# Keys to the Cyperaceae of Ontario

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## Key to the Genera

The generic key was written by A. A. Reznicek, used here with permission.

1. Achenes enclosed in a closed sac (perigynium) beside a subtending scale, the style protruding through the apex; flowers strictly unisexual
***Carex*, page 8**
1. Achenes not enclosed in a closed sac, naked beneath or beside a subtending scale; at least some flowers perfect (except in *Scleria*).
2. Achenes white, hard (bone-like), ± spherical; flowers all unisexual
***Scleria*, page 7**
2. Achenes yellow, brown, or black, rarely whitish, not spherical; at least some flowers perfect.
3. Spikelets ± strongly flattened in cross section, with scales in two clear ranks; spikelets always more than one per inflorescence.
4. Stems usually ± angled, solid; inflorescences terminal; achenes without subtending bristles.
5. Inflorescences capitate to branched; spikelets with elongated rachillas, more than 2-flowered . . . . . ***Cyperus***
5. Inflorescences densely capitate; spikelets with very short rachillas, 1(-2)-flowered . . . . . ***Kyllinga pumila***
4. Stems round, hollow; inflorescences in the axils of stem leaves; achenes with subtending bristles
***Dulichium arundinaceum***
3. Spikelets round or several-angled in cross section, with numerous scales arranged spirally; spikelets one or several to many per inflorescence.
6. Bristles 6, 3 slender and 3 with an expanded, ± spongy, spoon-like portion at the tip . . . . . ***Fuirena pumila***
6. Bristles absent or 1 to many, all slender.
7. Spikelet or cluster of spikelets borne on one side of the stem at the base of a single ± erect to somewhat angled or curved, elongate (longer than the spikelet or cluster of spikelets) involucral bract that appears to be a continuation of the stem.
8. Stems less than 0.5 mm thick; plants tiny, less than 10cm tall . . . . . ***Lipocarpha micrantha***
8. Stems thicker than 0.5 mm; plants usually much taller
***Schoenoplectus*, page 6**
7. Spikelet or spikelets terminating the stem or born both terminally and laterally; if more than one spikelet, the inflorescence often with (1-)2-several spreading to reflexed, leaf-like involucral bracts.
9. Spikelet solitary and terminal on the stem.
10. Sheaths totally bladeless or at most with an apical tooth up to 1 mm long; achenes usually with an apical tubercle formed by the expanded and persistent base of the style
***Eleocharis*, page 2**
10. Upper sheaths with short blades 0.3-12 cm long; achenes blunt at apex, tubercle absent.
11. Achenes subtended by conspicuous silky, white or tawny, hair-like bristles many times as long as the achenes.
12. Bristles numerous, ca. (12-)15-50 or more
***Eriophorum*, page 5**
12. Bristles 6 . . . . . ***Trichophorum alpinum***
11. Achenes subtended by 1-8 bristles less than twice as long as the achenes, or bristles absent
***Trichophorum*, page 8**
9. Spikelets several to many on the stem, terminal or lateral.
13. Achenes subtended by (12-)15-50 conspicuous, silky, white or tawny, hair-like bristles many times as long as the achenes . . . . . ***Eriophorum*, page 5**
13. Achenes subtended by 1-8 bristles, or bristles absent.
14. Leaves flat or folded; with a definite, ± keeled midrib.

15. Achenes with a conspicuous tubercle formed by the expanded, persistent style base
***Rhynchospora*, page 6**
15. Achenes blunt at apex, without a tubercle; style base not persistent if expanded.
16. Widest leaves 4-15 mm wide; achenes subtended by 1-8 bristles.
17. Spikelets (10-)15-35 mm long; rhizomes with prominent corm-like thickenings
***Bolboschoenus*, page 2**
17. Spikelets smaller; plants cespitose or, if rhizomatous, then rhizomes lacking corm-like thickenings . . . . . ***Scirpus*, page 7**
16. Widest leaves 0.5-3 mm wide; achenes bristleless
***Fimbristylis*, page 6**

14. Leaves inrolled and wiry; rounded on the back and without a definite midrib.
18. Styles 2-cleft; achenes subtended by slender bristles
***Rhynchospora*, page 6**
18. Styles 3-cleft; achenes bristleless.
19. Rhizomatous perennials 4-11 dm tall; achenes 2.2-3.5 mm long . . . . . ***Cladium mariscoides***
19. Tufted annuals 0.2-4 dm tall; achenes 0.7-0.8 mm long . . . . . ***Bulbostylis capillaris***

## *Bolboschoenus*

1. Inflorescences with all spikelets sessile or not more than 1/2 on evident branches; perianth bristles not persistent on shed achene or 1-few bristles weakly persistent; achenes biconvex or compressed-trigonous with low, rounded abaxial angle; achene epidermal cells appearing greatly enlarged in cross section, 2-3+ times deeper than wide; styles 2-3-fid; habitats brackish to saline. . . . . ***B. maritimus* subsp. *paludosus***
1. Inflorescences with all or most spikelets on evident, elongated branches; perianth bristles tightly attached to shed achene, rarely some or all falling separately; achenes equilaterally trigonous to compressed-trigonous or rarely some biconvex; achene epidermal cells appearing small in cross section, isodiametric or very rarely enlarged and to 3 times deeper than wide (in *B. novae-angliae*); styles mostly 3-fid; habitats fresh to slightly brackish. . . . . ***B. fluviatilis***

## *Cyperus*

1. Stigmas 2 (3 in C. serotinus); achenes biconvex.
***Cyperus subg. Pycreus***
1. Stigmas 3; achenes trigonous, plano-convex, or terete.
2. Spikelets borne in digitate clusters (rarely singly) or in umbellate or glomerulate heads. . . . . ***Cyperus subg. Pycnostachys***
2. Spikelets borne in spikes on conspicuous rachis.
3. Rachilla continuous or articulate only at base.
***Cyperus subg. Cyperus***
3. Rachilla articulate at base of each scale, mature spikelet disarticulating into segments consisting of scale, internode, and rachilla wings. . . . . ***Cyperus subg. Diclidium***

## *Eleocharis*

1. Spikelet scales with 15+ prominent to obscure, close, longitudinal veins running length of scale; achenes markedly (to obscurely) sculptured at 10-15×, with 10-40 longitudinal rows of enlarged, horizontally elongated or isodiametric cells that are not distinctly depressed; spikelets cylindric to narrowly ellipsoid, (6-)9-76 mm, often as wide as culms; culms often hollow with complete transverse septa.
2. Spikelets 1.4-3 mm wide, with 4-26 floral scales; submersed plants often forming flaccid culms without spikelets. . . . . ***E. robbinsii***
2. Spikelets 3-8 mm wide, with 30-220 floral scales; plants never forming flaccid culms without spikelets.
3. Culms hollow, with complete transverse septa (mostly evident externally). . . . . ***E. equisetoides***
3. Culms internally spongy, with incomplete transverse septa.
***E. quadrangulata***

1. Spikelet scales with 1 vein (midrib) or rarely to 10 widely spaced longitudinal veins; achenes smooth to markedly sculptured at 10×, if with longitudinal rows of enlarged cells at 10× then cells distinctly depressed; spikelets mostly ovoid, seldom cylindric or narrowly ellipsoid, rarely as wide as culms; culms rarely hollow with complete transverse septa.
4. Achenes with 9-13 longitudinal rows of fine horizontal ridges (trabeculae) between much more prominent longitudinal ridges and achene angles, trigonous or nearly circular in cross section; spikelets with proximal scale subtending flower; distal leaf sheaths thinly membranous-hyaline, often disintegrating; culms to 1.5 mm wide, spongy. . . . . ***E. acicularis***

4. Achenes without longitudinal rows of fine horizontal ridges, biconvex to trigonous or nearly circular in cross section; spikelets with proximal scale subtending flower or not (empty); distal leaf sheaths papery to thinly membranous-hyaline, persistent or disintegrating; culms to 5 mm wide.
   5. Proximal internodes of rachillae thicker and shorter than internodes in middle of spikelet; spikelet scales 4-12 per spikelet; rhizomes present, often with terminal bulb; achenes usually distally narrowed into thick beaklike region, smooth or finely longitudinally ridged or reticulate at 10-20×, 1.5-2.7 mm; tubercles often similar to and merging with achene apex in color, texture, and form. ***E. quinqueflora***
   5. Proximal internodes of rachillae as thick and long as internodes in middle of spikelet; spikelet scales 5-500+ per spikelet; rhizomes present or absent, without bulb, sometimes (in 8a3. sect. Parvulae) with terminal tuber; achenes rarely distally narrowed into thick beaklike region, never finely longitudinally ridged, smooth or variously sculptured at 10-20×, 0.4-2 mm; tubercles clearly different from achene apex in color, texture, and form and not merging with achene apex, or rarely similar to and merging with achene apex ***E.* subgenus *Eleocharis***

## *Eleocharis* subgenus *Eleocharis*

1. Styles 2-fid, sometimes to 1/3 3-fid; achenes biconvex or sometimes to 1/3 trigonous, smooth or finely rugulose at 10-20×; plants never stoloniferous or proliferating from spikelets.
   2. Distal leaf sheaths often disintegrating, delicately membranous, usually prominently inflated and conspicuously wrinkled; culms 0.1-0.6 mm wide; creeping rhizomes present (often inconspicuous). ***E. flavescens* var. *olivacea***
   2. Distal leaf sheaths evident, rarely disintegrating, firmly membranous to papery, not prominently inflated or conspicuously wrinkled; culms 0.3-5 mm wide; creeping rhizomes present or absent.
      3. Plants annual (rarely perennial?), without creeping rhizomes; anthers 0.2-1 mm; achenes green, stramineous, pale brown, dark brown, or black; distal leaf sheath apex narrowly acute to acuminate.
         4. Tubercles not strongly dorsiventrally compressed, cross section shape similar to shape of achene, not sessile on achene; achenes brown ripening to black; distal leaf sheath apex not toothed. ***E. geniculata***
         4. Tubercles strongly compressed dorsiventrally, cross section shape proportionally much thinner than shape of achene, sessile on achene; achenes stramineous to dark brown; distal leaf sheath apex often toothed.
            5. Tubercles not more than 1/4 as high as achene (rarely to 2/5 as high as achene in *E. engelmannii* var. *robusta*, 1/10-1/2 as high as wide); perianth bristles shorter than achene to ± equaling tubercle, or often absent.
               6. Tubercles 0.1-0.2 × 0.25-0.45 mm, 1/3-1/2 as high as wide; perianth bristles absent; spikelets ovoid, scales acute; very local in Northeast. . . . . ***E. diandra***
               6. Tubercles (0.1-)0.2-0.3(-0.4) × 0.6-0.9(-1) mm, 1/10-2/5 as high as wide; perianth bristles present or absent; spikelets lanceoloid to subcylindric or ovoid, scales subacute to narrowly rounded; widespread. . . . . ***E. engelmannii***
            5. Tubercles 1/4 or more as high as achene, 1/3 to as high as wide; perianth bristles equaling to usually markedly exceeding tubercle, rarely shorter or absent.
               7. Tubercles 0.3-0.5 mm wide; spikelets ovoid. . . . ***E. ovata***
               7. Tubercles 0.5-0.8 mm wide; spikelets broadly ovoid to lanceoloid (or ellipsoid or subcylindric). . . . . ***E. obtusa***
   3. Plants perennial, with creeping rhizomes; anthers 1-2.5 mm; achenes yellow to dark brown or sometimes green; distal leaf sheath apex truncate to subacute.
      8. All or some culms with distal leaf sheath apex with distinct, abrupt tooth.
         9. Proximal scale of spikelets clasping (2/3-)3/4 (rarely all) of culm; subproximal scale of some (rarely all) spikelets without flower (empty); culms usually distinctly compressed; achenes smooth at 30× or finely rugulose at 10-20×; tubercles as high as wide or higher. . . . . ***E. macrostachya***
         9. Proximal scale of spikelets clasping all of culm (amplexicaulous); subproximal scale of all spikelets with flower; culms terete; achenes finely rugulose at 10×; tubercles sometimes lower than wide. . . . . ***E. erythropoda***
      8. All culms with distal leaf apex without distinct, abrupt tooth.
         10. Proximal scale of spikelets clasping 2/3(-3/4) of culm; all spikelets with empty subproximal scale.
            11. Perianth bristles (4-)5-6(-8), exceeding tubercle; achene apex without distinct neck, tubercles sessile on achenes; mostly boreal. . . . . ***E. mamillata***
            11. Perianth bristles 0-4(-5), rarely exceeding tubercle; achene

apex with or with out distinct neck, tubercles often not sessile on achenes; widespread. . . . . ***E. palustris***

10. Proximal scale of spikelets clasping 3/4+ of culm; subproximal scale with flower or empty.
    12. Subproximal scale of some spikelets of plant empty; proximal scale of some or all spikelets usually clasping less than all of culm. . . . . ***E. macrostachya***
    12. Subproximal scale of all spikelets of plant with flower; proximal scale of all spikelets clasping all of culm (amplexicaulous).
        13. Floral scales in middle of spikelet not more than 1.8 mm wide, 4-5 per mm of rachilla. . . . . ***E. erythropoda***
        13. Floral scales in middle of spikelet 1.8-2.5 mm wide, 2-4 per mm of rachilla. . . . . ***E. uniglumis***

1. Styles 3-fid, sometimes to 2/3 2-fid; achenes trigonous, or subcircular in cross section, or sometimes mostly biconvex, smooth to prominently variously sculptured at 10×; plants sometimes stoloniferous or proliferating from spikelets.
    14. Achenes biconvex or sometimes less than 1/3 of achenes compressed trigonous, smooth; tubercles strongly compressed dorsiventrally, in cross section much thinner than achene; plants tufted annuals; spikelets not proliferous.
        15. Tubercles not more than 1/4 as high as achene, 0.1-0.3 mm (rarely 2/5 as high as achene and 0.4 mm high in *E. engelmannii* var. *robusta*); perianth bristles often absent, rudimentary to slightly exceeding tubercle. . . . . ***E. engelmannii***
        15. Tubercles 1/3-1/2 as high as achene, 0.35-0.5 mm; perianth bristles present (very rarely absent), slightly to usually greatly exceeding tubercle. . . . . ***E. obtusa***
    14. Achenes trigonous or subterete or to 2/3 of achenes biconvex, smooth to variously sculptured; tubercles not strongly compressed dorsiventrally, in cross section similar in shape to achene; plants rhizomatous or tufted perennials or tufted annuals or stoloniferous; spikelets sometimes proliferous.
        16. Some or all culms with distal leaf sheath apex with distinct, abrupt tooth; distal leaf sheaths persistent.
            17. Spikelets with some or all scales except the proximal emarginate to 2-fid.
                18. Some or all floral scales with apex acute to acuminate, 2-fid to shallowly cut, with translucent apex in middle part of spikelet 0.6-1.5 mm and mostly longer than wide; culms subterete, to 5 times wider than thick, to 1.8 mm wide; rhizomes 2-3 mm thick, longer internodes to 2 mm; achenes rugulose at 10-30×. ***E. compressa* var. *compressa***
                18. Some or all floral scales with apex rounded, obtuse, or acute, shallowly notched to deeply cut, with translucent apex in middle part of spikelets 0.2-0.7 mm and at least as wide as long; culms terete or subterete, to 2 (rarely 3) times wider than thick, to 0.8 mm wide; rhizomes 0.5-2.5 mm thick, longer internodes 2-10 mm; achenes rugulose or cancellate at 10×. ***E. elliptica***
            17. Spikelets with all scales entire.
                19. Rhizomes with longer internodes to 2 mm, 2-3 mm thick; achenes falling with scales or some persistent; culms seldom compressed, to 1.8 mm wide. . . ***E. compressa* var. *compressa***
                19. Rhizomes with longer internodes 2-10 mm, 0.5-2.5 mm thick; achenes falling with scales or persistent after scales fall; culms angled or terete, seldom compressed, to 0.8 mm wide. ***E. elliptica***
        16. Culms with distal leaf sheath apex without distinct, abrupt tooth; distal leaf sheaths persistent or disintegrating.
            20. Spikelets with some or all scales shallowly notched to 2-fid; distal sheaths persistent.
                21. Floral scales with apex acute to acuminate, all 2-fid or some in same spikelet entire, in middle part of spikelet with colorless, hyaline apex 0.6-1.5 mm and mostly longer than wide; culms subterete to greatly compressed, to 1.8 mm wide; rhizomes 2-3 mm thick, longer internodes to 2 mm. ***E. compressa* var. *compressa***
                21. Floral scales with apex rounded to obtuse, rarely acute, emarginate to 2-fid or some in same spikelet entire, in middle part of spikelet with colorless, hyaline apex 0.2-0.7 mm and at least as wide as long; culms mostly not compressed, sometimes to 2 or rarely 3 times as wide as thick, to 0.8 mm wide; rhizomes 0.4-2.5 mm thick, longer internodes 2-10 mm. ***E. elliptica***
            20. Spikelets with all scales entire; distal sheaths persistent or disintegrating.
                22. Distal leaf sheath apices persistent, membranous to papery, subtruncate to obtuse, seldom acute; plants perennial, with creeping rhizomes or short, mostly ascending, caudexlike rhizomes.
                    23. Plants densely tufted from short, caudexlike rhizomes mostly hidden by culms, the internodes and scales usually

not evident; creeping rhizomes absent. . . . ***E. rostellata***

23. Plants mat-forming or sometimes densely tufted, with creeping rhizomes, internodes and scales evident (often hidden by culms and roots in *E. decumbens*).
    24. Spikelets with scales 1-1.3 mm; boreal. . . . . ***E. nitida***
    24. Spikelets with scales 1.5-4 mm; nonboreal.
        25. Floral scales narrowly acute to acuminate; culms usually clearly compressed; rhizomes with longer internodes to 2 mm, 2-3 mm thick; achenes falling with or before scales, rugulose and sometimes finely cancellate at 10-30×; widespread e of Rocky Mountains. ***E. compressa* var. *compressa***
        25. Floral scales rounded to acute; culms terete or angled, sometimes slightly compressed; rhizomes with longer internodes 2-30 mm, 0.3-2.5 mm thick; achenes sometimes persistent after scales fall, smooth to clearly rugulose or cancellate at 10×; ranges various. ***E. elliptica***

