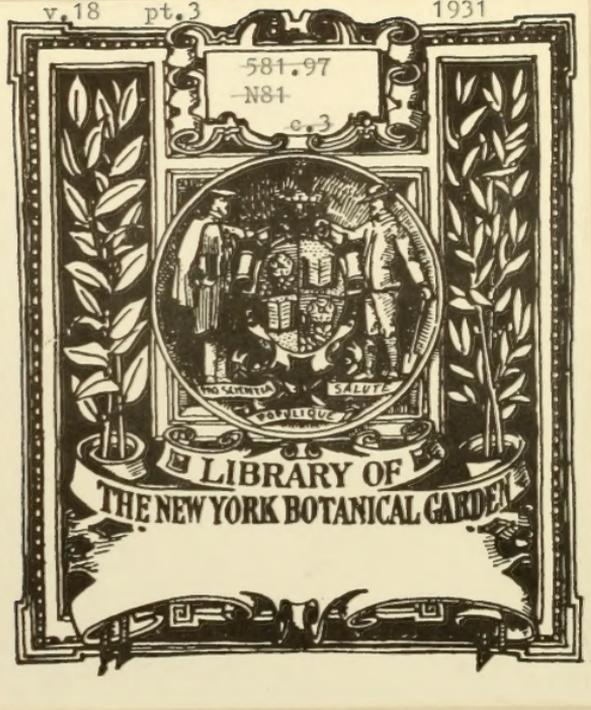


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VOLUME 18

PART 3

NORTH AMERICAN FLORA

(POALES)

(CYPERACEAE)

CARICEAE (continuatio)

KENNETH KENT MACKENZIE



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very rough towards the attenuate apex, the sheaths tight, hyaline and more or less red-dotted ventrally, concave and scarcely thickened at mouth, the ligule as wide as long; sterile shoots numerous, the culms well-developed; spikes 3-5, approximate or little separate, forming a head 1-2 cm. long, the terminal gynaeceandrous, the lateral pistillate, 5-15-flowered, suborbicular or short-oblong, 4-6 mm. long and nearly as wide, the perigynia widely spreading at maturity; bracts scale-like or the lowest setaceous-prolonged; scales ovate, short-cuspidate, yellowish with sharply defined green midvein extending to the apex and ill-defined opaque margins, narrower than but equaling bodies of perigynia; perigynia plano-convex, lanceolate, 2.5-3.5 mm. long, 1.25 mm. wide, thick, submembranaceous, yellowish-brown, nerveless ventrally, or impressed-nerved towards base, obscurely nerved dorsally, sharp-edged, the margins slightly raised, not serrulate, rounded and spongy at base, tapering or slightly contracted into a beak more than half to about length of body, with sparingly serrulate margins, the dorsal suture and false ventral suture and apex reddish-brown-tipped, the apex bidentate, the teeth sharp, triangular; achenes lenticular, ovate or oblong-ovate, 1.75 mm. long, 1 mm. wide, yellow, substipitate, apiculate; style slender, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender, short.

TYPE LOCALITY (of *C. stellulata* var. *angustata* Carey, on which *C. angustior* is based): [Fairfield, New York.]

DISTRIBUTION: Swampy meadows, Newfoundland to Washington, and southward to District of Columbia and in the mountains to North Carolina, Wyoming, Nevada, and middle California; and apparently the same species in Santo Domingo. (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, North Carolina, Ontario, Michigan, Wisconsin, Wyoming, Colorado, Idaho, Nevada, California, Oregon, Washington, British Columbia, Santo Domingo.)

ILLUSTRATIONS: Proc. Am. Acad. 37: pl. 4, f. 95-97; Rob. & Fern. Man. f. 379; Abrams, Ill. Fl. Pacif. St. f. 713.

118. *Carex laricina* Mackenzie, sp. nov.

Very densely cespitose, the rootstock not at all prolonged, the culms slender but stiff, sharply triangular, more or less roughened beneath head, light-brown at base and conspicuously clothed with the dried-up leaves of the previous year, the lower short-bladed or bladeless, loose; leaves with well-developed blades 6-9 to a fertile culm, on lower third, the blades light-green, slender, usually 1-2 dm. long, 1.5 mm. wide, strongly canaliculate, the sheaths tight, hyaline ventrally, concave and scarcely thickened at mouth, the ligule about as long as wide; spikes 3-5, more or less strongly separate, forming a head 2.5-4.5 cm. long, the lateral spikes subglobose to short-oblong, 4-8 mm. long, 5-7 mm. wide, gynaeceandrous, with few staminate flowers and 8-20 at first appressed but soon widely spreading perigynia, the terminal spike similar, but longer, clavate and strongly staminate at base, sometimes entirely staminate; bracts mostly scale-like, the lowest short-setaceous; staminate scales obovate, obtuse or obtusish, yellowish-brown-tinged with broad hyaline margins, the sharp green midvein not extending to apex; pistillate scales ovate, obtusish to acute, narrower and rather shorter than bodies of perigynia, yellowish-brown-tinged, the hyaline margin narrow, the center 3-nerved, green, the midvein sharp, extending to apex or nearly so; perigynia plano-convex, ovate, 2.75-3.5 mm. long, 1.75 mm. wide, yellowish-green, thick, subcoriaceous, round-truncate and spongy at base, strongly many-nerved dorsally and lightly many-nerved on lower half ventrally, sharp-edged to base, the margins slightly raised, sharply serrulate above, tapering into a beak about one third length of body, the beak obliquely cut dorsally and reddish-tinged ventrally, shallowly bidentate, with short triangular stiff teeth; achenes lenticular, broadly ovate to reniform-orbicular, widest below middle, about 1.3 mm. long and as wide, short-stipitate, apiculate, golden-yellow; style slender, slightly enlarged below, jointed with achene, withering and at length deciduous; stigmas two, light-reddish-brown, slender, rather short.

TYPE LOCALITY: Leesburg, Kosciusko County, Indiana (Deam 10927).

DISTRIBUTION: Sphagnum swamps, Ontario and northwestern Pennsylvania to Wisconsin, and southward to Indiana. (Specimens examined from Ontario, Pennsylvania (Presque Isle), Michigan, Wisconsin, Indiana.)

119. *Carex cephalantha* (L. H. Bailey) Bicknell, Bull. Torrey Club
35: 493. 1908.

- *Carex echinata* var. *cephalantha* L. H. Bailey, Mem. Torrey Club 1: 58. 1889. (Type from eastern Pennsylvania.)
- *Carex sterilis* var. *cephalantha* L. H. Bailey, Bull. Torrey Club 20: 424. 1893. (Based on *C. echinata* var. *cephalantha* L. H. Bailey.)
- Carex sterilis* var. *aequidistans* Peck; Howe, Ann. Rep. N. Y. State Mus. 48: 137. 1897. (Type from Oneida and Essex counties, New York.)
- Carex cephalantha* Proc. Biol. Soc. Wash. 14: 1906. 1901. (In index; not intended as a publication—but see *Torreya* 5: 44.)
- Carex echinata* var. *ormantha* Fernald, Proc. Am. Acad. 37: 483, as to Connecticut and Rhode Island specimens. 1902.
- Carex echinata* var. *excelsior* Fernald, Proc. Am. Acad. 37: 483, as to plant described. 1902.
- *Carex stellulata* var. *cephalantha* Fernald, Rhodora 4: 222. 1902. (Based on *C. echinata* var. *cephalantha* L. H. Bailey.)
- "*Carex stellulata* var. *excelsior* L. H. Bailey" Fernald, Rhodora 4: 222, as to plant described. 1902.
- Carex stellulata* var. *ormantha* Fernald, Rhodora 4: 222, as to plant. 1902.
- *Carex Leersii* var. *cephalantha* J. K. Henry, Fl. So. Brit. Columb. 60. 1915; Burnham, Torreya 19: 131. 1919. (Based on *C. echinata* var. *cephalantha* L. H. Bailey.)
- *Carex muricata* var. *cephalantha* Wiegand & Eames, Mem. Cornell Exp. Sta. 92: 120. 1926. (Based on *C. echinata* var. *cephalantha* L. H. Bailey.)

Very densely caespitose, the rootstock not at all prolonged, the culms slender but stiff, sharply triangular, more or less roughened beneath head, 2.5–7.5 dm. high, aphyllopodic, light-brown at base and conspicuously clothed with the dried-up leaves of the previous year, the lower short-bladed or bladeless; leaves 3 or 4 to a fertile culm, on lower third, but not bunched, the blades stiff, light-green, usually 1–2 dm. long, 1.5–2.5 mm. wide, flat or somewhat canaliculate, the sheaths tight, hyaline and red-dotted ventrally, concave at mouth, the ligule as long as wide; spikes 3–7, more or less strongly separate, forming a head 2.5–5 cm. long, the lateral spikes subglobose or short-oblong, 4–10 mm. long, 5–7 mm. wide, gynaeceandrous with few staminate flowers and 5–25 at first appressed and finally widely spreading or even reflexed perigynia, the terminal spike similar but longer, clavate and strongly staminate at base; lower 1 or 2 bracts mostly setaceous and exceeding spikes, the others scale-like; scales ovate, acute or somewhat cuspidate, narrower than and about length of bodies of perigynia, yellowish-brown or chestnut-brown-tinged with 3-nerved green center and midvein sharply keeled and prominent to apex, the margins hyaline; perigynia plano-convex or somewhat concavo-convex, ovate, 3.5–4 mm. long, 1.5–2 mm. wide, greenish-yellow or brownish, thick, subcoriaceous, round-truncate and spongy at base, strongly many-nerved dorsally and finely many-nerved ventrally at least at base, sharp-edged to base, strongly serrulate above, tapering or more or less abruptly narrowed into a beak half length of the body, the beak prominently reddish-brown-tinged ventrally and with margins of the dorsal suture narrowly hyaline, strongly bidentate, the subulate teeth erect; achenes lenticular, obovate, widest towards top, about 1.5 mm. long and as wide, golden-yellow, substipitate, apiculate; style straight, slightly enlarged below, jointed with achene, withering and at length deciduous; stigmas two, slender, light-reddish-brown, short.

TYPE LOCALITY (of *C. echinata* var. *cephalantha* L. H. Bailey, on which *C. cephalantha* is based): "E. Pennsylvania, Porter; Ashland, Mass., Morong; Tompkins Co., N. Y., Dudley; Jefferson Co., N. Y., Crane; and Keweenaw Co., Michigan, Farwell."

DISTRIBUTION: Acid soils, wet sphagnum, in swampy meadows or open woods, Newfoundland to Wisconsin, and southward to Maryland; on the Pacific coast from Vancouver to Washington. (Specimens examined from Newfoundland, Miquelon, Prince Edward Island, New Brunswick, Nova Scotia, Quebec, Maine, New Hampshire, Vermont, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Ontario, Wisconsin, Vancouver, Washington.)

ILLUSTRATIONS: Proc. Am. Acad. 37: pl. 4, f. 90–94; Rob. & Fern. Man. f. 377, 378; Abrams, Ill. Fl. Pacif. St. f. 714.

20. *Deweyanae* Tuckerm. Enum. Caric. 11. 1843; Mackenzie, in Rydb. Fl. Rocky Mts. 124. 1917; Mackenzie, Erythea 8: 36. 1922. SICCATAE Carey, in A. Gray, Man. 539, in part. 1848. ARGYRANTHAE Holm, Am. Jour. Sci. IV. 16: 453. 1903. By Carey (in A. Gray, Man. 544. 1848) referred in part to the CANESCENTES Fries; and by L. H. Bailey (Proc. Am. Acad. 22: 146. 1886) referred to the ELONGATAE Kunth, as also by Kükenthal (in Engler, Pflanzenreich 4²⁰: 226. 1909). One species is referred to the genus *Loncoyperis* Raf. by Rafinesque (Good Book 27. 1840).

Densely or loosely cespitose; culms triangular; sheaths not red-dotted nor cross-rugulose; spikes 3-8, gynaeandrous, pistillate or rarely staminate, simple; lower one or two bracts often conspicuous; perigynia plano-convex, light-green or yellowish-green, 3.5-5.5 mm. long, appressed, the body ovate-oblong or linear-oblong, strongly spongy at base, only upper half sharp-edged, round-tapering at base, the body closely enveloping and nearly filled by the achene, nerved dorsally, nerved or nerveless ventrally, the beak sutured dorsally, bidentate to deeply bidentate; achenes lenticular, apiculate, jointed with the straight, slender style; stigmas 2.

A group of four species, confined to North America.

Culms very rough above; leaf-blades 1-2.5 mm. wide; perigynia narrowly lanceolate; pistillate scales obtusish to acuminate; achenes linear-lanceolate.

120. *C. bromoides*.

Culms smooth to more or less strongly roughened above; leaf-blades 2-5 mm. wide; perigynia lanceolate to ovate; pistillate scales obtuse to awned; achenes orbicular-obovoid.

121. *C. Deweyana*.

Rootstocks rarely elongate, the culms usually densely cespitose; perigynia rounded at base, 4.5-5.5 mm. long, shallowly bidentate, the upper part of the body covered by the translucent scale; achenes 2-2.5 mm. long.

Rootstocks slender, elongate; perigynia tapering at base, stipitate, 3.5-4.5 mm. long; achenes 1.5-1.75 mm. long.

122. *C. leptopoda*.

Perigynia shallowly bidentate, the upper part of the body usually not covered by the scale; spikes ovoid or oblong; scales not reddish-brown-tinged.

Perigynia deeply bidentate, the body covered by the scale; spikes linear-oblong; scales usually reddish-brown-tinged.

123. *C. Bolanderi*.

120. *Carex bromoides* Schkuhr; Willd. Sp. Pl. 4: 258. 1805.

Loncoyperis bromoides Raf. Good Book 27. 1840. (Based on *Carex bromoides* Schkuhr.)

Very densely cespitose, in large clumps, the rootstocks fibrillose, sometimes slender, blackish, elongate, the culms 2.5-8 dm. high, very slender, ascending or erect, sharply triangular with concave sides, very rough on the angles above, from shorter than to exceeding the leaves, brownish at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 2-5 to a fertile culm, on the lower fourth, the blades erect or ascending, green, flat, usually less than 1 dm. long, 1-2.5 mm. wide, the blades of the sterile-culm leaves longer, often 2-3 dm. long, much roughened on the margins and towards the apex, the sheaths tight, thin and hyaline ventrally and concave and slightly thickened and short-prolonged at mouth beyond base of blade and continuous with ligule, spikes 2-7, pistillate, gynaeandrous, staminate or sometimes androgynous, aggregated (or the lower one or two slightly separate) into a slender head 2-6 cm. long, the spikes narrowly linear-oblong, the lower 5-20 mm. long, 3 mm. wide, with 6-15 erect-appressed perigynia, upper spikes less distinct; lower bracts short-prolonged, shorter than their spikes, the upper scale-like; scales narrowly oblong-ovate, thin, obtusish to acuminate, straw-colored or brownish with 3-nerved green center and white-hyaline margins, as wide below as the perigynia but much shorter; perigynia plano-convex, spindle-shaped, thin, 4.5-5.5 mm. long, 1-1.5 mm. wide, very membranaceous, light-green, rather conspicuously slenderly few-nerved on both sides, narrowly sharp-margined to middle, serrulate above, the lower third of body corky, substipitate and tapering at base, tapering at apex into a slender, strongly serrulate, sharply bidentate beak half length of the body, the dorsal suture reddish-brown-margined, achenes lenticular, occupying upper half of bodies of perigynia, closely enveloped, linear-lanceolate, 2 mm. long, 0.75 mm. wide, yellowish-brown, short-stipitate, very short-apiculate, style slender, somewhat enlarged at base, jointed with achene, at length deciduous; stigmas two, dark-colored, long, slender.

TYPE LOCALITY: "Habitat in Pennsylvania."

DISTRIBUTION: Swampy woods, Nova Scotia and Quebec to Wisconsin, and southward to Florida, Louisiana, and Hidalgo. (Specimens examined from Nova Scotia, Quebec, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Ontario, Ohio, Michigan, Indiana, Kentucky, Wisconsin, Louisiana, Hidalgo.)

ILLUSTRATIONS: Schkuhr, Riedgr. pl. Xxx, f. 176; Boott, Ill. *Carex* 82, pl. 227; Britt. & Brown, Ill. Fl. f. 857; ed. 2, f. 915; Proc. Am. Acad. 37: pl. 5, f. 125, 126; Rob. & Fern. Man. f. 388.

121. *Carex Deweyana* Schw. Ann. Lyc. N. Y. 1: 65. 1824.

"*Carex remota* L." Richards, in Frankl. Journey 750. 1823; ed. 2. 763. 1824.

"*Carex Deweyi* Schw." Eaton, Man. ed. 6. 69. 1833. (Change in spelling only.)

Vignea Deweyi Raf. Good Book 27. 1840. (Based on *Carex Deweyana* Schw.)

Carex Deweyana var. *collectanea* Fernald, Rhodora 15: 93. 1913. (Type from Gaspé Peninsula, Quebec.)

Carex Deweyana var. *stricta* Farwell, Rep. Mich. Acad. 20: 169. 1918. (Type from Keweenaw County, Michigan.)

Densely caespitose, the rootstocks usually not elongate, the culms 2-12 dm. high, slender, weak and spreading or sometimes erect, sharply triangular with flat sides, exceeding the leaves, more or less strongly roughened beneath head, brownish at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades usually 3-6 to a fertile culm, on the lower third, but not bunched, the blades erect or ascending, light-green or yellowish-green, thin, flat, usually 5-15 cm. long, 2-5 mm. wide, roughened towards the apex, the sheaths tight, hyaline ventrally, thin, concave and very short-prolonged at mouth beyond base of blade and continuous with ligule; spikes usually 3 or 4, the lowest strongly separate, the upper approximate or little separate, forming a head 2-5 cm. long, the spikes oblong or ovoid-oblong, the lateral usually pistillate, 5-12 mm. long, 3-5 mm. wide, the terminal larger, rounded at base and apex, with usually inconspicuous but often somewhat separated staminate flowers at base, and 3-15 appressed-ascending perigynia above; lower bract prolonged, 1-4 cm. long, enlarged and hyaline-margined at base, the upper shorter; scales ovate or oblong-ovate, very thin, whitish, hyaline with 3-nerved green center, frequently somewhat brownish-tinged, obtuse to awned, about width of but slightly shorter than perigynia, but concealing the bodies; perigynia plano-convex, oblong-lanceolate, thick, 4.5-5.5 mm. long, 1.5-2 mm. wide, membranaceous, light-green, nerveless ventrally, obscurely many-nerved at base dorsally, rounded, sessile or nearly so and strongly spongy at base, sharp-edged above, serrulate at base of beak, tapering into a serrulate, shallowly bidentate beak 2 mm. long, the dorsal suture conspicuous, hyaline-margined; achenes lenticular, quadrate, suborbicular, occupying upper two thirds of perigynium-bodies, 2-2.5 mm. long, 1.3-1.75 mm. wide, yellowish-brown, substipitate, very minutely truncately apiculate; style slender, slightly enlarged at base and jointed with achene and at length deciduous; stigmas two, slender, yellowish-brown, long.

TYPE LOCALITY: "New England" and, more specifically, "In moist rocky woods. Williamstown and elsewhere. Dewey, Plainfield, Massachusetts. Dr. Porter, Norwich, Vermont, Barratt."

DISTRIBUTION: Dry woods, Labrador and Newfoundland to Mackenzie and British Columbia, and southward to Pennsylvania, Iowa, and Colorado. (Specimens examined from Labrador, Newfoundland, Nova Scotia, Prince Edward Island, Quebec, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, Pennsylvania, Ontario, Michigan, Wisconsin, Minnesota, Iowa, Manitoba, Keewatin, North Dakota, South Dakota, Colorado, Montana, Alberta, Saskatchewan, Idaho, eastern British Columbia.)

ILLUSTRATIONS: Boott, Ill. *Carex* 27. pl. 70; Britt. & Brown, Ill. Fl. f. 856; ed. 2. f. 914; Proc. Am. Acad. 37: 490. pl. 5, f. 127, 128; Rob. & Fern. Man. f. 389; Am. Jour. Sci. 9: pl. C, f. 11.

122. *Carex leptopoda* Mackenzie, in Rydb. Fl. Rocky Mts.

124. 1917.

Carex Bolanderi var. *minor* Olney; A. Gray, Proc. Am. Acad. 8: 407, name only. 1872. (Type from Oregon.)

Somewhat loosely caespitose, from slender, elongate, dark, fibrillose rootstocks, the culms slender but erect, 2-8 dm. high, sharply triangular with concave sides, rather strongly roughened just beneath head, more or less strongly exceeding leaves, light-brownish at base, and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3-5 to a fertile culm, clustered on lower fourth, the blades usually 2-5 dm. long, 2.5-5 mm. wide, flat, or with revolute margins, thin, yellowish-green or light-green, roughened towards apex and on margins, the sheaths rather loose, hyaline ventrally, thin and deeply concave at mouth, short-prolonged beyond base of blade and continuous with ligule; spikes 4-7, aggregated or lower 1-3 more or less separate, forming a head 2-4 cm. long, the lateral pistillate, the upper gynaeceandrous and sparingly staminate at base, ovoid or oblong, 5-12 mm. long, 4-6 mm. wide, closely flowered and containing 6-18 ascending perigynia in

several ranks; lower one or two bracts setaceous-prolonged, shorter than or rarely exceeding head, the upper scale-like; scales oblong-ovate, thin, greenish-white with 1-3-nerved green midvein, never reddish-brown-tinged, obtuse, acute, or mostly short-cuspidate, about width of but only reaching to base of beaks of perigynia and usually not concealing upper part of bodies; perigynia plano-convex, ovate-lanceolate, 3.5-4 mm. long, 1.5 mm. wide, membranaceous, greenish or in age greenish-white or greenish-yellow, nerveless or few-nerved at very base ventrally, several-nerved on lower half dorsally, stipitate, somewhat spongy and tapering at base, sharp-edged above, the margins of the body entire, contracted into a serrulate, shallowly bidentate, dorsally sutured beak half the length of the body; achenes lenticular, suborbicular, filling bodies of perigynia, 1.5 mm. long, 1.25 mm. wide, substipitate, truncately minutely apiculate, yellowish-brown; style slender, jointed with achene, at length deciduous; stigmas two, slender, yellowish-brown.

TYPE LOCALITY: Elk Rock, near Oswego, Clackamas County, Oregon (Heller 10052).

DISTRIBUTION: Woods, British Columbia to California and Arizona, and eastward to Idaho. (Specimens examined from Idaho, British Columbia (including Vancouver Island), Washington, Oregon, Arizona, California.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 715.

123. *Carex Bolanderi* Olney, Proc. Am. Acad. 7: 393. 1868.

Carex Bolanderi var. *elongata* Olney; A. Gray, Proc. Am. Acad. 8: 407, name only. 1872. (Type from Oregon.)

Carex Deweyana var. *Bolanderi* W. Boott, in S. Wats. Bot. Calif. 2: 236. 1880. (Based on *C. Bolanderi* Olney.)

Cespitose, from slender, short-elongate, dark, fibrillose rootstocks, the culms slender but erect, 1.5-9 dm. high, sharply triangular with concave sides, exceeding the leaves, smooth or somewhat roughened immediately beneath the head, brown at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 2-5 to a fertile culm, on the lower third, but not bunched, the blades flat, erect or ascending, usually 1-3.5 dm. long, 2-5 mm. wide, thin, yellowish-green or light-green, roughened towards the apex and on the margins, the sheaths rather loose, hyaline ventrally, concave, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; spikes 5-8, gynaeceandrous, sessile, well-defined, forming a head 3-8 cm. long, the upper aggregated, the lower 1-5 more or less separate, the spikes linear-oblong, obtuse, rounded or somewhat attenuate at base, 6-25 mm. long, 3-5 mm. wide, closely-flowered, containing 8-20 appressed-ascending perigynia, the basal staminate flowers few and very inconspicuous; lowermost bract prolonged, 1-8 cm. long, 1 mm. wide, the others gradually reduced, the uppermost scale-like; scales ovate or lance-ovate, acute to short-awned, brownish with 3-nerved green center and narrow hyaline margins, as wide as but somewhat shorter than the perigynia but exceeding their bodies, the midvein rough towards tip; perigynia plano-convex, lanceolate, 4-4.5 mm. long, 1-1.3 mm. wide, membranaceous, yellowish-green, strongly several-nerved dorsally, more lightly several-nerved ventrally at least at base, sharp-edged to base, serrulate to top of achene, stipitate, tapering and somewhat spongy at base, rather abruptly tapering at apex into a serrulate, deeply bidentate, brownish-tipped beak more than half the length of the body, the dorsal suture light-brownish-margined; achenes lenticular, obovate to suborbicular, 1.75 mm. long, 1.25 mm. wide, yellowish-brown, substipitate, minutely truncately apiculate, rather closely enveloped; style slender, jointed with achene, at length deciduous; stigmas two, slender, dark-colored, rather long.

TYPE LOCALITY: "California, Yosemite Valley and Mariposa Bigtree grove." (*Bolander 6209* from the Yosemite is taken as the type.)

DISTRIBUTION: Woods, British Columbia to western Montana, and southward to New Mexico and southern California. (Specimens examined from Montana, Idaho, British Columbia (including Vancouver Island), Washington, Oregon, Utah, California, Nevada, Arizona, New Mexico.)

ILLUSTRATIONS: Bull. So. Calif. Acad. 5: 47, 49, pl. 23, f. b; Erythraea 8: 37, f. 13; Jepson, Fl. Calif. 1: 217, f. 31, g-i; Jepson, Man. Fl. Pl. Calif. f. 173; Abrams, Ill. Fl. Pacif. St. f. 716.

21. *Ovales* Kunth, Enum. Pl. 2: 394. 1837; Tuckerm. Enum. Caric. 8. 1843; Carey, in A. Gray, Man. 545. 1848; L. H. Bailey, Proc. Am. Acad. 22: 153. 1886; Kükenth. in Engler, Pflanzenreich 4²⁰: 191. 1909; Mackenzie, in Rydb. Fl. Rocky Mts. 125.

1917; Mackenzie, *Erythea* 8: 37. 1922. SCHELLHAMMERIA (Moench) Kunth, Enum. Pl. 2: 392. 1837; Kükenth. in Engler, Pflanzenreich 4^o: 190. 1909. CYPEROIDEAE Tuckerm. Enum. Caric. 8. 1843. LEPORINAE Fries, Summa Veg. Scand. 72, in part. 1845. SYCHNOCEPHALAE Holm, Am. Jour. Sci. IV. 16: 454. 1903. ATHROSTACHYAE Holm, Am. Jour. Sci. IV. 16: 454, mostly. 1903. PTEROCARPAE Holm, Am. Jour. Sci. IV. 16: 465, mostly. 1903. Species are referred to the HYPARRHENAE Fries, by Pax (in E. & P. Nat. Pf. 2^e: 124. 1887.) Treated as a genus *Schellhammeria* by Moench (Meth. Suppl. 119. 1802). Treated as genera, *Kolerma*, *Diemisias*, and *Loncoferis* (in part), by Rafinesque (Good Book 27. 1840). Treated as a genus *Thysanocarex* with subgenera THYSANOCAREX and SCHELLHAMMERIA (Moench) by Börner (Abh. Nat. Ver. Bremen 21: 274. 1913).

Densely caespitose, or with more or less prolonged rootstocks; culms triangular, hollow; leaf-sheaths not red-dotted nor cross-rugulose ventrally, but sometimes green-striate; spikes from 2 or 3 up to 20, with several to many perigynia, the terminal gynaeceandrous, the lateral pistillate or gynaeceandrous, simple, the inflorescence varying from capitate to moniliform; lower bracts from inconspicuous to very conspicuous; perigynia varying from scale-like or flat (except where distended by achene) to thick and strongly plano-convex, the body subulate to reniform, narrowly to broadly wing-margined, appressed or ascending or spreading, little corky-thickened at base, prominently beaked, the beak sutured dorsally, bidentate, or obliquely cut, usually becoming bidentulate or bidentate, usually serrulate on the margins, rarely smooth; achenes lenticular, apiculate, jointed with the straight, slender style; stigmas 2.

By far the largest and best developed group in North America, where about seventy-five species occur. Some species are characteristic of sand-dunes or salt marshes, others of the coastal plain, others of the interior, others of the plains and foothills of the mountains, others of the mountain slopes, and others of the alpine summits. While best developed in the temperate regions, one species is confined to the far north, while others reach the tropics. Outside of North America, the group is represented by three species in Europe, which also extend into northern or western Asia, and one of which also extends into northern Africa; two other species are known from eastern Asia; several species occur in South America, especially in the southern part; and one in the Hawaiian Islands. The group is not known from Australasia.

Bracts not leaf-like nor conspicuously exceeding head.

Perigynia with beak slender and nearly terete and scarcely margined at the tip, the upper 1-2 mm. little if at all serrulate, obliquely cut dorsally, at times becoming bidentulate or rarely bidentate.

Perigynia 2.5-6 mm. long, or up to 7 mm. long and then with very dark-colored scales.

Scales shorter than perigynia and noticeably narrower above, largely exposing perigynia above.

Leaf-sheath shortly or scarcely prolonged upward ventrally beyond base of blade; scales usually strongly dark-tinged.

Leaf-sheath strongly prolonged upward ventrally beyond base of blade, the prolongation very fragile and quickly ruptured; scales not dark-tinged; perigynia greenish-white, conspicuously nerved ventrally.

Scales about length of perigynia and nearly the same width above, concealing perigynia above or very nearly so.

Perigynia 6-8 mm. long, lanceolate, the scales chestnut or reddish-brown.

Perigynia with beak flattened and margined at tip, serrulate to the apex, often strongly bidentate as well as obliquely cut dorsally.

Scales shorter than the perigynia and noticeably narrower above, largely exposing perigynia above.

Leaf-blades of sterile culms erect or ascending, usually clustered at apex; sterile culms often poorly developed.

Perigynium-body not obovate, widest near the middle or base.

Leaf-sheath strongly white-hyaline ventrally.

Leaf-sheath (at least of uppermost leaf) green and strongly nerved ventrally nearly or quite to the mouth.

Perigynium-body obovate, widest near the top.

Leaf-blades of sterile culms widely spreading, numerous, not clustered at apex; sterile culms strongly developed; sheaths loose; perigynium-wing somewhat abruptly narrowed near middle of body.

I. FESTIVAE.

II. FRACTAE.

III. LEPORINAE.

IV. SPECIFICAE.

V. FESTUCACEAE.

VI. FETAE.

VII. ALATAE.

VIII. TRIBULOIDEAE.

Scales about length of the perigynia and nearly the same width above, concealing perigynia above or very nearly so.
 Bracts either leaf-like or conspicuously exceeding head.
 Bracts conspicuously exceeding head, but not leaf-like.
 Bracts many times exceeding head, leaf-like.

IX. FOENEAE.

X. ATHROSTACHYAE.

XI. CYPEROIDEAE.

I. FESTIVAE

Perigynia much flattened, thin and scale-like, except where distended by the achene, membranaceous.

Scales and perigynia not copper-colored.

Leaf-blades flat or little channeled towards base, 1.5-6 mm. wide; perigynia less than twice width of scales.

Perigynia 3.5-5 mm. long, lightly few-several-nerved at least at base ventrally; culms slender above; scales dark-chestnut to dull-brown or brownish-black.

Perigynia strongly margined, ovate, appressed; scales dark-chestnut to brownish-black; culms annual or nearly so.

124. *C. festivella*.

Perigynia very narrowly margined, lance-ovate, ascending-spreading; scales dull-brown; culms biennial.

125. *C. microptera*.

Perigynia 4.5-7 mm. long; culms low; scales brownish-black or blackish.

Perigynia finely many-nerved ventrally, narrowly lanceolate, the beaks appressed; culms stiff, erect.

126. *C. ebenea*.

Perigynia nerveless ventrally (except sometimes towards base), typically ovate (broadly ovate to rarely lanceolate), the beaks conspicuous; culms slender, ascending or decumbent.

127. *C. nubicola*.

Leaf-blades involute or nearly so, deeply channeled, 0.5-1.5 mm. wide; perigynia 3.5-4.5 mm. long, 2.25-2.75 mm. wide, 2-3 times width of the oblong-ovate or lanceolate scales, nerveless ventrally.

128. *C. proposita*.

Scales brownish-copper-colored; perigynia copper-brown, 4 mm. long, concave and obscurely few-nerved ventrally towards base.

129. *C. macloviana*.

Perigynia plano-convex.

Perigynia with conspicuous raised nerves ventrally.

Perigynia 3.75-5 mm. long; sterile culms not conspicuous; lower bladeless sheaths short; culms slender to stoutish; scales acute or obtuse, reddish-brown or reddish or chestnut-brown.

Perigynia membranaceous.

Spikes densely capitate; perigynia conspicuously hyaline-tipped, abruptly short-beaked; scales dull-reddish- or chestnut-brown.

130. *C. abrupta*.

Spikes capitate above, the lower ones more or less separate; perigynia light-reddish-tipped, tapering into the beak; scales reddish.

131. *C. mariposana*.

Perigynia coriaceous, tapering into the beak.

Perigynia 3.25 mm. long; sterile culms conspicuous; lower bladeless sheaths very long; culms very slender; scales cuspidate or short-awned, yellowish-brown.

133. *C. montereyensis*.

Perigynia nerveless ventrally or few-nerved towards base or with impressed nerves.

Rootstocks elongate and conspicuously creeping, slender but tough. (Mexican.)

Perigynia lanceolate or narrowly ovate, round-tapering at base, the beak half length of body or more.

134. *C. Bonplandii*.

Perigynia ovate, rounded at base, the beak proportionately shorter.

135. *C. Purdiei*.

Rootstocks at most short-prolonged, the culms usually cespitose. (Non-Mexican.)

Perigynia very small, 2.25-2.5 mm. long.

Perigynia with margins of beak entire or very obscurely subserrulate under a microscope.

