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Field Guide to Intermountain Sedges

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Front cover art: *Carex nebrascensis*, drawn by Lenora Oosterhuis, an emigrant from Holland, a Forest Ecologist, and a freelance Biological Artist living in Boise, ID.

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Field Guide to Intermountain Sedges

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Introduction

"A delightful genus to work with—"
Goodrich and Neese (1986)

Invaluable for their ability to stabilize stream banks, filter sediments, provide habitat for other organisms, and contribute to the diversity and aesthetics of Intermountain wetland and riparian areas as well as many upland communities, sedges (*Carex* spp.) constitute a challenging, species-rich genus. Recent research and community classification efforts are beginning to elucidate details of the life histories and ecological relationships of individual sedge species. Use of these data necessitate accurate identifications.

This guide was prepared to assist both specialists and nonspecialists in identifying common sedges of the Intermountain Region. The geographic area encompassing southeastern Oregon, Nevada, Utah, western Wyoming, and Idaho south of the Salmon River was considered when selecting species for inclusion (fig. 1). Because some less plentiful sedges are not included, it is recommended that identifications derived from this guide be confirmed by consulting regional floristic manuals with dichotomous keys or local taxonomists.

The guide begins with a discussion of sedge morphology with illustrations. Then, after a general description of the genus and a key to the species, technical descriptions of each species are presented alphabetically by scientific name. These descriptions include characteristics of the plant habit, leaves, bracts, spikes, pistillate scales, perigynia, achenes, habitat and distribution, distinctive characteristics, and comparisons with similar species. Color photographs and line drawings accompany the text to illustrate growth habits, inflorescences, pistillate scales, perigynia, and achenes for each species. A glossary of terms and an index of common names follow the technical descriptions. The concluding section is an appendix providing comparisons of similar species.

Color photographs and some line drawings for this publication were prepared by the senior author. Permission for use of additional line drawings was provided by the University of Washington Press (Hitchcock and others 1969), University of California Press (Mastrogiuseppe 1993), and Columbia University Press (Cronquist and

Figure 1—Intermountain Region.

others 1977). Other drawings are from Hermann (1970). Taxonomy, morphological descriptions, common names, habitat requirements, and geographic distributions were derived from Cronquist and others (1977), Davis (1952), Gledhill (1989), Goodrich and Neese (1986), Harrington (1954), Hermann (1970), Hitchcock and Cronquist (1973), Hitchcock and others (1969), Howell (1968), Lewis (1958), Mackenzie (1931, 1935), Mastrogiuseppe (1993), Standley (1985, 1987), Taylor (1983), USDA-NRCS (1995), Van Eseltine (1925), Welsh and others (1987), and examination of specimens and notes in the Rocky Mountain Research Station Herbarium, Boise, ID; Monte L. Bean Herbarium, Brigham Young University, Provo, UT; Reno/Nesh Herbarium, University of Nevada, Reno; Intermountain Herbarium, Utah State University, Logan; Marion Ownbey Herbarium, Washington State University, Pullman; and Tucker Herbarium, Albertson College, Caldwell, ID.

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Morphology

Characteristics and measurements of morphological structures are frequently used to differentiate among sedge species. Descriptions in this guide may be more easily understood if the reader refers to figures 2 through 12—illustrations of characteristics. Photographs accompanying the species description provide additional illustrations of morphological characteristics.

Several important morphological considerations for obtaining accurate identifications were discussed by Cronquist and others (1977), Hitchcock and Cronquist (1973), and Hitchcock and others (1969):

1. Perigynium and achene morphology and size (see General Description, figs. 8 to 12, and the Glossary). Characteristics and measurements of these structures are frequently used to differentiate among sedge species. Measurements must be taken from mature structures; it is often impossible to identify immature specimens. Also, young or dried perigynia may have different shapes and colorations than mature or fresh specimens.

2. Basal leaf structure. Specimens may be described as being phyllopodic or aphyllopodic (see fig. 3 and the Glossary). Some plants, however, are slightly aphyllopodic with one or two reduced leaves at the base, but with foliage leaves also developing near the culm base.

3. Stigma number. Some species having pistillate flowers with three stigmas occasionally produce a few flowers with two stigmas, these should be considered tristigmatic species. Species normally producing two stigmas rarely produce three stigmas (*Carex saxatilis* is an exception).

General Description: *Carex* L.

Grasslike perennial herbs with short to long creeping rhizomes and hairy, fibrous roots; stems arising singly, few together, or in clumps; culms generally solid and sharply 3-angled to sometimes round in cross section, aphyllopodic (basal leaves reduced to a leaf sheath without a blade) or less frequently phyllopodic (basal leaves with well-developed blades present); leaves 3-ranked, usually clustered toward the base, but sometimes borne along the length of the fruiting culm; leaf sheaths closed, dorsal side green, ventral side usually thin and translucent, mouth shallowly concave, convex, or truncate; basal sheaths sometimes shredding; blades usually glabrous except for the generally scabrous midrib and