22. Distal leaf sheath apices either persistent, membranous to papery, acute to lanceolate, or disintegrating; plants annuals or perennials, with or without creeping or caudexlike rhizomes. ***E. intermedia***

## *Eriophorum*

1. Spikelets solitary, erect, without blade-bearing involucral bracts; distal leaves on culms bladeless or with blades not more than 1 cm; proximal scales of spikelets usually empty.
    2. Culms usually solitary; empty proximal scales usually not more than 7.
        3. Anthers not longer than 1.5 mm; perianth bristles bright white; spikelets broadly obovoid to subglobose in fruit; fertile scales with hyaline margins not more than 1 mm wide. . . . ***E. scheuchzeri***
        3. Anthers 1 mm or longer; perianth bristles red-brown to white; spikelets globose in fruit; fertile scales with hyaline margins at least 1 mm wide. . . . . ***E. chamissonis***
    2. Culms densely tufted; empty proximal scales usually 10 or more.
        4. Proximal scales spreading or reflexed in fruit, with white-hyaline margins to 1 mm wide; perianth bristles pure white in fruit; distal sheaths on culms inflated. . . . . ***E. vaginatum***
        4. Proximal scales appressed to ascending, without conspicuous whitish margins; perianth bristles white or brownish; distal sheaths on culms inflated or not.
            5. Culms to 70 cm, smooth; sheaths evenly distributed along culms, distal not inflated, bladeless; proximal scales with broad ribless margins; perianth bristles creamy white to pale brown; anthers to 2 mm . . . . . ***E. brachyantherum***
            5. Culms not more than 25(-50) cm, rough distally; sheaths mostly confined to proximal 1/2 of culm, often with short blade; proximal scales with ribs ± to margins; perianth bristles white to pale brown; anthers to 1 mm. . . . . ***E. callitrix***
1. Spikelets usually 2 or more, spreading or nodding, subumbellate or capitate, subtended by 1 or more blade-bearing involucral bracts, sometimes reduced to sheaths; distal leaves on culms with blades at least 1 cm; proximal scales of spikelets usually subtending flowers.
    6. Inflorescences with single blade-bearing bract; leaf blades channeled in cross section for entire length, not more than 1.5(-3) mm wide.
        7. Anthers 2-5 mm; longer scales 5-10 mm, proximal scales without lateral ribs. . . . . ***E. angustifolium* subsp. *angustifolium***
        7. Anthers 1-2(-2.5) mm; longer scales 3-4.5 mm, proximal (2-)3-9-ribbed, lateral ribs usually thinner and shorter than central.
            8. Distal leaf blades 30-250 mm, longer than sheath; culms scabrous distally; scales with at least some red-brown. ***E. tenellum***
            8. Distal leaf blades 10-40 mm, shorter than sheath; culms distally smooth; scales black or dark gray. . . . . ***E. gracile***
    6. Inflorescences with (1-)2-5 blade-bearing bracts; leaf blades flat at least in proximal 1/2, 1.5-6+ mm wide.
        9. Scales brown often with green center, ribs obscure or several equally prominent; perianth bristles usually brown, at least proximally, rarely entirely white. . . . . ***E. virginicum***
        9. Scales greenish gray to black with pale tip, midrib prominent; perianth bristles white or pale brown.
            10. Scales with midrib prominent and enlarged towards tip, sometimes excurrent; anthers 0.8-2 mm; peduncles scabrous. ***E. viridicarinatum***
            10. Scales with midrib fading toward tip; anthers (2-)2.5-5 mm; peduncles smooth or scabrous. ***E. angustifolium* subsp. *angustifolium***

## *Fimbristylis*

1. Styles 3-fid; ligule of short hairs complete; plants annual.
***F. autumnalis***
1. Styles 2-fid; ligule absent or incomplete; plants perennial.
***F. puberula* var. *puberula***

## *Rhynchospora*

1. Perianth bristles retrorsely barbellate (except in scattered forms of *R. capitellata*, *R. cephalantha*, and *R. capillacea*, in which bristles are either smooth or antrorsely barbellate); base of fruit body narrowed to stipe.
   2. Spikelets whitish to straw colored, pale dull brown to pale red brown (pallid in living material); perianth bristles 10-20. . . . . ***R. alba***
   2. Spikelets rich red brown (rarely pale brown) to dark brown; perianth bristles 6.
      3. Clusters of spikelets ovoid or ellipsoid; spikelets all ascending or erect; fruit body narrowly ellipsoid. . . . . ***R. capillacea***
      3. Clusters of spikelets turbinate to hemispheric or globose; spikelets spreading to erect; fruit body obovoid or round. . . ***R. capitellata***
1. Perianth bristles, when present, antrorsely barbellate (shortest ones may be smooth); base of fruit body not stipelike. . . . . ***R. fusca***

## *Schoenoplectus*

1. Spikelet scale apices clearly emarginate to 2-fid; culms (1-)2-15 mm diam.; plants perennial, with rhizomes long, tough, firm, not concealed among culm bases.
   2. Culms usually cylindric throughout, occasionally trigonous distally; inflorescences branched.
      3. Achenes clearly trigonous; perianth bristles 4(-5), usually 2 much shorter; styles 3-fid; spikelet scales scabrous only on awn and distal part of midrib; spikelets all solitary or some in pairs.
***S. heterochaetus***
      3. Achenes usually plano- or biconvex, rarely clearly trigonous; perianth bristles (4-)6(-8), usually nearly equal; styles 2-fid or 2-3-fid, rarely all 3-fid; spikelet scales scabrous on awn, midrib, and often flanks, especially in proximal parts of spikelets; spikelets all clustered to all solitary.
         4. Spikelet scale awns straight to bent, 0.2-0.8 mm; scales (except often midribs) uniformly orangish, or sometimes straw-colored and prominently spotted at 10X, flanks smooth or very sparsely (rarely densely) scabrous; spikelets often all solitary; widest air spaces in upper 1/4 of culm 1-2.5 mm wide.
***S. tabernaemontani***
         4. Spikelet scale awns (sometimes broken off) mostly strongly contorted, rarely all straight, 0.5-2 mm; scales wholly or partly pale and prominently spotted at 10X, flanks sparsely to often densely scabrous; some spikelets always clustered; widest air spaces in upper 1/4 of culm 0.5 (east)-1.5(-2.5) (west) mm wide.
***S. acutus* var. *acutus***
   2. Culms clearly trigonous throughout; inflorescences branched or not.
***S. pungens***
1. Spikelet scale apices entire (sometimes very obscurely emarginate); culms (0.5-)2(-3) mm diam.; plants perennial, with rhizomes long, weak, soft, or tufted annuals or perennials with rhizomes short, concealed among culm bases.
   5. Achenes smooth, 2.5-4.5 mm, trigonous; plants perennial with long rhizomes; leaf blades not erect, often flaccid.
      6. Culms acutely trigonous throughout, 1.5-5 mm thick; leaf blades 1-2 mm wide, erect, emergent; spikelets 1-4. . . . . ***S. torreyi***
      6. Culms cylindric or clearly trigonous distally, 0.5-1 mm thick; leaf blades 0.2- 1 mm wide, mostly flaccid, submerged; spikelets 1.
***S. subterminalis***
   5. Achenes rugulose or with sharp transverse ridges, 1-2.2 mm, plane or biconvex, sometimes trigonous; plants tufted annual (rarely perennial) with very short, inconspicuous rhizomes; leaf blades erect, not flaccid.
      7. Achenes mostly proximally rounded to stipelike constriction, base 0.3-0.4 mm wide; perianth bristles rarely absent, distinctly wider proximally; inflorescence bracts often divergent.
***S. purshianus* var. *purshianus***
      7. Achenes mostly proximally evenly tapered, without stipelike constriction, base 0.2-0.3 mm wide; perianth bristles often absent, slender throughout; inflorescence bracts rarely divergent.
         8. Perianth bristles absent or rudimentary.
***S. smithii* var. *smithii***
         8. Perianth bristles present, some well developed.
***S. smithii* var. *setosus***

## *Scirpus*

1. Perianth bristles always present, smooth, strongly contorted, much longer than achenes (sometimes not projecting beyond them because of their contortion); lateral heads of cymules pedicellate, all heads in open cymes (heads sometimes sessile in *S. cyperinus*).
   2. Scales usually with prominent green midribs; mature perianth bristles enclosed within scales or scarcely projecting beyond them; achenes 1-1.5 mm. . . . . ***S. pendulus***
   2. Scales usually with pale or inconspicuous midribs; mature perianth bristles exceeding scales and giving inflorescence a woolly appearance; achenes 0.6-1 mm.
      3. Spikelets mostly solitary, with distinct pedicels; scales usually blackish, at least distally; achenes maturing late Jun-early Jul, later in far north. . . . . ***S. atrocinctus***
      3. Spikelets solitary, with distinct pedicels or in glomerules and sessile; scales pale brown, reddish brown, brown, or sometimes blackish; achenes maturing Jul-Sep in ne United States.
         4. Spikelets in open cymes, central spikelet of each cyme sessile, others usually pedicellate; scales usually pale brown, black pigment absent (or sometimes a little beside distal midrib); achenes maturing Jul. . . . . ***S. pedicellatus***
         4. Spikelets in cymes of 2-15, central spikelet of each cyme sessile, others sessile or pedicellate; scales reddish brown, brownish, or blackish; achenes maturing Aug-Sep. . . . . ***S. cyperinus***
1. Perianth bristles present (usually rudimentary or absent in S. georgianus), margins toothed or barbate (except rudimentary bristles of S. georgianus, which are much shorter than achenes); bristles straight, curved, or contorted, shorter than or longer than achenes; all heads of cymules sessile (sometimes, minority of cymules with only 1 head), thus some or all heads sessile in dense glomerules (lateral heads of cymules pedicellate in *S. divaricatus*).
   5. Teeth of perianth bristles thick-walled, sharp-pointed, densely crowded over distal 0.6 or more of bristle length; distal branches of inflorescence scabrous, proximal branches smooth or scabrellous.
      6. Styles 3-fid; achenes plano-convex or sometimes plumply trigonous; perianth bristles brittle-based, readily detached. . ***S. expansus***
      6. Styles 2-fid (rarely, small minority of flowers with 3-fid styles); achenes biconvex to plano-convex; perianth bristles not brittle, persistent. . . . . ***S. microcarpus***
   5. Teeth of perianth bristles thin-walled, round-tipped, mostly restricted to distal 0.6 or less of bristle length; branches of inflorescence smooth throughout or distal branches scabrous.
      7. Perianth bristles contorted, much longer than achene and projecting beyond it, with scattered, often inconspicuous, antrorse teeth in distal 1/2. . . . . ***S. atrocinctus*** × ***S. hattorianus***
      7. Perianth bristles contorted or nearly straight, shorter than to 1.5 times as long as achene, if long then contorted, not projecting beyond achene, with retrorse, thin-walled, round-tipped barbs in distal (0.1-)0.2-0.6 (bristles usually rudimentary, often ± smooth in *S. georgianus*).
         8. Perianth bristles 0-3, much shorter than (rarely to 0.7 times as long as) achene, with teeth, if present, only near tips of bristles. ***S. georgianus***
         8. Perianth bristles usually 5-6, shorter than or scarcely longer than achenes, with retrorse, thin-walled, round-tipped barbs in distal (0.1-)0.2-0.6.
            9. Scales 1.6-2.8 mm, apex terete or flat-awned to 0.4-0.6(-1.2) mm; mostly w of Mississippi River. . . . . ***S. pallidus***
            9. Scales 1-2.1 mm, apex mucronate, mucro to 0.1-0.3(-0.4) mm; mostly e of Great Plains.
               10. Septa in blades and sheaths of proximal leaves many, ± conspicuous; spikelets ovoid or narrowly ovoid, 2-5(-8) mm; scales dark brown; longest bristles often slightly exceeding achenes; achenes mostly (0.8-)1-1.3 mm. . . ***S. atrovirens***
               10. Septa in blades and sheaths of proximal leaves few to many, rather inconspicuous; spikelets broadly ovoid or ovoid, 2-3.5 mm; scales blackish or occasionally brownish; longest bristles usually shorter than or ± equaling achenes; achenes mostly (0.6-)0.7-1.1 mm. . . . . ***S. hattorianus***

## *Scleria*

1. Hypogynium absent or vestigial, achene base tapered, indented or with small pits, appearing continuous with achene body in texture and color. ***S. verticillata***
1. Hypogynium present, appearing as basal zone differentiated from rest of achene by change in tissue appearance or physical border or gap or both.
   2. Hypogynium continuous and without distinct lobes or tubercles, densely covered with whitish to brownish papillae; body of achene smooth. . . . . ***S. triglomerata***

2. Hypogynium with 3 or 6 lobes or tubercles; body of achene usually reticulate or papillose. . . . . ***S. pauciflora* var. *pauciflora***

## *Trichophorum*

1. Culms terete, smooth. . . . . ***T. cespitosum***
1. Culms trigonous, angles scabrous.
   2. Flowers usually 15 or more per spike; perianth bristles white, flattened, to 20 times longer than achenes, smooth. . . . . ***T. alpinum***
   2. Flowers fewer than 10 per spike; perianth bristles white to brown, terete, equaling or shorter than achenes, scabrous.
      3. Scales with obtuse apex, midribs not reaching apices in distal scales; leaves equaling or shorter than culms, 0.5-0.8(-1) mm wide. ***T. clintonii***
      3. Scales (most or all) with mucronate apex, midribs excurrent; leaves equaling or exceeding culms, 0.8-2 mm wide. . . ***T. planifolium***

## *Carex*

1. Spike 1 per culm, all flowers attached to main stem in terminal spike. **Key A, page 8**
1. Spikes 2+ per culm, some flowers in lateral spikes.
   2. All flowers staminate. . . . . **Key B, page 9**
   2. At least some flowers pistillate.
      3. Stigmas 2; achenes flat to biconvex in cross section. **Key C, page 9**
      3. Stigmas (2-)3(-4); achenes ± trigonous, rarely terete, in cross section.
         4. Body of perigynium pubsescent, scabrous, hispid, or sometimes papillose, papillae longer than wide . . . . . **Key D, page 11**
         4. Body of perigynium glabrous or papillose, papillae mostly not longer than wide.
            5. Bracts sheathless or with sheath less than 4 mm, rarely longer, then sheath shorter than diameter of stem. **Key E, page 12**
            5. Bracts, at least the proximal, with sheath 4+ mm, longer than diameter of stem. . . . . **Key F, page 14**