Perigynia and scales blackish; spikes capitate in a suborbicular head; perigynia 3 mm. long.

136. *C. illota*.

Perigynia and scales lighter-colored; spikes not capitate; perigynia 2.25-2.75 mm. long.

137. *C. integra*.

Perigynia with margins of beak strongly serrulate.

Culms slender; leaf-blades deep-green, 1-2.5 mm. wide; perigynia loosely appressed or spreading-ascending.

138. *C. teneraeformis*.

Culms rather stiff; leaf-blades light-green, 2-3.5 mm. wide; perigynia closely appressed.

139. *C. subfusca*.

Perigynia 3.5-5.5 mm. long.

Lower bracts not strongly amplexant; scales strongly reddish-brown to nearly blackish-tinged; beaks of perigynia colored towards tip.

Perigynia coriaceous or subcoriaceous, not copper-colored at maturity.

Scales chestnut-brown or light-reddish-brown with broad shining white-hyaline margins; perigynia 4.5-5.5 mm. long, many-nerved dorsally, the nerves impressed or low; culms densely cespitose, conspicuously biennial.

Scales reddish-brown to brownish-black, the margins dull-white-hyaline; perigynia 3.5-4.5 mm. long.

Perigynia with beak not hyaline at tip; culms from much thickened nearly corm-like root-stocks, with short conspicuous scales at the very base of the culms; perigynia deep-green at anthesis; culms strongly annual.

Perigynia with beak hyaline at tip; root-stocks not nearly corm-like, the scales at the base of the culms absent or inconspicuous; perigynia straw-colored or dull-green at anthesis; culms biennial.

Culms densely cespitose; perigynia many-nerved dorsally; leaf-blades usually 3-7 cm. long; spikes with 6-12 perigynia.

Culms from short-prolonged, black-fibrillose rootstocks; perigynia with several raised nerves dorsally; leaf-blades usually 0.5-3 dm. long.

Spikes not strongly capitate, the head slender; leaf-blades 1-2 mm. wide; culms 3-6 dm. high; spikes with 4-12 perigynia.

Spikes strongly capitate; leaf-blades 2.5-4 mm. wide; culms 3.5-12 dm. high; spikes with 10-20 perigynia.

Perigynia membranaceous or submembranaceous, copper-colored at maturity.

Perigynia with the body strongly plano-convex, thick, the beak usually inconspicuously white-hyaline-tipped.

Perigynia with the body concave ventrally, slightly very low-convex dorsally, thin, the beak very strongly white-hyaline-tipped.

Lower bracts, or at least the lowest, strongly amplexant; scales and beaks of perigynia little reddish-brown-tipped.

169. *C. mullicostata*.

140. *C. Preslii*.

141. *C. paucifructus*.

142. *C. gracilior*.

143. *C. subbracteata*.

144. *C. pachystachya*.

129. *C. macloviana*.

145. *C. amplexans*.

One species.

II. FRACTÆ

146. *C. fracta*.

III. LEPORINÆ

Beak of perigynium not white-hyaline at apex.

Perigynia with bidentate beak, light-reddish-brown at tip, the body ventrally lightly nerved or nerveless.

Perigynia with obliquely cut bidentulate beak, deep-reddish-brown at tip, the body ventrally conspicuously nerved.

Beak of perigynium strongly white-hyaline at apex.

Culms and head stiff, the culms 1-3 dm. high, in large stools; scales strongly reddish-brown or darker-tinged.

Perigynia oblong-ovate or obovate, rather conspicuously margined, 4-6 mm. long; spikes 2-7, usually 3 or 4, ovoid or oblong-obovoid, becoming loosely flowered at maturity.

Perigynia linear-oblongate, very narrowly margined, boat-shaped, 3.5-4 mm. long; spikes 3-8, usually 6-8, narrowly oblong-ovoid, closely flowered at maturity.

Culms slender, 2-8 dm. high, the head not stiff.

Spikes in a flexuose or moniliform inflorescence; perigynia 4.5-6.5 mm. long.

Pistillate scales dull, light-reddish-brown-tinged, the mar-

147. *C. leporina*.

148. *C. Tracyi*.

149. *C. phaeocephala*.

150. *C. leporinella*.

gins broad, silvery-white-hyaline; spikes usually 6-16 mm. long; stigmas light-reddish-brown.

Pistillate scales shining, strongly dark-chestnut-brown-tinged; spikes 10-18 mm. long; stigmas dark-reddish-brown.

Spikes closely approximate except sometimes lowermost; perigynia 4.5 mm. long; pistillate scales dull-reddish-brown.

IV. SPECIFICAE

Scales about length and width above of perigynia, and hence largely concealing them; perigynia finely many-striate ventrally. Scales shorter and narrower above than perigynia, the latter therefore conspicuous in the spikes.

Perigynia finely several- to many-striate ventrally; scales with narrow hyaline margins. (California.)

Spikes mostly 3, not capitate; scales little more than half length of perigynia.

Spikes 6-12, capitate; scales equaling bodies of perigynia.

Perigynia nerveless ventrally; scales with broad shining white-hyaline margins. (Arizona and New Mexico.)

V. FESTUCACEAE

Perigynia subulate to narrowly ovate-lanceolate, 3-4 times as long as wide, thin and scale-like save where distended by achene.

Perigynia lanceolate-subulate, where distended by achene 0.8-1.5 mm. wide, the margin at base nearly obsolete.

Scales chestnut-brown, glossy, obtusish or acute, at maturity little exceeded by tips of perigynia; leaf-blades 2-4 mm. wide; culms 5-10 dm. high.

Scales light-brown, dull, acute or short-acuminate, conspicuously exceeded by tips of perigynia; leaf-blades 1-3 mm. wide; culms 1-6 dm. high.

Perigynia lanceolate to narrowly ovate-lanceolate, 1.2-2 mm. wide, noticeably winged-margined to the base.

Perigynia ovate-lanceolate or broader, at most twice as long as wide.

Perigynia 3-4 mm. (or rarely up to 5 mm.) long, narrowly to broadly ovate.

Perigynia thin and scale-like except where distended by achene.

Perigynia thick, firm, and strongly plano-convex.

Sheaths short-prolonged upward beyond base of blade at mouth, not loose, conspicuously hyaline ventrally, not green-and-white-mottled dorsally, the blades 1.5-4.5 mm. (averaging 2.5 mm.) wide.

Culms smooth; perigynia subcoriaceous, with tip of beak little flattened. (Pacific coast.)

Culms rough beneath head; perigynia membranaceous, with beak flattened to apex.

Perigynia 3-3.5 mm. long, brownish at maturity (dull-green when young); spikes closely aggregated, truncate or rounded at base.

Perigynia 3.5-4 mm. long, straw-colored at maturity (green when young); spikes aggregated to strongly separate, often short-clavate at base.

Spikes usually in a moniliform inflorescence; scales greenish-hyaline or tawny-tinged.

Spikes closely aggregated; scales light-reddish-brown.

Sheaths conspicuously prolonged upward beyond base of blade at mouth, not tight, hyaline ventrally towards mouth, green-and-white-mottled dorsally, the blades 2.5-6 mm. (usually 3.5-4.5 mm.) wide; culms rough above; perigynia and scales green or the scales light-yellowish-brown-tinged.

Perigynia 3.5-8.5 mm. long, the body suborbicular to reniform.

Perigynia plano-convex, or slightly concavo-convex, thick, coriaceous or subcoriaceous or submembranaceous, 3.5-5.5 mm. long.

Scales little if at all reddish-brown-tinged.

Achenes 1.5 mm. long, oblong-ovoid; perigynia 3.5 mm. long, the beak half length to nearly length of body; spikes in a moniliform inflorescence.

Achenes 1.75-2 mm. long, orbicular or suborbicular; perigynia 3.75-5.5 mm. long, the beak less than half length of the body; spikes aggregated or in a moniliform inflorescence.

151. *C. praticola*.152. *C. Piperi*.153. *C. platylepis*.154. *C. petasata*.155. *C. Davyi*.156. *C. specifica*.157. *C. Wootoni*.158. *C. oronensis*.159. *C. Crawfordii*.160. *C. scoparia*.160. *C. scoparia* var. *tessellata*.139. *C. subfusca*.161. *C. Bebbii*.162. *C. tenera*.163. *C. tinctoria*.164. *C. normalis*.165. *C. festucacea*.

- Perigynia ovate, tapering into the beak, submembranaceous, few-nerved ventrally; achenes suborbicular. 166. *C. molesta*.
- Perigynia broadly ovate to suborbicular, abruptly contracted into the beak, coriaceous, nerveless or very nearly so (or rarely strongly nerved towards base) ventrally; achenes orbicular. 167. *C. brevior*.
- Scales strongly reddish-brown- or chestnut-brown-tinged. Perigynia with beak entire or bidentulate, the body inconspicuously finely nerved dorsally; rootstocks long-creeping; culms slender. 168. *C. peucophila*.
- Perigynia with beak bidentate, the body conspicuously striate dorsally; rootstocks short; culms stoutish. 169. *C. multicostata*.
- Perigynia very flat or flattened-concavo-convex, except where distended by achene, thin, membranaceous (or subcoriaceous in *C. reniformis*).
- Perigynia membranaceous, the body orbicular. Scales strongly reddish-brown- or chestnut-brown-tinged; rootstocks very short. (Western United States.)
- Perigynia light-green or straw-colored, 4-5.5 mm. long, nerveless ventrally or nearly so, the margins strongly crinkled; culms 1-4 dm. high; hyaline part of leaf-sheath short-prolonged ventrally above base of blade. 170. *C. straminiformis*.
- Perigynia olive-green or brownish, 6 mm. long, slenderly striate ventrally, the margins slightly crinkled; culms 4-8 dm. high; hyaline part of leaf-sheath scarcely prolonged ventrally above base of blade. 171. *C. Egglestonii*.
- Scales greenish or whitish or dull-brown- or yellowish-brown-tinged; rootstocks short-prolonged or even strongly so.
- Perigynia 5.5-6.5 mm. long and prominently nerved ventrally, or 4-5 mm. long and nearly nerveless ventrally.
- Spikes with 10-25 perigynia; perigynia whitish-green with conspicuously spreading white-tipped beaks more than half length of body; achenes narrowly oblong, stipitate. 172. *C. hyalina*.
- Spikes with 15-many perigynia; perigynia straw-colored with shorter more ascending reddish-brown-tipped beaks; achenes oblong-quadrate, substipitate; sheaths papillate dorsally.
- Perigynia 4-5 mm. long, nerveless ventrally or faintly few-nerved at base, not translucent. 173. *C. Merritt-Fernaldii*.
- Perigynia 5.5-6.5 mm. long, finely but strongly about 10-nerved ventrally, nearly translucent. 174. *C. Bicknellii*.
- Perigynia 7.5-8.5 mm. long, nerveless or nearly so ventrally (except on the wings). 175. *C. Brittoniana*.
- Perigynia subcoriaceous, 4-5 mm. long, the body reniform, nerveless or nearly so ventrally. 176. *C. reniformis*.

VI. FETAE

- Perigynia plano-convex, 3-3.5 mm. long; culms smooth or nearly so. (Pacific Coast.) 177. *C. feta*.
- Perigynia very thin and flat, 4-6 mm. long; culms much roughened beneath head. (Eastern.)
- Perigynia nerveless or nearly so ventrally; scales cuspidate or even obtusish; spikes 2-5, aggregated in a stiff head. 178. *C. suberecta*.
- Perigynia about 10-nerved ventrally; scales long-acuminate or aristate; spikes 4-8, in a slender or moniliform inflorescence.
- Perigynia with ovate-lanceolate bodies, the beaks appressed or ascending, about one third length of bodies; terminal spike tapering at base, the staminate part short; upper spikes approximate. (Saline localities.) 179. *C. hormathodes*.
- Perigynia with suborbicular bodies, the beaks loosely ascending or spreading, half length of bodies or more; terminal spike truncately contracted below perigynia, the staminate part long and conspicuous; spikes scattered, in a very flexuous inflorescence. (Non-saline localities.) 180. *C. Richii*.

VII. ALATAE

- Scales obtuse to short-acuminate; achenes sessile or substipitate; perigynia 1.5-3 mm. wide, obliquely cut dorsally, at length shallowly bidentate.
 Spikes greenish to silvery-brownish-green or in age brownish; perigynia with body rounded at apex, from very short to moderately beaked; scales obtuse or acute; culms stiff.
 Spikes approximate or aggregated, the lateral rounded or little clavate at base; leaf-blades not knobbed at base.
 Perigynia nerveless ventrally; spikes 5-30, greenish or in age brownish, densely aggregated, the lateral truncate or rounded at base; sheaths loose; sterile culms with leaf-blades mostly 4-5 mm. wide.
 Perigynia nerved ventrally; spikes 3-10, silvery-green or in age silvery-brownish, aggregated or somewhat separate, the lateral round-tapering at base; sheaths rather tight; sterile culms with leaf-blades mostly 2.5-3 mm. wide.
 Spikes in a moniliform flexuose inflorescence, the lateral strongly clavate at base; leaf-blades minutely knobbed on either side at junction with sheath. [Coastal sand-dunes.]
 Spikes not silvery, not aggregated; perigynia truncate-rounded at apex, very abruptly beaked, the beak one fourth to one half length of the body; scales acute or short-acuminate; culms slender to base.
 Scales long-acuminate or aristate; achenes slenderly stipitate; perigynia 2.5-4 mm. wide, bidentate.
181. *C. cumulata*.
 182. *C. Longii*.
 183. *C. silicea*.
 184. *C. straminea*.
 185. *C. alata*.

VIII. TRIBULOIDEAE

- Perigynia 3-6.5 mm. long; achenes oblong-oval, 1.5 mm. long; spikes 4-15 mm. long; ligule much longer than wide.
 Perigynia thin and scale-like, more or less distended over achene.
 Tips of perigynia appressed or ascending; spikes suborbicular-turbinate to obovoid-turbinate, 5-12 mm. long; leaf-blades firm; culms stiff.
 Tips of perigynia loosely ascending to recurved; spikes suborbicular, not turbinate, 4-8 mm. long; leaf-blades flaccid; culms not stiff.
 Perigynia plano-convex, obviously distended over achene, the tips widely spreading or recurved; culms stiff, stoutish; head dense, oblong.
 Perigynia 7-10 mm. long; achenes linear-oblong, 2.5 mm. long; spikes 1.5-2.5 cm. long; ligule as wide as long.
186. *C. tribuloides*.
 187. *C. projecta*.
 188. *C. cristatella*.
 189. *C. muskingumensis*.

IX. FOENEA

- Inflorescence stiff, the spikes aggregated or approximate.
 Perigynia conspicuously white-hyaline-tipped, not bidentate or obscurely so, the body finely many-nerved ventrally; culms very densely cespitose, 1.5-4 dm. high.
 Perigynia reddish-brown- or yellowish-brown-tipped, bidentate, the body nerveless ventrally or nerved at base only; culms less densely cespitose, 2-8 dm. high.
 Lateral spikes ovoid-elliptic, round-tapering at base; perigynia closely appressed; bracts not prominent.
 Lateral spikes suborbicular, rounded at base; perigynia loosely ascending in age; lower 1-2 bracts prominent, stiff.
 Inflorescence flexuous or moniliform, not stiff.
 Perigynia with body widest near base, dull-green, soon brownish, nerveless ventrally or occasionally few-nerved, the beak reddish-brown-tipped; scales dull-brown or yellowish-brown.
 Perigynia with body widest near middle, greenish-white, strongly several-many-nerved ventrally, the beak hyaline-tipped; scales silvery-green.
190. *C. arapahoensis*.
 191. *C. xerantica*.
 192. *C. adusta*.
 193. *C. aenea*.
 194. *C. foenea*.

X. ATHROSTACHYAE

- Beak of perigynium hyaline at orifice, obliquely cleft, shallowly bidentate; lowest bract not appearing like a continuation of the culm.
 Beak of perigynium not hyaline at orifice, bidentate; lowest bract appearing like a continuation of the culm.
195. *C. athrostachya*.
 196. *C. unilateralis*.

XI. CYPEROIDEAE

- One species in our area.
197. *C. sychnocephala*.

124. *Carex festivella* Mackenzie, Bull. Torrey Club 42: 609. 1915.

Carex festiva var. *viridis* L. H. Bailey, Mem. Torrey Club 1: 51. 1889. (Type from Montana.)
 " *Carex festiva* Dewey" Rydb. Fl. Colo. 64, 70. 1906. (Plant from Colorado.)
Carex macloviana var. *stricta* f. *viridis* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 197. 1909. (Based on *C. festiva* var. *viridis* L. H. Bailey.)

Cespitose, from very short-creeping, tough, matted, blackish, fibrillose rootstocks, the culms stoutish (2.5-3.5 mm. thick) at base, slender but stiffish above, 3-10 dm. high, obtusely triangular and few-striate below, sharply triangular and somewhat roughened beneath head, exceeding leaves, aphyllodipod, light-brown at base, mostly developing and flowering same year; leaves with well-developed blades 3-5 to a fertile culm, on lower fourth, but not bunched, the blades erect, deep-green or light-green, mostly 1-2 dm. long, 2-6 mm. wide, flat, firm, the sheaths tight, hyaline ventrally, concave or truncate at orifice, thin and short-prolonged beyond base of blade and continuous with ligule; sterile shoots conspicuous, the leaves mostly clustered at the top; head ovoid or oblong-ovoid, 12-25 mm. long, 10-18 mm. thick, with 5-20 densely aggregated but distinct gynaeandrous spikes, the latter oblong-ovoid, 5-12 mm. long, 4-8 mm. wide, rounded or round-tapering at base and round-tapering at apex, the perigynia 15-30, densely arranged in many rows, appressed with erect ascending tips, the staminate flowers few; lowest bract somewhat prolonged, shorter than head, the others scale-like; scales ovate, obtuse or acutish, shining, dark-chestnut to brownish-black, with lighter poorly defined midvein and narrow hyaline margins and tip, narrower and shorter than perigynia; perigynia thin, save where distended by achene, appressed, ovate, 3.75-5 mm. long, 1.5-2 mm. wide, membranaceous, light-green or stramineous, the edges brownish-tinged and beak strongly dark-tinged, lightly several-nerved dorsally, 3-4-nerved mostly towards base ventrally, rounded at base, strongly wing-margined to base, serrulate to middle, tapering into a beak half the length of body, hyaline-tipped, terete and not serrulate at tip, obliquely cut dorsally, bidentate; achenes lenticular, obovoid, 1.5 mm. long, 1 mm. wide, substipitate, apiculate; style slender, straight, jointed with achene, tardily deciduous; stigmas two, slender, light-yellowish-brown; filaments white; anthers 2.5 mm. long, white.

TYPE LOCALITY: Albany County, Wyoming (A. Nelson 3275).

DISTRIBUTION: Meadows and open slopes, mostly in the mountains, in calcareous districts, Manitoba and the Black Hills of South Dakota to eastern British Columbia, and southward to Chihuahua and the Sierra Nevada of California. (Specimens examined from Manitoba, Saskatchewan, Alberta, British Columbia, South Dakota, Montana, Idaho, Wyoming, Colorado, Utah, Oregon, Washington, Nevada, California, Arizona, New Mexico, Chihuahua.)

ILLUSTRATIONS: Abrams, Ill. Fl. Pacif. St. f. 737; Contr. U. S. Nat. Herb. 8: pl. 63, fig. f. (as *C. festiva*).

125. *Carex microptera* Mackenzie, Muhlenbergia 5: 56. 1909.

Very densely cespitose, the rootstocks very short, stout, black, fibrillose, the culms 3-10 dm. high, slender but strict, 2.5-4 mm. thick at base, conspicuously striate, sharply triangular above, much exceeding leaves, smooth on angles or roughened beneath head, brownish-tinged at base and clothed with the dried-up short-bladed leaves of the previous year, the lower bladeless; leaves with well-developed blades 3-5 to a fertile culm, on lower third, but not bunched, the upper the longer, the blades flat, light-green, firm, 1-3 dm. long, 2-4.5 mm. wide, roughened towards apex, the sheaths tight, white-hyaline ventrally, short-prolonged beyond base of blade and continuous with ligule; sterile shoots conspicuous, the leaves mostly clustered near apex; spikes 5-10, gynaeandrous, distinguishable, but closely bunched, forming an ovoid or suborbicular head 12-18 mm. long, 10-16 mm. thick, the spikes ovoid, 5-8 mm. long, 4-6 mm. wide, with a few inconspicuous staminate flowers at base and 15-30 closely packed ascending-spreading perigynia above in several rows, the tips ascending or somewhat spreading; lowest bracts short-awned, the upper scale-like; scales ovate-lanceolate, acute, dull-brown, with nearly obsolete lighter midrib, the margins scarcely hyaline, narrower and slightly shorter than perigynia; perigynia flattened save where distended by achene, lance-ovate or lanceolate, 3.5-4.5 mm. long, 1-1.5 mm. wide, membranaceous, light-green or straw-colored, or light-brownish at maturity, very narrowly wing-margined to base, serrulate to middle, round-tapering at base, lightly several-nerved on both faces, tapering into a

serrulate beak one third to one half length of body, obliquely cut dorsally, brownish-tipped, bidentate, the tip terete, not serrulate, obscurely or not at all hyaline; achenes lenticular, broadly obovoid, nearly filling perigynia at base, 1.25 mm. long, nearly 1 mm. wide, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown, rather short; filaments white; anthers 1.5 mm. long, white.

TYPE LOCALITY: Death, Elko County, Nevada (*Heller 9067*).

DISTRIBUTION: Mountains, Alberta to Washington, and southward to Wyoming, Nevada, and Oregon. (Specimens examined from Alberta, Wyoming, Montana, Utah, Nevada, Oregon.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. *f. 736*.

126. *Carex ebenea* Rydb. Bull. Torrey Club 28: 266. 1901.

—“*Carex festiva* Dewey”; Clements, Rocky Mt. Fl. 326. *pl. 45, f. 4*. 1914.

“*Carex festiva* var. *Haydeniana* Boott” Holm, Am. Jour. Sci. IV. 18: 16. *f. 3*. 1904.

Cespitose, from short-prolonged, black, fibrillose rootstocks, the culms 2.5–5 dm. high, strict, stoutish (3–4 mm. thick) at base, conspicuously striate, obtusely triangular, exceeding the leaves, roughened on the angles above, aphyllopodic, brownish-tinged at base, making growth in one year, or with 1 or 2 very short-bladed old dried-up leaves; leaves with well-developed blades 3–5 to a fertile culm, all towards the base, the blades flat, firm, light-green, 1–2 dm. long, 2–3 mm. wide, roughened towards the long-tapering apex, the sheaths tight, white-hyaline ventrally, very thin at mouth and short-prolonged beyond base of blade and continuous with ligule; head dense, 1.5–3 cm. long, 12–18 mm. thick, containing 5–10 ovoid-oblong, closely aggregated, gynaeceandrous spikes 7–12 mm. long and 6 mm. wide, the staminate flowers few, the perigynia numerous, appressed, the beaks appressed; lower one or two bracts present, shorter than head, 1 cm. long or less, 3 mm. wide at base and tinged with brownish-black, short-awned; scales ovate-lanceolate, acutish or obtuse, brownish-black or black with very narrow hyaline margins and largely obsolete lighter midvein, about as wide below as the perigynia, but exceeded by their beaks; perigynia flat, but distended over achene, narrowly lanceolate, 6–7 mm. long, 1.75 mm. wide, membranaceous, brownish-black or blackish with upper margins green, rather narrowly wing-margined to base, serrulate to middle, finely many-nerved on both faces, substipitate, round-tapering at base, narrowed above into a slender beak about 2 mm. long, obliquely cut dorsally, blackish, shallowly bidentate, serrulate below and smooth and white-hyaline at tip; achenes lenticular, oval-oblong, 2 mm. long, 1.25 mm. wide, substipitate, apiculate; style straight, slender, jointed with achene; stigmas two, light-yellowish-brown, slender, rather short; filaments white; anthers 2.5 mm. long, white.

TYPE LOCALITY: Pike's Peak, Colorado (*F. Clements*, in 1900).

DISTRIBUTION: Mountain meadows, Wyoming to Utah, and southward to New Mexico and Arizona. (Specimens examined from Wyoming, Colorado, Utah, New Mexico, Arizona.)

ILLUSTRATIONS: Clements, Rocky Mt. Fl. *pl. 45, f. 4* (as *C. festiva*); Contr. U. S. Nat. Herb. 8: *pl. 63, fig. 9* (as *C. festiva Haydeniana*); Am. Jour. Sci. IV. 18: 16. *f. 3* (as *C. festiva* var. *Haydeniana*).

127. *Carex nubicola* Mackenzie, Bull. Torrey Club 36: 480. 1909.

—*Carex Haydeniana* Olney, in S. Wats. Bot. King's Expl. 366. 1871. (Type from eastern Utah.)
Not *C. Haydenii* Dewey, 1854.

Carex festiva var. *Haydeniana* W. Boott, in S. Wats. Bot. Calif. 2: 234. 1880. (Based on *C. Haydeniana* Olney.)

Carex festiva var. *decumbens* Holm, Am. Jour. Sci. IV. 16: 20, 26. 1903. (Type from Pagosa Peak, Colorado.) Not *C. decumbens* Ehrh., 1791.

—*Carex macloviana* var. *Haydeniana* “W. Boott” Kükenth. in Engler, Pflanzenreich 4²⁰: 196. 1909. (Based on *C. Haydeniana* Olney.)

Carex macloviana var. *tricalif. decumbens* “Holm” Kükenth. in Engler, Pflanzenreich 4²⁰: 197. 1909. (Based on *C. festiva* var. *decumbens* Holm.)

Very densely cespitose, in large clumps, the rootstocks very short, dark, fibrillose, the culms 1–4 dm. high, mostly low, erect, curving or even decumbent, slender but firm, smooth or nearly so on the angles, sharply triangular above, strongly exceeding the leaves, brownish at base, the dried-up leaves of the previous year not conspicuous, the upper short-bladed, the lower bladeless, leaves with well-developed blades usually 3–5 to a fertile culm, clustered near the base, the blades erect, ascending or curving, deep-green, rather firm, flat, 4–18 cm.

long, 1.5–4 mm. wide, roughened at apex, the sheaths tight, white-hyaline and thin ventrally and short-prolonged beyond base of blade and continuous with ligule; head ovoid or globose, 9–18 mm. long and about as thick, with 4–7 very densely aggregated gynaeandrous spikes, the spikes ovoid or subglobose, 5–9 mm. long, 4.5–8 mm. wide, with 15–35 closely packed ascending perigynia above with erect or ascending conspicuous beaks, and the few inconspicuous staminate flowers below; bracts scale-like or the lower more or less prolonged, usually much shorter than the head; scales ovate, acute, brownish-black or blackish, with lighter center and nearly obsolete hyaline margins, shorter and much narrower than the perigynia; perigynia very flat and thin except where distended by achene, rather narrowly to broadly ovate, or even lanceolate, 4.5–6 mm. long, 1.75–2.75 mm. wide, greenish-straw-colored and blackish-tinged or brownish-tinged, membranaceous, obscurely nerved dorsally, nerveless ventrally or nerved at base, strongly winged to base, strongly doubly serrulate to below middle, rounded, slightly substipitate, slightly spongy at base, abruptly contracted into a conspicuous beak nearly half length of body, slender, bidentate, obliquely cut dorsally, brownish or blackish-tipped, the orifice hyaline-margined; achenes lenticular, oblong-obovoid, 1.75 mm. long, 0.75 mm. wide, stipitate, apiculate; stigmas two, slender, light-reddish-brown.

TYPE LOCALITY (of *C. festiva* var. *decumbens* Holm, on which *C. nubicola* is based): Pagosa Peak, Colorado (Baker 232).

DISTRIBUTION: Summits of high mountains, Alberta to Oregon, and southward to Colorado, Nevada, and the Sierra Nevada of California. (Specimens examined from Colorado, Wyoming, Montana, Alberta, Idaho, Utah, Nevada, California, Oregon.)

ILLUSTRATIONS: Abrams, Ill. Fl. Pacif. St. f. 738; Am. Jour. Sci. IV. 18: 16. f. 4.

128. *Carex proposita* Mackenzie, sp. nov.

Very densely cespitose, in large stools, the rootstocks very short, the culms 1–3 dm. high, slender but stiff, sharply triangular above and roughened beneath the head, much exceeding the leaves, aphyllopodic, strongly brownish-tinged at base, the dried-up leaves of the previous year conspicuous; sterile shoots elongate, conspicuous; leaves of the year with well-developed blades 2–4 to a fertile culm, clustered on lower fourth, the blades firm, light-green, involute or nearly so, deeply canaliculate, 3–12 cm. long, 0.5–1.5 mm. wide, slenderly long-attenuate, the tip triangular, roughened, soon drying up, the sheaths tight, truncate at mouth, short-prolonged beyond base of blade and continuous with the short ligule; spikes 2–4, gynaeandrous, closely aggregated, forming an ovoid head 1.5–2 cm. long, 7–15 mm. thick, the spikes sub-orbicular, 7–10 mm. long, 6–9 mm. wide, rounded at apex, rounded or the terminal one very short-clavate at base, closely flowered, the 15–30 perigynia spreading-ascending in many rows, the staminate flowers few; lowest bract strongly prolonged, shorter than head, the others scale-like; scales oblong-ovate or lanceolate, thin, not sharply keeled, obtuse or acute, brown with conspicuous lighter 1–3-nerved center and very narrow hyaline margins, shorter than and about one third to one half the width of perigynia, the latter therefore very conspicuous in the spikes; perigynia very thin and flat save where distended by achene, 3.5–4.5 mm. long, 2.25–2.75 mm. wide, the body broadly ovate or suborbicular, nerveless ventrally, very obscurely nerved dorsally, membranaceous, brownish below, greenish or straw-colored above, rounded at base, sessile, strongly wing-margined to base, serrulate to below middle, abruptly beaked, the beak 1 mm. long, terete and smooth at tip, reddish-brown-tipped, the apex hyaline, bidentate, obliquely cut dorsally; achenes lenticular, oblong-ovoid, 1.75 mm. long, 1 mm. wide, brownish-yellow, short-stipitate, short-apiculate, jointed with the straight slender style; stigmas two, slender, long, reddish; anthers 2 mm. long, long persistent.

TYPE LOCALITY: Dryish slopes, 2700 meters altitude, Smoky Mountains, Blaine County, Idaho (Macbride & Payson 3778, August 13, 1916, in herb. N. Y. Bot. Garden).

DISTRIBUTION: Dry slopes, mountains of Idaho. (Specimens examined from Idaho.)

129. *Carex macloviana* Urv. Mém. Soc. Linn. Paris 4: 599. 1826.

Carex ovalis var. Brongn. in Duperrey, Voy. Coq. Bot. Phan. 150. 1834. (Based on *C. macloviana* Urv.)

Carex propinqua [Nees & Meyen; Meyen, Reise 1: 116, name only. 1834. (Type from Chile.)

Carex festiva Dewey, Am. Jour. Sci. 29: 246. pl. W, f. 71. 1836. (Type from Bear Lake and Rocky Mountains.)

- *Carex inciso-dentata* Steud. Syn. Cyp. 189. 1855. (Type from Sandy Point, Straits of Magellan.)
 — *Carex allomacros* Steud. Syn. Cyp. 189. 1855. (Type from Chile.)
 — *Carex pratensis* Philippi, Anal. Univ. Chile 93: 491. 1896. (Type from Chile.) Not *C. pratensis* Drejer, 1841.
 — "*Carex macloviana* var. *gracilis* Olney" Kükenth. Jour. Russe Bot. 1911: 61. f. 42. 1912.

Densely cespitose, from very short, brownish, fibrillose rootstocks, the culms 1–3.5 dm. high, rather stiff (2.5–3.5 mm. thick at base), obtusely triangular below, sharply-triangular and roughened above, conspicuously striate, much exceeding the leaves, brown at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades usually 3 or 4 to a fertile culm, bunched on the lower fourth, the blades flat, light-green, stiffish, usually 7–15 cm. long, 2.5–4 mm. wide, roughened towards the attenuate apex, the sheaths tight, white-hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; spikes 3–8, densely aggregated but the lower at least distinguishable, forming an oblong to suborbicular head 12–20 mm. long, 7–14 mm. thick, the spikes gynaeandrous, oblong-oval or ovoid, 5–10 mm. long, 4–6 mm. wide, rounded or the terminal slightly clavate at base, rounded or slightly pointed at apex, the 10–20 appressed-ascending perigynia in several to many rows, the staminate flowers few; bracts scale-like, the lowest occasionally short-awned, much shorter than head; scales ovate, obtuse, brownish-copper-colored, usually with slightly lighter midvein, the margins and especially the apex strongly whitish-hyaline, as wide below as but shorter than the perigynia; perigynia thin, concavo-convex, ovate, flattened, but strongly distended over achene, 4 mm. long, 2 mm. wide, membranaceous, copper-brown or olive-green above on the margins, wing-margined to base, serrulate to much below middle, lightly several-nerved dorsally, obscurely few-nerved ventrally towards base, or sometimes markedly few-nerved, rounded at base, rather abruptly contracted into a slender beak the length of the body, serrulate, obliquely cut dorsally, bidentate, the tip terete, not serrulate, conspicuously white-hyaline, the margins of the orifice also white-hyaline; achenes lenticular, oval, 1.75 mm. long, 1.25 mm. wide, sub-stipitate, apiculate; style slender, straight, jointed with achene, deciduous; stigmas two, light-yellowish-brown, slender.

TYPE LOCALITY: Falkland Islands.

DISTRIBUTION: In calcareous districts, Greenland and Labrador to Mackenzie, and southward to the coast of Gaspé, Quebec; also in Iceland, Norway, Lapland, and Finland, and in southern South America. (Specimens examined from Greenland, Labrador, Mackenzie, Quebec (Gaspé Mountains).)

