota.)

ILLUSTRATION: Rob. & Fern. Man. f. 489.

NOTE: In the index to the Proceedings of the Biological Society of Washington (14: 196. 1901) appears the name *Carex varians*, with a page reference to where the name appears as *Carex laxiflora* var. *variens*. The publication committee has for years followed this practice holding that "what are usually called subspecies should be expressed by binomials." At this time the publication committee consisted of Messrs. Hay, Palmer & White. I am not treating the above name as a properly published name, but merely as a method of reference. Others think it and similar names should be regarded as properly published and credited to the publication committee (T. D. A. Cockerell, Torreya 5: 44-5. 1905). If so, *Carex varians* is the proper name for the present species, as it long antedates *Carex leptonervia* Fernald, and the type belongs here. (Wiegand, Rhodora 24: 201. 1922.)

299. *Carex crebriflora* Wiegand, Rhodora 24: 197. 1922.

Cespitose, the rootstocks short-prolonged, the clumps medium-sized to large, some of the culms lateral and aphyllopodic, others central and phyllopodic, 2-6 dm. high, erect or ascending, shorter than to exceeding the leaves, comparatively stout, sharply triangular, slightly winged, retrorsely serrulate, somewhat flattened in drying, brownish at base; sterile shoots elongate, forming conspicuous culms; leaf-blades of the sterile shoots erect, flat, firm, long-persistent, green or pale-green, 3-8 mm. wide, the longer 2.5-3.5 dm. long, roughened on the margins and towards the apex on the veins, acute, the edges usually strongly parallel, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; leaves with well-developed blades 3 to several to a fertile culm, the blades similar but smaller, the sheaths long, enlarged upward, smooth, thin ventrally, the ligule prominent, longer than wide; staminate spike linear-subclavate, sessile or short-peduncled, often overtopped by the uppermost pistillate spikes, 1-2.5 cm. long, 2-3 mm. wide, the scales oblong-obovate, obtuse to slightly cuspidate, white-hyaline with 3-nerved green center, scarcely if at all yellowish-brown-tinged; pistillate spikes 2 or 3, the upper one or two and the staminate spike contiguous, the lower strongly separate, erect, the upper scarcely exsert-peduncled, the lower strongly exsert-peduncled, the peduncles retrorsely serrulate, the spikes linear-oblong, 0.5-2 cm. long, about 5 mm. wide, rather closely flowered, containing 10-20 perigynia, ascending or finally somewhat spreading, in few rows, the rachis smooth; bracts strongly sheathing, leaf-like, the upper

strongly exceeding the culms, the sheaths retrorsely serrulate towards mouth, hyaline and prolonged ventrally above base of blades; scales oblong-ovate or oblong-obovate, obtuse to cuspidate, white with 3-nerved green center, narrower than and about half the length of the perigynia; perigynia elliptic-obovoid or fusiform, not at all inflated, obtusely triangular below, more sharply so above, 3.5–4.5 mm. long, nearly 2 mm. wide, glabrous, subcoriaceous, yellowish or brownish-green, conspicuously many-nerved, long-stipitate, tapering to a spongy base 0.5–1 mm. long, tapering or somewhat abruptly narrowed into a straight or slightly excurved conspicuous beak about 1 mm. long, the orifice oblique, whitish; achenes obovoid, closely filling body of perigynium, 2.5 mm. long, nearly 2 mm. wide, granular, dull-yellowish-brown, triangular with concave sides and blunt angles, sessile, short-apiculate, jointed with the short style; stigmas three, slender, reddish brown; anthers 2–2.5 mm. long.

TYPE LOCALITY: Low woods, Appalachian River bottoms, near Chattahoochee, Florida. (A. H. Curtiss, 1882).

DISTRIBUTION: Woodlands, Texas to Florida, and northward to South Carolina. (Specimens examined from South Carolina, Alabama, Florida, Mississippi, Louisiana, Texas.)

300. *Carex albursina* Sheldon, Bull. Torrey Club 20: 284. 1893.

Carex laxiflora var. *latifolia* Boott, Ill. Carex 38. pl. 93. 1858. (Type from New York.) Not *C. latifolia* J. F. Gmel. 1791; nor *C. latifolia* Moench. 1794.

Loosely cespitose, the rootstocks short, the clumps medium-sized, the culms 1–6 dm. high, lateral and aphyllopodic, erect, thick but weak, and flattened in drying, sharply triangular, conspicuously narrowly winged and more or less roughened on the angles, exceeded by the bracts and usually by the upper culm-leaves, dark-brown at base; sterile shoots conspicuous, reduced to tufts of leaves; well-developed fertile-culm leaves 2–5, the blades ascending, 6–25 cm. long, 7–15 mm. wide, usually roughened towards the apex and on the margins, thin, flaccid, light-green, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; leaf-blades of sterile culms much wider, 1–3.5 dm. long, 12–30 mm. wide, strongly many-veined; sheaths loose, enlarged upward, very thin ventrally, prolonged upward beyond base of blade and continuous with the very long prominent ligule; staminate spike sessile, erect, exceeded by uppermost pistillate spike, narrowly linear, 5–17 mm. long, 1.25 mm. wide, the scales oblong-obovate, very obtuse, white-hyaline with strongly marked, 3-nerved, green center; pistillate spikes usually 3 or 4, erect, the lower one or two more or less distant and exert-peduncled, often strongly so (the peduncles ancipital), the upper two close together and little if at all exert-peduncled, the spikes linear, 6–35 mm. long, 3–4 mm. wide, loosely 3–18-flowered, the perigynia erect; bracts long-sheathing, somewhat rough-edged, the lower leaf-like, the upper somewhat smaller; scales broadly obovate-orbicular, very truncate, white-hyaline with 3-nerved deep-green center, as wide as but only half the length of the perigynia; perigynia obovoid, obtusely triangular, not inflated, 3–4 mm. long, 2 mm. wide, glabrous, finely many-nerved, membranaceous, yellowish-green, stipitate, long-tapering and spongy at base, abruptly contracted at apex into a minute, abruptly bent beak 0.5 mm. long, with entire hyaline orifice; achenes obovoid, sharply triangular with concave sides, closely enveloped, 2.5 mm. long, 1.75 mm. wide, yellowish-brown, substipitate, short-bent-apiculate, jointed with the very short style; stigmas three, slender, reddish-brown; anthers 2 mm. long.

TYPE LOCALITY (of *C. laxiflora* var. *latifolia*, on which *C. albursina* is based): "New York, Kniesskern. Ohio, Sullivant. Kentucky, Short."

DISTRIBUTION: Wooded bluffs in limestone regions, Quebec to Minnesota, and southward to Virginia, Tennessee, and Arkansas. A well-marked species. (Specimens examined from Quebec, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, West Virginia, Virginia, Tennessee, Ohio, Ontario, Michigan, Indiana, Kentucky, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Arkansas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 781; ed. 2. f. 991; Rob. & Fern. Man. f. 488; Boott, Ill. Carex 38. pl. 93.

301. *Carex blanda* Dewey, Am. Jour. Sci. 10: 45. 1825.

"*Carex conoidea* Schkuhr" Muhl. Descr. Gram. 248. 1817.

Carex anceps var. *blanda* Boott, in Hook. Fl. Bor. Am. 2: 226. 1839. (Based on *C. blanda* Dewey.)
Deweya blanda Raf. Good Book 26. 1840. (Based on *Carex blanda* Dewey.)

- Carex anceps* var. *striatula* Carey, in A. Gray, Man. 554. 1848. (As to plant described; not as to type.)
- Carex bubosa* Böck. Flora 38: 597. 1855. (Type from New Orleans, Louisiana.)
- Carex laxiflora* var. *striatula* Carey, in A. Gray, Man. ed. 2. 524. 1856. (As to plant described; not as to type.)
- Carex laxiflora* var. *blanda*, sub-vars, *major* and *minor* Boott, Ill. Carex 37. pl. 92. 1858. (Based on *C. blanda* Dewey except subvar. *major*, type from Texas.)
- Carex truncata* Böck. Flora 41: 649. 1858. (Type from New Orleans, Louisiana.)
- Carex laxiflora* var. *varians* L. H. Bailey, Mem. Torrey Club 1: 32, in smaller part; not as to type. 1889.
- Carex laxiflora* f. *varians* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 526. 1909 (Based on *C. laxiflora* var. *varians* L. H. Bailey.)

Densely caespitose, the rootstocks very short, the clumps medium-sized or large, the culms 1-6 dm. high, slender, erect or ascending, very sharply triangular, slightly winged, coarsely cellular and more or less two-edged and flattened in drying, minutely serrulate above, leafy throughout, lateral and aphyllopodic, shorter than or exceeding leaves, brownish at base; sterile shoots forming elongate conspicuous culms; leaf-blades of sterile shoots thin, flat, flaccid, light-green, 1-3.5 dm. long, 3.5-15 mm. wide, the midvein prominent on the lower surface and the two mid-lateral veins on the upper, roughened on the margins and towards the apex on the veins; fertile-culm blades similar but narrower and shorter; sheaths thin, conspicuously whitish and septate-nodulose dorsally, truncate at mouth, the ligule longer than wide and very conspicuous; staminate spike linear-obclavate, sometimes pistillate at apex, sessile or short-peduncled, or even more or less long-peduncled, 0.5-2 cm. long, 2-3 mm. wide, the scales oblong-obovate, obtuse, acute, acuminate or cuspidate, greenish-white with 3-nerved green center, more or less (usually slightly) light-reddish-brown-tinged; pistillate spikes 2-5, oblong or linear-oblong, 0.5-3 cm. long, 3.5-5 mm. wide, closely 8-25-flowered, in several rows, the perigynia ascending, the upper one or two spikes little or not at all exert-peduncled, contiguous with the staminate spike, the lower widely separated on slender, 2-edged, minutely serrulate, erect, often much-exserted peduncles; bracts with long sheaths enlarged upward, loose, their margins serrulate dorsally and often crinkled, prolonged upward ventrally at mouth, the blades leaf-like, the upper two or three at least exceeding the culm; scales ovate, obovate, or oblong-obovate, long-awned to mucronate, narrower and shorter than the perigynia, white-hyaline with 3-nerved greenish center; perigynia obovoid, very obtusely triangular, not at all inflated, 3-4 mm. long, 1.75 mm. wide, membranaceous, light-green or yellowish-green, strongly many-nerved, short-stipitate, tapering and spongy at base, rounded at apex and abruptly very short-beaked, the beak 0.5 mm. long, bent or recurved, the orifice hyaline, entire; achenes obovoid, closely enveloped, triangular with slightly concave sides and blunt angles, 2.5 mm. long, 1.5 mm. wide, yellowish-brown, granular, stipitate, abruptly bent-apiculate, jointed with the very short slender style; stigmas three, reddish-brown, slender, rather short.

TYPE LOCALITY: "Sheffield; Newburgh, New York; Pennsylvania."

DISTRIBUTION: Dry woodlands, best developed in calcareous districts, Quebec to North Dakota and southward to Alabama and Texas. One of the most common and widely distributed species in the dry deciduous woodlands of the eastern United States. (Specimens examined from Quebec, Ontario, New Hampshire, Vermont, Rhode Island, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, Georgia, Alabama, Ohio, Michigan, Indiana, Kentucky, Tennessee, Wisconsin, Illinois, Minnesota, Iowa, Missouri, Arkansas, Louisiana, Mississippi, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas.)

ILLUSTRATIONS: Am. Jour. Sci. 11: pl. K, f. 33; Boott, Ill. Carex 37. pl. 92. Britt & Brown, Ill. Fl. ed. 2. f. 992; Rob. & Fern. Man. f. 487.

302. *Carex gracilescens* Steud. Syn. Cyp. 226. 1855.

- Carex laxiflora* var. *intermedia* b. Boott, Ill. Carex 37. pl. 91, f. 1. 1858. (Type from Clinton County, Pennsylvania.)
- Carex laxiflora* var. *blanda* subvar. *gracillima* Boott, Ill. Carex 38. pl. 91, f. 2. 1858. (Type from Ohio.)
- Carex laxiflora* var. *gracillima* "Boott" Rob. & Fern. Man. 242. 1908. (Based on *C. laxiflora* var. *blanda* subvar. *gracillima* Boott.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms 1.5-6 dm. usually 2-3.5 dm. high, aphyllopodic, lateral, slender, erect, leafy throughout, exceeding the leaves but usually exceeded by the bracts, sharply triangular, not coarsely cellular and

not 2-edged or flattened in drying, the angles serrulate at least above, purplish-tinged at base; sterile shoots forming elongate conspicuous culms; leaves (not bracts) with well-developed blades usually 3-5 to a fertile culm, on the lower third, but not bunched, the blades thin, flat, flaccid, yellowish-green, ascending, 4-15 cm. long, usually 3-7 mm. wide, strongly roughened on the margins and on the veins towards the apex, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; sheaths greenish-white dorsally, truncate at mouth, the ligule conspicuous; sterile-culm blades 1-2 dm. long; staminate spike conspicuous, normally very strongly peduncled, linear-obclavate, 1-2.5 cm. long, 2.5 mm. wide, the scales oblong-obovate, obtuse, reddish-brown or reddish-brown-tinged with 3-nerved green center and narrow hyaline margins; pistillate spikes usually 2-4, widely separate or the two upper occasionally approximate, erect, the lower on long-exserted, slightly serrulate, 2-edged peduncles, the upper on shorter-exserted peduncles or nearly sessile, linear, 7-30 mm. long, 3-4 mm. wide, containing 7-20 ascending not closely arranged perigynia, in few rows; bracts leaf-like, decreasing in size upward, more or less strongly sheathing, the sheaths tight, little enlarged upward, scarcely crinkled, serrulate dorsally, little prolonged at mouth, the ligule not conspicuous; scales ovate or obovate, cuspidate or awned, narrower than and much shorter than the perigynia, hyaline and often strongly reddish-brown-tinged with 3-nerved green center; perigynia obovoid or broadly obovoid, not at all inflated, very obtusely triangular, 2.5-3.5 mm. long, 1.5-1.75 mm. wide, conspicuously many-nerved, membranaceous, yellowish-green, stipitate, strongly tapering and spongy at base, rounded at apex and abruptly short-beaked, the beak 0.5-1 mm. long, bent or recurved, the orifice entire; achenes obovoid, closely filling the perigynium, nearly 2-2.5 mm. long, 1.5 mm. wide, triangular with slightly concave sides and blunt angles, yellowish-brown, granular, stipitate, abruptly bent-apiculate, and jointed with the short slender style; stigmas three, reddish-brown, slender, rather short.

TYPE LOCALITY: Ohio.

DISTRIBUTION: Woodlands, Quebec to Wisconsin, and southward to Virginia, Tennessee, and Arkansas. (Specimens examined from Quebec, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, District of Columbia, Virginia, Ontario, Ohio, Michigan, Indiana, Wisconsin, Illinois, Tennessee, Missouri, Arkansas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 777; ed. 2. f. 993; Rob. & Fern. Man. f. 482, 483; Boott, Ill. Carex 37. pl. 91, f. 1, 2.

41. *Granulares* O. F. Lang, *Linnaea* 24: 582, in part. 1851; L. H. Bailey, *Proc. Am. Acad.* 22: 109. 1886; Mackenzie, in *Rydb. Fl. Rocky Mts.* 133. 1917. *CENCHROCARPAE* Holm, *Am. Jour. Sci.* IV. 16: 458, in part. 1903. Referred to the *LAXIFLORAE* Kunth by Tuckerman (*Enum. Caric.* 15. 1843). By Carey (in A. Gray, *Man.* 551. 1848) referred to the *PANICEAE* Tuckerm. By Kükenthal (in Engler, *Pflanzenreich* 4³⁰: 516. 1909) referred to the *GRISEAE* L. H. Bailey.

Culms central, slender, leafy; leaf-blades flat; basal sheaths brownish; terminal spike staminate, linear; lateral spikes 2-4, pistillate, closely many-flowered in several rows, erect, on more or less strongly exerted peduncles; bracts sheathing, not colored nor dark-auricled, the blades leaf-like; scales ovate, pointed, slightly ferruginous; perigynia ascending or squarrose, elliptic to ovoid, membranaceous, glabrous, with many raised nerves, suborbicular in cross-section, loosely enveloping the achene, rounded at the base, short-tapering and minutely beaked, the orifice entire or submarginate; achenes triangular, strongly apiculate, jointed with the slender style; stigmas 3, short.

A group of five calciphiles or near-calciphiles in the temperate parts of eastern and central North America in open sunny places.

Rootstocks not long-creeping; staminate spike short-peduncled or sessile; two upper pistillate spikes usually contiguous; some bracts overtopping culms, their sheaths conspicuously prolonged upward at mouth, their ligules much longer than wide; achenes short-apiculate.

Perigynia elliptic-obovoid or elliptic-ovoid, 2-2.5 mm. long, 1.5 mm. wide, ascending, not ventricose-squarrose, membranaceous, nerved, sessile, rounded at apex, abruptly very minutely beaked, light-green, becoming yellowish-brown.

Perigynia broadly ovoid to broadly obovoid, 2.5-4 mm. long, 1.5-2.5 mm. wide, soon ventricose-squarrose, tapering at apex, minutely beaked.

Perigynia membranaceous, nerved, sessile, light-green, becoming yellowish-brown.

303. *C. Haleana*.

304. *C. rector*.

- Perigynia submembranaceous, ribbed, substipitate, olive-green, becoming yellowish-green.
305. *C. granularis*.
- Rootstocks long-creeping; staminate spike long-peduncled; spikes widely separate; bracts from shorter than to overtopping culms, their sheaths but little prolonged upward at mouth, their ligules short; achenes very prominently apiculate.
- Perigynia nerved, 3-3.5 mm. long, very short-beaked, the orifice entire or minutely bidentulate; achenes obovoid, the apiculation straight or flexuous; pistillate spikes 5-6 mm. wide; leaf-blades 1.5-3 mm. wide.
306. *C. Crawei*.
- Perigynia ribbed, 3-4.5 mm. long, the beak short but conspicuous, the orifice bidentulate; achenes oblong-obovoid, the apiculation strongly bent-recurved; pistillate spikes about 7.5 mm. wide; leaf-blades 3-6 mm. wide.
307. *C. microdonta*.

303. *Carex Haleana* Olney, Caric. Bor.-Am. 6. 1871.

- "*Carex granularis* var. *recta* Dewey" Paine, Ann. Rep. N. Y. State Cab. 18: 158. 1865; Dudley, Bull. Cornell Univ. 2: 114. 1886.
- Carex granularis* var. *Haleana* Porter, Proc. Acad. Phila. 1887: 74. 1887. (Based on *C. Haleana* Olney.)
- Carex granularis* var. *Shriveri* Britton; Britt. & Brown, Ill. Fl. 1: 322. 1896. (Based on *C. Haleana* Olney.)
- Carex Shriveri* Britton, Man. 208. 1901. (Based on *C. Haleana* Olney.)

Densely caespitose, the rootstocks very short, the clumps small or medium-sized, the culms slender, erect or spreading, 1.5-9 dm. high, lateral or central, obtusely triangular, smooth, leafy throughout, exceeded by the upper bracts only, brownish-tinged at base; leaves (not bracts) with well-developed blades usually 2 or 3 to a culm, the blades glabrous, light-green, more or less glaucous, ascending, flat, flaccid, 0.5-2 dm. long, 5-10 mm. wide, roughened on the margins and toward the apex, the two mid-lateral nerves prominent above, the sheaths long, smooth, yellowish-brown-tinged and red-dotted ventrally, prolonged at mouth beyond base of blade and continuous with the long conspicuous ligule, the latter much longer than wide; staminate spike erect, sessile or nearly so, linear, 0.5-2.5 cm. long, 2 mm. wide, the scales oblong-obovate, cuspidate or acuminate, closely appressed, reddish-brown with green 3-nerved center and hyaline margins; pistillate spikes 2-5, erect, the lower widely separated, often very long-exsert-peduncled (the peduncles roughish above), the upper short-peduncled or sessile, the two uppermost and the staminate often very close together, the spikes linear-oblong, 7-30 mm. long, 3-5 mm. wide, closely 15-50-flowered, the perigynia ascending in several rows; bracts large and leaf-like, the blade of the lowermost rarely more than 10 cm. long, and usually not equaling the culm, the sheaths prolonged beyond base of blade and the ligule conspicuous; scales small, ovate or ovate-lanceolate, short-awned, cuspidate or acuminate, narrower than and one fourth the length of the perigynia, white-hyaline and reddish-dotted, with green 3-nerved center; perigynia elliptic-obovoid or elliptic-ovoid, 2-2.5 mm. long, 1.5 mm. wide, little inflated, suborbicular, many-nerved, light-green, becoming yellowish-brown, membranaceous, resinous-punctulate, sessile, rounded at base, rounded at apex and abruptly very minutely beaked, the beak entire, straight or rarely somewhat bent, or often essentially beakless, the orifice hyaline; achenes small, obovoid, rather loosely enveloped, 1.75 mm. long, 1.25 mm. wide, triangular, with concave sides, tapering and short-stipitate at base, brownish, densely granular, abruptly rounded and short-apiculate at apex, jointed with the short, slender style; stigmas three, slender, reddish-brown, short.

TYPE LOCALITY: "Hab. Madison, Wisconsin, T. J. Hale. 1860 or previous."

DISTRIBUTION: Moist meadows and wet cliffs, in calcareous districts, Quebec and Maine to Saskatchewan, and southward to Virginia, Indiana, and Kansas. (Specimens examined from Quebec, Ontario, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, District of Columbia, Virginia, Ohio, Michigan, Wisconsin, Indiana, Iowa, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Manitoba, Saskatchewan.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2, f. 997; Rob. & Fern. Man. f. 499; Boott, Ill. Carex 34 (in part), pl. 85 (as *C. granularis*), except perigynia.

304. *Carex rector* Mackenzie.

- Carex granularis* var. *recta* Dewey, in Wood, Classbook ed. 1861. 763. 1861. (Type from southern Illinois and Louisiana.) Not *C. recta* Boott, 1840.

Densely caespitose, the rootstocks very short, the clumps small or medium-sized, the culms slender, ascending or spreading, 5-9 dm. high, lateral or central, obtusely triangular, smooth,

leafy throughout, exceeded by the upper bracts only, brownish-tinged at base; leaves (not bracts) with well-developed blades usually 2 or 3 to a culm, the blades glabrous, light-green, more or less glaucous, ascending, flat, flaccid, 0.5–2 dm. long, 3–6 mm. wide, roughened on the margins and toward the apex, the two mid-lateral nerves prominent above, the sheaths long, smooth, yellowish-brown-tinged and red-dotted ventrally, prolonged at mouth beyond base of blade and continuous with the conspicuous ligule, the latter much longer than wide; staminate spike short-peduncled, linear, 2–3.5 cm. long, 2 mm. wide, the scales oblong-obovate, cuspidate or acute, appressed, dull reddish-brown with green 1–3-nerved center and hyaline margins; pistillate spikes 3–5, erect, the lower widely separated, often very long-exsert-peduncled (the peduncles smooth), the upper short-peduncled or sessile, the uppermost and the staminate spike approximate, the spikes linear, 2–4 cm. long, 3–4 mm. wide, closely 20–50-flowered, the perigynia erect-appressed in several rows; bracts large and leaf-like, the blades of the lowermost shorter or longer than the culm, the sheaths prolonged beyond base of blade and the ligule conspicuous; scales small, ovate, acute, cuspidate or short-awned, narrower and several times shorter than the perigynia, more or less dull-reddish-brown-tinged with green 1–3-nerved center and hyaline margins; perigynia broadly obovoid to broadly ovoid, 2.5–3 mm. long, 1.5–1.75 mm. wide, little inflated, suborbicular, finely many-nerved, light-green, becoming yellowish-brown, membranaceous, punctulate, tapering at base, contracted at apex into a straight beak 0.5 mm. long, the orifice entire, hyaline; achenes small, obovoid, closely enveloped and filling lower three quarters of perigynium, 1.75 mm. long, 1 mm. wide, triangular with concave sides, tapering and markedly short-stipitate at base, yellowish-brown, granular, abruptly rounded and short-apiculate at apex, the apiculation abruptly bent, jointed with the short slender style; stigmas 3, slender, reddish-brown, short.

TYPE LOCALITY (of *C. granularis* var. *recta* Dewey, on which *C. rector* is based): Southern Illinois and Louisiana.

DISTRIBUTION: Moist open places in calcareous districts. (Specimens examined from Indiana, Alabama, Louisiana.)

305. *Carex granularis* Muhl.; Willd. Sp. Pl. 4: 279. 1805.

Deweya granularis Raf. Good Book 26. 1840. (Based on *Carex granularis* Muhl.)
Carex chalaros Steud. Syn. Cyp. 231. 1855. (By error given as from Afghanistan.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms 2–9 dm. high, slender, erect, lateral or central, leafy throughout, obtusely triangular, smooth, noticeably exceeded by the leaf-like bracts, brownish-tinged at base; leaves (not bracts) with well-developed blades 1–5 to a culm, the blades glabrous, slightly glaucous, flat, flaccid, erect-ascending, 1–3 dm. long, 3–9 mm. wide, roughened on the margins and toward the apex, the two mid-lateral nerves prominent above; sheaths long, smooth, yellowish-brown-tinged and red-dotted ventrally, conspicuously septate-nodulose dorsally, prolonged at mouth beyond base of blade and continuous with the long conspicuous ligule, the latter much longer than wide; staminate spike sessile or nearly so, linear, 1–2.5 cm. long, 2 mm. wide, the scales oblong-obovate, cuspidate or acuminate, closely appressed, reddish-brown with green 3-nerved center and narrow hyaline margins; pistillate spikes 2–5, erect, the lower widely separated, long-exsert-peduncled (the peduncles smooth), the upper short-exsert-peduncled or sessile, the two uppermost and the staminate often very close together, the spikes oblong to linear-oblong, 0.5–3 cm. (typically 1.2–2 cm.) long, 5–6 mm. wide, closely 10–50-flowered, the perigynia ventricose-squarrose in several rows; bracts large and leaf-like, the blade of the lowermost usually more than 10 cm. long and noticeably exceeding the culm, the sheath prolonged upward beyond base of blade and the ligule conspicuous; scales small, ovate or ovate-lanceolate, awned, cuspidate or acuminate, narrower than and one fourth the length of the perigynia, light-reddish-brown and red-dotted, with green 3-nerved center; perigynia broadly ovoid to broadly obovoid, 2.5–4 mm. long, 2–2.5 mm. wide, somewhat inflated, many-ribbed, olive-green or in age yellowish-green, suborbicular in cross section, submembranaceous, resinous-punctulate, minutely papillate, rounded and substipitate at base, abruptly contracted into a minute, entire, straight or somewhat bent beak, with hyaline, entire or emarginate orifice;

achenes small, obovoid, loosely enveloped, 1.75 mm. long, 1.25 mm. wide, triangular with concave sides, tapering and sessile at base, brownish, densely granular, abruptly rounded and apiculate at apex, jointed with the bent slender style; stigmas 3, slender, reddish-brown, short.

TYPE LOCALITY: "Habitat in Pennsylvania."

DISTRIBUTION: Moist meadows in calcareous districts, western New England to Minnesota, and southward to Florida and Arkansas. (Specimens examined from Vermont, Massachusetts, Connecticut, New York, including Long Island, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, Georgia, Alabama, Florida, Mississippi, southwestern Quebec, southern Ontario, Ohio, Michigan, Wisconsin, Indiana, Kentucky, Illinois, Minnesota, Missouri, Kansas, Arkansas.)

ILLUSTRATIONS: Schkuhr, Riedgr. *pl. Vvv, f. 169*; Britt. & Brown, Ill. Fl. *f. 763*; ed. 2. *f. 998*; Rob. & Fern. Man. *f. 498*; Rep. N. J. Mus. 1910: *pl. 24, f. 5*; Boott, Ill. Carex 1: 34 (in part). *pl. 85* (perigynia only).

306. *Carex Crawei* Dewey, Am. Jour. Sci. II. 2: 246. 1846.

Carex heterostachya Torr.; Dewey, in Am. Jour. Sci. II. 2: 246. 1846. (Type from Drummond Island, Lake Huron.)

Carex Crawei var. *heterostachya* Dewey, Am. Jour. Sci. II. 42: 328. 1866. (Based on *C. heterostachya* Torr.)

Culms one-few together from slender, horizontal, long-creeping rootstocks, the culms 1-3 dm. high, slender but stiff, obtusely triangular, smooth or slightly roughened above, leafy throughout, phyllopodic, exceeding the leaves, brownish-tinged at base, the dried-up leaves of the previous year conspicuous; leaves with well-developed blades 6-12 to a culm, largely clustered near the base, sometimes more or less equitant, the blades thick, stiff, light-green, usually recurved-spreading, channeled below, 1-2.5 dm. long, 1.5-3 mm. wide, roughened on the margins and towards the apex, the sheaths smooth, tight, hyaline ventrally, not prolonged at mouth, the ligule longer than wide; staminate spike one (rarely with a small additional one), erect, long-peduncled, linear, 1-3 cm. long, 2-3 mm. wide, the peduncle rough, the scales oblong-obovate, obtuse, reddish-brown with hyaline margins and 3-nerved green center; pistillate spikes 2-4, widely separate, the lowest often nearly basal, erect, little or not at all exsert-peduncled (the peduncles roughish), oblong-cylindric, 1-3 cm. long, 5-6 mm. wide, closely 10-45-flowered, the perigynia ascending in several rows; bracts leaf-like, the upper reduced, normally shorter than the culms, the sheaths smooth, but little prolonged upward at mouth, tight, 15 mm. long or less, their ligules very short; scales broadly ovate, mucronate, acuminate, or cuspidate, narrower than and about half the length of the perigynia, reddish-brown with hyaline margins and 3-nerved green center; perigynia ovoid or oblong-ovoid, sub-orbicular in cross-section, scarcely inflated, 3-3.5 mm. long, 1.25-2 mm. wide, asperulous, many-nerved, submembranaceous, light-green or yellowish-green, rounded and sessile at base, rather abruptly contracted into a very short, hyaline-tipped, straight, entire or minutely bidentulate beak; achenes small, obovoid, in the lower two thirds of perigynium, loosely enveloped, 1.75-2 mm. long, 1.25 mm. wide, triangular with sides concave below and blunt angles, yellowish-brown, tapering and substipitate at base, round-tapering and very prominently apiculate at apex, the apiculation straight or flexuous, jointed (sometimes obscurely) with the straight, short, slender style; stigmas 3, reddish-brown, slender, long.

TYPE LOCALITY: "Found at Watertown, and Griffins Bay, Jefferson County, N. Y."

DISTRIBUTION: Moist thin soil underlaid by rocks or in pockets on rocky ledges in limestone regions, Quebec to Alberta and Washington, and southward to northeastern New Jersey, southern Alabama, Tennessee, Kansas, and Wyoming. Widely distributed, but in parts of its range a very local species. (Specimens examined from Quebec, Maine, Connecticut, New York, northwestern New Jersey, Ontario, Wisconsin, Michigan, Ohio, Indiana, Tennessee, Illinois, southern Alabama, Manitoba, Iowa, Missouri, Alberta, North Dakota, South Dakota, Nebraska, Kansas, Wyoming, Montana, Washington.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. *f. 764*; ed. 2. *f. 999*; Rob. & Fern. Man. *f. 500*; Boott, Ill. Carex 32. *pl. 81*; Bull. Lab. Nat. Hist. Univ. Iowa 4*: *pl. 4*.

307. *Carex microdonta* Torr. & Hook.; Torr. Ann. Lyc.

N. Y. 3: 423. 1836.

Carex alveata Boott, Bost. Jour. Nat. Hist. 5: 114. 1845. (Type from Texas.)

Carex Roemeriana Scheele, Linnaea 22: 346. 1849. (Type from New Braunfels, Texas.)

Carex Wrightii Dewey, in Torr. Bot. Mex. Bound. Surv. 232. 1859. (Type from Texas.)

Carex microdonta var. *latifolia* L. H. Bailey, Proc. Am. Acad. 22: 110. 1886. (Type from Texas.)

Culms one-few together from slender, horizontal, long-creeping rootstocks, the culms 1.5-6 dm. high, slender, erect, triangular, smooth or slightly roughened above, leafy throughout, phyllopodic, exceeding the leaves, brownish-tinged at base, the dried-up leaves of the previous year conspicuous; leaves with well-developed blades 6-12 to a culm, largely clustered near the base, occasionally somewhat equitant, the blades thick, stiff, light-green, flat or channeled at base, spreading, 0.5-2.5 dm. long, 3-6 mm. wide, short-pointed, roughened on the margins and towards the apex; sheaths smooth, tight, hyaline ventrally, but little prolonged upward at mouth, the ligule scarcely as long as wide; staminate spike one (often with a small additional one), erect, long-peduncled, linear or linear-clavate, 2-4 cm. long, 3 mm. wide, the peduncle smooth or rough, the scales oblong-obovate, obtuse to acutish, reddish-brown with hyaline margins and 3-nerved green center; pistillate spikes usually 3, often staminate at apex, widely separate, the lowest often nearly basal, erect, more or less strongly exsert-peduncled (the peduncles roughish), the spikes oblong to oblong-cylindric, 1-3.5 cm. long, about 7.5 mm. wide, closely 10-45-flowered, the perigynia squarrose-ascending in several rows; bracts leaf-like, the upper reduced, shorter than to exceeding the culms, their sheaths rather loose, from very short to 6 cm. long, tight, smooth, the ligules short; scales ovate, acuminate to cuspidate, narrower and shorter than the perigynia, reddish-brown with hyaline margins and wide 3-nerved green center; perigynia oblong-ovoid or obovoid, suborbicular in cross-section, scarcely inflated, 3-4.5 mm. long, 1.5-2 mm. wide, asperulous, many-ribbed, subcoriaceous, olive-green, sessile, rounded or round-tapering at base, rather abruptly contracted into a short, but conspicuous, minutely bidentulate, hyaline-tipped, straight beak; achenes oblong-obovoid, small, rather closely enveloped and nearly filling perigynium, triangular with sides concave below and blunt angles, 2.5 mm. long, 1.5-1.75 mm. wide, yellowish-brown, tapering and sub-stipitate at base, round-tapering and very prominently apiculate at apex, the apiculation strongly bent-recurved and jointed with the short, slender style; stigmas 3, slender, long, reddish-brown.

TYPE LOCALITY: "Hab. Texas, T. Drummond! (Texas collection III. No. 439)."

DISTRIBUTION: Wet prairies, Mississippi and Oklahoma to Texas. (Specimens examined from Mississippi, Oklahoma, Texas.)

ILLUSTRATION: Boott, Ill. *Carex* 21. *pl.* 56, *f.* 2.

42. Oligocarpae Carey, in A. Gray, *Man.* 554. 1848; L. H. Bailey, *Proc. Am. Acad.* **22**: 113. 1886; LAXIFLORAE Kunth, *Enum. Pl.* **2**: 452, in part. 1837. CAREYANAE Tuckerm. *Enum. Caric.* 15, in small part. 1843. LEJOCHLAENAE Holm, *Am. Jour. Sci.* **IV.** **16**: 458, in part. 1903. Referred to the GRISEAE L. H. Bailey by Kükenthal (in Engler, *Pflanzenreich* **4**²⁰: 516. 1909).

Culms slender, some central, but mostly lateral and aphyllpodic; leaf-blades flat; basal sheaths brownish or purplish; terminal spike staminate, linear; lateral spikes 2-4, pistillate, alternately 1-9-flowered in few rows, erect, on more or less strongly exerted peduncles; bracts strongly sheathing, not colored or dark-auricled, the blades leaf-like; scales ovate or obovate, strongly rough-awned; perigynia ascending, obovoid, glabrous, subcoriaceous, finely impressed with many undulate nerves, obtusely triangular in cross-section, tapering and spongy at base, abruptly constricted and beak-like at apex, closely enveloping the achene, the orifice entire; achenes triangular, with slightly concave sides, apiculate, jointed with the thickish style; stigmas 3.