## Key A

1. Spike entirely staminate.
   2. Culms distinctly red or purple at base.
      3. Fronts of leaf sheaths puberulent; scales ciliate. **§ *Scirpinae*, page 29**
      3. Fronts of leaf sheaths glabrous; scales not ciliate. **§ *Racemosae*, page 23**
   2. Culms yellow to brown or black, without red or purple at base.
      4. Plants densely cespitose; culms serrulate on angles distally.
         5. Culms shorter than leaves; widest leaf blades at least 2 mm wide. . . . . **§ *Phyllostachyae*, page 30**
         5. Culms clearly exceeding leaves; widest leaf blades less than 2 mm wide. . . . . **§ *Stellulatae*, page 19**
      4. Plants loosely cespitose or not; culms smooth distally. ***C. gynocrates***
1. Spikes with at least some pistillate flowers.
   6. Stigmas 2; achenes biconvex or flat.
      7. Margins of perigynium beak and often sides of body distinctly and often densely serrulate.
         8. Plants usually not cespitose, single-stemmed; margins and beak of perigyium only weakly and sparsely serrulate. ***C. gynocrates***
         8. Plants cespitose; margins and beak of perigyium coarsely and densely serrulate. . . . . **§ *Stellulatae*, page 19**
      7. Margins of perigynium beak entire or minutely and sparsely serrulate.
         9. Spikes gynecandrous; beak of perigyium 0.1-0.3 mm. **§ *Glareosae*, page 18**
         9. Spikes androgynous or pistillate; beak of perigyium 0.3-1 mm. ***C. gynocrates***
   6. Stigmas 3; achenes trigonous.
      10. Perigynia pubescent or puberulent at least at base of beak, if present. . . . . **§ *Scirpinae*, page 29**
      10. Perigynia glabrous, sometimes minutely papillose.
         11. Spikes gynecandrous; beak of perigyium with apical teeth 0.3 mm or longer. . . . . **§ *Squarrosae*, page 28**
         11. Spikes androgynous or entirely pistillate; beak of perigyium with apex entire, emarginate, or with teeth less than 0.2 mm.
            12. Proximal pistillate scales 10+ mm. **§ *Phyllostachyae*, page 30**
            12. Proximal pistillate scales less than 10 mm.

13. Beak of perigynium mostly 2 mm or longer and at least as long as body. . . . . **§ *Phyllostachyae*, page 30**
13. Beak of perigyium less than 2 mm, or if more, then tapering to body and shorter than body.
14. Perigynia 4-6+ times as long as wide.
**§ *Leucoglochin*, page 28**
14. Perigynia 1.5-4 times as long as wide.
**§ *Racemosae*, page 23**

## Key B

1. Bases of culms and young basal sheaths red or purple tinged (sometimes hidden by old sheaths).
2. Leaf and bract sheaths and sometimes blades puberulent.
**§ *Scirpinae*, page 29**
2. Leaf and bract sheaths and blades glabrous, sometimes finely papillose.
3. Mouth of leaf sheath ciliate; culms, inflorescence axes, and abaxial surface of bracts glabrous. . . . . **§ *Acrocystis*, page 28**
3. Mouth of leaf sheath entire; culms, inflorescence axes, and abaxial surface of bracts finely papillose. . . . . **§ *Racemosae*, page 23**
1. Bases of culms and basal sheaths brown or black, without trace of red or purple.
4. Plants cespitose.
5. Leaves flat. . . . . **§ *Deweyanae*, page 19**
5. Leaves involute or channeled. . . . . **§ *Stellulatae*, page 19**
4. Plants not cespitose, some colony forming.
6. Widest leaves not more than 1 mm wide; rhizomes not more than 1 mm wide, mostly without persistent scales; scales at base of culms and on rhizomes not or scarcely fibrous. . . . . ***C. gynocrates***
6. Widest leaves 1+ mm wide; rhizomes mostly more than (0.8-)1 mm wide, covered with persistent scales; scales at base of culms and on rhizomes disintegrating into coarse persistent fibers.
7. Rhizomes with thin, loose cortex, easily detached when dry.
***C. siccata***
7. Rhizomes with tight cortex, not detaching on drying.
***C. praegracilis***

## Key C

1. Perigynia pubescent, not papillose. . . . . **§ *Acrocystis*, page 28**
1. Perigynia glabrous, sometimes papillose.
2. Lateral spikes usually pedunculate; proximal bracts sometimes with sheath; peduncles with prophyll at base.
3. Pistillate scales, at least the proximal, long-awned.
**§ *Phacocystis*, page 22**
3. Pistillate scales obtuse to acuminate or cuspidate.
4. Proximal bracts with distinct sheath. . **§ *Bicolores*, page 23**
4. Bracts sheathless or with very short sheath.
5. Perigynia smooth; style persistent on achene.
**§ *Vesicariae*, page 27**
5. Perigynia often papillose over most of surface; style deciduous.
6. Terminal spike gynecandrous, pistillate flowers as many as or more numerous than staminate; lateral spikes short, not much longer than wide. . . . . **§ *Bicolores*, page 23**
6. Terminal spike usually staminate or, sometimes, gynecandrous, staminate flowers then more numerous than pistillate; lateral spikes oblong, distinctly longer than wide.
7. Apex of perigynium beak entire, emarginate, or very shallowly bidentate. . . . . **§ *Phacocystis*, page 22**
7. Apex of perigynium beak distinctly bidentate.
8. Terminal spike usually staminate; stigmas always 2.
**§ *Phacocystis*, page 22**
8. Terminal spike gynecandrous with few perigynia; stigmas 3. . . . . **§ *Racemosae*, page 23**
2. Lateral spikes sessile; bracts sheathless; peduncles without or, rarely, with prophyll.
9. Perigynia papillose (20X); peduncles with or without prophyll.
10. Terminal spike staminate, androgynous, or if gynecandrous, staminate flowers more numerous than pistillate; lateral spikes at least 2 times as long as wide. . . . **§ *Phacocystis*, page 22**
10. Terminal spike staminate or gynecandrous, pistillate flowers then as many as or more numerous than staminate; lateral spikes not much longer than wide.
11. Rachis of spikes papillose; peduncles with prophyll.
**§ *Bicolores*, page 23**
11. Rachis of spikes smooth; peduncles without prophyll.
**§ *Glareosae*, page 18**
9. Perigynia smooth; peduncles without prophyll.
12. Terminal spike gynecandrous; lateral spikes gynecandrous or pistillate.
13. Margins of perigynia flat, at least in distal 1/2, flat portion (0.1-)0.2 mm wide or wider at tip of achene and base of beak.

14. Achenes rounded at apex, style dehiscing at surface of achene; style conspicuously enlarged at base.
**§ *Deweyanae*, page 19**
14. Achenes with short apiculus formed by persistent base of style; style not conspicuously enlarged at base.
**§ *Ovales*, page 19**

13. Margins of perigynia rounded or with flat portion not more than 0.1 mm wide.
15. Margins of perigynia rounded or with very narrow rounded edge; achenes nearly filling perigynium bodies.
**§ *Glareosae*, page 18**
15. Margins of perigynia sharply edged or narrowly winged; achenes distinctly smaller than bodies.
16. Inflorescences in fruit 1-1.5 times as long as wide.
**§ *Ovales*, page 19**
16. Inflorescences in fruit (1.5-)2+ times as long as wide.
17. At least proximal perigynia in each spike spreading.
**§ *Stellulatae*, page 19**
17. All perigynia erect or ascending.
18. Perigynia with margins of body and beak entire.
**§ *Ovales*, page 19**
18. Perigynia with distal margins of body and usually base of beak serrulate, sometimes sparsely.
**§ *Deweyanae*, page 19**

12. Terminal spike androgynous, rarely entirely staminate, or entirely pistillate; lateral spikes androgynous, staminate, or pistillate.
19. Sheath fronts of proximal cauline leaves transversely rugose.
20. Perigynia mostly more than 2 times as long as wide, widest near base. . . . . **§ *Vulpinae*, page 16**
20. Perigynia mostly not more than 2 times as long as wide, widest near middle.
21. Inflorescences usually branched, at least proximally, usually with more than 15 spikes; pistillate scales usually yellow or brown, sometimes with hyaline margins, 3-veined. . . . . **§ *Multiflorae*, page 17**
21. Inflorescences unbranched or with 1-2 short branches proximally, with not more than 15 spikes; pistillate scales greenish hyaline, 1-veined.
**§ *Phaestoglochin*, page 17**
19. Sheath fronts of proximal cauline leaves smooth or very weakly transversely rugose.
22. Fronts of leaf sheaths dotted red, brown, or yellow.
23. Perigynia widest near base; culms usually more than 1 mm wide. . . . . **§ *Vulpinae*, page 16**
23. Perigynia widest near middle; culms usually not more than 1 mm wide distally.
24. Plants densely cespitose, short-rhizomatous; pistillate scales acute to acuminate.
**§ *Heleoglochin*, page 16**
24. Plants loosely cespitose, sometimes long-rhizomatous; pistillate scales, at least distally, obtuse.
**§ *Multiflorae*, page 17**
22. Fronts of leaf sheaths not dotted red, brown, or yellow.
25. Distal leaves of culms with front of sheaths green-veined, not differentiated from rest of sheath.
**§ *Holarrhenae*, page 18**
25. Distal leaves of culms with front of sheaths with at least narrow hyaline or whitish hyaline band extending at least 1/2 length of sheath.
26. Perigynia with flat, winglike margins 0.1 mm wide or wider distally; plants long-rhizomatous, not cespitose, sometimes colonial. . . . . ***C. siccata***
26. Perigynia without or with flat margins less than 0.1 mm wide; plants short-rhizomatous or inconspicuously rhizomatous, cespitose or not, sometimes colonial.
27. Plants cespitose.
28. Spikes not consistently androgynous, terminal either entirely staminate or pistillate, lateral spikes irregularly pistillate or staminate or mixed. . . . . **§ *Stellulatae*, page 19**
28. Spikes ± consistently androgynous, occasionally some lateral spikes entirely pistillate.
29. Perigynium widest near base, tapering from base to beak. . . . . **§ *Vulpinae*, page 16**
29. Perigynium widest above base, often abruptly beaked. . . . . **§ *Phaestoglochin*, page 17**
27. Plants cespitose or colonial from creeping rhizomes.
30. Inflorescences globose or ovoid-globose, very dense so that individual spikes are indistinguishable; spikes consistently androgynous.
***C. maritima***

30. Inflorescences ovoid to oblong, usually moderately dense, at least proximal spikes distinguishable; rarely inflorescence ovoid-globose, then spikes mostly pistillate. . . . . ***C. praegracilis***

## Key D

1. Pistillate spikes all basal. . . . . **§ *Acrocystis*, page 28**
1. Pistillate spikes, at least some, on an elongate stem.
2. Bracts of proximal nonbasal spike with well-developed sheath at least 4 mm.
3. Beak of perigynium with distinct teeth usually at least 0.6 mm. **§ *Carex*, page 26**
3. Beak of perigynium entire, notched, or with teeth less than 0.6 mm.
4. Bracts of proximal nonbasal spikes bladeless or with blade not more than 2 mm. . . . . **§ *Clandestinae*, page 29**
4. Bracts of proximal nonbasal spikes with blade at least 3 mm, often much longer.
5. Leaves pubescent or pilose. **§ *Hymenochlaenae*, page 25**
5. Leaves usually glabrous.
6. Pistillate scales dark brown to almost black; proximal leaf blades with marginal veins equally prominent; leaves on culms as wide as basal leaves.
7. Distal leaves on culms bladeless or with blade less than 1 cm. . . . . **§ *Clandestinae*, page 29**
7. Distal leaves on culms with blade at least 2 cm. ***C. atrofusca***
6. Pistillate scales hyaline, green, or pale brown; proximal leaf blades usually with 2 marginal veins more prominent than midvein on adaxial surface; basal leaves often conspicuously wider than leaves on culms.
8. Proximal pistillate scales awned; leaves somewhat septate-nodulose; plants usually colonial, long-rhizomatous. . . . . **§ *Paludosae*, page 26**
8. Proximal pistillate scales obtuse to acuminate; leaves not septate-nodulose; plants cespitose, short-rhizomatous. **§ *Hymenochlaenae*, page 25**
2. Bract of proximal nonbasal spike sheathless or with sheath less than 4 mm.
9. Perigynia 10+ mm.
10. Pistillate spikes globose, about as long as wide; staminate spikes usually 1. . . . . **§ *Lupulinae*, page 27**
10. Pistillate spikes cylindric, much longer than wide; staminate spikes 1-8. . . . . **§ *Carex*, page 26**
9. Perigynia less than 10 mm.
11. Tip of perigynium beak with 2 teeth at least 0.6 mm. **§ *Carex*, page 26**
11. Tip of perigynium beak entire or with 2 teeth less than 0.6 mm.
12. Terminal spike gynecandrous or pistillate.
13. Leaf sheaths and usually blades pilose. **§ *Porocystis*, page 26**
13. Leaf sheaths puberulent and blades usually glabrous. **§ *Scirpinae*, page 29**
12. Terminal spike staminate or, rarely, androgynous.
14. Leaf sheaths and usually blades pubescent.
15. Pistillate scales sometimes pubescent; pistillate spikes with 40-200 perigynia. . . . . **§ *Paludosae*, page 26**
15. Pistillate scales glabrous; pistillate spikes with not more than 40(-50) perigynia.
16. Perigynia usually not more than 3.2 mm, apex rounded and beakless or abruptly beaked. **§ *Porocystis*, page 26**
16. Perigynia 3.5+ mm, apex tapering or abruptly beaked. **§ *Hymenochlaenae*, page 25**
14. Leaf sheaths and blades glabrous.
17. Leaf blades scabrous on adaxial surface; beak of perigyium recurved. . . . . ***C. scabrata***
17. Leaf blades glabrous on adaxial surface, often with rough margins or rough tip; beak of perigyium straight.
18. Fronts of sheaths of proximal leaves ladder-fibrillose; leaves and sheaths septate-nodulose, sometimes obscurely. . . . . **§ *Paludosae*, page 26**
18. Fronts of leaf sheaths not ladder-fibrillose, sometimes breaking into longitudinal fibers; leaves and sheaths not septate-nodulose.
19. Perigynia strongly 12-30-veined.
20. Leaf blades, at least distally, M-shaped in cross section when young, adaxial surface usually with 2 marginal veins more prominent than midvein; staminate spikes 1-4. . **§ *Paludosae*, page 26**
20. Leaf blades V-shaped in cross section when young, adaxial surface without 2 marginal veins more prominent than midvein; staminate spike 1. **§ *Acrocystis*, page 28**

19. Perigynia 0-12-veined.
    21. Plants with at least some pistillate spikes basal; culms usually much shorter than leaves.
    **§ *Acrocystis*, page 28**
    21. Plants with most pistillate spikes on obvious elongated stems; culms shorter or longer than leaves.
        22. Distal leaves (often near base) bladeless or blades not more than 1 cm and not longer than sheaths. . . . . **§ *Clandestinae*, page 29**
        22. Distal leaves with blades more than 2 cm, longer than sheaths.
        **§ *Acrocystis*, page 28**