margins; dorsiventrally flattened, channeled, or acicular in cross section; plants usually monoecious (both male and female flowers on one plant) or occasionally dioecious (male and female flowers on separate plants); inflorescenses terminal, usually subtended by an involucral bract and consisting of 1 to many spikes arranged in racemes, panicles, or heads; spikes unisexual (all flowers staminate or all pistillate) or if bisexual either androgynous (male flowers borne above the female flowers) or gynaecandrous (female flowers borne above the male flowers), or rarely with female and male flowers intermixed; each spike subtended by a bract that may or may not be sheathing at the base or by an inconspicuous, reduced bract; flowers few to many per spike, unisexual, lacking perianths; staminate flowers each subtended by a scale; stamens 3 or occasionally 2; anthers basifixed; pistillate flowers each with a 1-celled, 2- or 3-(4)-carpellate superior ovary enveloped by the persistent saclike perigynium (a specialized foliar structure) and subtended by an open scale (the pistillate scale); stigmas 2 or 3 (rarely 4), exserted through the usually notched opening in the perigynium apex; fruit an achene enclosed by and dispersed with the perigynium at maturity; achenes lenticular if developed from a bicarpellate ovary (2 stigmas) or trigonous if developed from a tricarpellate ovary (3 stigmas); achenes of single-spiked plants often accompanied by a rachilla, an extension of the floral axis; pericarp tough, leathery, whitish or light brown to black; seed with a large amount of endosperm; embryo small, rudimentary, imbedded in the basal end of the seed. Chromosomes polycentric with $x = 6, 7, 8, 9, 10, 13$, and so forth.

The genus consists of about 1,000 species worldwide with about 533 species in North America. Sedges are widely distributed, but best developed in wet to moist regions of the North Temperate Zone and the Arctic.

This description was developed from Cronquist and others (1977), Goodrich and Neese (1986), Hermann (1970), Hitchcock and Cronquist (1973), Hitchcock and others (1969), Howell (1968), Mackenzie (1931, 1935), Mastrogiuseppe (1993), and Welsh and others (1987).

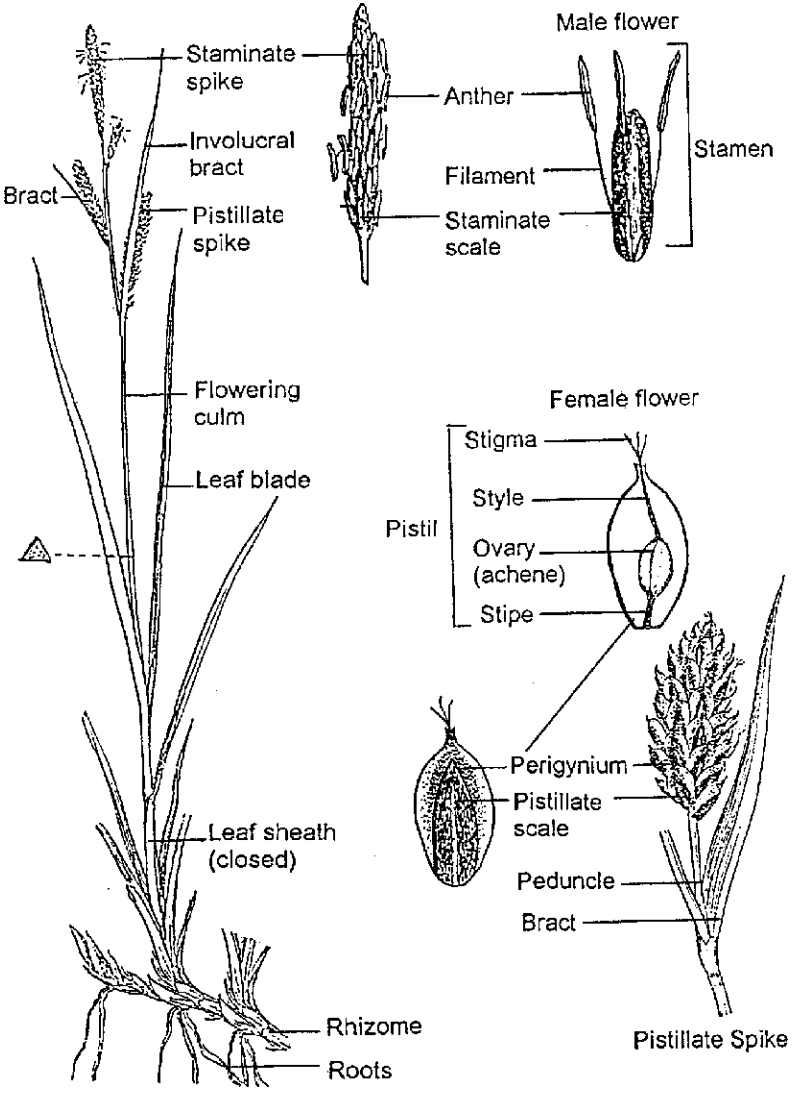
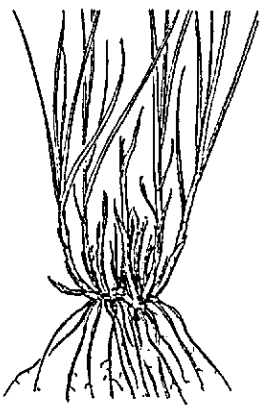
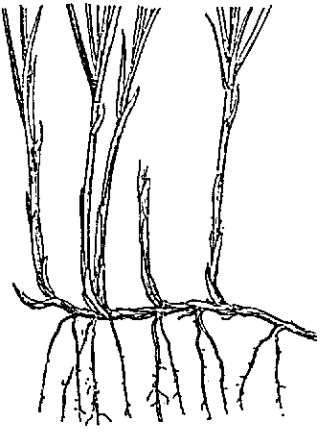


Figure 2—Sedge morphology.