A group of two calciphiles or near-calciphiles of woodlands in the temperate parts of eastern North America.

Bract-sheaths not hispidulous; perigynia 3.5-4 mm. long; achenes straight, apiculate; culms purple-tinged at base.

308. *C. oligocarpa*.

Bract-sheaths strongly rough-hispidulous; perigynia 4.5-5 mm. long; achenes bent-apiculate; culms brownish-tinged at base.

309. *C. Hitchcockiana*.

308. *Carex oligocarpa* Schkuhr; Willd. *Sp. Pl.* **4**: 279. 1805.

Carex Hitchcockiana var. Torr. *Ann. Lyc. N. Y.* **3**: 413. 1836. (From Kentucky and western New York.)

Oloirema oligocarpa Raf. *Good Book* 25. 1840. (Based on *Carex oligocarpa* Schkuhr.)

Deweya oligocarpa Raf. *Good Book* 26. 1840. (Based on *Carex oligocarpa* Schkuhr.)

Carex Sartwelliana Gay; Dewey, Am. Jour. Sci. II. 5: 176, as synonym. 1848. (Type from Penn Yan, New York.) Not *C. Sartwellii* Dewey. 1842.

Carex oligocarpa var. *Sartwelliana* Dewey, Am. Jour. Sci. II. 5: 176. 1848. (Based on *C. Sartwelliana* Gay.)

Carex subuniflora Steud. Syn. Cyp. 234. 1855. (Type from "Alleghany.")

Carex oligocarpa var. *minor* Boott, Ill. Carex 40. 1858. (Based on *C. oligocarpa* Schkuhr.)

Carex oligocarpa f. *subuniflora* Kükenth. in Engler, Pflanzenreich 4²⁰: 521. 1909. (Based on *C. subuniflora* Steud.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms slender, erect, 1-5 dm. high, sharply triangular, rough above, evenly leafy, exceeded by the upper leaf-like bracts and often by the leaves, mostly lateral and aphyllipodic, purple-tinged at base; sterile shoots elongate, conspicuous; leaves (not bracts) usually 1 to 2 to a culm, the blades flat, thin, green, ascending, 1-2.5 dm. long, 2-4.5 mm. wide, long-tapering, roughened on the margins and toward the apex on the veins, the midvein conspicuous on the lower surface and the two mid-lateral veins on the upper; sheaths long, tight, smooth dorsally, conspicuously prolonged at mouth beyond base of blade, white-hyaline ventrally, the ligule long, not ciliate; staminate spike sessile to strongly peduncled, linear, 1-2.5 cm. long, 2-3 mm. wide, the scales oblong-obovate, obtuse to acuminate, white-hyaline with 3-ribbed green center, more or less reddish-brown-tinged; pistillate spikes 2-4, 0.5-1.75 cm. long, 5 mm. wide, widely separate, erect, the lower peduncles at least exerted, loosely flowered, bearing 1-8 ascending perigynia alternately on the somewhat zigzag rachis, bracts leaf-like, reduced upwards, their sheaths not hispidulous; scales ovate, strongly rough-awned, sharply keeled, from shorter to longer than the perigynia, white-hyaline with 3-nerved green center; perigynia obovoid, obtusely triangular, not at all inflated, 3.5-4 mm. long, 2 mm. wide, subcoriaceous, grayish-green, punctulate, finely impressed with many undulate nerves, tapering and spongy at the base, abruptly contracted at apex into a straight or oblique beak 0.75 mm. long, with entire hyaline orifice; achenes triangular, broadly obovoid, 2.25 mm. long, 1.75 mm. wide, closely filling perigynium, triangular with slightly concave sides and blunt angles, yellowish-brown, strongly granular, short-stipitate, straight-apiculate, jointed with the short thickish style; stigmas 3, reddish-brown, slender.

TYPE LOCALITY: "Habitat in America boreali." (Pennsylvania.)

DISTRIBUTION: Dry rich woods and thickets in calcareous districts, Vermont and Ontario to Iowa, and southward to Alabama, Kentucky, and Texas. (Specimens examined from Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Alabama, Ontario, Ohio, Indiana, Kentucky, Illinois, Iowa, Missouri, Arkansas, Kansas, Oklahoma, Texas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 771; ed. 2. f. 1000; Rob. & Fern. Man. f. 491; Schkuhr, Riedgr. pl. Vvv, f. 170; Boott, Ill. Carex 40, pl. 99; Rhodora 3; pl. 32, f. 8-10.

NOTE: As to the identity of this species see Gray (Am. Jour. Sci. 42: 14. 1842).

309. *Carex Hitchcockiana* Dewey, Am. Jour. Sci. 10: 274.

pl. E, f. 17. 1826.

"*Carex Hitchcockii* Dewey" Eaton, Man. ed. 5. 158. 1829. (Change in form of name only.)

Loxotrema Hitchcockii Raf. Good Book 25. 1840. (Based on *Carex Hitchcockiana* Dewey.)

Carex oligocarpa var. *major* Torr. Fl. N. Y. 2: 406. 1843. (Based on *C. Hitchcockiana* Dewey.)

Carex oligocarpa var. *Hitchcockiana* Böck. Linnaea 41: 149. 1877. (Based on *C. Hitchcockiana* Dewey.)

Carex Hitchcockiana var. *triflora* Peck; Howe, Ann. Rep. N. Y. State Mus. 48: 164. 1897. (Type from New York.)

Carex oligocarpa var. *Hitchcockiana* f. *triflora* "Peck" Kükenth. in Engler, Pflanzenreich 4²⁰: 521. 1909. (Based on *C. oligocarpa* var. *triflora* Peck.)

Densely caespitose, the rootstocks very short, the clumps rather small, the culms slender, erect or ascending, 1.5-7 dm. high, sharply triangular, roughened above, evenly leafy, exceeded by the leaf-like bracts and often by the leaves, mostly lateral and aphyllipodic, brownish-tinged at base; sterile shoots elongate, conspicuous; leaves (not bracts) usually 3 or 4 to a culm, not clustered near the base, the blades flat, thin, light-green, ascending, 1-2.5 dm. long, 3-7 mm. wide, roughened on the margins and toward the apex on the veins, the midvein conspicuous on the lower surface and the two mid-lateral veins on the upper; sheaths long, tight, hispidulous dorsally, conspicuously prolonged at mouth beyond base of blade, and (especially the lower) cinnamon-brown-tinged, the ligule long, ciliate; staminate spike sessile or more or less

strongly peduncled, linear, 1–3 cm. long, 2–3 mm. wide, the peduncle rough, the scales oblong-obovate, obtuse to acute, white-hyaline with 3-nerved green center; pistillate spikes 3 or 4, 1–2.5 cm. long, 5 mm. wide, the lowest at least widely separate, on exserted peduncles, erect, loosely flowered, bearing 1–9 ascending perigynia alternately on the zigzag rachis; bracts leaf-like, reduced upwards, their sheaths strongly rough-hispidulous; scales ovate or obovate, strongly rough-awned, serrulate-ciliolate, sharply keeled, from shorter to longer than the perigynia, white-hyaline with 3-nerved green center; perigynia obovoid, obtusely triangular, not at all inflated, 4.5–5 mm. long, 2.5 mm. wide, subcoriaceous, yellowish-green or grayish-green, punctulate, finely impressed with many undulate nerves, tapering and spongy at base, abruptly contracted at apex into a straight or slightly bent, conspicuous beak 1 mm. long with entire hyaline orifice; achenes broadly obovoid, 3 mm. long, 2 mm. wide, closely filling perigynium, triangular with slightly concave sides and blunt angles, yellowish-brown, granular, short-stipitate, abruptly bent-apiculate, jointed with the short thickish style; stigmas 3, reddish-brown, slender.

TYPE LOCALITY: "Grows on the borders of mountain woods, Williamstown" (Massachusetts).

DISTRIBUTION: Woods and thickets in calcareous districts, Vermont and Ontario to Wisconsin, and southward to West Virginia, Kentucky, and western Missouri. (Specimens examined from Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, District of Columbia, West Virginia, Virginia, Ontario, Ohio, Michigan, Wisconsin, Indiana, Kentucky, Illinois, Missouri.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 772; ed. 2. f. 1001; Rob. & Fern. Man. f. 490; Boott, Ill. Carex 41. pl. 100; Am. Jour. Sci. 10: pl. E, f. 17.

43. *Griseae* L. H. Bailey, Proc. Am. Acad. 22: 107. 1886; Kükenth. in Engler, Pflanzenreich 4²⁰: 516, in part. 1909; LAXIFLORAE Kunth, Enum. Pl. 2: 452, in part. 1837; Tuckerm. Enum. Caric. 15, in part. 1843; PALLESCENTES Carey, in A. Gray, Man. 552, in part. 1848; LEJOCHLAENAE Holm, Am. Jour. Sci. IV. 16: 458, in part. 1903. Treated as a genus MANOCHLAENIA by Börner (Abh. Nat. Ver. Bremen 21: 271. 1913).

Culms slender, leafy; leaf-blades flat; basal sheaths brownish or purplish; terminal spike staminate, linear; lateral spikes 2–4, pistillate, many-flowered in several rows, erect, on more or less strongly exserted peduncles; bracts sheathing, not dark-colored or dark-auricled, the blades leaf-like; scales ovate, acute, awned; perigynia ascending, elliptic to broadly obovoid, glabrous, membranaceous to subcoriaceous, finely impressed with many nerves, rounded at base, rounded to round-tapering at apex, suborbicular in cross-section, from not inflated to turgid, beakless or nearly so, the orifice entire or emarginate; achenes triangular, apiculate, jointed with the style; stigmas 3.

A group of seven species of the eastern part of North America.

Perigynia elliptic, 1.25–1.5 mm. wide; leaf-blades 1.75–4 mm. wide; bract-sheaths minutely serrulate on edges; peduncles of pistillate spikes rough.

Staminate spike 1–1.5 mm. wide, few-flowered, short-peduncled; upper spikes approximate; culms 4–8 cm. high, 2–6 times exceeded by bracts.

310. *C. katahdinensis*.

Staminate spike 2–3 mm. wide, many-flowered, usually long-peduncled; upper pistillate spikes somewhat separate to overlapping; culms 1–7 dm. high, usually exceeding leaves and somewhat exceeded by the upper bracts.

311. *C. conoidea*.

Perigynia oblong-oval to broadly obovoid, 2–2.5 mm. wide; leaf-blades 2–18 mm. wide; bract-sheaths smooth; peduncles of pistillate spikes smooth or nearly so.

Pistillate spikes 3–15-flowered; bract-sheaths tight.

Perigynia oblong-oval or oblong-obovoid; style-base scarcely enlarged; ligule prominent, longer than wide; leaf-blades light-green or deep-green.

Culms strongly purplish-tinged at base; perigynia not or scarcely turgid; leaf-blades 2–4 mm. wide, erect; pistillate spikes widely separate, the lower nearly basal; achenes slenderly short-stipitate.

312. *C. amphibola*.

Culms brownish-tinged at base; perigynia somewhat turgid; leaf-blades 4–7 mm. wide, ascending; lower pistillate spikes not nearly basal; achenes substipitate.

313. *C. grisea*.

Perigynia broadly obovoid, turgid; style-base conspicuously enlarged and bulbous; ligule much wider than long; leaf-blades light-green or glaucous-green; culms strongly purplish-tinged at base.

314. *C. bulbostylis*.

Pistillate spikes 10-45-flowered; bract-sheaths enlarged upward.

Tip of achene bent; perigynia 3-5 mm. long, from twice the length of to somewhat exceeding the scales; leaf-blades thickish, glaucous-green; sheaths reddish-dotted ventrally at mouth.

Tip of achene straight; perigynia 4-6 mm. long, 2-3 times exceeding the scales; leaf-blades thinnish, light-green or glaucous-green; sheaths rarely reddish-dotted ventrally.

315. *C. glaucoidea*.

316. *C. flaccosperma*.

310. *Carex katahdinensis* Fernald, *Rhodora* 3: 171.

pl. 32, *f.* 1-4. 1901.

Cespitose, the rootstocks slender, more or less prolonged, the clumps small or medium-sized, the culms 4-8 cm. high, erect, slender, central and phyllopodic, sharply triangular, roughened on the angles above, much exceeded by and hidden among the leaves, cinnamon-brown-tinged at base, the sterile shoots elongate; leaves with well-developed blades 5-8 to a fertile culm, clustered, the blades flat, deep-green, stiffish, ascending, 0.6-2.5 dm. long, 1.75-4 mm. wide, tapering, noticeably roughened towards apex, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; sheaths tight, yellowish-brown-tinged ventrally, the ligule as long as wide; terminal spike staminate, short-peduncled, 5-10 mm. long, 1-1.5 mm. wide, narrow, few-flowered, the peduncle rough, the scales oblong-obovate, acutish, white-hyaline with 3-nerved green center, more or less yellowish-brown-tinged; upper pistillate spikes 3 or 4, approximate, the lowest more or less remote, oblong, 7-14 mm. long, 3.5-5 mm. wide, the uppermost overtopping the staminate spike, short exsert-peduncled (the peduncles rough), containing 6-15 closely arranged, appressed-ascending perigynia in few rows; bracts leaf-like, sheathing, 2-6 times exceeding inflorescence, the sheath-edges minutely serrulate; scales ovate, sharply keeled, more or less strongly awned, nearly as wide as but shorter than perigynia, hyaline with 3-nerved green center; perigynia elliptic, 3-4 mm. long, 1.25 mm. wide, little inflated, suborbicular in cross-section, yellowish-green or brownish-green, membranaceous, punctulate, finely impressed with many nerves, sessile and rounded at base, round-tapering at apex, very nearly beakless, the orifice entire; achenes obovoid, rather loosely enveloped in lower three fourths of perigynium, 2 mm. long, 1 mm. wide, triangular with sides concave below and angles blunt, yellowish-brown, substipitate, apiculate-tipped, jointed with the short slender style; stigmas 3, short, slender, reddish-brown.

TYPE LOCALITY: Depot Pond, Mount Katahdin, Piscataquis County, Maine.

DISTRIBUTION: Gravelly shores and rocky banks, Newfoundland to Lake St. John, Quebec, and Maine. (Specimens examined from Valley of Exploits River, Newfoundland; Lake St. John, Quebec; Mount Katahdin, Maine.)

ILLUSTRATIONS: *Rhodora* 3: *pl.* 32, *f.* 1-4; *Rob. & Fern. Man. f.* 492; *Britt. & Brown, Ill. Fl. ed.* 2, *f.* 1002.

311. *Carex conoidea* Schkuhr; Willd. *Sp. Pl.* 4: 280. 1805.

Carex granularioides Schw. *Ann. Lyc. N. Y.* 1: 69. 1824. (Type from Bethlehem, Pennsylvania.)

"*Carex tetanica* Schkuhr" Schw. & Torr. *Ann. Lyc. N. Y.* 1: 347. 1825.

Carex illinoensis Dewey, *Am. Jour. Sci.* II, 6: 245. 1848. (Type from Augusta, Illinois.)

Densely cespitose, the rootstocks very short, the clumps medium-sized, the culms 1-7 dm. high, leafy, slender, erect, sharply triangular, rough on the angles, usually exceeding the leaves, sometimes shorter, lateral and aphyllopodic or central and phyllopodic, cinnamon-brown-tinged at base; sterile shoots forming conspicuous culms; leaves (not bracts) usually 1-3 to a culm, clustered near the base, the blades flat, long-acuminate, green, not flaccid, ascending, usually about 1 dm. long, but varying from 5 to 35 cm., 2-4 mm. wide, rough on the margins and towards the apex, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; sheaths tight, short-prolonged at mouth beyond base of blade, the ligule conspicuous; staminate spike usually long-peduncled, rarely nearly sessile, linear, 1-2 cm. long, 2-3 mm. wide, many-flowered, the peduncle very rough, the scales oblong-obovate, obtuse to acute, cinnamon-brown with 3-nerved green center and hyaline margins; pistillate spikes 1-3, the lowest widely separate, the two upper somewhat separate to overlapping, rough-peduncled (the lower peduncles at least long-exserted from the sheaths of the bracts), erect, linear-oblong,

0.5–2.5 (usually 0.8–1.5) cm. long, 4–5 mm. wide, rather closely 8–25-flowered, the perigynia ascending in several rows; bracts leaf-like, reduced upwards, the upper 1 or 2 somewhat exceeding the culm, the sheaths 2.5 cm. long or less, minutely serrulate on edges; scales ovate, strongly awned to acuminate, with broad green 3-nerved center and brownish-hyaline margins, usually considerably shorter than the perigynia, but often equaling or exceeding them; perigynia elliptic, scarcely inflated, suborbicular and somewhat triangular in cross-section, 3 mm. long, 1.5 mm. wide, yellowish-green, becoming brownish-green, membranaceous, punctulate, finely impressed with many nerves, sessile, rounded at base, round-tapering at apex, very nearly beakless, the orifice entire; achenes obovoid, rather loosely enveloped in lower three-fourths of perigynium, 2 mm. long, 1.25 mm. wide, triangular with concave sides and blunt angles, yellowish-brown, granular, short-stipitate, tapering at base, apiculate-tipped, jointed with the short slender style; stigmas 3, slender, reddish-brown.

TYPE LOCALITY: "Habitat in America boreali." (Pennsylvania.)

DISTRIBUTION: Meadows, Newfoundland to Minnesota, and southward to Delaware, Ohio, and Iowa, and in the mountains to North Carolina. (Specimens examined from Newfoundland, Miquelon, St. Pierre, Quebec, Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, North Carolina, southwestern Ontario, Ohio, Michigan, Indiana, Wisconsin, Minnesota, Illinois, Iowa.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 770; ed. 2. f. 1003; Rob. & Fern. Man. f. 493; Schkuhr, Riedgr. pl. Vvv, f. 168; Boott, Ill. Carex 33. pl. 82; Am. Jour. Sci. 9: pl. A, f. 4; Rhodora 3: pl. 32, f. 5–7.

312. *Carex amphibola* Steud. Syn. Cyp. 234. 1855.

Carex grisea var. *angustifolia* Boott, Ill. Carex 34. pl. 87. 1858. (Type from Texas.)

Carex cryptandra Schw.; E. Hall, Pl. Tex. 25, name only. 1873.

Carex cryptandra var. *pedunculata* Olney; E. Hall, Pl. Tex. 25, name only. 1873.

Carex grisea var. *minor* Olney; E. Hall, Pl. Tex. 25, name only. 1873. (Type from Texas.)

Carex grisea var. *minor* Böck. Linnaea 40: 443. 1876. (Based on *C. grisea* var. *angustifolia* Boott and Texas plant cited.)

Carex grisea var. (?) *rigida* L. H. Bailey, Mem. Torrey Club 1: 56. 1889. (Type from Sellersville, Pennsylvania.)

Carex grisea var. *amphibola* Kükenth. in Engler, Pflanzenreich 4²⁹: 520. 1909. (Based on *C. amphibola* Steud.)

Densely caespitose, the rootstocks very short, the culms very slender but erect, lateral or central, 2–6 dm. high, leafy throughout, triangular, smooth or nearly so, exceeded by the leaves, strongly purple-tinged at base; sterile shoots elongate, conspicuous; leaves with blades 1–3 dm. long, and 2–4 mm. wide, erect, thin, flat, deep-green, long-attenuate, the midvein prominent on the lower surface and the two mid-lateral veins on the upper, roughened towards the apex, the sheaths white-hyaline ventrally and somewhat yellowish-brown-tinged and red-dotted, the ligule conspicuous, longer than wide; staminate spike slender, rough-peduncled, linear, 1–3 cm. long, 1.5–2.5 mm. wide, the scales oblong-obovate, obtuse or acutish, whitish-hyaline with 3-nerved green center, reddish-brown-tinged; pistillate spikes 3–5, linear-oblong, 1–2.5 cm. long, 2.5–4 mm. wide, widely and evenly separate, the lowest nearly basal, erect on slender, smooth, more or less strongly exerted peduncles, with 4–12 erect-ascending perigynia somewhat alternate in few rows; bracts long-sheathing, the sheaths smooth, tight, long-bladed, the upper overlapping the culms; scales ovate-triangular, much narrower and shorter than the perigynia, strongly awned, white-hyaline with green midvein, slightly yellowish-brown-tinged and red-dotted; perigynia oblong-oval, suborbicular-triangular in cross-section, not or scarcely turgid, 3.5–4.5 mm. long, 2 mm. wide, minutely asperulous and punctulate, subcoriaceous, light-green or in age yellowish-brown, finely impressed with many nerves, sessile, rounded at base, very minutely short-pointed at apex, the orifice slightly hyaline, entire; achenes obovoid, 2.5 mm. long, 1.5 mm. wide, triangular with concave sides, somewhat loosely enveloped in lower three-fourths of perigynium, yellowish-brown, granular, slenderly short-stipitate, apiculate, jointed with the straight slender style; stigmas 3, reddish-brown, slender, 2 mm. long.

TYPE LOCALITY: "Carex nr. 437. Drummond. * * * Am. sptr."

DISTRIBUTION: Dry woodlands, Florida and Texas northward to western New Jersey, and in the interior to Indiana. (Specimens examined from western New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, South Carolina, Georgia, Florida, Alabama, Mississippi, Texas, Arkansas, Missouri, Kentucky, Indiana.)

ILLUSTRATIONS: Rob. & Fern. Man. f. 495; Britt. & Brown, Ill. Fl. f. 760; ed. 2. f. 1004; Boott, Ill. Carex 34, pl. 87.

NOTE: Type verified by L. H. Bailey (Mem. Torrey Club 1: 69) as *Carex grisea* var. *angustifolia*. However Drummond 437 in the New York Botanical Garden is *Carex blanda* Dewey, and C. B. Clarke in his copy of Steudel has so marked *C. amphibola*. Steudel's description applies to the present plant.

313. *Carex grisea* Wahl. Sv. Vet.-Akad. Nya Handl.

24: 154. 1803.

"*Carex laxiflora* Lam." Schkuhr, Riedgr. Nachtr. 69. pl. Kkk, f. 141. 1806.

Manochlaenia grisea Fedde & Schuster, Bot. Jahresb. 41: 11. 1918. (Based on *C. grisea* Wahl.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms leafy throughout, stoutish, 5 mm. thick at base, 2-8 dm. high, erect, triangular, rough on the angles above, from shorter than to exceeding the leaves, but exceeded by the leaf-like bracts, central and phyllopodic, brownish-tinged at base; sterile shoots conspicuous, elongate; leaves (not bracts) 2-several to a culm, chiefly toward the base, the blades thin, light-green, flat, ascending, 4-7 mm. wide, those of the culms 0.5-2 dm. long, those of the sterile shoots often 2.5-3.5 dm. long, roughened towards the apex and on the margins, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; sheaths smooth, very thin ventrally, prolonged upward at mouth beyond base of blade and continuous with the prominent ligule, the ligule much longer than wide; staminate spike sessile or very short-peduncled, linear, 1-3 cm. long, 2-3 mm. wide, the scales oblong-obovate, acute or acuminate, white-hyaline with 3-nerved green center, more or less reddish-brown-tinged; pistillate spikes 3-5, erect, the lower 1 or 2 widely separate, on slender, nearly smooth peduncles, but not nearly basal, the upper 1 or 2 approximate, not exsert-peduncled, short-oblong to linear-oblong, 7-25 mm. long, 4-7 mm. wide, closely 4-15 flowered, the perigynia erect-ascending in few rows; bracts large and leaf-like, long-sheathing, the sheaths tight, the upper somewhat reduced, usually all exceeding the culms; scales ovate-lanceolate, the lower (at least) prominently awned, narrower and (except the lower) usually somewhat shorter than the perigynia, white-hyaline with prominent, 3-nerved, green center, somewhat yellowish-brown-tinged; perigynia oblong-obovoid, suborbicular and slightly triangular in cross-section, somewhat turgid, 4.5-5.5 mm. long, 2-2.5 mm. wide, glabrous, submembranaceous, light-green or yellowish-green, finely impressed with very many nerves, sessile, rounded at base and apex, beakless or very nearly so, the orifice entire; achenes obovoid, rather loosely enveloped but nearly filling perigynium, sharply triangular with concave sides, 2.5 mm. long, 2 mm. wide, substipitate, short-apiculate, jointed with the short, rather stout style; stigmas 3, reddish-brown, slender, rather short, often twisted.

TYPE LOCALITY: "Patria ignota est; in America borealis. In herbaris Swartzii asservatur."

DISTRIBUTION: Dry woods and thickets, western New Brunswick to Ontario and Minnesota, and southward to Georgia and Texas. (Specimens examined from western New Brunswick, Quebec, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, Georgia, Alabama, Ontario, Ohio, Michigan, Wisconsin, Indiana, Kentucky, Tennessee, Illinois, Minnesota, Iowa, Missouri, Nebraska, Kansas, Oklahoma, Arkansas, Louisiana, Texas.)

ILLUSTRATIONS: Schkuhr, Riedgr. pl. Kkk, f. 141 (as *C. laxiflora*); Britt. & Brown, Ill. Fl. f. 759; ed. 2. f. 1005; Rob. & Fern. Man. f. 494; Rep. N. J. Mus. 1910: pl. 24, f. 2; Boott, Ill. Carex 34, pl. 86; Bull. Lab. Nat. Hist. Univ. Iowa 4: pl. 3 (as *C. amphibola*).

NOTE: In Encycl. Suppl. 3: 243. 1813, under a reference to *Carex laxiflora* Lam., reference is made to Schkuhr, f. 141, which is *Carex grisea* Wahl., but Lamarck's specimens do not belong here.

314. *Carex bulbostylis* Mackenzie, Bull. Torrey Club.

42: 617. 1915.

Carex grisea var. *globosa* L. H. Bailey, in A. Gray, Man. ed. 6. 605. 1890. (At least in part; based on specimens from Missouri, Kansas, and southward.)

Carex amphibola var. *globosa* L. H. Bailey, Contr. U. S. Nat. Herb. 2: 480. 1894. (Based on *C. grisea* var. *globosa* L. H. Bailey.)

Cespitose, the rootstocks short, tough, woody, rather slender, the culms 2-4 dm. high, central and phyllopodic or lateral and aphyllopodic, leafy, slender, erect or ascending, obtusely triangular, smooth or nearly so, strongly purplish-tinged at base, exceeding the leaves, but

exceeded by the bracts; sterile shoots elongate; leaves with well-developed blades 4–10 to a culm, the blades flat with revolute margins, light-green or glaucous-green, thin, erect, long-tapering, mostly 1–2 dm. long, or up to 3 dm. on sterile shoots, 2.5–3.5 mm. wide; sheaths smooth or nearly so, tight, more or less red-dotted ventrally, prolonged at mouth beyond base of blade, the ligule short, much wider than long; staminate spike apparently long-peduncled (actually nearly sessile, the uppermost pistillate spike usually being abortive and with short-sheathing bract), 2–3 cm. long, 2.5–3.5 mm. wide, the scales oblong-obovate, whitish with slightly excurrent, 3-nerved, green midrib, reddish-brown-tinged and dotted; developed pistillate spikes 3 or 4, widely separate, the lower on slender erect rough peduncles, the upper scarcely exsert-peduncled, 3–7-flowered, oblong or suborbicular, 7–20 mm. long, 6–7 mm. wide, the perigynia appressed-ascending; bracts leaf-like, strongly sheathing, the sheaths tight; scales broadly ovate, white-hyaline and reddish-brown-tinged, with sharply-keeled, 3-nerved, green center exerted as a long cusp, the body narrower than and about half the length of the perigynia; perigynia broadly obovoid, globose in cross-section, turgid, 4.5 mm. long, 2.5 mm. wide, finely impressed with many nerves, green, becoming greenish-straw-colored, membranaceous, punctulate, minutely hispidulous when young, rounded at base and apex, the orifice entire; achenes obovoid, triangular with concave sides and blunt angles, 3 mm. long, 2 mm. wide, granular, yellowish, substipitate, tapering at base, minutely apiculate, jointed with the conspicuously enlarged bulbous base of the very short deciduous style; stigmas 3, short, reddish-brown.

TYPE LOCALITY: Valley of the Trinity River, Fort Worth, Texas (*Ruth 360*).

DISTRIBUTION: Dry woodlands in calcareous districts, Louisiana and western Arkansas to northeastern and central Texas. (Specimens examined from Arkansas, Louisiana, Texas.)

315. *Carex glaucoidea* Tuckerm.; Olney, Proc. Am. Acad.

7: 395. 1868.

Carex grisea var. *mutica* Carey, in A. Gray, Man. 552. 1848. (As to plant described; not *C. mutica* R. Br. 1823.)

"*Carex flaccosperma* Dewey" Boott, Ill. Carex 35, in part. *pl. 88*. 1858.

Carex flaccosperma var. *glaucoidea* Kükenth. in Engler, Pflanzenreich 4²⁰: 518. 1909. (Based on *C. glaucoidea* Tuckerm.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms 1–6 dm. high, erect or ascending, leafy, obtusely triangular, smooth, mostly lateral and aphyllopodic, some central and phyllopic, usually but not always exceeding the leaves, brownish at base; sterile shoots forming short culms or reduced to tufts of leaves; leaves (not bracts) several to a culm, the blades flat, stiff, thickish, glaucous, ascending or spreading, usually 1–2 dm. long, 3–10 mm. wide, acute or acuminate, roughened on the veins and on the margins toward the apex, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; sheaths smooth, enlarged upward, prolonged at mouth beyond base of blade, reddish-dotted, the ligule prominent, longer than wide; staminate spike linear, sessile or very short-peduncled, rarely long-peduncled, 10–25 mm. long, 2–3 mm. wide, the scales narrowly oblong-obovate, acute or obtuse, reddish-brown or hyaline with lighter-colored or green 3-nerved center; pistillate spikes usually 4, widely separated, the lowest often nearly basal, erect, the upper not exsert-peduncled, the lower exsert-peduncled (the peduncles smooth), oblong or linear-oblong, 1–4 cm. long, 5 mm. wide, densely 10–45 flowered, the perigynia appressed-ascending in several rows; bracts leaf-like, reduced upwards, the upper exceeding the culm, the sheaths smooth, 4 cm. long or less, reddish-dotted ventrally at mouth; scales ovate, varying from obtusish to awned, narrower than and usually about half the length of the perigynia, but frequently as long, whitish-hyaline with 3-nerved center and reddish-brown-hyaline margins; perigynia oblong-obovoid, suborbicular in cross-section, scarcely inflated, 3–5 mm. long, 1.5–1.75 mm. wide, yellowish-green or brownish-green, punctulate, subcoriaceous, glabrous, many-nerved, sessile, rounded at base and apex, beakless, the orifice entire; achenes obovoid, nearly filling perigynium, triangular with concave sides and blunt angles, 2.25 mm. long, 1.5 mm. wide, stipitate, brownish, granular, bent-apiculate, obscurely jointed with the very short style; stigmas 3, reddish-brown, short.

TYPE LOCALITY: "Moist traprocks, summit of Mount Holyoke and Mount Tom," (Massachusetts). (Tuckerman.)

DISTRIBUTION: Dry open places, fields and meadows, more or less moist in spring, western Massachusetts to Ontario and Illinois, and southward to North Carolina and Arkansas. (Specimens examined from Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, West Virginia, Kentucky, Ohio, southwestern Ontario, Indiana, Illinois, Missouri, Arkansas.)

ILLUSTRATIONS: Boott, Ill. *Carex* 35, in part. *pl.* 88 (as *Carex flaccosperma*); Britt. & Brown, Ill. Fl. *f.* 762; ed. 2. *f.* 1006; Rob. & Fern. Man. *f.* 496.

NOTE: Very closely related to *Carex flaccosperma*.

316. *Carex flaccosperma* Dewey, Am. Jour. Sci. II. 2: 245. 1846.

Carex laxiflora var. (?) *mutica* Torr. Ann. Lyc. N. Y. 3: 414. 1836. (Type from Texas.)

Carex grisea var. *mutica* Carey, in A. Gray, Man. 552. 1848. (Based on *C. laxiflora* var. *mutica* Torr.)

Carex microsperma Steud. Syn. Cyp. 231. 1855. (Type from Texas.) Not *C. microsperma* Wahl. 1805.

Carex xanthosperma Dewey, Am. Jour. Sci. II. 42: 334. 1866. (New name for *C. flaccosperma* Dewey.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms erect or ascending, leafy, obtusely triangular, 1.5–6 dm. high, smooth, mostly lateral and aphyllopodic, some central and phyllopodic, exceeding the leaves, brownish at base; sterile shoots forming short culms or reduced to tufts of leaves; leaves with well-developed blades (not bracts) 3–5 to a fertile culm, the blades flat, thinnish, not stiff, light-green or glaucous-green, usually 7–20 cm. long, 4–9 mm. wide, acute or acuminate, roughened on the margins and towards the apex on the veins, the midvein prominent on the lower surface and the two mid-lateral veins on the upper; blades of sterile culms wider (8–18 mm.) and somewhat longer; sheaths smooth, enlarged upward, prolonged at mouth beyond base of blade, rarely reddish-dotted, the ligule prominent, longer than wide, reddish-dotted; staminate spike linear, little to strongly peduncled, 1–2.5 cm. long, 2–3 mm. wide, the scales narrowly oblong-obovate, obtuse or acute, whitish-hyaline with 3-nerved green center, strongly tinged with reddish-brown; pistillate spikes 2–4, very widely separate, the lowest often nearly basal, erect on smooth peduncles exerted one half to twice the length of the spikes, the spikes narrowly oblong, 1–3.5 cm. long, 4.5–6 mm. wide, the 10–40 appressed-ascending perigynia closely packed in several rows; bracts leaf-like, the sheaths smooth, enlarged upward, 0.5–3.5 cm. long, rarely reddish-dotted ventrally, the upper blades often exceeding inflorescence; scales broadly ovate, awned to acute, narrower than and from one third to one half the length of the perigynia, hyaline with 3-nerved green center, and often reddish-tinged; perigynia oblong-obovoid, suborbicular or obscurely triangular in cross-section, scarcely inflated, 4–6 mm. long, 2–2.25 mm. wide, yellowish or brownish-green, punctulate, subcoriaceous, many-nerved, sessile, rounded at base, rounded at apex, beakless or very slightly contracted at orifice, the orifice hyaline, entire; achenes obovoid, 2.5 mm. long, 1.75 mm. wide, loosely enveloped in lower two thirds of perigynium, triangular with concave sides and blunt angles, granular, yellowish-brown, stipitate, slenderly straight-apiculate, obscurely jointed with the slender style; stigmas 3, reddish-brown, short.

TYPE LOCALITY: "Florida and Louisiana, *Dr. Leavenworth*."

DISTRIBUTION: Dry open places, fields and meadows, often wet in spring, Florida to Texas, northward to North Carolina, and in the interior to Missouri. (Specimens examined from North Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, Texas, Arkansas, Missouri.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. *f.* 761; ed. 2. *f.* 1007; Rob. & Fern. Man. *f.* 497; Engler, Pflanzenreich 4²⁰: 519. *f.* 82.

44. *Longicaules* Mackenzie. TRIQUETRAE Carey; Olney, Proc. Am. Acad. 7: 395, in part. 1868; Mackenzie, Erythea 8: 61, in part. 1922; PUBESCENTES Kükenth. in Engler, Pflanzenreich 4²⁰: 577, in large part. 1909. By Holm (Am. Jour. Sci. IV. 16: 461–2. 1903) placed with the SPAERIDIOPHORAE Drejer, and (Am. Jour. Sci. IV. 16: 463. 1903) with the HYMENOCHLAENAE Drejer.