## Key E

1. Tip of perigynium beak with 2 teeth at least (0.4-)0.5 mm.
    2. Perigynia with 2 distinct marginal veins, otherwise veinless or only very faintly veined; leaves not septate-nodulose.
    **§ *Hymenochlaenae*, page 25**
    2. Perigynia with 5+ distinct veins; at least proximal leaves septate-nodulose, rarely not.
        3. Pistillate scales obtuse to acuminate, awnless or at most with a rough apiculus.
            4. Staminate spike usually 1; perigynia 15-20-veined, 10-20 mm.
            **§ *Lupulinae*, page 27**
            4. Staminate spikes usually 1-3+; perigynia 6-15(-22)-veined, 4-10(-12.5) mm.
                5. Perigynia 6-14(-15)-veined. . . . . **§ *Vesicariae*, page 27**
                5. Perigynia 14-25-veined.
                    6. Perigynia narrowly ovate to subglobose, 2-2.5 times as long as wide. . . . . **§ *Paludosae*, page 26**
                    6. Perigynia elliptic to ovate, 3-4.5 times as long as wide.
                    **§ *Vesicariae*, page 27**
        3. Pistillate scales, at least some, with scabrous awn.
            7. Perigynia (9-)10+ mm.
                8. Pistillate spikes globose,ovoid, or cylindric, about as long as wide; staminate spikes usually 1. . . **§ *Lupulinae*, page 27**
                8. Pistillate spikes cylindric, much longer than wide; staminate spikes (1-)2-6. . . . . **§ *Carex*, page 26**
            7. Perigynia not more than 9 mm.
                9. Distal pistillate scales with awn at least 1/2 as long as body.
                **§ *Vesicariae*, page 27**
                9. Distal pistillate scales acute to short-awned, awn less than 1/2 as long as body.
                    10. Beak of perigynia with teeth 1.1-3 mm.
                    **§ *Carex*, page 26**
                    10. Beak of perigynia with teeth often not more than 1 mm.
                        11. Staminate spikes 1(-4); perigynium beak more than 1.7 mm. . . . . **§ *Paludosae*, page 26**
                        11. Staminate spikes 1-6; perigynium beak often less than 1.7 mm.
                            12. Perigynia veined only at base; widest leaves not more than 4 mm wide. . . . . **§ *Paludosae*, page 26**
                            12. Perigynium veined to tip of body and often into beak; widest leaves mostly more than 4 mm wide.
                                13. Pistillate scales with margins serrulate distally; awn, when present, rough.
                                    14. Perigynia 3.1-4.8 × 0.9-1.5(-1.8) mm; staminate spikes 1-2. . . . . **§ *Vesicariae*, page 27**
                                    14. Perigynia 2.5-8 × 1.2-3.5 mm; staminate spikes usually 3-7. . . . . **§ *Paludosae*, page 26**
                                13. Pistillate scales with margins entire; awn, when present, usually smooth.
                                    15. Perigynia 9-15-veined.
                                    **§ *Vesicariae*, page 27**
                                    15. Perigynia 14-25-veined.
                                        16. Perigynia narrowly ovate to subglobose, 2- 2.5 times as long as wide.
                                        **§ *Paludosae*, page 26**
                                        16. Perigynia elliptic to ovate, 3-4.5 times as long as wide. . . . . **§ *Vesicariae*, page 27**
1. Tip of perigynium beak entire, emarginate, or with 2 teeth less than 0.5 mm.
    17. Perigynia minutely papillose, at least distally (20X).
        18. Some roots with yellow-brown felty covering.
        **§ *Limosae*, page 23**
        18. Roots brown or black, without yellow-brown felty covering, rarely with white felty covering.
            19. Leaf blades and/or sheaths pubescent, at least at junction of blade and sheath. . . . . **§ *Porocystis*, page 26**
            19. Leaf blades and sheaths glabrous. . . **§ *Racemosae*, page 23**
    17. Perigynia not papillose, essentially smooth.

20. Terminal spike gynecandrous.
21. Perigynia with distinct beak 0.5-4 mm.
22. Larger spikes usually with more than 50 perigynia; achenes 2-3 mm. . . . . § ***Squarrosae*, page 28**
22. Larger spikes with not more than 40 perigynia; achenes 1-2 mm. . . . . § ***Ceratocystis*, page 28**
21. Perigynia beakless or with beak not more than 0.5 mm.
23. Adaxial side of leaves with 2 marginal veins more prominent than midvein; young leaves M-shaped in cross section.
§ ***Hymenochlaenae*, page 25**
23. Adaxial side of leaves without 2 marginal veins more prominent than midvein; young leaves V-shaped or rounded in cross section.
24. Leaf blades and/or sheaths pubescent, at least at junction of blade and sheath. . . . . § ***Porocystis*, page 26**
24. Leaf blades and sheaths glabrous.
25. Perigynia erect or ascending.
§ ***Racemosae*, page 23**
25. Perigynia ascending, spreading at about right angles, or reflexed when mature. . . . . § ***Ceratocystis*, page 28**
20. Terminal spike staminate or androgynous.
26. Leaves and/or sheaths pubescent, at least at junction of blade and sheath.
27. Larger leaves 8-23 mm wide, only sheaths pubescent.
**Carex scabrata**
27. Leaves not more than 8 mm wide, blades and usually sheaths pubescent.
28. Perigynium beak 0.5-3 mm, often 1+ mm, about 1/2 length of body; proximal pistillate scales awned.
§ ***Hymenochlaenae*, page 25**
28. Perigynium beak absent or not more than 0.5(-0.7) mm, not more than 1/4 length of body; proximal pistillate scales acute, acuminate or cuspidate. 1.
§ ***Porocystis*, page 26**
26. Leaves and sheaths usually glabrous, rarely papillose.
29. Style persistent on achene in fruit; larger leaves and sheaths usually at least sparsely septate-nodulose, rarely not.
30. Perigynia (9-)10+ mm; staminate spike usually 1.
§ ***Lupulinae*, page 27**
30. Perigynia not more than 10 mm; staminate spikes 1-5(-7).
31. Pistillate scales with margins serrulate distally, apex usually rough-awned.
32. Distal pistillate scales with apex long-awned, awn at least 1/2 as long as body. . . § ***Vesicariae*, page 27**
32. Distal pistillate scales with apex acute to short-awned, awn less than 1/2 as long as body.
§ ***Paludosae*, page 26**
31. Pistillate scales with margins entire, apex awnless or with short, smooth awn.
33. Perigynia slightly to strongly inflated, thin walled, yellowish to purlish, shiny. . . . § ***Vesicariae*, page 27**
33. Perigynia not inflated, thick walled, brownish, dull.
§ ***Paludosae*, page 26**
29. Style deciduous; larger leaves and sheaths sometimes septate-nodulose, more often not.
34. Leaf blades, at least widest, M-shaped in cross section when young, adaxial surface with 2 marginal veins more prominent than midvein.
35. Widest leaf blades 8-23 mm wide, septate-nodulose.
**Carex scabrata**
35. Widest leaf blades not more than 6 mm wide, not septate-nodulose.
36. Pistillate scales awned, longest awn 0.5+ mm.
§ ***Griseae*, page 25**
36. Pistillate scales obtuse to acuminate or short-awned, awn not more than 0.2 mm.
§ ***Hymenochlaenae*, page 25**
34. Leaf blades V-shaped in cross section when young, adaxial surface without 2 marginal veins more prominent than midvein.
37. Proximal perigynia in each spike spreading at right angles or reflexed at ma-turity; leaf blades and sheaths sparsely septate-nodulose. . . § ***Ceratocystis*, page 28**
37. Proximal perigynia in each spike ascending or spreading-ascending; leaf blades and sheaths not septate-nodulose.
38. Plant base brown or blackish, without trace of red or purple. . . . . § ***Phyllostachyae*, page 30**
38. Plant base red or purple tinged, sometimes sparsely.
39. Perigynia distinctly veined on faces; pistillate scales brown or black. . . . . § ***Racemosae*, page 23**
39. Perigynia veinless or with veins only proximally; pistillate scales white-hyaline or red-brown.
40. Widest leaves 2-4.5 mm wide; plants usually with several long-peduncled basal pistillate spikes.

§ ***Acrocystis*, page 28**

40. Widest leaf blades 1-2 mm wide; plants without long-peduncled basal pistillate spikes.
§ ***Lamprochlaenae*, page 29**

## Key F

1. Apex of perigynium beak terminated by 2 teeth, mostly at least 0.5 mm.
2. Perigynia 4+ times as long as wide (8-15 × 1-3 mm).
§ ***Rostrales*, page 28**
2. Perigynia not more than 4 times as long as wide.
3. Perigynia (9-)10 mm or longer.
4. Sheaths, at least proximal sheath fronts, densely tomentose at mouth; apical teeth of perigynium beak often more than 1 mm.
§ ***Carex*, page 26**
4. Sheaths glabrous; apical teeth of perigynium beak not more than 1 mm.
5. Perigynia 7-11-, 5-12-, or 12-25-veined.
§ ***Vesicariae*, page 27**
5. Perigynia 12-34-veined.
6. Basal and proximal leaf sheaths reddish or purplish.
§ ***Lupulinae*, page 27**
6. Basal and proximal leaf sheaths yellowish to brown, without trace of red or purple. . . . . § ***Rostrales*, page 28**
3. Perigynia not more than 10 mm.
7. At least proximal pistillate scales with long, rough awn.
8. Perigynia with 2 strong marginal veins, otherwise veinless or veined only proximally; leaves not septate-nodulose.
§ ***Hymenochlaenae*, page 25**
8. Perigynia with 5+ strong veins extending length of bodies; leaves septate-nodulose.
9. Perigynium beak with apical teeth (0.4-)0.6-3 mm, often longer than 1 mm. . . . . § ***Carex*, page 26**
9. Perigynium beak with apical teeth not more than 1 mm.
10. Perigynium body obovoid, widest distally; proximal bract at least 3 times as long as inflorescence.
§ ***Squarrosae*, page 28**
10. Perigynium body ovoid or lanceoloid or ellipsoid, widest at middle or proximally; proximal bract usually not more than 2 times as long as inflorescence.
11. Perigynium beak 0.9-1.7 mm; mature perigynia dull.
§ ***Paludosae*, page 26**
11. Perigynium beak 0.2-6 mm; mature perigynia somewhat glossy. . . . . § ***Vesicariae*, page 27**
7. All pistillate scales obtuse to acuminate or cuspidate.
12. Culms with some red or purple at base.
13. At least proximal perigynia in each spike spreading or reflexed; leaves sparsely septate-nodulose.
§ ***Vesicariae*, page 27**
13. All perigynia erect or ascending; leaves not septate-nodulose. . . . . § ***Hymenochlaenae*, page 25**
12. Culms brown or black at base, without trace of red or purple.
14. Pistillate scales with 5-7-veined center.
§ ***Rostrales*, page 28**
14. Pistillate scales with 1-3-veined center.
15. Leaves not septate-nodulose.
§ ***Hymenochlaenae*, page 25**
15. Leaves at least sparingly septate-nodulose.
§ ***Ceratocystis*, page 28**

1. Apex of perigynium beak entire, emarginate, or with teeth mostly less than 0.5 mm.
16. Leaf blades variously hairy.
17. Plant brown or black at base. . . . . § ***Griseae*, page 25**
17. Plant with at least some red or purple at base.
§ ***Hymenochlaenae*, page 25**
16. Leaf blades glabrous.
18. Bracts without blades.
19. Leaves not more than 1 mm wide. . . . . ***C. eburnea***
19. Leaves much wider, often over 10 mm wide.
§ ***Careyanae*, page 24**
18. Bracts, at least proximal, with distinct blade.
20. Young leaves V-shaped or rounded in cross section, adaxial surface without 2 marginal veins more prominent than midvein or other veins.
21. Perigynium beak with 2 distinct terminal teeth, usually more than 0.2 mm.
22. At least proximal pistillate scales awned, awn at least 1/2 as long as body; leaves conspicuously septate-nodulose.
23. Base of culm strongly red or purple; leaves 2-4 mm wide.
§ ***Vesicariae*, page 27**
23. Base of culm brown, without or with only trace of red or purple; leaves 4-15 mm wide.
24. Distal pistillate scales with awn at least about as long as body. . . . . § ***Vesicariae*, page 27**

24. Distal pistillate scales acute, acuminate, or short-awned, awn less than 1/2 length of body.
**§ *Paludosae*, page 26**

22. Pistillate scales obtuse to acuminate, sometimes very shortly awned; leaves not or only weakly septate-nodulose.
25. Perigynia often black, at least distally, or black-mottled (even when immature). . . . . ***C. atrofusca***
25. Perigynia yellow-brown to dark brown when mature, not black-mottled.
26. Plants with long-creeping rhizomes; leaves usually not septate-nodulose. . . . . **§ *Paniceae*, page 24**
26. Plants with short-ascending rhizomes; leaves at least sparingly septate-nodulose.
**§ *Ceratocystis*, page 28**

21. Perigynium beak entire, emarginate, or with 2 apical teeth not exceeding 0.2 mm.
27. Perigynia often black at least distally, or black-mottled (even when immature). . . . . ***C. atrofusca***
27. Perigynia yellow-brown to dark brown when mature, not mottled black.
28. Perigynia rounded at base, sides proximally distinctly convex.
29. Perigynia with veins slightly prominent.
**§ *Granulares*, page 24**
29. Perigynia with veins slightly impressed.
**§ *Griseae*, page 25**
28. Perigynia tapering at base, sides straight or only slightly convex proximally.
30. Perigynia rounded at apex, beakless or with beak less than 0.3 mm.
31. Widest leaf blades usually 5+ mm wide; plants usually cespitose. . . . . **§ *Laxiflorae*, page 24**
31. Widest leaf blades less than 5 mm wide; plants usually not cespitose. . . . . **§ *Paniceae*, page 24**
30. Perigynia tapering to beak at least (0.3-)0.5 mm.
32. Proximal perigynia in each spike spreading at right angles or reflexed at maturity; leaves and sheaths sparsely septate-nodulose.
**§ *Ceratocystis*, page 28**
32. Proximal perigynia in each spike ascending or spreading-ascending; leaves and sheaths not septate-nodulose.
33. Plants usually colonial; perigynia and leaves often papillose. . . . . **§ *Paniceae*, page 24**
33. Plants cespitose; perigynia and leaves not papillose. . . . . **§ *Chlorostachyae*, page 26**

20. Leaf blades M-shaped in cross section when young, adaxial surface with 2 marginal veins more prominent than midvein and other marginal veins, sometimes apparent only on proximal leaves and on proximal part of blade.
34. Perigynium beakless or with beak 0.5 mm or less, entire or with 2 apical teeth less than 0.1 mm.
35. Widest leaf blades (usually basal) 10+ mm wide.
36. Perigynia sharply trigonous in cross section.
**§ *Careyanae*, page 24**
36. Perigynia trigonous with rounded angles in cross section.
**§ *Laxiflorae*, page 24**
35. Widest leaves not more than 10 mm wide.
37. Perigynia not prominently veined, veins somewhat impressed. . . . . **§ *Griseae*, page 25**
37. Perigynia at least slightly prominently veined or veinless except for 2 marginal veins.
38. Perigynia rounded at base, sides proximally convex.
**§ *Granulares*, page 24**
38. Perigynia tapering at base, sides proximally straight, concave or slightly convex.
39. Perigynia sharply trigonous in cross section.
**§ *Careyanae*, page 24**
39. Perigynia terete or with rounded angles in cross section.
40. Perigynia with 2 marginal veins and not more than 10 veins on faces.
41. Base of plant red, often very dark.
**§ *Hymenochlaenae*, page 25**
41. Base of plant brown, without trace of red.
**§ *Chlorostachyae*, page 26**
40. Perigynia with more than 12 veins.
42. Plants usually colonial, not cespitose; perigynia papillose at least faintly.
**§ *Paniceae*, page 24**
42. Plants usually cespitose; perigynia not papillose. . . . . **§ *Laxiflorae*, page 24**