Growth habit



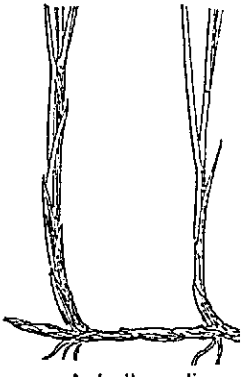
Cespitose
(culms tufted or clumped)



Rhizomatous
(Culms arising singly
or few together)

Basal leaves

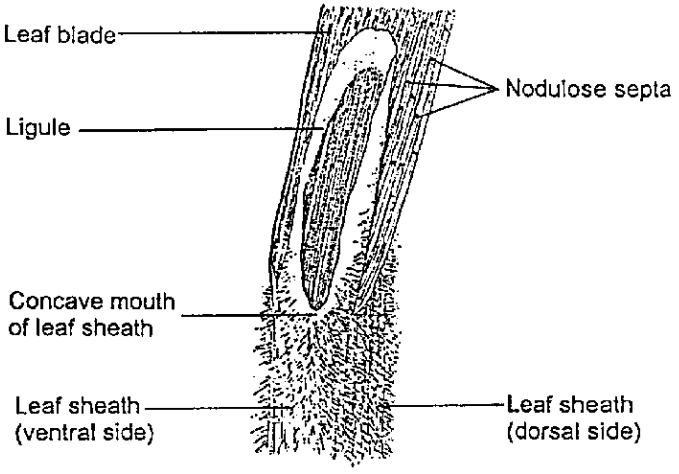
Phyllopodic
(lower basal leaves
well developed)



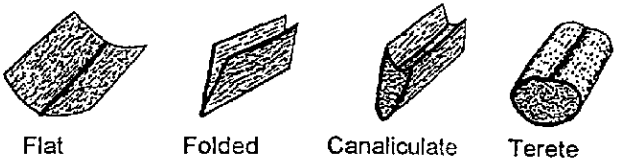
Aphyllopodic
(lower basal leaves
reduced to scales)

Figure 3—Sedge growth habit and characteristics of basal leaves.

Leaf morphology



Cross section of leaf blade



Leaf margins

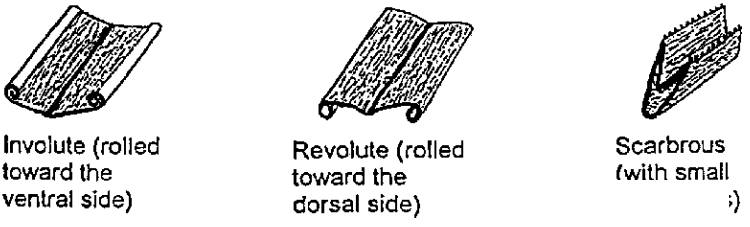


Figure 4—Sedge morphology—leaves.

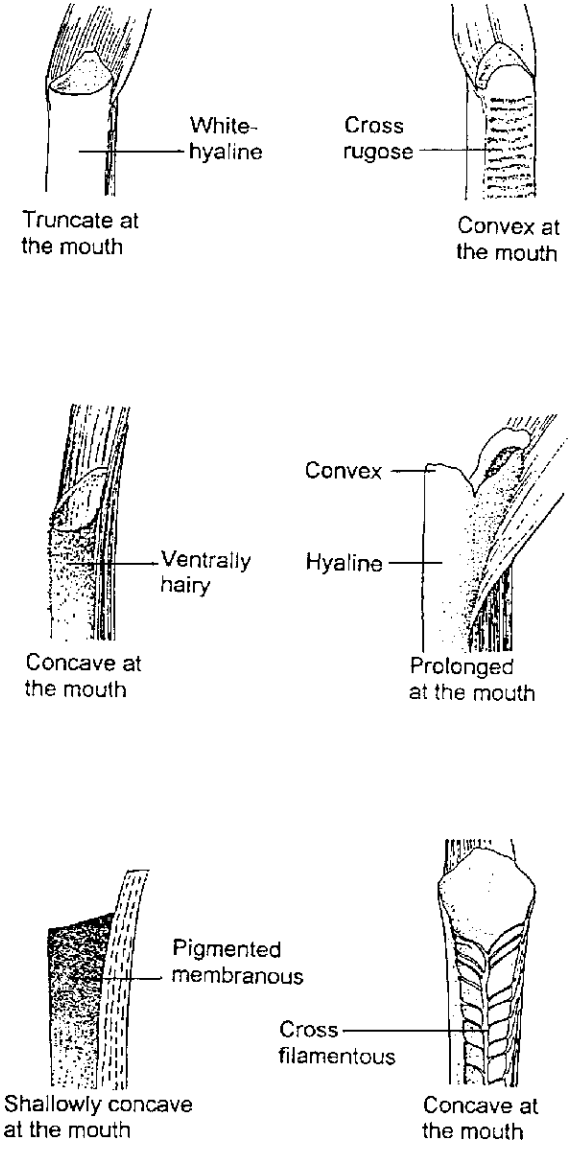


Figure 5—Sedge morphology—ventral leaf sheaths.