Cespitose, leafy towards base; culms (often) and foliage, at least the sheaths, more or less pubescent; leaf-blades narrow; terminal spike staminate or gynaeandrous; lateral spikes 2–5, pistillate, linear-oblong, oblong, or oblong-cylindric, approximate or more or less separate,

5–30-flowered in few to several rows, the upper sessile or nearly so, the lower exsert-peduncled; lower bract very short-sheathing or scarcely sheathing, leaflet-like; pistillate scales greenish or hyaline or reddish-brown-tinged; perigynia of an ovoid or obovoid type, bluntly triangular, pubescent or glabrous, membranaceous, ascending, tapering at base and more or less stipitate, abruptly contracted to tapering into a short beak, the orifice more or less obliquely cut, very shallowly to strongly bidentate; achenes triangular with concave sides, closely enveloped; style short, thickish, jointed with the achene, withering and deciduous; stigmas 3, early-deciduous.

A group of dry-ground species, of which five, confined to California and the mountains of Mexico, are known.

- Perigynia 2.5–4 mm. long, slenderly or obsolete nerved; leaf-blades stiff with revolute margins (Mexican).
 Basal sheaths strongly purplish-red-tinged; pistillate spikes linear, 3 mm. wide; perigynia 2.5–3 mm. long, oval-obovoid, glabrous, the beak emarginate or shallowly bidentate; culms usually densely cespitose. 317. *C. anisostachys*.
 Basal sheaths brownish-tinged or cinnamon-tinged; pistillate spikes oblong or linear-oblong, 4–6 mm. wide; perigynia 3.5–4 mm. long, ovoid or obovoid, pubescent or glabrous, the beak more sharply bidentate; culms loosely cespitose.
 Perigynia and scales glabrous or nearly so; beak of perigynium bidentate; leaf-blades sparingly pilose beneath. 318. *C. longicaulis*.
 Perigynia strongly short-pilose-pubescent, the beak strongly bidentate; leaf-blades strongly villous beneath; scales sparingly pilose. 319. *C. Coulteri*.
 Perigynia 3.5–5 mm. long, strongly ribbed or nerved; leaf-blades not stiff (Californian).
 Perigynia ovoid, 3.5–4.25 mm. long, abruptly short-beaked, several-nerved; pistillate scales spreading. 320. *C. flaccifolia*.
 Perigynia elliptic-ovoid to elliptic-obovoid, 3.75–5 mm. long, tapering or contracted into the beak, strongly nerved or ribbed; pistillate scales appressed. 321. *C. Whitneyi*.

317. *Carex anisostachys* Liebm. Danske Vid. Selsk. Skr.

V. 2: 266. 1850.

- Carex chlorocarpos* Liebm. Danske Vid. Selsk. Skr. V. 2: 265. 1850. (Type from Sierra de Oaxaca, Mexico.) Not *C. chlorocarpa* Wimm. 1850.
Carex olivacea Liebm. Danske Vid. Selsk. Skr. V. 2: 267. 1850. (Type from Mt. Orizaba, Mexico.) Not *C. olivacea* Boott, 1846.
Carex Liebmanni Walp. Ann. 3: 705. 1852. (Based on *C. chlorocarpos* Liebm.)
Carex monticola Böck. Bot. Jahrb. 1: 364. 1881. (Based on *C. olivacea* Liebm.) Not *C. monticola* Dewey, 1861.
Carex androgyna L. H. Bailey, Proc. Am. Acad. 22: 101. 1886. (Based on *C. olivacea* Liebm.) Not *C. androgyna* Balbis, 1792.
Carex anisostachys var. *chlorocarpa* L. H. Bailey, Mem. Torrey Club 1: 66. 1889. (Based on *C. chlorocarpos* Liebm.)
Carex oaxacana L. H. Bailey, Bot. Gaz. 25: 271. 1898. (Based on *C. olivacea* Liebm.)
Carex felipensis C. B. Clarke, Kew Bull. Add. Ser. 8: 84. 1908. (Type from Sierra de San Felipe, Oaxaca, Mexico.)
Carex anisostachys var. *monticola* Kükenth. in Engler, Pflanzenreich 4^{oo}: 580. 1909. (Based on *C. monticola* Böck.)

Usually densely cespitose, from stout, matted, woody rootstocks, the culms 1.5–9 dm. high, slender but stiff, much surpassing the leaves, aphyllopodic, sharply triangular, not roughened but slightly hairy, purplish-red-tinged at base, the basal sheaths breaking and becoming somewhat filamentose; leaves with well-developed blades 5–10 to a fertile culm, not septate-nodulose, the lower bunched towards the base, the blades stiff, light-green, erect-ascending, flat with revolute margins, long-attenuate, usually 5–15 cm. long, 1–3 mm. wide, glabrate or sparsely minutely pubescent, not ciliate, rough at the apex, the sheaths tight, short, pubescent dorsally and ventrally, reddish-brown-spotted ventrally, at mouth concave, and extending up beyond point of insertion of blade, the ligule not longer than wide; spikes 3–5, erect, close together or the lowest more or less remote, forming a head 3–6 cm. long, the lowest strongly peduncled, the upper lateral shorter-peduncled to nearly sessile, the upper androgynous or staminate throughout or pistillate in center, the others pistillate, linear, 7–15 mm. long, 3 mm. wide, containing 10–20 closely arranged ascending perigynia in several rows; lower bract 2–4 cm. long, shorter than the head, the others absent or much shorter, sheathless or

nearly so; staminate scales oblong-ovate, acutish to obtusish, hyaline with green midrib, tinged with brownish or straw-color; pistillate scales ovate, narrower than and varying from longer than perigynia and acuminate (lower) to shorter than perigynia and obtusish (upper), greenish-hyaline and somewhat reddish-brown-tinged; with 3-nerved green center; perigynia rather narrowly oval-obovoid, 2.5–3 mm. long, 1.25 mm. wide, triangular, somewhat flattened, not at all inflated, glabrous, membranaceous, slenderly few-nerved, punctulate, green, tapering at base, substipitate, abruptly contracted into a short-cylindric, whitish-tipped, obliquely cut, emarginate or shallowly bidentate beak 0.5 mm. long; achenes oblong-oval, 1.5 mm. long, sharply triangular with concave sides, brownish, punctulate, closely enveloped, sessile, short-apiculate, jointed with the very short style; stigmas 3, slender, rather long, reddish-brown.

TYPE LOCALITY: Chinantla, Dept. Puebla, Mexico (*Liebmann*).

DISTRIBUTION: Mountains of southern and central Mexico. (Specimens examined from Hidalgo, Oaxaca.)

ILLUSTRATIONS: Engler, *Pflanzenreich* 4²⁰: 579, f. 96, A–D.

318. *Carex longicaulis* Böck. *Flora* 65: 62. 1882.

Carex ciliaris Fernald, *Proc. Am. Acad.* 43: 61. 1907. (Type from Lena, Hidalgo.)

Loosely cespitose and short-stoloniferous, from stout matted elongate rootstocks, the culms 2.5–6 dm. high, slender, stiff, erect, strongly exceeding the leaves, phyllopodic, sharply triangular, slightly pubescent but scarcely roughened, brownish-tinged at base, the dried-up leaves of the previous year conspicuous, the basal sheaths not filamentose; leaves with well-developed blades 6–12 to a fertile culm, clustered near the base, the blades light-green, flat with revolute margins, ciliate and sparingly pilose below, 5–20 cm. long, 2.5–3.5 mm. wide, strongly papillate, roughened towards the attenuate apex, the sheaths sparingly pilose dorsally, slightly yellowish-brown-tinged ventrally, the ligule very short, much wider than long; terminal spike staminate or usually with perigynia at base or middle, short-peduncled or nearly sessile, 12–18 mm. long, 2–3 mm. wide, the scales oblong-obovate, acuminate or acute, short-ciliate, whitish-hyaline with 3-nerved green, straw-colored, or brownish center; pistillate spikes 2–5, erect, approximate or but little separate, sessile or the lower short-exsert-peduncled, oblong or linear-oblong, 6–18 mm. long, 4–6 mm. wide, densely 10–25-flowered, the perigynia ascending in few or several rows; lowest bract leaflet-like, exceeding the inflorescence, short-sheathing; upper bracts much reduced; scales ovate or ovate-lanceolate, cuspidate or acute, sharply keeled, glabrous or nearly so, white-hyaline with 3-nerved green center, slightly shorter and narrower than perigynia; perigynia 4 mm. long, the body obovoid, strongly triangular, 2 mm. wide, glabrous, membranaceous, light green, punctulate, obscurely many-nerved, tapering at base, rather abruptly beaked, the beak 0.5–1 mm. long, flattened-subconic, obliquely cleft, sharply but not deeply bidentate; achenes short-obovoid, 2.5 mm. long, 1.75 mm. wide, triangular with concave sides, closely enveloped, slightly stipitate, apiculate, jointed with the short straight style; stigmas 3, slender, dark-reddish-brown.

TYPE LOCALITY: "In valli Mexico" (*Schaffner* 413).

DISTRIBUTION: South Mexico and Mexico State. (Specimens examined from Hidalgo and Mexico.)

319. *Carex Coulteri* Boott; Hemsl. *Biol. Centr. Am. Bot.* 3: 473. 1885.

Carex longicaulis var. *Coulteri* Kükenth. in Engler, *Pflanzenreich* 4²⁰: 580. 1909. (Based on *C. Coulteri* Boott.)

Loosely cespitose, the rootstocks stout, matted, more or less elongate, the culms 6–8 dm. high, slender, erect, exceeding the leaves, phyllopodic, sharply triangular, short-pubescent, brownish-tinged at base, the dried-up leaves of the previous year few but conspicuous, the basal sheaths not filamentose; leaves with well-developed blades 5–10 to a culm, on the lower half but not bunched, the blades light-green, stiff, flat with strongly revolute margins, usually 2–3 dm. long, 2–3 mm. wide, long-attenuate, strongly villous beneath, sparsely pilose above,

the sheaths soft-villous dorsally, yellowish-brown ventrally, concave at mouth, the ligule short; terminal spike staminate, linear, erect, short-peduncled to nearly sessile, 1.5–2.5 cm. long, 2–3 mm. wide, the scales oblong-obovate, appressed, sparingly pilose, acute or mucronate, with greenish or yellowish 3-nerved center and whitish-hyaline margins; pistillate spikes about 4, the 2 upper approximate, the others more or less separate, erect, sessile or short-peduncled, linear-oblong, 8–15 mm. long, 4–6 mm. wide, closely flowered, the perigynia 10–25, ascending in several rows; lower bracts leaflet-like, short-sheathing, usually shorter than the inflorescence, the upper much reduced; scales ovate, hyaline with 3-nerved green center, sparsely pilose, acute to short-cuspidate, rather narrower and shorter than the perigynia; perigynia obovoid, 3.5 mm. long, 1.75 mm. wide, sharply triangular, strongly short-pilose-pubescent, membranaceous, light-green, about 3-nerved on each side, tapering at base, contracted at apex into a short (0.75 mm. long), flattened, subconic, strongly bidentate beak, the teeth hyaline, slender; achenes obovoid, 2.25 mm. long, 1.5 mm. wide, triangular with concave sides, closely enveloped, sessile, apiculate, jointed with the short straight style; stigmas 3, slender, dark-reddish-brown.

TYPE LOCALITY: "South Mexico, Zimapan (*Coulter 1620*), Santa Fé, valley of Mexico. (*Bourgeau 671*)."

DISTRIBUTION: Central Mexico. (Specimens examined from State of Mexico.)

ILLUSTRATIONS: Engler, *Pflanzenreich* 4²⁰: 579. f. 96, E–G.

320. *Carex flaccifolia* Mackenzie, *Erythea* 8: 92. 1922.

Rootstocks not seen; culms 6–9 dm. high, slender, weak, sharply triangular, much exceeding leaves, aphyllipodic, sparingly pubescent, not roughened on the angles, dull-light-brownish at base; leaves with well-developed blades 2–4 to a culm, on lower fourth, but not bunched, not septate-nodulose, the blades flat, flaccid, pubescent on both sides, 0.5–2.5 dm. long, 2–3.5 mm. wide, the mid-lateral nerves prominent above, the sheaths white-pubescent, tight, white-hyaline ventrally, deep-concave at mouth, the ligule conspicuous, longer than wide; staminate spike sessile or short-peduncled, 1–2.5 cm. long, 2–4 mm. wide, the scales appressed, oblong-obovate, obtuse or slightly cuspidate, whitish and more or less dull-yellowish-brown-tinged, the margins hyaline, the center 1–3-nerved; pistillate spikes 2 or 3, approximate, erect, sessile or short-peduncled, oblong, 12–25 mm. long, 6–9 mm. wide, with 12–25 ascending perigynia, not closely arranged, in few rows; bracts leaflet-like, the lowest very short-sheathing, the upper sheathless, the blade of the lowest equaling or exceeded by the inflorescence; scales spreading, ovate, short-cuspidate to acute, about width of and usually somewhat shorter but sometimes somewhat longer than mature perigynia, the body strongly white-hyaline-margined, the apex slightly ciliate-serrulate, the center green, prominently 3–5-nerved; perigynia ovoid, 3.5–4.25 mm. long, 2.25 mm. wide, sharply triangular, glabrous, membranaceous, dull-green, punctulate, strongly several-nerved on each side, round-tapering at base, short-tapering at apex and abruptly short-beaked, the beak 0.25 mm. long, the orifice hyaline, oblique or becoming bidentulate; achenes oval-ovoid, 3.25 mm. long, 2 mm. wide, triangular with concave sides, light-brown, the superficial cells conspicuous, closely enveloped, sessile, apiculate, jointed with the very short (0.5 mm. long) straight style; stigmas 3, rather slender, short.

TYPE LOCALITY: Southwestern California, *George B. Grant* (U. S. Nat. Herb. no. 468192).

DISTRIBUTION: Said to occur on dry sunny plains in southwestern California, no definite station given. Known only from the type specimen.

ILLUSTRATION: Abrams, *Ill. Fl. Pacif. St.* f. 782.

321. *Carex Whitneyi* Olney, *Proc. Am. Acad.* 7: 394. 1868.

Carex pilosiuscula Böck. *Flora* 65: 61. 1882. (Type from salt plains of the Rocky Mountains.)
Not *C. pilosiuscula* Gobi, 1876.

Densely caespitose, from stout rootstocks, the clumps medium-sized, the culms usually 2.5–5 dm. (or even 10 dm.) high, rather stiff but slender, exceeding the leaves, aphyllipodic, sharply triangular, not at all or but little roughened on the angles, purplish-brown-tinged at base; leaves with well-developed blades usually 3–5 to a fertile culm, on lower fourth but not

bunched, not septate-nodulose, the blades flat with revolute margins, usually 1-2 dm. long, 2.5-8 mm. wide, soft-pubescent on both surfaces, long-acuminate, thin, not stiff, the mid-lateral nerves prominent above, the sheaths cinnamon-brown-tinged ventrally, concave at mouth, the ligule conspicuous, longer than wide; terminal spike staminate, linear, erect, short-peduncled, 5-30 mm. long, 2-4 mm. wide, the scales appressed, ovate, obtuse to acutish, whitish and more or less reddish-brown-tinged with 3-ribbed greenish center; pistillate spikes 2 or 3, approximate, or the lowest considerably separated, erect, sessile or short-peduncled, oblong or linear-oblong, or the uppermost short, 7-30 mm. long, 5-7 mm. wide, the 5-30 perigynia ascending, closely arranged in few rows; bracts well-developed with very short (1-5 mm. long) sheaths, the blade of the lowest leaf-like, 2-12 cm. long, from shorter than to somewhat exceeding the inflorescence; upper bracts reduced; scales appressed, ovate, short-cuspidate to acute, about the width of and from shorter to longer than the mature perigynia, sparingly ciliate-serrulate above, whitish with 3-nerved green center, the margins often chestnut-brown-tinged; perigynia elliptic-ovoid or elliptic-obovoid, 3.75-5 mm. long, 2 mm. wide, sharply triangular, slightly flattened, glabrous, membranaceous, light-green, punctulate, about 5-nerved or 5-ribbed on each side, round-tapering at base and substipitate, tapering or contracted into a smooth short (0.5-0.75 mm. long) beak, with obliquely cut, white-hyaline orifice at length minutely bidentate; achenes oval-obovoid or oval-ovoid, 3 mm. long, 1.8 mm. wide, triangular with concave sides, closely enveloped, substipitate, pointed at apex and minutely apiculate, jointed with the very short, somewhat thickish style; stigmas 3, slender, reddish-brown.

TYPE LOCALITY: "California, Yosemite Valley, *Brewer 1639*, *Bolander 6198*, *Hillebrand 2305*, *2308*, *2314*; Mount Dana, 12000 feet, *Bolander 5086*; Soda Springs, 9000 feet, *Brewer 1778*."

DISTRIBUTION: Southern Oregon and northern California, and southward in the Sierra Nevada mountains to Tulare County, California. Erroneously recorded from Colorado by Kükenthal (in Engler, *Pflanzenreich* 4²⁰: 581). (Specimens examined from all parts of the range as above given.)

ILLUSTRATIONS: *Erythraea* 8: 61. f. 31; Abrams, Ill. Fl. Pacif. St. f. 783; Jepson, Man. Fl. Pl. Calif. f. 189.

45. *Viridiflorae* Mackenzie. DECORAE Kükenth. in Engler, *Pflanzenreich* 4²⁰: 541, in very small part. 1909. By L. H. Bailey (Proc. Am. Acad. 22: 97. 1886) referred to the POLYSTACHYAE Tuckerm.

Densely or loosely caespitose; culms leafy on lower part; strongly purplish-tinged at base; leaf-blades rather narrow, the sheaths often hispidulous dorsally or ventrally or both; spikes 3-12, single or in pairs, androgynous, very slender, linear or elongate-linear, the lower strongly separate, strongly exsert-peduncled, usually drooping, the perigynia 10-80, appressed-ascending in few rows; lower bract leaf-like or leaflet-like, long-sheathing; pistillate scales sharply keeled, acute to short-awned, reddish-brown or yellowish-brown-tinged; perigynia obtusely triangular, not inflated, glabrous, membranaceous, 2-keeled and finely several-nerved, substipitate or stipitate, nearly beakless, or tapering or contracted into a short slender beak, the orifice obliquely cut, hyaline, becoming bidentate or bidentulate; achenes triangular with concave sides, closely enveloped, apiculate, jointed with the slender style; stigmas 3, short.

Three dry-ground species, from the mountains of Mexico.

Leaf-blades 2-4 mm. wide, channeled at least at base above, more or less keeled below; pistillate spikes 2.5-8 cm. long, the perigynia 10-40.

Leaf-blades sparsely short-hirsute, the sheaths short-hispidulous dorsally; perigynium-beak 1 mm. long, sparsely ciliate-serrulate; culms densely caespitose.

322. *C. viridiflora*.

Leaf-blades glabrous, the sheaths smooth dorsally; perigynium scarcely or very minutely beaked; culms loosely caespitose, the rootstocks very elongate.

323. *C. pertenuis*.

Leaf-blades 3.5-5.5 mm. wide, flat; sheaths strongly hispidulous dorsally; pistillate spikes 8-12 cm. long, the perigynia 30-80; perigynium-beak 1.5 mm. long, smooth.

324. *C. perlonga*.

322. *Carex viridiflora* Mackenzie.

Carex viridis Schlecht. & Cham. *Linnaea* 6: 30. 1831. (Type from southern Mexico.) Not *C. viridis* Honck. 1792.

Densely caespitose, the rootstock very short, the new shoots at the base of the old, the culms 2-6 dm. high, slender, erect, shorter than to exceeding the leaves, phyllopodic, triangu-

lar with slightly concave sides, slightly roughened above, strongly purplish-tinged at base; sterile shoots elongate; leaves with well-developed blades 6-9 to a fertile culm, widely separated and not at all bunched, not septate-nodulose. the blades ascending or erect, thin, not flaccid, dull-green, usually 1-2.5 dm. long, 2-3 mm. wide, channeled above, keeled below, the margins revolute, sparsely short-hirsute, very rough above, long-attenuate, the sheaths rounded and short-hispidulous dorsally, purplish-dotted or blotched and hispidulous ventrally, the basal breaking, scarcely filamentose, the ligule somewhat longer than wide; spikes 5-8, androgynous or the terminal also staminate at base, the lower strongly separated, strongly exsert-peduncled and more or less nodding, the upper approximate, short-exsert-peduncled and erect (the peduncles very slender, smooth), narrowly linear, elongate, 3-8 cm. long, 2.5 mm. wide, the lower rarely slightly branching, closely flowered above, loosely below, the staminate part 3-8 mm. long, the perigynia 15-40, appressed-ascending in few rows; lowest bract leaflet-like, long-sheathing, from shorter than to slightly exceeding culm, the upper reduced, shorter-sheathing; scales appressed, thin, ovate or ovate-lanceolate, narrower and somewhat shorter than perigynia, acute to cuspidate, sharply keeled, hyaline and slightly yellowish-brown-tinged, with conspicuous green midrib; staminate scales similar but less keeled; perigynia 3.5 mm. long, the body oblong-obovoid, obtusely triangular in cross-section, not inflated, 0.9 mm. wide, smooth, green, membranaceous, 2-ribbed and obscurely finely several-nerved, tapering at base and short-stipitate, abruptly beaked, the beak 1 mm. long, somewhat flattened, sparsely ciliate-serrulate, obliquely cut, the apex hyaline, becoming bidentulate or bidentate; achenes oblong-obovoid, 2 mm. long, 0.8 mm. wide, triangular with concave sides, yellowish, closely enveloped and filling body of perigynium, tapering at base, substipitate, prominently apiculate, jointed with the straight, slender style; stigmas 3, slender, short.

TYPE LOCALITY (of *C. viridis* on which *C. viridiflora* is based): Southern Mexico.

DISTRIBUTION: Central Mexico.

ILLUSTRATION: Boott, Ill. *Carex* 159. pl. 522.

NOTE 1: The description is based on Müller 1977, in part, without date.

NOTE 2: Böckeler (Linnaea 40: 330. 1876) gives Junghuhn as the author of the name *Carex viridis*, but this is not in accordance with the original publication.

323. *Carex pertenuis* L. H. Bailey, Mem. Torrey Club 1: 9. 1889.

"*Carex viridis* Jungh." Kükenth. in Engler, Pflanzenreich 4^o: 550, in part. 1909.

Loosely caespitose, from slender, very elongate, long-stoloniferous rootstocks, the culms 2.5-8 dm. high, very slender, weak, much exceeding the leaves, mostly central and phyllopodic, some lateral and aphylopodic, bluntly triangular, smooth, strongly purplish-tinged at base; sterile shoots elongate; leaves with well-developed blades 5-8 to a fertile culm, on lower half, the basal more or less clustered, not septate-nodulose, the blades ascending or erect, thin, not stiff, deep-green, not hairy, usually 1-3 dm. long, 2-4 mm. wide, flat except channeled at base, more or less keeled below, revolute on the margins, attenuate, much roughened towards the apex, the sheaths rounded and glabrous dorsally, reddish-brown-tinged and smooth ventrally, the ligule as long as wide; spikes 3-7, androgynous, the lower 1-3 widely separate, the upper approximate, flexuous, drooping on smooth, slender, exserted peduncles shorter or somewhat longer than the spikes, the spikes elongate, narrowly linear, 2.5-5 cm. long, about 3 mm. wide, somewhat closely flowered above, loosely below, the upper 6-12 mm. staminate, the perigynia 10-30, appressed-ascending in few rows; lower bract leaflet-like, long-sheathing, very much shorter than the culm, the upper reduced, shorter-sheathing; staminate scales oblong-obovate, short-cuspidate to obtuse, reddish-brown with lighter midrib and minutely hyaline margins; pistillate scales appressed, obovate, cuspidate or short-rough-awned, sharply keeled, reddish-brown with lighter midrib and minutely hyaline margins, nearly as wide as but somewhat shorter than the perigynia; perigynia oblong-oblanccolate, 3.25 mm. long, scarcely 1 mm. wide, obtusely triangular in cross-section, slightly flattened, glabrous, membranaceous, puncticulate, dull-green, purplish-spotted, 2-ribbed (the marginal) and finely several-nerved, tapering at base, short-stipitate, tapering at apex, scarcely or very minutely beaked, the orifice entire; achenes oblong-obovoid, 2 mm. long, 0.8 mm. wide, triangular with concave sides, blackish,

closely enveloped and filling lower three fourths of perigynium, substipitate, apiculate, jointed with the straight, slender, whitish style; stigmas 3, slender, short.

TYPE LOCALITY: Orizaba, Mexico (*Müller 1337 and 1338*).

DISTRIBUTION: Mt. Orizaba, middle Mexico. (Specimens examined from Mt. Orizaba.)

324. *Carex perlonga* Fernald, Proc. Am. Acad. 43: 61. 1907.

Cespitose, the rootstocks short, stout, the culms 5–9 dm. high, stoutish at base, slender above, exceeding the leaves, central and phyllopodic or lateral and aphyllpodic, sharply triangular with flat sides and smooth angles, strongly purple-tinged at base, the lower sheaths breaking and very slightly filamentose; leaves with well-developed blades 5–10 to a fertile culm, not septate-nodulose, the lower somewhat clustered, the blades erect, thin, deep-green, flat with revolute margins, usually 1.5–3.5 dm. long, 3.5–5.5 mm. wide, long-tapering, strongly roughened towards apex, the sheaths rounded and strongly hispidulous dorsally, yellowish-brown-tinged and purple-spotted and hispidulous ventrally, concave and purple-tinged at mouth, the ligule much longer than wide; spikes 6–12, androgynous, the lower widely separate, the upper approximate, in pairs or single, very elongate-linear, 8–12 cm. long, 3–4.5 mm. wide, closely flowered above, loosely at base, the upper fourth or fifth staminate, the perigynia 30–80, appressed-ascending in few rows; lower bract leaf-like, long-sheathing, exceeded by culm, purple-tinged at mouth, the upper much reduced; scales oblong-ovate or lanceolate, the pistillate closely appressed, short-awned or acuminate, nearly as wide at base but much narrower above and shorter than the perigynia, sharply keeled, thin, dull-reddish-brown, with 1–3-nerved green center and dull-hyaline margins, the staminate similar but less pointed and with whitish-hyaline apex; perigynia spindle-shaped, 5 mm. long, scarcely 1 mm. wide, obtusely triangular in cross-section, smooth, green, membranaceous, punctulate, 2-ribbed (the marginal) and finely several-nerved, tapering at base, stipitate, tapering into a slender, smooth, obliquely cut, at length bidentate, hyaline-tipped beak 1.5 mm. long; achenes oblong-obovoid, 2.5 mm. long, 0.75 wide, triangular with slightly concave sides, yellowish, closely enveloped in lower four fifths of perigynium body, substipitate, apiculate, not constricted in middle, jointed with the straight slender style; stigmas 3, slender, yellowish-brown, short.

TYPE LOCALITY: Barranca, below Trinidad Iron Works, Hidalgo, Mexico, at 5200 feet (*Pringle 8863*, June 2, 1904).

DISTRIBUTION: Known only from the type locality. (Specimens examined from Hidalgo.)

EDITORIAL NOTE: In the belief that *Carex perlonga* Fernald is a homonym of *C. praelonga* C. B. Clarke, the author used the unpublished name *C. longa* in his original manuscript and probably annotated herbarium specimens accordingly.

46. *Gracillimae* Carey, in A. Gray, Man. 552. 1848; L. H. Bailey, Proc. Am. Acad. 22: 106. 1886; Kükenth. in Engler, Pflanzenreich 4²⁰: 581. 1909. Referred to the LAXIFLORAE Kunth by Tuckerman (Enum. Caric. 15. 1843), and to the MICROCARPAE Kükenth. by Holm (Am. Jour. Sci. IV. 16: 459. 1903).

Culms slender, leafy; foliage often soft-hairy, the sheaths hairy, at least the lower hispidulous; leaf-blades flat; terminal spike gynaeandrous or abnormally sometimes staminate or in one species staminate; lateral spikes 2–4, elongate, of a linear-cylindric or oblong-cylindric type, the lower at least slender-peduncled and drooping; lower bract or several bracts strongly green-sheathing, the blades leaf-like; perigynia of an oblong or ovoid type, not at all inflated to markedly inflated, membranaceous, 2-keeled, otherwise nerveless or strongly several- to many-nerved, beakless or short-beaked, the orifice entire or emarginate or bidentate; achenes triangular with concave sides, apiculate, jointed with the style; stigmas 3, short.

A group represented by seven species, in the eastern wooded districts of the temperate and cooler parts of North America.

Plant glabrous except that the lower sheaths are more or less hispidulous dorsally.

Perigynia rounded or short-tapering at apex, beakless, 2.5–3.5 mm. long.

325. *C. gracillima*.

Perigynia tapering into a triangular, often somewhat bent beak nearly as long as the body.

326. *C. prasina*.

Sheaths and often leaf-blades pubescent; perigynia beaked (except in *C. aestivalis*).

Terminal spike normally gynaeandrous; lowest bract or several bracts sheathing; pistillate scales often not reddish-brown-tinged; achenes obovoid or oblong-obovoid.

Spikes all gynaeandrous; pistillate scales except lowest obtuse or acute; perigynia 2-ribbed and obscurely nerved.

Lateral spikes pistillate; pistillate scales obtuse to strongly awned.

Perigynia 1.75–2.5 mm. wide, strongly nerved, the beak shallowly bidentate; lateral spikes closely flowered except at base.

Bracts strongly sheathing; leaf-blades 3–8 mm. wide.

Upper scales acuminate or short-cuspidate; perigynia 3.5–4 mm. long, 1.75–2 mm. wide, scarcely inflated; spikes linear-cylindric.

Upper scales long-cuspidate; perigynia 4–5 mm. long, 2–2.5 mm. wide, inflated; spikes linear-oblong or oblong-cylindric.

Lower bract only strongly short-sheathing; leaf-blades 2–4 mm. wide.

Perigynia about 1 mm. wide, not inflated, 2-ribbed and obscurely nerved, the orifice entire; lateral spikes alternately flowered at base; leaf-blades 1.5–2.5 mm. wide.

Terminal spike staminate; bracts sheathless; pistillate scales brownish-red; achenes narrowly oblong-obovoid.

327. *C. formosa*.

328. *C. oxylepis*.

329. *C. Davisii*.

330. *C. aestivaliformis*.

331. *C. aestivalis*.

332. *C. misera*.

325. *Carex gracillima* Schw. Ann. Lyc. N. Y. 1: 66. 1824.

"*Carex digitalis* Willd." Schw. & Torr. Ann. Lyc. N. Y. 1: 324, *pl.* 27, *f.* 1. 1825.

Loxanisa gracillima Raf. Good Book 26. 1840. (Based on *Carex gracillima* Schw.)

Carex gracillima var. *humilis* L. H. Bailey, Mem. Torrey Club 1: 71. 1889. (Type locality not given.)

Carex gracillima f. *humilis* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 584. 1909. (Based on *C. gracillima* var. *humilis* L. H. Bailey.)

Carex gracillima var. *macerrima* Fernald & Wieg. Rhodora 15: 133. 1913. (Type from York Harbor, Bay of Islands, Newfoundland.)

Cespitose, the rootstocks rather slender but tough, short, the clumps medium-sized, the sterile culms numerous, elongate, the fertile culms 2–9 dm. high, slender, erect, exceeding the leaves, aphyllodipodic, smooth or nearly so, strongly purple-tinged at base; leaves 3 or 4 to a culm, evenly separated on the lower half, the blades flat, glabrous, deep-green, flaccid, ascending, 1–3 dm. long, 3–7 mm. wide, roughened towards the apex and on the margins, the sheaths very long, hyaline ventrally and yellowish-brown-tinged and reddish-dotted, the lowest more or less hispidulous dorsally, the ligule short; terminal spike gynaeandrous, the lower two thirds staminate, pistillate above or occasionally entirely staminate, slender-peduncled, narrowly linear, 1–4 cm. long, the staminate portion 1.5 mm. wide, rather loosely flowered, the scales ovate-lanceolate, acuminate or cuspidate, whitish-hyaline with green midrib; pistillate spikes usually 3 or 4, widely separate or the upper 2 approximate, nodding or spreading on slender roughish peduncles often as long as the spikes, the spikes narrowly linear, 1–5 cm. long, 2–3 mm. wide, from loosely to rather closely 10–45-flowered, the perigynia in few rows, ascending and usually much overlapping or more loosely flowered at base; bracts strongly sheathing, the lowest leaf-like and usually exceeding the culm, the upper much shorter and usually exceeded by the culm; scales obovate, ovate, or ovate-lanceolate, white-hyaline with green midrib, often yellowish-brown-tinged, typically half the length of the perigynia and obtusish, but varying to cuspidate and with the lowest nearly equaling the perigynia; perigynia oblong-obovoid, 2.5–3.5 mm. long, 1.5 mm. wide, triangular-suborbicular in cross-section, little inflated, glabrous, membranaceous, puncticulate, few-nerved, round-contracted at base, beakless, rounded or short-tapering at apex; achenes obovoid, triangular with concave sides and thick blunt angles, 1.5 mm. long, 1 mm. wide, granular, in lower half of perigynium, sessile or nearly so, slender-apiculate, jointed with the straight, slender style; stigmas 3, blackish, very short.

TYPE LOCALITY: Bethlehem, Pennsylvania (*Schweinitz*).

DISTRIBUTION: Dry open woodlands and thickets, Newfoundland to Manitoba, and southward to Virginia, Kentucky and Missouri. (Specimens examined from Newfoundland, Quebec, Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, Ontario, Michigan, Ohio, Kentucky, Indiana, Wisconsin, Illinois, Minnesota, Missouri.)

ILLUSTRATIONS: Ann. Lyc. N. Y. 1: *pl.* 27, *f.* 1. (as *C. digitalis*); Am. Jour. Sci. 11: *pl.* 1, *f.* 28; Britt. & Brown, Ill. Fl. *f.* 747; ed. 2. *f.* 1008; Rob. & Fern. Man. *f.* 436; Kunze, Suppl. Riedgr. *pl.* 8

(excluding *f* and *g*); Engler, *Pflanzenreich* 4²⁰: 583. *f.* 97; Boott, *Ill. Carex* 55. *pl.* 145; Francis, *Grasses* 310.

HYBRIDS: An apparent hybrid with *Carex hirtifolia* Mackenzie occurs. It has sharply keeled and awned pistillate scales; short-pubescent and short-beaked perigynia, and staminate terminal spikes. It has been collected at Columbus, Ohio (*Sullivant*), at Stanton, Delaware (*Commons*), and at Yonkers, New York (*E. C. Howe*). The scales strongly resemble those of *Carex hirtifolia*, but the general appearance of the plant is strikingly different. Sullivant says the two supposed parents grew with the plant. The synonymy of this supposed hybrid is as follows: *Carex Sullivantii* Boott; A. Gray, *Am. Jour. Sci.* 42: 29. 1842; *Ill. Carex* 50. *pl.* 133. 1858. *Carex pubescens* × *arctata* Böck. *Linnaea* 41: 229. 1877. *Carex gracillima* × *pubescens* L. H. Bailey, *Proc. Am. Acad.* 22: 107. 1886. A drawing of it was also published by Dewey (*Am. Jour. Sci.* 49: 44. *pl.* EE, *f.* 111).

An apparent hybrid with *Carex hirsutella* Mackenzie was found at Philipstown, New York by Barratt more than one hundred years ago. The specimen is still preserved in the Torrey Herbarium. This same hybrid was recorded by Dewey from Newburgh, New York, and Stockbridge, Massachusetts (*Am. Jour. Sci.* 11: 315. 1826). Its synonymy is as follows: *Carex hirsuta* var. *pedunculata* Schw. & Torr. *Ann. Lyc. N. Y.* 1: 323. 1825. *Carex gracillima* × *hirsuta* L. H. Bailey, *Mem. Torrey Club* 1: 76. 1889. *Carex gracillima* × *triceps* Kükenth. in Engler, *Pflanzenreich* 4²⁰: 757. 1909.