34. Perigynium with distinct beak more than 0.5 mm, usually with apical teeth 0.1+ mm.

43. Perigynia with 2 distinct marginal veins, otherwise veinless or with very weak veins proximally.
    44. Perigynium beak entire, emarginate, or with apical teeth not more than 0.1 mm.
        45. Widest leaves mostly 5+ mm wide.
            **§ *Laxiflorae*, page 24**
        45. Widest leaves 1-4 mm wide.
            **§ *Chlorostachyae*, page 26**
    44. Perigynium beak with apical teeth 0.2-1 mm.
        46. Perigynium beak somtimes more than 2 mm.
            **§ *Hymenochlaenae*, page 25**
        46. Perigynium beak usually not more than 1 mm.
            **§ *Paniceae*, page 24**
43. Perigynia with more than 2 veins extending most of length of bodies.
    47. Pistillate scales with narrow, indistinct bodies, scarcely enlarged at bases. . . . . **§ *Squarrosae*, page 28**
    47. Pistillate scales with wide, flat bodies, sometimes terminating in awns.
        48. Perigynium beak entire or emarginate.
            49. Perigynium with not more than 5 veins extending length of body on abaxial face, veinless or weakly veined on adaxial face.
                **§ *Hymenochlaenae*, page 25**
            49. Perigynium with 8+ equally prominent veins on both faces.
                50. Perigynia sharply angled in cross section.
                    **§ *Careyanae*, page 24**
                50. Perigynia bluntly angled in cross section.
                    **§ *Laxiflorae*, page 24**
        48. Perigynium beak with 2 distinct teeth at apex, usually at least 0.2 mm.
            51. Pistillate spikes, at least the proximal, lax, proximal and middle perigynia separated by internodes at least 1/4 their length; leaves and sheaths not septate-nodulose.
                **§ *Hymenochlaenae*, page 25**
            51. Pistillate spikes dense, proximal and middle perigynia separated by internodes less than 1/10 their length; proximal leaves and sheaths sparingly septate-nodulose.
                52. Pistillate scales, at least proximal, awned, awn at least 1/4 of scale body length.
                    53. Distal pistillate scales acuminate or with awn less than 1/2 body length; staminate spikes usually 2+. . . . . **§ *Paludosae*, page 26**
                    53. Distal pistillate scales awned, awn usually more than 1/2 body length; staminate spikes 1, sometimes with 1 much smaller spike laterally.
                        **§ *Vesicariae*, page 27**
                52. Pistillate scales obtuse to acute or apiculate, apiculus not more than 1/10 of body length.
                    54. Culms purple-red at base; achenes with style persistent. . . . . **§ *Vesicariae*, page 27**
                    54. Culms brown at base, without trace of red or purple; achenes with style deciduous.
                        **§ *Ceratocystis*, page 28**

### § *Vulpinae*

1. Apex of sheath front yellow, thickened, not fragile; leaf blades papillose adaxially (25×). . . . . ***C. laevivaginata***
1. Apex of sheath front not yellow, thin, usually fragile; leaf blades not papillose.
    2. Larger perigynia 6-8 mm, prominently distended at base and forming basal disk; sheath fronts smooth, red dotted. . . . . ***C. crus-corvi***
    2. Perigynia less than 6 mm, prominent basal disk absent, sometimes somewhat distended at base; sheath fronts smooth or rugose, dotted or not.
        3. Perigynia veinless adaxially, not distended at base.
            ***C. alopecoidea***
        3. Perigynia veined adaxially, distended at base.
            ***C. stipata* var. *stipata***

### § *Heleoglochin*

1. Inner band of leaf sheath whitish except for reddish dots; inflorescence straight, little interrupted, proximal branches usually at least slightly overlapping 1 above; perigynia low-convex on adaxial face, ± spreading at maturity, not concealed by scales. . . . . ***C. diandra***
1. Inner band of leaf sheath strongly copper colored toward summit (as well as red dotted); inflorescence commonly ± flexuous and interrupted,

proximal branches often separated; perigynia plane on adaxial face distal to thick body, appressed to spreading at maturity, nearly or completely concealed by scales. . . . . ***C. prairea***

§ ***Multiflorae***

1. Perigynia dull yellow-green to pale brown. . . . . ***C. vulpinoidea***
1. Perigynia golden brown or yellow-brown. . . . . ***C. annectens***

§ ***Phaestoglochin***

1. Proximal leaf sheaths longitudinally green-and-white-striped and with prominent green cross veins, usually loose; widest leaf blade 3-10 mm wide.
   2. Bodies of pistillate scales 2.2-4.4 × 1.2-2.4 mm, mostly more than 1/2 length of perigynia, apex acuminate to awned; anthers 1.5-3 mm.
      3. Fronts of leaf sheaths white, hyaline, thin, and fragile at mouth, backs not white spotted. . . . . ***C. gravida***
      3. Fronts of leaf sheaths yellow or brown, thick, and firm at mouth, backs often white spotted. . . . . ***C. aggregata***
   2. Bodies of pistillate scales 1.5-2.5 × 1.1-1.8 mm, mostly less than 1/2 length of perigynia, apex obtuse to acuminate or shortly awned; anthers 0.7-1.3 mm.
      4. Proximal internodes of inflorescences usually not more than 1 cm, usually less than 2 times as long as proximal spikes; bodies of perigynia with narrow wing not more than 0.1 mm wide. ***C. cephaloidea***
      4. Proximal internodes of inflorescences usually 2+ cm, at least 2 times as long as proximal spikes; bodies of perigynia with narrow wing 0.1-0.2 mm wide, at least distally. . . . . ***C. sparganioides***
1. Proximal leaf sheaths not or indistinctly striped, without prominent cross veins, tight; widest leaf blade 0.5-4(-5) mm wide.
   5. Perigynium beak margins smooth.
      6. Pistillate scales not more than 1/3-3/4 length of perigynia; bases of perigynia not longitudinally striate on adaxial face. ***C. leavenworthii***
      6. Pistillate scales at least 3/4 length of perigynia; bases of perigynia longitudinally striate on adaxial side. . . . . ***C. retroflexa***
   5. Perigynium beak margins serrulate.
      7. Inflorescences lax; proximal internodes more than 2 times as long as proximal spikes.
         8. Pistillate scales (2.5-)2.7-4.5 mm; perigynia not or only slightly spongy thickened at base, not longitudinally striate.
            9. Pistillate scales hyaline or pale brown, shorter than perigynia; perigynia 1.7-2.6 mm wide. . . . . ***C. divulsa***
            9. Pistillate scales brown, exceeding perigynia; perigynia 1.2-1.5 mm wide. . . . . ***C. hookerana***
         8. Pistillate scales 1-2.5 mm; perigynia spongy thickened at base and longitudinally striate adaxially.
            10. Stigmas straight, twisted or slightly coiled, 0.03-0.06 mm wide; spongy bases of perigynia 1-1.5 mm, 0.2-0.3 times length of perigynia. . . . . ***C. radiata***
            10. Stigmas usually tightly coiled, 0.05-0.1 mm wide; spongy bases of perigynia 0.5-1.3 mm, not more than 0.2 times length of perigynia.
               11. Widest leaf blades 1.8-2.6 mm wide; base of culms 1.5-2.2 mm wide. . . . . ***C. rosea***
               11. Widest leaf blades 0.9-1.5 mm at widest; base of culms 0.7-1.4 mm wide. . . . . ***C. appalachica***
      7. Inflorescences dense; proximal internodes less than 2 times as long as proximal spikes.
         12. Bodies of pistillate scales at least as long as and wide as perigynia, largely obscuring them. . . . . ***C. hookerana***
         12. Bodies of pistillate scales shorter than perigynia and narrower; perigynia easily visible.
            13. Bodies of pistillate scales not more than 2/3 length of perigynia; inflorescences dense, spikes individually indistinct.
               14. Perigynium bodies elliptic to circular, widest point at 0.4-0.55 of length of body; beak 0.7-1.1 mm, apical teeth 0.3-0.5 mm. . . . . ***C. cephalophora***
               14. Perigynium bodies ovate, widest point at 0.25-0.4 of length of body; beak 0.3- 0.8 mm, apical teeth 0.1-0.3 mm. ***C. leavenworthii***
            13. Bodies of pistillate scales at least 2/3 length of perigynia; inflorescences dense or lax.
               15. Ligules 4-8 mm, distinctly longer than wide; basal scales and sheaths frequently tinged red or purple. . ***C. spicata***
               15. Ligules not more than 4(-5) mm, as wide as or wider than long; basal scales and sheaths brown or black, without trace of red or purple.
                  16. Pistillate scales, except for midvein, dark brown. ***C. muricata***

16. Pistillate scales, except for midvein, hyaline or brown brown.
    17. Inflorescences dense, globose to ovoid heads, 1-1.5 times as long as wide, spikes not distinct.
        ***C. mesochorea***
    17. Inflorescences somewhat lax, oblong, (1.5-)2+ times as long as wide, proximal spikes ± distinct.
        18. Perigynia yellow-green, becoming dark brown and glossy when mature, veinless or weakly 7(-11)-veined abaxially. . . . . ***C. muricata***
        18. Perigynia yellow or yellow-brown when mature, strongly 9-15-veined abaxially.
            19. Pistillate scales 2.5-3.6 mm; perigynia 5-9-veined or veinless adaxially, 3-4.2 mm.
                ***C. muehlenbergii* var. *muehlenbergii***
            19. Pistillate scales 2-2.5 mm; perigynia veinless adaxially, 2.7-3.1 mm.
                ***C. muehlenbergii* var. *enervis***

**§ *Holarrhenae***

1. Larger perigynia (2.5-)2.8-4.1(-4.6) mm; beak 0.4-1(-1.2) mm; pistillate scales usually pale brown to straw colored at maturity; basal spikes only slightly, if at all, more prominent than middle spikes, inflorescence nearly cylindric except near apex. . . . . ***C. sartwellii***
1. Larger perigynia (3.8-)4-5.5(-6.1) mm; beak (0.8-)1-1.9(-2.3) mm; pistillate scales reddish brown at maturity; basal spikes usually substantially larger than those nearer middle, inflorescence at maturity usually conspicuously contracted towards middle. . . . . ***C. disticha***

**§ *Glareosae***

1. Proximal bracts long-bristlelike, many times exceeding 1-5-flowered spike; spikes widely separate. . . . . ***C. trisperma***
1. Proximal bracts short-bristlelike or scalelike, often shorter than spike; spikes usually several-flowered, distal spikes approximate.
    2. Perigynia beakless or nearly so; scales white-hyaline; plants loosely cespitose.
        3. Perigynia gray-green; spikes aggregated, forming an ovoid to suborbicular head; perigynia obscurely veined. . . . . ***C. tenuiflora***
        3. Perigynia light green; spikes remote (proximal 2 spikes at least 1 cm apart); perigynia conspicuously veined. . . . . ***C. loliacea***
    2. Perigynia shortly to strongly beaked; scales green or brown; plants loosely or densely cespitose.
        4. Perigynia widest near base, apex long-beaked, margins strongly serrulate. . . . . ***C. arcta***
        4. Perigynia widest near middle, apex short-to long-beaked, margins entire to serrulate.
            5. Spikes 1-4(-6), closely approximate; scales tinged chestnut or red.
                6. Culms often arching; leaves 1-2 mm wide, flat to channeled, gray-green; lateral spikes pistillate; perigynia gray-brown to pale brown at maturity. . . . . ***C. glareosa* subsp. *glareosa***
                6. Culms erect; leaves 1-3 mm wide, flat, green or gray-green; lateral spikes gynecandrous; perigynia brownish at maturity.
                    ***C. heleonastes***
            5. Spikes 3-10, approximate to remote; scales tinged light green or dark brown.
                7. Terminal spike clearly clavate, staminate for at least 1/2 of length; pistillate scales equaling or exceeding, partly concealing perigynia. . . . . ***C. mackenziei***
                7. Terminal spike not or scarcely clavate, staminate for less than 1/2 of length; pistillate scales shorter than, not concealing perigynia.
                    8. Perigynia loosely spreading, distinctly beaked, with long, asymmetric abaxial suture conspicuous; leaves green to yellowish green.
                        9. Culms usually erect or, sometimes, nodding; leaves (1-)1.5-2.5 mm wide; terminal spike ellipsoid to subclavate.
                            ***C. brunnescens* subsp. *brunnescens***
                        9. Culms ascending to arching; leaves (0.5-)1-1.5 mm wide; terminal spike often clavate.
                            ***C. brunnescens* subsp. *sphaerostachya***
                    8. Perigynia appressed-ascending, very shortly to distinctly beaked, abaxial suture inconspicuous; leaves usually gray-green.
                        10. Culms 15-60 cm; inflorescences 3-5(-7) cm, all but proximal spikes approximate or slightly remote.
                            ***C. canescens* subsp. *canescens***
                        10. Culms 30-90 cm, inflorescences 6-12(-15) cm, all but distalmost spikes distant, proximal 2 spikes 2-5 cm apart.
                            ***C. canescens* subsp. *disjuncta***

**§ *Deweyanae***

1. Perigynia (3.3-)4.1-6.7 times as long as wide, (3-)4-8-veined abaxially, veins extending unbroken from perigyium base to base of perigynium beak, achenes 1.9-2.9 times as long as wide; widest leaf blade 1.3-4.4 mm wide. . . . . ***C. bromoides* subsp. *bromoides***
1. Perigynia 2.3-3.9(-4.2) times as long as wide, 0-7-veined abaxially, veins extending unbroken from perigyium base to base of perigynium beak, achenes 1.2-1.8 times as long as wide; widest leaf blade (2.2-)2.4-5.9 mm wide. . . . . ***C. deweyana* var. *deweyana***

**§ *Stellulatae***

1. Spikes usually 1; leaves involute; anthers (2-)2.2-3.6 mm. . . ***C. exilis***
1. Spikes 2-8; leaves flat or plicate; anthers 0.6-2.2(-2.35) mm.
   2. Perigynium beak smooth-margined. . . . . ***C. seorsa***
   2. Perigynium beak at least sparsely serrulate-margined.
      3. Widest leaves 2.8-5 mm wide.
         4. Proximal perigynia of spikes mostly 1.1-1.7 times as long as wide, mostly 2.1- 3 mm wide. . . . . ***C. atlantica* subsp. *capillacea***
         4. Proximal perigynia of spikes (1.5-)1.7-3 times as long as wide, mostly 1.2-2 mm wide.
            5. Longer pistillate scales 2.1-3.1 mm. ***C. echinata* subsp. *echinata***
            5. Longer pistillate scales 1.1-2.2 mm. . . . . ***C. wiegandii***
      3. Widest leaves 0.8-2.7 mm wide.
         6. Terminal spikes entirely staminate; anthers (1-)1.2-2.2(-2.35) mm. . . . . ***C. sterilis***
         6. Terminal spikes partly or wholly pistillate; anthers 0.6-2.2(-2.35) mm.
            7. Terminal spikes without distinct clavate base of staminate scales, staminate portion, if present, less than 1 mm; anthers (1-)1.2-2.2(-2.35) mm. . . . . ***C. sterilis***
            7. Terminal spikes with distinct clavate base of staminate scales 1-8(-16.5) mm; anthers 0.6-1.6(-2) mm.
               8. Proximal perigynia 2-3 mm wide. ***C. atlantica* subsp. *capillacea***
               8. Proximal perigynia 0.9-1.95 mm wide.
                  9. Proximal perigynia mostly 2.9-4.75 mm, (1.7-)1.8-3.6 times as long as wide; beak mostly 0.95-2 mm, mostly 0.45-0.85 length of body. ***C. echinata* subsp. *echinata***
                  9. Proximal perigynia mostly 1.9-3 mm, 1-2(-2.2) times as long as wide; beak mostly 0.4-0.95 mm, mostly 0.2-0.5 length of body.
                     10. Perigynia mostly veinless over achene on adaxial surface; perigynium beak conspicuously setulose-serrulate; perigynia often ± convexly tapered from widest point to beak, forming a “shoulder”. ***C. interior***
                     10. Perigynia 1-10-veined over achene on adaxial surface; perigynium beak more sparsely serrulate with definite spaces between the often single teeth; perigynia mostly ± cuneate or even concavely tapered from widest point to beak. ***C. atlantica* subsp. *capillacea***

**§ *Ovales***

1. Pistillate scales uniformly as long as or longer than mature perigynia, usually concealing beaks (though not necessarily bodies), apex obtuse to acuminate, not awned.
   2. Pistillate scales as wide as and essentially covering perignyia bodies.
      3. Scales reddish brown, hyaline margins 0-0.2 mm wide; perigynia strongly 7-11-veined abaxially. . . . . ***C. adusta***
      3. Scales whitish or yellowish, hyaline margins 0.3-0.7 mm wide; perigynia veinless or faintly veined abaxially. . . . . ***C. xerantica***
   2. Pistillate scales usually distinctly narrower than perignyia bodies.
      4. Perignyium beak cylindric, unwinged, ± entire for 0.4+ mm from apex. . . . . ***C. praticola***
      4. Perignyium beak flat, ciliate-serrulate to apex.
         5. Perigynia ascending to spreading, strongly and evenly veined on adaxial face, finely granular-papillose; spikes (3-)7-15, distal usually densely aggregated. . . . . ***C. argyrantha***
         5. Perigynia erect-ascending, often veinless on adaxial face or with few veins of unequal strength, smooth; spikes 3-7(-11), distal often ± separated. . . . . ***C. foenea***
1. Pistillate scales (awns, if any, excluded) shorter than perigynia at least in middle portions of spikes, apical portion narrower than beaks and not completely covering them, apex awned in some species.
   6. Pistillate scales in middle or proximal portions of spikes with apex acuminate with subulate tip or awned.
      7. Perigynia 2.6-4 times longer than wide, bodies lanceolate, 0.9-2 mm wide.