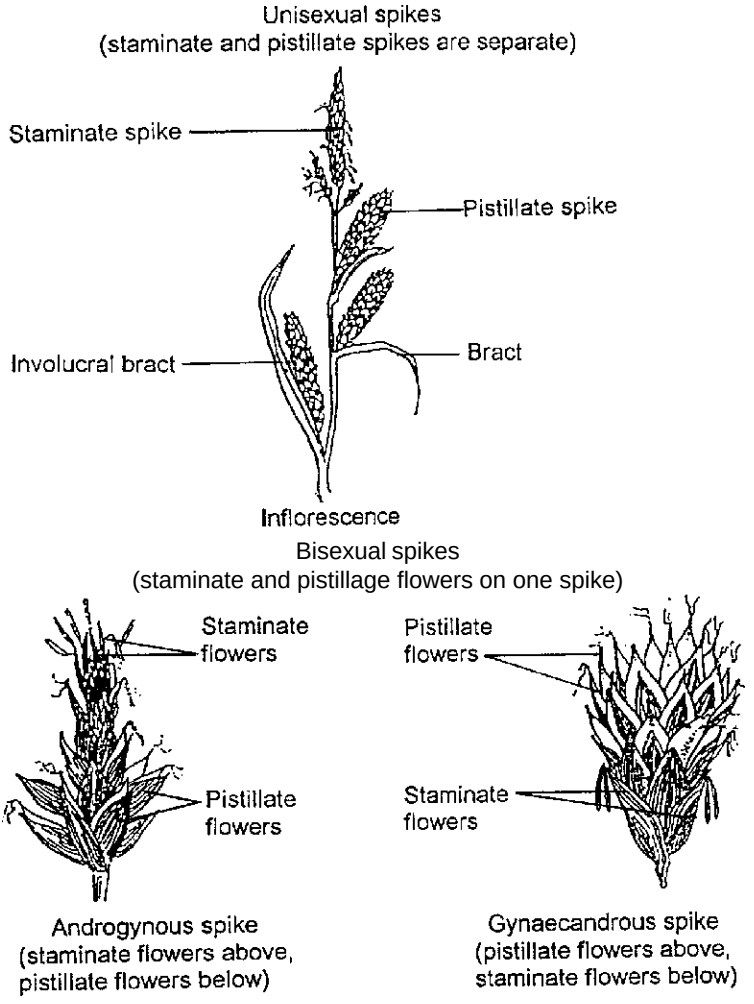


Figure 6—Sedge morphology—unisexual and bisexual spikes.

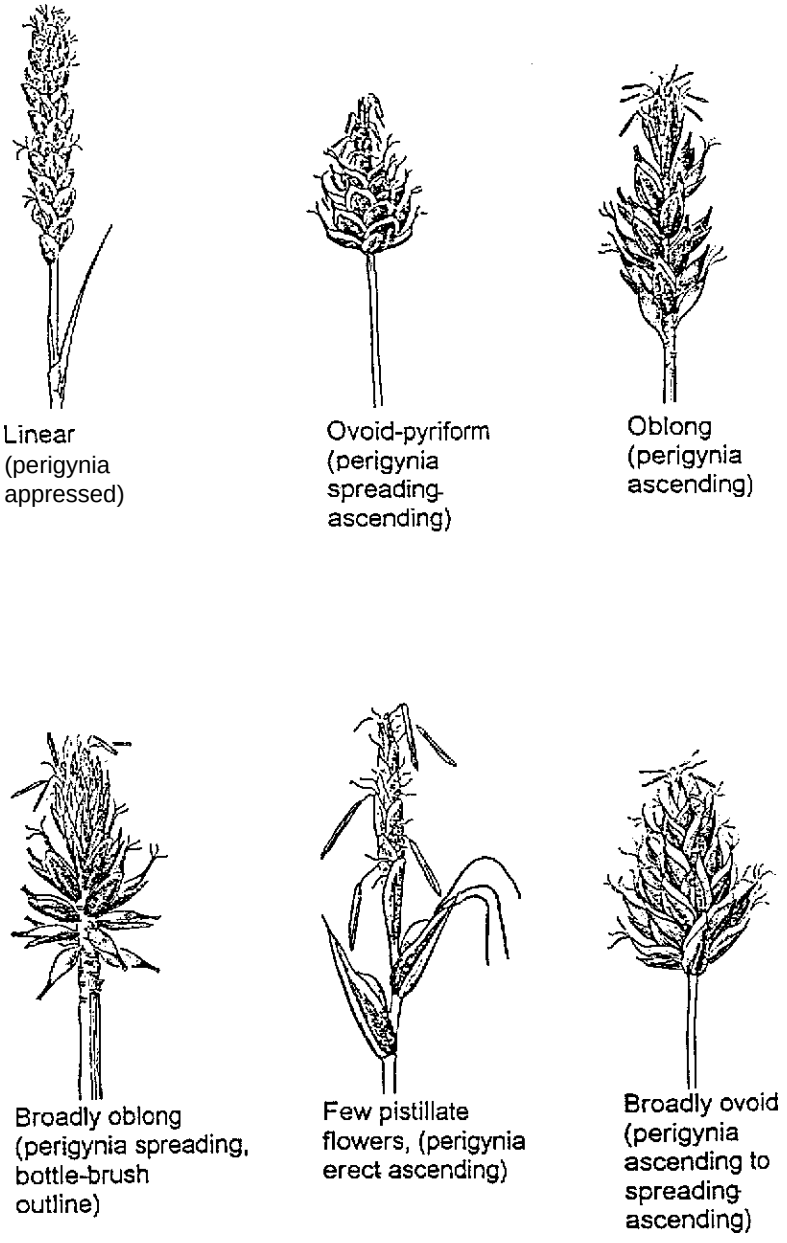


Figure 7—Sedge morphology—solitary spike inflorescences.