326. *Carex prasina* Wahl. Sv. Vet.-Akad. Nya Handl. 24: 161. 1803.

Carex miliacea Muhl.; Willd. *Sp. Pl.* 4: 290. 1805. (Type from Pennsylvania.) Not *C. miliacea* Schrank, 1789.

Olamblis miliacea Raf. *Good Book* 26. 1840. (Based on *Carex miliacea* Muhl.)

Carex subcompressa Steud. *Syn. Cyp.* 221. 1855. (Type from "Am. septr.")

Densely caespitose and not stoloniferous, from very short rootstocks, the clumps medium-sized or large, the culms 3–8 dm. high, erect, slender, remotely leafy, somewhat exceeding the leaves, sharply triangular with concave sides, asperulous and roughened on the angles above, brownish or slightly purplish-tinged at base, the basal sheaths slightly filamentose; sterile shoots elongate; leaves with well-developed blades 3–5 to a fertile culm, on the lower third, the blades light-green, flat, thin, increasing in length upwards, roughened on margins and towards apex, the uppermost 8–15 cm. long, 2.5–4 mm. wide, the sterile-culm leaves longer and rather wider, the sheaths glabrous, very thin and white-hyaline ventrally, the ligule about as long as wide; staminate spike solitary, linear, strongly peduncled, 2–4 cm. long, 2.5–4 mm. wide, occasionally bearing some perigynia, the scales obovate-oblong, acute to short-awned, greenish-white with green midrib; pistillate spikes 2–4 (usually 3), occasionally staminate at apex, approximate, linear, 2–6 cm. long, 3.5–5 mm. wide, the lower on long, slender, smooth peduncles, the upper on shorter peduncles, all nodding or curving, 20–50-flowered, the perigynia in few rows, ascending, closely packed, or the spikes somewhat attenuate at base; lowest bract leaflet-like, short-sheathing, somewhat exceeding inflorescence, the upper reduced, scarcely sheathing; scales ovate or obovate, mucronate or cuspidate, whitish with green 3-nerved center, shorter and slightly narrower than the perigynia; perigynia sharply triangular, narrowly ovoid-rhomboid, 3–4 mm. long, 1.5 mm. wide, not inflated, membranaceous, green, punctulate, nerveless or nearly so except for the two prominent lateral nerves, short-stipitate and rounded at base, tapering at apex into a smooth, triangular, often somewhat bent beak nearly the length of the body, the orifice white-hyaline, entire or emarginate; achenes broadly obovoid, 1.5 mm. long, 1.2 mm. wide, closely enveloped in lower half of perigynia, triangular with deeply concave sides and blunt angles, sessile, light-brownish, apiculate-tipped, jointed with the straight, slender style; stigmas 3, short, slender, light-reddish-brown.

TYPE LOCALITY: "Hab. in America boreali, *Kjellman*; ex herbario Bergiano."

DISTRIBUTION: Springy banks along shaded streamlets, Quebec and Maine to Michigan, and southward to the District of Columbia and Kentucky and in the Alleghanies to Georgia. (Specimens examined from Quebec, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Ontario, Ohio, Michigan, Indiana, Kentucky.)

ILLUSTRATIONS: Britt. & Brown, *Ill. Fl. f.* 730; ed. 2. *f.* 1009; Rob. & Fern. *Man. f.* 470; Engler, *Pflanzenreich* 4²⁰: 585. *f.* 98; Schkuhr, *Riedgr. pl.* 0, *f.* 151; Boott, *Ill. Carex* 101. *pl.* 300.

327. *Carex formosa* Dewey, *Am. Jour. Sci.* 8: 98. 1824.

Edritria formosa Raf. *Good Book* 26. 1840. (Based on *Carex formosa* Dewey.)

Cespitose and not stoloniferous, the rootstocks short, tough, the clumps medium-sized, the culms 3–8 dm. high, slender, weak, exceeding the leaves, aphyllopodic, triangular, short-

pubescent on the angles, at least above, strongly purple-tinged at base, the lower sheaths breaking and becoming filamentose; leaves 3 or 4 to a culm, not at all bunched, evenly separated on the lower half, the blades ascending, deep-green, flat, flaccid, 1–2 dm. long, 3–6 mm. wide, the upper and bracts (at least) short-hairy below especially on the margins; sheaths very long, conspicuously white-hyaline and nearly glabrous and sparingly red-dotted ventrally, truncate at mouth, the ligule very short; terminal spike staminate below (lower two thirds) and with a few pistillate flowers above, capillary-peduncled, narrowly linear, 1.5–3 cm. long, the staminate portion 2 mm. wide, the scales oblong-ovate, loose, acute or obtuse, greenish-white with green midrib; pistillate spikes 3 or 4, widely separate, nodding on rough capillary peduncles from one to five times as long as spikes, the spikes linear, 1–2.5 cm. long, 4 mm. wide, the lower few scales usually empty, closely 8–20-flowered in few rows, the ascending perigynia overlapping; bracts strongly sheathing, shorter than or equaling culm, the lower one or two leaf-like, the upper much reduced; scales ovate, half to two thirds the length of the perigynia, obtuse to acute or the lower short-awned, white-hyaline with green midrib; perigynia oblong-oval, 3.5–5 mm. long, 1.75–2 mm. wide, suborbicular or obscurely triangular in cross-section, somewhat inflated, glabrous, membranaceous, deep-green, sparingly red-dotted, obscurely nerved except for the two lateral ribs, tapering at base, substipitate, contracted into a short, slender beak, the beak entire or bidentulate, white at mouth; achenes obovoid, 2 mm. long, 1.5 mm. wide, sharply triangular with concave sides and prominent angles, in lower half of perigynia, substipitate, scarcely apiculate, jointed with the slender style; stigmas 3, slender, brownish, rather short.

TYPE LOCALITY: Stockbridge, Massachusetts.

DISTRIBUTION: Woods and thickets, in calcareous districts, southwestern Quebec to Wisconsin, and southward to western Connecticut and New York. A handsome local species. (Specimens examined from southwestern Quebec, Vermont, Massachusetts, Connecticut, New York, Ontario, Michigan, Wisconsin.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 750; ed. 2. f. 1010; Rob. & Fern. Man. f. 434; Boott, Ill. Carex 53. pl. 141; Am. Jour. Sci. 9: pl. B, f. 6.

328. *Carex oxylepis* Torr. & Hook.; Torr. Ann. Lyc. N. Y.

3: 409. 1836.

Carex familiaris Steud. Syn. Cyp. 226. 1855. (Type from the Rio Brazos, Texas.)

Carex oxylepis var. Böck. Linnaea 44: 408. 1876. (From South Carolina.)

Carex oxylepis f. *glabra* Böck.; Kükenth. in Engler, Pflanzenreich 4²⁰: 589. 1909. (Type from South Carolina.)

Cespitose, from slender but tough blackish rootstocks, the clumps medium-sized, the culms 2.5–8 dm. high, slender, from shorter to longer than the leaves, aphyllpodic, sharply triangular, glabrous to slightly pubescent on the angles, strongly purple-tinged at base, the lower sheaths sometimes breaking and becoming filamentose; leaves 3–5 to a culm, not septate-nodulose, evenly separated on the lower half, the blades ascending, flat, thin, deep-green, soft, 1–3 dm. long, 3–6 mm. wide, more or less hairy, especially on the under surface, the sheaths long, more or less hairy, hyaline ventrally, concave at mouth, the ligule nearly as long as wide; terminal spike gynaeandrous, the lower two thirds staminate and with few to several pistillate flowers above, peduncled, 1.5–3.5 cm. long, the staminate portion 1–2 mm. wide, the scales oblanceolate, acuminate or short-cuspidate, rather loose, white-hyaline with green midrib; pistillate spikes 2 or 3, somewhat separate, erect or more or less drooping, on slender, slightly hairy peduncles usually shorter than the spikes, the spikes linear-cylindric, 1.5–4.5 cm. long, 3–4 mm. wide, closely (or more loosely at base) 15–40-flowered, in several rows; bracts from shorter to somewhat longer than the culm, strongly sheathing, the lower leaf-like, the upper reduced; scales narrowly ovate, acuminate, cuspidate, or short-awned (the upper acuminate or short-cuspidate), greenish-white, with 3-ribbed green center, scabrous above, narrower and shorter than the perigynia; perigynia ascending, elliptic-lanceolate, 3.5–4 mm. long, 1.75–2 mm. wide, triangular-suborbicular in cross-section, scarcely inflated, glabrous, membranaceous, deep-green, punctulate, strongly several-nerved, round or round-tapering at base, substipitate, round-tapering and short-beaked at apex, the beak shallowly bidentate; achenes obovoid, 2 mm. long, 1.5 mm. wide, triangular with concave sides and blunt angles, granular, yellowish,

in lower half of perigynium, rather closely enveloped, minutely substipitate, apiculate-tipped, jointed with the straight slender style; stigmas 3, very short, brownish-black.

TYPE LOCALITY: "Texas, T. Drummond. (Texas collection III. no. 436)."

DISTRIBUTION: Rich woods, Texas to Florida, and northward to southeastern Missouri, Tennessee, and Virginia. (Specimens examined from Florida, Georgia, South Carolina, North Carolina, Alabama, Tennessee, Mississippi, Louisiana, Texas, Arkansas, southeastern Missouri.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 749; ed. 2. f. 1011; Rob. and Fern. Man. f. 438; Boott, Ill. Carex 53. pl. 142.

329. *Carex Davisii* Schw. & Torr. Ann. Lyc. N. Y. 1: 326. 1825.

Carex (anon.) no. 45, Muhl. Descr. Gram. 254. 1817. (From "Cherokee.")

Carex aristata Dewey, Am. Jour. Sci. 7: 277. 1824. (Type from western Massachusetts.) Not *C. aristata* Honck. 1792; nor *C. aristata* Clairv. 1811; nor *C. aristata* R. Br. 1823.

Carex Torreyana Dewey, Am. Jour. Sci. 10: 47. 1825. (Based on *C. aristata* Dewey.) Not *C. Torreyana* Schw. 1824.

Loxotrema Davisii Raf. Good Book 25. 1840. (Based on *Carex Davisii* Schw. & Torr.)

Carex albostris C. B. Clarke, Kew Bull. Add. Ser. 8: 78. 1908. (Type from Dallas, Texas.)

Carex Davisii f. *glabrescens* Kükenth. in Engler, Pflanzenreich 4²⁹: 588. 1909. (Type from Ohio.)

Cespitose, the rootstocks tough, dark-colored, the clumps medium sized, the culms 3-9 dm. high, slender, erect, from shorter to longer than the leaves, aphyllopodic, triangular, from noticeably pubescent to glabrous on the angles, strongly purple-tinged at base, the lower sheaths sometimes breaking and becoming filamentose; leaves 3-5 to a culm, evenly separated on the lower half, the blades ascending, flat, soft, deep-green, 1-3 dm. long, 3-8 mm. wide, long-attenuate, more or less soft-hairy (usually strongly so) especially on the under surface, the sheaths long, more or less hairy, yellowish-brown-tinged ventrally, concave at mouth, the ligule about as long as wide; terminal spike gynaeandrous, the lower two thirds staminate, and with few to several pistillate flowers above, peduncled, 1.5-3.5 cm. long, the staminate portion 1-2 mm. wide, the scales rather loose, lanceolate, awned, cuspidate, or acuminate, white-hyaline with green midrib; pistillate spikes 2 or 3, somewhat separate, erect or more or less drooping, on sparingly hairy peduncles usually shorter than the spikes, the spikes linear-oblong or oblong-cylindric, 2-4 cm. long, 3-6 mm. wide, closely 10-40-flowered in few rows; bracts strongly sheathing, from shorter to longer than the culm, the lower leaf-like, the upper reduced; scales ovate-lanceolate, long-cuspidate, 3-ribbed, white-hyaline with green center, narrower and usually somewhat shorter than the perigynia; perigynia ascending, oblong-ovoid, 4-5 mm. long, 2-2.5 mm. wide, suborbicular or obscurely triangular in cross-section, inflated, green or in age yellowish-brown-tinged, glabrous, membranaceous, punctulate, reddish-brown-dotted, rather strongly several- to many-nerved, round or round-tapering at base, and truncately very short-stipitate, rounded and very short-beaked at apex, the beak slender, white-tipped, bidentate or bidentulate; achenes oblong-obovoid, 2.5 mm. long, 1.75 mm. wide, triangular with concave sides and blunt angles, loosely enveloped in lower half of perigynia, yellowish, granular, slender, substipitate, slender-apiculate, jointed with the straight slender style; stigmas 3, slender, blackish, very short.

TYPE LOCALITY: "Hab. Williamstown, Massachusetts. Prof. Dewey."

DISTRIBUTION: Alluvial woodlands, mostly in calcareous districts, Vermont and western Massachusetts to Minnesota, and southward to Maryland, Tennessee, and Texas. (Specimens examined from southwestern Quebec, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Ohio, Wisconsin, Indiana, Kentucky, Tennessee, Illinois, Minnesota, Iowa, Missouri, Kansas, Oklahoma, Texas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 751; ed. 2. f. 1012; Rob. & Fern. Man. f. 435; Boott, Ill. Carex 54. pl. 143; Am. Jour. Sci. 9: pl. A, f. 1 (*C. aristata* Dewey).

330. *Carex aestivaliformis* Mackenzie, Bull. Torrey Club

37: 238. 1910.

Carex gracillima × *aestivalis* L. H. Bailey, Bull. Torrey Club 20: 419. 1893. (Type from Alcove, Albany County, New York.)

Culms densely cespitose, 3.5-9 dm. high, slender, erect or ascending, exceeding the leaves, aphyllopodic, sharply triangular and roughened on the angles above, glabrous or nearly so, remotely leafy on lower half, strongly purplish-tinged at base, the basal sheaths breaking and

becoming prominently filamentose, the sterile shoots reduced to tufts of leaves; well-developed blades some 4 or 5 to a fertile culm, the blades glabrous or sparsely pubescent and ciliate near base, or strongly soft-pubescent, rough, the longer about 3 dm. long, 2–4 mm. wide, thin, flat, deep-green, ascending, the sheaths yellowish-brown-tinged and red-dotted ventrally, concave and more or less hairy at mouth, the lower at least hispidulous dorsally, the ligule longer than wide; spikes 3 or 4, widely separate or slightly approximate, narrowly linear, 1.5–6 cm. long, 3.5 mm. wide, the terminal gynaeceandrous, the lower two thirds staminate, the lateral pistillate, nodding or weakly erect on long, slender, rough peduncles, the perigynia 20–40, appressed-ascending, closely packed in few rows, or loosely at base; lowest bract leaflet-like, strongly short-sheathing, shorter or longer than inflorescence, the upper reduced, little sheathing; scales ovate, short-cuspidate acuminate acute or obtuse, greenish-white with hyaline margins and 3-nerved green center, sometimes tinged with reddish-brown, narrower than and about two thirds the length of the perigynia; staminate scales similar but more white-hyaline; perigynia oblong-ovoid, 3–3.5 mm. long, 1.75 mm. wide, flattened-triangular in cross-section, not inflated, glabrous, deep-green, punctulate, strongly several-nerved, rounded at base, substipitate, abruptly very short-beaked, the beak slender, 0.25–0.5 mm. long, minutely bidentate and hyaline-tipped; achenes obovoid, 2 mm. long, 0.75 mm. wide, triangular with concave sides, not filling perigynia, nearly sessile, short-apiculate, jointed with the straight slender style; stigmas 3, slender, reddish-brown.

TYPE LOCALITY: "Mountain meadow near Greenwood Lake, Passaic County, New Jersey." (*Mackenzie* 2676, June 23, 1907.)

DISTRIBUTION: Meadows, swales and open woods, New Hampshire to Delaware, and westward to Michigan. (Specimens examined from New Hampshire, New York, New Jersey, Pennsylvania, Delaware, Michigan.)

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2. f. 1013.

HYBRIDS: An apparent hybrid with *Carex virescens* has been collected (Ohio Pyle, Pennsylvania, *Brown, Crawford & Van Pell* 41, June 3–8, 1905; herb. Acad. Phila.)

NOTE: From *Carex Sullivantii* Boott (*Carex gracillima* × *Carex hirtifolia*) this species is distinguished by its gynaeceandrous terminal spike; the scales obtuse to short-cuspidate; and somewhat narrower and often less pubescent leaves.

331. *Carex aestivalis* M. A. Curt.; A. Gray, Am. Jour. Sci. 42: 28. 1842.

Carex Darlingtonii Schw.; M. A. Curt. Am. Jour. Sci. II. 7: 410, as synonym. 1849.

Carex Rugeliana Kunze, Suppl. Riedgr. 189, in part. *pl.* 48. 1851. (Type from North Carolina.)

Carex tabularia M. A. Curt.; Boott, Ill. Carex 54, as synonym. 1858.

Carex virescens var. *aestivalis* Olney, Caric. Bor.-Am. 5. 1871. (Based on *C. aestivalis* M. A. Curt.)

Cespitose and not stoloniferous, the culms 3–6 dm. high, erect, slender, mostly exceeding the upper leaves, aphyllopodic, triangular, sparingly pubescent and roughened on the angles, reddish-purple at base; leaves with well-developed blades about 3 to a culm, on lower half, not at all bunched, the blades essentially glabrate, but with traces of pubescence, especially below and towards the base, flat, flaccid, deep-green, 7–20 cm. long, 1.5–2.5 mm. wide, erect-ascending, the upper culm-leaf inserted about halfway up the culm, the sheaths tight, long pubescent especially ventrally, yellowish-brown-tinged and red-dotted ventrally, deeply concave at mouth, the ligule longer than wide; spikes about 4, linear-cylindric, 2–4 cm. long, 2–3 mm. thick, the lower half of the uppermost staminate, the remainder pistillate, all erect and from nearly sessile to strongly (1.5 cm. long) peduncled (the peduncles smooth or nearly so), approximate, or the lower more or less separate, the pistillate portion of the uppermost spike rather closely flowered, the remaining spikes with 15–30 perigynia in few rows, loosely flowered, especially below; lower bract 1–1.5 mm. wide, exceeding the inflorescence, strongly sheathing, the others much smaller, sheathless or nearly so; scales of pistillate flowers ovate or obovate, small, about one half the length of the perigynia, from slightly cuspidate to obtusish, greenish-white and slightly reddish-tinged, with sharply defined green midrib and hyaline margins; scales of staminate flowers larger, closely appressed, ovate-oblong, acute or cuspidate, greenish-white with hyaline straw-colored margins; perigynia oblong-lanceolate, 2.5–3 mm. long, about 1 mm. wide, rather sharply triangular, not at all inflated, smooth, membranaceous, deep-green, punctulate, 2-ribbed and obscurely several-nerved, tapering and broadly stipitate

and somewhat spongy at base, tapering at apex, the orifice entire; achenes oblong-obovoid, 1.75–2 mm. long, 1.25 mm. wide, strongly triangular with concave sides and rather prominent angles, completely filling the lower part of the perigynium, brownish, tapering at base, subapiculate, jointed with the straight slender style 0.75 mm. long; stigmas 3, short, slender, reddish-brown.

TYPE LOCALITY: "Hab. in montibus altioribus Carolinae septentrionalis ubique."

DISTRIBUTION: Dry mountain woods, New Hampshire, Massachusetts, and northern New York to Georgia. (Specimens examined from Vermont, Massachusetts, New York, Pennsylvania, Virginia, North Carolina.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 748; ed. 2. f. 1014; Rob. & Fern. Man. f. 437; Kunze, Suppl. Riedgr. pl. 28 and pl. 48 (excluding c and d); Boott, Ill. Carex 54. pl. 144.

332. *Carex misera* Buckl. Am. Jour. Sci. 45: 173. 1843.

"*Carex juncea*" Willd. Kunth, Enum. Pl. 2: 468. 1837. (Plant from North Carolina.)

Carex rugeliana Kunze, Linnaea 20: 8, in small part. 1847. (Not as to type; plant from North Carolina.)

Cespitose, the rootstocks short, slender but tough, purplish, the clumps medium-sized, the culms 2.5–4.5 dm. high, very slender but erect, exceeding the leaves, aphyllopodic, sharply triangular, minutely pubescent and roughened on the angles, strongly purplish at base; leaves with well-developed blades usually 2 to 4 to a fertile culm, on the lower half but not clustered, the blades ascending, flat or channeled at base, light-green, not stiff, ciliate and sparsely short-pubescent beneath, usually 7–25 cm. long, 1–1.5 mm. wide, long-attenuate and roughened towards the apex, the sheaths tight, yellowish-brown-tinged and red-dotted and sparsely pubescent ventrally, truncate and strongly ciliate at mouth, the ligule very short; terminal spike staminate, peduncled, linear, 1–2 cm. long, 1.5–2.5 mm. wide, the scales rather loose, oblong-obovate, obtuse to acute, reddish-brown with narrow white-hyaline margins and lighter midrib; pistillate spikes 2 or 3, erect, strongly separate, the lower on long, capillary, slightly rough peduncles, the upper short-peduncled, the spikes linear, 12–35 mm. long, 3 mm. wide, loosely flowered below, closely above, and containing 10–25 appressed-ascending perigynia in few rows; lowest bract leaflet-like, 3–6 cm. long, slightly auriculate at base, but not sheathing; upper bracts much shorter; scales ovate-oblong, obtuse or short-cuspidate, brownish-red with lighter sharply defined midrib and narrow white-hyaline margins, about width of but only half to two thirds the length of the perigynia; perigynia lanceolate, 4–4.5 mm. long, 1.25 mm. wide, obscurely triangular, slightly flattened, rounded on outer, concave on inner surface, not inflated, light-green, membranaceous, punctulate, red-dotted, very sparsely pubescent towards apex, lightly few-nerved (the two lateral sharply defined), long-tapering at base and more or less stipitate, and shorter-tapering at apex or short-beaked, the orifice entire; achenes narrowly oblong-obovoid, 2.5 mm. long, scarcely 1 mm. wide, triangular with somewhat concave sides, rather closely enveloped, tapering and stipitate at base, minutely subapiculate, jointed with the rather long slender style 1.5–2 mm. long; stigmas 3, reddish-brown, slender.

TYPE LOCALITY: "Hab. Summit of Roan Mountain, North Carolina."

DISTRIBUTION: High mountains of western North Carolina and eastern Tennessee. (Specimens examined from western North Carolina and eastern Tennessee.)

ILLUSTRATIONS: Kunze, Suppl. Riedgr. pl. 48, f. c, d; Am. Jour. Sci. 48: pl. DD, f. 100.

NOTE: L. H. Bailey (Mem. Torrey Club 1: 62. 1889) says that *Carex juncea* Willd. (Enum. Suppl. 63. 1813; type from America boreali; not *C. juncea* Scop. 1772) is *Carex ferruginea* Scop., and that the name has been wrongly applied to the present species. Willdenow's description calls for a plant "fructibus * * * hispido-scabris bidentatis." This answers to *Carex ferruginea* Scop., but not to the plant of North Carolina. The description given by Kunth (Enum. Pl. 2: 468. 1837); by Boott (Trans. Linn. Soc. 20: 116. 1846; Ill. Carex 189. 1867); and by Böckeler (Linnaea 41: 249. 1877) are all based on material collected by Rugel and Buckley.

47. *Sylvaticae* Boott; Tuckerm. Enum. Caric. 12. 1843. FLEXILES Tuckerm. Enum. Caric. 13, in part. 1843. HYMENOCHLAENAE Drejer, Symb. Car. 10, in part. 1844; Holm, Am. Jour. Sci. IV. 16: 462, in part. 1903. DEBILES Carey, in A. Gray, Man. 558. 1848; L. H. Bailey, Proc. Am. Acad. 22: 104. 1886; Kükenth. in Engler, Pflanzenreich 4²⁰: 591. 1909; Mackenzie, in Rydb. Fl. Rocky Mts. 134. 1917; Mackenzie, Erythea 8: 63. 1922. Treated as a genus, PROTEOCARPUS subgenus PROTEOCARPUS, by Börner (Abh. Nat. Ver. Bremen 21: 266, 267. 1913.

Fertile culms tufted, slender, leafy, aphyllopodic, usually strongly purplish-tinged at base; sterile shoots phyllopodic or aphyllopodic; leaf-blades flat; terminal spike usually staminate; lateral spikes 2-5, pistillate or slightly staminate at apex, elongate, narrowly linear to oblong, slender-peduncled, the lower usually drooping, sometimes erect; bracts green-sheathing, the lower sheaths long or short, the blades leaf-like; perigynia appressed or ascending, lanceolate to ovoid, membranaceous to subcoriaceous, glabrous, hirsutulous, hairy, or tuberculate-hispid, 2-keeled and slenderly nerved or ribbed or nerveless, rather closely enveloping the achene, tapering to or contracted into a well-developed conic beak, more or less oblique at orifice, sometimes very strongly so, usually more or less hyaline-tipped, usually bidentate, sometimes strongly so; achenes triangular with concave sides, in lower part of perigynium body, apiculate, jointed with the straight, slender style; stigmas 3.

A group represented by numerous species in the temperate parts of Eurasia and North America; also represented in the highlands of eastern Africa. It is not found in South America or Australasia.

- Lateral spikes pistillate or gynaeandrous; perigynia 3.5-10 mm. long, the beak 0.5-3 mm. long (Not Mexican).
- Staminate spike sessile or very short-peduncled, nearly equaled to overtopped by the nearly sessile uppermost pistillate spike; pistillate spikes erect.
- Leaf-blades sparsely soft-villous, 3-9 mm. wide; perigynia short-pilose towards apex, 4.5-5.5 mm. long; beak of perigynium 0.5-1 mm. long, shallowly bidentate; pistillate spikes oblong-cylindric, 6-9 mm. wide; staminate spike 1-2 cm. long. 333. *C. gynodynamis*.
- Leaf-blades rough-hispidulous, 3-5 mm. wide; perigynia minutely pubescent on angles toward apex, 4-5 mm. long; beak of perigynium 0.5 mm. long, bidentate; pistillate spikes linear, 3-4.5 mm. wide; staminate spike 2-3.5 cm. long. 334. *C. mendocinensis*.
- Staminate spike strongly peduncled; pistillate spikes, at least the lower, drooping (except in *C. hirtissima*).
- Pistillate spikes oblong-cylindric, 8-25 mm. long; leaf-blades and (or) sheaths pubescent.
- Perigynia loosely pubescent, 2-keeled and obscurely nerved; lateral spikes erect. 335. *C. hirtissima*.
- Perigynia glabrous, 2-keeled and several-nerved; lateral spikes drooping. 336. *C. castanea*.
- Pistillate spikes narrowly linear or linear, the larger 2.5-8 cm. long; leaf-blades not pubescent except rarely towards base; sheaths sometimes puberulent or short-pubescent, especially at mouth.
- Perigynia densely tuberculate-hispid, narrowly lanceolate, the beak very long, slender, very oblique at the orifice; stigmas very long. 337. *C. assimiboinensis*.
- Perigynia glabrous or hirsutulous, shorter-beaked (except in *C. sylvatica*); stigmas shorter.
- Perigynia 2-keeled and several-nerved or several-ribbed (Native American species).
- Perigynia firm, strongly several-nerved or several-ribbed; pistillate scales tinged with reddish-brown; bract-sheaths puberulent at mouth.
- Perigynia glabrous, subcoriaceous, strongly ribbed, the beak thickish, flattened, shallowly bidentate; achenes short-stipitate or substipitate; pistillate spikes drooping or the uppermost weakly erect. 338. *C. oblita*.
- Perigynia short-pubescent, submembranaceous, strongly nerved, the beak more slender, conic, obliquely cleft; achenes slenderly stipitate; upper pistillate spikes erect, only the lower drooping. 339. *C. venusta*.
- Perigynia membranaceous, slenderly nerved; pistillate scales hyaline with green midrib or tawny-tinged or reddish-brown-tinged; bract-sheaths not puberulent at mouth.
- Achenes slenderly stipitate; perigynia glabrous, sessile or substipitate; pistillate scales mostly obtuse, the midvein not extending to the tip.
- Beak of perigynium slender, the tip somewhat enlarged, very conspicuously white-hyaline, very oblique at orifice, more or less bidentate; pistillate scales mostly rounded on back, white-hyaline-margined; perigynia 6-10 mm. long, light-green or greenish-straw-colored; sterile shoots aphyllopodic. 340. *C. debilis*.

Beak of perigynium stouter, shorter, the tip not enlarged, much less conspicuously white-hyaline, obliquely strongly bidentate; pistillate scales keeled, green with hyaline margins, reddish-brown-tinged; perigynia 4.5-7 mm. long, deep-green; sterile shoots phyllopodic or nearly so.

Achenes substipitate or sessile.

Perigynia hirsutulous, 5-7 mm. long; pistillate scales cuspidate or awned, the midvein extending to the tip; perigynium-beak unequally sharply bidentate; sterile shoots aphyllopodic.

Perigynia glabrous or nearly so, 3-5 mm. long.

Pistillate scales strongly cuspidate or awned; perigynia strongly stipitate, leaf-blades 5-10 mm. wide.

Pistillate scales obtuse to cuspidate; perigynia substipitate; leaf-blades 1.75-2.5 mm. wide.

Perigynia 2-keeled, otherwise nerveless (Very sparingly adventized European species).

Lower lateral spikes androgynous, drooping, the upper staminate; perigynia 2.25 mm. long, the beak 0.5 mm. long (Mexican).

341. *C. flexuosa*.

342. *C. allegheniensis*.

343. *C. arctata*.

344. *C. debiliformis*.

345. *C. sylvatica*.

346. *C. conspecta*.

333. *Carex gynodynamis* Olney, Proc. Am. Acad. 7: 394. 1868.

Carex Blankinshipii Fernald, Erythea 7: 121. 1899. (Type from Hydesville, Humboldt County, California.)

Densely caespitose and not stoloniferous, the culms 2-9 dm. high, slender, spreading, much exceeding the leaves, mostly lateral and phyllopodic, some central, bluntly triangular with concave sides, smooth on angles or nearly so, brownish or slightly purplish-tinged at base; sterile shoots conspicuous, somewhat elongate; leaves with well-developed blades 6-12 to a fertile culm on the central culms or fewer on the lateral, the lower clustered, the upper somewhat scattered, the blades flat, flaccid, light-green, soft, sparsely soft-villous, 1-5 dm. long, 3-9 mm. wide, somewhat roughened towards apex, the sheaths long, tight, soft-hairy, yellowish-brown-tinged ventrally, concave at mouth, the ligule as long as wide; terminal spike staminate or often with a few perigynia, erect, overtopped or largely so by the uppermost pistillate spike, sessile or short-peduncled, 1-2 cm. long, 3-6 mm. wide, the scales obovate, more or less hairy, obtuse or mucronate, light-reddish-brown with lighter center and conspicuous white-hyaline margins; pistillate spikes 2-4, the 2 upper approximate, short-peduncled, the lower 1 or 2 widely separate, erect, on slender, usually long-exserted, sparingly hairy peduncles, the spikes oblong-cylindric, 1-3.5 cm. long, 6-9 mm. wide, containing 20-40 closely packed ascending perigynia in several rows; bracts strongly sheathing, leaflet-like, exceeded by inflorescence, the sheaths 0.5-4 cm. long; scales very broadly ovate or obovate, more or less soft-hairy above, the lower abruptly short-cuspidate, the upper often obtuse, chocolate-brown with 3-nerved green center and conspicuous white-hyaline margins, wider but shorter than perigynia; perigynia narrowly oblong-obovoid, 4.5-5.5 mm. long, 2 mm. wide, somewhat triangular and flattened, scarcely inflated, membranaceous, yellowish-brown and red-dotted, short-pilose toward apex, finely many-nerved, round-tapering at base and stipitate, rounded and abruptly beaked at apex, the beak conic, 0.5-1 mm. long, hyaline at mouth, shallowly bidentate; achenes obovoid, 2.5 mm. long, 1.75 mm. wide, triangular with concave sides and thickened angles, yellowish-brown, granular, in lower three fourths of perigynia, rather closely enveloped, somewhat stipitate, slender, apiculate, jointed with the straight slender style; stigmas 3, slender, reddish-brown.

TYPE LOCALITY: "California, near Mendocino City" (*Bolander 4700*).

DISTRIBUTION: Moist places in the Coast Ranges, from southern Oregon to San Mateo County, California. (Specimens examined showing the above range.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 784.

334. *Carex mendocinensis* Olney; W. Boott, in S. Wats.

Bot. Calif. 2: 249. 1880.

Clumps medium-sized, not stoloniferous, the rootstock somewhat elongate, the culms 2.5-8 dm. high, very slender, nodding, much exceeding the leaves, strongly aphyllopodic,

rather obtusely triangular, smooth below the spikes, strongly purplish-red and scaly at the base; sterile shoots numerous, reduced to tufts of leaves, their culms not developed; leaves with well-developed blades about 7 to a culm, the lower clustered, the upper widely separated, the blades ascending, 5–10 cm. long, 3–5 mm. wide, flat with revolute margins, somewhat channeled toward base, dull-green, firm, rough-hispidulous on both sides, attenuate; sterile-culm blades 1–3 dm. long; sheaths very long, hispidulous dorsally, whitish-hyaline and brownish-tinged ventrally, the ligule longer than wide; terminal spike staminate, or occasionally with one or two perigynia at base, sessile or very short-peduncled, slender, linear, 2–3.5 cm. long, 2.5–4 mm. wide, the scales closely appressed, oblong-obovate, obtuse or acutish, slightly ciliate, dull-reddish-brown with hyaline margins and lighter midvein; pistillate spikes 2 or 3, slender, erect, more or less strongly separate, the uppermost nearly sessile, nearly equaling the staminate spike, the lower peduncled, linear, 2–4 cm. long, 3–4.5 mm. wide, closely flowered above, loosely at base, the perigynia 20–40, appressed-ascending, in few rows; bracts leaf-like, the lowest with elongate hispidulous sheath 2–3 cm. long and blade nearly equaling the culm, the upper with shorter blades and sheaths; scales ovate, short-cuspidate to obtuse, sharply keeled, slightly ciliate, cinnamon-brown with green midrib and narrow hyaline margins, as wide as and one half to three fourths the length of the perigynia; perigynia oblong-oblongeolate, 4–5 mm. long, 1.5 mm. wide, triangular or somewhat flattened-triangular, oblong-obovate, glabrous below, minutely pubescent on angles toward apex, light-green, membranaceous, punctulate, lightly few-nerved, tapering at base and substipitate, abruptly contracted at apex into a bidentate beak 0.5 mm. long, ciliate at mouth; achenes oblong-obovoid, 2.5 mm. long, 1.25 mm. wide, triangular with concave sides and blunt angles, closely enveloped, brownish, granular, slenderly but conspicuously rather short-stipitate, abruptly conspicuously apiculate, jointed with the short slender style; stigmas 3, slender, rather short.

TYPE LOCALITY: Mendocino County, California (*Bolander 4701*).

DISTRIBUTION: Along streams in the coast ranges of Mendocino County, northwestern California. (Specimens examined showing range as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 786.

NOTE: This plant has much the appearance of a hybrid between *Carex gynodynamis* Olney and *Carex debiliformis* Mackenzie.

335. *Carex hirtissima* W. Boott, in S. Wats. Bot. Calif.

2: 247. 1880.