8. Perigynia 0.9-1.3 mm wide; achenes 0.6-0.8 mm wide; inflorescences dense; proximal inflorescence internodes 2-3(-5) mm.
***C. crawfordii***

8. Perigynia 1.2-2 mm wide; achenes 0.7-1.1 mm wide; inflorescences dense to open; proximal internode 2-17 mm.
***C. scoparia* var. *scoparia***

7. Perigynia less than 2.5 times longer than wide, bodies lance-ovate, ovate, broadly elliptic, orbiculate, or obovate, 1.8-3.9 mm wide.
9. Perigynium body obovate, often with conspicuous "shoulders;" leaves 2.5-6 mm at widest. . . . . ***C. alata***
9. Perigynium body elliptic, suborbiculate, or weakly obovate; leaves 1-3(-4.2) mm at widest.
10. Perignyium body cuneately tapered to base, base subacute, body ± diamond shaped; inflorescences ± dense, stiffly erect, with 3-5 spikes. . . . . ***C. suberecta***
10. Perignyium body convexly tapered to base, base rounded, body ovate, elliptic, orbiculate or weakly obovate, inflorescences dense and erect or open and nodding, with 3-11 spikes.
11. Scales with white-hyaline or pale yellowish margins; perigynia greenish to straw colored or pale brown, (2.3-)2.5-4(-4.2) mm, often indistinctly 0-4(-6)-veined adaxially.
***C. festucacea***

11. Scales with reddish brown margins; perigynia reddish brown, (3.8-)4-5.5 mm, conspicuously 5+-veined adaxially.
***C. scoparia* var. *scoparia***

6. Pistillate scales with apex obtuse, acute, or acuminate, sometimes inconspicuous in spikes.
12. Perigynia 2 mm wide or less.
13. Perigynia thin, often not winged to base; leaf sheaths somewhat expanded towards apex, bearing narrow wings continuous with midvein and edges of leaf blade; blades 3-7.5 mm wide; vegetative shoots tall, conspicuous, with numerous leaves spaced along distal 1/2 of culm.
14. Proximal perigynia of each spike spreading or recurved (at 80°angle or greater); spikes globose; pistillate scales hidden, 1.6-2.3 mm. . . . . ***C. cristatella***
14. Proximal perigynia of each spike appressed-ascending to somewhat spreading (at 30-75°angle); spikes subglobose to ovate-oblong; pistillate scales evident, 2-3 mm.
15. Inflorescences straight, spikes overlapping; perigynia usually 40+, appressed-ascending (at 30-40°angle); leaf sheaths firm at summit.
***C. tribuloides* var. *tribuloides***

15. Inflorescences usually flexible or nodding, proximal spikes usually separated; perigynia usually 15-40, spreading (at 40-75°angle to spike axis); leaf sheaths firm or friable at summit. . . . . ***C. projecta***
13. Perigynia thicker, winged to base; leaf sheaths with ± rounded edges, not distinctly expanded towards apex; blades 1-4.5 mm wide (except in *C. normalis*); vegetative shoots usually inconspicuous, with relatively few leaves clustered at apex.
16. Perigynia (2.5-)2.6-4 times as long as wide, body lanceolate, distance from beak tip to top of achene 2.2-5 mm (sometimes to 1.8 mm in *C. crawfordii* with perigynia less than 1.3 mm wide).
17. Perigynia 0.9-1.3 mm wide; achenes 0.6-0.8 mm wide; inflorescences dense, erect; proximal internode 2-3(-5) mm.
***C. crawfordii***

17. Perigynia 1.2-2 mm wide; achenes 0.7-1.1 mm wide; inflorescences dense to open, arching or nodding; proximal internode 2-17 mm.
18. Spikes ellipsoid; inflorescences compact to open and arching; pistillate scales acuminate; perigynia usually ascending. . . . . ***C. scoparia* var. *scoparia***
18. Spikes ovoid to globose; inflorescences open, usually nodding; pistillate scales acute; perigynia spreading.
19. Perigynium beak appressed or ascending in spikes, exceeding pistillate scales by 0-0.8 mm; leaf sheaths at least sparsely papillose (30×). . . . . ***C. tenera***
19. Perigynium beak spreading, exceeding pistillate scales by 0.7-1.6 mm; leaf sheaths smooth.
***C. echinodes***

16. Perigynia less than 2.5 times as long as wide, body obovate, orbiculate, or ovate, distance from beak tip to top of achene 0.8-2.2 mm.
20. Perigynium body obovate, widest distally. . . . . ***C. longii***
20. Perigynium body ovate, elliptic, or orbiculate, widest at or proximal to mid body.
21. Inflorescences on tallest culms compact, 1.5-3 times as long as wide, erect, spikes overlapping; the proximal internode 1-6(-7.5) mm, 1/2-1/5(-1/4) length of inflorescence.

22. Achenes 0.6-0.9 mm wide; perigynia veinless or 1-3-veined adaxially, veins faint or basal; inflorescences less than 30 mm. . . . . ***C. bebbii***
22. Achenes 0.9-1.3 mm wide; perigynia often 3-veined adaxially; inflorescences 12-60 mm.
23. Perigynia broadly elliptic or nearly orbiculate, wing margin 0.4-0.8 mm wide, 0-6 veined adaxially. ***C. molesta***
23. Perigynia ovate to broadly ovate, wing margin 0.25-0.45 mm wide, 4-7-veined adaxially.
24. Sheaths smooth, whitish mottled, inner band not corrugated; perigynia greenish at maturity. ***C. normalis***
24. Sheaths finely papillose (at 30×), not whitish mottled, the inner band sometimes corrugated; perigynia brown at maturity. . . . . ***C. tincta***
21. Inflorescences on tallest culms elongate, ± open proximally, (2.5-)3-5.1 times as long as wide, often arching or nodding; spikes ± separate; proximal internode (5-)7-19 mm, mostly 1/5-1/3(-1/2) length of inflorescence.
25. Perignyium orbiculate, widest at mid body. ***C. festucacea***
25. Perignyium narrowly to broadly ovate, widest proximal to mid body.
26. Sheaths, at least some, papillose near collar (at 30×), not prominently whitish mottled; perignyium beak appressed or ascending in spikes, exceeding pistillate scales by 0-0.8 mm; beak and shoulders of perigynia straw colored to reddish brown at maturity.
27. Perigynium beak appressed or ascending in spikes, exceeding pistillate scales by 0-0.8 mm; leaf sheaths at least sparsely papillose (30×). ***C. tenera***
27. Perigynium beak spreading, exceeding pistillate scales by 0.7-1.6 mm; leaf sheaths smooth. ***C. echinodes***
26. Sheaths smooth, often whitish mottled; perignyium beak spreading, exceeding pistillate scales by 0.7-1.6 mm; beak and shoulders of perigynia greenish to yellowish or greenish brown at maturity.
28. Inflorescences erect to somewhat bent; proximal internode mostly 6-10(-11.5) mm; rachis stiff; leaves 2.2-6.5 mm wide; larger perigynia mostly 2.7-4.1 mm and 1.8-2.2 times as long as wide; plants forming small, ± erect clumps of fewer than 40 culms. . . . . ***C. normalis***
28. Inflorescences arching or nodding; proximal internode (6-)10-21 mm; rachis usually thin, wiry; leaves 1.5-3.5(-3.7) mm wide; larger perigynia mostly (3.4-)3.6-4.6 mm, (1.9-)2.1-2.8(-3.2) times as long as wide; plants often forming large, spreading, nodding clumps of many culms.
29. Perigynium beak appressed or ascending in spikes, exceeding pistillate scales by 0-0.8 mm; leaf sheaths at least sparsely papillose (30×). ***C. tenera***
29. Perigynium beak spreading, exceeding pistillate scales by 0.7-1.6 mm; leaf sheaths smooth. ***C. echinodes***

12. Perigynia more than 2 mm wide.
30. Spikes 12-28 mm with tapered base and acute apex; perigynium body lanceolate, 6-9 mm; vegetative culms conspicuous. ***C. muskingumensis***
30. Spikes either shorter than 12 mm or longer and with either rounded bases or apices or both; perigynium body ovate, elliptic, orbiculate, or obovate or, if lanceolate, shorter than 6 mm; vegetative culms conspicuous or not.
31. Perignyium bodies obovate, widest distally; leaf sheaths green veined adaxially nearly to summit or with narrow Y-shaped hyaline area.
32. Perigynia veinless on adaxial face; leaves 3-6(-8) mm at widest; sheaths truncate at summit and extending 0.3 mm beyond collar. . . . . ***C. cumulata***
32. Perigynia veined on adaxial face; leaves 2-4(-4.5) mm at widest; sheaths concave at summit and not prolonged beyond collar. . . . . ***C. longii***
31. Perignyium body lanceolate, ovate, elliptic, orbiculate, or reniform, widest at or proximal to middle; leaf sheaths various, some with prominent hyaline band near apex adaxially.
33. Perigynia 5.5-8(-8.7) × (3.1-)3.3-6.3 mm at largest (except sometimes in *C. bicknellii* and *C. shinnersii*), often prominently bulged on both faces; beak (1.4-)1.6-2.5(-3.4) mm. ***C. bicknellii***

33. Perigynia 2.5-5.5 × 2-3.6 mm at largest, prominently bulged by achene only on abaxial face or flat; beak usually 0.7-1.6(-1.8) mm.
    34. Leaf sheaths green-veined adaxially nearly to summit; inflorescences dense to ± open, erect, the proximal internode usually less than 8(-12) mm. . . . ***C. suberecta***
    34. Leaf sheaths with white-hyaline area adaxially; inflorescences open or dense.
        35. Perigynium body narrowly to broadly ovate, greenish; pistillate scales with green midstripe, hyaline or pale margins, rarely brown tinged; leaves 2.5-6.5 mm wide, sheaths green mottled, with mouth truncate, and prolonged to 2 mm distal to base of leaf blades. ***C. normalis***
        35. Perigynium body broadly ovate, broadly elliptic, or orbiculate, yellowish to tan brown; pistillate scales greenish or dark brown; leaves 1.5-4(-5) mm wide, sheaths usually evenly colored, with mouth concave (prolonged distal to base of leaf blades in *C. merritt-fernaldii*).
            36. Leaf sheaths finely papillose (at 30-40×), especially near leaf base.
                37. Perigynia strongly and evenly 4-8-veined over achene adaxially, (4.5-)5.1-5.5 mm; pistillate scales usually (1-)1.4-2.3 mm shorter than perigynia; anthers (2.4-)2.8-4.2 mm. . . ***C. bicknellii***
                37. Perigynia veinless or faintly and irregularly 0-5(-6)-veined over achene adaxially, (2.3-)2.5-5.2(-5.5) mm; pistillate scales 0.2-1.3 mm shorter than perigynia; anthers (1-)1.3-2.6 mm.
                    38. Pistillate scales reddish brown or dark brown; leaves of fertile shoots 2-4, sheaths with adaxial hyaline area sometimes puckered or cross-corrugated. . . . . ***C. tincta***
                    38. Pistillate scales greenish to yellowish; leaves of fertile shoots 3-6, sheaths not puckered.
                        39. Perigynia 2.3-3.5 mm wide; distance from summit of achene to tip of beak 1.8-3.1 mm; achenes 1.1-1.5 mm wide. ***C. merritt-fernaldii***
                        39. Perigynia 1.5-2.3(-2.5) mm wide; distance from summit of achene to tip of beak 0.8-1.7(-2) mm; achenes 1-1.3 mm wide. ***C. festucacea***
            36. Leaf sheaths smooth.
                40. Spikes on larger culms (3-)5-7(-11), tapered at base, terminal spike with conspicuous staminate base; inflorescences typically open, 2.5-4.5(-6.5) cm; proximal internode (3-)4-13(-23) mm; perigynium body (0.7-)0.9-1.3 times as long as wide (to 1.6 in *C. shinnersii*).
                    41. Achenes 1.2-1.8 × 1-1.3 mm at largest; perigynia 2.5-4.2 × 1.5-2.3 (-2.5) mm at largest, mostly 2-4(-6)-veined adaxially. ***C. festucacea***
                    41. Achenes (1.6-)1.7-2.2 × (1.2-)1.4-1.8 mm at largest; perigynia 3.2-5.5 × 2.5-3.6 mm at largest, veinless or faintly 1-5(-7)-veined adaxially. . . . . ***C. brevior***
                40. Spikes on larger culm 2-4(-5), rounded at base, terminal spike usually lacking conspicuous staminate base; inflorescences compact, 1.2-3(-3.6) cm, the proximal internode 1.5-7(-13) mm; perigynium body (0.7-)0.9-1.6 times as long as wide.
                    42. Achenes of larger perigynia ellipsoid to narrowly oblong, 0.9-1.3 mm wide, 1.3-1.6 times as long as wide; perigynia (25-)30-80 per spike, squarrose-spreading at maturity, 2-2.8(-3) mm at widest. . . . . ***C. molesta***
                    42. Achenes of larger perigynia broadly oblong to ± orbicular, 1.35-1.8 mm wide, 1-1.3 times as long as wide; perigynia (10-)15-40(-45) per spike, appressed-ascending at maturity, (2.1-)2.5-3.4(-3.5) mm at widest. . . . ***C. brevior***

**§ *Phacocystis***

1. Pistillate scales with prominent, scabrous awn on at least the proximal scales.
    2. Leaf blades involute, 1-2 mm wide. . . . . ***C. subspathacea***
    2. Leaf blades not involute, the widest more than 2 mm wide.
        3. Perigynia veinless.

4. Spikes usually erect; proximal sheaths not ladder-fibrillose. ***C. recta***

4. Spikes usually pendent; proximal sheaths ladder-fibrillose.

5. Sheaths glabrous; perigynia obovoid; apex of pistillate scales retuse. . . . . ***C. crinita* var. *crinita***

5. Sheaths scabrous; perigynia broadly ovoid to ellipsoid; apex of pistillate scales truncate to acuminate. . . . . ***C. gynandra***

3. Perigynia veined.

6. Proximal bract often spathelike, enclosing spike; achenes glossy, deeply constricted on 1 edge. . . . . ***C. salina***

6. Proximal bract not spathelike, not enclosing spike; achenes not glossy, constricted or not.

7. Perigynia thick-walled, leathery. . . . . ***C. paleacea***

7. Perigynia thin-walled, not leathery. . . . . ***C. recta***

1. Pistillate scales with apex acute, acuminate, or mucronate, lacking prominent, scabrous awn.

8. Proximal bract longer than inflorescence (usually at least 1.5 times as long).

9. Perigynia veinless; achenes glossy.

10. Pistillate scales pale brown with narrow red-brown margins and broad pale midvein. . . . . ***C. aquatilis* var. *substricta***

10. Pistillate scales red- or purple-brown and narrow pale midvein. ***C. aquatilis* var. *aquatilis***

9. Perigynia veined; achenes dull. ***C. lenticularis* var. *lenticularis***

8. Proximal bract shorter than or equal to inflorescence.

11. Proximal sheaths ladder-fibrillose.

12. Scales longer than perigynia; perigynia olive-green, veinless, inflated, obovoid. . . . . ***C. haydenii***

12. Scales shorter than or equaling perigynia; perigynia pale brown, 0-5-veined on each face, not inflated, ovoid. . . . . ***C. stricta***

11. Proximal sheaths not ladder-fibrillose.

13. Perigynia veined. . . . . ***C. emoryi***

13. Perigynia veinless.

14. Perigynia with apex tapering, flat, triangular, twisted; beak orifice obliquely bidentate. . . . . ***C. torta***

14. Perigynia with apex round or acute, not twisted; beak orifice obliquely bidentate or entire. ***C. bigelowii* subsp. *bigelowii***

**§ *Racemosae***

1. Terminal spike staminate (or androgynous in C. adelostoma). ***C. parryana***

1. Terminal spike gynecandrous (or wholly pistillate in C. parryana, C. hallii, and C. idahoa).

2. Lateral spikes sessile or short-pendunculate; spikes, at least proximal, sometimes separate and distinct; distal spikes forming dense terminal cluster.