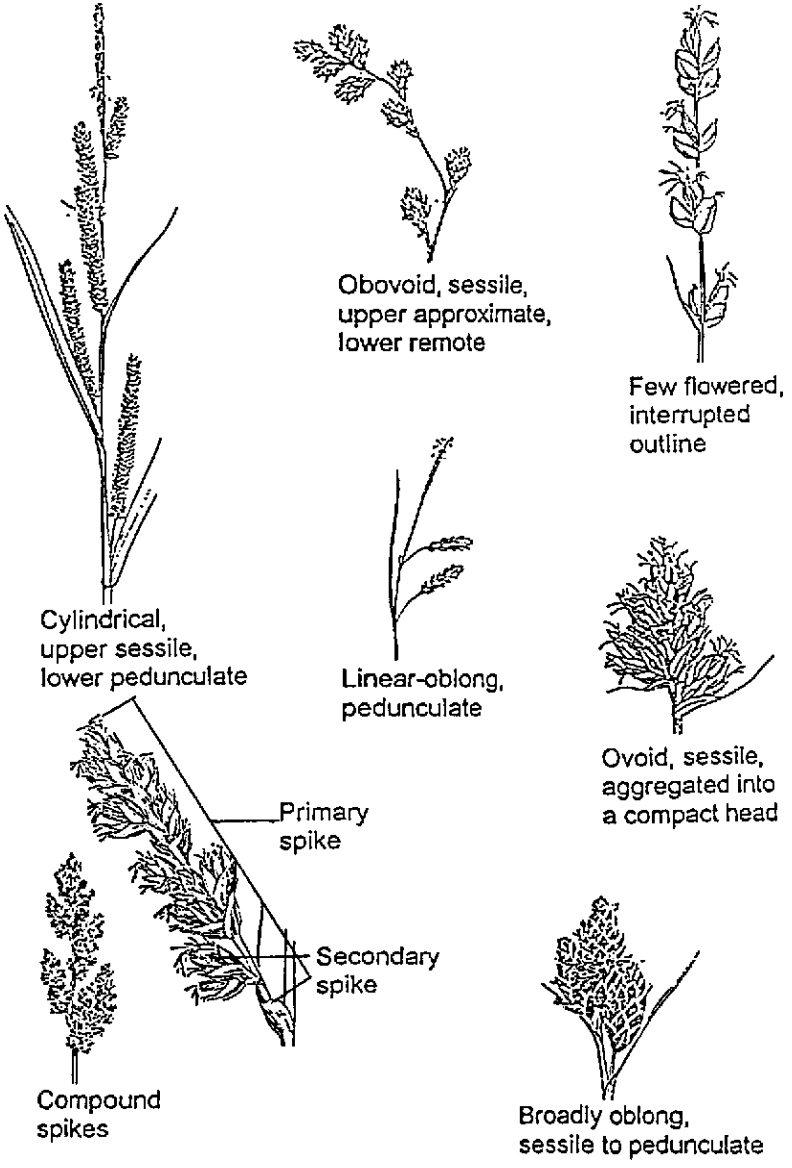


Figure 8—Sedge morphology—multiple spike inflorescences.

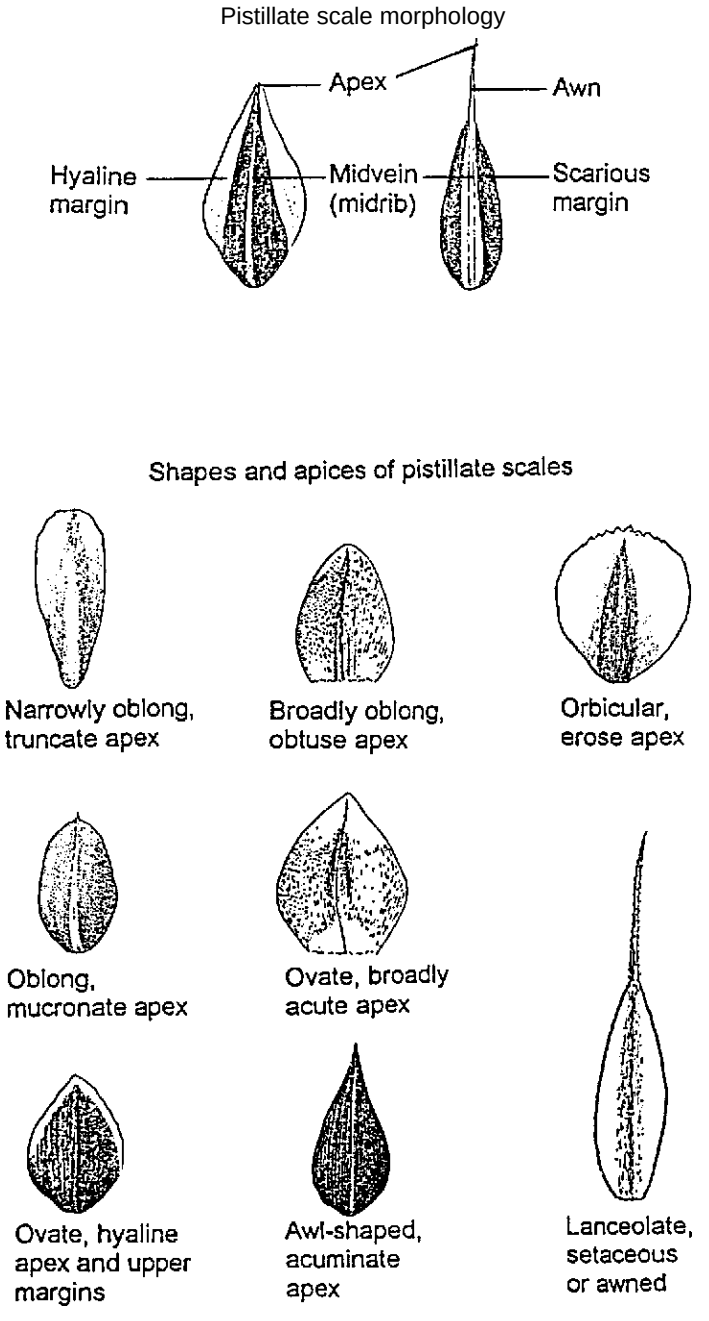


Figure 9—Sedge morphology—pistillate scales.