Cespitose, from short stout rootstocks, the clumps medium-sized, the culms 3–6 dm. high, strictly erect but slender, much exceeding the leaves, obscurely aphyllopodic, sharply triangular, sparingly pubescent, not roughened on angles, purplish-red-tinged at base; leaves with well-developed blades 3–8 to a fertile culm, the lower clustered, the upper 1 or 2 much separated, not septate-nodulose, the blades flat, 1–2 dm. long, 3–4 mm. wide, or those of the sterile shoots up to 7 mm.; acuminate, thin, not stiff, loosely hirsute on both surfaces, the mid-lateral nerves prominent above, the sheaths whitish ventrally, concave at mouth, the ligule conspicuous, wider than long; terminal spike staminate or gynaeandrous, from short- to long-peduncled, not overtopped by the lateral spikes, linear, 1.5–2.5 cm. long, 4.5–6 mm. wide, the scales oblong-obovate, obtuse or slightly mucronate, glabrous or very slightly pubescent, yellowish-brown-tinged, with broad white margins and prominent midvein; pistillate spikes 2 or 3, erect, the upper more or less strongly separated, scarcely exerted-peduncled, the lower 1 or 2, if developed, widely separate on peduncles exerted 7–15 cm., oblong-cylindric, 1–2.5 cm. long, 5 mm. wide, with about 20–30 ascending perigynia in few rows, closely packed or a little attenuate at base; bracts from much exceeded by to exceeding inflorescence, the lower leaf-like, sheathing, the uppermost little exceeding its spike, its sheath obsolete or very nearly so; scales ovate or obovate, cuspidate or mucronate, obscurely slightly pubescent, more or less yellowish-brown-tinged, with green or straw-colored midrib and broad white-hyaline margins, as wide as but shorter than perigynia; perigynia 3.5–4 mm. long, 1.75 mm. wide, the body obovoid, tapering at base, 2.5–3 mm. long, triangular, loosely pubescent, punctulate, light-green, membranaceous, not at all inflated, 2-ribbed and obscurely nerved, sessile or nearly so, abruptly short-beaked, the beak conic, 1 mm. long, very shallowly bidentate, hyaline above; achenes obovoid,

2.1 mm. long, 1.6 mm. wide, triangular with concave sides, very closely enveloped, nearly sessile, apiculate, jointed with the very short style not enlarged at base; stigmas 3, short, dark-reddish-brown.

TYPE LOCALITY: Probably from Bear Valley, Sierra Nevada, California.

DISTRIBUTION: Central part of the Sierra Nevada, California; also Mount Sanhedrin, Lake County; rare and local. (Specimens examined from Summit Camp and Bear Valley, Kellogg, type, and Hog Ranch, above Hetch-Hetchy, Tuolumne County, Congdon, June 9, 1897.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. States, f. 785.

336. *Carex castanea* Wahl. Sv. Vet.-Akad. Nya Handl.

24: 155. 1803.

Carex flexilis Rudge, Trans. Linn. Soc. 7: 98. pl. 10. f. 1. 1804. (Type from Newfoundland.)

Carex blepharophora A. Gray, Ann. Lyc. N. Y. 3: 237. 1835. (Type from Bridgewater, Oneida County, New York.)

Loxotrema castanea Raf. Good Book 25. 1840. (Based on *Carex castanea* Wahl.)

Rather loosely cespitose, the rootstocks slender but tough, purplish, growing in rather small clumps, the culms 4-9 dm. high, remotely leafy, slender, erect or often weak, much exceeding the leaves, mostly lateral and aphyllopodic, sparingly hairy, strongly purplish-tinged at base, the basal sheaths loose; sterile shoots elongate, conspicuous; leaves with well-developed blades 3 or 4 to a fertile culm, on lower half, the blades usually 5-20 cm. long, about 2.5 mm. wide, soft-hairy, flat, deep-green, those of the sterile shoots 2-4 dm. long and up to 5 mm. wide, the sheaths tight, hairy, brownish-tinged and red-dotted ventrally, the ligule poorly developed; staminate spike erect, not overtopped by the uppermost lateral spikes, slenderly long-peduncled, linear, slender, 1.5-3 cm. long, 2-3 mm. wide, the scales oblanceolate, short-awned to acute, ciliate, yellowish-brown with green midrib and white-hyaline margins; pistillate spikes usually 2 or 3, approximate or more or less separate, drooping on very slender, glabrous or slightly pubescent peduncles about their own length, oblong-cylindric, 8-25 mm. long, 4-5 mm. wide, frequently staminate at apex, closely 10-40-flowered in several rows, the perigynia ascending; bracts very short-sheathing, the lowest leaflet-like, shorter than the culm, the upper much reduced; scales ovate, awned, cuspidate, or acuminate, ciliate-denticulate above, thin, light-chestnut-brown with green midrib and hyaline margins, about the width of but rather shorter than the perigynia; perigynia lanceolate or ovate-lanceolate, 3.5-5 mm. long, 1.25 mm. wide, triangular, not at all or scarcely inflated, glabrous, membranaceous, greenish-straw-colored, punctulate, prominently 2-keeled and several-nerved, short-tapering at base and sessile, longer-tapering to the slender, slightly hairy, obliquely cut, hyaline-tipped beak half the length of the body, the apex shallowly bidentate, ciliate; achenes small, obovoid, 1.5 mm. long, 1 mm. wide, triangular with sides concave below and blunt angles, closely enveloped, yellowish-brown, sessile, apiculate-tipped, jointed with the straight slender style; stigmas 3, blackish, slender.

TYPE LOCALITY: "Hab. in America boreali, secundum herb. Cl. Torneri."

DISTRIBUTION: Dry thickets and on banks in calcareous regions, Newfoundland to Minnesota, and southward to Connecticut, New York, and the Great Lakes region. (Specimens examined from Newfoundland, Quebec, New Brunswick, Nova Scotia, Maine, Vermont, Connecticut, New York, Ontario, Michigan, Wisconsin, Minnesota.)

ILLUSTRATIONS: Trans. Linn. Soc. 7: pl. 10, f. 1; Britt. & Brown, Ill. Fl. f. 754; ed. 2. f. 1020; Rob. & Fern. Man. f. 510; Boott, Ill. Carex 32, pl. 80; Am. Jour. Sci. 30: pl. A.A, f. 85.

NOTE: A more glabrous state of this species has been supposed to be a hybrid with *Carex arctata* Boott, which I think is incorrect. It has very much the same range as the species. (Specimens examined from New Brunswick, Quebec, Maine, New York, Ontario, Michigan, Minnesota.) For a summary of opinions concerning it, see Bill, Rhodora 32: 162. 1930. The synonymy of this supposed hybrid is as follows:

Carex castanea var. *Knieskernii* (Dewey) Mackenzie.

Carex Knieskernii Dewey, Am. Jour. Sci. II. 2: 247. 1846. (Type from Rome, New York.)

Carex arctata × *flexilis* L. H. Bailey, Bot. Gaz. 11: 328. pl. 11, f. A. 1886. (Based on *C. Knieskernii* Dewey.)

Carex arctata × *formosa* L. H. Bailey, Proc. Am. Acad. 22: 104. 1886. (Based on *C. Knieskernii* Dewey.)

Carex arctata × *castanea* L. H. Bailey, in A. Gray, Man. ed. 6. 603. 1890. (Based on *C. Knieskernii* Dewey.)

337. *Carex assiniboinensis* W. Boott, Bot. Gaz. 9: 91. 1884.

Cespitose, not stoloniferous, the rootstocks very short, stout, the clumps medium-sized, the culms 3.5–7.5 dm. high, weak, slender, exceeding the leaves, mostly lateral and aphyllopodic, somewhat compressed-triangular, smooth or somewhat roughened on the angles above, strongly purple-tinged at base, the basal sheaths breaking and becoming filamentose; sterile shoots elongate and very conspicuous; leaves (not bracts) with well-developed blades 3–5 to a culm, regularly disposed on the lower third, the blades ascending, thin, green, glabrous, flat, usually 1–2 dm. long, 1.5–3 mm. wide, roughened toward the long-attenuate apex; blades of the sterile culms similar but longer, the sheaths long, tight, smooth, slightly yellowish-brown-tinged, concave and short-ciliate at mouth, the ligule wider than long; terminal spike staminate, erect, very long-peduncled, linear, 2–3 cm. long, 2.5–4 mm. wide (with an attenuate prolonged bract below its base usually subtending one perigynium), the scales oblong-lanceolate, acuminate to acute, light-reddish-brown with 3-nerved green center and conspicuous hyaline margins; pistillate spikes about 3, very widely separated, on slender, erect or drooping, slightly roughish peduncles 2–6 cm. long, the spikes linear, 5–30 mm. long, 3–5 mm. wide, very loosely and alternately 1–8-flowered, the perigynia erect; bracts strongly sheathing, the lower leaf-like, the upper somewhat reduced; scales lanceolate-ovate, and short-awned, cuspidate, or acuminate, greenish-straw-colored with sharp green midrib and white-hyaline margins, narrower and slightly shorter than mature perigynia; perigynia narrowly lanceolate, 6 mm. long, 1.75 mm. wide, suborbicular-triangular in cross-section, not inflated, tuberculate-hispid, coriaceous, pale-green or greenish-straw-colored, 2-ridged, otherwise obscurely many-nerved, round-tapering at base and truncately short-stipitate, contracted into a very long slender beak 2.5 mm. long, strongly white-tipped and very oblique at the orifice; achenes short-oblong-obovoid, 2.5 mm. long, triangular with concave sides below and blunt angles, very closely enveloped, sessile, strongly apiculate, jointed with the slender straight style; stigmas 3, dark-reddish-brown, slender, very long.

TYPE LOCALITY: "Assiniboine Rapids, June 14, 1879; *Macoun*. Lake Manitoba, June 9, 1881, *Macoun*."

DISTRIBUTION: Woodlands, northern Wisconsin to Manitoba, and southward to Iowa and South Dakota. A very well-marked species. (Specimens examined from northern Wisconsin, Manitoba, Minnesota, Iowa, North Dakota, South Dakota.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 753; ed. 2. f. 1019; Rob. & Fern. Man. f. 507.

338. *Carex oblita* Steud. Syn. Cyp. 231. 1855.

Carex venusta var. γ Boott, Ill. Carex 51. 1858. (Type from New Orleans, Louisiana.)

Carex glabra Boott, Ill. Carex 93, pl. 275. 1860. (Type given as from Oneida County, New York.)

Carex venusta var. *minor* Böck. Linnaea 41: 255. 1877. (Based on *C. oblita* Steud.)

Carex venusta var. *glabra* L. H. Bailey, Proc. Am. Acad. 22: 105. 1886. (Based on *C. glabra* Boott.)

Carex venusta var. *oblita* Kükenth. in Engler, Pflanzenreich 4⁹: 597. 1909. (Based on *C. oblita* Steud.)

Very densely cespitose, not at all stoloniferous, the clumps medium-sized, the culms 2.5–6.5 dm. high, weakly ascending to erect, slender, exceeding the leaves, mostly lateral and aphyllopodic, some central, obtusely triangular, somewhat roughened on the angles above, strongly purplish-tinged at base, the basal sheaths loose, breaking and becoming filamentose; sterile shoots conspicuous, elongate; culm-leaves usually 2 or 3, on lower third, the blades ascending, rarely exceeding 15 cm. in length, 2–2.5 mm. wide, roughened toward the apex and on the margins, flat, thin, deep-green, smooth, the blades of the sterile culms up to 6 mm. wide, often 30 cm. long; sheaths very long, tight, yellowish-brown-tinged and red-dotted ventrally, hispidulous especially at mouth, concave at mouth, the ligule long; staminate spike solitary, slender, very rough-peduncled, narrowly linear, 1.5–4 cm. long, 1–2 mm. wide, often with pistillate flowers at the middle or apex, the scales appressed, oblong-obovate, obtuse or acute, ciliate, reddish-brown-tinged with white-hyaline margins and green midrib, soon deciduous; pistillate spikes 2 or 3, more or less strongly separate, the lower drooping, the upper drooping to weakly erect, on very slender rough peduncles of about their own length, narrowly linear, 1–5 cm. long, 3–5 mm. wide, rather densely 10–30-flowered in few rows, the perigynia ascending

and overlapping; bracts long-sheathing, usually exceeded by the culms, the lowest leaf-like, the upper much reduced, the sheaths rough-hispidulous; scales ovate-lanceolate, acute or obtuse, short-ciliate, reddish-brown with 3-nerved green center and white-hyaline margins, the central nerves rough-pubescent, much narrower than and one third to one half the length of the perigynia, soon deciduous; perigynia narrowly oblong-obovoid, 5-7 mm. long, 2-2.25 mm. wide, suborbicular-triangular in cross-section, little inflated, glabrous, subcoriaceous, firm, olive-green, punctulate, red-dotted, prominently about 10-ribbed, round-tapering at base and short-stipitate, tapering at apex into a short (0.5 mm. long), thickish, flattened, shallowly bidentate beak, whitish at the orifice; achenes obovoid, 2.5 mm. long, 1.5 mm. wide, triangular with concave sides and blunt angles, in lower half of perigynium, granular, short-stipitate or substipitate, slender, apiculate and jointed with the straight slender style; stigmas 3, slender, short, blackish.

TYPE LOCALITY: New Orleans, Louisiana (*Drummond 434*).

DISTRIBUTION: Moist sandy woods and thickets, acid soils, near the coast, Louisiana to Georgia, and northward to Long Island, New York. Recorded from central New York, but apparently erroneously. (Specimens examined from Long Island, New Jersey, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 758; ed. 2. f. 1015; Rob. & Fern. Man. f. 515; Rep. N. J. Mus. 1910: pl. 25, f. 3; Boott, Ill. Carex 93, pl. 275.

NOTE: All specimens from central New York seen by me and so named have been *Carex flexuosa* Muhl. It seems probable that Knieskern's material, on which *Carex glabra* Boott was based, really came from around Lakehurst (Manchester), New Jersey, where Knieskern lived for years, and where the species occurs.

339. *Carex venusta* Dewey, Am. Jour. Sci. 26: 107.

pl. T, f. 62. 1834.

Densely caespitose, not stoloniferous, the clumps medium-sized, the culms 3-9 dm. high, slender, exceeding the leaves, mostly lateral and aphyllodipodic, sharply angled, smooth below, roughened in the inflorescence, purplish-reddened at base, the basal sheaths loose; sterile shoots conspicuous; leaves (not bracts) with well-developed blades usually 3 or 4 to a fertile culm, widely separated, the blades ascending, flat, thin, light-green, usually 1-2.5 dm. long, 3-4.5 mm. wide, or 5-8 mm. on the sterile shoots, scabrous on the margins and on the upper surface and toward apex; sheaths very long, scabrous, puberulent at mouth, light-yellowish-brown-tinged ventrally, deeply concave at mouth, the ligule long, short-pubescent; terminal spike staminate, occasionally with some perigynia at the apex, slender-peduncled, elongate, linear, 2.5-5 cm. long, 1.5-2 mm. wide, the peduncle very rough, the scales appressed, oblong-oblancoate, obtuse, hyaline and usually more or less strongly light-reddish-brown-tinged and purplish-red-dotted, with roughish green midvein; pistillate spikes usually 3 or 4, the upper approximate, erect, short-exsert-peduncled, the lower distant and drooping, on long slender rough peduncles, slender, linear, 3-5 cm. long, 3-5 mm. wide, rather loosely flowered, containing 10-25 appressed-ascending perigynia in few rows; bracts leaf-like, reduced upward, the sheaths 1-3 cm. long, hispidulous, the blades generally shorter than the culms; scales ovate or oblong-ovate, obtuse to mucronate, somewhat ciliate, hyaline and reddish-brown-tinged, with 3-nerved green center, narrower than and from one third to one half the length of the perigynia, soon deciduous; perigynia lanceolate, 6-7.5 mm. long, 2 mm. wide, somewhat flattened-triangular, scarcely inflated, scabrous, short-pubescent, submembranaceous but firm, pale-green, punctulate, red-dotted, strongly several-nerved, tapering at base, stipitate, tapering or somewhat contracted at apex into a short, slender, conic beak 0.5 mm. long, with hyaline, obliquely cut, ciliate orifice; achenes obovoid, 2.5 mm. long, 1.5 mm. wide, triangular with concave sides and blunt angles, in lower half of perigynia, yellowish, granular, slender-stipitate, slender-apiculate and jointed with the straight slender style; stigmas 3, slender, blackish.

TYPE LOCALITY: "S. Car. to Florida."

DISTRIBUTION: Pine-barren swamps, North Carolina to Florida. (Specimens examined from North Carolina, South Carolina, Georgia, Florida.)

ILLUSTRATIONS: Am. Jour. Sci. 26: pl. T, f. 62; Boott, Ill. Carex 51, pl. 134.

340. *Carex debilis* Michx. Fl. Bor. Am. 2: 172. 1803.

Carex debilis var. γ Boott, Ill. Carex 92. 1860. (Type from southern United States.)

Carex debilis var. *prolixa* L. H. Bailey, Proc. Am. Acad. 22: 105. 1886. (Based on *C. debilis* var. γ Boott.)

Cespiteous, not stoloniferous, the rootstocks very short, the clumps medium-sized or large, the culms 2.5–12 dm. high, slender but erect, exceeding the leaves, lateral and aphyllopodic or central and phyllopodic, sharply triangular, smooth or but slightly roughened on angles above, reddish-purple at base, the basal sheaths breaking and becoming somewhat filamentose; sterile shoots aphyllopodic, conspicuous, mostly elongate; leaves with well-developed blades 2–4 to a fertile culm, not bunched, the blades flat, not stiff, pale-green, 7–30 cm. long, 2–4 mm. wide, or up to 4.5 dm. long on the sterile shoots, long-acuminate, much roughened toward the apex, the sheaths thin, yellowish-brown-tinged and reddish-dotted ventrally, smooth or puberulent dorsally, concave at mouth, the ligule longer than wide; terminal spike staminate, more or less strongly peduncled, very narrowly linear, 1.5–5 cm. long, 1 mm. wide, rarely with a few perigynia, the scales loose, oblong-obovate or oblanceolate, obtuse or acute, white with a rough 3-nerved green center; pistillate spikes 2–4, not approximate, or the upper slightly so, drooping or weakly erect on rough slender peduncles from much shorter than to 3 times the length of the spikes; the spikes narrowly linear, 2.5–6 cm. long, 3–4 mm. wide, with 8–25 appressed-ascending perigynia overlapping in few rows, or often loosely flowered at base, the rachis flexuose, terminating in an empty scale or scales; lower bracts leaflet-like, the upper reduced but exceeding inflorescence, the sheaths 1–4 cm. long, smooth; scales ovate or oblong-ovate, obtuse, slightly narrower than and from one third to one half the length of the perigynia, more or less ciliate, rounded on back, very thin, white-hyaline with green, 3-nerved, roughish center not extending to tip, not or but scarcely brownish-tinged, closely appressed, mostly disarticulating and falling before perigynia; perigynia subulate-lanceolate, 6–10 mm. long, 1.5–2 mm. wide, obscurely triangular in cross-section, but little inflated, glabrous, membranaceous, light-green or greenish-straw-colored at maturity, strongly 2-keeled and slenderly several-nerved, tapering at base, sessile or substipitate, tapering at apex into a slender, somewhat tumid, very conspicuously white-hyaline-tipped beak 1.5–2 mm. long, the tip somewhat enlarged, more or less bidentate, very oblique at orifice; achenes triangular, with sides concave below and thickened angles, in lower half of perigynium, oblong-ovoid, 2 mm. long, 1.5 mm. wide, punctate, very strongly, conspicuously, and slenderly stipitate, slender-apiculate, jointed with the flexuose slender style; stigmas 3, slender, brownish-black.

TYPE LOCALITY: None given, but his specimens are labeled "Basse Carolina?" (L. H. Bailey, Mem. Torrey Club 1: 34).

DISTRIBUTION: Dry woods and copses, in acid soils, Florida to Texas, and northward, mostly near the coast, to Massachusetts (Martha's Vineyard), and in the interior to Indiana. (Specimens examined from Massachusetts (Martha's Vineyard), New York (Long Island), New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, Indiana, Kentucky, North Carolina, Tennessee, South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, Arkansas, Texas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f 1016; Rob. & Fern. Man. f. 513; Boott, Ill. Carex 92. pl. 274.

NOTE: The sheet containing Michaux's material also has on it *Carex blanda* Dewey and *Carex prasina* Wahl., but the description was drawn from the species here described (see L. H. Bailey, Mem. Torrey Club 1: 34).

341. *Carex flexuosa* Muhl.; Willd. Sp. Pl. 4: 297. 1805.

Carex tenuis Rudge, Trans. Linn. Soc. 7: 97. pl. 9, f. 2. 1804. (Type from Long Island, New York.)

Not *C. tenuis* J. F. Gmel. 1791.

"*Carex debilis* Michx." Boott, Ill. Carex 92. pl. 272. 1860.

Carex debilis var. β Boott, Ill. Carex 93. pl. 273. 1860. (Type from Penn Yan, New York.)

Carex debilis var. *Rudgei* L. H. Bailey, Mem. Torrey Club 1: 34. 1889. (Based on *C. tenuis* Rudge.)

Carex debilis var. *strictior* L. H. Bailey, Mem. Torrey Club 1: 34. 1889. (Type from White Mountains, New Hampshire.)

Carex debilis var. *interjecta* L. H. Bailey, Bull. Torrey Club 20: 418. 1893. (Based on *C. debilis* var. β Boott.)

Carex tenuis var. *interjecta* Britton; Britt. & Brown, Ill. Fl. 1: 320. 1896. (Based on *C. debilis* var. *interjecta* Bailey.)

Carex tenuis var. *erector* Britton; Britt. & Brown, Ill. Fl. 1: 321. 1896. (New name for *C. debilis* var. *strictior* Bailey, not *C. strictior* Dewey, 1846.)

Cespitose, not stoloniferous, the rootstocks very short, the clumps medium-sized or large, the culms 2–10 dm. high, slender but erect, exceeding the leaves, mostly lateral and aphyllipodic, a few central and phyllopic, sharply triangular, somewhat roughened on the angles above, reddish-purple at base, the basal sheaths breaking and becoming somewhat filamentose; sterile shoots conspicuous, phyllopic or nearly so, mostly elongate; culm-leaves usually 2 or 3 and with the bracts evenly distributed, not bunched, their blades flat, deep-green, not stiff, ascending, 7–30 cm. long, 2–4 mm. wide, roughened on the margins and toward the apex, long-acuminate, the blades of the shoots up to 4.5 dm. long, 2.5–4 mm. wide; sheaths thin, yellowish-brown-tinged and reddish-dotted ventrally, glabrous, concave at mouth, the ligule longer than wide; staminate spike solitary, slender-peduncled, narrowly linear, 1.5–5 cm. long, 1 mm. wide, often with some perigynia at the summit, the scales loosely appressed, oblong-obovate, obtuse or acutish, whitish-straw-colored and more or less yellowish-brown-tinged, with green, 3-nerved, little roughened or nearly smooth center; pistillate spikes usually 3 or 4, not approximate except the uppermost, on slender rough peduncles, from twice the length of to shorter than the spikes, the spikes nodding to weakly erect, elongate, narrowly linear, 2–8 cm. long, 3–4 mm. wide, 12–25-flowered, the perigynia ascending, overlapping above, loosely flowered at base or sometimes throughout, the rachis flexuose, terminating in an empty scale; bracts usually exceeding the culms, the lowest leaf-like, with sheaths 1–4 cm. long, smooth, the upper much reduced; scales obovate, oblong-obovate, or ovate, obtuse to short-acuminate, narrower than and from one third to three fourths the length of the perigynia, more or less ciliate, greenish-white with green, 3-nerved, smooth or little roughened center, and more or less strongly reddish-brown-tinged, the midvein very prominent, not reaching top, sharply keeled, the scales at top not closely appressed, mostly deciduous with or after the perigynia; perigynia lanceolate, 4.5–7 mm. long, 1.75–2.25 mm. wide, triangular in cross-section, little inflated, glabrous but obscurely or slightly roughened on angles, membranaceous, deep-green, 2-ridged and slenderly several-nerved, round-tapering at base and truncately stipitate, contracted at apex into a yellowish-brown-tinged, rough, obliquely strongly bidentate, stoutish beak, the tip not enlarged, about 1 mm. long, ciliate and white-hyaline between the teeth; achenes obovoid, 2 mm. long, 1.5 mm. wide, triangular with sides concave below and thickened angles, in lower half of perigynium, slenderly stipitate, slenderly apiculate, jointed with the flexuose slender style; stigmas 3, slender, short, brownish-black.

TYPE LOCALITY: "Habitat in Pennsylvania."

DISTRIBUTION: Dry woods, acid soils, Newfoundland to Wisconsin, and southward to Virginia and Missouri, and in the mountains to North Carolina and Tennessee. (Specimens examined from Newfoundland, Quebec, Prince Edward Island, New Brunswick, Nova Scotia, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Virginia, North Carolina, Kentucky, Tennessee, Ohio, Michigan, Indiana, Wisconsin, Missouri.)

ILLUSTRATIONS: Trans. Linn. Soc. 7: pl. 9, f. 2; Knobel, Grasses pl. 27, f. 36; Kunze, Suppl. Riedgr. pl. 8, f. g (as *C. gracillima* Schw.); Britt. & Brown, Ill. Fl. f. 757; ed. 2. f. 1017; Rob. & Fern. Man. f. 514; Schkuhr, Riedgr. pl. *Did* and *Aaaa*, f. 124; Boott, Ill. Carex 92. pl. 272, 273; Engler, Pflanzenreich 4²⁰: 596. f. 101, A–D (as *C. debilis* Michx.).

342. *Carex allegheniensis* Mackenzie, sp. nov.

Carex venusta var. β Boott, Ill. Carex 51. 1858. (Type from North Carolina.)

Carex debilis var. *pubera* A. Gray, Man. ed. 5. 593. 1867.

Cespitose, not stoloniferous, the rootstock very short, the clumps medium-sized or large, the culms 2.5–6 dm. high, slender but erect, exceeding the leaves, lateral and aphyllipodic or central and phyllopic, sharply triangular, smooth or but slightly roughened on the angles above, reddish-purple at base, the basal sheaths breaking and becoming somewhat filamentose; sterile shoots aphyllipodic, conspicuous, mostly elongate; leaves with well-developed blades 2–4 to a fertile culm, not bunched, the blades flat, not stiff, pale-green, very sparingly hirsute on upper surface at base, 7–30 cm. long or even longer on the sterile shoots, 2–3 mm. wide, long-acuminate, much roughened toward the apex, the sheaths thin, yellowish-brown-tinged and reddish-dotted ventrally, smooth dorsally, concave at mouth, the ligule longer than wide; terminal spike staminate, more or less strongly peduncled, very narrowly linear, 1.5–3 cm.

long, 1 mm. wide, the scales loose, oblong-obovate or oblanceolate, ciliate, white-hyaline with conspicuously roughened, sharply defined, green midrib extending to the acute or acuminate tip; pistillate spikes 2-4, not approximate or the upper slightly so, drooping or weakly erect on rough slender peduncles from much shorter than to 3 times the length of the spikes, the spikes narrowly linear, 2.5-5 cm. long, 3-4 mm. wide, with 8-20 appressed-ascending perigynia overlapping in few rows, or often loosely flowered at base, the rachis flexuose, terminating in empty scales; lower bracts leaflet-like, the upper reduced, but usually exceeding inflorescence, the sheaths 1-4 cm. long, smooth; scales oblanceolate or oblong-obovate, slightly narrower than and from one third to one half the length of the perigynia, sharply keeled, cuspidate or awned, more or less ciliate, little or not at all brownish-tinged, white-hyaline with roughish green midvein extending to tip, somewhat persistent after fall of perigynia; perigynia lanceolate, 5-7 mm. long, 1.5 mm. wide, obscurely triangular in cross-section, but little inflated, hirsutulous, membranaceous, light-green, or greenish-straw-colored at maturity, 2-keeled and slenderly several-nerved, tapering at base, short-stipitate, tapering at apex into a slender, unequally cleft, sharply bidentate beak 1 mm. long, the teeth ciliate; achenes elliptic or oblong-ovoid, 1.75-2 mm. long, 1-1.25 mm. wide, in lower half of perigynium, triangular with sides concave below and thickened angles, punctate, yellowish, sessile or substipitate, strongly slenderly apiculate, jointed with the nearly straight slender style; stigmas 3, slender, rather long, reddish-brown.

TYPE LOCALITY (of *C. debilis* var. *pubera* Gray, on which *C. allegheniensis* is based): "Bear Meadows, Centre County, Penn., Prof. Porter."

DISTRIBUTION: Dry woodlands, mostly in the mountains, Pennsylvania to North Carolina. (Specimens examined from Pennsylvania, District of Columbia, Virginia, North Carolina.)

343. *Carex arctata* Boott, in Hook. Fl. Bor. Am. 2: 227. 1839.

"*Carex sylvatica* Huds." Dewey, Am. Jour. Sci. 10: 40. 1825.

Carex arctata var. *Faxonii* L. H. Bailey, Bot. Gaz. 13: 87. 1888. (Type from Lisbon, New Hampshire.)

Densely caespitose, not stoloniferous, the clumps medium-sized, the culms 3-9 dm. high, slender, erect, noticeably exceeding the leaves, mostly lateral and aphyllopodic with the basal sheaths breaking and becoming filamentose, some central and phyllopodic, obtusely triangular, smooth, except in inflorescence, strongly purple-tinged at base; sterile shoots conspicuous; leaves of the lateral fertile culms usually 2 or 3 and with the bracts evenly distributed, the blades ascending, usually less than 15 cm. long, 2.5-3.5 mm. wide, punctulate, flat, thin, deep-green, soft, short-acuminate, roughened on the margins and toward the apex, those of the sterile shoots often 2-3 dm. long and 5-10 mm. wide; sheaths minutely roughened, yellowish-brown-tinged and red-dotted ventrally, concave at mouth, the ligule poorly developed, short-pubescent; staminate spike solitary, short-peduncled, narrowly linear, 1.5-4 cm. long, 1.5 mm. wide, the scales appressed, oblong-ovate, acute to obtuse, white-hyaline with broad green center; pistillate spikes 3-5, the upper approximate, the lower more or less strongly separate on very slender rough peduncles, the lower often several times the length of the spike, the upper shorter, the spikes nodding to weakly erect, elongate-linear, 2.5-8 cm. long, 3-4 mm. wide, loosely 15-45-flowered in few rows, the perigynia ascending; bracts long-sheathing, usually exceeded by the culms, the lowest leaf-like, the upper much reduced, the sheaths smooth; scales ovate, strongly cuspidate or awned, greenish-white with green center, ciliolate, thin, the lower from two thirds as long as to exceeding but narrower than the perigynia, soon deciduous; perigynia elliptic-lanceolate or ovoid, 3-5 mm. long, 1.5 mm. wide, triangular in cross-section, not inflated, deep-green, membranaceous, punctulate, smooth, prominently 2-ribbed and slenderly several-nerved, round-tapering at base and strongly stipitate, somewhat abruptly narrowed at apex into a short (0.75 mm. long) bidentate beak, hyaline above and ciliate between the teeth; achenes oblong-elliptic, 2.25 mm. long, 1.25 mm. wide, triangular with sides concave below and blunt angles, in lower two thirds of perigynia, closely enveloped, yellowish-brown, granular, truncately substipitate, apiculate-tipped, jointed with the straight slender style; stigmas 3, rather short, blackish, slender.

TYPE LOCALITY: "Hab. Canada. *Goldie*. *Todd*. *Torrey*."

DISTRIBUTION: Dry woods and thickets, Newfoundland to Minnesota, and southward to Pennsylvania and Ohio. (Specimens examined from Newfoundland, Quebec, Prince Edward Island, Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut (Litchfield County), New York, Pennsylvania, Ontario, Ohio, Michigan, Wisconsin, Minnesota.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 756; ed. 2. f. 1018; Rob. & Fern. Man. f. 512; Boott, Ill. Carex 51. pl. 135.

344. *Carex debiliformis* Mackenzie, Bull. Torrey Club
37: 244. 1910.

Carex cinnamomea Olney; A. Gray, Proc. Am. Acad. 8: 396. 1872. (Type from Mendocino County, California.) Not *C. cinnamomea* Boott, 1846.
“*Carex mendocinensis*” Mackenzie, Erythra 8: 63, in part. 1922.

Clumps medium-sized, not stoloniferous, the rootstocks somewhat elongate, the culms 5–8 dm. high, very slender, nodding, much exceeding the leaves, aphyllopodic, obtusely triangular, smooth below the spikes, brownish-red at base; sterile shoots numerous, elongate, their culms well-developed; leaves with well-developed blades usually 3 or 4 to a fertile culm, widely separated, the blades erect, usually 5–12 cm. long, 1.75–2.5 mm. wide, flat toward apex, channeled toward base, the margins revolute, very sparsely hispidulous, pubescent near the base, deep-green, thin, roughened especially on the margins and toward the apex; sterile-culm leaves long-attenuate, much longer (1.5–3.5 dm. long); sheaths very long, very sparsely hispidulous dorsally, whitish-hyaline and brownish-tinged ventrally, the ligule longer than wide; terminal spike staminate, or occasionally with one or two perigynia at base or little separate, long-peduncled, slender, linear, 1.5–3.5 cm. long, 2–3 mm. wide, the scales closely appressed, oblong-obovate, obtuse or acutish, cinnamon-brown with broad white-hyaline margins and lighter midvein; pistillate spikes 2 or 3, the lower at least strongly separate, the upper more or less so, the uppermost erect, short-peduncled or nearly sessile, the lower weakly erect, slender-peduncled, slender, linear, 1.5–5 cm. long, 3.5–4.5 mm. wide, closely flowered above, loosely at base, the perigynia 20–50, appressed-ascending in few rows; bracts leaflet-like, the lowest with elongate smooth sheath 2–3 cm. long, and blade exceeding the spike, the upper with shorter blades and sheaths; scales ovate, sharply keeled, obtuse to cuspidate, minutely ciliate, sometimes sparingly appressed-pubescent, cinnamon-brown with lighter midvein and hyaline margins, one half to three fourths the length of and nearly as wide below as the perigynia; perigynia oblong-obovate, 3.5 mm. long, 1.5 mm. wide, triangular or somewhat flattened-triangular, glabrous, light-green, membranaceous, punctulate, obscurely few-nerved, tapering at base and substipitate, abruptly contracted at apex into a hyaline bidentate beak 0.5 mm. long, short-ciliate at mouth, and sometimes sparingly appressed-pubescent above; achenes oblong-obovoid, 2.5 mm. long, 1.25 mm. wide, triangular with concave sides and blunt angles, closely enveloped, brownish, granular, slenderly but conspicuously rather short-stipitate, abruptly conspicuously apiculate, jointed with the short slender style; stigmas 3, slender, rather short.

TYPE LOCALITY (of *C. cinnamomea* Olney, on which *C. debiliformis* is based): Mendocino County, California (*Bolander 6477*).

DISTRIBUTION: Swampy places, southwestern Oregon and northwestern California. (Specimens examined from southwestern Oregon; northwestern California.)

ILLUSTRATIONS: Erythra 8: 63. f. 33; Jepson, Man. Fl. Pl. Calif. f. 191 (both as *C. mendocinensis*).

345. *Carex sylvatica* Huds. Fl. Angl. 353. 1762.

Carex patula Scop. Fl. Carn. ed. 2. 2: 226. 1772. (Type from Carniola.)

“*Carex capillaris* L.” Leers, Fl. Herborn. 202. pl. 15. f. 2. 1775. (From western Germany.)

Carex Drymeia L.f. Suppl. 414. 1781. (Type from Germany.)

Carex emarcida Suter, Fl. Helv. 2: 263. 1802. (Type from Switzerland.)

Carex psilostachya Kit.; Willd. Sp. Pl. 4: 289. 1805. (Type from Croatia.)

Trasus sylvaticus S. F. Gray, Nat. Arr. Brit. Pl. 2: 65. 1821. (Based on *Carex sylvatica* Huds.)

Edritria sylvatica Raf. Good Book 26. 1840. (Based on *Carex sylvatica* Huds.)

Carex laxula Tineo; Guss. Fl. Sic. Syn. 2: 573. 1844. (Type from Sicily.)

Carex sylvatica var. *Tommasinii* Reichenb. Ic. Fl. Germ. 8: 19. 1846. (Type from Istria.)

Carex sylvatica f. *pumila* Fiek; Uechtr. Jahresb. Schles. Ges. 57: 332. 1880. (Type from Germany.)