ILLUSTRATIONS: Fl. Dan. pl. 2367; Britt. & Brown, Ill. Fl. ed. 2. f. 935; Kunze, Suppl. Riedgr. pl. 45; Am. Jour. Sci. 29: pl. W, f. 71; Boott, Ill. Carex 26. pl. 66; Jour. Russe Bot. 1911: 61. f. 42; Ostenf. Fl. Aret. 1: 53. f. 21; Anderss. Cyp. Scand. pl. 4, f. 27 (poor); Gay, Hist. Chile Bot. Fan. pl. 73, f. 9.

NOTE: *C. leporina* var. *ovata* Laest. is referable to *C. leporina*, and not to this species.

130. *Carex abrupta* Mackenzie, Bull. Torrey Club 43: 618. 1917.

- "*Carex nervina* L. H. Bailey" Parish, Bull. So. Calif. Acad. 5: 26. 1906.
 — "*Carex festiva stricta* L. H. Bailey" Parish, Bull. Soc. Calif. Acad. 5: 53, in part. 1906.

Densely cespitose, the rootstocks very short, brownish, fibrillose, the culms 4–6 dm. high, slender but erect, triangular, smooth, much exceeding the leaves, aphylloditic, light-brownish at base, the dried-up leaves of the previous year inconspicuous, short-bladed or bladeless; sterile shoots less numerous than fertile, with 4–6 erect leaves; fertile culms normally making growth in one year, with 3 or 4 well-developed leaves just above the base, the blades flat, light-green, thin, erect, 5–15 cm. long, 1.5–2.5 mm. wide, the sheaths tight, hyaline and thin ventrally, prolonged beyond base of blade and continuous with ligule; sterile shoots with similar leaves; spikes 4–8, very densely aggregated in a suborbicular head 9–17 mm. long and nearly as thick, the spikes gynaeandrous, with few staminate flowers, ovoid, 5–8 mm. long, 5–6 mm. wide, rounded at base and apex, the perigynia 10–20 in several rows, ascending; bracts scale-like; scales ovate, dull-reddish- or chestnut-brown with greenish center and at length hyaline margins, the midvein not conspicuous, obtuse, narrower and shorter than perigynia; perigynia plano-convex, oblong-lanceolate or oblong-ovate, 3.75–4 mm. long, 1.5 mm. wide, membranaceous, soon light brownish tinged, with several conspicuous slender raised nerves on both faces, rather narrowly wing-margined to the rounded base, lightly spongy and

sessile at base, the body serrulate on the margins above, abruptly contracted into a slender-tipped beak one third to one fourth the length of the body, terete, dark, with smooth margins and conspicuously white-hyaline, bidentulate apex, strongly obliquely cut dorsally; achenes lenticular, oblong-ovoid, 1.8 mm. long, nearly 1 mm. wide, yellowish, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, light-reddish-brown, rather short.

TYPE LOCALITY: West Branch of North Fork of Feather River, near Stirling, Butte County, California (Heller 10820).

DISTRIBUTION: Mountains of southern Oregon and northern California, and in California southward through the Sierra Nevada and in the higher southern mountains. (Specimens examined showing range as given.)

ILLUSTRATIONS: Abrams, Ill. Fl. Pacif. St. f. 739; Erythea 8: 45. f. 19; Jepson, Man. Fl. Pl. Calif. f. 177.

131. *Carex mariposana* L. H. Bailey; Mackenzie, Bull. Torrey Club 43: 619. 1917.

"*Carex adusta* Boott" W. Boott, in S. Wats. Bot. Calif. 2: 238, in small part. 1880.

"*Carex Preslii* Steud." Parish, Bull. So. Calif. Acad. 5: 52. 1906.

Carex albomarginata Mackenzie; Parish, Pl. World 20: 176, name only. 1917.

Densely caespitose, the rootstocks very short, brownish, fibrillose, the culms 2.5-6 dm. high, slender, much exceeding leaves, triangular, smooth, aphyllopodic, light-brownish at base, the dried-up leaves of the previous year represented by bladeless sheaths; leaves with well-developed blades 3-5 to a fertile culm, on lower fourth, somewhat bunched, the blades flat, light-green, thickish, firm, usually 1-2 dm. long, 2-3 mm. wide, the sheaths tight, hyaline ventrally, thin at mouth and short-prolonged beyond base of blade and continuous with ligule; head 2-3.5 cm. long, oblong or ovoid, the spikes 4-12, the upper closely approximate, the lower 1-3 slightly separate, ovoid or oblong-ovoid, 8-12 mm. long, 4.5-7 mm. wide, short-clavate and sparingly staminate at base, rounded at apex, the 10-20 perigynia closely appressed, with erect or ascending tips; lower one or two bracts short-prolonged, much shorter than head, the others scale-like; scales ovate, acute, reddish with lighter center, narrowly or strongly white-hyaline-margined, noticeably narrower and shorter than perigynia; perigynia planoconvex, ovate, 5 mm. long, 1.75 mm. wide, deep-green or in age greenish-straw-colored, contrasting strongly with scales, membranaceous, strongly several-nerved on both faces, the nerves slender, raised, narrowly winged to base, serrulate to middle, substipitate, slightly spongy and round-tapering at base, tapering into a slender beak one fourth length of body, light-reddish-tipped and scarcely hyaline at apex, the tip terete, entire or nearly so, strongly obliquely cut dorsally; achenes lenticular, obovoid, 2 mm. long, 1.5 mm. wide, substipitate, short-apiculate; style slender, jointed with achene, at length deciduous; stigmas two, slender, yellowish-brown.

TYPE LOCALITY: Tuolumne Meadows, Sierra Nevada, California (Jepson 4476).

DISTRIBUTION: Sierra Nevada mountains of California, from Shasta County to Tulare County, and in the higher mountains of southern California. (Specimens examined showing range as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 740.

132. *Carex Harfordii* Mackenzie, Bull. Torrey Club 43: 615. 1917.

Carex festiva var. *stricta* L. H. Bailey, Mem. Torrey Club 1: 51. 1889. (At least in part; *s. e.*, as to second specimen cited.)

Cespitose, the rootstocks short, thick, blackish, fibrillose, the culms erect, slender but stiff, 2.5-8 dm. high, obtusely triangular, smooth, much exceeding leaves, strongly striate, aphyllopodic, light-brownish at base and clothed with the short dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades usually 3-5 to a fertile culm, on lower fourth, but not bunched, the blades flat, light-green, firm, usually 1-3 dm. long, 2.5-4.5 mm. wide, the sheaths tight, hyaline ventrally, short-prolonged at mouth beyond base of blade and continuous with ligule; head globose to oblong-ovoid, 1.5-2.5 cm. long, 1-1.2 cm. thick, the spikes 10-20, all closely aggregated and the upper scarcely distinguishable, gynaeandrous, ovoid, rounded at base, rounded or tapering at apex, 6-10 mm. long, 4-6 mm. wide, the staminate flowers few, the perigynia 10-30 in several to many rows, appressed-ascending or

in age spreading, the beaks not conspicuous; one to several of the lower bracts broadly dilated at base and brown with hyaline margins, conspicuous, their tips usually shorter than or rarely little exceeding head; scales ovate, acute, reddish-brown with lighter midvein conspicuous to apex and very narrow hyaline margins, about width of and somewhat shorter than perigynia; perigynia thick, strongly plano-convex at maturity, ovate, 4.25 mm. long, 1.5 mm. wide, greenish-straw-colored or at maturity light-yellowish-brown, coriaceous, strongly but slenderly several-nerved dorsally, slenderly several-nerved ventrally, substipitate, round-tapering and somewhat spongy at base, narrowly margined to base, serrulate above middle, tapering into a beak one fourth length of body, serrulate below, the tip slender, terete, smooth or nearly so, chestnut-tinged, shallowly bidentate, obliquely cut dorsally and hyaline at apex; achenes lenticular, thick, short-oblong, 2 mm. long, 1.25 mm. wide, apiculate, short-stipitate; style slender, straight, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender.

TYPE LOCALITY: California (*Kellogg & Harford 1073*).

DISTRIBUTION: Coastal counties of California, where known from Humboldt Bay to San Mateo County. (Specimens examined showing above distribution.)

ILLUSTRATION: Abrams, Ill. Pl. Pacif. St. f. 746.

133. *Carex montereyensis* Mackenzie, *Erythea* 8: 92. 1922.

Densely cespitose, the rootstock very short, dark, fibrillose, the culms 2 mm. thick at base, very slender but erect, 8-10 dm. high, sharply triangular, smooth or nearly so, much exceeding the leaves, brown at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 4-6 to a fertile culm, on lower third, strongly separated, the blades erect, light-green, thinish, flat, usually 1.5-3 dm. long, 2.5-3 mm. wide, long-attenuate and roughened above, the sheaths tight, hyaline and thin ventrally, short-prolonged beyond base of blade and continuous with ligule; basal bladeless sheaths very long and conspicuous; sterile shoots numerous, elongate, the developed leaves erect, clustered at summit; spikes 8-12, gynaeceandrous, very densely aggregated in an ovoid or short-oblong head 1.5-2.5 cm. long, 1-1.5 cm. thick, the spikes ovoid or oblong-ovoid, 6-9 mm. long, 4.5-6 mm. wide, closely flowered, the perigynia 15-35, ascending or spreading-ascending, the staminate flowers very inconspicuous; lowest bracts setaceous-prolonged, shorter than the head, the upper scale-like; scales ovate-lanceolate, narrower than perigynia and about the length of the bodies, cuspidate or short-awned, yellowish-brown with sharply defined lighter midvein, the margins scarcely hyaline; perigynia plano-convex, ovate, 3.25 mm. long, 1.5 mm. wide, greenish-straw-colored or light-brownish-tinged, submembranaceous, narrowly wing-margined to base, ciliate-serrulate nearly to middle, several- to many-nerved dorsally, prominently slenderly few-nerved ventrally, with raised nerves, short-stipitate, rounded and somewhat spongy at base, contracted into a serrulate beak half the length of the body, bidentate, yellowish-brown-tipped, obliquely cut and dorsally sutured, the orifice slightly hyaline, the tip of the beak terete and entire; achenes lenticular, ovate-quadrate, 1.5 mm. long, 0.9 mm. wide, brown, shining, short-stipitate, apiculate; style straight, slender, jointed with achene, at length deciduous; stigmas two, yellowish-brown, slender, rather short.

TYPE LOCALITY: Pacific Grove, Monterey County, California (*C. P. Smith 1055*, in the Gray Herbarium).

DISTRIBUTION: Southwestern California, near the coast where it grows in "pine forest, lowlands." (Specimens examined showing range as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 747.

134. *Carex Bonplandii* Kunth, *Enum. Pl.* 2: 380. 1837.

--- *Carex Orizabae* Liebm. *Danske Vid. Selsk. Skr.* V: 2: 263. 1850. (Type from Mt. Orizaba, Mexico.)

Carex Bonplandii var. *angustifolia* Boott, *Ill. Carex* 115. 1862. (Type from Peru.)

--- *Carex heptastachya* Bock. *Linnaea* 39: 114. 1875. (Type from Merida, Colombia.)

--- *Carex Mandoniana* Bock. *Allg. Bot. Zeits.* 2: 174. 1896. (Type from Prov. Larecaja, Bolivia.)

--- *Carex Durandii* Bock. *Allg. Bot. Zeits.* 2: 189. 1896. (Type from Costa Rica.)

Carex Bonplandii var. *humilior* Kükenth. in Engler, *Pflanzenreich* 4²⁰: 232. 1909. (Type from Ecuador.)

Rootstocks elongate, creeping, slender but tough, brownish, fibrillose, the culms arising

one to several together, sharply triangular, slender but strict, 0.5–6 dm. high, exceeding the leaves, slightly rough above, conspicuously clothed at base with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 2–8 to a fertile culm, clustered at the base, the blades flat or canalicate, 2–20 cm. long, 1–3.5 mm. wide, thick, dull-green or light-green, roughened towards the attenuate apex, the sheaths white-hyaline ventrally, prolonged upwards beyond base of blade and continuous with ligule; sterile shoots with few erect ascending leaves; spikes 3–12, well-defined but more or less aggregated, forming a head 1–3 cm. long, 0.5–2 cm. thick, the spikes ovoid-oblong, 4–12 mm. long, 3–5 mm. wide, rounded or somewhat tapering at base and apex, containing above 5–20 closely appressed perigynia with erect-appressed beaks, and the terminal one at least with inconspicuous staminate flowers beneath; lower bract or bracts dilated at base and brownish with hyaline margins, cuspidate, from 0.5–1 cm. long to equaling or even much exceeding the head, the upper scale-like; scales ovate, light- or dark-chestnut-brown with lighter midrib and narrow hyaline margins, obtusish or acutish, as wide as but shorter than mature perigynia; perigynia plano-convex or often somewhat concave ventrally, narrowly ovate or lanceolate, thick, 3–4 mm. long, 1.25–1.5 mm. wide, light-green or in age brownish, subcoriaceous, very narrowly margined nearly to base, serrulate to middle, lightly several-nerved dorsally, few-nerved ventrally on lower half, short-stipitate, round-tapering at base, tapering at apex into a serrulate beak one half the length of the body or more, obliquely cut dorsally, at length bidentulate, the tip terete, chestnut-brown, smooth, hyaline at orifice, the dorsal suture conspicuous to top of achene; achenes lenticular, oblong-ovoid, 1.5–1.75 mm. long, 0.75–1 mm. wide, short-stipitate, apiculate, yellowish-brown; style slender, short, jointed with achene, deciduous; stigmas two, light-reddish-brown, slender, elongate.

TYPE LOCALITY: "America meridionalis," *Bonpland*.

DISTRIBUTION: High mountains from southern Mexico to Bolivia. (Specimens examined from Vera Cruz (Mexico), Costa Rica, Colombia, Bolivia.)

ILLUSTRATION: Boott, Ill. *Carex* 115, *pl.* 367.

135. *Carex Purdiei* Boott, Ill. *Carex* 26. *pl.* 67. 1858.

— "*Carex Bonplandii* Kunth" Kükenth. in Engler, *Pflanzenreich* 4²⁰: 232. 1909.

Cespitose, from conspicuously creeping, stout, lignescent, blackish, fibrillose rootstocks, the culms slender but stiff, aphyllpodic, 2.5–8 dm. high, shorter than or exceeding leaves, sharply triangular and roughened beneath head, light-brownish at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3–5 to a fertile culm, on lower third, but not bunched, the blades stiffish, mostly 1–2 dm. long, 1.5–3.5 mm. wide, light-green, flat or canalicate, the sheaths tight, thin and white-hyaline ventrally, truncate at mouth and short-prolonged beyond base of blade and continuous with ligule; sterile shoots conspicuous; head 2–4.5 cm. long, linear or linear-oblong, with 6–12 spikes, the upper aggregated, the lower approximate or slightly separated, rounded at apex, rounded or short-clavate at base, the terminal gynaeandrous, the lateral pistillate or gynaeandrous, ovoid, 5–7 mm. long, 4–5 mm. wide, with 6–20 appressed-ascending perigynia; bracts, except uppermost, setaceous and more or less prolonged, usually shorter than head; scales ovate, acutish, thin, narrower than perigynia and reaching about half way up beak, light-chestnut-brown-tinged, the center green, 3-nerved, the margins narrowly hyaline, sharply keeled, the midvein extending to apex; perigynia plano-convex, ovate, 3.5 mm. long, 1.5 mm. wide, thickish, subcoriaceous, greenish or yellowish-green, sharp-edged to base and serrulate above middle, finely several-nerved dorsally, obscurely few-nerved at base ventrally, short-stipitate, spongy and rounded at base, contracted into a serrulate beak much shorter than the body, reddish-brown-tinged, obliquely cut dorsally, very shallowly bidentate, the dorsal suture conspicuous, the ventral false suture not developed; achenes lenticular, oblong-ovate, 1.7 mm. long, 1 mm. wide, short-stipitate, apiculate, yellowish or dark-colored in age; style slender, jointed with achene, deciduous; stigmas two, slender, yellowish-brown.

TYPE LOCALITY: High mountains of Colombia, South America (*Purdie*).

DISTRIBUTION: High mountains, Colombia to Costa Rica. (Specimens examined from Costa Rica.)

ILLUSTRATION: Boott, Ill. *Carex* 26. pl. 67.

136. *Carex illota* L. H. Bailey, Mem. Torrey Club 1: 15. 1889.

Carex Bonplandii var. *minor* Boott, Proc. Acad. Phila. 1863: 77. 1863. (Type from Colorado.)

Carex Bonplandii var. *angustifolia* Boott "W. Boott, in S. Wats. Bot. Calif. 2: 233. 1880.

Carex Dieckii Böck. Cyp. Nov. 2: 33. 1890. (Type from Lytton, British Columbia.)

Cespitose, from rather slender, short-creeping, matted, dark-colored, scaly rootstocks, the clumps rather small, the culms 1-3.5 dm. high, slender but stiff, much exceeding the leaves, roughened on the angles above, brown-tinged at base, the dried-up leaves of the previous year largely reduced to bladeless sheaths; leaves with well-developed blades 2-5 to a culm, all near the base, the blades flat or somewhat canaliculate, 2-10 cm. long, 1.5-3 mm. wide, light-green, stiffish, roughened towards the apex, the sheaths tight, hyaline ventrally, concave and yellowish-brown-tinged at mouth, the ligule conspicuous; leaves of sterile culms similar; inflorescence consisting of 3-6 gynaeandrous spikes closely capitate in a dense suborbicular head 6-15 mm. long, 5-12 mm. thick, the individual spikes suborbicular, 4-6 mm. long, 3-5 mm. wide, the staminate flowers basal, inconspicuous, the pistillate flowers 5-15 to a spike, the perigynia ascending, or somewhat spreading, the beaks conspicuous; lowest bract straw-colored, dilated at base and with blackish margins, the edge hyaline, usually setaceous-prolonged but much shorter than the head; upper bracts scale-like; scales broadly ovate, obtuse, blackish, with yellowish-brown center and very narrow hyaline margins, not keeled, wider than but only about length of bodies of the perigynia; perigynia plano-convex, ovate-lanceolate, thick, 3 mm. long, 1.25 mm. wide, subcoriaceous, sharp-edged to base, the edges not raised, not serrulate, blackish-brown above, straw-colored below, very obscurely nerved both dorsally and ventrally, substipitate, rounded and spongy at base, tapering at apex into a beak about one third the length of the body, obliquely cleft dorsally, bidentulate, its margins smooth or with a few very shallow inconspicuous serrulations; achenes lenticular, broadly oval, 1.25 mm. long, 0.75 mm. wide, substipitate, apiculate, light-yellowish-brown; style slender, jointed with achene, at length deciduous; stigmas two, slender, rather short, brownish.

TYPE LOCALITY: Colorado (*Hall & Harbour 591*).

DISTRIBUTION: High mountains, Wyoming and Colorado, and westward to British Columbia and California. (Specimens examined from Colorado, Wyoming, Idaho, Utah, California, Oregon, Washington, British Columbia.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 708.

NOTE: This species has been treated as belonging to the *Stellulatae*, but its true relationship seems to be with the *Oales*, of which it may be regarded as one of the most primitive species.

137. *Carex integra* Mackenzie, Bull. Torrey Club 43: 608. 1917.

Very densely cespitose, the rootstocks very short, brown, fibrillose, the culms 1.5-3.5 dm. high, slender but erect, rather bluntly triangular, smooth, much exceeding the leaves, aphyllopodic, light-brownish at base, the old leaves of the previous year very short-bladed or bladeless; sterile shoots numerous, with 5-8 erect leaves; fertile culms with 1 or 2 old leaves at base and with 3 or 4 well-developed leaves just above the base, the blades flat, erect, light-green, thin, 3-10 cm. long, 1-2 mm. wide, the sheaths tight, hyaline ventrally and short-prolonged beyond base of blade and continuous with ligule; sterile shoots with leaf-blades much longer; spikes 4-8, densely aggregated in a head 1-2 cm. long, 6-10 mm. thick, the spikes gynaeandrous, obovoid or oblong-obovoid, 4-8 mm. long, 3.5-5 mm. wide, rounded at apex, tapering at base, the 10-20 perigynia in several rows, appressed or appressed-ascending; lowest bract slightly prolonged, much shorter than head, the upper scale-like; scales ovate, dark-chestnut with prominent green midvein and in age hyaline margins, acute or short-cuspidate, nearly width of, but shorter than mature perigynia; perigynia plano-convex, lanceolate, very small, 2.25-2.75 mm. long, 0.75-1 mm. wide, thickish, subcoriaceous, straw-colored or brownish-tinged, lightly few-nerved dorsally, nerveless or very obscurely nerved ventrally toward base, very narrowly wing-margined to base, substipitate, spongy and round-tapering at base, tapering or somewhat contracted into a slender beak one half to three

fourths length of body, the margins smooth or very sparingly subserrulate under a microscope, chestnut-brown-tipped with white-hyaline entire or emarginate apex, obliquely cut dorsally; achenes lenticular, short-oblong, filling perigynia, 1-2 mm. long, 0.6 mm. wide, yellowish, short-apiculate, substipitate; style straight, slender, jointed with achene, at length deciduous; stigmas two, slender, light-reddish-brown, rather short.

TYPE LOCALITY: Summit, Placer County, California (Heller 9841).

DISTRIBUTION: Sierra Nevada mountains of California, from Tulare County to Siskiyou County, extending northward in the Cascade Mountains of Oregon. (Specimens examined showing range as given.)

ILLUSTRATIONS: Erythea 8: 46. f. 20; Jepson, Man. Fl. Pl. Calif. f. 178; Abrams, Ill. Fl. Pacif. St. f. 741.

138. *Carex teneraeformis* Mackenzie, Bull. Torrey Club
43: 609. 1917.

Cespitose, the rootstocks very short, dark, fibrillose, the culms 3-4.5 dm. high, erect, slender, triangular, smooth or nearly so, exceeding leaves, aphyllopodic, light-brownish at base, the leaves of the previous year represented by bladeless or very short-bladed sheaths; sterile shoots conspicuous, with 4-6 erect leaves; fertile culms normally making growth in one year, with 3 or 4 leaves on lower fourth, but not bunched, the blades erect, thin, deep-green, flat or with slightly revolute margins, usually 6-18 cm. long, 1-2.5 mm. wide, the sheaths tight, strongly hyaline ventrally and thin and short-prolonged at mouth and continuous with ligule; sterile shoots with similar leaves; spikes 5-8, readily distinguishable, strongly separate in a slender head 1.5-2.5 cm. long and much less thick, the spikes gynaeandrous, oblong-obovoid to suborbicular, 3.5-6 mm. long, 3.5-4.5 mm. wide, rounded at apex, the lateral rounded and the terminal short-tapering at base, the 6-12 perigynia loosely appressed or spreading-ascending in several rows with rather conspicuous tips, the staminate flowers few and inconspicuous; bracts scale-like or lowest sometimes slightly prolonged; scales ovate, acute, light-brownish with lighter midvein and inconspicuous white-hyaline margins, narrower and slightly shorter than perigynia; perigynia plano-convex, ovate, widest near middle of achene, 2.75-3.25 mm. long, 1.25 mm. wide, thickish, winged to base, the walls subcoriaceous, light-green or straw-colored, conspicuously several-nerved dorsally, nerveless or nearly so ventrally, substipitate, rounded and slightly spongy at base, serrulate above and on beak, tapering into a slender beak 1 mm. long, white-hyaline, slightly dark-tipped, obliquely cut dorsally, the tip wingless and scarcely serrulate, bidentate, the teeth strictly erect, and closely contiguous; achenes lenticular, short, suborbicular, 1 mm. long, nearly 1 mm. wide, substipitate, apiculate; style slender, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY: Jonesville, Butte County, California (Hall 9781).

DISTRIBUTION: Sierra Nevada mountains of California, from Butte County to Tulare County; also on Mt. Sanhedrin, Lake County, and in the southern Californian mountains. (Specimens examined showing range as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 742.

139. *Carex subfusca* W. Boott, in S. Wats. Bot. Calif. 2: 234. 1880.

Carex festiva var. *stricta* L. H. Bailey, Mem. Torrey Club 1: 51. 1889. (As to the type, Palmer 389, first specimen cited.)

Carex festiva var. *Horneri* Piper, Contr. U. S. Nat. Herb. 11: 164. 1906. (Based on *C. festiva* var. *stricta* L. H. Bailey.)

Carex macloviana var. *stricta* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 196. 1909. (Based on *C. festiva* var. *stricta* L. H. Bailey.)

Carex macloviana var. *subfusca* Kükenth. in Engler, Pflanzenreich 4²⁰: 197. 1909. (Based on *C. subfusca* W. Boott.)

Carex stenoptera Mackenzie, Erythea 8: 28. 1922. (Type from Ice House Cañon, San Antonio Mountains, southern California.)

Very densely cespitose, the rootstocks very short, blackish, fibrillose, the culms 2-6.5 dm. high, slender to base but rather stiff, sharply triangular above, obtusely triangular below, much exceeding the leaves, very smooth, brownish at base and clothed with the few dried-up leaves of the previous year, the lowest loose and bladeless; leaves with well-developed blades usually 3-5 to a fertile culm, on the lower fourth but little clustered, the blades ascending

or erect, usually 7-15 cm. long 2-3.5 mm. wide, flat, light-green, stiffish, strongly roughened towards the attenuate apex, the sheaths strongly white-hyaline ventrally, thin, concave at mouth, short-prolonged beyond base of blade and continuous with ligule; sterile-culm leaves similar but rather longer; spikes 4-12, well-defined but clustered in an oblong or ovoid head 1-3.5 cm. long, 7-12 mm. thick, the spikes gynaeandrous, ovoid to oblong, 4-10 mm. long, 2.5-4.5 mm. wide, rounded at both ends or somewhat clavate at base, usually containing 8-24 closely appressed perigynia, the beaks ascending, the basal staminate flowers few and inconspicuous; lowest bract usually developing a short cusp and usually shorter than the head, the upper scale-like; scales ovate, acute to acuminate, reddish-brown with narrow hyaline margin and lighter 3-nerved center, about the width of the perigynia below, but narrower above and shorter than the perigynia; perigynia plano-convex, thickish, narrowly to broadly ovate, 3-3.5 mm. long, 1-1.5 mm. wide, narrowly wing-margined to the base, serrulate to below middle, subcoriaceous, greenish or in age straw-colored, finely many-nerved dorsally, several-nerved towards base to nearly nerveless ventrally, short-stipitate, rounded or round-tapering at base, tapering or abruptly contracted at apex into a serrulate beak one half as long as the body, obliquely cut dorsally, shallowly bidentate, the tip reddish-brown-tinged, serrulate, moderately flattened, the margins of the orifice hyaline; achenes lenticular, short-oval, 1.25 mm. long, 0.75 mm. wide, apiculate, short-stipitate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, light-reddish-brown, long.

TYPE LOCALITY: "Lake Tahoe (Kellogg), and near Virginia City, Nevada, Bloomer."

DISTRIBUTION: Mountains and foothills, from Oregon to southern California and eastward to Arizona. (Specimens examined from Oregon, California, Arizona.)

ILLUSTRATIONS: Abrams, Ill. Fl. Pacif. St. f. 743; also f. 696 (stamens incorrectly shown).

140. *Carex Preslii* Steud. Syn. Cyp. 242. 1855.

"*Carex leporina* L." Presl, Rel. Haenk. 1: 203. 1828.

In dense clumps, the rootstock short, much thickened, nearly corm-like, blackish, fibrillose, the culms 2.5-7.5 dm. high, slender but erect, strongly aphyllopodic, deep-green but light-brownish at very base, exceeding leaves, roughened above on angles, making growth in one year, the leaves of the first year reduced to a few bladeless or very short-bladed, conspicuous, scale-like sheaths; leaves with well-developed blades usually 3 or 4 to a fertile culm, on lower third, sometimes more or less bunched towards base, the blades flat, deep-green, thinnish, usually 1.5-4.5 dm. long, 1.5-4 (usually 2-3) mm. wide, long-attenuate, the sheaths conspicuously white-hyaline ventrally, very thin, short-prolonged at mouth beyond base of blade and continuous with ligule; head oblong to globose, 10-20 mm. long, 6-10 mm. thick, containing 3-8 spikes, closely approximate, or the lower somewhat separated, usually readily distinguishable, gynaeandrous, ovoid or suborbicular, 5-8 mm. long and slightly narrower, rounded at apex, the lateral rounded and the terminal short-tapering at base, the 10-25 perigynia in many rows, with conspicuous spreading tips at maturity, the staminate flowers few, but the anthers often conspicuous; lower bracts usually but little prolonged, the upper scale-like; scales ovate, acute to mucronate, reddish-brown, with green midvein and narrowly hyaline margins, much narrower above and slightly narrower below and somewhat shorter than perigynia; perigynia plano-convex, ovate, 3.5-4 mm. long, 2 mm. wide (widest near middle of achene), distended by the thick achene, deep-green at anthesis or yellowish-brown-tinged in age, strongly green-winged to base, obsolete several-nerved dorsally, nerveless or sometimes obscurely nerved towards base ventrally, substipitate, rounded and spongy at base, subcoriaceous, strongly serrulate to middle of achene, abruptly contracted into a beak 1-1.5 mm. long, obliquely cut dorsally, non-hyaline, yellowish-brown-tipped, winged and serrulate to tip or nearly so, the tip slender or somewhat flattened, bidentate, the erect teeth closely contiguous; achenes lenticular, oblong quadrate, 1.5 mm. long, 0.75 mm. wide, short-stipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, yellowish-brown.

TYPE LOCALITY (of Presl's "*C. leporina* L." on which *C. Preslii* is based): "Hab. in portu Mulgravae aut in Nootka-Sund."

DISTRIBUTION: Mountains, Alberta and Montana, and westward to British Columbia and Cali-

fornia. (Specimens examined from California, Oregon, Washington, British Columbia (including Vancouver Island), Idaho, Montana, Alberta.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. *f.* 748.

NOTE: In the United States National Herbarium is a portion of the type of this species, given by Museum des Königreichs Böhmen, Prague. It shows perigynia serrulate to the tip, and not hyaline but reddish-brown-tinged at the tip.

This species is marked by the deep-green foliage contrasting with the strongly white-hyaline basal sheaths, by the culms being strictly annual, and by the thickened nearly corm-like rootstocks; the anthers are long-persistent.

141. *Carex paucifructus* Mackenzie, Bull. Torrey Club

43: 615. 1917.

Cespitose, the rootstocks short, dark, fibrillose, the culms 1-2.5 dm. high, erect, stiff, sharply triangular above, obtusely triangular below, smooth, much exceeding leaves, aphyllopodic, brown at base, the leaves of the previous year few, the upper short-bladed, the lower bladeless; leaves with well-developed blades 2-4 to a fertile culm, bunched above the base, the blades short, usually 3-7 cm. long, 1.5-3 mm. wide, thickish, light-green, flat or canaliculate, the sheaths tight, hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; head ovoid or oblong, 1-2 cm. long, 6-12 mm. thick, the spikes 4-8, aggregated, gynaeandrous, ovoid, tapering at base, round-tapering at apex, 6-9 mm. long, 4.5 mm. wide, the basal staminate flowers rather conspicuous, the perigynia 6-12, in few to several rows, appressed or appressed-ascending, the beaks not conspicuous; lowest bract short-prolonged, much shorter than head, the others scale-like; scales ovate, reddish-brown with lighter midvein and conspicuous dull-white-hyaline margins, about width of perigynia but shorter; perigynia strongly plano-convex, ovate, 4 mm. long, 1.5 mm. wide, dull-green or straw-colored, soon yellowish-brown, thick, few-nerved at base ventrally, finely many-nerved dorsally, substipitate, round-tapering and spongy at base, coriaceous, margined (serrulate above) from base, tapering into a beak one third length of body, slender and smooth at tip, serrulate below, reddish-tipped, hyaline at apex, shallowly bidentate, obliquely cut dorsally; achenes lenticular, short-oblong, 1.75 mm. long, more than 1 mm. wide, substipitate, apiculate; style slender, jointed with achene, at length deciduous; stigmas two, slender, yellowish-brown, rather short.

TYPE LOCALITY: Devil's Basin, El Dorado County, California (*Brainerd 200*).

DISTRIBUTION: In the central part of the Sierra Nevada mountains of California. (Specimens examined from Sierra and El Dorado counties.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. *f.* 752.

142. *Carex gracilior* Mackenzie, Bull. Torrey Club 43: 614. 1917.

—*Carex festiva* var. *gracilis* Olney; A. Gray, Proc. Am. Acad. 8: 407, in part. 1872. (Not as to Hall's plant.)

—*Carex propinqua* Nees & Meyen" Boott, Pacif. R.R. Rep. 4: 154. 1857.

"*Carex festiva* var. *gracilis* Olney" W. Boott, in S. Wats. Bot. Calif. 2: 234, in part. 1880.

Cespitose, but with slender, short-creeping, black, fibrillose rootstocks, the clumps medium-sized, the culms slender but strict, 3-6 dm. high, exceeding leaves, rather obtusely triangular, smooth or nearly so on angles, aphyllopodic, brownish at base, the dried-up leaves of the previous year not conspicuous, the lower bladeless, the upper short-bladed; leaves with well-developed blades 3-5 to a fertile culm, on lower third, but not bunched, the blades erect, light-green, firm, flat, 5-15 cm. long, 1-2 mm. wide, the sheaths tight, hyaline ventrally, thin and very short-prolonged at mouth beyond base of blade and continuous with ligule; inflorescence consisting of 3-6 small few-flowered spikes aggregated (or lower one or two a little separate) into a narrow or oblong head 12-20 mm. long, 5-12 mm. thick, the spikes gynaeandrous, sessile, bluntish, suborbicular, 5-8 mm. long, 4-6 mm. wide, the basal staminate flowers few and inconspicuous, the perigynia 4-12 to a spike, ascending to rather strongly spreading-ascending with conspicuous beaks; lower bract present, setaceous, from shorter than to (rarely) exceeding the head, the upper scale-like; scales ovate, obtusish or acutish, chestnut-brown with lighter-colored midrib and shining-white-hyaline margins, about width of, but shorter than perigynia; perigynia plano-convex, 3.5-4.5 mm. long, 1.5 mm. wide, lance-ovate, thick, narrowly winged to base, dull-green, coriaceous, the body faintly several-nerved dorsally,

nerveless ventrally or nearly so, substipitate, round-tapering and spongy at base, tapering somewhat abruptly into a slender beak one half length of body, chestnut-brown-tinged, hyaline at apex, obliquely cut dorsally at mouth, smooth towards apex, serrulate below, bidentulate; achenes lenticular, obovoid, 2 mm. long, 1.2 mm. wide, apiculate, substipitate; style slender, straight, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender.