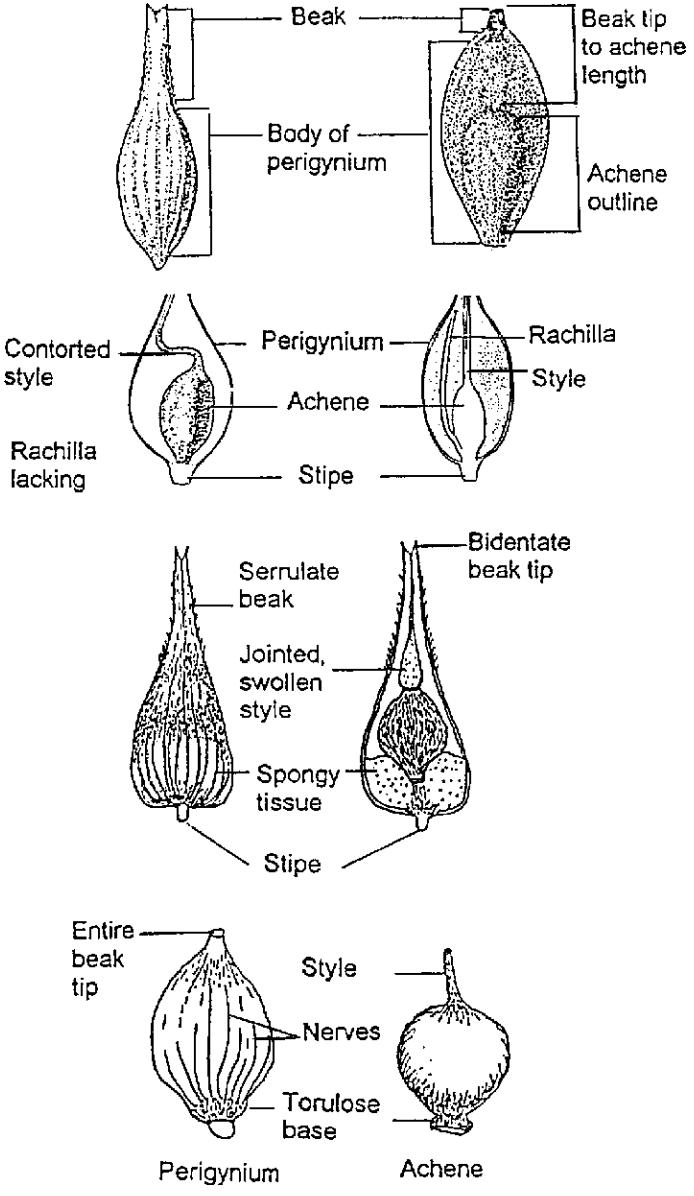


Figure 10—Sedge morphology—perigynia and achenes.