Carex sylvatica f. *gracilis* Celak. Sitz.-ber. Böhm. Ges. Wiss. 1887: 1888. (Type from Bohemia.)

Carex pallescens × *sylvatica* Murr, Osterr. Bot. Zeits. 38: 239. 1888. (Type from central Europe.)

Carex sylvatica f. *latifolia* Kneucker, Allg. Bot. Zeits. 7: 31. 1901. (Type from Caucasus.)

Carex sylvatica var. *brigitina* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 184. 1903. (Type from Bregenz, Tyrolia.)

Carex sylvatica f. *laxula* Kükenth. in Engler, Pflanzenreich 4²⁰: 607. 1909. (Based on *C. laxula* Tineo.)

Cespitose, from short, tough, rather stout rootstocks, the culms 2.5–8 dm. high, erect or becoming decumbent, slender, remotely leafy on lower half, obtusely triangular, smooth, brownish-tinged and somewhat fibrillose at base, the lower sheaths loose; leaves with well-developed blades 3–5 to a fertile culm, flat, thin, deep-green, asperulous above, usually 1–2 dm. long, 2.5–8 mm. wide, those of the sterile shoots 2–3 dm. long, short-acuminate, the sheaths red-dotted and more or less strongly yellowish-brown-tinged ventrally especially at the deeply concave mouth, the ligule longer than wide; staminate spike strongly rough-peduncled, linear, 1.5–4 cm. long, 2.5 mm. wide, the scales oblong-obovate, short-cuspidate to obtuse, greenish-white and often yellowish-brown-tinged, with 3-nerved green center; pistillate spikes 3 or 4, linear, 2–5 cm. long, 5–7 mm. wide, the lower widely separate, nodding on very long rough capillary peduncles, the uppermost shorter-peduncled and more erect and usually approximate to the staminate spike, closely (or loosely at base) 15–40-flowered in several rows with ascending perigynia; bracts strongly sheathing, leaflet-like, shorter than culms, the upper much reduced; scales oblong-ovate, thin, awned to acute, greenish-white and yellowish-brown-tinged, with sharp 3-nerved green center, scabrous toward the tip, narrower and shorter than the perigynia; perigynia 5–6 mm. long, 1.75 mm. wide, the body elliptic-obovoid, triangular, not inflated, slightly asperulous or smooth, green, membranaceous, punctulate, becoming greenish-straw-colored, or in age dark-brown, 2-keeled, otherwise nerveless, tapering at base and truncately stipitate, abruptly contracted into a slender, hyaline-tipped, bidentate beak nearly as long as the body, the orifice ciliate; achenes oblong-obovoid, 2.25 mm. long, 1.5 mm. wide, triangular with sides concave below and blunt angles, closely enveloped, yellowish-brown, granular, sessile or nearly so, apiculate-tipped, jointed with the straight slender style slightly enlarged at base, stigmas three, slender, long, reddish-brown.

TYPE LOCALITY: "Habitat in sylvis humidis," England.

DISTRIBUTION: Locally established in woodlands at Roslyn and Hempstead, Long Island, New York. Widely distributed in Europe, extending into northern Africa and western Asia. (Specimens examined from Roslyn and Hempstead, Long Island).

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 8: pl. 242, f. 603; Leers, Fl. Herborn. pl. 15, f. 2 (as *C. capillaris*); Anderss. Cyp. Scand. pl. 8, f. 100; Engl. Bot. pl. 995; ed. 2. pl. 1665; Benth. Handb. Brit. Fl. ed. 2. f. 1133; Coste, Fl. Fr. f. 3896; Host, Gram. Austr. 1: pl. 84; Hegi, Ill. Fl. Mittel-Eur. pl. 51, f. 5; Hallier, Deuts. Fl. pl. 446; Scop. Fl. Carn. ed. 2. pl. 59, No. 1160 (poor); Thomé, Fl. Deuts. pl. 93, f. C.; Schkuhr, Riedgr. pl. Ll, f. 101.

346. *Carex conspecta* Mackenzie, sp. nov.

Cespitose, the rootstock short and stout, the culms slender above and nodding, 4–6 mm. thick at base, 6–12 dm. high, exceeding the leaves, phyllopodic, triangular with flat sides and smooth angles, dull-purplish-brown-tinged at base, the lower sheaths breaking and sparingly filamentose; leaves with well-developed blades 5–8 to a fertile culm, on lower fourth, not clustered, not septate-nodulose, the blades not pubescent, dull-green, thick, many-nerved, stiff, channeled above, flat toward the base, slightly keeled, the margins strongly revolute, usually 2–4 dm. long, 3–6 mm. wide, long-attenuate, roughened toward the apex, the sheaths rounded and roughened between the ridges dorsally, thin-hyaline and cinnamon-brown-dotted ventrally, the ligule longer than wide; terminal spike staminate, short-peduncled, linear, 4 cm. long, 3.5 mm. wide, the scales oblong-obovate, emarginate, erose, mucronate, dull-brownish-red, with lighter midvein and narrow hyaline margins; lateral spikes 6, the upper 2 staminate, erect, short-peduncled, the lower 4 androgynous, the staminate part one fifth to one fourth of the whole, widely separate, drooping on very slender, slightly roughened peduncles 1–2 times the length of the spikes, the spikes linear, 2–3 cm. long, 5 mm. wide (the lower sometimes slightly compound), closely flowered except at very base, the perigynia 20–50, ascending or spreading at maturity in several to many rows; lowest bract leaflet-like, long-sheathing, shorter than the culm, the upper somewhat reduced; scales closely appressed, ovate, wider but somewhat shorter than the perigynia, rounded on back, mucronate, reddish-brown

with lighter midvein and whitish-hyaline erose margins; perigynia small, oval-obovoid, 2.25 mm. long, scarcely 1 mm. wide, triangular in cross-section, slightly compressed, glabrous, membranaceous, straw-colored, purple-dotted, punctulate, 2-ribbed and finely several-nerved, tapering at base, substipitate, abruptly beaked, the beak 0.5 mm. long, shallowly bidentate; achenes oval-obovoid, 1.5 mm. long, 0.8 mm. wide, triangular with concave sides, not constricted in middle, closely enveloped, filling perigynium-body, brownish, sessile, subapiculate, jointed, with the straight slender style; stigmas 3, slender, reddish-brown, rather long.

Cespitosa e rhizomate brevi; culmi nutantes triangulares folia excedentes; folia in quoque culmo fertili 5-8, valde revoluta, longe attenuata, apicem versus asperata; spica terminalis mascula linearis brevipedunculata squamis oblongo-obovatis erosis mucronatis; spicae laterales 6, 2 superiores masculae erectae brevipedunculatae, 4 inferiores androgynae nutantes lineares, pedunculis gracillimis; perigynia 20-50 ovali-obovoidea 2-costata tenuiter nervata membranaeae glabra abrupte brevirostrata.

Type collected "Entre les haciendas Santa Barbara et Cristo sur l'Alseseca, alt. 2150 m. Vicinity of Puebla, State of Puebla," *Bro. G. Arsène 1359*, Aug. 1, 1907. (U. S. Nat. Herb. no. 1032323.)
DISTRIBUTION: Known only from the type locality. (Specimens examined from Puebla.)

48. Capillares Asch. & Graebn. Syn. Mitteleur. Fl. 2: 153. 1902; Kükenth. in Engler, Pflanzenreich 4²⁰: 588. 1909; Mackenzie, in Rydb. Fl. Rocky Mts. 134. 1917. By Tuckerman (Enum. Caric. 12. 1843) referred to the SYLVATICAE Boott; by Carey (in A. Gray, Man. 558. 1848) and by L. H. Bailey (Proc. Am. Acad. 22: 103. 1886) referred to the FLEXILES Tuckerm.; by Holm (Am. Jour. Sci. IV. 16: 462. 1903) referred to the HYMENOCHLAENAE Drejer.

Culms phyllopodic, light-brown or purplish-brown and leafy at base, tufted, very slender; leaf-blades narrow; terminal spike staminate, few-several-flowered; lateral spikes 2-4, linear, drooping on long capillary peduncles, the flowers few, in few rows; bracts green-sheathing, the blades developed; perigynia appressed, ovoid to lanceolate, triangular, closely enveloping the achene, contracted or tapering into a conic beak, hyaline, oblique, and entire or nearly so at orifice; achenes triangular with concave sides and blunt angles, short-apiculate, jointed with the straight slender style; stigmas 3.

A group of a few species, widely distributed in the colder and mountainous parts of Eurasia and North America.

Leaf-blades flat or slightly channeled, usually 0.75-2.5 mm. wide; perigynium contracted into a beak 1 mm. long, 2-ribbed, otherwise nerveless; staminate spike several-flowered, 4-8 mm. long.

Leaf-blades strongly canaliculate, 0.25-0.75 mm. wide; perigynium tapering or little contracted into the beak, 2-ribbed and slenderly few-nerved; staminate spike few-flowered, 2-6 mm. long.

347. *C. capillaris*.

348. *C. Williamsii*.

347. *Carex capillaris* L. Sp. Pl. 977. 1753.

Carex pendula Genersich, Fl. Scep. Elench. no. 871. 1798. (Type from Hungary.)

Carex plena Clairv. Man. 292. 1811. (Type from Switzerland.)

Carex chlorostachys Steven, Mém. Soc. Nat. Mosc. 4: 68. 1813. (Type from Siberia.)

Trasus capillaris S. F. Gray, Nat. Arr. Brit. Pl. 2: 66. 1821. (Based on *Carex capillaris* L.)

Loxotrema capillaris Raf. Good Book 25. 1840. (Based on *Carex capillaris* L.)

Carex capillaris var. *α* (*tenuior*) Drejer, Nat. Tidssk. 3: 471. 1841. (Type from Iceland.)

Carex capillaris var. *β* (*major*) Drejer, Nat. Tidssk. 3: 472. 1841. (Type from Greenland.)

Carex nana Cham.; Steud. Syn. Cyp. 228. 1855. (Type from Unalaska.) Not *C. nana* Lam. 1789.

Carex saskatchewana Böck. Linnæa 41: 159. 1877. (Type from Saskatchewan.)

Carex Krausei Böck. Bot. Jahrb. 7: 279. 1886. (Type from Alaska.)

Carex capillaris var. *Krausei* Krantz; Macoun, Cat. Can. Pl. 4: 163. 1888. (Based on *C. Krausei* Böck.)

Carex capillaris var. *minima* G. Beck, Fl. Nied.-Oesterr. 144. 1890. (Type from central Europe.)

Carex capillaris subsp. *Karoi* Freyn, Osterr. Bot. Zeits. 40: 303. 1890. (Type from eastern Siberia.)

Carex capillaris f. *alpestris* Norman, Förh. Vid.-Selsk. Christ. 27⁸: 52, without description. 1893.

(Type from Norway.)

Carex Chamissonis Meinsh. Acta Hort. Petrop. 18: 361. 1901. Not *C. Chamissoi* Böck. 1877.

Carex capillaris var. *elongata* Olney, Caric.-Bor. Am. 5, without description. 1871; Fernald, Proc. Am. Acad. 37: 509. 1902. (Type from Twin Lakes, Colorado.)

Carex capillaris f. *saskatchewana* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 590. 1909. (Based on *C. saskatchewana* Böck.)

Carex capillaris f. *major* "Drejer" Kükenth. in Engler, Pflanzenreich 4²⁰: 590. 1909. (Based on *C. capillaris* var. (*major*) Drejer.)

- Carex capillaris* f. *minima* "Beck" Kükenth. in Engler, Pflanzenreich 4²⁰: 590. 1909. (Based on *C. capillaris* var. *minima* Beck.)
Carex capillaris var. *nana* Kükenth. in Engler, Pflanzenreich 4²⁰: 591. 1909. (Based on *C. nana* Cham.)
Carex capillaris var. *nana* f. *Krausei* Kükenth. in Engler, Pflanzenreich 4²⁰: 591. 1909. (Based on *C. Krausei* Böck.)

Cespitose in small dense clumps, the rootstocks short, the stolons very short, ascending, the culms 0.3–6 dm. high, erect or decumbent, normally very slender, occasionally stiff, usually much exceeding the leaves, phyllopodic, obtusely triangular, smooth, brownish-tinged or purplish-brown-tinged and more or less fibrillose at base, the dried-up leaves of the previous year conspicuous; leaves with well-developed blades usually 5–8 to a fertile culm, clustered toward the base, the blades flat or slightly channeled toward the base, deep-green or light-green, thin, firm, 2–9 cm. long, usually 0.75–2.5 mm. wide, roughened at apex, the sheaths tight, truncate at mouth, the ligule very short; terminal spikes staminate (sometimes gynaeandrous), very slender, 4–8 mm. long, barely 1 mm. wide, several-flowered, usually overtopped by the uppermost pistillate spike, the peduncle slender, short, roughish, the scales oblong-obovate to lanceolate, acute or obtuse, yellowish-straw-colored with greenish midrib and white-hyaline margins; pistillate spikes 2 or 3, on very slender, nearly smooth, elongate, drooping peduncles, approximate to widely separate, linear-oblong, 5–15 mm. long, 3–4 mm. wide, containing 3–20 ascending perigynia, loosely arranged in few rows; bracts long-sheathing, tubular, the sheaths green, the blades leaflet-like, rather short, usually strongly exceeded by culm; scales closely appressed, orbicular-ovate, obtuse or acute, rather wider but much shorter than the perigynia, thin, smooth, early-deciduous, light-chestnut, with lighter midrib and conspicuous white-hyaline apex and less conspicuous margins; perigynia ovoid-lanceolate, 2.5–3 mm. long, 0.75 mm. wide, obtusely triangular in cross-section, slightly inflated, slightly ciliate, serrulate, membranaceous, greenish-brown, 2-ribbed, otherwise nerveless, rounded at base and strongly stipitate, contracted into a minutely white-hyaline-tipped, conic, entire or nearly so, straight beak 1 mm. long, with oblique orifice; achenes obovoid, 1.5 mm. long, 0.75 mm. wide, triangular with brownish concave sides and blunt greenish angles, closely filling body of perigynium, granular, substipitate, short-apiculate, jointed with the short slender style; stigmas 3, slender, brownish, short.

TYPE LOCALITY: "Habitat in Sueciae pratis humidis."

DISTRIBUTION: Dry sunny places in calcareous districts, Greenland to Alaska, and southward to Maine, the White Mountains of New Hampshire, northern New York, Michigan, and in the Rocky Mountains to New Mexico and Nevada. Widely distributed in arctic-alpine Eurasia. (Specimens examined from Greenland, Ellesmereland, Labrador, Newfoundland, Quebec, New Brunswick, Maine, New Hampshire, New York, Ontario, Michigan, Wisconsin, Manitoba, Saskatchewan, Alberta, Wyoming, Colorado, New Mexico, Montana, Idaho, Utah, Nevada, British Columbia, Yukon, Mackenzie.)

ILLUSTRATIONS: Britt. & Brown Ill. Fl. f. 755; ed. 2. f. 1021; Rob. & Fern. Man. f. 511; Schkuhr, Riedgr. pl. O. f. 56; Fl. Dan. pl. 2374; Jour. Russe Bot. 1911: 157. f. 130; Clements, Rocky Mt. Fl. pl. 45, f. 16; Sturm, Deuts. Fl. 53: pl. 14; Reichenb. Ic. Fl. Germ. 8: pl. 241, f. 600; Ostenf. Fl. Arct. 1: 91. f. 69; Anderss. Cyp. Scand. pl. 7, f. 77; Host, Gram. Austr. 1: pl. 62; Engl. Bot. pl. 2069; ed. 2. pl. 1662; Coste, Fl. Fr. f. 3880; Benth. Handb. Brit. Fl. ed. 2. f. 1130; Hegi, Ill. Fl. Mittel-Eur. pl. 52, f. 7; Scop. Fl. Carn. ed. 2. pl. 59, no. 1152; Hallier, Deuts. Fl. pl. 439.

348. *Carex Williamsii* Britton; Britton & Rydb.
 Bull. N. Y. Bot. Gard. 2: 159. 1901.

Cespitose in small or medium-sized clumps, from slender elongate rootstocks, the culms 3–30 cm. high, very slender, more or less strongly exceeding the leaves, phyllopodic, erect, obtusely triangular, smooth, purplish-red-tinged and sometimes fibrillose at base, the dried-up leaves of the previous year conspicuous; leaves with well-developed blades 5–10 to a fertile culm, clustered near the base, the blades light-green, thin, strongly canaliculate, usually 2–8 cm. long, 0.25–0.75 mm. wide, minutely short-serrulate on margins toward the base, the sheaths tight, truncate at mouth, the ligule very short; terminal spike staminate, short-peduncled, few-flowered, 2–6 mm. long, 0.5–1 mm. wide, overtopped or nearly equaled by the uppermost pistillate spike, the peduncle slender, short, roughish, the scales broadly obovate, very obtuse or short-mucronate, light-brown with lighter center and white-hyaline apex;

pistillate spikes 3-5, the 2 upper from the same sheath and approximate, the others more or less strongly separate, erect or drooping on slender, nearly smooth peduncles from much shorter than to exceeding the spikes, the spikes linear, 4-10 mm. long, 2.5 mm. wide, containing 3-9 ascending perigynia, loosely arranged in few rows; lowest bract leaflet-like, strongly tubular-sheathing, the blade shorter than inflorescence, the upper bracts much reduced; scales closely appressed, broadly obovate, very obtuse, thin, smooth, early-deciduous, light- or yellowish-brownish with white-hyaline apex and often lighter midrib, as wide as but only half the length of the perigynia; perigynia lanceolate, 2.5-3.5 mm. long, 0.75-1 mm. wide, obscurely triangular in cross-section, slightly inflated, smooth, membranaceous, greenish, punctulate, 2-ribbed and slenderly few-nerved, tapering at base and stipitate, tapering or little contracted at apex into a smooth beak 1 mm. long, the orifice somewhat hyaline, oblique; achenes obovoid, 1.5 mm. long, 0.5 mm. wide, triangular with concave sides and blunt angles, closely enveloped in lower part of perigynium, substipitate, short-apiculate, jointed with the short slender style; stigmas 3, slender, brownish, short.

TYPE LOCALITY: Dawson, Yukon Territory (*Williams*).

DISTRIBUTION: Dry sunny places, in calcareous districts, Hudson Bay to Upper Yukon Valley. (Specimens examined from Yukon, Manitoba.)

49. *Longiostres* Kükenth. in Engler, Pflanzenreich 4²⁰: 604, mostly. 1909; Mackenzie, in Rydb. Fl. Rocky Mts. 134. 1917. FLEXILES Tuckerm. Enum. Caric. 13, in part. 1843; L. H. Bailey, Proc. Am. Acad. 22: 103, in part. 1886. By L. H. Bailey (Proc. Am. Acad. 22: 102. 1886) referred to the SYLVATICAE Boott, in part; and by Holm (Am. Jour. Sci. IV. 16: 463. 1903) to the HYMENOCHLAENAE Drejer.

Culms phyllopodic, tufted, leafy toward the base; foliage not pubescent; blades flat, or channeled near the base; terminal spike staminate; lateral spikes 2-6, oblong-cylindric, peduncled, many-flowered in several rows; bracts green-sheathing, the sheaths short or long, the blades developed; perigynia appressed-ascending to spreading-ascending, globose-triangular or orbicular in cross-section, somewhat inflated, membranaceous, 2-keeled and nerved or nerveless (except at base), prominently beaked, the beak bidentate, the teeth weak, scarious; achenes triangular, the sides concave below, apiculate, the apiculation usually very abruptly bent, jointed with the slender style; stigmas 3, long, slender.

Two species in the temperate parts of eastern North America, east of the Rocky Mountains, and one in eastern Asia.

Perigynia several-nerved, the beak much shorter than the body; culms not fibrillose at base. 349. *C. cherokeensis*.
Perigynia 2-ribbed (lateral), otherwise nerveless except near base, the beak as long as or longer than the body; culms strongly fibrillose at base. 350. *C. Sprengelii*.

349. *Carex cherokeensis* Schw. Ann. Lyc. N. Y. 1: 71. 1824.

Carex recurva Muhl. Descr. Gram. 262. 1817. (Type from "Cherokee.") Not *C. recurva* Huds. 1778; nor *C. recurva* Schkuhr, 1801.

Edrylzia recurva Raf. Good Book 26. 1840. (Based on *Carex recurva* Muhl.)

Carex Christyana Boott, Bost. Jour. Nat. Hist. 5: 114. 1845. (Type from Texas.)

Carex baazasana Steud. Syn. Cyp. 236. 1855. (Type from Rio Brazos, Texas.)

Carex brazasana Steud.; Böck. Flora 39: 321. 1856. (Correction in spelling only.)

Cespitose, the rootstocks stout, tough, elongate, ascending, blackish, covered with the persistent leaf-bases, the culms 3-6 dm. high, slender but erect, exceeding the leaves, strongly phyllopodic, obtusely triangular, smooth, except in the inflorescence, strongly darkened but not fibrillose at base; leaves (not bracts) usually 4-10 to a fertile culm, mostly clustered toward the base, not septate-nodulose, strongly striate, the blades thick, flat or channeled at base, light-green, long-attenuate, usually 1-2.5 dm. long, 3-7 mm. wide, roughened toward the apex, the sheaths glabrous, copper-brown-tinged ventrally, concave at mouth, the ligule very short; terminal spike staminate, usually with one or two additional smaller staminate spikes at base occasionally pistillate above, peduncled, linear, 2.5-6 cm. long, 2.5-4 mm. wide, many-flowered, the scales closely appressed, ovate-oblong, rounded on back, obtuse, whitish-hyaline with greenish or yellowish center; pistillate spikes usually 3-6, the lower often in pairs or even

three, erect or somewhat drooping, widely separate, the lower on long slender rough peduncles, the upper shorter-peduncled, oblong-cylindric, 1.5–4.5 cm. long, 6–9 mm. wide, containing 10–50 closely arranged appressed-ascending perigynia in several rows; bracts leaf-like, reduced upward, the sheaths long, the lower 2–8 cm. long, even the uppermost well-developed; scales lanceolate, acuminate, thin, greenish-white with green midvein, often somewhat brownish-tinged, narrower and usually somewhat shorter than the perigynia; perigynia ovoid, 5–6 mm. long, 2.5 mm. wide, obscurely flattened, globose-triangular in cross-section, somewhat inflated, greenish-straw-colored, membranaceous, several-nerved, rounded at base, somewhat abruptly contracted at apex into a slender beak one fourth the length of the body, scarious and bidentate at apex, the orifice obliquely cut; achenes obovoid, 2–2.5 mm. long, 1.5–1.75 mm. wide, brownish-black, granular, triangular, the sides concave below, the angles prominent and light-colored, short-stipitate, prominently slenderly (often bent-) apiculate, jointed with the straight slender style; stigmas 3, slender, long, reddish-brown.

TYPE LOCALITY: "Cherokee," and as given by Schweinitz and Torrey: "Hab. the Cherokee country. Mrs. Gambold."

DISTRIBUTION: In the low country, Georgia to Texas, and northward to southeastern Missouri and Oklahoma. (Specimens examined from Florida, Georgia, Alabama, Mississippi, Louisiana, Texas, Oklahoma, Arkansas, southeastern Missouri.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 1022; Rob. & Fern. Man. f. 509; Boott, Ill. Carex 31. pl. 79; Ann. Lyc. N. Y. 1: pl. 25, f. 1; Drejer, Symb. Car. pl. 12; Am. Jour. Sci. 11: pl. L, f. 34.

350. *Carex Sprengelii* Dewey; Spreng. Syst. 3: 827. 1826.

Carex longirostris Torr.; Schw. Ann. Lyc. N. Y. 1: 71. 1824. (Type from Massachusetts.) Not *C. longirostris* Krock. 1814.

Carex longirostris var. *minor* Boott, Proc. Acad. Phila. 1863: 78. 1863. (Type from Colorado.)

Carex Deweyana var. Böck. Linnaea 39: 129. 1875. (Type from Saskatchewan.)

Carex longirostris var. *microcystis* Böck. Linnaea 41: 241. 1877. (Type from Manitoba.)

Cespitose, from stout, tough, matted, very strongly fibrillose, elongate rootstocks, the clumps medium-sized, the culms 3–9 dm. high, slender, erect to decumbent, exceeding the leaves, triangular, rough on the angles above, brownish-tinged and very strongly long-fibrillose at base; leaves several (5–8) to a culm, not septate-nodulose, evenly disposed and not clustered at base, the blades flat, green, not stiff, ascending or spreading, usually 1–4 dm. long, 2.5–4 mm. wide, long-attenuate, roughened on the margins toward the apex and on the under surface, the sheaths long, smooth, concave or truncate at mouth, thin and white-hyaline ventrally, the ligule very short; staminate spikes 2 or 3 (occasionally 1), approximate, the upper rough-peduncled, the others sessile, linear, 1–2 cm. long, 2 mm. wide, occasionally with a few perigynia at base, the scales lanceolate, sharp-pointed, straw-colored and somewhat yellowish-tinged, with green midrib and hyaline margins; pistillate spikes 2–4, widely separate from one another and from the staminate spikes, on rough capillary peduncles one half to three times the length of the spike, pendulous or the uppermost sometimes nearly erect, the spikes oblong-cylindric, 1–3.5 cm. long, 8–10 mm. wide, rather closely (or loosely at base) 10–40-flowered, in several rows, the perigynia spreading-ascending; bracts leaflet-like, 1–1.5 mm. wide, reduced upward, from shorter than to exceeding the culm, the sheaths short, 5 mm. long or less; scales lanceolate or ovate-lanceolate, strongly awned or cuspidate or acute, greenish-white and yellowish-brown-tinged, with sharply defined, green, 3-nerved, rough center, narrower than perigynia and exceeded by their beaks; perigynia 5–6 mm. long with body suborbicular to oblong-orbicular, globose in cross-section and nearly filled by the achenes, 2.5–3 mm. long, 2 mm. wide, shining, glabrous, membranaceous, greenish-straw-colored, the two lateral ribs prominent, otherwise nerveless except near base, rounded at base and short-stipitate, very abruptly contracted at apex into a smooth slender beak as long as or longer than the body, the upper half white, the orifice very deeply obliquely cut, at length deeply bidentate, the teeth weak, scarious; achenes obovoid, 2.5 mm. long, 1.75 mm. wide, obtusely triangular with the sides concave below, rather closely enveloped, yellowish, tapering at base and truncately sub-stipitate, abruptly bent-apiculate at apex, jointed with the long, deep-green, slender style somewhat enlarged at base; stigmas 3, slender, brown, long.

TYPE LOCALITY: "Amer. bor."

DISTRIBUTION: Dry alluvial thickets, rich rocky banks and tops of large boulders in calcareous regions, New Brunswick to Alberta and Montana, and southward to Delaware, Pennsylvania, Nebraska, and Colorado. (Specimens examined from Quebec, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Ontario, Indiana, Michigan, Wisconsin, Illinois, Manitoba, Minnesota, Iowa, Saskatchewan, North Dakota, South Dakota, Nebraska, Alberta, Wyoming, Colorado, Montana.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 752; ed. 2. f. 1023; Rob. & Fern. Man. f. 508; Boott, Ill. Carex 30. pl. 78; Amer. Jour. Sci. 9: pl. C, f. 10; Amer. Jour. Sci. IV. 2: pl. 2, f. 5, 6.

NOTE: *Carex Annelii* Christ of eastern Asia is a very closely related species with smaller (4.5 mm. long) ovoid-elliptic perigynia.

50. *Extensae* Fries, Fl. Scan. 188. 1835; Tuckerm. Enum. Caric. 13. 1843; L. H. Bailey, Proc. Am. Acad. 22: 111. 1886; Mackenzie, in Rydb. Fl. Rocky Mts. 140. 1917; Mackenzie, Erythraea 8: 86. 1922. SPIROSTACHYAE Drejer, Symb. Car. 10. 1844; Holm, Am. Jour. Sci. IV. 16: 463, mostly. 1903; Kükenth. in Engler, Pflanzenreich 4²⁰: 657. 1909. FULVELLAE Fries, Summa Veg. Scand. 70. 1845. FLAVAE Tuckerm. Enum. Caric. 13. 1843; Carey, in A. Gray, Man. 559. 1848. DISTANTES O. F. Lang, Linnaea 24: 603. 1851. ECHINOCYCLAENAE Holm, Am. Jour. Sci. IV. 16: 462. 1903; Kükenth. in Engler, Pflanzenreich 4²⁰: 681. 1909. Treated as a genus PROTEOCARPUS subgenus NASTANTHA by Börner (Abh. Nat. Ver. Bremen 21: 266, 267. 1913).

Culms slender but strict, obtusely triangular below or throughout, leafy toward base; leaves sparingly septate-nodulose, the blades narrow; spikes 2-20, the terminal usually staminate, sometimes partly pistillate, the others pistillate, suborbicular to oblong, densely flowered, 3 cm. or less long, the upper sessile or nearly so and often approximate, the lower remote or approximate, usually peduncled, erect; bracts leafy, the lowest at least sheathing; pistillate scales ovate, mostly reddish-tinged, copper-tinged, or chestnut-tinged; perigynia ascending, spreading, or deflexed, obscurely triangular, somewhat or even markedly inflated, membranaceous or subcoriaceous, smooth, many-nerved, rounded or tapering at base, contracted into a bidentate beak, the teeth strict, erect; achenes triangular with concave or flat sides, apiculate, jointed with the very slender, straight or flexuous style; stigmas 3.

A very widely distributed group, represented by numerous species, occurring in sunny, moist or swampy places, especially in calcareous districts. There are nine species in North America, including one introduced species, the native ones being confined to the cooler temperate parts. The group is a very characteristic one in Newfoundland.

The group is strongly developed in Europe and a few of the species found there extend into Asia and Africa, on both of which continents there are a few endemic species. A few endemic species occur in the southern part of South America, and numerous species are endemic in Australasia, especially in New Zealand. One species occurs only in the Hawaiian Islands.

Plants with slender rootstocks, sending forth short ascending stolons; bracts all long-sheathing, the blades erect; pistillate scales brownish-chestnut; sheaths short-prolonged upward at mouth and chestnut-brown-tinged at mouth; staminate spike and pistillate spikes widely separate.

Plants densely caespitose; bracts (except lowest) sheathless or short-sheathing, the blades often spreading; scales green or tinged with red or yellowish-brown or copper-brown; sheaths often not prolonged upward at mouth, not dark-tinged; staminate spike and upper pistillate spike or all aggregated or approximate (except in *C. lepidocarpa* and sometimes in *C. Oederi*).

Culms dark-reddish-brown-tinged at base; perigynia light-olive-green; leaf-blades usually strongly canaliculate; pistillate scales copper-brown-tinged.

Culms dull-brownish-tinged at base; perigynia deep-green or light-green or yellowish or brownish-green; leaf-blades flat to deeply canaliculate; pistillate scales green or reddish or reddish-brown-tinged.

Perigynia 2-3.5 mm. long, not at all or but little deflexed, not obliquely attached, the beak markedly shorter than the body, smooth or very nearly so; achenes very short-apiculate; culms bluntly triangular, low or moderately tall; continuously producing new fertile culms and flowering and fruiting continuously from early summer until frost; rootstock not at all prolonged.

Sheath of lowest bract convex and prolonged upward at mouth opposite blade, the blade normally strongly divaricate; perigynia with beak nearly half the length to more than half the length of body, the body broadly obovoid.

351. *C. fulvescens*.

352. *C. extensa*.

353. *C. Oederi*.

- Sheath of lowest bract concave or truncate and not prolonged upward at mouth opposite blade, the blade normally erect; perigynia with beak about one third the length of the body, the body obovoid.
- Foliage dull-green; leaf-sheaths concave at mouth, not markedly fragile; leaf-blades canaliculate, scarcely papillate; spikes 2-7, the lower often separate, the terminal normally staminate; pistillate scales reddish-tinged; perigynia yellowish-green, the beak reddish-tipped. 354. *C. viridula*.
- Foliage very deep-green; leaf-sheaths truncate at mouth, very membranaceous and fragile ventrally; leaf-blades flat or but little canaliculate, papillate; spikes 4-20, mostly densely aggregated, the terminal one usually androgynous; pistillate scales at most very slightly reddish-tinged; perigynia deep-green, becoming brownish, the beak whitish-tipped. 355. *C. chlorophila*.
- Perigynia 3.5-6 mm. long, the lower at least conspicuously deflexed and obliquely attached, the beak about the length of the body or only moderately shorter; culms more sharply triangular above, taller; not continuously producing new fertile culms, the flowering and fruiting confined to late spring or early summer; root-stock very short-prolonged.
- Beak of perigynium smooth or very nearly so, whitish or in age slightly tawny-tinged at tip; scales not or but very little reddish-tinged, concealed by the perigynia; perigynia 3.5-4.5 mm. long; leaf-blades 1.5-3 mm. wide; achenes very short-apiculate. 356. *C. cryptolepis*.
- Beak of perigynium serrulate, reddish-tinged at tip; scales strongly reddish-tinged, conspicuous in the spikes.
- Perigynia little inflated, 4-6 mm. long, all obliquely contracted into a beak about as long as the body; staminate spike normally sessile or short-peduncled.
- Perigynia 4 mm. long, the middle and upper not deflexed; leaf-blades 2-4 mm. wide; ligule mostly wider than long; achenes very short-apiculate. 357. *C. laxior*.
- Perigynia 4.5-6 mm. long, all except the uppermost deflexed; leaf-blades 3-5 mm. wide; ligule mostly longer than wide; achenes strongly apiculate. 358. *C. flava*.
- Perigynia markedly ventricose, 4 mm. long, abruptly contracted into a longish beak somewhat shorter than the body, not deflexed except in the lower; staminate spike conspicuously long-peduncled; achenes strongly apiculate. 359. *C. lepidocarpha*.

351. *Carex fulvescens* Mackenzie, Bull. Torrey Club 37: 239. 1910.

"*Carex binervis* Smith" Dewey, in Wood, Class-book 424. 1845.

"*Carex fulva* Gooden." Dewey, in Wood, Class-book ed. 1861. 764. 1861.

Carex Hornschuchiana var. *laurentiana* Fernald & Wieg.; Fernald, Rhodora 13: 130. 1911. (Type from Port à Port Bay, western Newfoundland.)

Carex Hostiana var. *laurentiana* Fernald & Wieg.; Fernald, Rhodora 26: 122. 1924. (Based on *C. Hornschuchiana* var. *laurentiana* Fernald & Wieg.)

Loosely cespitose, from slender, rather short rootstocks, the stolons short, ascending, the culms 2.5-4 dm. high, slender, erect, leafy, phyllopodic, exceeding the leaves, rather sharply triangular, smooth or slightly roughened on the angles above, brownish-tinged, and slightly fibrillose at base; leaves with well-developed blades about 6-10 to a fertile culm, flat or somewhat canaliculate at base, light-green, thickish, 0.5-2 dm. long, 2-3.5 mm. wide, erect or ascending, roughened toward the apex, the sheaths of the upper and of the bracts short-prolonged ventrally at mouth and strongly tinged with chestnut-brown, the appendage white-hyaline at the tip; staminate spike solitary, slenderly rough-peduncled, linear-obclavate, 1.5-2.5 cm. long, 2-3 mm. wide, the scales closely appressed, oblong-obovate, obtuse or subacute, chestnut-reddish with white-hyaline margins and apex, and obscurely 3-nerved center; pistillate spikes 1 or 2, widely separate, erect, the upper on a scarcely exerted peduncle, the lower on a strongly exerted peduncle, short-oblong or oblong, 12-20 mm. long, 7.5-10 mm. wide, closely flowered, the perigynia 15-35, spreading-ascending in several to many rows; bracts all long-sheathing, the blades erect, much shorter than inflorescence; scales ovate, short-acute or obtuse, brownish-chestnut with conspicuous white-hyaline apex and margins above, the center lighter-tinged, obscurely 3-nerved, nearly as wide and nearly as long as body of perigynium; perigynia 5-6 mm. long, 1.5-2 mm. wide, elliptic-ovoid, more or less strongly flattened, slightly inflated, at maturity compressed-suborbicular or obscurely triangular in cross-section, yellowish-green, strongly and rather closely about 10-nerved, rounded at base, substipitate,

contracted rather gradually into a rough, reddish-brown-tinged, strongly bidentate beak 1.5 mm. long, the erect, slender teeth smooth within; achenes obovoid, 2 mm. long, 1 mm. wide, triangular with concave sides, rather loosely enveloped, tapering at base, apiculate, jointed with the straight slender style; stigmas 3, slender, reddish-brown.