TYPE LOCALITY: Cloverdale, Sonoma County, California (*Bolander 3822*).

DISTRIBUTION: Coast Ranges of California, from San Mateo County to Mendocino County. (Specimens examined showing range as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 751.

143. *Carex subbracteata* Mackenzie, Bull. Torrey Club

43: 612. 1917.

Cespitose, from short, creeping, tough, black, fibrillose rootstocks, the culms erect, stiff, 3.5–12 dm. high, obtusely triangular, smooth, much exceeding leaves, light-brownish at base, the upper dried-up leaves of the previous year short-bladed, the lower bladeless; leaves with well-developed blades usually 3–5 to a fertile culm, on lower fourth, but not bunched, the blades flat, stiff, light-green, usually 1–3 dm. long, 2.5–4 mm. wide, the sheaths tight, hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; head globose or ovoid, 1.5–2.5 cm. long and rather less thick, the spikes 5–10, closely aggregated, gynaeandrous, ovoid, rounded at base, round-tapering at apex, 6–10 mm. long, 4–6 mm. wide, the staminate flowers few, the 10–20 perigynia in several to many rows, appressed or in age appressed-ascending, the beaks not spreading; one to several of lower bracts conspicuous, dilated at base, brown with hyaline margins, the tips shorter than or occasionally exceeding head; scales ovate, obtuse or acutish, reddish-brown with lighter center and narrow white-hyaline margins, slightly narrower and shorter than perigynia; perigynia plano-convex, narrowly ovate, 3.5–4.5 mm. long, 1.5 mm. wide, dull-green or soon yellowish-brown, thick, finely several-nerved dorsally, nerveless or essentially so ventrally, coriaceous, substipitate, round-tapering and spongy at base, narrowly margined (serrulate above middle) from base, tapering somewhat abruptly into a beak one third length of body, slender, serrulate below the tip, chestnut-tinged, obliquely cut dorsally and hyaline at apex, bidentulate; achenes lenticular, thick, short-oblong, 1.75 mm. long, 1.2 mm. wide, apiculate, substipitate; style slender, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY: Oakland, California (*Bolander*).

DISTRIBUTION: Coast Ranges of California, from Santa Barbara County to Humboldt County. (Specimens examined showing range as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 750.

144. *Carex pachystachya* Cham.; Steud. Syn. Cyp. 197. 1855.

Carex festiva var. *pachystachya* L. H. Bailey, Mem. Torrey Club 1: 51. 1889. (Based on *C. pachystachya* Cham.)

Carex macloviana var. *pachystachya* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4⁹⁰: 197. 1909. (Based on *C. pachystachya* Cham.)

Very densely cespitose, the rootstocks very short, blackish, fibrillose, the culms 3–10 dm. high, slender, 2.5–3.5 mm. thick at base, conspicuously striate, obtusely triangular below, sharply so above, much exceeding the leaves, smooth or slightly rough beneath the head, brown at base, and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades usually 3–5 to a fertile culm, all on the lower third, but not bunched, the blades flat, deep-green, not stiff, 1–3 dm. long, 2–4 mm. wide, roughened towards the apex, the sheaths tight, white-hyaline ventrally, thin at mouth and prolonged beyond base of blade and continuous with ligule; spikes 4–12, gynaeandrous, closely aggregated into a dense suborbicular or oblong head 1.2–2.5 cm. long, 7–15 mm. thick, the individual spikes suborbicular or short-oblong, 5–8 mm. long, 4–6 mm. wide, round truncate at base, obtuse at apex, the upper hardly distinguishable, the staminate flowers inconspicuous, the perigynia 19–30, ascending or ascending-spreading, with conspicuous beaks; bracts scale-like, or the

lowest short-awned, much shorter than head; scales ovate, acute, chestnut-brown or blackish, with greenish or yellowish midrib, scarcely hyaline-margined, about the width of the perigynia below, but exceeded by their beaks; perigynia plano-convex, ovate, thick, 3.5-5 mm. long, 1.5-2.25 mm. wide, submembranaceous but firm, copper-colored at maturity, narrowly wing-margined to base, serrulate to middle, nerveless ventrally, several-nerved dorsally, rounded at base, tapering somewhat abruptly into a beak not half the length of the body, serrulate, obliquely cut dorsally, chestnut-brown-tipped, bidentulate, the tip terete, smooth, slightly hyaline; achenes lenticular, short-oblong, 1.5 mm. long, 0.8 mm. wide, substipitate, apiculate; style slender, straight, jointed with achene, deciduous; stigmas two, slender, yellowish-brown.

TYPE LOCALITY: "In Unalashka."

DISTRIBUTION: Wyoming to California, and northward to Alberta and British Columbia, and along the Alaskan coast to the Aleutian Islands. (Specimens examined from Wyoming, Montana, Alberta, Idaho, California, Oregon, Washington, British Columbia (including Vancouver Island), Alaska.)

ILLUSTRATIONS: Abrams, Ill. Fl. Pacif. St. f. 744; Am. Jour. Sci. IV. 18: 16. f. 1, 2, 5 (as *C. festiva*).

Carex pachystachya var. *gracilis* (Olney). *Carex festiva* var. *gracilis* Olney; A. Gray, Proc. Am. Acad. 8: 407, name only. 1872. (Based on Hall 586 from Oregon.) *Carex festiva* var. *gracilis* Olney; W. Boott, in S. Wats. Bot. Calif. 2: 234. 1880. (Excluding specimens cited.) *Carex multimoda* L. H. Bailey, Bot. Gaz. 21: 5. 1896. (Based on *C. festiva* var. *gracilis* Olney.) *Carex macloviana* var. *gracilis* "Olney" K nenth. in Engler, Pflanzenreich 4²⁰: 197. 1909. (Based on *C. festiva* var. *gracilis* Olney.) *Carex olympica* Mackenzie, Bull. Torrey Club 43: 610. 1917. (Type from Washington.) More slender; leaf-blades 1-2 mm. wide, light-green; inflorescence of 3-6 spikes aggregated or in a head more or less interrupted below; spikes with 5-15 ascending or in age more or less spreading perigynia. TYPE LOCALITY (of *C. festiva* var. *gracilis* Olney, on which this variety is based): Oregon (Hall 586). DISTRIBUTION: Dry soil, mostly at lower elevations, from northern California to British Columbia and Idaho. (Specimens examined from California, Oregon, Washington, British Columbia, Idaho.)

NOTE: This seems to be a common plant in parts of Oregon and Washington; it is often well marked and distinct in appearance, but it is connected with the higher mountain plant by a perplexing series of intermediate plants, and I have so far found no constant differences.

Olney's name has been used for several different species; it is here used as first applied by him without description. The first description, by W. Boott, is undoubtedly largely based on other species, but it is broad enough to cover Olney's original plant. *Carex multimoda* L. H. Bailey is probably also an aggregate. It is based on "*C. festiva* var. *gracilis* authors." A very general description is given and no specimens are cited. It is here regarded as based on *C. festiva* var. *gracilis* Olney, as here interpreted.

145. *Carex amplexans* Mackenzie, Bull. Torrey Club 43: 611. 1917.

Cespitose, the rootstocks short, dark, fibrillose, the culms 5-8 dm. high, exceeding leaves, aphyllopodic, triangular, stiff, slightly roughened immediately beneath head, brownish at base, and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless or short-bladed; sterile shoots with well-developed tall culms; leaves with well-developed blades 4-6 to a fertile culm, on lower half, not bunched, the blades erect, light-green, firm, flat, mostly 1-2 dm. long, 2.5-4 mm. wide, the sheaths rather loose, hyaline ventrally, soon breaking, conspicuously many-striate dorsally, short-prolonged at mouth beyond base of blade and continuous with ligule; head 2-5 cm. long, 8-15 mm. thick, the spikes 6-12, closely approximate or lower slightly separate, ovoid or oblong-ovoid, 7-15 mm. long, about 4-5 mm. wide, short-clavate and sparingly staminate at base, rounded at apex, the 15-35 perigynia closely appressed, with erect tips; bracts conspicuous, dilated at base, closely appressed to spikes, the lower three or four usually prolonged and from nearly equaling to exceeding head, strongly amplexant at flowering time, the others less or not at all prolonged; scales ovate, acute or short-cuspidate, greenish and slightly tawny-tinged, the midvein green, prominent, somewhat narrower and shorter than perigynia; perigynia plano-convex, ovate, 3.5-4 mm. long, 1.75 mm. wide, thin, rounded and contracted but sessile at base, wing-margined to base, several-nerved on both faces, strongly serrulate to below middle, membranaceous, light-green, contracted into a beak one third to one half length of body, the tip terete, not serrulate, slightly tawny-tinged and obliquely cut dorsally, bidentulate; achenes lenticular, small, 1.5 mm. long,

0.75 mm. wide, tapering at base; style slender, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender.

TYPE LOCALITY: Lover's Leap, El Dorado County, California (*Brainerd 209*).

DISTRIBUTION: Sierra Nevada mountains of California, from Shasta County to Tulare County. (Specimens examined showing range as given.)

ILLUSTRATIONS: *Erythea* 8: 47, f. 21; Jepson, Fl. Calif. 1: 222, f. 32, d-f; Abrams, Ill. Fl. Pacif. St. f. 745; Jepson, Man. Fl. Pl. Calif. f. 179.

146. *Carex fracta* Mackenzie, *Erythea* 8: 38. 1922.

— "*Carex adusta* Boott" W. Boott, in S. Wats. Bot. Calif. 2: 238, in greater part. 1880.

— *Carex scoparia* var. *fulva* W. Boott, in S. Wats. Bot. Calif. 2: 237, in small part. 1880.

— *Carex speciosa* L. H. Bailey, Mem. Torrey Club 1: 21, in very small part, not as to type. 1889.

— *Carex speciosa* f. *brevifrustris* Kükenth. in Engler, Pflanzenreich 4⁹: 199. 1909. (Type from Mt. Paddo, Washington.)

Cespitose, the rootstocks short, dark, fibrillose, the culms tall, 5–12 dm. high, aphyllopodic, strongly striate, rather obtusely triangular below, sharply so above, somewhat roughened beneath the head, much exceeding leaves, brownish at base, the leaves of the previous year represented by a few mostly bladeless sheaths; leaves with well-developed blades 3–5 to a fertile culm, on lower third, not bunched, the blades erect, light-green, firm, flat with slightly revolute margins, usually 2–6 dm. long, 3–6 mm. wide, roughened on margins and towards apex, the sheaths rather loose, hyaline and extremely membranaceous and easily breaking ventrally, continuous with ligule, conspicuously prolonged at mouth beyond base of blade into a very fragile appendage; head 2.5–7.5 cm. long, 8–10 mm. thick, usually interrupted below, containing 7–15 appressed spikes, the upper not distinguishable, the spikes gynaeceandrous, oblong or oblong-ovoid, 7–12 mm. long, 5–6 mm. wide, rounded at both ends and with 15–30 appressed-ascending perigynia in several-to many rows, the staminate flowers very inconspicuous; bracts of several of lower spikes conspicuous, with dilated bases, the lower one or two prolonged and from much shorter than to exceeding inflorescence; scales lanceolate, long-acuminate or aristate, slightly narrower and shorter than the perigynia, hyaline and yellowish-green or straw-colored, with darker midrib, in age becoming white-hyaline; perigynia low-plano-convex, 3–4.5 mm. long, 1.2–1.75 mm. wide, distended over achene, narrowly winged, serrulate above and on beak, broadest at middle of achene, greenish-white, conspicuously but finely about 5–8-nerved on each side, membranaceous, substipitate, rounded and slightly spongy at base, abruptly contracted into a beak 1–1.5 mm. long, tawny-tipped, obliquely cut dorsally, the tip terete and not serrulate, bidentate; achenes lenticular, oblong-quadrate, 1.5 mm. long, nearly 1 mm. wide, brownish-yellow, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, yellowish-brown, slender, conspicuous.

TYPE LOCALITY: Mt. Shasta, California (*Pringle*, August 23, 1881; U. S. Nat. Herb. 817810).

DISTRIBUTION: Washington to southern California. (Specimens examined from Washington, Oregon, California.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 720.

147. *Carex leporina* L. Sp. Pl. 973. 1753.

— *Carex mollis* Gilib. Exerc. Phyt. 546. 1792. (Based on *C. leporina* L.)

— *Carex nuda* Lam. Fl. Fr. ed. 2: 2: 172. 1793. (Based on *C. leporina* L.)

— *Carex ovalis* Gooden. Trans. Linn. Soc. 2: 148. 1794. (Type from England.)

— *Carex argyroglochis* Hornem. Dansk. Oecon. Pl. ed. 2: 1: 927. 1821. (Type from Reinbeck, Laueburg.)

— *Vignea argyroglochis* Reichenb. in Mössler, Handb. ed. 3: 1612. 1829. (Based on *Carex argyroglochis* Hornem.)

— *Vignea leporina* Reichenb. in Mössler, Handb. ed. 3: 1613. 1829. (Based on *Carex leporina* L.)

— *Carex leporina* var. *argyroglochis* Koch, Syn. Fl. Germ. 753. 1837. (Based on *C. argyroglochis* Hornem.)

— *Carex leporina* var. *ovata* Hartm. Skand. Fl. ed. 3: 216. 1838. (Type from Denmark: Fl. Dan. pl. 1115.)

— *Obstreta leporina* Raf. Good Book 25. 1840. (Based on *Carex leporina* L.)

— *Carex leporina* var. *capitata* Sonder, Schouw & Vahl, Fl. Dan. 40: 7. pl. 2366. 1843. (Type from Escheburg, Laueburg.)

— *Carex sicula* Tineo, Pl. Rar. Sic. 30. 1846. (Type from Sicily.)

— *Carex leporina* var. *longibracteata* Peterm. Anal. Pfl. 493. 1846. (Type from Germany.)

— *Carex leporina* var. *monostachya* Peterm. Anal. Pfl. 493. 1846. (Type from Germany.)

— *Carex leporina* var. *argyrolepis* Peterm. Anal. Pfl. 493. 1846. (Type from Germany.)

- Carex leporina* var. *pallens* Reichenb. Ic. Fl. Germ. 8: 8. pl. 211, f. 555. 1846. (Based on *C. argyroglochin* Hornem.)
- Carex leporina* var. *memoralis* Trev. in Ledeb. Fl. Ross. 4: 279. 1853. (Based on *C. argyroglochin* Hornem.)
- Carex leporina* var. *genuina* Gren. & Godr. Fl. Fr. 3: 397. 1856. (Based on *C. leporina* L.)
- Carex leporina* var. *pallidescens* Gren. & Godr. Fl. Fr. 3: 397. 1856. (Based on *C. argyroglochin* Hornem.)
- Carex leporina* var. *minor* Kuntze, Taschen-Fl. Leipz. 16. 1867. (Type from Germany.)
- Carcinia ovalis* St.-Lag. in Carot. Étude Fl. ed. 8. 2: 878. 1889. (Based on *Carex ovalis* Gooden.)
- Carex leporina* f. *robusta* Fiek & Pax, Jahresh. Schles. Ges. 66: 203. 1889. (Type from Germany.)
- Carex leporina* var. *alpina* Asch. & Graebn. Syn. Mitteleur. Fl. 2²: 52. 1902. (Type from central Europe.)
- Carex leporina* var. *nana* Asch. & Graebn. Syn. Mitteleur. Fl. 2²: 52. 1902. (Type from central Europe.)
- Carex leporina* f. *nana* "Asch. & Graebn." Kükenth. in Engler, Pflanzenreich 4²⁰: 210. 1909. (Based on *C. leporina* var. *nana* Asch. & Graebn.)
- Carex leporina* f. *minor* "Kuntze" Kükenth. in Engler, Pflanzenreich 4²⁰: 211. 1909. (Based on *C. leporina* var. *minor* Kuntze.)
- Carex leporina* f. *monostachya* "Peterm." Kükenth. in Engler, Pflanzenreich 4²⁰: 211. 1909. (Based on *C. leporina* var. *monostachya* Peterm.)
- Carex leporina* f. *capitata* "Sonder" Kükenth. in Engler, Pflanzenreich 4²⁰: 211. 1909. (Based on *C. leporina* var. *capitata* Sonder.)
- Carex leporina* f. *longibracteata* "Peterm." Kükenth. in Engler, Pflanzenreich 4²⁰: 211. 1909. (Based on *C. leporina* var. *longibracteata* Peterm.)
- Carex leporina* f. *argyroglochin* "Koch" Kükenth. in Engler, Pflanzenreich 4²⁰: 211. 1909. (Based on *C. argyroglochin* Hornem.)

Cespitose, from short-elongate, black, fibrillose rootstocks, the culms 1.5–8 dm. high, sharply triangular, slender to base but strict, exceeding the leaves, roughened on the angles above, dark-tinged at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 4–7 to a fertile culm, on the lower third, but not at all bunched, the blades ascending, flat, light-green, rather stiff, usually 1–2 dm. long, 2–4 mm. wide, very rough towards the apex, the sheaths tight, strongly white-hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; sterile shoots with several similar leaves clustered near the top; inflorescence consisting of 4–7 approximate very well-defined spikes in a rather stiff erect narrow head 18–35 mm. long, 7–15 mm. thick, the spikes gynaeceandrous, ovoid or short-oblong, 7–15 mm. long, 5–8 mm. wide, obtuse at apex, rounded or slightly tapering at base, the staminate flowers very inconspicuous, the perigynia numerous, appressed-ascending, the beaks not conspicuously spreading; lower bracts occasionally developing a cuspidate point, much shorter than the head, the upper scale-like; scales ovate, acute, dull-reddish-brown with lighter 1–3-nerved center and broad white-hyaline margins, as long and as wide as and concealing the perigynia; perigynia plano-convex or concavo-convex, ovate, flattened, strongly distended over achene, 4–5 mm. long, 1.75–2.25 mm. wide, membranaceous, green, or at maturity yellowish-brown, wing-margined to base, serrulate to below middle, substipitate, rounded at base, strongly many-nerved dorsally, nearly nerveless or lightly several-nerved ventrally, abruptly contracted into a beak of less than its own length, serrulate below and terete, nearly smooth and light-reddish-brown and not white-hyaline towards the tip, obliquely cut dorsally, bidentate; achenes lenticular, oblong-obovoid, 1.75 mm. long, 1 mm. wide, yellowish-brown, shining, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY: "Habitat in Europae pratis udis."

DISTRIBUTION: Naturalized from Europe in dry places, Newfoundland to Massachusetts and New York; in ballast southward. Widely distributed in Eurasia, extending into North Africa; recorded from New Zealand. (Specimens examined from Newfoundland, Prince Edward Island, Nova Scotia, Maine, New Hampshire, Massachusetts, New York.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 864; ed. 2. f. 943; Rob. & Fern. Man. f. 368; Proc. Am. Acad. 37: pl. 3, f. 58–60; Schkuhr, Riedgr. pl. B, f. 8; Fl. Dan. pl. 1115, 1710 (*C. argyroglochin*), 2366; Jour. Russe Bot. 1911: 62, f. 44; Sturm, Deuts. Fl. 47: pl. 4; 55: pl. 5 (*C. argyroglochin*); Reichenb. Ic. Fl. Germ. 8: pl. 211, f. 554, f. 555 (*C. argyroglochin*); Anders. Cyp. Scand. pl. 4, f. 26; Leers, Fl. Herb. Fl. 14, f. 6; Host, Gram. Austr. 1: pl. 51; Engl. Bot. pl. 306; ed. 2. pl. 1634; Benth. Handb. Brit. Fl. ed. 2. f. 1097; Coste, Fl. Fr. f. 3831; Hegi, Ill. Fl. Mittel-Eur. pl. 47, f. 2; Hallier, Deuts. Fl. pl. 426; Karst. Deuts. Fl. f. 163 (5); Lindm. Bild. Nord. Fl. pl. 433, B; Knobel, Grasses pl. 27, f. 110.

148. *Carex Tracyi* Mackenzie, *Erythea* 8: 41. 1922.

— *Carex albolutescens* var. *brunnea* Olney; A. Gray, Proc. Am. Acad. 8: 407, name only. 1872. (Type from Oregon.)

Densely caespitose, the rootstocks very short, black, fibrillose, the culms 2-8 dm. high, sharply triangular above, slender to base but strict, exceeding the leaves, roughened on the angles beneath head, brownish-tinged at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 4-7 to a fertile culm, on the lower third, but not at all bunched, the blades ascending, flat or canaliculate with revolute margins, light-green, rather stiff, usually 1-2 dm. long, 2-4 mm. wide, much roughened towards the attenuate apex, the sheaths tight, strongly white-hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; sterile shoots with several similar leaves clustered near the top; spikes 4-7, very well-defined, approximate or slightly separate in a rather stiff, erect, narrow head 1.5-4 cm. long, 7-15 mm. thick, the spikes ovoid, 7-15 mm. long, 5-9 mm. wide, obtuse-tapering at apex, rounded or slightly tapering at base, the staminate flowers inconspicuous, the perigynia numerous, appressed-ascending, the beaks not conspicuously spreading; lowest bract short-cuspidate-prolonged, much shorter than the head, the upper scale-like; scales ovate, acute, dull-reddish-brown with lighter 1-3-nerved center and white-hyaline margins, the white tip conspicuous, as long as and nearly as wide as and concealing the perigynia; perigynia flattened-plano-convex, ovate, with nearly orbicular body, distended over achene, 4-5 mm. long, 2.25 mm. wide, membranaceous, green or at maturity yellowish-brown, wing-margined to base, serrulate to middle, substipitate, rounded at base, strongly many-nerved dorsally, conspicuously several-nerved ventrally, abruptly contracted into a beak of less than its own length, serrulate below and terete, nearly smooth and reddish-brown-tipped above, obliquely cut dorsally, bidentulate, the margins of the orifice hyaline; achenes lenticular, oblong-ovoid, 1.75 mm. long, 1 mm. wide, yellowish-brown, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY: Bald Mountain, Humboldt County, California (*J. P. Tracy 4547*).

DISTRIBUTION: Wet meadows and low swampy grounds, northern California to British Columbia. (Specimens examined from California, Nevada, Oregon, British Columbia.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 733.

149. *Carex phaeocephala* Piper, Contr. U. S. Nat.

Herb. 11: 172. 1906.

Carex leporina var. *americana* Olney; (A. Gray, Proc. Am. Acad. 8: 407, name only. 1872) L. H. Bailey, Proc. Am. Acad. 22: 152. 1886. (Type from Oregon.)

— "*Carex leporina* L." L. H. Bailey, in Coult. Man. 396. 1885.

— "*Carex Preslii* Steud." L. H. Bailey, Mem. Torrey Club 1: 52. 1889.

— "*Carex petasata* Dewey" Holm, Am. Jour. Sci. IV. 16: 20. 1903.

Carex petasata var. *pleiostachya* Kükenth. in Engler, Pflanzenreich 4^o: 210. 1909. (Type from Lake Louise, Alberta.)

— *Carex tahoensis* Smiley, Univ. Calif. Publ. Bot. 9: 119. 1921. (Type from Mt. Tallac, Lake Tahoe, California.)

Very densely caespitose, forming large stools, the rootstocks densely matted, very short, blackish, fibrillose, the culms 1-3 dm. high, slender but stiff, exceeding the leaves, obtusely triangular below, sharply angled and more or less roughened above, brownish at base, the dried-up leaves of the previous year conspicuous, the lower bladeless; leaves with well-developed blades 3-6 to a fertile culm, clustered towards the base, the blades short, canaliculate or more or less involute, ascending to recurving, usually 5-15 cm. long, 1.5-2 mm. wide, stiff, light-green, roughened towards the apex, the sheaths tight, white-hyaline ventrally, truncate at mouth, short-prolonged beyond base of blade and continuous with ligule; sterile-culm leaves similar; inflorescence consisting of 2-5, usually 3 or 4, rarely 7, spikes aggregated into an erect head 12-25 mm. long, 5-12 mm. thick, the lower one or two spikes occasionally a little separate, the spikes ovoid to oblong-obovoid, 6-12 mm. long, 5-8 mm. wide, gynaeandrous, obtuse at apex, narrowed and often quite clavate at base (especially the uppermost) and hence making the staminate portion more conspicuous, the perigynia usually 10-20, appressed-ascending, becoming loosely flowered at maturity, the beaks inconspicuous, lower bracts much shorter

than the head, occasionally developing a cuspidate point, the upper scale-like; scales ovate, acute, brownish-black or brownish or reddish-brown, with lighter 1-3-nerved center and broad white-hyaline margins, as long and as wide as and concealing the perigynia until over-ripe; perigynia concavo-convex, oblong-ovate or obovate, thin but distended over the achene, 4-6 mm. long, 1.75-2.5 mm. wide, membranaceous, slightly spongy at base, straw-colored to brownish-black, rather conspicuously margined, the margins green-winged to base, serrulate to below middle, substipitate, round-tapering at base, several-nerved dorsally, lightly several-nerved ventrally or nearly nerveless, abruptly contracted into a chestnut-brown beak 1 mm. long, serrulate below, terete, strongly white-hyaline-tipped and nearly smooth above, and obliquely cut dorsally, with white-hyaline margins; achenes lenticular, oblong-obovoid, 1.5 mm. long, 1 mm. wide, substipitate (nearly sessile), apiculate, brownish; style slender, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender, elongate.

TYPE LOCALITY (of *C. leporina* var. *americana* Olney, on which *C. phaeocephala* is based): Oregon (Elihu Hall 583).

DISTRIBUTION: High mountain summits, Alberta to Colorado, westward to British Columbia, and southward to California, where confined to the higher peaks of the Sierra Nevada, extending as far south as Mt. Whitney. (Specimens examined from Alberta, Montana, Wyoming, Colorado, Utah, Idaho, Nevada, California, Oregon, Washington, British Columbia (including Vancouver Island).)

ILLUSTRATIONS: Erythea 8: 41. f. 17; Abrams, Ill. Fl. Pacif. St. f. 734; Jepson, Man. Fl. Pl. Calif. f. 175

150. *Carex leporinella* Mackenzie, Bull. Torrey Club 43: 605. 1917.

"*Carex tenuirostris* Olney" L. H. Bailey, Mem. Torrey Club 1: 15, as to plant described. 1889.

Very densely caespitose, forming large stools, the rootstocks very short, black, fibrillose, the culms 1.5-3 dm. high, exceeding the leaves, stiff, biennial, sharply triangular, smooth, brownish at base, the dried-up leaves of the previous year conspicuous, the lower bladeless; leaves with well-developed blades 3-5 to a fertile culm, on the lower fourth and more or less bunched, the blades involute, mostly 5-10 cm. long, 0.75-1.5 mm. wide, sparingly roughened towards apex, green, firm, the sheaths tight, white-hyaline ventrally, short-prolonged beyond base of blade and continuous with ligule; sterile shoots with several similar leaves; inflorescence consisting of 3-8 (usually 6-8) gynaeandrous spikes aggregated into a head or more or less separate, the head erect and rather stiff, 1.5-3 cm. long, less than 1 cm. thick, the spikes narrowly oblong-ovoid, 6-15 mm. long, 3-5 mm. wide, short-clavate at base, short-pointed at apex, the staminate flowers few, the perigynia 8-20, closely appressed, the tips erect-appressed; bracts scale-like, the lowest occasionally short-prolonged; scales oblong-ovate, reddish-brown with lighter midvein and conspicuous white-hyaline margins, acute, slightly longer and wider than perigynia and concealing them; perigynia plano-convex, boat-shaped, linear-oblanceolate, widest above middle of achene, 3.5-4 mm. long, scarcely 1 mm. wide, very narrowly wing-margined, serrulate above middle, membranaceous, finely striate dorsally, at first nerveless ventrally, at maturity few-nerved, yellowish-tinged, contracted and tapering at base, tapering into a beak 1 mm. long, light-reddish-tinged, serrulate below, terete and not serrulate above, obliquely cut dorsally, white-hyaline at apex; achenes lenticular, obovoid-oblong, 2 mm. long, less than 1 mm. wide, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, long, light-reddish-brown.

TYPE LOCALITY: Pyramid Peak, El Dorado County, California (Hall & Chandler 4716).

DISTRIBUTION: Summits of high mountains, Washington to California, where confined to the Sierra Nevada. (Specimens examined from Washington, Oregon, California.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 735.

151. *Carex praticola* Rydb. Mem. N. Y. Bot. Gard. 1: 84. 1900.

Carex adusta var. *minor* Boott, in Hook. Fl. Bor. Am. 2: 215. 1839. (Type from Carlton House, Saskatchewan.)

Carex pratensis Drejer, Nat. Tidssk. 3: 442. 1841. (Type from Greenland). Not *C. pratensis* Hose, 1797.

"*Carex Liddoni* Boott" Dewey, Am. Jour. Sci. 49: 45. pl. Ff, f. 112. 1845.

"*Carex adusta* Boott" W. Boott, in Rothr. Bot. Wheeler's Survey 277. 1878.

Cespitose, in rather small clumps, the rootstocks short-prolonged, black, fibrillose, the culms slender to base, 2-7 dm. high, sharply triangular, roughened immediately beneath the

head, more or less nodding, much exceeding the leaves, brownish-tinged at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades usually 2-4 to a fertile culm, inserted near the base, but not bunched, the blades ascending, flat, light-green, not stiff, usually 5-15 cm. long, 1-3.5 mm. wide, roughened towards the apex and on the margins, the sheaths tight, white-hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; sterile culms with several similar but longer leaves bunched towards apex; spikes 2-7, very well defined, from more or less approximate to forming a moniliform inflorescence, the head flexuous, 1.5-5 cm. long, about 1 cm. thick, from erect to nodding, the spikes gynaeandrous, ovoid-oblong to oblong, usually 6-16 mm. long, 4-6 mm. wide, rounded at apex and from rounded to clavate (especially uppermost) at base, the staminate flowers inconspicuous, the perigynia 6-20, loosely but closely appressed with erect-ascending beaks; bracts scale-like or the lowest cuspidate-prolonged and 5-15 mm. long; scales ovate, dull, reddish-brown with green 1-3-nerved center and conspicuous broad silvery-white-hyaline margins, obtuse or acutish, as wide and as long as and concealing the perigynia; perigynia flattened-plano-convex, ovate-lanceolate, distended over achene, 4.5-6.5 mm. long, 1.5-2 mm. wide, membranaceous, light-green or whitish, wing-margined to base, serrulate to below the middle, lightly many-nerved dorsally, nerveless or nearly so ventrally, short-stipitate, round-tapering at base, tapering at apex into a serrulate, shallowly bidentate beak one third to one half the length of the body, obliquely cut dorsally, the tip slender, terete, smooth, light-reddish-brown and conspicuously white-hyaline at apex; achene lenticular, ovoid, 1.5-2 mm. long, 1.5 mm. wide, yellowish-brown, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, light-reddish-brown.

TYPE LOCALITY (of *C. pratensis* Drejer, on which *C. praticola* is based): Godthaab, Greenland (*J. Vahl*).

DISTRIBUTION: Meadows and open woods, Greenland to Yukon and southern Alaska, and southward to Quebec, Colorado, and northern California. (Specimens examined from Greenland, Labrador, Quebec, Saskatchewan, Michigan, North Dakota, Manitoba (Isle Royale), Alberta, Montana, Wyoming, Colorado, Idaho, California, Oregon, Washington, British Columbia (including Vancouver Island), Yukon.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 858; ed. 2, f. 946; Rob. & Fern. Man. f. 349; Engler, Pflanzenreich 4²⁰: 194, f. 32, L. M.; Proc. Am. Acad. 37: pl. 1, f. 17, 18; Boott, Ill. Carex 119, pl. 383; Fl. Dan. pl. 2368; Abrams, Ill. Fl. Pacif. St. f. 731; Ostenf. Fl. Arct. 53, f. 20.

152. *Carex Piperi* Mackenzie; Piper & Beattie, Fl. NW.

Coast 75. 1915.

— *Carex albolutezens* var. *sparsiflora* Olney; A. Gray, Proc. Am. Acad. 8: 407, name only. 1872. Not *C. albolutezens* var. *sparsiflora* Olney, 1871.

— *Carex pratensis* var. *furva* L. H. Bailey; Macoun, Cat. Can. Pl. 5: 377. 1890. (Type from Vancouver Island.)

— *Carex praticola* var. *furva* A. Heller, Cat. N. Am. Pl. ed. 2. 3. 1900. (Based on *C. pratensis* var. *furva* L. H. Bailey.)

— *Carex furva* Piper, Contr. U. S. Nat. Herb. 11: 166. 1906. (Based on *C. pratensis* var. *furva* L. H. Bailey.) Not *C. furva* Webb, 1838.

Carex pratensis f. *furva* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 198. 1909. (Based on *C. pratensis* var. *furva* L. H. Bailey.)