3. Perigynia green or golden brown, veinless; pistillate scales with hyaline margins, equaling or shorter than perigynia. ***C. norvegica***

3. Perigynia dark brown to purple-black, often veined proximally; pistillate scales without hyaline margins, 1/2 as long as perigynia. ***C. media***

2. Lateral spikes pedunculate; spikes contiguous or separate; distal spikes not forming a dense terminal cluster.

4. Proximal lateral spikes spreading or pendent. . ***C. atratiformis***

4. Proximal lateral spikes erect, not spreading or pendent.

5. Lateral spikes of varying lengths, mostly shorter than terminal spike (Carex hallii and C. idahoa can have a single, terminal spike). . . . . ***C. parryana***

5. Lateral spikes of similar length. . . . . ***C. buxbaumii***

**§ *Limosae***

1. Perigynia with beak 0.1-0.5 mm; leaf blades grayish blue-green, margins involute; culms usually aphyllopodic, without dead leaf remains at base. . . . . ***C. limosa***

1. Perigynia not beaked; leaf blades green, margins sometimes involute or revolute; culms phyllopodic, usually with dead leaf remains at base. ***C. rariflora***

**§ *Bicolores***

1. Lateral spikes lax, middle internodes (0.5-)0.7-1.5 mm; terminal spike usually staminate. . . . . ***C. aurea***

1. Lateral spikes dense, middle internodes 0.2-0.7 mm; terminal spike usually gynecandrous.

2. Terminal spike with usually not more than 1/3 of total number of flowers staminate, staminate portion 1.1-1.8 mm wide; pistillate scales usually black with green midvein, rarely dark brown. . . ***C. bicolor***

2. Terminal spike with more than 1/3 of total number of flowers staminate, staminate portion (1.2-)1.5-3.5 mm wide; pistillate scales pale to dark brown. . . . . ***C. garberi***

§ ***Paniceae***

1. Perigynium apex contracted to cylindric beak (0.4-)0.6-1.8(-2.2) mm. ***C. vaginata***
1. Perigynium apex tapering and beakless, indistinctly beaked, or contracted to beak less than 0.5 mm.
   2. Perigynia strongly ascending, beakless or cuneately tapering to erect, straight beak; leaves coriaceous, channeled, glaucous. . . ***C. livida***
   2. Perigynia ascending to spreading, concavely tapering (at least on 1 side) to deflexed, curved beak; leaves herbaceous, flat or folded, not or slightly glaucous.
      3. Bladeless basal sheaths and proximal leaf sheaths strongly tinged with reddish purple; plants forming loose clumps to extensive closed colonies of vegetative shoots from superficial rhizomes. ***C. woodii***
      3. Bladeless basal sheaths and proximal leaf sheaths brownish or faintly, irregularly tinged with reddish purple; plants usually with vegetative shoots widely scattered and inconspicuous from deep rhizomes.
         4. Achenes 1.7-2.2(-2.5) mm wide; ligules 0.4-1.2 times as long as wide. . . . . ***C. meadii***
         4. Achenes 1.2-1.6(-1.8) mm wide; ligules (0.8-)1-2 times as long as wide. . . . . ***C. tetanica***

§ ***Laxiflorae***

1. Bract blades of distal lateral spikes lanceolate or narrowly lanceolate, wider than spikes, concealing them (viewed from abaxial surface), widest bract blade of distalmost lateral spike (2.9-)3.2-8.3 mm wide. ***C. albursina***
1. Bract blades of distal lateral spikes linear, narrower than spikes, not concealing them (viewed from abaxial surface), widest bract blade of distalmost lateral spike 0.5-3.4 mm wide.
   2. Perigynia 8-18-veined, 2(-3) veins conspicuous. . . . ***C. leptonervia***
   2. Perigynia (22-)25-32-veined, all veins conspicuous.
      3. Basal sheaths purple, reddish purple, or purple tinged.
         4. Perigynia closely overlapping, 1.8-2.7 times long as wide; beaks 0.2-0.8 mm; internodes in proximalmost spikes 1.1-3.2(-4.8) mm; angles of bract sheaths denticulate. . . . . ***C. gracilescens***
         4. Perigynia loosely overlapping or separate, 1.7-2.1 times long as wide; beak 0.1-0.3 mm; internodes in proximalmost spikes 3.3-14 mm; angles of bract sheaths smooth or minutely papillose. ***C. ormostachya***
      3. Basal sheaths brownish, not purplish.
         5. Perigynia closely overlapping: ratio of longer lateral spike length (in mm) to perigynia number = 0.8-1.7. . . . . ***C. blanda***
         5. Perigynia loosely overlapping or separate: ratio of longer lateral spike length (in mm)/perigynia number = 1.9-3.4. ***C. laxiflora***

§ ***Granulares***

1. Plants with short or inconspicuous rhizomes; culms in tufts; terminal spike and distal lateral spike usually overlapping; proximal spikes usually arising from distal 1/2 of culms. . . . . ***C. granularis***
1. Plants with long-creeping rhizomes; culms mostly solitary; terminal spike and distal lateral spike (unless staminate) usually separated; proximal spikes usually arising from proximal 1/2 of culms. ***C. crawei***

§ ***Careyanae***

1. Basal sheaths purple or reddish purple.
   2. Bracts from middle and proximal portions of culms bladeless or with blades 0.8-2 cm; perigynia 3.7-4.9 mm; longest lateral spike with 9-13 peryginia. . . . . ***C. plantaginea***
   2. Bracts from middle and proximal portions of culms with blades 2.1-9.2 cm; perigynia 5-6.6 mm; longest lateral spike with 4-9 perigynia. ***C. careyana***
1. Basal sheaths white to tan or brown.
   3. Leaf blades of vegetative shoots 3.8-9 times wider than bract blades; widest leaves (7-)11-28 mm wide; bract blades from middle and proximal portions of culms 2-6.2 cm; leaves glaucous. . ***C. platyphylla***
   3. Leaf blades of vegetative shoots 1-3.5 times wider than bract blades; widest leaves 0.8-14 mm wide; bract blades from middle and proximal portions of culms (1-)4.5-28 cm; leaves green or glaucous.
      4. Proximal scales of lateral spikes sterile or subtending a staminate flower; pistillate scales 2.5-3.2 mm.

5. Leaves usually glaucous; widest leaf blade 6.4-11.8 mm; longest staminate spike (10-)12-25 mm.
***C. laxiculmis* var. *laxiculmis***
5. Leaves usually bright green; widest leaf blade 5.3-8.3 mm; longest staminate spike 6-20(-23) mm.
***C. laxiculmis* var. *copulata***

4. Proximal scales of lateral spikes subtending perigynia; pistillate scales 1.3-2.2 mm. . . . . ***C. digitalis* var. *digitalis***

§ ***Griseae***

1. Culm bases brown.
2. Leaf sheaths scabrous to hispidulous; perigynium beak (0.5-)0.6-1.3 mm. . . . . ***C. hitchcockiana***
2. Leaf sheaths glabrous; perigynium beak 0-0.5(-0.7) mm.
3. Leaf blades glaucous; pistillate scales awnless or awn not more than 1(-1.9) mm. . . . . ***C. glaucodea***
3. Leaf blades deep or light green; pistillate scales usually with awns 1.2-3.7(-6) mm, rarely awnless.
4. Peduncles of lateral spikes scaberulous; perigynia (6-)18-37(-86) per spike, (2.5-)2.8-3.6(-4.3) mm, 17-25-veined. . . ***C. conoidea***
4. Peduncles of lateral spikes glabrous or scaberulous; perigynia (3-)5-16(-19) per spike, (3.6-)4-5(-5.5) mm, 40-65-veined.
5. Perigynia orbicular to suborbicular in cross section, 1.8-2.3(-2.6) times as long as wide, (1.8-)2-2.6 mm wide; achenes 1.7-2.1(-2.2) mm wide, stipes (0.2-)0.3-0.4(-0.5) mm. . ***C. grisea***
5. Perigynia obtusely triangular in cross section, (2.2-)2.5-3.1 times as long as wide, 1.5-1.9(-2.2) mm wide; achenes (1.3-)1.5-1.7(-1.8) mm wide, stipes (0.3-)0.4-0.6 mm.
***C. amphibola***

1. Culm bases purple-red.
6. Perigynia spirally imbricate; proximal bracts with sheaths loose; ligules (0.9-)2-12.9 mm.
7. Perigynia (1.8-)2-2.6 mm wide, orbicular to suborbicular in cross section; achene bodies (2.6-)3.1-3.5(-3.7) mm, stipes (0.2-)0.3-0.4(-0.5) mm, bodies 4.8-9.7(-12) times as long as stipes. . . ***C. grisea***
7. Perigynia 1.5-2.3(-2.4) mm wide, obtusely triangular in cross section; achene bodies 1.8-2.3(-2.4) mm, stipes (0.3-)0.4-0.6 mm, bodies 3.2-5.8(-7.3) times as long as stipes. . . . . ***C. amphibola***
6. Perigynia distichously imbricate; proximal bracts with sheaths tight; ligules 4-4.9(-9.6) mm (to 2.2 mm in *C. bulbostylis*). . ***C. oligocarpa***

§ ***Hymenochlaenae***

1. Terminal spike staminate; lateral spikes staminate, androgynous, or pistillate; base of culms tan, brown, or ivory.
2. Plants without rhizomes or with very short ones, densely cespitose.
***C. sylvatica***
2. Plants with short-creeping rhizomes, loosely cespitose or colonial.
***C. sprengelii***

1. Terminal spike staminate or gynecandrous; lateral spikes pistillate, gynecandrous or rarely distal spike staminate; base of culms usually covered with dark maroon bladeless sheaths (often missing or very short in C. prasina).
3. Perigynia 2-ribbed but otherwise veinless or nearly so, green to yellow at maturity.
4. Pistillate spikes densely flowered with perigynia strongly overlapping, more than 10 per spike; perigynia green, membranous, tapered gradually to bent beak, surface smooth and glabrous.
***C. prasina***
4. Pistillate spikes sparsely flowered with perigynia barely overlapping, fewer than 10 per spike; perigynia yellow at maturity, cartilaginous, tapered gradually to straight beak, surface pubescent and roughened distally. . . . . ***C. assiniboinensis***
3. Perigynia 2-ribbed and veined between ribs, often conspicuously so, green to olive-green at maturity, usually red dotted.
5. Perigynia fusiform to narrowly lance-ovoid, longer than 5 mm including elongate beak; leaves generally less than 5 mm wide; leaf sheaths usually glabrous, at least on back.
***C. debilis* var. *rudgei***
5. Perigynia ovoid-oblong to lance-ovoid, 2-6 mm (mostly 5 mm or less) tapering to beak shorter than body or beakless; leaves 2.5-12 mm wide; leaf sheaths glabrous or pubescent.
6. Terminal spike usually gynecandrous, rarely staminate.
7. Perigynia 2-4 mm, beakless or nearly so; pistillate spikes linear, 10-70 × 2-3.5 mm, usually longer than 40 mm.
***C. gracillima***
7. Perigynia at least 3.5 mm, apex tapering to abrupt beak; beak less than 0.7 mm; pistillate spikes cylindric, 10-50 × 3-6 mm.
8. Bract of proximal pistillate spike usually longer than entire inflorescence, 2-6 mm wide; pistillate scales cuspidate or with rough awns nearly as long as body of scale; perigynia 4.5-6 mm. . . . . ***C. davisii***

8. Bract of proximal pistillate spike not usually exceeding inflorescence, 1.5-4.5 mm wide; pistillate scales acute to mucronate or with awns much shorter than body of scale; perigynia 3.5-5 mm. . . . . ***C. formosa***

6. Terminal spike usually staminate, rarely gynecandrous.
9. Pistillate spikes linear, 25-80 × 3-4 mm; proximal bract sheaths longer than 10 mm; leaf blades glabrous; perigynia distinctly stipitate. . . . . ***C. arctata***
9. Pistillate spikes short cylindric, 8-25 × 4-5 mm; proximal bract sheaths very short, often less than 2 mm; leaf blades pilose; perigynia acute at base, but not stipitate. ***C. castanea***

§ ***Chlorostachyae***

1. Leaf blades not more than 1 mm wide, channeled; perigynia distinctly veined on faces; terminal spike androgynous or staminate. ***C. williamsii***
1. Leaf blades (0.75-)1-4 mm wide, flat or, rarely, folded; perygynia with marginal veins, otherwise veinless on faces; terminal spike staminate or gynecandrous. . . . . ***C. capillaris***

§ ***Porocystis***

1. Terminal spike staminate or, rarely, gynecandrous, then not more than 1/4 of flowers pistillate. . . . . ***C. pallescens***
1. Terminal spike gynecandrous, at least 1/3 of flowers pistillate.
2. Perigynia densely pilose; widest lateral spikes 2-4 mm wide; ligules longer than wide.
3. Terminal spike (5-)11-20 mm; anthers 0.7-1.3(-1.6) mm. ***C. swanii***
3. Terminal spike 20-35(-40) mm; anthers (1-)1.6-2(-2.8) mm. ***C. virescens***
2. Perigynia usually glabrous or pubescent, sometimes sparsely pilose; widest lateral spikes (3.5-)4-11 mm wide; ligules usually not longer than wide. . . . . ***C. hirsutella***

§ ***Paludosae***

1. Perigynium body glabrous.
2. Perigynia 3-4.5 mm. . . . . ***C. acutiformis***
2. Perigynia 4.8-7.8 mm.
3. Longest ligules 13-40(-56) mm, much longer than wide; culms lateral, basal sheaths bladeless; perigynia usually strongly 14-28-veined. . . . . ***C. lacustris***
3. Longest ligules 2-10(-12) mm, less than 2 times longer than wide; culms central, base with marcescent remains of previous yearâĂŹs leaves; perigynia obscurely 10-15-veined. . . . . ***C. hyalinolepis***

1. Perigynium body pubescent.
4. Perigynia 4.5-6.5 mm, sparsely short-pubescent, cellular detail and venation of perigynium clear. . . . . ***C. houghtoniana***
4. Perigynia 2.8-4.5(-5.2) mm, densely pubescent, cellular detail and venation of perigynium obscured.
5. Leaf blades flat or folded into an M shape except at base and near tip, (2-)2.2-4.5(-6) mm wide, not prolonged into long filiform tip; leaves and proximal bract with midvein forming prominent, sharply pointed keel for much of length. . . . . ***C. pellita***
5. Leaf blades involute to triangular-channeled, 0.7-2(-2.2) mm wide, those of vegetative shoots especially long-prolonged into curled, filiform tip; leaves and proximal bract with midvein low, rounded, forming inconspicuous keel (at least proximally). . ***C. lasiocarpa***

§ ***Carex***

1. Inner bands of leaf sheaths pubescent apically with spreading hairs; leaf blades often with spreading hairs abaxially.
2. Beak of perigynium glabrous or with scattered spreading hairs on main veins, longest beak teeth (1.2-)1.5-3 mm; perigynia glabrous, (6.5-)7-12 mm; leaf blades finely papillose abaxially. . ***C. atherodes***
2. Beak of perigynium pubescent or scabrous both on and between main veins, longest beak teeth (0.4-)0.6-1.7 mm; perigynia pubescent, 4.4-7.8 mm; leaf blades not papillose abaxially. . . . . ***C. hirta***
1. Inner bands of leaf sheaths glabrous or scabrous apically on veins; leaf blades glabrous.
3. Leaf blades finely papillose abaxially; longest ligules (6-)11-45 mm; vegetative culms hollow, flattened when pressed; longest teeth of beak (1.2-)1.5-3 mm, spreading to outcurved. . . . . ***C. atherodes***
3. Leaf blades not papillose abaxially (sometimes scabrous proximally); longest ligules 2-12(-17) mm; vegetative culms hard, solid with parenchyma; longest teeth of beak (0.8)1.1-2.3(-2.8) mm, straight to spreading.
4. Inner band of distal sheaths pale brown to darker brown, usually thin at apex, ± dull, strongly veined, at length becoming ladder-fibrillose; perigynia glabrous or scabrous on main veins, 4.8-8.4

mm. . . . . ***C. laeviconica***

4. Inner band of distal sheaths strongly reddish purple tinged, thickened at apex, thickened reddish portion opaque, smooth, and glossy, essentially veinless at very apex, not becoming ladder-fibrillose; perigynia pubescent, 6-11.5 mm. . . . . ***C. trichocarpa***