TYPE LOCALITY: Valley of La Belle-Riviere, Miquelon (*Arsène 93*) (not given in original description, but this is the collection used for the illustration in Britt. & Brown, Ill. Fl. ed. 2, f. 1073).

DISTRIBUTION: Marly swamps and marshes in limestone districts, Anticosti, Quebec, Miquelon, St. Pierre, and Newfoundland; also once found near Boston, Mass. (Specimens examined from Massachusetts, Anticosti, Miquelon, St. Pierre, Newfoundland.)

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2, f. 1073.

NOTE 1: Differs from *Carex Hornschuchiana* Hoppe of Europe in the longer and wider perigynia which are rounded and not tapering at base, less abruptly beaked and more flattened; in the more strongly bright-white-margined scales; in the very membranaceous texture of the conspicuous ventral prolongation of the lower bract-sheaths; and in the more loosely enveloped achenes.

NOTE 2: In *Rhodora* 13: 243, M. L. Fernald surmises that the Massachusetts locality for this species may have been Long Pond at Tewksbury.

NOTE 3: *Carex Greeniana* Dewey (Am. Jour. Sci. 30: 61. pl. BB, f. 89. 1836), collected in the vicinity of Boston by B. D. Greene, is *Carex helodes* Link (See Mackenzie, Bull. Torrey Club 37: 239; Fernald, *Rhodora* 13: 243). It has not since been reported from North America.

352. *Carex extensa* Gooden. Trans. Linn. Soc. 2: 175.

pl. 21, f. 7. 1794.

Carex flava var. β Huds. Fl. Angl. 407. 1762. (Type from England.)

Carex nervosa Desf. Fl. Atlant. 2: 337. 1800. (Type from northwestern Africa.)

Carex arcuata Wahl. Sv. Vet.-Akad. Nya Handl. 24: 151, as synonym. 1803. (Type from Gothland.)

Carex Balbisii Spreng. Pug. 2: 86. 1815.

Carex extensa var. *tenuifolia* DC. Fl. Fr. 6: 292. 1815. (Type from France.)

Trasus extensus S. F. Gray, Nat. Arr. Brit. Pl. 2: 61. 1821. (Based on *Carex extensa* Gooden.)

Trasus extensus var. *cylindraceus* S. F. Gray. Nat. Arr. Brit. Pl. 2: 61. 1821. (Type from England.)

Carex Ecklonii var. β Nees, Linnaea 10: 203. 1835. (Type from southern Africa.)

Carex extensa var. *Balbisii* Reichenb. Ic. Fl. Germ. 8: 30. pl. 274, f. 656. 1846. (Based on *C. Balbisii* Spreng.)

Carex extensa f. *pumila* Anders. Cyp. Scand. 26. 1849. (Type from Scandinavia.)

Carex littoralis Wulfen, Fl. Norica Phan. 771. 1858. (Type from central Europe.) Not *C. littoralis* Krock, 1814; nor *C. littoralis* Schw. 1824.

Carex microdonta var. *controversa* L. H. Bailey, Proc. Am. Acad. 22: 110. 1886. (Type from San Pablo, Mexico.)

Carex extensa var. *gracca* Hausskn. Mitth. Thür. Bot. Ver. II. 13/14: 36. 1899. (Type from Greece.)

Carex extensa var. *nana* Husnot, Cyp. 48. 1905.

Carex extensa f. "*Balbisii* Reichenb." Kükenth. in Engler, Pflanzenreich 4²⁰: 667. 1909. (Based on *C. Balbisii* Spreng.)

Carex extensa f. *tenuifolia* "DC." Kükenth. in Engler, Pflanzenreich 4²⁰: 667. 1909. (Based on *C. extensa* var. *tenuifolia* DC.)

Densely caespitose, the rootstocks very short, the clumps medium-sized, the culms 1.5–6 dm. high, slender, stiff, leafy, from shorter than to exceeding the leaves, phyllopodic, obtusely triangular, smooth, dark-reddish-brown-tinged at base; sterile shoots aphyllopodic, conspicuous, elongate; leaves with well-developed blades several to a fertile culm, the lower more or less bunched, not septate-nodulose, the blades 1–2.5 dm. long, 1–2 mm. wide, glaucous-green, thick, stiff, usually strongly canaliculate, the sheaths smooth, hyaline and red-dotted ventrally, concave at mouth, the ligule short; staminate spike sessile or very short-peduncled, linear, 1–2.5 cm. long, 2–3 mm. wide, the scales oblong-obovate, obtusish or acutish, reddish-brown with straw-colored 3-nerved center and narrow hyaline margins; pistillate spikes 2 or 3, all erect and sessile or nearly so, contiguous or more or less strongly separate, occasionally one much separated, oblong, 7–20 mm. long, 6–8 mm. wide, closely 15–50-flowered, the perigynia ascending or spreading in several to many rows; bracts leaflet-like, spreading or ascending, usually exceeding the culms, the upper usually very short-sheathing, short-prolonged ventrally at mouth, the lower long-sheathing; scales ovate, cuspidate to acute, about as wide as but much shorter than the perigynia, copper-brown with greenish 3-nerved center and minutely hyaline margins; perigynia ovoid, 3–4 mm. long, 2 mm. wide, obscurely triangular in cross-section, scarcely inflated, subcoriaceous, light-olive-green, purplish-punctulate, strongly about 10-ribbed, rounded at base and sessile, tapering into a smooth-margined, flattened-conic, short, bidentate beak 0.75 mm. long, with reddish-brown tip; achenes obovoid, 2 mm. long, 1.5 mm. wide, triangular with concave sides, rather closely enveloped, yellowish-brown, sub-

stipitate, slenderly bent-apiculate, jointed with the straight slender style; stigmas 3, reddish-brown, slender, short.

TYPE LOCALITY: "Habitat in palustribus prope Harwich—on the marshy part of Branton Burrows in Devonshire," England.

DISTRIBUTION: Naturalized from Europe on the borders of salt meadows, Coney Island and Far Rockaway, New York; and Norfolk, Virginia. Also naturalized at San Pablo, Vera Cruz, Mexico (Gregg). Widely distributed in Europe and northern Africa. (Specimens examined from stations given in New York, Virginia, and Vera Cruz.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 765; ed. 2. f. 1074; Rob. & Fern. Man. f. 501; Schkuhr, Riedgr. pl. V, f. 72; pl. XX, f. 72; Fl. Dan. pl. 1709; Sturm, Deuts. Fl. 57; pl. 9; Reichenb. Ic. Fl. Germ. 8; pl. 274 (left-hand); Anderss. Cyp. Scand. 26. pl. 7, f. 91; Trans. Linn. Soc. 2; pl. 21, f. 7; Host, Gram. Austr. 1; pl. 73; Coste, Fl. Fr. f. 3906; Benth. Handb. Brit. Fl. ed. 2. f. 1125; Engl. Bot. pl. 833; ed. 2. pl. 1675; Karst. Deuts. Fl. f. 174 (11); Hallier, Deuts. Fl. pl. 441.

NOTE: Gregg's specimens from Mexico have no close relationship to *Carex microdonia* Torr. & Hook., under which they appear as a variety in Bailey's Preliminary Synopsis (Proc. Am. Acad. 22: 110). It is probable that this was due to a typographical error, and that Bailey's variety *controversa* was not intended to be placed under *Carex microdonia*, but should have appeared as a variety of *Carex extensa* (the second following species in Bailey's Synopsis). A very careful drawing of the Mexican plant shows no difference between it and *Carex extensa* Good.

353. *Carex Oederi* Retz. Fl. Scand. Prodr. 179. 1779.

- "*Carex divisa* Huds." Oeder, Fl. Dan. 7: 4. pl. 371. 1768. (From Denmark.)
Carex flava var. *Oederi* DC. Fl. Fr. 3: 121. 1805. (Based on *C. Oederi* Retz.)
Carex flava var. *lutescens* Wahl. Fl. Lapp. 234. 1812. (Type from Lapland.)
Carex flava var. *minor* Mérat, Fl. Paris ed. 2. 2: 54. 1821. (Based on *C. Oederi* Retz.)
Carex serotina Mérat, Fl. Paris ed. 2. 2: 54. 1821. (Type from France.)
Trasus Oederi S. F. Gray, Nat. Arr. Brit. Pl. 2: 60. 1821. (Based on *Carex Oederi* Retz.)
Carex flava var. *minor* Wahl. Fl. Suec. 596. 1826. (Based on *C. divisa* Huds. Fl. Dan.)
Carex subglobosa Mielichh. Flora 22: 257. 1839. (Type from Salzburg, Germany.)
Onkermia Oederi Raf. Good Book 27. 1840. (Based on *Carex Oederi* Retz.)
"*Carex flava* L." Seubert, Fl. Azor. 21. 1844. (Plant from the Azores.)
Carex flava var. *pumila* and subvar. *elongata* Coss. & Germ. Fl. Paris 602. 1845. (Based on *C. Oederi* Retz. and *C. serotina* Mérat respectively.)
Carex tumidicarpa Anderss. Bot. Notiser 1849: 16. 1849. (Type from Lapland.)
Carex Oederi f. *elatior* Anderss. Cyp. Scand. 25. 1849. (Type from Scandinavia.)
Carex Oederi f. *pygmaea* Anderss. Cyp. Scand. 25. 1849. (Type from Scandinavia.)
Carex Oederi subsp. *oedocarpa* Anderss. Cyp. Scand. 25. 1849. (Based on *C. tumidicarpa* Anderss.)
Carex Oederi var. *pulchella* Lönnroth, Obs. Crit. Pl. Suec. 24. 1854.
Carex Oederi f. *subglobosa* Storch, Fl. Salz. 76. 1857. (Based on *C. subglobosa* Mielichh.)
Carex flava var. *Oederi* subvar. *elongata* Coss. & Germ. Fl. Paris ed. 2. 753. 1861. (Based on *C. serotina* Mérat.)
Carex Oederi var. *minor* Bochkoltz, Verh. Bot. Ver. Prov. Brand. 3/4: 387. 1862. (Type from Germany.)
Carex Oederi a exigua Schur, Enum. Pl. Transsylv. 711. 1866. (Type from Transsylvania.)
Carex flavidula St.-Lag. in Cariot and St.-Lag. Fl. Bass. Rhone and Loire 2: 858. 1867.
Carex flava var. *orthorhyncha* Celak. Prodr. Fl. Böhm. 71. 1867.
Carex pullulans Dulac, Fl. Hautes-Pyr. 57. 1867. (Based on *C. Oederi* Retz.)
Carex flava var. *Oederi* f. *elatior* Marsson, Fl. Neu.-Vorpomm. 537. 1869. (Based on *C. Oederi* f. *elatior* Anderss.)
Carex flava var. *Oederi* f. *vulgaris* Marsson, Fl. Neu.-Vorpomm. 537. 1869. (Type from Germany.)
Carex flava var. *Oederi* f. *cyperoides* Marsson, Fl. Neu.-Vorpomm. 537. 1869. (Type from Germany.)
Craex flava × *punctata* × *pallescens* Brügger, Jahresh. Nat. Ges. Graubünd. 23-24: 120. 1881.
Carex flava var. *minor* Towns. Jour. Bot. 19: 163. 1881. (Type from Great Britain.)
Carex flava var. *argillacea* Towns. Jour. Bot. 19: 163. 1881. (Type from Great Britain.)
Carex Oederi β *fallax* Heimerl, Verh. Zool.-Bot. Ges. Wien 31: 182. 1881. (Type from central Europe.)
Carex Oederi var. *major* Celak. Prodr. Fl. Böhm. 740. 1881.
Carex divaricata St. Lag. Cat. Fl. Rhone 781. 1882.
Carex Oederi elatior "Anderss." Callmé, Deuts. Bot. Monats. 5: 18. 1887. (Based on *C. Oederi* f. *elatior* Anderss.)
Carex Oederi elatior f. *tularia* Callmé, Deuts. Bot. Monats. 5: 18. 1887. (Type from Sweden.)
Carex Oederi vulgaris "Marsson" Callmé, Deuts. Bot. Monats. 5: 18. 1887. (Based on *C. flava* var. *Oederi* f. *vulgaris* Marsson.)
Carex Oederi vulgaris f. *pygmaea* "Anderss." Callmé, Deuts. Bot. Monats. 5: 19. 1887. (Based on *C. Oederi* f. *pygmaea* Anderss., in part.)
Carex Oederi glomerata Callmé, Deuts. Bot. Monats. 5: 19. 1887. (Type from Sweden.)
Carex Oederi glomerata f. *pygmaea* "Anderss." Callmé, Deuts. Bot. Monats. 5: 19. 1887. (Based on *C. Oederi* f. *pygmaea* Anderss., in part.)
Carex Oederi virescens Callmé, Deuts. Bot. Monats. 5: 19. 1887. (Type from Sweden.)
Carex Oederi vulgaris f. *canaliculata* Callmé, Deuts. Bot. Monats. 6: 3. 1888. (Type from Sweden.)
Carex Oederi f. *pumila* Zahn, Oesterr. Bot. Zeits. 40: 363. 1890.
Carex flava d. *serotina* K. Richt. Pl. Eur. 1: 64. 1890. (Based on *C. serotina* Mérat.)
Carex Oederi f. *dispersa* Neuman, Sv. Fl. 697. 1901. (Type from Sweden.)
Carex Oederi f. *congesta* Neuman, Sv. Fl. 697. 1901. (Type from Sweden.)

- Carex Oederi* f. *pinguis* Neuman, Sv. Fl. 697. 1901. (Type from Sweden.)
Carex flava subsp. *Oederi* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 201. 1902. (Based on *C. Oederi* Retz.)
Carex flava β *brevirostris* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 201. 1902. (Type from Central Europe.)
Carex flava f. *alpestris* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 201. 1902. (Type from Central Europe.)
Carex flava f. *thalassica* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 201. 1902. (Type from Central Europe.)
Carex Oederi var. *pumila* Fernald, Rhodora 8: 201, as to synonymy. 1906.
Carex Oederi f. *cyperoides* "Marsson" Kükenth. in Engler, Pflanzenreich 4²⁰: 673. 1909. (Based on *C. flava* var. *Oederi* f. *cyperoides* Marsson.)
Carex Oederi f. *argillacea* Kükenth. in Engler, Pflanzenreich 4²⁰: 674. 1909. (Based on *C. flava* var. *argillacea* Towns.)
Carex Oederi f. *oedocarpa* Kükenth. in Engler, Pflanzenreich 4²⁰: 674. 1909. (Based on *C. Oederi* subsp. *oedocarpa* Anderss.)

Densely caespitose, the rootstock not at all prolonged, the culms 0.5–6 dm. high, stiff, erect, leafy, exceeded by or longer than the leaves, phyllopodic, obtusely triangular, smooth, exceeded by or longer than the leaves, phyllopodic, dull-brownish and more or less fibrillose at base, the dried up leaves of the previous year conspicuous; sterile shoots elongate, conspicuous; leaves several to a fertile culm, scarcely bunched, not septate-nodulose, the blades canaliculate toward base, dull-green, thickish, stiff, 0.5–1.5 dm. long, 1.5–3 mm. wide, attenuate, the sheaths dull-white and more or less yellowish-brown-tinged ventrally, thin, concave at mouth, the ligule short; terminal spike staminate, or with a few perigynia, sessile or short- or long-peduncled, linear, 6–25 mm. long, 1.5–2 mm. wide, the scales oblong-obovate, obtusish, reddish with narrow hyaline edges and 3-nerved lighter center; pistillate spikes 2–4, erect, the upper aggregated and sessile, the lower or sometimes all more or less strongly remote and exsert-peduncled, oblong or subglobose, 5–12 mm. long, 5 mm. wide, very closely flowered, the 10–25 perigynia squarrose-spreading in several to many rows, not or but little deflexed; bracts leaf-like, usually strongly divaricate, the lowest strongly sheathing, the upper short-sheathing, the lowest at least convex and prolonged ventrally at mouth; scales obovate, obtuse or short-cuspidate, reddish with greenish 3-nerved center and narrow hyaline margins, narrower than and about half the length of the perigynia; perigynia 2–3.5 mm. long, 1.5 mm. wide, the body broadly obovoid, somewhat ventricose, obtusely triangular, membranaceous, deep-green, becoming brownish-green, punctulate, several- to many-ribbed, rounded at base and sub-stipitate, not obliquely attached, abruptly contracted into a smooth, straight, minutely bidentate, conic beak nearly half to more than half the length of the body but markedly shorter than the body, the orifice yellowish-tinged; achenes minute, obovoid, 1.25 mm. long, 0.85 mm. wide, triangular with concave sides, nearly filling body of perigynium, black and shining at maturity, punctulate, sub-stipitate, abruptly very short-apiculate, jointed with the short slender style; stigmas 3, reddish-brown, slender, short; anthers sharp-tipped.

TYPE LOCALITY (of Oeder's "*Carex divisa* Hudson," on which *C. Oederi* Retz. is based): "Copiose in convallibus collium arenae mobilis (Dunen) insulae Sylt & Eyderstettensibus," Denmark.

DISTRIBUTION: Newfoundland to Quebec and Nova Scotia. (Specimens examined from Newfoundland, Quebec, Magdalen Islands, Nova Scotia.)

ILLUSTRATIONS: Fl. Dan. pl. 371, pl. 2794; Jour. Russe Bot. 1911: 173. f. 143; Sturm, Deuts. Fl. 57: pl. 8 (excellent); Reichenb. Ic. Fl. Germ. 8: pl. 272, f. 652; Ostenf. Fl. Arct. 91. f. 70; Anderss. Cyp. Scand. (pl. 7, f. 92; Host, Gram. Austr. 1: pl. 65; Coste, Fl. Fr. 1. 3909; Engl. Bot. ed. 2. pl. 1674; Hegi, Ill. Fl. Mittel-Eur. pl. 53, f. 4; Hallier, Deuts. Fl. pl. 442; Schkuhr, Riedgr. pl. F, f. 26.

NOTE 1: See L. H. Bailey (Mem. Torrey Club 1: 29. 1889) for a treatment of this and following species.

NOTE 2: This species, as well as *Carex viridula* Michx. and *C. chlorophila* Mackenzie, blooms and bears fruit from early summer until frost, new culms continuously appearing and new spikes being continuously produced and matured. The other species in this group mature all of their spikes about the same time in late spring or early summer. Concerning this species Gaudin (Agrost. Helv. 2: 149. 1811) says: "Radix mere fibrosa (cel. Hostio monente) per totam aestatem novos foliorum culmorumque caespitos spargens ut plantam semper florentem vel fructiferam respirere queas." This follows observations by Host (Gram. Austr. 1: 50. 1801).

354. *Carex viridula* Michx. Fl. Bor. Am. 2: 170. 1803.

Carex irregularis Schw. Ann. Lyc. N. Y. 1: 66. 1824. (Type from northwestern New Jersey.)
 "*Carex Oederi* Retz." Schw. & Torr. Ann. Lyc. N. Y. 1: 334. 1825.

Edritria viridula Raf. Good Book 26. 1840. (Based on *Carex viridula* Michx.)

Carex Urbani Böck. Bot. Jahrb. 7: 280. 1886. (Type from Alaska.)

- Carex flava* var. *recterostrata* L. H. Bailey, Bot. Gaz. 13: 84. 1888. (Type from Vancouver Island.)
Carex flava var. *viridula* L. H. Bailey, Mem. Torrey Club 1: 31. 1889. (Based on *C. viridula* Michx.)
Carex Oederi var. *pumila* Fernald, Rhodora 8: 201, as to plant described. 1906.
Carex Oederi var. *viridula* Kükenth. in Engler Pflanzenreich 4²⁰: 674. 1909. (Based on *C. viridula* Michx.)
Carex Oederi var. *viridula* f. *recterostrata* Kükenth. in Engler, Pflanzenreich 4²⁰: 674. 1909. (Based on *C. flava* var. *recterostrata* L. H. Bailey.)

Densely caespitose, the rootstock not at all prolonged, the clumps small, the culms 0.6–3 dm. high, stiff, erect, leafy, shorter than or exceeding the leaves, phyllopodic, obtusely triangular, smooth, light-brown and fibrillose at base, the dried-up leaves of the previous year conspicuous; sterile shoots elongate, conspicuous; leaves (not bracts) with well-developed blades usually 4–8 to a fertile culm, on the lower half, the lower clustered, the upper separate, not septate-nodulose, the blades dull-green, thickish, canaliculate, 0.5–2 dm. long, 1–3 mm. wide, long-attenuate, scarcely papillate but roughened at apex, the sheaths rather dull-white ventrally, thin but not markedly fragile, concave at mouth, the ligule as long as wide; terminal spike normally staminate, sessile or short-peduncled, linear, 1.5–3 mm. long, 1.5–3 mm. wide, the scales oblong-obovate, obtusish, reddish-brown with hyaline margins and 3-nerved center, often green when young; pistillate spikes 2–6, the upper closely aggregated, the lowermost from little to very widely separate, all erect, the upper nearly sessile, the others on usually little exerted smooth peduncles, the spikes oblong or globose-oblong, 5–10 mm. long, 4–7 mm. wide, containing 15–30 spreading perigynia in several to many rows, not or but little deflexed; bracts conspicuous, leaf-like, erect or occasionally spreading, many times exceeding head, the sheaths conspicuous, the lowermost 4–18 mm. long, concave and not chestnut-tinged at mouth; scales obovate, usually short-cuspidate, reddish with greenish 3-nerved center and narrow hyaline margins, narrower than and about half the length of the perigynia; perigynia 2–3 mm. long, 1.25 mm. wide, the body obovoid, not inflated, obtusely triangular, slightly flattened, membranaceous, punctulate, yellowish-green, several- to many-ribbed, attenuate-tapering at base and substipitate, not obliquely attached, abruptly contracted into the smooth or subserrulate, straight, minutely bidentate beak about one third as long as the body, the tip reddish-tinged; achenes minute, obovoid, 1.25 mm. long, nearly 1 mm. wide, triangular with concave sides, closely enveloped, nearly filling body of perigynium, black and shining at maturity, substipitate, abruptly very short-apiculate, jointed with the straight slender style; stigmas 3, reddish-brown, short, slender; anthers 1.75 mm. long, reddish-yellow.

TYPE LOCALITY: "Hab. in Canada."

DISTRIBUTION: Seepy lake and river banks in calcareous districts, Greenland and Newfoundland to Alaska, and southward to northwestern New Jersey, Indiana, New Mexico, Utah, and northern California; also in Japan. (Specimens examined from Greenland, Newfoundland, Quebec, Nova Scotia, Prince Edward Island, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Manitoba, North Dakota, Saskatchewan, Alberta, Montana, Wyoming, Colorado, New Mexico, Utah, Idaho, northwestern California, Oregon, Washington, British Columbia, including Vancouver and Queen Charlotte Islands, Alaska.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 767; ed. 2. f. 1075; Rob. & Fern. Man. f. 505 (as *Carex Oederi*); Boott, Ill. Carex 159. pl. 523; Abrams, Ill. Fl. Pac. States f. 836.

355. *Carex chlorophila* Mackenzie, sp. nov.

Carex Oederi var. *prolifera* H. B. Lord; G. W. Clinton, Ann. Rep. N. Y. State Cab. 19: 76. 1866. (Type from Cayuga Lake, New York.)

Carex Oederi f. *intermedia* Dudley, Bull. Cornell Univ. 2: 117. 1886. (Type from Marl Pond, Cortland County, New York.)

"*Carex Oederi* var. *pumila* Fernald" Rob. & Fern. Man. 246, in small part. 1908.

"*Carex irregularis* Schw." House, Bull. N. Y. State Mus. 254: 195. 1924.

Densely caespitose, the rootstock not at all prolonged, the culms 1–3.5 dm. high, stiff and erect, leafy, usually exceeded by the leaves, phyllopodic, obtusely triangular, smooth, light-brown and more or less fibrillose at base, mostly making growth in one year, the dried-up leaves therefore usually not conspicuous; sterile shoots elongate, conspicuous; leaves several to a fertile culm, scarcely bunched, not septate-nodulose, the blades flat or little canaliculate at base, very deep-green, thickish, stiff, 1–3.5 dm. long, 2–3.5 mm. wide, long-attenuate, papillate, the sheaths bright-shining-white ventrally, very membranaceous and fragile ventrally and

easily ruptured, truncate at mouth, the ligule as long as wide; spikes 4–20, all densely aggregated or the lower somewhat separated (or rarely widely remote on a long slender peduncle), the lower often compound, the peduncles smooth, the terminal spike sessile, linear-obclavate, 7–15 mm. long, 2.5–3.5 mm. wide, staminate or more usually androgynous, the scales oblong-oblancheolate, acute, reddish-brown with 3-nerved lighter center and narrow hyaline margins; lateral spikes pistillate, oblong or suborbicular, 5–10 mm. long, 4.5–6 mm. wide, closely 15–40-flowered, the perigynia in several to many rows, widely spreading, not or but little deflexed; bracts very short-sheathing, deeply cut and chestnut-tinged at mouth, the blades erect, many times exceeding the head; scales ovate, obtuse, or short-mucronate, greenish-white with 3-nerved green center and hyaline margins, at most very slightly reddish-tinged, narrower and usually much shorter than perigynia and concealed by them; perigynia 2–3 mm. long, 1–1.25 mm. wide, the body obovoid, not inflated, obtusely triangular, slightly flattened, membranaceous, deep-green, becoming brownish, strongly punctulate, several- to many-ribbed, attenuate-tapering at base, substipitate, not obliquely attached, abruptly contracted into the smooth, straight, minutely bidentate, conic beak, the beak whitish-tinged and about one third the length of the body; achenes minute, obovoid, 1.5 mm. long, 0.75 mm. wide, triangular with concave sides, closely enveloped, filling body of perigynium, black and shining at maturity, punctulate, substipitate, abruptly very short-apiculate, jointed with the straight slender style; stigmas 3, reddish-brown, slender, short; anthers 1.75 long, reddish-yellow.

Culmi dense cespitosi 1–3.5 dm. alti foliosi obtuse triangulares e rhizomate abbreviato, basi pallide brunnei; laminae planae papillatae 1–3.5 dm. longae; vaginae latere anteriore fragiles membranaceae albo-nitentes, ore truncato; bracteae brevissime vaginatae erectae spicas multo superantes; spicae 4–20 dense aggregatae vel infimae interdum disjunctae, terminalis lineari-obclavata saepissime androgyna, squamis oblongo-oblancheolatis, laterales fertiles subglobosae, squamis viridibus ovatis a perigyniis obtectis; perigynia obovoidea 2–3 mm. longa patula viridia demum brunnescentia, rostro brevi recto conico minute bidentato; achaenia brevissime apiculata.

Type collected at White Pond, Marksboro, Warren County, New Jersey (*Mackenzie 6806*.)

DISTRIBUTION: Shores of marl ponds, New York to Wisconsin, and southward to northwestern New Jersey and Indiana. (Specimens examined from New York, New Jersey, Ontario, Ohio, Michigan, Indiana, Wisconsin.)

ILLUSTRATION: Rob. & Fern. Man. f. 506 (as *C. Oederi* var. *pumila*.)

356. *Carex cryptolepis* Mackenzie, *Torrey* 14: 156. 1914.

"*Carex lepidocarpa* Tausch" Dewey, *Am. Jour. Sci.* II. 3: 172. 1847; also in Wood, *Class-book* ed. 2. 585. 1847.

Carex flava var. *graminis* L. H. Bailey, *Mem. Torrey Club* 1: 30. 1889. (Type from eastern United States.)

"*Carex flava* var. *rectirostra* Gaudin" Fernald, *Rhodora* 8: 201, in part. 1906.

"*Carex flava* var. *elatior* Schlecht." Fernald, *Rhodora* 8: 201, in part. 1906.

Carex Oederi var. *viridula* f. *graminea* (sic) Kükenth. in Engler, *Pflanzenreich* 4^o: 674. 1909. (Based on *C. flava* var. *graminis* L. H. Bailey.)

"*Carex lepidocarpa* Tausch" Mackenzie, in Britt. & Brown, *Ill. Fl.* ed. 2. 420. f. 1076. 1913.

Densely cespitose, not stoloniferous, the rootstock very short-prolonged, the culms 2–6 dm. high, erect, slender, exceeding the culm-leaves, but mostly exceeded by leaves of sterile shoots, phyllopodic, smooth or very nearly so, obtusely triangular below, acutely triangular above, light-brown and more or less fibrillose at base; leaves 4–6 to a fertile culm, on lower fourth, but not bunched, light-green, the blades erect, flat, usually 0.5–2.5 dm. long, 1.5–3 mm. wide, roughened toward apex, not septate-nodulose, the sheaths conspicuously dull-white-hyaline ventrally, not prolonged upwards at mouth; sterile shoots phyllopodic, conspicuous, the blades averaging longer; staminate spike sessile to strongly peduncled, 7–18 mm. long, 2–3 mm. wide, occasionally partly pistillate at base, its scales oblong-lanceolate, acute, greenish-yellow, with 3-nerved green center; pistillate spikes 3 or 4, the upper 1 or 2 approximate, the next strongly separate and the lowest often very strongly separate, mostly staminate at apex, sessile or the lower exsert-peduncled, oblong, 10–20 mm. long, 7–10 mm. wide, closely 15–35-flowered in many rows, the upper perigynia ascending, the middle spreading and the lower obliquely attached and conspicuously deflexed; bracts leaf-like, the lower long-sheathing, the

upper short-sheathing, convex at mouth, the lower with erect, the upper with widely spreading blades; scales lanceolate or ovate, acute, greenish-yellow, with 3-nerved green center, not or but very little reddish-tinged, narrower than and about the length of body of perigynium, concealed and inconspicuous at maturity; perigynia 3.5–4.5 mm. long, the body obovoid, 1.75 mm. wide, inflated, triangular-suborbicular in cross-section, the upper part empty, light-green or yellowish-green, or at maturity yellowish, about 10-ribbed, round-tapering at base, sessile, abruptly slenderly beaked, the beak nearly as long as body, straight or the lower bent, smooth or very nearly so, prominently bidentate, the teeth smooth, closely contiguous to one another, whitish at top or in age slightly tawny-tinged; achenes small, obovoid, 1.5 mm. long, 1 mm. wide, triangular with concave sides, blackish, slightly silvery-shining, prominently pitted, very short-apiculate, jointed with the slender, bent, at length deciduous style; stigmas 3, slender, light-reddish, short; anthers 2.5 mm. long.

TYPE LOCALITY: White Pond, Andover Junction, Sussex County, New Jersey (*Mackenzie* 4645).

DISTRIBUTION: Wet meadows, in calcareous regions, Newfoundland to Minnesota, and southward to northwestern New Jersey and Indiana. (Specimens examined from Newfoundland, Quebec, Nova Scotia, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Ontario, Ohio, Michigan, Indiana, Wisconsin, Minnesota.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 1076 (as *C. lepidocarpa* Tausch); Rob. & Fern. Man. f. 503 (as *C. flava* var. *rectirostra* Gaudin).

357. *Carex laxior* (Kükenth.) Mackenzie.

Carex lepidocarpa var. *laxior* Kükenth. in Engler, Pflanzenreich 4²⁰: 673. 1909. (Type from Maine.)

Densely caespitose, the rootstock very short-prolonged, the culms 5–8 dm. high, slender, erect, leafy, exceeding the leaves, phyllopodic, obtusely triangular below, sharply triangular above, smooth, dark-brown and fibrillose at base, the dried-up leaves of the previous year conspicuous; sterile shoots elongate, conspicuous; leaves several to a fertile culm, the lower bunched, not septate-nodulose, the blades flat, yellowish-green, not stiff, 1.5–3.5 dm. long, 2–4 mm. wide, attenuate, the sheaths dull-white ventrally, thin and truncate at mouth, the ligule short, mostly wider than long; terminal spike staminate, sessile or nearly so, linear, 12–25 mm. long, 2.5 mm. wide, the scales oblanceolate, obtuse, reddish with narrow hyaline margins and 3-nerved lighter center; pistillate spikes 3 or 4, erect, the upper aggregated and sessile, the lowest more or less strongly separate and short-exsert-peduncled, oblong or subglobose, 5–15 mm. long, 6–8 mm. wide, very closely 15–30-flowered in several to many rows, the perigynia square-rose-spreading, the lower obliquely attached and deflexed; bracts leaf-like, more or less divaricate, the lowest strongly sheathing, the upper short-sheathing, concave at mouth; scales ovate, acute or obtuse, narrower and much shorter than perigynia but not hidden, strongly reddish with narrow hyaline margins and 3-nerved greenish center; perigynia 4 mm. long, 1.5 mm. wide, the body obovoid, little inflated, obtusely triangular, membranaceous, dull-green, becoming yellowish-green, punctulate, several- to many-ribbed, rounded at base and sessile, abruptly and obliquely contracted into a slender, serrulate, bidentate beak about as long as the body, the tip reddish-tinged, the teeth subserrulate within; achenes minute, broadly obovoid, 1.25 mm. long, 1 mm. wide, triangular with concave sides, somewhat loosely enveloped, brownish, substipitate, abruptly apiculate, jointed with the straight slender style; stigmas 3, reddish-brown, slender.

TYPE LOCALITY (of *C. lepidocarpa* var. *laxior* Kükenth., on which *C. laxior* is based): Maine (*Fernald* 169).

DISTRIBUTION: Swampy meadows in calcareous districts, Nova Scotia and Quebec to Maine and New York. (Specimens examined from Quebec, including Anticosti, Nova Scotia, Maine, New York.)

358. *Carex flava* L. Sp. Pl. 975. 1753.

Carex foliosa All. Fl. Ped. 2: 270. 1785. (Based on Haller, Hist. Stirp. Indig. Helv. No. 1384, 2: 193. 1768 (type from Mt. Uetliberg); and Scheuchzer, Agrost. 435. 1719 (type from Mt. Utliaca).)

Carex viridis Honck. Syn. 1: 372. 1792. (Type from Switzerland, based primarily on Haller no. 1384 and Scheuchzer, Agrost. 435.)

Carex echinata Lam. Fl. Fr. ed. 2. 2: 177. 1793. (Based on *C. flava* L.)

Carex patula Host, Gram. Austr. 1: 48. pl. 64. 1801. (Type from Austria.)