Cespitose, in rather small clumps, the rootstocks short-prolonged, black, fibrillose, the culms slender to base, 3-8 dm. high, sharply triangular, much exceeding leaves, erect, usually slightly roughened beneath head, brownish-tinged at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 2-5 to a fertile culm, on lower third or fourth, but not bunched, the blades flat, light-green, firm, usually 1-2 dm. long, 2-3.5 mm. wide, roughened towards apex, the sheaths tight, white-hyaline ventrally, thin and short-prolonged at mouth beyond base of blade and continuous with ligule; sterile culms with several similar but longer leaves bunched towards apex; inflorescence of 3-9 gynaeandrous spikes, aggregated or slightly separate, forming an erect, slightly flexuous or moniliform inflorescence 2-4.5 cm. long and 1-2 cm. thick, the spikes ovoid-oblong, 10-18 mm. long, 5-6 mm. wide, short-tapering at base, slightly pointed at apex, the staminate flowers inconspicuous, the numerous perigynia loosely erect, appressed; bracts scale-like or the lowest occasionally short-prolonged; scales ovate, shining, dark-chestnut-brown with lighter 1-3-nerved center and conspicuous silvery-white-hyaline margins, acutish, about as long and

as wide as perigynia and concealing them; perigynia flattened-plano-convex, lanceolate-ovate, widest near top of achene, distended over achene, 4.5-6.5 mm long, 1.5-2 mm. wide, membranaceous, light-green or at maturity yellowish-brown, wing-margined to base, serrulate to below the middle, strongly many-nerved dorsally, several-nerved at base ventrally, substipitate, tapering at base, tapering into a beak 1 mm. long, serrulate and chestnut-brown-tinged, very shallowly bidentate, obliquely cut dorsally, the tip slender, terete, smooth, conspicuously hyaline; achenes lenticular, short-oblong, 1.75 mm. long, 1.25 mm. wide, apiculate, substipitate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, dark-reddish-brown.

TYPE LOCALITY (of *C. pratensis* var. *furva* L. H. Bailey, on which *C. Piperi* is based): "Not uncommon in damp meadows at Cedar Hill, Goldstream, and throughout southern Vancouver Island, May 27th and 31st, 1887" (*John Macoun*).

DISTRIBUTION: Damp meadows, Oregon to Vancouver and western British Columbia. (Specimens examined from British Columbia (including Vancouver Island), Washington, Oregon.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 732.

153. *Carex platylepis* Mackenzie, sp. nov.

-*Carex Piperi* Mackenzie, in Rydb. Fl. Rocky Mts. 127. 1917.

Cespitose, the rootstocks very short-prolonged, the culms 4-7 dm. high, slender, weak, not at all strict, 3 mm. thick at base, triangular, roughened immediately beneath head, much exceeding the leaves, brownish-tinged at base, the culms annual or biennial, the first-year blades not usually conspicuous; sterile shoots elongate, conspicuous; leaves with well-developed blades 3-5 to a fertile culm, on lower third, not at all clustered, the blades erect, deep-green, thin but not flaccid, prominently wrinkled and shallowly pitted superficially, 2.5-3.5 mm. wide, mostly 1-2.5 dm. long, roughened towards apex, the upper long-attenuate; sheaths strongly white-hyaline ventrally, the ligule wider than long; head ovoid or oblong, 1.5-3.5 cm. long, 12-18 mm. thick, the spikes 5-8, gynaeandrous, capitate or closely approximate, or the lowest slightly separate, ovoid, 7-12 mm. long, 5-7 mm. wide, rounded or short-tapering at base, rounded or slightly pointed at apex, the perigynia 15-40, appressed-ascending in several to many rows, the beaks inconspicuous; bracts scale-like, the lowest occasionally somewhat prolonged, much shorter than culm; scales ovate, obtuse or acute, very membranaceous and closely appressed, nearly as long and nearly as wide above as the perigynia, and nearly concealing them, dull-reddish-brown, with green 1-3-nerved center and white-hyaline margins; perigynia plano-convex, oblong-lanceolate, 4-5 mm. long, 1.5 mm. wide, thin, membranaceous, obscurely finely nerved dorsally and towards base ventrally, dull-greenish when young, yellowish-brown at maturity, round-tapering at base, nearly sessile, winged nearly to base, the upper one third to one half of body and beak serrulate, tapering into a beak 1-1.5 mm. long, the tip terete, nearly smooth, strongly white-hyaline at apex, strongly obliquely cut dorsally, becoming bidentulate; achenes lenticular, oblong-obovoid, 1.75 mm. long, scarcely 1 mm. wide, loosely enveloped in lower two thirds of perigynium, brownish, shining, substipitate, apiculate, jointed with the straight, slender style; stigmas two, slender, brownish, rather long.

Type collected at Ten Sleep Lakes, Big Horn Mountains, Wyoming (*T. A. Williams 2951*, August 19, 1897, in herb. K. K. Mackenzie).

DISTRIBUTION: Dry pine and spruce woods, mountains of Wyoming and Idaho. (Specimens examined from Wyoming, Montana, Idaho, Alberta, eastern British Columbia.)

154. *Carex petasata* Dewey, Am. Jour. Sci. 29: 246.

pl. W, f. 72. 1836.

Carex Liddoni Boott, in Hook. Fl. Bor. Am. 2: 214. 1839. (Type from Columbia River.)

Carex rufo-variegata Bück. Cyp. Nov. 2: 33. 1890. (Type from Lytton, British Columbia.)

Cespitose, the rootstocks short-prolonged, black, fibrillose, the culms 3-8 dm. high, exceeding the leaves, slender to base but strict, obtusely triangular below, sharply triangular above, smooth or nearly so, brownish at base and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 2-5 to a fertile culm, on lower third or fourth, but not bunched, the blades light-green, firm, flat, usually

7-20 cm. long, 2-3 mm. wide, roughened towards apex, the sheaths tight, white-hyaline ventrally, thin and short-prolonged beyond base of blade and continuous with ligule. blades of sterile shoots similar; inflorescence consisting of 3-6 gynaeceandrous spikes aggregated into an erect head 2-4 cm. long, 1-1.5 cm. thick, the spikes ovoid-oblong, 8-16 mm. long (or the terminal longer), 6-9 mm. wide, rounded at apex, the lateral with a few inconspicuous staminate flowers, and short-tapering at base, the terminal often strongly clavate, the rather numerous perigynia somewhat loose, closely appressed, with erect beaks; bracts scale-like or the lowest occasionally short-prolonged; scales ovate, light-reddish-brown, with lighter 1-3-nerved center and broad silvery-white-hyaline margins, acute, about as long and as wide as the perigynia above and largely concealing them; perigynia plano-convex, oblong-lanceolate, widest near top of achene, 6-8 mm. long, 2.25 mm. wide, strongly dilated over achene, submembranaceous, brownish-green or at maturity yellowish-brown, rather narrowly wing-margined to base, the margins slightly raised and serrulate to below the middle, strongly but slenderly many-striate on both faces, substipitate, tapering and spongy at base, tapering into a beak scarcely 2 mm. long, obliquely cut dorsally, reddish-brown-tinged, serrulate below, and terete, hyaline-tipped and smooth above, shallowly bidentate; achenes lenticular, oblong, 2.5-3 mm. long, 1.5 mm. wide, substipitate, apiculate, brownish, shining; style straight, slender, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY: "Found on the Rocky Mountains."

DISTRIBUTION: Meadows and open woods, Saskatchewan to Colorado, and westward to Nevada, eastern Oregon, Washington, and British Columbia. (Specimens examined from Colorado, Wyoming, Montana, Saskatchewan, Alberta, Idaho, Utah, Nevada, Oregon, Washington, British Columbia.)

ILLUSTRATIONS: Am. Jour. Sci. 29: pl. W, f. 72 (*C. petasata*); 49: pl. FF, f. 112 (*C. Liddonii*); Hook. Fl. Bor. Am. pl. 215; Boott, Ill. Carex 20. pl. 53; Abrams, Ill. Fl. Pacif. St. f. 728.

NOTE: Concerning the proper use of the name *Carex petasata* Dewey, see L. H. Bailey (Mem. Torrey Club 1: 52) and Mackenzie (Bull. Torrey Club 35: 262).

155. *Carex Davyi* Mackenzie, Bull. Torrey Club 43: 606. 1917.

"*Carex siccata* Dewey" W. Boott, in S. Wats. Bot. Calif. 2: 230. 1880.

Densely caespitose, the rootstocks very short, blackish, fibrillose, the culms 2.5-3.5 dm. high, strongly biennial, much exceeding leaves, slender but erect, sharply triangular above, smooth on angles, brownish at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3-4 to a fertile culm, on lower fourth, but not bunched, the blades flat or canaliculate, mostly 8-12 cm. long, 1.5-2.5 mm. wide, the sheaths strongly hyaline ventrally and fragile, short-prolonged at mouth beyond base of blade and continuous with ligule; spikes mostly 3, approximate in a head about 2.5 cm. long, the spikes oblong-obovoid, 12-18 mm. long, 6-8 mm. wide, rounded at apex, clavate and staminate at base, the perigynia 10-15, in several to many rows, closely appressed, the beaks erect; bracts scale-like or the lowest short-prolonged; scales oblong-ovate, very obtuse, chestnut-brown or reddish-brown with lighter center and hyaline margins, little more than half the length of and narrower than perigynia; perigynia plano-convex, lanceolate, 7.5 mm. long, 2 mm. wide, thin, green or in age straw-colored, strongly many-striate dorsally, less so ventrally, submembranaceous, short-stipitate, contracted and spongy at base, narrowly margined from base, serrulate from middle of achene, tapering into a sharply bidentate beak not differentiated from body, the apex and dorsal suture reddish-tinged, obliquely cut dorsally, the tip terete, smooth or nearly so; achenes lenticular, oblong-obovoid, 2.5 mm. long, 1.25 mm. wide, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, light-reddish-brown.

TYPE LOCALITY: Truckee River, Placer County, California (*Davy 3266*).

DISTRIBUTION: Meadows in the central part of the Sierra Nevada of California. (Specimens examined from Placer, El Dorado, Tulare, and Calaveras counties.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 729.

156. *Carex specifica* L. H. Bailey, Mem. Torrey Club 1: 21. 1889.

— *Carex scoparia* var. *fulva* W. Boott, in S. Wats. Bot. Calif. 2: 237. 1880. (Excluding Hillebrand and Oregon specimens, type from Alpine County, California.)

— "*Carex arida* Schw. & Torr." W. Boott, in S. Wats. Bot. Calif. 2: 237. 1880.

Carex lancifructus Mackenzie, Bull. Torrey Club 43: 607. 1917. (Type from Tulare County, California.)

Cespitose, the rootstocks very short, blackish, fibrillose, the culms 2.5–8 dm. high, stiff, erect, obtusely triangular, smooth or nearly so, much exceeding leaves, aphyllopodic, brownish at base, the leaves of the previous year reduced to a few bladeless sheaths; leaves with well-developed blades 2–4 to a fertile culm, bunched above base, the blades flat or canaliculate, thick, mostly 7–12 cm. long, 2–5 mm. wide, the sheaths tight, narrowly hyaline ventrally, except at the deeply concave mouth, little prolonged above blade, not readily rupturing, continuous with ligule; head globose to oblong, 1.5–4 cm. long, 1.5–2 cm. thick, the spikes 6–12, densely aggregated, gynaeceandrous, oblong-ovoid, 6–9 mm. long, 4 mm. wide, tapering at both ends, the staminate flowers inconspicuous, the 8–15 perigynia in several rows, appressed, the beaks not spreading; bracts scale-like or the lowest setaceous-prolonged; scales lanceolate-ovate, acute, greenish-hyaline or tinged with light-reddish-brown, with lighter 3-nerved midvein and narrowly hyaline margins, about width of but shorter than perigynia, equaling the bodies; perigynia plano-convex, lanceolate, 6 mm. long, 1.5 mm. wide, thin, straw-colored, finely several- to many-nerved on both faces, submembranaceous, short-stipitate, spongy and contracted at base, narrowly margined (serrulate above) to base, tapering into a beak one third length of body, slender and smooth at tip, serrulate below, deeply bidentate, light-reddish-tipped, obliquely cut dorsally; achenes lenticular, short-oblong, nearly 2 mm. long, 1 mm. wide, stipitate, apiculate; style straight, slender, jointed with achene, at length deciduous; stigmas two, slender, long, yellowish-brown.

TYPE LOCALITY (of *C. scoparia* var. *fulva* W. Boott, on which *C. specifica* is based): Silver Valley, Alpine County, California (Brewer 1969).

DISTRIBUTION: Sierra Nevada mountains of California, from El Dorado to Tulare counties. (Specimens examined showing distribution as given.)

ILLUSTRATION: Abrams, Ill. Fl. Pacif. St. f. 730.

157. *Carex Wootoni* Mackenzie, Smithson. Misc. Coll. 657: 1. 1915.

Cespitose, the rootstocks short-prolonged, dark, fibrillose, the clumps small or medium-sized, the culms 2–6 dm. high, usually exceeding the leaves, sharply triangular, slender but strict, slightly roughened on the angles above, brownish at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3–8 to a fertile culm, on the lower third, the blades flat, erect or ascending, yellowish-green, thickish, 1–2 dm. long, 1.5–3.5 mm. wide, roughened towards the apex, the sheaths tight, white-hyaline and thin ventrally, short-prolonged at mouth beyond base of blade and continuous with ligule; blades of sterile-culm leaves longer and more attenuate; spikes 3–8, gynaeceandrous, distinct, aggregated into a head 1.5–4 cm. long, 1–2 cm. thick, the spikes ovoid-oblong, 8–16 mm. long, 6–8 mm. wide, short-tapering at apex, tapering at base, containing several to rather many staminate flowers at base and about 20–30 appressed-erect perigynia above; lowest bract 3 cm. long or less, 2–4 mm. wide at base, usually setaceous-prolonged, with hyaline margins at base and often brownish-tinged; upper bracts much shorter or wanting; scales ovate, deep-chestnut-brown with sharply defined green midrib and shining-white-hyaline margins, usually acute but varying from short-cuspidate to obtusish, narrower and noticeably shorter than the mature perigynia; perigynia flat, but noticeably dilated by the thick achene, narrowly ovate-lanceolate or lanceolate, 6.5–7.5 mm. long, 2.5–3 mm. wide, narrowly winged to the base, the margins often incurved, very obscurely few-nerved dorsally, nerveless ventrally, submembranaceous, light-green or straw-colored, round-tapering, nearly sessile, slightly spongy at base, tapering into a beak about one third the length of the body, bidentate, chestnut-tinged, obliquely cleft, and sutured dorsally, serrulate and winged nearly to tip, the orifice white-hyaline-margined; achenes lenticular, oblong-quadrate, 2.5 mm. long, 1.5 mm. wide, rounded to a substipitate base, rounded and apiculate at apex; style straight, jointed with achene, at length deciduous; stigmas two, reddish-brown, very slender, long.

TYPE LOCALITY: San Francisco Mountains, New Mexico (Wooton).

DISTRIBUTION: Mountains of New Mexico and Arizona. (Specimens examined from Arizona and New Mexico, from the Sacramento, White, Sandia and San Francisco mountains.)

158. *Carex oronensis* Fernald, Proc. Am. Acad. 37: 471.*pl. 1, f. 15, 16.* 1902.

Densely caespitose, in loose stools, the rootstocks short, blackish, fibrillose, the culms few, 5-10 dm. high, sharply triangular, slender to base, not strict, exceeding the leaves, roughened on the angles beneath the head, brownish at base, clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades usually 3 or 4 to a fertile culm, inserted on the lower third, but not bunched, the blades flat or slightly canaliculate, light-green, usually 1-2 dm. long, 2-4 mm. wide, much shorter than the culms, strongly roughened towards the apex, the sheaths tight, strongly white-hyaline ventrally, prolonged at mouth beyond base of blade and continuous with ligule; sterile shoots elongate, with several leaves clustered at top, the blades erect; spikes 3-9 (usually 5-8), rather loosely bunched into a linear-oblong or oblong often slightly flexuous inflorescence 2-3 cm. long, 5-12 mm. thick, the spikes gynaeandrous, obovoid-oblong, 5-10 mm. long, 4-6 mm. wide, bluntly tapering at apex, tapering to a subclavate base, the scales of the few basal staminate flowers conspicuous, the numerous perigynia erect-ascending with appressed beaks; bracts scale-like or one or two of the lower developing short-setaceous points; scales glossy, chestnut-brown (giving a brown appearance to the spikes), with brownish-yellow midrib and narrow but conspicuous white-hyaline margins, obtusish or acute, about the width of the perigynia at maturity, little exceeded by the tips of the perigynia; perigynia thin and scale-like save where distended over achene, lanceolate-subulate, 4-4.5 mm. long, 0.9-1.5 mm. wide, very membranaceous, greenish-white or straw-colored, the upper margins green, very narrowly winged to middle of body, the margin at base nearly obsolete, serrulate above middle, lightly several-nerved on both faces, substipitate, round-tapering at base, tapering into a flat beak about one third the length of the whole, serrulate, obliquely cut dorsally, bidentate, dark-reddish-brown-tipped, the margins of the orifice reddish-brown; achenes lenticular, oblong, 1.5 mm. long, 0.6 mm. wide, substipitate, apiculate; style straight, slender, jointed with achene, at length deciduous; stigmas two, dark-reddish-brown, slender.

TYPE LOCALITY: Orono, Maine (*Scribner; Fernald*).

DISTRIBUTION: Dry open places in calcareous districts, southern Maine. (Specimens examined from southern Maine.)

ILLUSTRATIONS: Proc. Am. Acad. 37: *pl. 1, f. 15, 16*; Rob. & Fern. Man. f. 348; Britt. & Brown, Ill. Fl. ed. 2. f. 925.159. *Carex Crawfordii* Fernald, Proc. Am. Acad. 37: 469.*pl. 1, f. 12, 13.* 1902.—*Carex scoparia* var. *minor* Boott, Ill. Carex 116. *pl. 369.* 1862. (Type from New Hampshire.)
Carex scoparia var. *minor* f. *elatiflor* Peck, Ann. Rep. N. Y. State Mus. 48: 141. 1897. (Type from Adirondack Mountains, New York.)*Carex Crawfordii* var. *vigens* Fernald, Proc. Am. Acad. 37: 470. *pl. 1, f. 14.* 1902. (Type from New Brunswick.)*Carex Crawfordii* f. *vigens* "Fernald" Kükenth. in Engler, Pflanzenreich 4²⁰: 203. 1909. (Based on *C. Crawfordii* var. *vigens* Fernald.)

Very densely caespitose, in close stools, the rootstocks very short, dark-colored, fibrillose, the culms 1-6 dm. high, numerous, sharply triangular, slender to base but stiff, exceeding or exceeded by the leaves, roughened on the angles immediately beneath the head, brownish-tinged at base, and clothed with the dried-up leaves of the previous year, the lowest bladeless; leaves with well-developed blades usually 3 or 4 to a fertile culm, inserted on the lower third, somewhat bunched, the blades flat or canaliculate, usually 7.5-15 cm. long, 1-3 mm. wide, yellowish-green, firm, roughened towards the apex, the sheaths white-hyaline ventrally, prolonged at mouth beyond base of blade and continuous with ligule; sterile shoots elongate, the few leaves clustered at top, with erect blades; spikes usually 3-12, rather closely aggregated into a linear-oblong or oblong, often slightly flexuous inflorescence usually 12-25 mm. long, 4-8 mm. thick, the spikes gynaeandrous, oblong to subglobose, 3-9 mm. long, 3-5 mm. wide, bluntly tapering at apex, tapering to the base, the basal flowers staminate, inconspicuous, the numerous perigynia erect-ascending, with erect, conspicuous beaks; lower one or two bracts usually present, setaceous, shorter than the head, the upper not developed; scales

ovate, dull, light-brown, with sharply defined 3-nerved green center, acute or short-acuminate, about the width of the perigynia, but conspicuously exceeded by their tips; perigynia thin save where distended over achene, plump at base, lanceolate-subulate, 4 mm. long, 0.8–1.2 mm. wide, brownish, very narrowly winged nearly to the base, the margin towards base nearly obsolete, serrulate to the middle, membranaceous, lightly several-nerved on both faces, sub-stipitate, round-tapering at base, tapering at apex into a beak about one third the length of the whole, flat, serrulate, obliquely cut dorsally, reddish-brown-tipped, at length bidentate; achenes lenticular, oblong, 1 mm. long, 0.5 mm. wide, brownish, short-stipitate, apiculate; style straight, slender, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender, short.

TYPE LOCALITY: Base of the White Mountains, New Hampshire (Tuckerman).

DISTRIBUTION: Open places in moist or dry soil, Newfoundland to British Columbia, and southward to Connecticut, northwestern New Jersey, Michigan, and Washington. (Specimens examined from Newfoundland, Quebec, Prince Edward Island, Nova Scotia, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, northwestern New Jersey, Ontario, Michigan, Manitoba, Saskatchewan, Idaho, Washington, British Columbia, Wisconsin, Alberta, Minnesota.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 926; Rob. & Fern. Man. f. 346, 347; Proc. Am. Acad. 37: pl. 1, f. 12–14; Engler, Pflanzenreich 4²⁰: 200. f. 33, K, L; Boott, Ill. Carex 116. pl. 369; Abrams, Ill. Fl. Pacif. St. f. 721.

160. *Carex scoparia* Schkuhr; Willd. Sp. Pl. 4: 230. 1805.

"*Carex leporina* L." Michx. Fl. Bor. Am. 2: 170. 1803.

Loncoberis scoparia Raf. Good Book 27. 1840. (Based on *Carex scoparia* Schkuhr.)

Carex scoparia var. *vera* Tuckerm. Enum. Caric. 17. 1843. (No types given.)

Carex scoparia var. *moniliformis* Tuckerm. Enum. Caric. 17. 1843. (No types given.)

Carex scoparia var. *aggregata* Dewey, in Wood, Class-Book ed. 2. 580. 1847. (Type from the eastern United States.)

Carex lagopodioides var. *scoparia* Böck. Linnaea 39: 114. 1875. (Based on *C. scoparia* Schkuhr.)

Carex tribuloides var. *reducta* L. H. Bailey, Proc. Am. Acad. 22: 148, in small part; not as to type. 1886.

Carex tribuloides var. *moniliformis* Britton; Britt. & Brown, Ill. Fl. 1: 356. 1896. (Technically based on *C. scoparia* var. *moniliformis* Tuckerm.)

Carex scoparia var. *condensa* Fernald, Proc. Am. Acad. 37: 468. pl. 1, f. 5. 1902. (Type from New Hampshire.)

Carex scoparia f. *moniliformis* "Tuckerm." Kükenth. in Engler, Pflanzenreich 4²⁰: 203. 1909.

(Based on *C. scoparia* var. *moniliformis* Tuckerm.)

Carex scoparia f. *tenerrima* Kükenth. in Engler, Pflanzenreich 4²⁰: 202. 1909. (Type from Vermont.)

Carex scoparia f. *condensa* "Fernald" Kükenth. in Engler, Pflanzenreich 4²⁰: 203. 1909. (Based on *C. scoparia* var. *condensa* Fernald.)

Carex scoparia var. *tesellata* Fernald & Wieg. Rhodora 12: 135. 1910. (Type from Washington County, Maine.)

Carex scoparia var. *subturbinata* Fernald & Wieg. Rhodora 14: 116. 1912. (Type from Rushy Pond, Newfoundland.)

Carex scoparia f. *peracuta* Fernald, Rhodora 23: 234. 1922. (Type from Yarmouth County, Maine.)

Carex scoparia var. *intermedia* Olney; Dudley, Bull. Cornell Univ. 2: 112. 1886. (Type from Cayuga Lake Basin.)

Densely caespitose, the rootstocks short, dark-brown, fibrillose, the culms 1.5–10 dm. high,

usually strongly exceeding the leaves, slender to base, not strict, sharply triangular, strongly

roughened on the angles beneath the head, brownish at base and clothed with the dried-up

leaves of the previous year, the lower sheaths bladeless; leaves with well-developed blades

2–6 (usually 3–5) to a fertile culm, on the lower half, but usually not clustered, the blades

0.5–5 dm. long, 1.5–3 mm. wide, flat or canaliculate, yellowish-green, very rough towards the

apex, the sheaths tight, white-hyaline ventrally, short-prolonged beyond base of blade and

continuous with ligule; sterile shoots elongate, with few leaves clustered at apex, the blades

erect; inflorescence 1–5 cm. long, 5–15 mm. thick, consisting of 3–12 very clearly defined spikes

aggregated into an oblong or linear-oblong or globose head, or the inflorescence moniliform,

flexuous, the spikes gynaeandrous, short-oblong or ovoid-oblong or subglobose, ascending

or erect, straw-colored, 6–16 mm. long, 3–9 mm. wide, tapering to a blunt point or rounded

at apex, round or tapering at base, the basal staminate flowers very inconspicuous, the

numerous perigynia appressed or erect-ascending, with appressed-erect beaks; one or two of

the lower spikes with small inconspicuous setaceous bracts shorter than the head; upper

bracts not developed; scales ovate or oblong-ovate, dull, light-brownish with narrow white-

hyaline margins and 3-nerved green center, acute, nearly the width of perigynia below but noticeably exceeded by their tips; perigynia flat, barely distended over the achene, 4-6.5 mm. long, 1.2-2 mm. wide, lanceolate to narrowly ovate-lanceolate, membranaceous, greenish-white with green margin above, or straw-colored at maturity, noticeably (but not broadly) wing-margined to the base, serrulate to below middle, strongly to lightly many-nerved dorsally and several-nerved ventrally, round-tapering at base, tapering into a beak about one third the length of the whole, flat, serrulate, obliquely cut dorsally, reddish-brown-tipped, shallowly bidentate, the margins of the orifice narrowly reddish-brown; achenes lenticular, oval-oblong, 1-1.5 mm. long, 0.5-0.75 mm. wide, short-stipitate, apiculate, brownish; style slender, straight, jointed with achene, at length deciduous; stigmas two, short, reddish-brown.

TYPE LOCALITY: "Habitat in America boreali."

DISTRIBUTION: Open swampy or wet places, Newfoundland to British Columbia, and southward to South Carolina, Arkansas, New Mexico, and Oregon. A very widely distributed species, often abundant in swampy meadows. (Specimens examined from Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, West Virginia, Virginia, North Carolina, South Carolina, Tennessee, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Arkansas, Nebraska, South Dakota, Colorado, Saskatchewan, New Mexico, Idaho, Oregon, Washington, British Columbia (Vancouver Island, introduced).)

ILLUSTRATIONS: Schkuhr, Riedgr. *pl. Xxx, f. 175*; Britt. & Brown, *Ill. Fl. f. 863*; ed. 2. *f. 927*; Rob. & Fern. *Man. f. 341, 342*; Proc. Am. Acad. **37**: *pl. 1, f. 3-5*; Rep. N. J. Mus. **1910**: *pl. 26, f. 1*; Boott, *Ill. Carex 116. pl. 368*; Abrams, *Ill. Fl. Pacif. St. f. 722*; Francis, *Grasses 311* (as *C. mirabilis*).

Carex scoparia var. *tessellata* Fernald & Wieg. *Rhodora 12*: 134. 1910. Perigynia ovate, 4 mm. long, 2 mm. wide; scales chestnut-brown-tinged. TYPE LOCALITY: Marshfield, Washington County, Maine (Fernald). DISTRIBUTION: Low grounds, Washington County, Maine to eastern Long Island, New York. (Specimens examined from Maine and eastern Long Island.)

161. *Carex Bebbii* Olney (Caric. Bor.-Am. 3, name only. 1871;

L. H. Bailey, Mem. Torrey Club **1**: 55, as synonym. 1889);

Fernald, Proc. Am. Acad. **37**: 478. 1902.

Carex tribuloides var. *Bebbii* L. H. Bailey, Mem. Torrey Club **1**: 55. 1889. (Based on *C. Bebbii* Olney.)

Densely caespitose, the rootstocks very short, black, fibrillose, the culms 2-8 dm. high, slender to base, usually exceeding the leaves, sharply triangular, roughened on the angles beneath the head, brownish-tinged at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3 or 4 to a fertile culm, on the lower third, but not at all bunched, the blades light-green or yellowish-green, flat, erect or ascending, usually 1-3 dm. long, 2-4.5 mm. wide, roughened towards the apex, the sheaths tight, white-hyaline ventrally, thin and concave at mouth, short-prolonged beyond base of blade and continuous with ligule; sterile shoots with several similar leaves; inflorescence consisting of 3-12 spikes closely aggregated into an oblong or linear-oblong head 1.5-2.5 cm. long, 8-12 mm. thick, the spikes gynaeandrous, subglobose to broadly ovoid, strongly brownish-tinged, at least at maturity, 4-9 mm. long, 3-6 mm. wide, blunt at apex, truncate or rounded at base, the basal staminate flowers very inconspicuous, the numerous perigynia ascending, with conspicuous ascending or erect-ascending beaks; one or two of the lower spikes with small inconspicuous setaceous bracts shorter than the head; upper bracts scale-like; scales oblong-lanceolate, brown with 1-3-nerved lighter center and at times very narrow hyaline margins, acute or short-acuminate, below nearly the width of but above much narrower than perigynia and exceeded by their beaks; perigynia plano-convex, ovate, 3-3.5 mm. long, 1.5-2 mm. wide, distended over the achene, membranaceous but firm, dull-green or at maturity brownish, narrowly wing-margined to the base, serrulate to below the middle, finely many-nerved dorsally, nerveless or obscurely nerved at base ventrally, substipitate, rounded at base, tapering into a beak one third or one fourth the length of the whole, flat, serrulate, obliquely cut dorsally, bidentulate, the tip and margins of orifice reddish-brown-tinged, achenes lenticular, broadly oval, about 1 mm. long, 0.6 mm. wide, apiculate, short-stipitate, style straight, slender, jointed with achene, at length deciduous; stigmas two, slender, dark-reddish-brown, short.

TYPE LOCALITY: Specimens from Illinois (*Bebb*) distributed by Olney (Exsicc. 2: *II*) are taken as the types.

DISTRIBUTION: Swampy meadows, in calcareous or neutral soils, Newfoundland to British Columbia, and southward to northern New Jersey, Illinois, Colorado, and Washington. (Specimens examined from Newfoundland, Quebec, Prince Edward Island, Nova Scotia, Maine, New Brunswick, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Ontario, Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Nebraska, South Dakota, North Dakota, Manitoba, Saskatchewan, Alberta, Montana, Colorado, Idaho, Washington, British Columbia (including Vancouver Island).)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 932; Rob. & Fern. Man. f. 365; Proc. Am. Acad. 37: pl. 3, f. 52, 53; Bull. Lab. Nat. Hist. Univ. Iowa 4: pl. 8; Abrams, Ill. Fl. Pacif. St. f. 723.

NOTE: Bailey's few words in Bot. Gaz. 10: 379 (1885) can scarcely be regarded as a publication of the name *Carex Bebbii* Olney.

162. *Carex tenera* Dewey, Am. Jour. Sci. 8: 97.

1824; 9: pl. C, f. 9. 1825.

Carex straminea var. *intermedia* Gay, Ann. Sci. Nat. II. 10: 364. 1838. (Regarded as technically based on *C. tenera* Dewey.)

Diemisia tenera Raf. Good Book 27. 1840. (Based on *Carex tenera* Dewey.)

Carex festucacea var. *tenera* Carey, in A. Gray, Man. 545. 1848. (Based on *C. tenera* Dewey.)

Carex straminea var. *moniliformis* Tuckerm. Enum. Caric. 17. 1843. (Mostly based on *C. tenera* Dewey; no type otherwise given.)

Carex straminea var. *tenera* Boott, Ill. Carex 120. pl. 384. 1862. (Based on *C. tenera* Dewey.)

Carex straminea var. (no. 2) Böck. Linnaea 39: 117. 1875. (Based on *C. tenera* Dewey.)

Carex moniliformis Britton, Cat. Pl. N. J. 278. 1890. (Technically based on *C. straminea* var. *moniliformis* Tuckerm.)

Carex straminea var. *echinodes* Fernald, Proc. Am. Acad. 37: 474. pl. 2, f. 30. 1902.

Carex straminea f. *echinodes* "Fernald" Kükenth. in Engler, Pflanzenreich 4⁹: 206. 1909. (Based on *C. straminea* var. *echinodes* Fernald.)

Carex festucacea var. *echinodes* Farwell, Papers Mich. Acad. 2: 17. 1923. (Based on *C. straminea* var. *echinodes* Fernald.)

Carex tenera var. *echinodes* Wiegand, Rhodora 26: 2. 1924. (Based on *C. straminea* var. *echinodes* Fernald.)

Densely caespitose, from very short, black, fibrillose rootstocks, the culms slender, erect, often nodding, 3–7.5 dm. high, sharply triangular and roughened on angles above, much exceeding leaves, dark-brown or blackish at base, the lower nodes not exposed, conspicuously clothed at base with the dried-up leaves of the previous year, the lowest bladeless; leaves with well-developed blades 3–5 to a fertile culm, on lower third, but not bunched, the blades flat, usually 7.5–30 cm. long, 1.5–2.5 mm. wide, the sheaths tight, obscurely septate-nodulose, conspicuously hyaline ventrally and short-prolonged beyond base of blade and continuous with ligule; inflorescence of 4–8 spikes, more or less strongly moniliform, 2.5–5 cm. long, the spikes ovoid, gynaeandrous, rounded at apex, 6–10 mm. long, 4.5–6 mm. wide, with 10–20 appressed or ascending perigynia above, the tips ascending or spreading, rounded and with few staminate flowers at base (except in terminal spike); lowest bract short, setaceous, the upper scale-like; scales ovate, acute, greenish-hyaline or tawny-tinged, with 3-nerved green center, narrower and shorter than perigynia; perigynia plano-convex, green or in age straw-colored, ovate, 3.5–4.5 mm. long, 1.5–1.8 mm. wide, the body suborbicular, firm, thick, membranaceous, winged to base, serrulate to middle, strongly about 5–7-nerved dorsally over achene with an additional nerve in both margins and similarly but less strongly nerved ventrally, sessile, rounded at base, contracted into a beak half the length of the body, tawny-tipped, obliquely cut dorsally, at length bidentulate, flattened to apex and strongly serrulate; achenes broadly ovoid, lenticular, 1.25 mm. long, 1 mm. wide, light-brown, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, rather short, light-reddish-brown.