**§ *Vesicariae***

1. Pistillate scales scabrous-awned, margins often ciliate.
   2. Plants extensively colonial, not cespitose, rhizomes elongate; apex of staminate scales acute to acuminate, essentially smooth-margined except at tip; perigynia 7-11-veined. . . . . ***C. schweinitzii***
   2. Plants densely to loosely cespitose, rhizomes connecting individual culms in clump no more than 10 cm; apex of at least some staminate scales scabrous-awned, sometimes also ciliate-margined; perigynia 5-12- or 12-25-veined.
      3. Perigynia 5-12-veined, veins separate nearly to beak apex, bodies broadly elliptic to ± round, (1.8-)2-4.2 mm wide; achenes rough-papillose. . . . . ***C. lurida***
      3. Perigynia 12-25-veined, veins (except for 2 prominent laterals) confluent at or proximal to mid beak, bodies elliptic to lance-ovate, 1-2.2 mm wide; achenes smooth.
         4. Perigynia ± reflexed when mature, leathery, uninflated, compressed-triangular, strongly and closely veined with most veins separated by less than 2 times their width; longest beak teeth 0.7-2.1(-2.8) mm.
            5. Spikes 12-18 mm thick; beak teeth strongly out-curved, longest 1.3-2.1(-2.8) mm. . . . . ***C. comosa***
            5. Spikes 9-12 mm thick; beak teeth straight or slightly out-curved, longest teeth 0.7-1.2(-1.4) mm. . ***C. pseudocyperus***
         4. Perigynia spreading to ascending, herbaceous, ± inflated, terete to somewhat flattened, many veins separated by more than 3 times their width; longest beak teeth 0.3-0.9 mm. ***C. hystericina***

1. Pistillate scales awnless (rarely the proximal awned in *C. rostrata* and *C. utriculata*), margins entire.
   6. Leaves filiform-involute, wiry, (0.5-)1-3(-3.2) mm wide; culms round or obtusely trigonous. . . . . ***C. oligosperma***
   6. Leaves flat, U-, V-, or W-shaped in cross section, widest 1.5-12(-15) mm wide; culms round to trigonous.
      7. Perigynia obscurely veined, veins not running into beak, often dark-colored; beak less than 1 mm, emarginate at apex; stigmas 2 or 3. . . . . ***C. saxatilis***
      7. Perigynia distinctly veined, veins running into beak, often green or straw colored; beak usually more than 1 mm, distinctly toothed at apex; stigmas 3.
         8. Achenes asymmetric, deeply indented or invaginated on 1 face; widest perigynia (4-)4.5-7 mm wide; beak 2.4-4.8 mm. ***C. tuckermanii***
         8. Achenes symmetric, not indented or invaginated; widest perigynia (1.5-)2.5-3.5(-4.5) mm wide; beak 1-4.2(-4.8) mm.
            9. Bract of proximal pistillate spike (isolated spikes from long-sheathing bracts on proximal part of stem excepted) (2.5-)3-9 times longer than inflorescence; staminate spike often 1, slightly if at all elevated beyond summit of crowded pistillate spikes; perigynia reflexed. . . . . ***C. retrorsa***
            9. Bract of proximal pistillate spike shorter to no more than 2.5 times longer than inflorescence; staminate spikes 2-4(-5), well elevated beyond summit of separate pistillate spikes; perigynia spreading or ascending.
               10. Leaves strongly papillose on adaxial surface, U-shaped in cross section, whitish green, widest leaves 1.5-4.5(-7.5) mm wide; culms terete to trigonous, smooth distally; plants rhizomatous; ligules as long as wide. . . . . ***C. rostrata***
               10. Leaves smooth or scabrous on adaxial surface, flat or folded, pale to dark green, widest leaves (2.5-)3-12(-15) mm wide; culms trigonous, scabrous distally; plants rhizomatous or not; ligules shorter to longer than wide.
                  11. Plants colonial; rhizomes elongate, creeping; widest leaves 4.5-12(-15) mm wide; ligules as long as wide; basal sheaths usually spongy-thickened, slightly red tinged or not. . . . . ***C. utriculata***
                  11. Plants cespitose; rhizomes short; widest leaves 1.8-6.5 mm wide; ligules longer than wide; basal sheaths not spongy, thickened and often tinged with reddish purple. ***C. vesicaria***

**§ *Lupulinae***

1. Sheath of the distal nonbracteal leaf 0-1.5(-2.5) cm; beak of perigynium 1.5-4.2 mm; achenes elliptic or obovate; spikes globose to short-ovoid.
   2. Perigynia radiating out in all directions to form globular spike, rhombic-ovoid, base cuneate, 8-35 per spike. . . . . ***C. grayi***

2. Perigynia ascending to spreading or, sometimes, the basalmost reflexed to form an ovoid to obovoid spike, lanceoloid to ovoid, base convex, 1-12(-20) per spike. . . . . ***C. intumescens***

1. Sheath of the distal nonbracteal leaf usually 1.7 cm or longer; beak of perigynium 4.5-10 mm; achenes rhombic or nearly triangular; spikes ovoid to cylindric.
   3. Angles of achenes pointed, often knobbed, with hard, nipplelike points; achenes (2.2-)2.4-3.4 mm wide, often nearly as wide as long. ***C. lupuliformis***
   3. Angles of achenes smoothly curved, not pointed or knobbed; achenes 1.7-2.6(-2.8) mm wide, longer than wide. . . . . ***C. lupulina***

**§ *Rostrales***

1. Widest leaf blades 1.6-3.5(-4.2) mm wide; bract sheaths concave at apex; anthers 1.1- 2.7 mm. . . . . ***C. michauxiana***
1. Widest leaf blades (3.5-)5-18 mm wide; bract sheaths prolonged, truncate to convex at apex; anthers 3-5 mm. . . . . ***C. folliculata***

**§ *Squarrosae***

1. Terminal spike largely staminate; pistillate scales with long awns, exceeding perigynia bodies; achenes 1.2-2.1 mm. . . . . ***C. frankii***
1. Terminal spike gynecandrous; pistillate scales with short awns or awnless, completely hidden by perigynia; achenes 2-3 mm.
   2. Style persistent, sinuous; achenes 1.9-2.5 times as long as wide; spikes 1-2(-3) per stem; pistillate portion of spike ovate to oblong; perigynia widely radiating, the proximal reflexed; beak usually smooth. . . . . ***C. squarrosa***
   2. Style deciduous, straight; achenes 1.2-1.9 times as long as wide; spikes (1-)2-4(-6) per stem; pistillate portion of spike oblong to elliptic; perigynia, including the proximal, appressed-ascending; beak often sparingly scabrous. . . . . ***C. typhina***

**§ *Ceratocystis***

1. Pistillate scales yellowish green, similar in color to perigynia. ***C. cryptolepis***
1. Pistillate scales brownish, contrasting with yellowish green perigynia. ***C. flava***

**§ *Leucoglochin***

1. Perigynia 3.4-4.7 mm (excluding rachilla); rachilla exserted 0.5-2.8 mm from orifice of beak, exceeding style, style not exserted; pistillate scales (except the proximal) 2.4-3 mm; proximal leaves blade-bearing. ***C. microglochin***
1. Perigynia (5-)5.9-7.8 mm; rachilla vestigial, style exserted; pistillate scales 3.7-5.9 mm; proximal leaves bladeless. . . . . ***C. pauciflora***

**§ *Acrocystis***

1. Pistillate spikes from basal nodes and cauline nodes in close proximity to staminate spike.
   2. Bracts of the proximal nonbasal pistillate spikes leaflike, equaling or exceeding inflorescences; remnants of old leaves not, or only slightly, shredded into fibers; pistillate scales with apex obtuse, acute, or acuminate, shorter than perigynia.
      3. Rhizomes slender; culms usually loosely cespitose, arching or spreading, smooth except near inflorescence; perigynia 2.3-3.1 mm; beak 0.4-0.8 mm, apical teeth 0.1-0.2 mm; staminate spikes 3.1-11.3 mm. . . . . ***C. deflexa* var. *deflexa***
      3. Rhizomes stout; culms densely cespitose, ascending, scabrous; perigynia 3.1-4.5 mm; beak 0.7-1.7 mm, apical teeth 0.2-0.4 mm; staminate spikes 4.8-12.8 mm. . . . . ***C. rossii***
   2. Bracts of the proximal nonbasal pistillate spikes scalelike, usually shorter than inflorescences; remnants of old leaves persisting as tufts of stiff fibers; pistillate scales with apex acute to acuminate, equaling or exceeding perigynia.
      4. Perigynia 2.2-3.2 × 1-1.4 mm; beak 0.4-1 mm. . . . ***C. umbellata***
      4. Perigynia 3.1-4.7 × 1.1-1.6 mm; beak 0.9-2 mm.
         5. Perigynia with few hairs near base of beak, otherwise glabrous; leaves pale green, often relatively short, coriaceous, usually smooth adaxially. . . . . ***C. tonsa* var. *tonsa***
         5. Perigynia pubescent on beak and body; leaves bright green, much longer than culms, herbaceous, scabrous to papillose adaxially. . . . . ***C. tonsa* var. *rugosperma***
1. Pistillate spikes produced only at cauline nodes in close proximity to staminate spike.
   6. Perigynium body globose to obovoid, about as long as wide.
      7. Plants densely cespitose; rhizomes short, not horizontally spreading or absent; widest leaves 3+ mm wide; staminate spikes 1-2.5 mm wide. . . . . ***C. communis* var. *communis***

7. Plants loosely cespitose or with solitary stems; rhizomes long, horizontally spreading (except in C. turbinata); widest leaves usually less than 3 mm wide; staminate spikes usually more than 2 mm wide.
   8. Perigynia 1.5-2.3 mm wide; achenes (1.4-)2.1-2.5 mm. ***C. inops* subsp. *heliophila***
   8. Perigynia 1.1-1.5(-1.7) mm wide; achenes 1.3-1.9(-2.3) mm.
      9. Beaks of perigynia 0.5-0.9 mm; blades of distal cauline leaves well developed; culms usually smooth or weakly scabrous distally. . . . . ***C. pensylvanica***
      9. Beaks of perigynia 0.9-1.6 mm; blades of distal cauline leaves poorly developed; culms usually strongly scabrous distally. ***C. lucorum* var. *lucorum***
6. Perigynium body ellipsoid, longer than wide.
   10. Widest leaves 3+ mm wide; pistillate spikes and staminate spike not closely aggregated, usually clearly separated. ***C. communis* var. *communis***
   10. Widest leaves 3.3 mm wide or less, if leaves more than 2.9 mm wide, then pistillate spikes closely aggregated with each other and with staminate spike.
      11. Proximal 2 pistillate spikes usually separated by more than 7 mm, remote, not overlapping; proximal cauline bracts equaling or exceeding inflorescences. . . . . ***C. novae-angliae***
      11. Proximal 2 pistillate spikes contiguous or overlapping, usually separated by less than 7 mm; proximal nonbasal bracts shorter than inflorescences.
         12. Pistillate scales shorter than perigynia, perigynia conspicuous among scales.
            13. Perigynia 2.3-3.1 mm; culms slender, 5-31 cm; leaves usually equaling or longer than culms. ***C. deflexa* var. *deflexa***
            13. Perigynia 3.2-4.2 mm; culms more robust, 21-47 cm; leaves shorter than culms. . . . . ***C. peckii***
         12. Pistillate scales about as long as perigynia, perigynia nearly or completely concealed.
            14. Culms 10-45 cm, usually more than 20 cm; bases (remnants of old leaves) slightly or not at all fibrous; staminate peduncles 0.4-9.9 mm.
               15. Scales from median portion of staminate spike without prominent midrib extending to tip and without minute teeth on midrib (15×); perigynium apical teeth 0.2-0.3 mm; staminate spikes 8.4-11.1 mm. ***C. albicans* var. *albicans***
               15. Scales from median portion of staminate spike with either prominent midrib extending to tip (and sometimes beyond) or minute teeth on midrib (15×); perigynium apical teeth 0.1-0.3 mm; staminate spikes 2.8-4 mm. ***C. albicans* var. *emmonsii***
            14. Culms 2-27 cm, usually less than 20 cm; bases (remnants of old leaves) slightly to strongly fibrous; staminate peduncles 0.3-1.2 mm. . . . . ***C. nigromarginata***

### § *Clandestinae*

1. Most pistillate spikes emerging from basal nodes on long peduncles to 13 cm; pistillate scales retuse to obtuse, cuspidate; perigynia 3.7-6 mm; leaves dark green, equaling or mostly exceeding culms. ***C. pedunculata***
1. All pistillate spikes emerging from cauline nodes on shorter peduncles or sessile; pistillate scales acute to obtuse; perigynia less than 3.5 mm; leaves pale green, shorter than culms.
   2. Staminate spikes less than 7 mm; anthers less than 2 mm; plants densely cespitose, short-rhizomatous. . . . . ***C. concinna***
   2. Staminate spikes usually more than 10 mm; anthers more than 2 mm; plants loosely cespitose, long-rhizomatous. . . . . ***C. richardsonii***

### § *Scirpinae*

1. Widest leaves of pistillate culm more than 1.5 mm wide, widely V-shaped in cross section; widespread. . . . . ***C. scirpoidea* subsp. *scirpoidea***
1. Widest leaves of pistillate culm less than 1.5 mm wide, narrowly V-shaped in cross section; restricted to shores near Lake Huron. ***C. scirpoidea* subsp. *convoluta***

### § *Lamprochlaenae*

1. Perigynia yellow-green to brown, 2.5-3.3 × 1.2-2 mm; staminate scales 3-4.5 mm, light brown; plants loosely cespitose, usually long-rhizomatous. . . . . ***C. supina***
1. Perigynia reddish black to dark brown distally, 1.5-2.5 × 0.9-1.2 mm; staminate scales 2-3 mm, reddish black or dark brown; plants densely cespitose, short-rhizomatous. . . . . ***C. glacialis***

**§ *Phyllostachyae***

1. Proximal pistillate scales (2-)2.5-6.5 mm wide, wider than perigynia, surrounding and essentially concealing them; stigmas short, thick, erect or convolute, essentially smooth (papillae minute); staminate flowers 2-4 per spike.
   2. Perigynia gradually tapered; beak 1.9-2.9 mm; achenes loosely enveloped by perigynia. . . . . ***C. backii***
   2. Perigynia abruptly tapered; beak 0.5-1.6 mm; achenes tightly enveloped by perigynia. . . . . ***C. saximontana***
1. Proximal pistillate scales (0.9-)1.2-2.5(-3) mm wide, not more than 1.5 times as wide as perigynia, spreading and not concealing them; stigmas long, slender, flexuous, strongly papillose; staminate flowers (2-)5-25 per spike.
   3. Distal pistillate scales with hyaline margins 0-0.3 mm wide; tallest culms 3.2-9.1 cm; perigynium beak (1.2-)1.4-2.1 mm. ***C. juniperorum***
   3. Distal pistillate scales with hyaline margins 0.3-0.8 mm wide; tallest culms (6-)9-36(-40) cm; perigynium beak (1.5-)2-5.5(-6.4) mm.
      4. Perigynia 2-3(-4) per spike, apex abruptly contracted; achenes 1.1-1.3 times as long as wide; staminate scales truncate or rounded. ***C. jamesii***
      4. Perigynia (2-)4-9 per spike, apex gradually tapering; achenes 1.2-2.2 times as long as wide; staminate scales obtuse to acute. ***C. willdenowii***