- Carex uelliaca* Suter, Fl. Helv. 2: 251. 1802. (Type from Switzerland, based primarily on Haller no. 1384 and Scheuchzer, Agrost. 435. See Gaudin, Fl. Helv. 6: 97-99. 1830.)
- Trasus flavus* S. F. Gray, Nat. Arr. Brit. Pl. 2: 60. 1821. (Based on *Carex flava* L.)
- Trasus flavus* var. *scaber* S. F. Gray, Nat. Arr. Brit. Pl. 2: 60. 1821. (Type from Great Britain.)
- Trasus flavus* var. *duplex* S. F. Gray, Nat. Arr. Brit. Pl. 2: 60. 1821. (Type from Great Britain.)
- Carex demissa* Hornem.; Spreng. Syst. 3: 822. 1826. (Type from Norway.)
- Carex flava* var. *densa* Gaudin, Fl. Helv. 6: 97. 1830. (Type from Switzerland.)
- Carex flava* var. *rectirostra* Gaudin, Fl. Helv. 6: 97. 1830. (Type from Switzerland.)
- Carex flava* var. *polystachya* Gaudin, Fl. Helv. 6: 97. 1830. (Type from Switzerland.)
- Anilhisia flava* Raf. Good Book 26. 1840. (Based on *Carex flava* L.)
- Carex flava* (a) *vulgaris* Döll, Rhein. Fl. 147. 1843. (Based on *C. flava* L.)
- Carex flava* var. *rectirostris* Peterm. Flora 27: 338. 1844. (Type from Germany.)
- Carex flava* var. *genuina* Peterm. Flora 27: 338. 1844. (Based on *C. flava* L.)
- Carex flava* var. *deficiens* Peterm. Flora 27: 339. 1844. (Type from Germany.)
- Carex flava* var. *elatior* Anderss. Cyp. Scand. 25. 1849. (Type from Scandinavia.)
- Carex flava* var. *elatior* f. *acrogyna* Anderss. Cyp. Scand. 25. 1849. (Type from Scandinavia.)
- Carex flava* var. *patula* Schur, Enum. Pl. Transsilv. 711. 1866. (Based on *C. patula* Host.)
- Carex flava* var. *remotiuscula* Schur, Enum. Pl. Transsilv. 711. 1866. (Type from Kronstadt.)
- Carex flava* var. *macrorrhyncha* Celak. Prodr. Fl. Böhm. 71. 1867.
- Carex flava* f. *androgyna* Olney, Caric. Bor.-Am. 5, name only. 1871.
- Carex polystachya* Czetz, Erd. Mag. 6: 12. 1872. (Based on *C. flava* var. *polystachya* Gaudin.)
- Carex flava* var. *fertilis* Peck, Ann. Rep. N. Y. State Mus. 48: 197. 1897. (Type from Dutchess County, New York.)
- Carex flava* f. *umbrosa* Kneucker, Allg. Bot. Zeits. 5: 8. 1899. (Type from Germany.)
- Carex flava* a *congesta* Neuman, Sv. Fl. 696. 1901.
- Carex flava* b *dispersa* Neuman, Sv. Fl. 696. 1901.
- Carex flava* A. *eu-flava* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 199. 1902. (Based on *C. flava* L.)
- Carex flava* f. *uelliaca* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 200. 1902. (Based on *C. uelliaca* Suter.)
- Carex flava* f. *brevirostris* Junge, Schr. Nat. Ver. Schlesw. 13: 288. 1906. (Type from Germany.)
- Carex flava* var. *gaspensis* Fernald, Rhodora 8: 200. 1906. (Type from Gaspé Peninsula, Quebec. Apparently a plant distorted by a fungus.)
- Carex flava* f. *patula* "Schur" Kükenth. in Engler, Pflanzenreich 4²⁰: 671. 1909. (Based on *C. flava* var. *patula* Schur.)
- Carex flava* f. *deficiens* "Peterm." Kükenth. in Engler, Pflanzenreich 4²⁰: 671. 1909. (Based on *C. flava* var. *deficiens* Peterm.)
- Carex flava* f. *densa* "Gaudin" Kükenth. in Engler, Pflanzenreich 4²⁰: 671. 1909. (Based on *C. flava* var. *densa* Gaudin.)
- Carex flava* f. *remotiuscula* "Schur" Kükenth. in Engler, Pflanzenreich 4²⁰: 671. 1909. (Based on *C. flava* var. *remotiuscula* Schur.)
- Carex flava* f. *rectirostris* "Peterm." Kükenth. in Engler, Pflanzenreich 4²⁰: 672. 1909. (Based on *C. flava* var. *rectirostris* Peterm.)
- Carex flava* f. *demissa* "Hornem." Kükenth. in Engler, Pflanzenreich 4²⁰: 672. 1909. (Based on *C. demissa* Hornem.)

Densely caespitose, the rootstock very short-prolonged, the clumps small or medium-sized, the culms 1-8 dm. high, stiff, erect, leafy, occasionally shorter than but usually exceeding the leaves, phyllopodic, obtusely triangular below, more sharply triangular above, not roughened or but little so, light-brown and more or less fibrillose at base; sterile shoots elongate, conspicuous; leaves (not bracts) with well-developed blades usually 4-8 to a fertile culm, toward the base but not strongly clustered, not septate-nodulose, the blades flat or somewhat canaliculate at base, yellowish-green, thickish, stiff, 0.5-2.5 dm. long, 3-5 mm. wide, somewhat roughened toward the apex, attenuate, the sheaths dull-white ventrally, thin and truncate at mouth, the ligule mostly longer than wide; terminal spike staminate or occasionally partly pistillate, sessile or short-peduncled (rarely strongly peduncled, linear, 0.5-2 cm. long, 2-3 mm. wide, the scales oblong-oblancheolate, closely appressed, obtuse to acute, reddish-brown with narrow hyaline margins and 3-nerved lighter center; pistillate spikes 2-5, occasionally staminate at apex, erect, contiguous or the lower more or less separate, the uppermost nearly sessile, the lower more or less strongly exsert-peduncled, short-oblong or suborbicular, 7-18 mm. long, about 1 cm. wide, closely flowered, usually with 15-35 perigynia in several to many rows, obliquely attached, their conspicuous beaks deflexed in all except the very uppermost; bracts conspicuous, leaf-like, erect to abruptly divergent, strongly exceeding the inflorescence, the lower sheath from short (2 mm. long) to strongly developed (2 cm. long), more or less prolonged ventrally at mouth; scales ovate or ovate-lanceolate, acute to short-cuspidate, narrower than and one third to one half the length of the perigynia, reddish with narrow hyaline margins and 3-nerved lighter center; perigynia 4.5-6 mm. long, the body obovoid, 1.25-2 mm. wide, yellowish-green, becoming yellow, membranaceous, punctulate, strongly several- to many-ribbed, little inflated, rounded at base, obliquely contracted into a slender, conic, serrulate,

bidentate beak of about its own length, the teeth slender, reddish-tinged; achenes small, obovate, 1.5 mm. long, 1 mm. wide, triangular with concave sides, loosely enveloped, yellowish-brown, substipitate, abruptly strongly apiculate, jointed with the slender style; stigmas 3, reddish-brown, slender, short; anthers reddish-brown, 2 mm. long, obtusish.

TYPE LOCALITY: "Habitat in Europae paludibus."

DISTRIBUTION: Wet meadows in calcareous districts, Newfoundland to British Columbia, and southward to northwestern New Jersey, Pennsylvania, Indiana and Montana. Widely distributed in Europe. (Specimens examined from Newfoundland, St. Pierre, Nova Scotia, New Brunswick, Quebec, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Ontario, Ohio, Michigan, Indiana, Wisconsin, Minnesota, Alberta, Montana, British Columbia, including Vancouver Island.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 766; ed. 2. f. 1077; Rob. & Fern. Man. f. 502; Fl. Dan. pl. 1047; Sturm, Deuts. Fl. 57: pl. 7; Wood, Bot. & Fl. ed. 1871. 368. f. 16-18; Reichenb. Ic. Fl. Germ. pl. 273, f. 654; Anderss. Cyp. Scand. pl. 7, f. 93; Leers, Fl. Herborn. pl. 15, f. 6; Host, Gram. Austr. 1: pl. 64; Coste, Fl. Fr. f. 3908; Hegi, Ill. Fl. Mittel-Eur. pl. 53, f. 3; Engl. Bot. pl. 1294; ed. 2. pl. 1672; Benth. Handb. Brit. Fl. ed. 2. f. 1126; Karst. Deuts. Fl. 345. f. 174(5); Hallier, Deuts. Fl. pl. 442; Lindm. Bild. Nord. Fl. pl. 437A; Thomé, Fl. Deuts. pl. 94A.

359. *Carex lepidocarpa* Tausch, Flora 17: 179. 1834.

"*Carex flava* L." Schkuhr, Riedgr. 72, in part. pl. H, f. 36. 1801.

"*Carex flava* L." Host, Gram. Austr. 1: 48. pl. 63, f. 4. 1801.

Carex lipsiensis Peterm. Fl. Lips. 58. 1838. (Type from Leipzig, Germany.)

Carex flava var. *lepidocarpa* Godr. Fl. Lorr. 3: 118. 1844. (Based on *C. lepidocarpa* Tausch.)

Carex flava var. *minor* Peterm. Flora 27: 338. 1844. (Type from Leipzig, Germany.)

Carex flava var. *laevigata* Peterm. Flora 27: 338. 1844. (Type from Leipzig, Germany.)

Carex flava var. *intermedia* Coss. & Germ. Fl. Paris 602. 1845. (Type from France.)

Carex Marssoni Auersw. Bot. Zeit 10: 409. 1852. (Type from Germany.)

Carex pyriformis F. Schultz, Pollichia 15: 122. 1857. (Type from Germany.)

Carex Oederi β *major* Bochkoltz, Verh. Bot. Ver. Prov. Brand. 3/4: 287. 1862. (Type from Germany.)

Carex flava β *brachyrhyncha* Celak. Prodr. Fl. Böhm. 71. 1867.

Carex flava var. *Marssoni* Marsson, Fl. Neu-Vorpomm. 537. 1869. (Based on *C. Marssoni* Auersw.)

Carex flava f. *lepidocarpa* Olney, Caric. Bor.-Am. 5. 1871. (Based on *C. lepidocarpa* Tausch.)

Carex lepidocarpa var. *pseudolepidocarpa* Kneucker, Allg. Bot. Zeits. 5: 9. 1899. (Type from Baden, Germany.)

Carex lepidocarpa f. *acroandra* Kneucker, Allg. Bot. Zeits. 5: 10. 1899. (Type from Baden, Germany.)

Carex lepidocarpa f. *dadostachya* Kneucker, Allg. Bot. Zeits. 5: 10. 1899. (Type from Baden, Germany.)

Carex lepidocarpa f. *laeviculmis* Kneucker, Allg. Bot. Zeits. 5: 10. 1899. (Type from Baden, Germany.)

Carex lepidocarpa f. *major* Kneucker, Allg. Bot. Zeits. 5: 10. 1899. (Type from Baden, Germany.)

Carex lepidocarpa f. *rectirostris* Kneucker, Allg. Bot. Zeits. 5: 11. 1899. (Type from Baden, Germany.)

Carex lepidocarpa α *sphaerostachys* Neuman, Sv. Fl. 696. 1901.

Carex lepidocarpa β *cylindrostachys* Neuman, Sv. Fl. 696. 1901.

Carex flava A. *eu-flava* II. *lepidocarpa* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 200. 1902. (Based on *C. lepidocarpa* Tausch.)

Carex flava A. *eu-flava* II. *lepidocarpa* β *intermedia* Asch. & Graebn. Syn. Mitteleur. Fl. 2: 200. 1902. (Based on *C. flava* var. *intermedia* Coss. & Germ.)

Carex lepidocarpa f. *laevigata* "Peterm." Kükenth. in Engler, Pflanzenreich 4²⁰: 672. 1909. (Based on *C. flava* var. *laevigata* Peterm.)

Carex lepidocarpa f. *intermedia* "Asch. & Graebn." Kükenth. in Engler, Pflanzenreich 4²⁰: 672. 1909. (Based on *C. flava* var. *intermedia* Coss. & Germ.)

Densely caespitose, the rootstock very short-prolonged, the culms 1.5-5 dm. high, stiff, erect, leafy, usually exceeding the leaves, phyllopodic, obtusely triangular below, more sharply triangular and roughish above, brownish and more or less fibrillose at base; sterile shoots elongate, conspicuous; leaves several to a fertile culm, the lower bunched, not septate-nodulose, the blades flat or somewhat canaliculate toward base, deep-green, thickish, stiff, 0.5-2.5 dm. long, 2-3.5 mm. wide, attenuate, the sheaths dull-white ventrally, thin and truncate at mouth, the ligule short; terminal spike staminate, conspicuously long-rough-peduncled, linear, 1.5-3 cm. long, 2.5-3 mm. wide, the scales oblong-obovate, obtuse, reddish with white-hyaline margins and 3-nerved lighter center; pistillate spikes 2 or 3, erect, the upper more or less approximate and sessile, the lower more or less remote and short-exsert-peduncled, oblong or subglobose, 6-15 mm. long, 7-9 mm. wide, very closely 15-30-flowered, in several to many rows, the perigynia squarrose-spreading, the lower obliquely attached and conspicuously deflexed; bracts leaf-like, more or less divaricate, the lowest strongly sheathing, the upper short-sheathing, more or less

prolonged ventrally at mouth; scales ovate or obovate, obtuse or short-rough-cuspidate, strongly reddish-tinged with greenish 3-nerved center and white-hyaline margins, narrower and much shorter than the perigynia; perigynia 4 mm. long, 1.75–2 mm. wide, the body broadly obovoid, markedly ventricose, triangular, membranaceous, dull-green, becoming yellowish, punctulate, several- to many-ribbed, rounded at base and sessile, abruptly contracted into a serrulate, straight, conic, bidentate beak 1.5–2 mm. long, somewhat shorter than the body, the apex whitish, reddish-tinged; achenes minute, obovoid, 1.5 mm. long, 1 mm. wide, triangular with concave sides, loosely enveloped, yellowish-brown, short-stipitate, abruptly strongly apiculate, jointed with the slender style; stigmas 3, reddish-brown, slender; anthers 3 mm. long, obtusish.

TYPE LOCALITY: Austria (based on Host, Gram. Austr. 1: 48. *pl.* 63.)

DISTRIBUTION: Swamp-meadows in calcareous districts, Newfoundland to Quebec and New Brunswick; also in Europe. (Specimens examined from Newfoundland, St. Pierre, Nova Scotia, New Brunswick, Quebec, including Magdalen Islands and Anticosti.)

ILLUSTRATIONS: Host, Gram. Austr. 1: *pl.* 63; Rob. & Fern. Man. *f.* 504; Sturm, Deuts. Fl. 69: *pl.* 10; Reichenb. Ic. Fl. Germ. *pl.* 272, *f.* 653; Anderss. Cyp. Scand. *pl.* 7, *f.* 93b; Engl. Bot. *pl.* 1773; ed. 2. *pl.* 1673; Schkuhr, Riedgr. *pl.* H, *f.* 36 (as *C. flava*); Kunze, Suppl. Riedgr. *pl.* 13, *f.* 2.

51. *Elatae* Kükenth. in Engler, Pflanzenreich 4²⁰: 645. 1909. SPIROSTACHYAE Drejer, Symb. Car. 10, in part. 1844; Holm, Am. Jour. Sci. IV. 16: 463, in part. 1903.

Culms stout below, more slender above, obtusely triangular, leafy toward the base; leaves not septate-nodulose, the blades coriaceous, long-sheathing, the lower sheaths cinnamon-brown or purplish-tinged; spikes 4–20, the upper 1–3 staminate, rarely androgynous or gynaeandrous, the others pistillate or androgynous, elongate-cylindric or oblong-cylindric, densely many-flowered, stout, 1.5–10 cm. long, the lower distant, long-peduncled, nodding or erect; bracts leaf-like, long-sheathing; pistillate scales ovate-lanceolate or lanceolate, acuminate to long-awned, reddish-brown-tinged; perigynia ascending, oblanceolate, elliptic or ovoid, flattened-triangular, not at all or scarcely inflated, smooth, membranaceous, many-ribbed or many-nerved, purple-dotted, tapering at base, abruptly contracted into a bidentate beak, the teeth rough within; achenes usually triangular with concave sides, rarely lenticular, jointed with the slender style; stigmas usually 3, rarely 2.

A group represented by numerous species in Africa and the islands adjacent. One Australian, one Asiatic, and two species in the temperate and warmer parts of Europe are also referred here. Represented in the western hemisphere by one very local species in Bermuda.

360. *Carex Bermudiana* Hemsl. Jour. Bot. 21: 260.

pl. 239, *f.* 2. 1883.

Cespitose, from stout elongate rootstocks, the culms 3–10 dm. high, erect, rather slender, leafy, soon exceeding the leaves, strongly phyllopodic, obtusely triangular, smooth, purplish-red-tinged at base, the basal sheaths breaking and becoming more or less filamentose; leaves (not bracts) usually 8–15 to a fertile culm, clustered toward the base, not septate-nodulose, strongly striate, the blades thick, flat above, channeled toward the base, 2.5–5 dm. long, 3–6 mm. wide, thick, coriaceous, light-green, roughened toward the apex, the sheaths purplish-dotted ventrally, truncate at mouth, the ligule very short; terminal spike staminate, with 1–3 additional smaller staminate spikes at base, occasionally with a few perigynia at base, peduncled, linear, 2.5–5 cm. long, 3 mm. wide, many-flowered, the scales closely appressed, ovate-oblong, red-dotted, hirsutulous, ciliate, short-rough-awned or cuspidate, straw-colored and light-reddish-brown-tinged, with hyaline margins and strongly 3-nerved lighter center; pistillate spikes 3–6, usually more or less staminate at apex, not in twos, sometimes more or less compound, erect or somewhat drooping, widely separate, the lower slender-peduncled, the peduncles roughish, the upper short-exsert-peduncled or nearly included, oblong-cylindric, 1.5–4.5 cm. long, 6–8 mm. wide, containing 20–50 closely arranged ascending perigynia in several to many rows; bracts leaf-like, the lower exceeding the inflorescence, reduced upwards, the sheaths long, the lower 2–10 cm. long, even the uppermost well-developed, purplish-dotted ventrally, deeply concave at mouth; scales lanceolate, strongly rough-awned, cuspidate or

long-acuminate, greenish-straw-colored with hyaline margins, dotted and reddish-brown-tinged, the center green, strongly about 5-nerved, narrower than and about the length of the perigynia; perigynia oblanceolate, 4.5–5.5 mm. long, 1.5–2 mm. wide, strongly flattened-triangular, not inflated, membranaceous, greenish-straw-colored, purple-dotted, punctulate, strongly very many-ribbed, sessile, strongly tapering at base, rather abruptly contracted into a short, rough, deeply bidentate, slightly reddish-brown-tinged beak scarcely 1 mm. long, the teeth somewhat spreading, rough within; achenes narrowly oblong-obovoid, 2.5 mm. long, 1 mm. wide, triangular with concave sides, rather closely enveloped in lower two thirds of perigynium, yellowish, short-stipitate, slenderly apiculate, jointed with the straight slender style; stigmas 3, slender, reddish-brown, rather short.

TYPE LOCALITY: Bermudas (*Dickinson*).

DISTRIBUTION: Marshes, Bermuda Islands; now known only in Paget Marsh. (Specimens examined from Paget Marsh, Bermuda.)

ILLUSTRATION: Jour. Bot. 21: pl. 239, f. 2.

NOTE: Very closely related to *Carex Dianae* Steud. of the Island of St. Helena. For that species see Kükenthal, in Engler, Pflanzenreich 4²⁰: 649, and Boott, Ill. Carex 66. pl. 178–180. In it the bract-sheaths are strongly convex at mouth, the perigynia are short-stipitate and slightly more spreading, the spikes are more-flowered, and the pistillate scales are more abruptly awned.

52. **Ferrugineae** Tuckerm. Enum. Caric. 12. 1843; L. H. Bailey, Proc. Am. Acad. 22: 92. 1886; Kükenth. in Engler, Pflanzenreich 4²⁰: 559. 1909. **USTULATAE** Tuckerm. Enum. Caric. 12. 1843. **FULIGINOSAE** Tuckerm. Enum. Caric. 12. 1843; Kükenth. in Engler, Pflanzenreich 4²⁰: 550. 1909. **FRIGIDAE** Fries, Summa Veg. Scand. 70. 1845; Kükenth. in Engler, Pflanzenreich 4²⁰: 531. 1909; Mackenzie, in Rydb. Fl. Rocky Mts. 134. 1917; Mackenzie, Erythea 8: 64. 1922. **MUCRONATAE** Nyman, Consp. Fl. Eur. 778, in part. 1882; Kükenth. in Engler, Pflanzenreich 4²⁰: 532. 1909. **STENOCARPAE** Holm, Am. Jour. Sci. IV. 16: 460, mostly. 1903. **PODOGYNAE** Holm, Am. Jour. Sci. IV. 16: 460. 1903; Kükenth. in Engler, Pflanzenreich 4²⁰: 535. 1909. **CURVICOLLES** Kükenth. in Engler, Pflanzenreich 4²⁰: 538. 1909. **DECORAE** Kükenth. in Engler, Pflanzenreich 4²⁰: 541. 1909. Treated as a genus **PROTEOCARPUS**, subgenus **PROTEOCARPUS**, and sections **ORPHINASCUS** and **CHARTOTEUCHIUM** by Börner (Abh. Nat. Ver. Bremen 21: 266–268. 1913).

Culms phyllopodic, tufted, the leaves mostly clustered near the base; spikes staminate, pistillate, androgynous or gynaeandrous; bracts green-sheathing, the blades developed or rudimentary; scales dark-tinged, usually with light midvein; perigynia appressed or ascending, flat to flattened-triangular or triangular, not inflated, usually dark-tinged, more or less beaked, the beak hyaline at orifice, more or less bidentulate or bidentate; achenes usually triangular, rarely lenticular, not closely enveloped, apiculate, jointed with the straight slender style; stigmas 3 or rarely 2.

A group very strongly developed in Asia, where the species are very numerous; also well represented in the mountains of Europe; in North America represented by a few high northern species and several in the mountains in the western part of the United States. One species occurs in southern South America; otherwise the group is confined to the northern hemisphere.

Stigmas normally 3.

Terminal spike normally androgynous, the upper lateral spike sessile and staminate, androgynous, or pistillate, the lower 1 or 2 spikes pistillate or androgynous, drooping on capillary peduncles; plants with slender horizontal stolons; perigynia ciliate.

Perigynia lanceolate, 1.5–1.75 mm. wide, tapering to the apex; spikes 2–5, usually 4, the terminal one with but a few perigynia at base.

Perigynia oblong-ovate, 2–2.5 mm. wide, abruptly minutely beaked; spikes more numerous, the terminal one more strongly pistillate at base.

361. *C. petricosa*.

362. *C. Franklinii*.

Terminal spike staminate or gynaeandrous, the lateral pistillate; plants densely cespitose or with short ascending stolons.

Perigynia narrowly lanceolate, 1 mm. wide, flattened-triangular, the upper half very long-tapering and strongly ciliate-serrulate on the margins; plants densely cespitose; terminal spike gynaeandrous; lowest bract with well-developed blade.

363. *C. misandra*.

Perigynia lanceolate to ovate, 1.25–2.25 mm. wide, contracted into a beak.

Lateral spikes ovoid or short-oblong; plants loosely cespitose; lowest bract with short or rudimentary blade.

364. *C. atrofusca*.

- Lateral spikes oblong to linear-oblong; plants densely cespitose (except sometimes in *C. Lemmonii*).
- Perigynia triangular or compressed-triangular, not at all or only moderately flattened, the beak bidentulate; scales obtusish, the midvein not prominent at apex (except in *C. luzulina*).
- Uppermost pistillate spikes strongly overtopped by the staminate spike; lower spikes widely separate; perigynia triangular, hyaline-tipped, 3.5-4 mm. long; leaf-blades thin. 365. *C. Lemmonii*.
- Uppermost pistillate spikes little exceeded by the staminate spike; uppermost spikes aggregated; perigynia flattened-triangular, dark-purplish-tipped, 3.5-5 mm. long; leaf-blades firm or thickish.
- Pistillate spikes linear-oblong or narrowly oblong; scales purplish-black-tinged, the midvein not extending to apex; perigynia short-stipitate. 366. *C. ablata*.
- Pistillate spikes oblong; scales reddish-brown, the midvein extending to apex or nearly so; perigynia sessile. 367. *C. luzulina*.
- Perigynia strongly flattened, the beak bidentate; scales sharp-pointed with mid-vein prominent to the tip.
- Perigynia glabrous; scales smooth; bract-sheaths strongly enlarged upwards; leaf-blades very leathery. 368. *C. luzulaefolia*.
- Perigynia very sparsely hairy, at least when young; scales ciliate and more or less hairy; bract-sheaths scarcely enlarged upwards; leaf-blades not leathery. 369. *C. fissuricola*.
- Stigmas 2; terminal spike staminate; pistillate spikes except the uppermost slender-peduncled, the lower 1 or 2 on capillary arcuate spreading peduncles; perigynia oblong-lanceolate, ciliate; plant loosely cespitose. 370. *C. misandroides*.

361. *Carex petricosa* Dewey, Am. Jour. Sci. 29: 246.

pl. W, f. 70. 1836.

Loosely cespitose and slenderly long-stoloniferous, the stolons horizontal, the clumps small, the culms 1.5-2.5 dm. high, slender, stiffish, phyllopodic, obtusely triangular, smooth, slightly fibrillose at base, the dried-up leaves of the previous year conspicuous, their sheaths strongly striate; leaves with well-developed blades 6-12 to a fertile culm, clustered above the base, the blades light-green, stiff, usually 7-15 cm. long, 2-2.5 mm. wide, flat or somewhat channeled toward base, roughened toward the long-attenuate apex, the sheaths tight, concave or truncate at mouth, yellowish-tinged and red-dotted ventrally, the ligule very short; terminal spike androgynous, short-peduncled, about 18 mm. long, usually 3.5-5 mm. wide, the scales oblong-obovate, acute or slightly cuspidate, purplish-black with broad lighter midrib and strongly developed white-hyaline margins; pistillate spikes 2 or 3, the upper approximate, the lowest separated, erect, the upper short-peduncled or nearly sessile, the lower on peduncles 1-2 times their own length, narrowly oblong, 8-15 mm. long, 4 mm. wide, little attenuate at apex, closely flowered, containing 8-20 appressed perigynia in few rows; lowest bract leaflet-like, with sheath about 1 cm. long, exceeded by inflorescence; upper bracts reduced; scales oblong-obovate, obtuse or acutish, rounded on back and slightly ciliate, purplish-black with lighter center, hyaline toward apex, wider than but exceeded by mature perigynia; immature perigynia lanceolate, 4-5 mm. long, 1.5 mm. wide, strongly flattened, not inflated, minutely hispidulous, ciliate on margins, thin, membranaceous, straw-colored at base, purplish-black-tinged above, finely nerved, rounded at base and short-stipitate, tapering at apex, beakless or very nearly so, the apex white-hyaline, obliquely cleft, becoming bidentulate; achenes triangular; stigmas 3, slender, blackish.

TYPE LOCALITY: "Found on the summit of the Rocky Mountains" (*Drummond*), probably about 59° lat.

DISTRIBUTION: Mountains, British Columbia and Alberta. (Specimens examined from Alberta.)

ILLUSTRATIONS: Am. Jour. Sci. 29: *pl. W, f. 70*; Am. Jour. Sci. IV. 26: 488. *f. 21-24*.

362. *Carex Franklinii* Boott, in Hook. Fl. Bor. Am. 2: 217.

pl. 218. 1839.

Loosely cespitose, the rootstocks slender, elongate, slenderly long-stoloniferous, the clumps small, the culms erect, slender, 2.5-9 dm. high, exceeding the leaves, phyllopodic,

obtusely triangular, smooth or slightly roughened above, fibrillose and light-brownish-tinged at base; leaves with well-developed blades 4–8 to a fertile culm, clustered above the base, not septate-nodulose, the blades light-green, stiffish, usually 2–3 dm. long, 1–3 mm. wide, deeply channeled, much roughened toward the attenuate apex, the sheaths, at least the lower, cinnamon-brown-tinged ventrally, soon breaking, truncate at mouth, strongly striate dorsally, the ligule very short; terminal 3 or 4 spikes aggregated, androgynous or staminate, unequal, the uppermost at least with several perigynia at base, 1–2 cm. long, the staminate portion 2.5–4 mm. wide, the scales oblong-ovate, acute to obtusish, chestnut-brown with strongly developed lighter center and white-hyaline margins; pistillate spikes 2 or 3, not approximate, the uppermost at least staminate at apex, erect, and short-peduncled, the lower strongly separate, drooping on a slender, slightly roughened peduncle 2–4 times its own length, the spikes oblong, heavy, somewhat attenuate at base, 12–25 mm. long, 6–8 mm. wide, closely flowered, containing 20–40 appressed perigynia in several rows; bracts sheathing, the sheaths tight, not dark-auricled, the lowest sheath 5–15 mm. long, but shorter than inflorescence, its blade leaflet-like, prolonged, the upper bracts much reduced; scales closely appressed, oblong-ovate, short-rough-awned to obtusish, thin, minutely roughened, light-chestnut or reddish-brown with yellowish midrib sharply defined to the tip and white-hyaline margins, about width of but exceeded by perigynia; perigynia oblong-ovate, 4.5–6 mm. long, 2–2.5 mm. wide, strongly flattened, not inflated, minutely roughened, ciliate on margins, thin, membranaceous, straw-colored at base, brownish-tinged above, finely many-nerved, rounded at base and short-stipitate, tapering and minutely beaked at apex, the beak 0.25 mm. long, the apex white-hyaline, obliquely cleft, becoming bidentulate; achenes oblong, 2.25 mm. long, 1–1.25 mm. wide, triangular with slightly concave sides, much narrower and shorter than perigynia, brownish, granular, stipitate, apiculate, obscurely jointed with the straight, slender, minutely puberulous style; stigmas 3, slender, blackish.

TYPE LOCALITY: "Hab. Rocky Mountains (*Drummond*)," probably about 59° lat.

DISTRIBUTION: Mountains of Alberta, in calcareous alluvial deposits along the Athabaska River. (Only type specimens and specimens from Jasper Park seen.)

ILLUSTRATIONS: Boott, Ill. *Carex* 77. pl. 211; Hook. Fl. Bor. Am. pl. 218; Am. Jour. Sci. IV. 49: 197. f. 1–4.

NOTE: *Macoun* 97625 from Jasper Park, Alberta, named *C. Franklinii*, has fewer spikes and the terminal staminate; the perigynia are ovate and 3.5 mm. long.

363. *Carex misandra* R. Br. Chlor. Melv. 25. 1823.

Carex fuliginosa var. Hook. in W. E. Parry, Jour. Second Voy. App. 406. 1825. (Type from Five Hawser Bay.)

Carex frigida var. *Huebneri* Hisinger, Anteckn. 5: 20. 1831.

"*Carex frigida* All." Fries, Mant. 1: 18. 1832.

"*Carex fuliginosa* Schkuhr" Kunze, Suppl. Riedgr. 57, in part. 1841.

Carex fuliginosa var. *misandra* Lang, Linnæa 24: 597. 1851. (Based on *C. misandra* R. Br.)

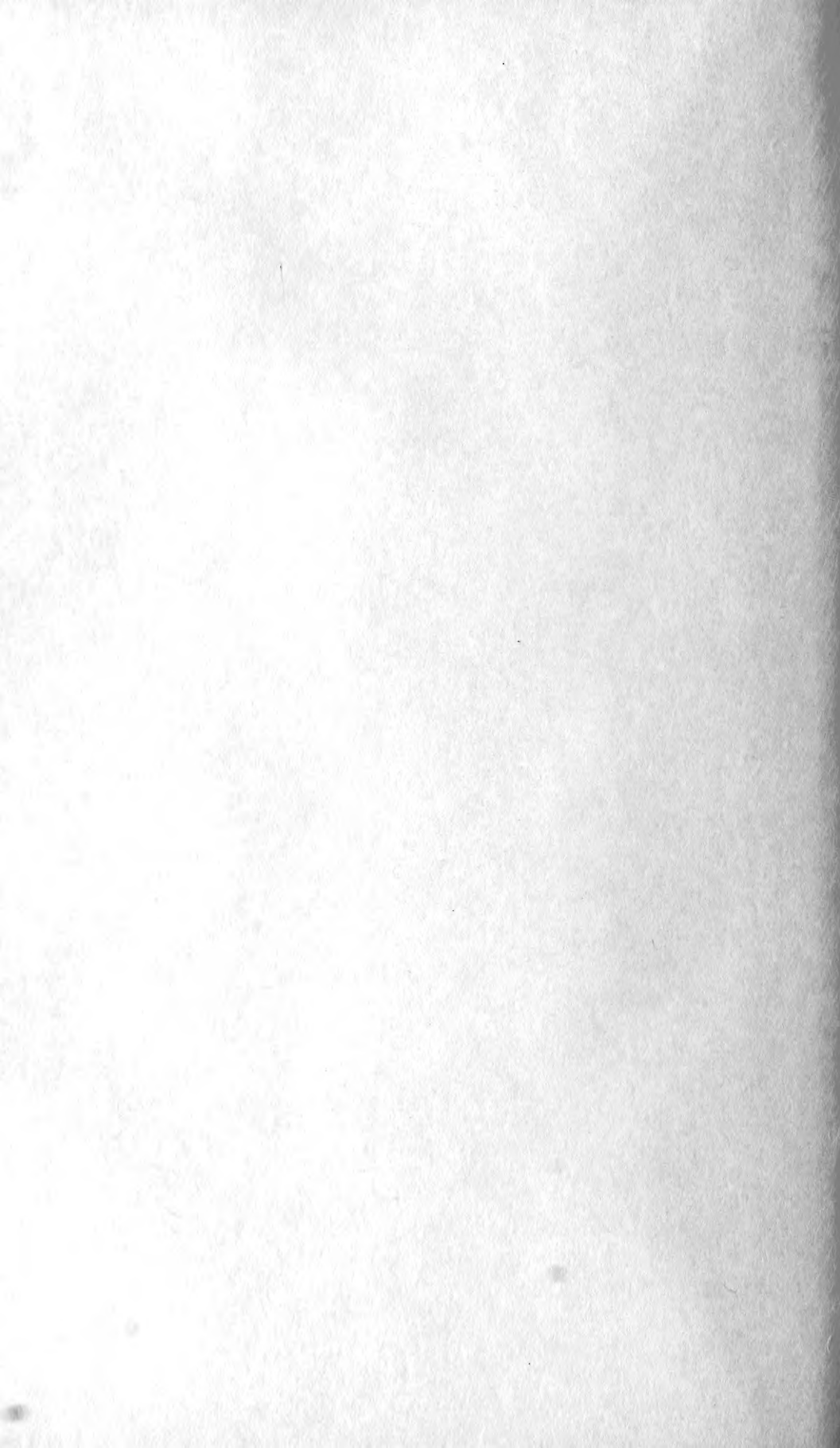
Carex frigida All. var. β Trev. in Ledeb. Fl. Ross. 4: 294. 1853. (From northern Russia.)

Carex misandra var. *elatior* Lange, Consp. Fl. Groenl. 130. 1880. (Type from Greenland.)

Carex misandra f. *ochrolochis* Ostenf.; Ostenf. & Lund. Medd. Groenl. 43: 1910. (Type from Greenland.)

Densely caespitose, the rootstocks very short, the culms slender, erect, nodding above, 1–3 dm. high, 2–4 times exceeding the leaves, strongly phyllopodic, obtusely triangular, smooth or slightly roughened above, brownish-tinged at base, the dried-up leaves of the previous year conspicuous; leaves numerous, mostly clustered near the base, not septate-nodulose, the blades erect to strongly recurved-spreading, 3–15 cm. long, 1.5–3 mm. wide, thickish, stiff, canaliculate below, often flat above, long-attenuate, blunt, the tip usually dead, the sheaths tight, more or less yellowish-brown-tinged ventrally, truncate at mouth, the ligule short; terminal spike gynaeandrous, slender-peduncled, drooping, the staminate portion conspicuous or inconspicuous, the staminate scales oblong-ovate, obtuse or acute, reddish-brown with conspicuous lighter midvein and white-hyaline margins; pistillate spikes 2 or 3, approximate or more or less strongly separate, 7–20 mm. long, 4–6 mm. wide, the upper erect and short-exsert-peduncled, the lower nodding on slender, nearly smooth peduncles, the spikes oblong or linear-oblong, closely flowered (except at very base), clavate at base, the perigynia appressed-ascending in several rows; lowest bract long-sheathing, the sheath tight, purplish-tinged, the





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