TYPE LOCALITY: "Grows in moist meadows" (in western Massachusetts, where the author resided). In Dewey's herbarium, a specimen from Saddle Mountain, near Williamstown, is marked "original."

DISTRIBUTION: In dry soil, open woodlands and thickets, Quebec to Alberta, and southward to District of Columbia, Illinois, and North Carolina (in the mountains). (Specimens examined from Quebec, New Brunswick, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, North Carolina, Ontario, Ohio, Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, Missouri, South Dakota, North Dakota, Manitoba, Saskatchewan, Alberta, Montana.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 868; ed. 2. f. 933; Proc. Am. Acad. 37: pl. 2, f. 28–30; Boott, Ill. Carex 120. pl. 384; Am. Jour. Sci. 9: pl. C, f. 9 (very poor); Abrams, Ill. Fl. Pacif. St. f. 724; Rob. & Fern. Man. f. 354, 355.

NOTE: The name *Carex tenera* Dewey was misapplied by Olney and other authors to *Carex hormathodes* Fernald, and many references to *C. tenera* refer to *C. hormathodes*.

163. *Carex tinctoria* Fernald, *Rhodora* 15: 186. 1913.

- *Carex mirabilis* var. *tinctoria* Fernald, Proc. Am. Acad., 37: 473. 1902. (Type from Fort Kent, Maine.)
 — *Carex straminea* var. *mirabilis* f. *tinctoria* "Fernald" Kükenth. in Engler, Pflanzenreich 4²⁰: 207. 1909. (Based on *C. mirabilis* var. *tinctoria* Fernald.)

Cespitose, from short-prolonged, tough, black, fibrillose rootstocks, the culms slender, erect, 4-8 dm. high, sharply triangular, roughened beneath head, much exceeding leaves, brownish-black at base and clothed with the dried-up leaves of the previous year, the lowest bladeless; leaves with well-developed blades 3 or 4 to a fertile culm, on lower fourth but not bunched, the blades flat, firm, light-green, usually 1-3 dm. long, 2-4 mm. wide, roughened towards the attenuate apex, the sheaths not loose, sparingly septate-nodulose dorsally, conspicuously hyaline and cross-rugulose ventrally, short-prolonged beyond base of blade and continuous with ligule; head oblong or ovoid, 2-4 cm. long, 1-1.5 cm. thick, composed of 5-10 closely aggregated but distinct spikes, the spikes ascending, ovoid, rounded or somewhat tapering at base, obtuse at apex, gynaeceandrous, 6-14 mm. long, 4.5-7 mm. wide, the 12-30 appressed-ascending perigynia in several to many rows; bracts scale-like or the lowest occasionally slightly prolonged; scales ovate, acute, light-reddish-brown with 3-nerved green center and hyaline margins, somewhat narrower and shorter than the perigynia; perigynia plano-convex, flat but thickish, firm, membranaceous, ovate, 3.5-4 mm. long, 1.75-2 mm. wide, green or straw-colored, the tips reddish-brown, strongly many-nerved dorsally and several-nerved ventrally, rounded at base, winged to base, serrulate to middle, tapering into a broad, flat, winged beak shorter than the body, serrulate nearly to tips, obliquely cut dorsally, minutely bidentate; achenes lenticular, quadrate, suborbicular, 1.5 mm. long, nearly as wide, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY (of *C. mirabilis* var. *tinctoria* Fernald, on which *C. tinctoria* is based): *Fernald 2158*, from Fort Kent, Maine, is taken as the type.

DISTRIBUTION: Woodlands, New Brunswick and Maine to Alberta, and southward to Connecticut and Michigan. (Specimens examined from New Brunswick, Quebec, Maine, New Hampshire, Vermont, western Massachusetts, western Connecticut, Alberta.)

164. *Carex normalis* Mackenzie, Bull. Torrey Club

37: 244. 1910.

- Carex mirabilis* Dewey, Am. Jour. Sci. 30: 63. pl. Bb, f. 92. 1836. (Type from western Massachusetts). Not *C. mirabilis* Host, 1809.
 — *Carex straminea* var. *mirabilis* Tuckerm. Enum. Caric. 18. 1843. (Based on *C. mirabilis* Dewey.)
 — *Carex festucea* var. *mirabilis* Carey, in A. Gray, Man. 545. 1848. (Based on *C. mirabilis* Dewey.)
 — "*Carex cristata* Schw." Kunze, Suppl. Riedgr. pl. 44, f. a, e, f (colored). 1851.
 — *Carex cristata* var. *mirabilis* Boott; A. Gray, Man. ed. 5. 580. 1867. (Based on *C. mirabilis* Dewey.)
 — *Carex lagopodioides* var. *mirabilis* Olney, Caric. Bor.-Am. 3. 1871. (Based on *C. mirabilis* Dewey.)
 — "*Carex tribuloides* var. *cristata* L. H. Bailey; Macoun, Cat. Can. Pl. 1: 130, in small part. 1883.
Carex mirabilis var. *perlonga* Fernald, Proc. Am. Acad. 37: 473. pl. 2, f. 27. 1902. (Type from New Ipswich, New Hampshire.)
Carex straminea var. *mirabilis* f. *perlonga* "Fernald" Kükenth. in Engler, Pflanzenreich 4²⁰: 207. 1909. (Based on *C. mirabilis* var. *perlonga* Fernald.)
Carex normalis var. *perlonga* Burnham, Torreyia 19: 131. 1919. (Based on *C. mirabilis* var. *perlonga* Fernald.)

Cespitose, from short-elongate, rather slender but tough, black, fibrillose rootstocks, the culms tall, 3-15 dm. high, slender to base, erect or ascending, much exceeding the leaves, roughened on the angles immediately below the head, dark-brownish at base, and clothed with the short-bladed leaves of the previous year, the lower bladeless; leaves with well-developed blades 4-7 to a fertile culm, on the lower third, regularly disposed and not bunched, the blades flat, ascending, usually 1-3 dm. long, 2.5-6 (usually 3.5-4.5) mm. wide, flat, thinish, light-green, very rough on margins, the sheaths not tight, green and white-mottled dorsally, hyaline ventrally towards mouth and conspicuously prolonged upward beyond base of blade and continuous with ligule, sterile shoots conspicuous, tall, the leaves bunched at the summit, the blades ascending; spikes 4-10, distinct, aggregated or a little separate, in an erect head

2.5–5 cm. long, about 1 cm. thick, the spikes gynaeandrous, subglobose, 6–9 mm. long, 5–8 mm. wide, rounded at both ends or the terminal short-clavate at base, the perigynia 10–30, ascending, with conspicuous ascending or spreading beaks, the staminate flowers few and inconspicuous except in terminal spike; bracts scale-like or lowest often cuspidate-prolonged, 5–20 mm. long; scales ovate, acutish or obtusish, hyaline and light-yellowish-brown-tinged with 3-nerved green center, nearly width of but shorter than perigynia; perigynia plano-convex, ovate, 3–4 mm. (usually about 3.5 mm.) long, 1.5–2 mm. wide, rather thick, green or greenish-white below, rather narrowly wing-margined to base, serrulate above middle, finely many-nerved dorsally, lightly about 7-nerved ventrally, membranaceous, substipitate, rounded at base, tapering into a beak less than half length of body, flat, serrulate, obliquely cut dorsally, shallowly bidentate, slightly reddish-brown-tipped, the margins of the orifice white; achenes lenticular, oval-oblong, 1.75 mm. long, 1 mm. wide, broadly substipitate, apiculate, yellowish; style slender, straight, jointed with achene, at length deciduous; stigmas two, light-reddish-brown, slender, short.

TYPE LOCALITY (of *Carex mirabilis* Dewey, on which *C. normalis* is based): "Found along fences and hedges, not very abundant" *i. e.*, in western Massachusetts, where the author resided.

DISTRIBUTION: Openings in dry woodlands, often on roadside banks, Maine to Manitoba, and southward to North Carolina and Oklahoma. (Specimens examined from Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, Ontario, Ohio, Michigan, Indiana, Kentucky, Wisconsin, Illinois, Manitoba, Minnesota, Iowa, Missouri, Oklahoma, Kansas, Nebraska, South Dakota.)

ILLUSTRATIONS: *Am. Jour. Sci.* 30: *pl. BB, f. 92*; Kunze, *Suppl. Riedgr. pl. 44* (except *f.* [un-colored] and *g.*); Boott, *Ill. Carex* 117. *pl. 374*; *Proc. Am. Acad.* 37: *pl. 2, f. 25–27*; Rob. & Fern. *Man.* 352, 353; Britt. & Brown, *Ill. Fl. ed. 2, f. 934*.

165. *Carex festucacea* Schkuhr; Willd. Sp. Pl. 4: 242. 1805.

Carex straminea var. *festucacea* Gay, *Ann. Sci. Nat.* II. 10: 364. 1838. (Technically based on *C. festucacea* Schkuhr.)

Carex straminea var. *festucacea* Tuckerm. *Enum. Caric.* 18. 1843. (Based on *C. festucacea* Schkuhr.)

Carex straminea var. (no. 1) Böck. *Linnaea* 39: 117. 1875. (Based on *C. festucacea* Schkuhr.)

"*Carex straminea* Willd." L. H. Bailey, *Proc. Am. Acad.* 22: 149, in part. 1886.

Densely caespitose, from short-prolonged, black, fibrillose rootstocks, the culms slender to base but rather stiff, erect, 5–10 dm. high, sharply triangular and roughened on angles above, much exceeding leaves, the lower nodes not exposed, brownish-black at base, and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3–5 to a fertile culm, on lower third of culm, but not bunched, the blades flat, usually 7.5–30 cm. long, 1–5.5 mm. wide, thin, light-green, the sheaths tight, sparingly septate-nodulose, conspicuously hyaline ventrally, and prolonged upward beyond base of blade and continuous with ligule; inflorescence of 4–10 spikes, moniliform, 2.5–6 cm. long, the spikes gynaeandrous, rounded at apex, 6–16 mm. long, 5–6 mm. wide, with 10–20 appressed-ascending perigynia above, with rather conspicuous spreading-ascending tips, usually strongly clavate, with numerous staminate flowers at base; lowest bract occasionally somewhat developed, the others scale-like; scales ovate, acute, hyaline and tawny-tinged with green 3-nerved center, narrower and shorter than perigynia; perigynia plano-convex, green or in age straw-colored, 3.5 mm. long, 2 mm. wide, the body orbicular, thick, subcoriaceous, winged to base, serrulate above middle, strongly about 5-nerved dorsally over achene with an additional nerve in both margins, and similarly but less strongly nerved ventrally, sessile, rounded at base, abruptly contracted into a beak half to nearly length of body, the beak flat and strongly serrulate, tawny-tipped, obliquely cut dorsally, at length bidentulate; achenes lenticular, oblong-ovoid, 1.5 mm. long, nearly 1 mm. wide, light-brown, short-stipitate, obliquely apiculate; style slender, abruptly bent near base, jointed with achene, at length deciduous; stigmas two, light-yellowish-brown, slender.

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

DISTRIBUTION: Open, often moist, woodlands, Georgia to Louisiana, and northward to Massachusetts, Indiana, and Iowa. (Specimens examined from Massachusetts, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Georgia, Kentucky, Tennessee, Ohio, Indiana, Illinois, Iowa, Missouri, Arkansas, Oklahoma, Louisiana, Mississippi.)

ILLUSTRATIONS: Schkuhr, *Riedgr. pl. Wuvv, f. 173*; Boott, *Ill. Carex* 120. *pl. 386*.

166. *Carex molesta* Mackenzie, sp. nov.

Cespitose, from short-prolonged, rather slender but tough, black, fibrillose rootstocks, the culms 3-10 dm. high, erect or ascending, slender to base, sharply triangular, exceeding the leaves, roughened above, brownish-black at base and clothed with the short-bladed leaves of the previous year, the lower bladeless; leaves with well-developed blades 4-7 to a fertile culm, on the lower third, regularly disposed and not bunched, the blades flat, ascending, light-green, thinnish, usually 1-3 dm. long, 2-3 mm. wide, very rough on the margins, the sheaths tight, green-and-white-mottled dorsally, conspicuously white-hyaline ventrally, prolonged at mouth beyond base of blade, the ligule wider than long; sterile shoots conspicuous, tall, the leaves largely bunched at apex, with ascending blades; spikes 4-8, gynaeceandrous, aggregated in an erect head 2-3 cm. long, 10-18 mm. thick, the spikes subglobose, 6-9 mm. long, 5-8 mm. wide, rounded at apex, the lateral truncate at base, the terminal short-clavate, the perigynia 15-30, ascending, with conspicuous ascending or spreading beaks, the staminate flowers inconspicuous except in the terminal spike; bracts scale-like or the lower cuspidate-prolonged, short; scales ovate, obtuse or acutish, narrower and much shorter than the perigynia, yellowish-brown with 3-nerved green center and white-hyaline margins; perigynia plano-convex, ovate, 4.5 mm. long, 2.25 mm. wide, rather thick, submembranaceous, greenish or greenish-white below, rather strongly wing-margined to base, serrulate to below middle, substipitate, rounded at base, faintly few-nerved dorsally, nerveless to strongly few-nerved ventrally, tapering into a beak less than half the length of the body, flat, serrulate, slightly yellowish-brown-tipped, obliquely cut dorsally, shallowly bidentate, the margins of the orifice white or yellowish-brown-tinged; achenes lenticular, suborbicular, 1.75 mm. long, 1.25 mm. wide, yellowish-brown, substipitate, apiculate; style slender, straight, jointed with achene, deciduous; stigmas two, light-reddish-brown, slender, short.

Type collected at Quindaro, Wyandotte County, Kansas (*Mackenzie*, May 30, 1897).

DISTRIBUTION: Dry woodlands, New York to Kansas and Nebraska. (Specimens examined from New York, Michigan, Indiana, Illinois, Missouri, Kansas, Nebraska.)

167. *Carex brevior* (Dewey) Mackenzie; Lunell, Am. Midl. Nat.

4: 235. N 1915; Bull. Torrey Club 42: 605. D 1915.

Carex straminea Willd.; Schkuhr, Riedgr. Nachtr. 23, in part, not as to type. 1806.

Carex straminea var. *brevior* Dewey, Am. Jour. Sci. 11: 158. 1826. (Type from western Massachusetts.)

Carex straminea var. *Schkuhrii* Gay, Ann. Sci. Nat. 11. 10: 363, in part, not as to type. 1838.

Carex straminea var. *typica* Boott, Ill. Carex 121. pl. 387. 1862. (Type from Connecticut.)

"*Carex straminea* Willd." L. H. Bailey, Proc. Am. Acad. 22: 149, in part. 1886.

Carex festucacea var. *brevior* Fernald, Proc. Am. Acad. 37: 477. pl. 3, f. 49-51. 1902. (Based on *C. straminea* var. *brevior* Dewey.)

Cespitose, from short-prolonged, lignescant, black-fibrillose rootstocks, the culms 3-10 dm. high, slender but stiff, sharply triangular, exceeding the leaves, the angles varying from smooth to noticeably roughened under the head, clothed at base with the short-bladed leaves of the previous year, the lower bladeless; leaves with well-developed blades 3-6 to a culm, on the lower third, but not bunched, the blades erect-ascending, light-green, thickish, usually 1-2 dm. long, 1.5-4 mm. wide, strongly roughened towards apex especially on the margins, the sheaths tight, conspicuously white-hyaline ventrally, extending up beyond point of insertion of blade and continuous with ligule; sterile shoots conspicuous, the leaf-blades ascending, the developed leaves bunched at apex; spikes 3-10, from aggregated in a short strict head to separated in a moniform inflorescence 1.5-5 cm. long, 7-15 mm. thick, the spikes gynaeceandrous, subglobose or ovoid or oblong, 7-15 mm. long, 5-9 mm. wide, with 8-20 ascending-spreading perigynia above (the beaks spreading-ascending), blunt at apex, and from abruptly rounded to gradually contracted into the short- or long-clavate basal staminate portion; bracts scale-like, the lowest often prolonged, 1-4 cm. long, the upper merely acuminate or short-awned, scales ovate, obtuse or acutish or even short-acuminate, yellowish-brown with 3-nerved green center and narrow hyaline margin, shorter and above noticeably narrower than the perigynia, perigynia plano-convex or slightly concavo-convex, broadly ovate to

suborbicular, usually 4-5.5 mm. long, 2.5-3.5 mm. wide, thick, firm, coriaceous, green above, greenish-white beneath, strongly winged to base, finely serrulate to below middle, truncate or rounded at base, strongly several- to many-nerved dorsally, nerveless to faintly (or rarely strongly) few-nerved towards base ventrally, abruptly narrowed into a beak about 1 mm. long and less than one third length of body, flat, finely serrulate, reddish-brown-tipped, obliquely cut dorsally, strongly bidentate, the margins of the orifice reddish-brown; achenes lenticular, orbicular, 1.75-2 mm. long, 1.5-1.75 mm. wide, substipitate, apiculate, yellowish-brown; style slender, straight, jointed with achene, at length deciduous; stigmas two, reddish-brown, slender, long.

TYPE LOCALITY (of *C. straminea* var. *brevior* Dewey, on which *C. breviar* is based): "Grows with the other" (*C. straminea*) in western Massachusetts, "also in Missouri."

DISTRIBUTION: Open sunny places, in dry calcareous or neutral soils, Quebec and Maine to British Columbia, and southward to District of Columbia, Tennessee, Texas, New Mexico, and Oregon. One of our most widely distributed species; it avoids acid soils. (Specimens examined from Quebec, Maine, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, District of Columbia, Ontario, Ohio, Michigan, Indiana, Tennessee, Wisconsin, Manitoba, Illinois, Minnesota, Iowa, Missouri, Arkansas, Oklahoma, Texas, Kansas, Nebraska, South Dakota, North Dakota, Saskatchewan, Alberta, Montana, Wyoming, Colorado, New Mexico, Idaho, Oregon, Washington, British Columbia.)

ILLUSTRATIONS: Schkuhr, Riedgr. *pl. Xxx, f. 174* (as *C. straminea*); Boott, *Ill. Carex* 121, *pl. 387* (as *C. straminea typica*); Proc. Am. Acad. 37: *pl. 3, f. 47-51*; A. Gray, *Man. ed. 6. pl. 6, f. 6-10*; Britt. & Brown, *Ill. Fl. f. 871*; ed. 2, *f. 936* (as *C. festucacea*); Rob. & Fern. *Man. f. 364*; Rep. N. J. Mus. 1910: *pl. 26, f. 8*; Abrams, *Ill. Fl. Pacif. St. f. 725*; Clements, *Rocky Mt. Fl. pl. 45, f. 9* (as *C. festucacea*); Contr. U. S. Nat. Herb. 8: *pl. 63, f. 4* (as *C. straminea*); Francis, *Grasses* 321 (as *C. festucacea*).

168. *Carex peucophila* Holm, Contr. U. S. Nat. Herb. 8: 290.

pl. 63, f. a-e. 1905.

- *Carex oreades* C. A. Meyer; Galeotti, *Bull. Acad. Brux.* 9^e: 248, name only. 1842. (Type, *Galeotti 5781*, from Mt. Orizaba, Mexico.)
Carex pinetorum Liebm. *Danske Vid. Selsk. Skr. V. 2*: 263. 1850. (Type from Mt. Orizaba, Mexico.) Not *C. pinetorum* Willd., *Linnaea* 10: 265. 1836.
Carex festiva f. *humilis* Böck. *Linnaea* 39: 74. 1875. (Based on *C. pinetorum* Liebm., excluding reference to *C. propinqua* Nees & Meyen.)
Carex straminea var. *australis* L. H. Bailey, *Mem. Torrey Club* 1: 23. 1889. (Type from Real del Monte, Mexico.)
Carex pinetorum var. *elatior* Kükenth. in Engler, *Pflanzenreich* 4²⁰: 195. 1909. (Type from Sierra de San Felipe, Oaxaca.)
Carex macloviana f. *bracteata* Kükenth. in Engler, *Pflanzenreich* 4²⁰: 196. 1909. (As to plant from Sierra de San Felipe, Oaxaca, only.)

Rootstocks long-creeping, brownish, slender but tough, fibrillose, the culms very loosely caespitose, 0.5-4 dm. high, slender to base (1.5-3 mm. thick at base), more or less nodding or weakly erect, obtusely triangular, slightly roughened beneath head, much exceeding the leaves, dull-brownish at base, annual or obscurely biennial, the dried-up leaves of the first year usually 2 or 3, very short-bladed; sterile shoots elongate; leaves of the flowering year with well-developed blades 2-4 to a fertile culm, more or less clustered on lower fourth or fifth, obscurely septate-nodulose, the blades erect or ascending or recurving, 3-15 cm. long, 1.25-2.5 mm. wide, dull-green, thin but firm, flat or somewhat channeled, the margins revolute, the apex long-attenuate, roughened, the sheaths rounded dorsally, white-hyaline and tight ventrally, truncate at mouth, the ligule much wider than long; head suborbicular to oblong-ovoid, 1-2 cm. long, 8-15 mm. thick, the spikes 3-6, gynaeandrous, aggregated or the lower slightly separate, ovoid to subglobose, 6-9 mm. long, 4.5-6 mm. wide, rounded at apex, rounded or the terminal very short-tapering at base, closely-flowered, the staminate flowers very few and inconspicuous, the perigynia 8-20, appressed-ascending in several to many rows, the beaks not prominent; lowest bract scale-like, often short-prolonged, but much shorter than culm, the upper reduced; scales ovate, obtuse, somewhat narrower and shorter than the perigynia and not concealing them above, rounded on back, chestnut-brown with green 3-nerved center and conspicuous white-hyaline apex and upper margins; perigynia plano-convex, ovate, 4.5 mm. long, 2 mm. wide, flattened but thickish, narrowly wing-margined to base, serrulate to middle, dull-green, at length brownish, firm, subcoriaceous, nerveless ventrally, inconspicuously finely nerved dorsally or nearly nerveless, substipitate, rounded or truncate at base, tapering

or somewhat abruptly contracted into a beak 1 mm. long, flat, dull-reddish-brown-tipped, entire or bidentulate, or at length bidentate, serrulate to tip, obliquely cut dorsally, the suture dull-reddish-brown-tinged below, the orifice white-hyaline; achenes lenticular, suborbicular-quadrate, nearly 2 mm. long, fully 1.5 mm. wide, in lower three fifths of perigynium-body, yellowish, rounded and broadly substipitate at base, truncate at apex and subapiculate, jointed with the straight, slender style; stigmas two, slender, reddish-brown, rather long.

TYPE LOCALITY (of *C. pinetorum* Liebm., on which *C. peucophila* is based): Mt. Orizaba, Mexico. DISTRIBUTION: High elevations in the mountains of southern Mexico. (Specimens examined from Mexico, Oaxaca.)

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 8: pl. 63, f. a-e; Engler, Pflanzenreich 4²⁰: 199, f. 32, C. D.

169. *Carex multicostata* Mackenzie, Bull. Torrey Club 43: 604. 1917.

"*Carex speciosa* L. H. Bailey" Parish, Bull. So. Calif. Acad. 5: 50, in small part. 1906.

"*Carex festiva* var. *stricta* L. H. Bailey" Parish, Bull. So. Calif. Acad. 5: 53, in small part. 1906.

Carex adusta var. *congesta* W. Boott, in S. Wats. Bot. Calif. 2: 238. 1880. (Type from Silver Valley, California.)

Carex Liddoni var. *incerta* L. H. Bailey, Bot. Gaz. 13: 88. 1888. (Based on *C. adusta* var. *congesta* W. Boott.)

Carex pachycarpa Mackenzie, Bull. Torrey Club 43: 616. 1917. (Type from Silver Valley, California.)

"*Carex Liddoni* Boott" Smiley, Univ. Calif. Publ. Bot. 9: 120. 1921.

In dense clumps, the rootstocks short, lignescens, blackish, fibrillose, the culms 3-9 dm. high, erect, many-striate, stoutish and obtusely triangular below, slender and sharply triangular above, much exceeding leaves, slightly roughened on angles beneath head, light-brownish at base, the leaves of the previous year conspicuous, short-bladed, the lower reduced to bladeless sheaths; leaves with well-developed blades usually 3 or 4 to a fertile culm, on lower fourth, but not bunched, the blades light-green or glaucous-green, flat, usually 1-3 dm. long, 2.5-6 mm. wide, not long-attenuate, conspicuously white-hyaline ventrally, prolonged beyond base of blade and continuous with ligule; head oblong or ovoid or globose, 1.5-4 cm. long, 14-20 mm. thick, containing about 5-10 closely aggregated but readily distinguishable, gynaeceandrous, oblong or oblong-ovoid spikes 6-16 mm. long, 6-9 mm. wide, rounded or short-pointed at apex, the lateral rounded and the terminal short-tapering at base, the 10-30 perigynia appressed, in many rows, with the tips not conspicuous, the staminate flowers inconspicuous; lowest one to several bracts slightly prolonged, the others scale-like; scales ovate, obtuse or subcuspidate, acute, light-reddish-brown with lighter 3-nerved center and conspicuous, broad, shining, white-hyaline margins, somewhat narrower and shorter than perigynia; perigynia plano-convex, narrowly to broadly ovate, 3.5-5.5 mm. long, 2-2.5 mm. wide (widest near top of achene), green or in age straw-colored, thickish and subcoriaceous, or coriaceous, strongly but not widely winged to base, serrulate to below middle, conspicuously many-striate dorsally, less so ventrally at least on lower half, substipitate, rounded and slightly spongy at base, abruptly contracted into a beak 1 mm. long, broad, flat at maturity, obliquely cut dorsally, yellowish-brown-tipped, winged and serrulate to the tip or very nearly so, bidentate, the teeth erect, contiguous, the orifice whitened on margins; achenes lenticular, quadrate-suborbicular, 1.75-2.5 mm. long, 1.5 mm. wide, substipitate, yellowish or light-brown, short-apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown, rather long.

TYPE LOCALITY: Bear Valley Dam, San Bernardino County, California (*Parish 3609*).

DISTRIBUTION: Mountains of Oregon and northern California, extending southward in the Sierra Nevada to the mountains of southern California. (Specimens examined showing range as given.)

ILLUSTRATIONS: Abrams, III. Fl. Pacif. St. f. 727, 749.

170. *Carex straminiformis* L. H. Bailey, Mem. Torrey Club 1: 24. 1889.

Carex straminea var. *congesta* Boott; Olney, Proc. Am. Acad. 7: 393. 1868. (Type from Mt. Shasta, California.)

Very densely caespitose, the rootstocks very short, lignescens, blackish, fibrillose, the culms 1-4 dm. high, firm, sometimes incurved, much exceeding the leaves, smooth on the angles,

except immediately beneath the head, slender and sharply triangular above, rather stout and obtusely triangular towards base, brownish-tinged at base and clothed with the bladeless sheaths of the previous year; leaves with well-developed blades 3-7 to a culm, bunched on the lower fourth, the blades flat, light-green, thick, 5-12 cm. long, 2-3.5 mm. wide, roughened towards the apex, the sheaths white-hyaline ventrally, short-prolonged beyond base of blade at mouth and continuous with ligule; inflorescence consisting of 3-10 spikes closely aggregated into a head 1.5-2.5 cm. long, 12-16 mm. thick, the spikes gynaeandrous, subglobose, 6-10 mm. long and nearly as wide, containing a few inconspicuous staminate flowers at base and numerous ascending-spreading perigynia with conspicuous beaks above; bracts very short or scale-like; scales ovate-lanceolate, acutish, reddish-chestnut with more or less prominent green midrib and white-hyaline margins, about the length of but much narrower than the bodies of the perigynia, strongly exceeded by their beaks; perigynia flattened-concavo-convex, ovate or broadly ovate, 4.5-5 mm. long, 2.5-3 mm. wide, membranaceous, light-green or straw-colored, strongly winged to base, serrulate to below middle, the margins strongly crinkled, noticeably distended over the achene, very lightly many-striate dorsally, nerveless or nearly so ventrally, sessile or nearly so, round-truncate at base, abruptly narrowed into a beak about one third the length of the body, flat, serrulate, obliquely cut dorsally, reddish-brown-tipped, bidentate, the orifice hyaline-margined; achenes lenticular, broadly oval, 2 mm. long, 1.5 mm. wide, rounded to a nearly sessile base, rounded and apiculate at apex; style slender, straight, jointed with achene, at length deciduous; stigmas two, light-reddish-brown, slender, short.

TYPE LOCALITY: Mt. Shasta, California (*Brewer*). (See Mackenzie, *Erythea* 8: 39.)

DISTRIBUTION: High mountain summits, from Washington through Oregon and northern California to western Nevada and Mt. Whitney, California. (Specimens examined from Nevada, California, Oregon.)

ILLUSTRATIONS: Engler, *Pflanzenreich* 4th: 194, f. 32, E, F; Abrams, *Ill. Fl. Pacif. St.* f. 726.

171. *Carex Egglestoni* Mackenzie, *Bull. Torrey Club* 42: 614. 1915.

"*Carex stramineiformis* L. H. Bailey" Holm, in Rydb. *Fl. Colo.* 71. 1906.

In dense clumps, from very short, lignescent, blackish, fibrillose rootstocks, the culms 4-8 dm. high, stiffly erect, rather stout and obtusely triangular below, sharply triangular and slender above, much exceeding leaves, roughened on angles beneath head, light-brown at base and clothed with the short-bladed dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 4-6 to a fertile culm, on lower third, but not bunched, the blades flat, usually 1-2 dm. long, 2-5 mm. wide, light-green, thickish, not long-attenuate, the sheaths conspicuously white-hyaline ventrally, scarcely prolonged beyond base of blade, the ligule short; head ovoid, 18-24 mm. long, and somewhat narrower, containing 3-6 closely aggregated but readily distinguishable, gynaeandrous, ovoid or ovoid-oblong spikes 10-14 mm. long, 6-10 mm. wide, rounded or short-pointed at apex, the lateral rounded and the terminal one short-tapering at base, the numerous perigynia appressed-ascending, in many rows, with rather conspicuous tips, the staminate flowers few and inconspicuous; lowest bract short-prolonged, 6-18 mm. long, or scale-like, the others scale-like; scales ovate or ovate-lanceolate, acutish to short-acuminate, chestnut-brown with lighter midvein and conspicuous but narrow white-hyaline margins, narrower and markedly shorter than perigynia; perigynia flattened-concavo-convex, ovate, 6 mm. long, 2 mm. wide (widest near top of achene), olive-green or in age brownish, membranaceous, thin, except where distended by achene, strongly winged to base, serrulate to much below middle, the margins slightly crinkled, slenderly striate on both faces (striae obsolete or nearly so in age), sessile, rounded at base, abruptly contracted into a beak 1.5 mm. long, broad, flat, obliquely cut dorsally, winged and serrulate to the tip, bidentate, the teeth strictly erect and contiguous but distinct, the orifice hyaline-margined; achenes lenticular, obovoid-oblong, thickish, 2 mm. long, 1.25 mm. wide, substipitate, short-apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY: Kebler Pass, Mt. Carbon, Gunnison County, Colorado (*Eggleston* 6181).

DISTRIBUTION: Dry open soil, mountains of Wyoming and Colorado to Utah. (Specimens examined from Wyoming, Colorado, Utah.)

172. *Carex hyalina* Boott, Bost. Jour. Nat. Hist. 5: 112. 1845.

—*Carex tetrastachya* Scheele, Linnaea 22: 347. 1849. (Type from Texas.)

—*Carex straminea* var. *hyalina* Boott, Ill. Carex 121. pl. 371, f. 2. 1862. (Based on *C. hyalina* Boott.)

Cespitose, the rootstocks slender, prolonged, black, fibrillose, the culms slender but strict, 2.5–5 dm. high, sharply triangular, exceeding the leaves, smooth or slightly roughened on the angles beneath the head, brownish at base and clothed with the dried-up leaves of the previous year, the lower bladeless; sterile shoots numerous, leafy; leaves with well-developed blades 3–5 to a fertile culm, on the lower third, but not bunched, the blades ascending, flat, light-green, rather stiff, usually 8–15 cm. long, 1–2 mm. wide, roughened on the margins, especially towards the apex, the sheaths long, conspicuously white-hyaline ventrally, prolonged in front beyond base of blade and continuous with ligule; spikes 3–6, aggregated or separate, forming a head 18–30 mm. long, 8–12 mm. thick, the spikes light-green, short-oblong or subglobose, the lateral 6–9 mm. long and nearly as wide, rounded at apex, truncate and very sparingly staminate at base, the terminal spike similar but abruptly contracted into a long-clavate staminate base often as long as the pistillate portion, the perigynia usually 10–25, ascending-spreading, with long conspicuous spreading beaks; bracts scale-like, the lowermost more or less strongly prolonged; scales ovate, obtusish or acutish, whitish-hyaline with green midrib, much narrower than and only about as long as bodies of perigynia; perigynia very flat, except where distended by achene, broadly ovate, 5.5–6.5 mm. long, 2.5–3.25 mm. wide, membranaceous, whitish-green, strongly but finely about 10-nerved dorsally, fewer and more faintly nerved ventrally, broadly winged nearly to base, serrulate to below middle, the margins undulate, rounded at base, contracted (somewhat abruptly) at apex into a beak 2 mm. long, and more than half length of body, flat, serrulate, obliquely cleft dorsally, white-tipped, bidentate; achenes lenticular, narrowly oblong, 2–2.5 mm. long, 1 mm. wide, stipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, light-red, slender, short.

TYPE LOCALITY: "Texas, Drummond."

DISTRIBUTION: Open places, Arkansas and Texas. (Specimens examined from Arkansas and Texas.)

ILLUSTRATION: Boott, Ill. Carex 121. pl. 371, f. 2.