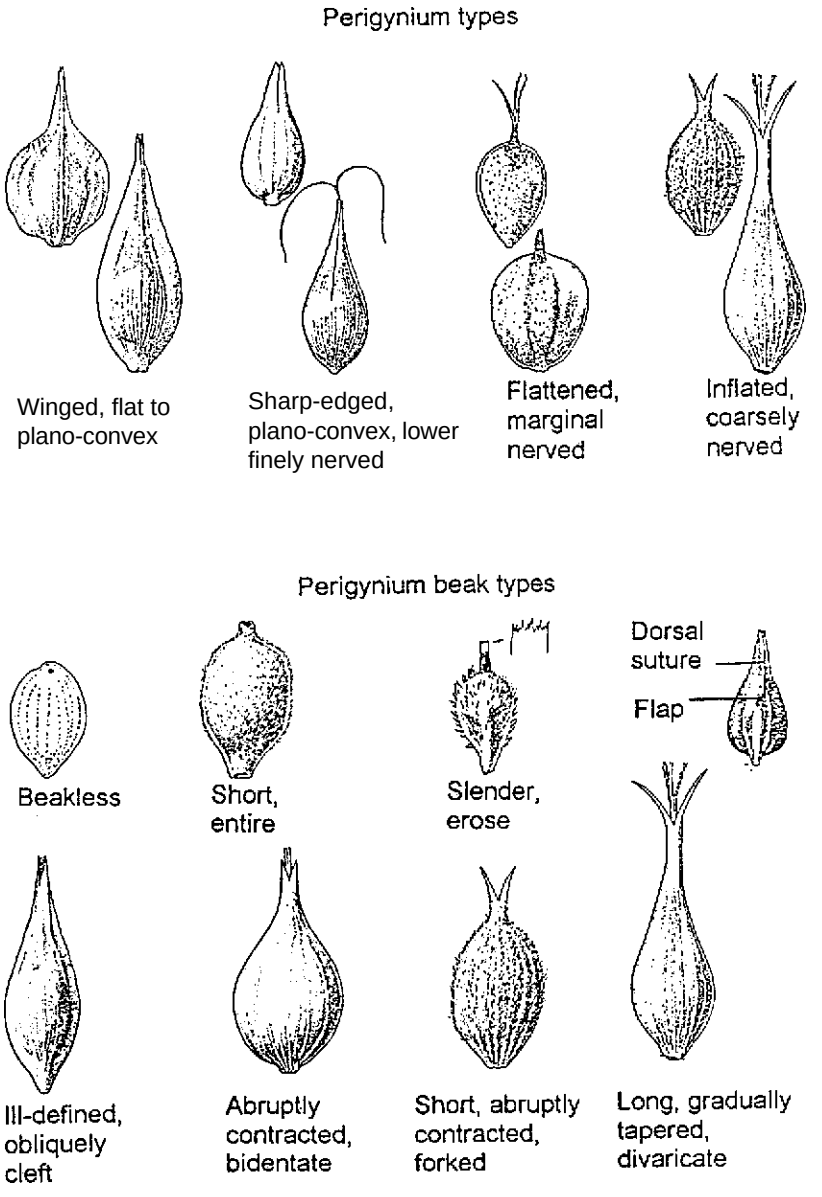


Figure 11—Sedge morphology—perigynia.

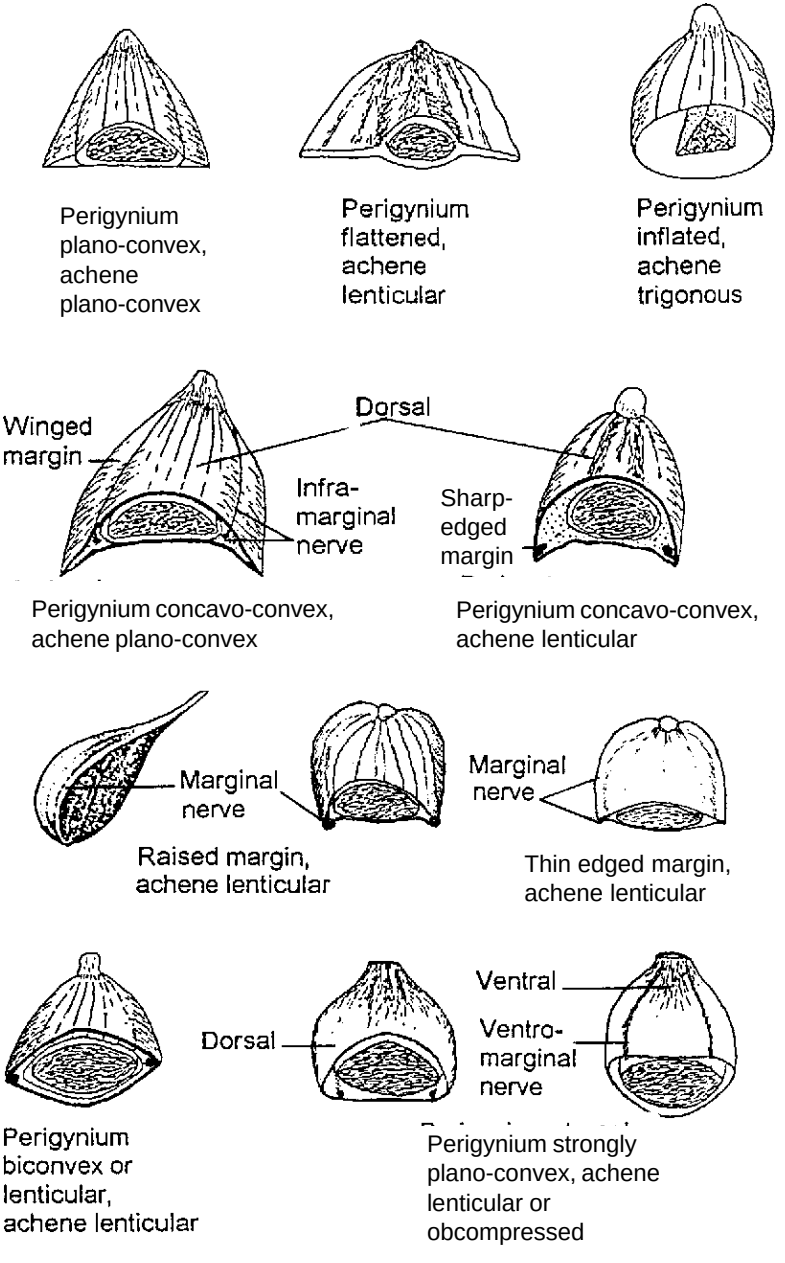


Figure 12—Sedge morphology—perigynium and achene cross sections; perigynium nerves.