173. *Carex Merritt-Fernaldii* Mackenzie, Bull. Torrey Club

49: 370. 1923.

—"*Carex festucacea* Schkuhr" Fernald, Proc. Am. Acad. 37: 477. pl. 3, f. 47, 48. 1902.

—*Carex brevior* var. *pseudofestucacea* Farwell, Papers Mich. Acad. 2: 18. 1923. (Based on "*Carex festucacea* Schkuhr" Fernald.)

Cespitose, from short-prolonged, lignescent, black, fibrillose rootstocks, the culms 3–10 dm. high, slender but stiff, sharply triangular, exceeding the leaves, smooth or very slightly roughened beneath head, clothed at base with the short-bladed leaves of the previous year, the lower bladeless; leaves with well-developed blades 3–6 to a culm, on the lower third, but not bunched, the blades erect-ascending, yellowish-green, firm, usually 1–2 dm. long, 1.5–3 mm. wide, strongly roughened towards apex especially on the margins, the sheaths tight, white-hyaline ventrally, papillate dorsally, extending up beyond point of insertion of blade, the ligule wider than long; spikes 4–10 (usually 6–8), aggregated to separate, the head 1.5–5 cm. long, 7–15 mm. thick, the spikes gynaeandrous, subglobose to ovoid, 7–15 mm. long, 5–9 mm. wide, with 15–30 appressed-ascending perigynia above (the beaks appressed-ascending), blunt at apex, abruptly contracted into the short-clavate basal staminate portion; bracts scale-like, the lowest often prolonged, 1–4 cm. long, the upper merely acuminate or short-awned, scales ovate, obtuse to short-cuspidate, yellowish-brown with 3-nerved green center and narrow hyaline margins, shorter and noticeably narrower than the perigynia above; perigynia concavo-convex, suborbicular, 4–5 mm. long, 2.5–3.5 mm. wide, thickish but the walls membranaceous, not translucent, yellowish-green or in age straw-colored, strongly winged to base, serrulate to below middle, truncate-rounded at base, strongly several-nerved to many-nerved dorsally, nerveless to faintly few-nerved at base ventrally (the wings 1–2-nerved), abruptly narrowed into a beak about 1 mm. long and less than one third length of

body, flat, serrulate, reddish-brown-tipped, obliquely cut dorsally, bidentate, the margins of the orifice reddish-brown; achenes lenticular, oblong-quadrate, 1.75 mm. long, 1.5 mm. wide, substipitate, apiculate, brown, shining; style slender, straight, jointed with achene, deciduous; stigmas two, reddish-brown, slender, long.

TYPE LOCALITY: Orono, Maine (*Fernald*, July 3, 1897; type in Gray Herb.)

DISTRIBUTION: Dry woodlands, Maine to Manitoba, and southward to Massachusetts and northern New York. (Specimens examined from Maine, New Hampshire, Vermont, Massachusetts, New York, Ontario, Michigan, Wisconsin, Manitoba.)

ILLUSTRATIONS: Proc. Am. Acad. 37: pl. 3, f. 47, 48; Rob. & Fern. Man. f. 363.

174. *Carex Bicknellii* Britton; Britt. & Brown,
Ill. Fl. 1: 360. f. 874. 1896.

Carex straminea var. *Crawei* Boott, Ill. Carex 121. pl. 388. 1862. (Type from Michigan.)

Carex straminea var. *Meadei* Boott, Ill. Carex 121. pl. 389. 1862. (Type from Illinois.)

"*Carex straminea* var. *brevior* Dewey" L. H. Bailey, Mem. Torrey Club 1: 22, in part. 1889.

Cespitose, the rootstocks short-prolonged, tough, black, fibrillose, the culms slender to base, but strict, 3-12 dm. high, sharply triangular, slightly roughened above, exceeding the leaves, light-brownish at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves with well-developed blades 3-6 to a fertile culm, on the lower third, but not bunched, the blades ascending, short, 1-2 dm. long, 2.5-4 mm. wide, flat, yellowish-green or light-green, roughened on the margins and towards the apex, the sheaths narrowly white-hyaline ventrally, papillate dorsally, prolonged in front beyond base of blade and continuous with ligule; sterile shoots leafy; inflorescence consisting of 3-7 gynaeceandrous brownish-straw-colored spikes aggregated into an erect, strict, oblong or linear-oblong head 2-4 cm. long, 8-15 mm. thick, the spikes globose to obovoid-oblong, 10-18 mm. long, 6-12 mm. wide, round-truncate to clavate-tapering at base, rounded at apex, the basal staminate flowers varying from few and inconspicuous to taking up half of the spike, the perigynia numerous, appressed-ascending, the beaks conspicuous and from not widely to widely spreading; lower bracts if present very short and setaceous, the upper scale-like; scales lance-ovate, obtusish or acutish, brownish-straw-colored with hyaline margins and 3-nerved green center, somewhat shorter and much narrower than the perigynia; perigynia very flat and thin, except where distended over achene, 5.5-6.5 mm. long, 2.75-4 mm. wide, very membranaceous, nearly translucent, straw-colored or greenish above, pellucid, the body broadly oval to suborbicular, broadly thin-winged to base, serrulate to middle, strongly about 12-nerved dorsally, finely but strongly slightly fewer-nerved ventrally, round-truncate at base, abruptly contracted into a beak one third to one fourth the length of the body, flat, serrulate, obliquely cut dorsally, reddish-tipped, sharply bidentate; achenes lenticular, oblong-quadrate, 1.75 mm. long, 1.5 mm. wide, substipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, light-reddish, slender, but rather short.

TYPE LOCALITY (of *C. straminea* var. *Crawei*, on which *C. Bicknellii* is based): "Michigan, *Crawe*."

DISTRIBUTION: Dry soil, valley of Penobscot River, Maine, to Saskatchewan, and southward to Delaware, Arkansas, and Oklahoma. (Specimens examined from Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Ohio, Indiana, Wisconsin, Illinois, Missouri, Iowa, Minnesota, Manitoba, Saskatchewan, North Dakota, South Dakota, Nebraska, Kansas, New Mexico, Arkansas, Oklahoma.)

ILLUSTRATIONS: Boott, Ill. Carex 121. pl. 388, 389; Britt. & Brown, Ill. Fl. f. 874; ed. 2. f. 937; Rob. & Fern. Man. f. 359; Proc. Am. Acad. 37: pl. 2, f. 37-40.

175. *Carex Brittoniana* L. H. Bailey, Contr. U. S. Nat. Herb.
2: 484. 1894.

"*Carex alata* Torr." Boott, Ill. Carex 118. pl. 378. 1862. (As to Texas material only.)

Carex Wrightii Olney, Caric. Bor.-Am. 3. 1871. (Type from Texas.) Not *C. Wrightii* Dewey, 1858.

Carex straminea var. *maxima* L. H. Bailey, Proc. Am. Acad. 22: 150. 1886. (Based on *C. Wrightii* Olney.)

Carex straminea var. *prorepens* Kükenth. in Engler, Pflanzenreich 4²⁰: 208. 1909. (Type from Texas.)

Cespitose, but the rootstock strongly elongate, tough, thickish, black, fibrillose, the culms

3-8 dm. high, smooth or nearly so, slender, weak, sharply triangular, exceeding the leaves, light-brown at base and inconspicuously clothed with the dried-up leaves of the previous year, the blades short; leaves with well-developed blades 3-5 to a culm, on the lower half, but not at all bunched, the blades glaucous-green, stiff, flat, 1.5-3 dm. long, 3 mm. wide, roughened towards the long-attenuate apex, the sheaths white-hyaline ventrally, prolonged in front beyond base of blade and continuous with ligule; head 3-6 cm. long, 1.5-2.5 cm. thick, the spikes 2-6, approximate or more or less strongly separate, gynaeandrous, silvery-white, 12-18 mm. long, and 8-12 mm. wide, rounded or clavate at base, rounded at apex, the pistillate part subglobose, with many ascending-spreading perigynia, the staminate flowers usually few except in the terminal spike; bracts setaceous, inconspicuous and mostly much shorter than the head, the upper scale-like; scales narrowly ovate, acutish or obtusish, silvery-white with light-yellowish 3-nerved center, much narrower than but about as long as the bodies of the perigynia, much exceeded by the beaks; perigynia very flat, scale-like except where distended by achene, membranaceous, whitish with light-green margins and beak, 7.5-8.5 mm. long, 5-6 mm. wide, the body orbicular, nerveless or nearly so on both faces, except on the wings, rounded to the broad truncate base, very strongly winged to base, serrulate to middle, abruptly narrowed into a beak 2.5 mm. long, one third length of body, flat, serrulate, light-reddish-tipped, obliquely cut dorsally, strongly bidentate; achenes lenticular, broadly oblong, 2.5 mm. long, 2 mm. wide, substipitate, apiculate; style slender, jointed with achene, at length deciduous; stigmas two, light-reddish, slender.

TYPE LOCALITY (of *C. straminea* var. *maxima*, on which *C. Brittoniana* is based): Texas (Wright).
DISTRIBUTION: Prairies of Oklahoma, Texas, and Florida. (Specimens examined from Texas, Oklahoma, and Lee County, Florida.)

ILLUSTRATION: Boott, Ill. *Carex* 118. pl. 378.

176. *Carex reniformis* (L. H. Bailey) Small, Fl. SE. U. S.
220. 1903.

Carex straminea var. *reniformis* L. H. Bailey, Mem. Torrey Club 1: 73. 1889. (Type from Mississippi.)

Carex straminea var. *brevior* f. *reniformis* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 207. 1909. (Based on *C. straminea* var. *reniformis* L. H. Bailey.)

Densely caespitose, the rootstock very short, black, fibrillose, the culms 3-9 dm. high, exceeding the leaves, sharply triangular, slender to base, strongly roughened on the angles above, light-brown at base, and clothed with the dried-up leaves of the previous year, the lower bladeless, the upper with short blades; leaves with well-developed blades about 5 to a culm, on the lower half, but not bunched, the blades flat, usually 1-2 dm. long, 2-2.5 mm. wide, light-green, thickish, roughened towards the attenuate apex, the sheaths with a narrow hyaline strip ventrally, the ligule surrounding the culm, thin, yellowish-brown-tinged, and prolonged beyond base of blade; head 3-4.5 cm. long, about 1 cm. thick, the spikes 3-6, more or less strongly separate, gynaeandrous, subglobose, blunt and rounded at apex, rounded-truncate or the terminal abruptly short-clavate at base, 6-10 mm. long, 5-8 mm. wide, greenish, the basal staminate flowers few and inconspicuous (except in the terminal spike), the perigynia numerous, appressed, with ascending but conspicuous beaks; lower one or two bracts usually 2.5 cm. long or less, very setaceous, the upper scale-like; scales ovate, light-yellowish-brown with hyaline margins and green 3-nerved center, obtuse, much narrower than and about the length of the bodies of the perigynia, much exceeded by the beaks; perigynia very flat, except where dilated over the achene, subcoriaceous, straw-colored, with green beak, reniform, widest at middle, strongly winged to base, serrulate to middle, the body 3-3.5 mm. long, 3.5-4.5 mm. wide, rounded to a truncate base, nerveless or nearly so ventrally, slenderly several-nerved dorsally, very abruptly contracted into a beak 1-1.5 mm. long, about one third length of body, flat, serrulate, obliquely cut dorsally, reddish-tipped, bidentate; achenes lenticular, oblong-oval, 2 mm. long, 1.5 mm. wide, very short-substipitate, apiculate; style slender, slightly enlarged at base, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown.

TYPE LOCALITY (of *C. straminea* var. *reniformis* L. H. Bailey, on which *C. reniformis* is based): "Mississippi, Bogue, Phalia, Mohr, Starkville, Tracy, E. Louisiana, Langlois."

DISTRIBUTION: Moist soil, Georgia to Texas, and northward to South Carolina, Arkansas, and Oklahoma. (Specimens examined from South Carolina, Georgia, Florida, Mississippi, Louisiana, Arkansas, Oklahoma, Texas.)

177. *Carex feta* L. H. Bailey, Bull. Torrey Club 20: 417. 1893.

- "*Carex lagopodioides* Schkuhr" W. Boott, in S. Wats. Bot. Calif. 2: 237. 1880.
 "*Carex adusta* Boott" W. Boott, in S. Wats. Bot. Calif. 2: 238, in part. 1880.
 "*Carex cristata* var. *mirabilis* A. Gray" W. Boott, in S. Wats. Bot. Calif. 2: 238. 1880.
Carex straminea var. *mixta* L. H. Bailey, Proc. Am. Acad. 22: 151. 1886. (Type from Sonoma County, California.) Not *C. mixta* J. F. Gmel. 1791.
Carex feta var. *multa* L. H. Bailey, Bot. Gaz. 21: 8. 1896. (Type from San Jacinto Mountains, San Diego County, California.)
Carex straminea var. *mixta* f. *multa* "L. H. Bailey" Kükenth. in Engler, Pflanzenreich 4²⁰: 208. 1909. (Based on *C. feta* var. *multa* L. H. Bailey.)

Densely caespitose, the rootstocks short-prolonged, black, fibrillose, the culms 5-12 dm. high, much exceeding the leaves, slender to base but stiff, sharply triangular, smooth or nearly so, brownish at base, and conspicuously clothed with the dried-up leaves of the previous year, the lowest bladeless, the lower nodes often exposed; leaves with well-developed blades 3-6 to a culm, on the lower half, but not bunched, the blades flat, usually 1-3 dm. long, 2.5-4 mm. wide, light-green, stiffish, roughened towards the attenuate apex, the sheaths rather loose, strongly green-striate ventrally to mouth, conspicuously prolonged beyond base of blade and strongly yellowish-brown-tinged, continuous with ligule; head 2-8 cm. long, 1-1.5 mm. thick, the spikes 5-15, closely aggregated to moniliform, gynaeandrous, greenish or light-brownish-green, blunt, short-oblong to subglobose, 6-10 mm. long, 4-6 mm. wide, the basal staminate flowers usually few and inconspicuous, the perigynia numerous, appressed-ascending, their beaks ascending; lowest bract usually setaceous, exceeded by the spikes, the upper scale-like; scales ovate, obtusish or acutish, light-yellowish-brown or straw-colored, with hyaline margins and lighter midvein, narrower and shorter than perigynia; perigynia flattened-plano-convex, ovate, 3-3.5 mm. long, 1.75-2 mm. wide, membranaceous, yellowish-green with green beak, strongly narrowly winged to base, serrulate to middle, several-nerved dorsally, obscurely few-nerved ventrally, rounded at base, tapering or somewhat abruptly narrowed into a beak about half length of body, flat, serrulate, obliquely cut dorsally, bidentulate, reddish-tipped; achenes lenticular, broadly oval, 1.5 mm. long, 1 mm. wide, slightly substipitate, apiculate, yellowish-brown; style slender, short, jointed with achene, withering; stigmas two, light-reddish-brown, short.

TYPE LOCALITY (of *C. straminea* var. *mixta* L. H. Bailey, on which *C. feta* is based): *Bolander 50*, from Cloverdale, Sonoma County, California, is taken as the type.

DISTRIBUTION: Wet meadows, from British Columbia to southern California; a characteristic species of the Pacific Coast states. (Specimens examined from British Columbia (Vancouver Island), Washington, Oregon, California.)

ILLUSTRATIONS: *Erythea* 8: 38. f. 16; Jepson, Fl. Calif. 1: f. 31, j-1; Abrams, Ill. Fl. Pacif. St. f. 719; Jepson, Man. Fl. Pl. Calif. f. 174.

178. *Carex suberecta* (Olney) Britton, Man. ed. 2. 1057. 1905.

- Carex foenea* var. β Boott, Ill. Carex 118. pl. 376. 1862. (Type from Ohio.)
Carex foenea var. *ferruginea* A. Gray, Man. ed. 5. 580. 1867. (Type from Ohio.) Not *C. ferruginea* Scop. 1772.
Carex tenera var. *suberecta* Olney, Caric. Bor.-Am. 3. 1871. (Based on *C. foenea* var. β Boott.)
Carex straminea var. *ferruginea* L. H. Bailey, Bull. Torrey Club 20: 421. 1893. (Based on *C. foenea* var. *ferruginea* A. Gray.)
Carex alata var. *ferruginea* Fernald, Proc. Am. Acad. 37: 477. 1902. (Based on *C. foenea* var. *ferruginea* A. Gray.)
Carex albullescens var. *ferruginea* Kükenth. in Engler, Pflanzenreich 4²⁰: 209. 1909. (Based on *C. foenea* var. *ferruginea* A. Gray.)
Carex festucacea var. *ferruginea* Farwell, Papers Mich. Acad. 2: 17. 1923. (Based on *C. foenea* var. *ferruginea* A. Gray.)

Very densely caespitose, the rootstocks very short-prolonged, blackish, fibrillose, the culms 3-9 dm. high, exceeding or slightly shorter than the leaves, very slender to base, sharply triangular, strongly roughened on the angles above, light-brown at base and clothed with the dried-up leaves of the previous year, the upper short-bladed, the lower bladeless; leaves of the year with well-developed blades 3-5 to a fertile culm, on the lower half, but widely separated, the blades flat, usually 1-2 dm. long, 2-3 mm. wide, long-attenuate, light-green, not

stiff, roughened at the apex, the sheaths very long, green-striate ventrally to mouth, prolonged more or less strongly beyond base of blade and continuous with ligule; sterile shoots few; spikes 2-5, gynaeceandrous, aggregated or approximate in a stiff head 1.5-3 cm. long, 8-14 mm. thick, the spikes ovoid, the lateral 7-12 mm. long, 5-7 mm. wide, short-pointed or rounded at apex, rounded and little staminate at base, the terminal spike similar but longer, clavate and strongly staminate at base, the numerous perigynia erect, strictly appressed; upper bracts scale-like, the lowest usually cuspidate-prolonged; scales ovate, acute, cuspidate or even obtusish, yellowish-brown with hyaline margins and green midrib, shorter and narrower than perigynia; perigynia very thin and flat except where distended over achene, ovate, 4-5 mm. long, 2.25-2.75 mm. wide, yellowish-brown with green margins and beak, faintly nerved dorsally, nerveless or nearly so ventrally, strongly winged to base and serrulate to below middle, the body widest near middle, round-truncate at base, tapering into a beak one third to one fourth the length of the body, flat, serrulate, obliquely cut dorsally, reddish-tipped, sharply bidentate; achenes lenticular, substipitate, strongly apiculate, yellowish-brown, ovoid, 1.5 mm. long, 1 mm. wide; style slender, jointed with achene, at length withering, slightly thickened at base; stigmas two, slender, light-reddish-brown.

TYPE LOCALITY (of *C. foenea* var. β Boott, on which *C. suberecta* is based): Ohio, *Sullivant, Lesqueureux*.

DISTRIBUTION: Moist meadows, Ontario and Ohio to western Virginia, Minnesota, and Iowa. (Specimens examined from western Virginia, Ohio, Michigan, Indiana, Illinois, Iowa, Minnesota.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 939; Rob. & Fern. Man. f. 362; Proc. Am. Acad. 37: pl. 2, f. 45, 46; Boott, Ill. Carex 118. pl. 376.

179. *Carex hormathodes* Fernald, *Rhodora* 8: 165. 1906.

Carex straminea var. *invisa* W. Boott, Bot. Gaz. 9: 86. 1884. (Type from eastern Massachusetts.)

"*Carex straminea* var. *tenera* Boott" L. H. Bailey, Bot. Gaz. 10: 381. 1885.

"*Carex tenera* Dewey" Britt. & Brown, Ill. Fl. 1: 358. f. 870. 1896.

Carex tenera var. *invisa* Britton; Britt. & Brown, Ill. Fl. 1: 358. 1896. (Based on *C. straminea* var. *invisa* W. Boott.)

Carex straminea var. *tenera* f. *invisa* "Britton" Kükenth. in Engler, Pflanzenreich 4²⁰: 206. 1909. (Based on *C. straminea* var. *invisa* W. Boott.)

Very densely caespitose, the rootstocks very short, blackish, fibrillose, the culms 3-9 dm. high, sharply triangular, exceeding the leaves, slender to base and often nodding, very rough on the angles for a considerable distance beneath the head, light-brown at base and clothed with the dried-up leaves of the previous year, the lowest bladeless; leaves with well-developed blades usually 3-5 to a fertile culm, on the lower third or half, not bunched, the nodes often exposed, the blades flat, light-green, ascending, usually 1-2 dm. long, 1.5-2.5 mm. wide, roughened towards the apex, the sheaths green-striate ventrally nearly to mouth, very short-prolonged beyond base of blade, continuous with the ligule; spikes 4-8, gynaeceandrous, the lower separated, the upper approximate, forming a moniliform flexuous inflorescence 3-6 cm. long, about 1 cm. thick, the spikes brown or straw-colored at maturity, ovoid, obtuse or short-pointed at apex, short-staminate and rounded or short-clavate at base but not truncate-clavate, 7-15 mm. long, 6-9 mm. wide, the perigynia numerous, appressed-ascending, with ascending or appressed beaks; lower bracts setaceous, scale-like, from little to much prolonged, very narrow and slender, the upper scale-like; scales lanceolate, acuminate to aristate, light-reddish-brown with hyaline margins and (when young) green midrib, rather shorter and much narrower than perigynia; perigynia very thin and flat except where distended over achene, ovate, membranaceous, light-green or straw-colored, 4.5 mm. long, 2.25-3 mm. wide, finely about 10-nerved on both faces, winged to base, serrulate above middle, widest near middle, rounded or round-tapering at base, tapering or somewhat abruptly narrowed into a beak about one third length of body, flat, reddish-tipped, serrulate, obliquely cleft dorsally, at length bidentulate; achenes lenticular, ovoid-oblong, 1.5 mm. long, 0.75 mm. wide, stipitate, apiculate, yellowish-brown; style slender, jointed with achene, at length deciduous; stigmas two, slender, reddish, short.

TYPE LOCALITY: Fernald's figures 31 and 32 cited below were drawn from a specimen in the Gray Herbarium collected by Olney near Providence, Rhode Island, July 1, 1867, which is taken as the type.

DISTRIBUTION: Salt marshes and borders of salt marshes along the coast, Newfoundland to Virginia. (Specimens examined from Newfoundland, Prince Edward Island, Quebec, (including Magdalen Islands), Nova Scotia (including Cape Breton Island and Sable Island), New Brunswick, Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 870; ed. 2. f. 938; Rob. & Fern. Man. f. 356, 357; Proc. Am. Acad. 37: pl. 2, f. 31, 32, 35, 36; Rep. N. J. Mus. 1910: pl. 26, f. 4; Boott, Ill. Carex 120. pl. 384 (perigynia and scale from Olney).

180. *Carex Richii* (Fernald) Mackenzie, Bull.

Torrey Club 49: 362. 1923.

Carex straminea var. *aperta* Boott, Ill. Carex 120. pl. 385. 1862. (Type from Penn Yan, New York.) Not *C. aperta* Boott, 1839.

"*Carex festucacea* Schkuhr" Tuckerm.; Boott, Ill. Carex 120. 1862.

Carex tenera var. *major* Olney, Car. Bor.-Am. 3. 1871. (Based on *C. straminea* var. *aperta* Boott.)

Carex tenera var. *Richii* Fernald, Proc. Am. Acad. 37: 475. 1902. (Type from Stoneham, Massachusetts.)

Carex hormathodes var. *Richii* Fernald, Rhodora 8: 166. 1906. (Based on *C. tenera* var. *Richii* Fernald.)

Carex straminea var. *tenera* f. *Richii* "Fernald" Kükenth. in Engler, Pflanzenreich 4²⁰: 206. 1909. (Based on *C. tenera* var. *Richii* Fernald.)

Densely caespitose, the rootstocks very short-prolonged, black, fibrillose, the culms 6-10 dm. high, very slender to base but erect, nodding, sharply triangular, very rough beneath head, exceeding the leaves, dark-brownish at base and clothed with the dried-up leaves of the previous year, the lower bladeless; leaves of the year 2-4 to a culm, on lower fourth, but widely separate, the lower nodes often exposed, the blades flat, usually 1-3 dm. long, 1.5-2.5 mm. wide, long-attenuate, the sheaths green-striate ventrally nearly to mouth, short-prolonged beyond base of blade, the ligule wider than long; spikes 4-8, strongly separate in a moniliform flexuous inflorescence, gynaeandrous, the staminate flowers conspicuous, tapering-clavate or in the terminal truncate-clavate at base, the pistillate part globose to ovoid-globose, 6-12 mm. long, 6-9 mm. wide, rounded at apex, and with about 20-30 spreading or spreading-ascending perigynia with conspicuous loosely ascending or spreading tips; lower bracts setaceous-prolonged, the upper scale-like; scales lanceolate, hyaline and yellowish-brown-tinged, acuminate or aristate from the sharp midvein, shorter and much narrower than the perigynia; perigynia very flat and thin except where distended by achene, 4-5 mm. long, 2.5 mm. wide, membranaceous, greenish or in age straw-colored, the body suborbicular, widest near middle, strongly winged to base, serrulate above middle, finely about 10-nerved both dorsally and ventrally, sessile, round-truncate at base, abruptly contracted into a beak half length of body or more, flat, serrulate, red-tipped, obliquely cut dorsally, at length bidentulate; achenes lenticular, oblong-obovoid, 1.5 mm. long, 0.75 mm. wide, stipitate, yellowish-brown, apiculate; style slender, jointed with achene, at length deciduous; stigmas two, reddish, slender, short.

TYPE LOCALITY (of *C. tenera* var. *Richii* Fernald, on which *C. Richii* is based): Stoneham, Massachusetts (*Rich*).

DISTRIBUTION: Swampy non-saline meadows, acid soils, Massachusetts to New Jersey and District of Columbia, and westward to Indiana. (Specimens examined from Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Indiana.)

ILLUSTRATIONS: BOOTT, Ill. CAREX 120. pl. 385; Proc. Am. Acad. 37: pl. 2, f. 33, 34; Rob. & Fern. Man. f. 358.

181. *Carex cumulata* (L. H. Bailey) Mackenzie, Bull.

Torrey Club 49: 366. 1923.

"*Carex foenea* Willd." Schw. & Torr. Ann. Lyc. N. Y. 1: 315. 1825.

Carex alata var. *putchra* Olney, Caric. Bor.-Am. 3. name only. 1871. (Specimens from New Brunswick.) L. H. Bailey, Mem. Torrey Club 1: 23, as synonym. 1889.

Carex straminea var. *cumulata* L. H. Bailey, Mem. Torrey Club 1: 23. 1889. (Type from New Brunswick.)

Carex abolutescens var. *cumulata* L. H. Bailey, Bull. Torrey Club 20: 422. 1893. (Based on *C. straminea* var. *cumulata* L. H. Bailey.)

Very densely caespitose, the rootstocks not prolonged, the culms 3-9 dm. high, stiff, sharply triangular, roughened beneath head, brownish at base and clothed with the dried-up leaves of the previous year, the lowest bladeless; leaves of the year with well-developed blades 2-4 to a culm, on lower third, but not bunched, the lower nodes sometimes exposed, the blades

flat, light-green, thickish, erect or ascending, 7-25 cm. long, 3-5 mm. wide, roughened towards apex, the sheaths loose, strongly green-striate ventrally nearly to mouth, conspicuously prolonged beyond base of blade, the ligule wider than long; sterile shoots elongate, the blades 4-5 mm. wide, occasionally narrower, erect, the sheaths very loose; spikes 5-30, the upper gynaeandrous, the lower pistillate, very closely aggregated into an ovoid or oblong head 2-4 cm. long, 1-2 cm. thick, the spikes ovoid, 6-10 mm. long, 5-8 mm. wide, short-pointed at apex, the lateral truncate or rounded at base, the terminal clavate, greenish or in age brownish, closely many-flowered, the perigynia ascending with appressed green tips; lowest bract cuspidate-prolonged, often conspicuous; scales ovate, obtuse or acute, much narrower and shorter than the perigynia-white-hyaline with 1-3-nerved green center, yellowish-brown-tinged at apex; perigynia thin-plano-convex, 3-4 mm. long, 2.5 mm. wide, membranaceous, greenish or in age brownish, the body orbicular-obovate, widest at top, sessile, round-tapering at base, wing-margined nearly to base, serrulate above the middle, nerveless ventrally, lightly several-nerved dorsally, rounded at apex and very abruptly contracted into a beak about 0.75 mm. long, about one third to one fourth length of body, short, serrulate, flat, obliquely cut dorsally; achenes lenticular, oval-obovoid, 2 mm. long, 1.25 mm. wide, at maturity yellowish-brown, very shortly substipitate, bent-apiculate; style slender, jointed with achene, at length deciduous; stigmas two, slender, light-reddish, short.

TYPE LOCALITY (of *C. straminea* var. *cumulata*, on which *C. cumulata* is based): Kent County, New Brunswick (*Rev. J. Fowler*, July 1870, distributed by Olney as *C. alata* var. *pulchra* Olney).

DISTRIBUTION: Rocky woods and ledges, sandy banks and plains, in acid soils, Nova Scotia to the pine barrens of New Jersey, and westward to Saskatchewan. (Specimens examined from Nova Scotia, New Brunswick, Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey (pine barrens), Pennsylvania, Michigan, Ontario, Manitoba, Saskatchewan.)

182. *Carex Longii* Mackenzie, Bull. Torrey Club 49: 372. 1927.

- "*Carex foenea* Willd." Ell. Bot. S. C. & Ga. 2: 533. 1824.
 — "*Carex leporina* L." Schlecht. & Cham. Linnaea 6: 29. 1831.
 — "*Carex straminea* var. *foenea* Torr. Ann. Lyc. N. Y. 3: 395. 1836. (As to plant described; not as to type.)
Carex straminea var. *intermedia* Gay, Ann. Sci. Nat. II. 10: 364, in very small part. 1838.
Carex leporina var. *bracteata* Liebm. Danske Selsk. Skr. V. 2: 264. 1851. (Type from Vera Cruz, Mexico.)
Carex lagopodioides var. *composita* Olney, Caric. Bor.-Am. 3, 4. 1871. (Based on "*C. foenea*" of Elliott and Schw. & Torr.)
Carex straminea var. *chlorostachys* Böck. Linnaea 39: 118. 1875. (Type from New Orleans, Louisiana.)
 — "*Carex albolutezensis* Schw." L. H. Bailey, Bull. Torrey Club 20: 422. 1893.

Very densely cespitose, the rootstocks very short-prolonged, blackish, fibrillose, the culms 3-5 dm. high, sharply triangular, slightly roughened on the angles beneath the head, slender to base but stiff, exceeding the leaves, light-brownish-tinged at base and conspicuously clothed with the dried-up leaves of the previous year, the lowest bladeless; leaves of the year with well-developed blades 2-4 to a fertile culm, on the lower half but not bunched, the blades ascending, light-green, thickish, 1-2.5 dm. long, 2-4 mm. wide, roughened towards the apex and on the margins, the sheaths rather tight, green-striate ventrally nearly to mouth, short-prolonged beyond base of blade and continuous with ligule; sterile culms with leaf-blades usually 2.5-3 mm. wide; inflorescence consisting of 3-10 gynaeandrous, silvery-green or silvery-brownish spikes, aggregated (or somewhat separate) into an erect, strict, ovoid to oblong-linear head 2-4 cm. long, 5-12 mm. thick, the spikes ovoid, 6-12 mm. long, 4-6 mm. wide, round-tapering at base, obtuse or obtuse-tapering at apex, the basal staminate flowers few (but their scales sometimes rather conspicuous, especially in the usually clavate terminal spike), the perigynia numerous, appressed-ascending, the beaks not spreading; one or two of the lower bracts present, short and setaceous, the others not developed; scales ovate, obtuse to acutish, silvery-hyaline with green 3-nerved center, shorter and much narrower than the perigynia; perigynia very flat-plano-convex, 3-4.5 mm. long, 2 mm. wide, membranaceous, silvery-green or at maturity light brownish green, the body broadly obovate, widest at top, strongly winged nearly to base, serrulate to below middle, distended over the achene, faintly to strongly slenderly several- to many-nerved on both sides, sessile, rounded

at base, abruptly contracted into a beak about 0.5 mm. long and one third to one fourth the length of the body, short, flat, serrulate, obliquely cut dorsally, at length bidentulate; achenes lenticular, oblong-obovoid, 1.5 mm. long, 0.75 mm. wide, short-apiculate, yellowish-brown, substipitate; style slender, jointed with achene, at length deciduous; stigmas two, slender, light-reddish, short.

TYPE LOCALITY: Cold Spring, Cape May County, New Jersey (*B. Long*, July 24, 1907).

DISTRIBUTION: Wet acid soils, mostly near the coast, Massachusetts to Venezuela; northwestern Indiana; also in Bermuda. (Specimens examined from Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, Texas, Mexico, northwestern Indiana, Guatemala, Bermuda.)

ILLUSTRATIONS: Boott, Ill. *Carex* 118. *pl.* 375; Britt. & Brown, Ill. *Fl.* *f.* 873; ed. 2, *f.* 941; Rob. & Fern. *Man. f.* 351; Engler, *Pflanzenreich* 4²⁰: 204. *f.* 34, *J, K*; Proc. Am. Acad. 37: *pl.* 1, *f.* 22-24; Rep. N. J. Mus. 1910: *pl.* 26, *f.* 6 (all except first as *Carex abolutescens* Schw.).

NOTE: This species, which has been known for about one hundred years, was from the time it first became known until 1889 mistakenly identified with *Carex foenea* Willd., and under that name appears in numerous publications. Bailey discovered the error and applied the name *Carex abolutescens* Schw. to the species, and under that name it has since appeared in botanical publications. However, an examination of the type of *Carex abolutescens* Schw. in Herb. Phila. Acad. shows that it is *Carex straminea* Willd., and accordingly another name has been given to the present species.

183. *Carex silicea* Olney, Proc. Am. Acad. 7: 393. 1868.

Carex straminea var. *moniliformis* Tuckerm. Enum. Caric. 7, in small part only; not as to *C. tenera* Dewey. 1843.

"*Carex adusta* Boott" Carey, in A. Gray, *Man. ed.* 2. 516. 1856.

Carex foenea var. γ Boott, Ill. *Carex* 118. *pl.* 377. 1862. (Type from Rhode Island.)

Carex foenea var. (?) *sabulonum* A. Gray, *Man. ed.* 5. 580. 1867. (Type from Maine southward.)

Carex straminea var. *silicea* L. H. Bailey, *Cat. N. Am. Car.* 4. 1884. (Based on *C. silicea* Olney.)

Carex moniliformis Britton, *Cat. Pl. N. J.* 278, in part. 1890. (As to plant, not *C. straminea* var. *moniliformis* Tuckerm.)

Densely caespitose, the rootstocks short-prolonged, blackish, strongly fibrillose, the culms 3-8 dm. high, stiff, sharply triangular above and slightly roughened on the angles beneath the head, terete towards base, exceeding or shorter than the leaves, very conspicuously clothed at base with the dried-up leaves of the previous year, the lowest bladeless; leaves with well-developed blades 4-8 to a fertile culm, on the lower half, but not bunched, the blades ascending, flat or somewhat canaliculate, 1-2 dm. long, 2.5-4 mm. wide, very light-green or glaucous-green, stiff, roughened towards the apex and on the margins and with a small hard knob on either side at base, the sheaths green-striate ventrally to mouth, very strongly prolonged in front beyond base of blade and continuous with ligule; sterile culms few, more leafy; inflorescence consisting of 3-12 silvery-greenish or silvery-brownish spikes, strongly separated in a long flexuous moniliform inflorescence 4-8 cm. long, the spikes gynaeceandrous, erect-ascending, with long-clavate base, obtusish at apex, 5-20 mm. long (including base), 4-7 mm. wide, the scales of the basal staminate flowers conspicuous, the pistillate parts ovoid, the perigynia numerous, appressed-ascending, the beaks strongly appressed; bracts scale-like or the lower short-prolonged; scales ovate, acute, hyaline with greenish or yellowish-brown midrib, shorter and much narrower than the perigynia; perigynia flattened-plano-convex, 3.5-5 mm. long, 2-2.5 mm. wide, membranaceous, silvery-green or in age silvery-brown, the body obovate-orbicular, widest near top, strongly winged to base and serrulate to middle, strongly many-nerved dorsally, rather faintly several-nerved ventrally, sessile, round-truncate at base, abruptly contracted into a beak one fourth the length of body, short, flat, serrulate, obliquely cut dorsally, at length bidentulate; achenes lenticular, thick, short-oblong or quadrate, 1.5 mm. long, 1 mm. wide, brown, substipitate, apiculate; style slender, jointed with achene, at length deciduous; stigmas two, slender, dark-brown, elongate.

TYPE LOCALITY: Specimens presumably collected by Olney "on rocks and beaches, Narragansett Bay," Rhode Island, are taken as the type.

DISTRIBUTION: Sands of the sea coast, Newfoundland to Delaware. (Specimens examined from Newfoundland, Quebec, Prince Edward Island, New Brunswick, Nova Scotia, Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware.)

ILLUSTRATIONS: Britt. & Brown, Ill. *Fl.* *f.* 869; ed. 2, *f.* 942; Rob. & Fern. *Man. f.* 360; Proc. Am. Acad. 37: *pl.* 2, *f.* 41, 42; Engler, *Pflanzenreich* 4²⁰: 204. *f.* 34, *G, H*; Rep. N. J. Mus. 1910: *pl.* 26, *f.* 3; Boott, Ill. *Carex* 118. *pl.* 377; Knobel, *Grasses pl.* 27, *f.* 103.

184. *Carex straminea* Willd.; Schkuhr, Riedgr. 49.*pl. G, f. 34.* 1801.*Carex alboluteles* Schw. Ann. Lyc. N. Y. 1: 66. 1824. (Type from Carolina and Pennsylvania.)*Carex straminea* var. *Schkuhrii* Gay, Ann. Sci. Nat. II. 10: 363. 1838. (Technically based on *C. straminea* Willd.)*Vignea straminea* Raf. Good Book 27. 1840. (Based on *Carex straminea* Willd.)

Densely caespitose, the rootstocks very short-prolonged, black, fibrillose, the culms slender to base, 2.5-9 dm. high, exceeding the leaves, sharply triangular and roughened on the angles immediately beneath the head, clothed at base with the dried-up leaves of the previous year, the lowest bladeless; leaves with well-developed blades 3-5 to a fertile culm, on the lower third, but much separated, the lower nodes exposed, the blades flat, green, erect-ascending, attenuate, usually 5-15 cm. long, 2-3 mm. wide, the margins rough, the sheaths rather loose, strongly green-striate ventrally nearly to mouth, yellowish-tinged, and continuous with ligule, very short-prolonged beyond base of blade at mouth; sterile culms conspicuous, the leaves more numerous; spikes 3-10, aggregated, approximate or more or less separate in a stiff head 2.5-6 cm. long, the spikes 6-10 mm. long, 4.5-6 mm. wide, ovoid, rounded at apex, the terminal long-clavate and staminate at base, the lateral rounded or short-clavate and sparingly staminate at base, with 15-30 appressed-ascending perigynia with erect or ascending or somewhat spreading beaks; bracts scale-like or the lowest often cuspidate-prolonged, 5-20 mm. long; scales ovate, acute or short-acuminate, white-hyaline with green strip on each side of midvein, slightly light-brownish-tinged, narrower and shorter than perigynia; perigynia thin except where distended by achene, 3.5 mm. long, 1.5-2 mm. wide, green or greenish, or in age straw-colored, wing-margined to base, serrulate nearly to middle, the body obovate-orbicular, widest towards top, many-nerved on outer face, slenderly about 5-nerved on inner face over achene, with an additional nerve in either margin, sessile, rounded at base, truncate-rounded at apex, very abruptly contracted into a beak one fourth to one half the length of body, the beak obliquely cut dorsally, at length bidentulate, flat and strongly serrulate; achenes lenticular, oval-oblong, 1.5 mm. long, 0.75 mm. wide, brownish, substipitate, slightly apiculate; style slender, obscurely jointed with achene, at length deciduous; stigmas two, light-reddish, short.

TYPE LOCALITY: "In nördlichen America."

DISTRIBUTION: In acid soils in swampy woodlands, Florida to Texas, northward along the Atlantic Coast east of the mountains to southwestern Nova Scotia, and in the Mississippi Valley to Indiana. (Specimens examined from Nova Scotia, New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Indiana, Illinois, Missouri, Tennessee, Georgia, Florida, Louisiana, Texas.)

ILLUSTRATION: Schkuhr, Riedgr. *pl. G, f. 34.*185. *Carex alata* Torr. Ann. Lyc. N. Y. 3: 396. 1836.*Kolerma alata* Raf. Good Book 27. 1840. (Based on *Carex alata* Torr.)" *Carex foenea* Willd." Chapm. Fl. S. U. S. 535. 1860. (Based on *C. alata* Torr.)*Carex straminea* var. (no. 3) Böck. Linnæa 39: 117. 1875. (Based on *C. alata* Torr.)*Carex straminea* var. *alata* L. H. Bailey, Cat. N. Am. Car. 4. 1884; Proc. Am. Acad. 22: 150. 1886(Based on *C. alata* Torr.)*Carex alboluteles* var. *alata* Kukenth. in Engler, Pflanzenreich 4²⁰: 209. 1909. (Based on *C. alata* Torr.)

Densely caespitose, the rootstocks very short-prolonged, blackish, fibrillose, the culms 3-12 dm. high, slightly roughened on the angles beneath the head, exceeding the leaves, sharply triangular, slender to base, light-brownish-tinged and clothed at base with the dried-up leaves of the previous year, their blades short, the lowest bladeless; leaves with well-developed blades 3-7 to a fertile culm, on the lower half, but strongly separate, the lower nodes exposed, the blades ascending, 1.2-5 dm. long, 2-4 mm. wide, flat, thickish, deep-green, roughened towards the apex and on the margins, the sheaths strongly green-striate ventrally to the thickened and yellowish-brown-tinged ligule, which surrounds the culm and is prolonged beyond base of blade; inflorescence consisting of 5-8 silvery-greenish or silvery-brownish spikes, aggregated (or the lowest slightly separated) into an erect, strict, oblong or linear-oblong head 2-4 cm. long, 12-20 mm. thick, the spikes gynaeandrous, subglobose to ovoid-oblong, 3-16 mm. long, 6-10 mm. wide, round-tapering at base, obtuse or obtuse-tapering at

apex, the basal staminate flowers few (but their scales sometimes rather conspicuous), the perigynia numerous, appressed-ascending, the beaks not spreading; one or two of the lower bracts present, short and setaceous, the others not developed; scales lanceolate or ovate-lanceolate, long-acuminate or aristate, shorter and much narrower than the perigynia, white-hyaline with 1-3-nerved green center; perigynia very flat, except where distended by achene, 4-5 mm. long, 2.5-4 mm. wide, membranaceous, silvery-green or in age silvery-brown, the body obovate-orbicular, broadest near top, strongly winged nearly to base, serrulate to the middle, finely many-nerved dorsally, faintly many-nerved ventrally, sessile, rounded at base, abruptly contracted into a beak 0.75 mm. long and one third to one fourth the length of the body, flat, serrulate, obliquely cut dorsally, bidentate; achenes lenticular, oblong, 1.75 mm. long, 1 mm. wide, slenderly stipitate, apiculate, yellowish-brown; style slender, jointed with achene, at length deciduous; stigmas two, very short, light-reddish.

TYPE LOCALITY: "Newbern, North Carolina, *Mr. Croom*; Macon, Georgia, *Dr. Loomis*."

DISTRIBUTION: Swampy meadows, in non-acid or calcareous soils, Massachusetts to Florida and Texas, and westward to Michigan and northwestern Indiana; best developed near the coast. (Specimens examined from Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Ohio, Michigan, Indiana, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Texas.)

ILLUSTRATIONS: Boott, Ill. *Carex* 118, pl. 378 (except Texas material); Britt. & Brown, Ill. Fl. f. 872; ed. 2, f. 940; Rob. & Fern. Man. f. 361; Proc. Am. Acad. 37: pl. 2, f. 43, 44; Rep. N. J. Mus. 1910; pl. 26, f. 5.

NOTE: The New Hampshire record is apparently based on specimens of *Carex straminea* Willd.

186. *Carex tribuloides* Wahl. Sv. Vet.-Akad. Nya Handl.

24: 145. 1803.

Carex lagopodioides Schkuhr; Willd. Sp. Pl. 4: 230. 1805. (Type from "America boreali.")

Carex scoparia var. *lagopodioides* Torr. Ann. Lyc. N. Y. 3: 394. 1836. (Based on *C. lagopodioides* Schkuhr.)

Carex lagopodioides f. *glomerata* Olney, Caric. Bor.-Am. 2, name only. 1871.

Cespitose, from short, blackish, fibrillose rootstocks, the culms 6-9 dm. high, strict, stoutish or slender, firm, exceeding the leaves, sharply triangular with concave sides, strongly roughened on the angles beneath the head, clothed at base with the dried-up leaves of the previous year, the lower bladeless, the lower nodes exposed; leaves with well-developed blades usually 4-10 to a fertile culm, on the lower half or two thirds, but not at all clustered, the blades flat with revolute margins, usually 2-4 dm. long, 2.5-7 mm. wide, light-green or yellowish-green, rather stiff, roughened especially on the margins and towards the apex, the sheaths loose, green-striate ventrally nearly to mouth, slightly thickened, white-hyaline, deeply or shallowly concave, and often with a dark band at mouth, short-prolonged beyond base of blade and continuous with ligule, the latter much longer than wide; sterile shoots elongate, with many widely spreading leaves; inflorescence consisting of 6-15 well-defined spikes aggregated into an oblong-linear to oblong-ovoid head 2.5-5 cm. long, 1-2 cm. thick, the spikes gynaeandrous, ovoid-oblong to subglobose, ascending or erect, straw-colored or greenish, 6-12 mm. long, 4-8 mm. wide, usually very blunt at apex, rounded or subclavate-tapering at base, the basal staminate flowers inconspicuous, the numerous perigynia erect-ascending, their tips appressed or ascending, the beaks of the uppermost only conspicuous; lower bract often present, setaceous, from shorter than to exceeding the head; upper bracts scale-like; scales lanceolate or ovate-lanceolate, light-yellowish-brown with conspicuous white-hyaline margins and prominent 3-nerved green center, acute or short-acuminate, narrower than and from half to two thirds the length of the perigynia; perigynia very flattened-plano-convex, ovate-lanceolate, 3-5 mm. long, about 1-1.5 mm. wide, more or less distended over the achene, strongly wing-margined and serrulate to below the middle, somewhat abruptly contracted into a narrower wing-margin extending to the base, membranaceous, greenish or soon straw-colored, the wings pellucid, several- to many-nerved on both sides, short-stipitate, round-tapering at base, tapering into a beak about one third the length of the whole, flat, serrulate, obliquely cut dorsally, bidentate, the margins of the orifice white-hyaline; achenes lenticular, oblong-oval, 1.5 mm. long, 0.5-0.75 mm. wide, short-stipitate, apiculate; style slender, straight, jointed with achene, at length deciduous; stigmas two, slender, dark-reddish-brown.

TYPE LOCALITY: "Hab. in America boreali, Kalm: ex herbar. Cel. Swartzii."

DISTRIBUTION: Wet meadows, Quebec to Minnesota, Florida, and Louisiana. (Specimens examined from Quebec, 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, Florida, Louisiana, Ontario, Ohio, Michigan, Indiana, Kentucky, Tennessee, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Arkansas, Oklahoma.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 862; ed. 2, f. 928; Rob. & Fern. Man. f. 343; Proc. Am. Acad. 37: pl. 1, f. 6, 7; Engler, Pflanzenreich 4²⁰: 200, f. 33, F, G; Schkuhr, Riedgr. pl. Yyy, f. 177; Rep. N. J. Mus. 1910: pl. 26, f. 2; Boott, Ill. Carex 116, pl. 370; Am. Jour. Sci. IV, 1: pl. 9, f. 2; Sv. Vet.-Acad. Nya Handl. 24: pl. 8, f. 68 (lower half of perigynium only).

NOTE 1: The character "capsulis xx patentibus" in the original description does not apply well to this species.

NOTE 2: *Carex flaccidula* Steud. (Syn. Cyp. 199. 1855, referred here, in part on the basis of specimens from Steudel, by Kükenthal in Engler, Pflanzenreich 4²⁰: 202) is as to description purely *C. rosea* Schkuhr, to which species Bailey (Mem. Torrey Club 1: 69) referred Steudel's original specimens.

Carex tribuloides var. *sangamonensis* Clokey, Rhodora 21: 84. 1919. *Carex tribuloides* var. *turbata* L. H. Bailey, Mem. Torrey Club 1: 55. 1889. (As to specimens, in part; not as to type.) Includes the more slender plants; leaf-blades averaging more narrow; spikes averaging 5 mm. wide; perigynia 3-4 mm. long, 1-1.5 mm. wide. TYPE LOCALITY: Macon County, Illinois. DISTRIBUTION: With the species, especially southward, but in poorer soil.

This more slender variety is widely distributed, but it is especially found in the more southern part of the range of *Carex tribuloides*. It is often well-marked. Boott's pl. 371, f. 1, based on a specimen collected by Tuckerman and cited by Bailey under *Carex tribuloides* var. *turbata*, is *C. projecta* Mackenzie.

187. *Carex projecta* Mackenzie, Bull. Torrey Club 35: 264. 1908.

—"*Carex scoparia* var. *lagopodioides* T. & G." Tuckerm. Enum. Caric. 17. 1843.

—"*Carex cristata* Schw." Kunze, Suppl. Riedgr. pl. 44, f. g. 1851.

Carex lagopodioides var. Boott, Ill. Carex 117, pl. 371, f. 1. 1862. (Based on collection by Tuckerman.)

Carex lagopodioides var. *moniliformis* Boott; (Olney, Caric. Bor.-Am. 3, name only. 1871) L. H. Bailey, Bot. Gaz. 10: 380. 1885. (Type from Kouchibouguac, New Brunswick.)

Carex tribuloides var. *reducta* L. H. Bailey, Proc. Am. Acad. 22: 148. 1886. (Based on *C. lagopodioides* var. *moniliformis* Olney.)

Carex tribuloides var. *turbata* L. H. Bailey, Mem. Torrey Club 1: 55. 1889. (Based on *C. tribuloides* var. Boott; excluding southern specimen.)

Carex tribuloides var. *reducta* f. *aggregata* Peck, Ann. Rep. N. Y. State Mus. 46: 132. 1893. (Type from Blue Mountain Lake, New York.)

Carex tribuloides var. *moniliformis* Britton; Britt. & Brown, Ill. Fl. 1: 356. 1896. (As to plant; not *C. scoparia* var. *moniliformis* Tuckerm.)

Carex cristata var. *reducta* Kükenthal, in Engler, Pflanzenreich 4²⁰: 201. 1909. (Based on *C. tribuloides* var. *reducta* L. H. Bailey.)

Cespitose, the rootstocks very short-prolonged, black, fibrillose, the culms 5-9 dm. high, exceeding the leaves, strongly roughened on the angles beneath the head, sharply triangular with concave sides, slender to base, not stiff, light-brown at base and clothed with the dried-up leaves of the previous year, the lower bladeless, the lower nodes often exposed; leaves with well-developed blades usually 4-6 to a fertile culm, on the lower half but not clustered, the blades flat, flaccid, light-green, spreading-ascending, usually 2-4 dm. long, 3-7 mm. wide, roughened especially on the margins and towards the apex, the sheaths loose, septate-nodulose and green-and-white-mottled dorsally, narrowly white-hyaline ventrally and easily broken, short-prolonged at mouth beyond base of blade and continuous with ligule, little or not at all colored and not thickened at mouth; ligule much longer than wide; blades of sterile shoots similar; inflorescence consisting of 8-15 well-defined spikes, alternately and usually loosely arranged in a moniliform inflorescence 3-5 cm. long, less than 1 cm. thick, the spikes gynaeandrous, subglobose, 4-8 mm. long, 5-7 mm. wide, straw-colored or greenish or even brownish, not turbinate, blunt at the apex, subclavate-tapering at base, the basal staminate flowers few, but their scales rather conspicuous, the perigynia 15-30, ascending-spreading, with conspicuous, loosely ascending, widely divergent or recurved beaks; lower bract frequently short-prolonged, much shorter than the head, upper bracts scale-like; scales lanceolate or ovate-lanceolate, brown with hyaline margins and 3-nerved green center, obtuse to acutish, narrower and much shorter than the perigynia, perigynia flat, lanceolate, 3.25-5 mm. long, about 1.5 mm. wide, thin, more or less distended over the achene, strongly wing margined and serrulate to below middle, somewhat abruptly contracted below middle into a narrower wing-margin extending

to the base, membranaceous, straw-colored, greenish above, several-nerved both dorsally and ventrally, short-stipitate, round-tapering at base, tapering into a beak one third to one half the length of the whole, flat, serrulate, obliquely cut dorsally, reddish-brown-tipped, shallowly bidentate, the orifice with yellowish-brown margins; achenes lenticular, oblong-oval, 1.5 mm. long, 0.5 mm. wide, apiculate, short-stipitate; style straight, slender, jointed with achene, at length deciduous; stigmas two, light-reddish-brown, slender, short.

TYPE LOCALITY: Kouchibouguac, New Brunswick (Fowler). Specimens distributed by Olney (Exsic. 2: 8), on which *C. lagopodioides* var. *moniliformis* and *C. tribuloides* var. *reducta* are based, are taken as the type.

DISTRIBUTION: Damp soil, Newfoundland to British Columbia, and southward to the District of Columbia and Iowa. (Specimens examined from Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, District of Columbia, West Virginia, Ontario, Michigan, Illinois, Wisconsin, Manitoba, Minnesota, Iowa, British Columbia.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2, f. 930; Rob. & Fern. Man. f. 344; Proc. Am. Acad. 37: pl. 1, f. 8; Kunze, Suppl. Riedgr. pl. 44, f. g; Boott, Ill. Carex 117: pl. 373; Knobel, Grasses pl. 27, f. 111.

188. *Carex cristatella* Britton; Britt. & Brown, Ill.

Fl. 1: 357. f. 865. 1896.

Carex cristata Schw. Ann. Lyc. N. Y. 1: 66. 1824. (Type from New Jersey.) Not *C. cristata* Clairv. 1811.

Carex straminea var. *cristata* Tuckerm. Enum. Caric. 18. 1843. (Based on *C. cristata* Schw.)

Carex lagopodioides var. *cristata* Carey, in A. Gray, Man. 545. 1848. (Based on *C. cristata* Schw.)

Carex lagopodioides var. *cristata* f. *minor* Olney, Caric. Bor.-Am. 3, name only. 1871.

Carex lagopodioides var. *cristata* f. *elongata* Olney, Caric. Bor.-Am. 3, name only. 1871.

Carex tribuloides var. *cristata* L. H. Bailey, Proc. Am. Acad. 22: 148. 1886. (Based on *C. cristata* Schw.)

Carex cristata f. *ellipsoidalis* Farwell, Rep. Mich. Acad. 22: 180. 1921. (Type from Lakeville, Michigan.)

Carex cristata var. *ellipsoidalis* Farwell, Papers Mich. Acad. 2: 17. 1923. (Based on *C. cristata* f. *ellipsoidalis* Farwell.)

Carex cristata var. *caelliformis* Farwell, Papers Mich. Acad. 2: 17. 1923. (Type from South Rockwood, Michigan.)

Cespitose, the rootstocks very short, black, fibrillose, the culms 3-10 dm. high, exceeding or exceeded by the leaves, stoutish and stiff, very sharply triangular with concave sides, strongly roughened on the angles beneath the head, light-brownish-tinged at base and clothed with the dried-up leaves of the previous year, the lower bladeless, the lower nodes exposed; leaves with well-developed blades 4-6 to a fertile culm, on the lower half, but not at all clustered, the blades flat with slightly revolute margins, usually 2-4 dm. long, 3-7 mm. wide, light-green or yellowish-green, rather stiff, roughened especially on the margins and towards the apex, the sheaths loose, green-striate ventrally nearly to mouth, hyaline, concave and slightly colored at mouth, prolonged beyond base of blade and continuous with ligule, the latter much longer than wide; sterile shoots with numerous widely spreading leaves; inflorescence consisting of 6-15 well-defined spikes, closely aggregated into an oblong head 2-3 cm. long, 8-15 mm. thick, the spikes gynaeceandrous, globose or subglobose, straw-colored or greenish, 4-8 mm. long, 4-8 mm. wide, very blunt at apex, round-truncate at base, the basal staminate flowers inconspicuous, echinate at maturity, the numerous perigynia with conspicuous stiff spreading or recurved beaks; lower bract setaceous-prolonged, shorter than the head; upper bracts scale-like; scales lanceolate or ovate-lanceolate, greenish-white or straw-colored, with hyaline margins and 3-nerved green center, acute or short-acuminate, much narrower than and scarcely half the length of the perigynia; perigynia plano-convex, obviously distended over the achene, lanceolate, strongly wing-margined and serrulate to below the middle, somewhat abruptly contracted into a narrower wing-margin extending to the base, 3-4 mm. long, 1.25-1.5 mm. wide, membranaceous but firm, green or at maturity straw-colored, slenderly several-nerved both dorsally and ventrally, short-stipitate, round-tapering at base, tapering into a beak about one third the length of the whole, flat and often slightly twisted at base, serrulate, obliquely cut dorsally, bidentate, the margins of the orifice slightly yellowish-brown-tinged; achenes lenticular, oblong-oval, 1.5 mm. long, 0.5 mm. wide, yellowish-brown, short-stipitate, apiculate; style straight, slender, jointed with achene, at length deciduous; stigmas two, reddish-brown, short, slender.

TYPE LOCALITY (of *C. cristata* Schw., on which *C. cristatella* is based): "N. Jersey."

DISTRIBUTION: Swampy meadows and thickets, eastern Massachusetts to North Dakota, and southward to Virginia and Missouri. (Specimens examined from Quebec, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, District of Columbia, West Virginia, Ontario, Ohio, Michigan, Indiana, Kentucky, Wisconsin, Illinois, Minnesota, Iowa, Missouri, Nebraska, South Dakota, North Dakota.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 865; ed. 2. f. 929; Rob. & Fern. Man. f. 350; Engler, Pflanzenreich 4th: 200. f. 33, D, E; Proc. Am. Acad. 37: pl. 1, f. 19-21; Boott, Ill. Carex 117, pl. 372 (excluding right-hand fig. a); Ann. Lyc. N. Y. 1: pl. 24, f. 1; Am. Jour. Sci. 11: pl. K. f. 31; Francis, Grasses 311.

189. *Carex muskingumensis* Schw. Ann. Lyc. N. Y. 1: 66. 1824.

Carex arida Schw. & Torr. Ann. Lyc. N. Y. 1: 312. pl. 24, f. 2. 1825. (Based on *C. muskingumensis* Schw.)

"*Carex scoparia* Schkuhr" Torr. Ann. Lyc. N. Y. 3: 394. 1836. (In part, *i. e.*, as to *C. muskingumensis* Schw.)

Carex scoparia var. *muskingumensis* Tuckerm. Enum. Caric. 817. 1843. (Based on *C. muskingumensis* Schw.)

Thysanocarex muskingumensis Fedde & Schuster, Bot. Jahresb. 41²: 12. 1918. (Based on *Carex muskingumensis* Schw.)

Cespitose, from short-prolonged, stout, blackish, fibrillose rootstocks, the sterile culms numerous, the fertile few, 6-10 dm. high, exceeding the leaves, slender to base but strict, roughened on the angles above, sharply triangular, the sides concave, brownish-tinged below and conspicuously clothed with the dried-up leaves of the previous year, the lower bladeless, the lower nodes exposed; sterile culms very leafy, with many leaves, the blades widely spreading; fertile culms with about 7-12 well-developed leaves, regularly disposed on the lower half, the blades flat, light-green, thin but stiff, noticeably spreading, usually 1.5-2.5 dm. long, 3-4 mm. wide, roughened on the margins and towards the apex, the sheaths rather loose, green-striate ventrally nearly to mouth, very firm and not breaking, deeply concave at mouth, the ligule thickish, as wide as long; blades of sterile shoots wider (4-5 mm.) and semicordate at base; inflorescence consisting of 5-12 approximate, linear-elliptic spikes forming a linear-oblong to oblong head 5-8 cm. long, 15-20 mm. thick, the spikes gynaeceandrous, straw-colored or brownish, 1.5-2.5 cm. long, 5-7 mm. wide, tapering to the blunt apex, tapering to a sub-clavate (or sometimes clavate) base, the basal flowers staminate, not conspicuous, rarely numerous and conspicuous, the numerous perigynia erect, closely appressed, with closely appressed beaks; bracts scale-like or the lowest short-prolonged; scales oblong-ovate, acute or obtusish, yellowish-brown with conspicuous hyaline margins and 3-nerved lighter center, rather narrower than and about half the length of the perigynia; perigynia flat and scale-like, somewhat distended over the achene, narrowly oblong-lanceolate, 7-10 mm. long, 2.5 mm. wide, rather strongly wing-margined and serrulate to below middle, somewhat abruptly contracted into a narrower wing-margin extending to base, membranaceous, straw-colored, the margins pellucid above, finely several- to many-nerved both dorsally and ventrally, round-tapering at base, tapering at apex into a beak about one third the length of the whole, flat, serrulate, obliquely cut dorsally, deeply bidentate, slightly reddish-brown-tipped; achenes lenticular, linear-oblong, 2.5 mm. long, 0.75 mm. wide, yellowish-brown, short-stipitate, conspicuously apiculate; style straight, slender, jointed with achene, at length deciduous; stigmas two, slender, reddish-brown, short.

TYPE LOCALITY: "Ohio" ("Tuscarora county, Ohio, near Muskingum river" Schw. & Torr. Ann. Lyc. N. Y. 1: 313).

DISTRIBUTION: Moist woods and thickets, Ohio and Kentucky to Manitoba, Missouri, and eastern Kansas. A very well-marked species. (Specimens examined from Ohio, Indiana, Kentucky, Michigan, Wisconsin, Minnesota, Manitoba, Illinois, Iowa, Missouri, eastern Kansas.)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 861; ed. 2. f. 931; Rob. & Fern. Man. f. 340; Proc. Am. Acad. 37: pl. 1, f. 1, 2; Engler, Pflanzenreich 4th: 200. f. 33, A-C; Ann. Lyc. N. Y. 1: pl. 24, f. 2; Boott, Ill. Carex 20. pl. 54; Am. Jour. Sci. 11: pl. L, f. 35; IV. 1: 350. f. 3.

190. *Carex arapahoensis* Clokey, Rhodora 21: 83. 1919.

Densely cespitose, the rootstocks very short, the culms 1.5-4 dm. high, strict, slender above, 3-4.5 mm. thick at base, sharply triangular above and roughened beneath head, exceeding the leaves, brownish-tinged at base, biennial, aphyllopodic, the dried up leaves of

the first year usually conspicuous; sterile shoots elongate; leaves with well-developed blades 5-8 to a fertile culm, on lower third, not strongly bunched, the blades erect, light-green, thin but firm, flat or slightly channeled above, 7-25 cm. long, 1.5-3 mm. wide, rough towards apex, very long-attenuate, the slender tip triangular, curved; sheaths tight, white-hyaline ventrally, truncate at mouth, the ligule wider than long; head subglobose, 1-2 cm. long, nearly as thick, the spikes 3-6, gynaeceandrous, very densely aggregated, broadly ovoid, 7-11 mm. long, 4-8 mm. wide, rounded at base, rounded or slightly pointed at apex, the perigynia 25-40, appressed-ascending in several to many rows, the beaks not conspicuous; staminate flowers inconspicuous; bracts scale-like, membranaceous, not at all prolonged or sometimes the lowest slightly so, shorter than spikes, ovate, chestnut-brown, very strongly white-hyaline-margined; scales ovate, obtuse, very membranaceous and closely appressed, nearly width above and nearly length of perigynia and nearly concealing them, dark-chestnut-brown, with inconspicuous or nearly obsolete lighter midvein and conspicuous white-hyaline apex and upper margins; perigynia very flat except where distended by achene, 4.5-5.25 mm. long, 2-2.5 mm. wide, the body obovate, widest above middle, wing-margined to base, membranaceous, finely many-nerved on both faces, sessile, round-tapering at base, abruptly beaked, the beak and upper half or third of body serrulate, the beak 1 mm. long, flat, serrulate nearly to tip, strongly white-hyaline at tip, strongly obliquely cut dorsally, not bidentate or obscurely so; achenes lenticular, loosely enveloped in lower half of perigynium-body, broadly oval, 1.75-2 mm. long, 1.2-1.5 mm. wide, yellowish-brown, nearly sessile, rounded at apex, abruptly minutely apiculate, jointed with the straight, slender style; stigmas two, slender, brownish, long.

TYPE LOCALITY: Arapahoe Peak, Boulder County, Colorado, 3500 meters altitude (*Clokey 3227*).

DISTRIBUTION: Dry mountain-sides at high altitudes above timber-line, central Colorado. (Specimens examined from central Colorado.)

191. *Carex xerantica* L. H. Bailey, Bot. Gaz. 17: 151. 1892.

Carex foenea var. *xerantica* Kükenth. in Engler, Pflanzenreich 4²⁰: 205. 1909. (Based on *C. xerantica* L. H. Bailey.)

Cespitose, from short-creeping, tough, black, fibrillose rootstocks, the culms 3-6 dm. high, stiff, erect, much exceeding the leaves, obtusely triangular below, sharply triangular and roughened at base of head, brownish-tinged at base, the dried-up leaves of the previous year inconspicuous, very short-bladed or bladeless; leaves with well-developed blades 2 or 3 to a culm, clustered towards the base, the blades flat, light-green, stiffish, 1-2 dm. long, 2-3 mm. wide, roughened towards the apex, the sheaths tight, white-hyaline ventrally, concave at mouth, short-prolonged beyond the base of the blade and continuous with the ligule; spikes 3-6, gynaeceandrous, approximate but very distinct, forming a head 3-5 cm. long and nearly 1 cm. thick, the spikes sessile, ascending, ovoid-elliptic, tapering to the apex, the lateral round-tapering, the terminal clavate at base, 8-14 mm. long, or longer in the terminal one, 5-8 mm. wide, the basal staminate flowers few and inconspicuous except in the terminal spike, the rather numerous perigynia closely appressed; lowest bracts short-prolonged, not prominent, the others scale-like; scales ovate, thin, light-reddish-brown, with 3-nerved green center and wide white-hyaline margins, acutish, about width and length of perigynia and nearly concealing them until over-ripe; perigynia flat, but thickish over the achene, ovate, 4-5.5 mm. long, 2-2.5 mm. wide, membranaceous, greenish or at maturity golden-yellow at base, strongly winged to base, serrulate to below middle, lightly many-nerved dorsally, nerveless or nearly so ventrally, round-tapering at base, tapering into a beak about one fourth of the whole length of the perigynia, flat, serrulate, obliquely cut dorsally, hyaline and reddish-brown-tipped, bidentate, the orifice white-hyaline-margined; achenes lenticular, quadrate-suborbicular, 2.5 mm. long, 1.5-1.75 mm. wide, substipitate, very short-apiculate, dull-yellowish-brown; style slender, straight, jointed with achene, at length deciduous; stigmas two, light-reddish-brown, slender, elongate.

TYPE LOCALITY: File Hills, British America (104° longitude, and 50½° latitude), *John Macoun*, July 4, 1879; also Moose Jaw, about thirty miles west and forty south of File Hills (*Macoun*, July 18, 1880.)

DISTRIBUTION: Prairies and plains, Manitoba to Alberta, and southward to New Mexico.

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