Key to Intermountain *Carex* Species

1. Spike solitary, terminating the culm, often with vestigial rachilla in the perigynium ..... **Group I p. 17**
1. Spikes more than 1 (sometimes in a very dense cluster), vestigial rachilla absent
   2. Stigmas 3 or 4, achene trigonous or quadrangular
      3. Perigynium surface hairy at least near beak ..... **Group II p. 19**
      3. Perigynium surface glabrous, margins sometimes ciliate near and on beak
         4. Style tough, bony, continuous with achene, persistent, often becoming sinuate at maturity; spikes cylindrical ..... **Group III p. 20**
         4. Style more or less delicate, not bony, jointed with achene, deciduous; spikes various ..... **Group IV p. 20**
   2. Stigmas 2, achene lenticular
      5. Spikes cylindrical, usually stalked; terminal spike usually staminate or with a few perigynia toward base .... **Group V p. 23**
      5. Spikes ovate to obovate, sessile (sometimes compound); terminal spike androgynous or gynaecandrous
         6. Spikes androgynous ..... **Group VI p. 25**
         6. Spikes gynaecandrous
            7. Perigynium margins thin-edged, sharp-edged, or raised, but not winged ..... **Group VII p. 27**
            7. Perigynium margins winged at least on upper body and beak ..... **Group VIII p. 28**

Group I

Spike solitary, terminating the culm; perigynium often containing vestigial rachilla.

1. Perigynium surface hairy at least near beak
   2. Spike unisexual, more or less linear; leaf blades 1-4 mm wide; perigynia purplish; pistillate scales often hairy; inflorescence bract often present ..... ***C. scirpoidea* var. *pseudoscirpoidea* p. 229**
   2. Spike bisexual, androgynous, conic; leaf blades less than 1 mm wide; perigynia whitish to gold; pistillate scales not hairy; inflorescence bract absent
      3. Perigynium tip tapered to 0-0.3 mm beak; achene 1.6-2.2 mm long; longest pistillate scales usually less than 2.5 mm long (excluding any awns) ..... ***C. exserta* p. 111**
      3. Perigynium tip usually abruptly narrowed to 0.1-0.8 mm beak; achene 2.2-3 mm long; longest pistillate scales usually more than 3 mm long (excluding any awns) ..... ***C. filifolia* p. 113**
1. Perigynium surface glabrous
   4. Perigynium beakless, with conspicuous spongy stalk at base; spike 2-3 mm wide ..... ***C. leptalea* p. 151**

4. Perigynium with distinct, sometimes short beak, without conspicuous spongy stalk at base; spike more than 3 mm wide
    5. Rachilla absent or less than one-half achene length
        6. Stigmas 2; achene lenticular ..... ***C. dioica*** **p. 95**
        6. Stigmas 3; achene trigonous
            7. Perigynia ascending at maturity, elliptic, reddish brown; pistillate scales persistent; achene filling perigynium ..... ***C. rupestris*** **p. 225**
            7. Perigynia widely spreading to reflexed at maturity, lanceolate to ovate, greenish brown to dark brown; pistillate scales usually deciduous before perigynia; achene not filling perigynium
                8. Leaf blades 1.5-3 mm wide; plants long-rhizomatous but sometimes forming clumps; perigynia widely spreading to reflexed at maturity...***C. nigricans*** **p. 181**
                8. Leaf blades 0.5-1.5 mm wide; plants forming dense tufts; perigynia spreading at maturity ..... ***C. pyrenaica*** **p. 217**
    5. Rachilla well-developed (at least one-half achene length)
        9. Perigynia linear-lanceolate, 0.8-1 mm wide, 3-5 mm long; rachilla projecting through beak orifice; pistillate scales deciduous before perigynia; leaves 0.3-0.6 mm wide ..... ***C. microglochin*** **p. 163**
        9. Perigynia lanceolate to broadly ovate, if less than 1 mm wide then also less than 3.5 mm long; rachilla not projecting through beak orifice; pistillate scales persistent; leaves usually usually more than 0.6 mm wide
            10. Perigynia at least 4.9 mm long, only 1-6 per spike, green
                11. Lower pistillate scales leaflike, 1-15 cm long; leaf blades much shorter than culms ..... ***C. multicaulis*** **p. 167**
                11. Lower pistillate scales not leaflike, less than 1 cm long; leaf blades from slightly shorter to longer than culms ..... ***C. geyeri*** **p. 125**
            10. Perigynia less than 4.9 mm long, or, if longer, also more than 6 per spike, gold to brown
                12. Perigynia trigonous or terete in cross section; margins not sharp- or thin-edged; achene more or less filling perigynium
                13. Culms in dense tufts; perigynia thin-walled, pale below and brownish toward beak; leaf blades less than 1 mm wide ..... ***C. elynoides*** **p. 109**
                13. Culms scattered on long rhizomes; perigynia thick-walled, dark shiny brown; leaf blades usually 1-1.5 mm wide ..... ***C. obtusata*** **p. 187**
                12. Perigynia flat to plano-convex; margins sharp- or thin-edged; achene smaller than perigynium

14. Perigynia plano-convex with narrow, flat margin toward beak ..... ***C. nardina*** **p. 171**
14. Perigynia flat, at least around achene
    15. Stigmas 2; achene lenticular; wet places ..... ***C. capitata*** **p. 81**
    15. Stigmas 3; achene trigonous; moist to dry places
        16. Perigynia 4-7 mm long, 2.1-4.8 mm wide, at least 3 times achene width; spike broadly conic, 6-10 mm wide...***C. breweri*** **var.** ***paddoensis*** **p. 71**
        16. Perigynia 2.5-4.1 mm long, 0.9-2 mm wide, less than 3 times achene width; spike elliptic to narrowly conic, 3-6 mm wide .....***C. subnigricans*** **p. 249**

Group II

Stigmas 3 or 4; achenes trigonous or quadrangular; perigynia at least sparsely hairy, terete in cross section; pistillate spikes from short-ovate to cylindrical.

1. Leaf sheaths pubescent; style bony, continuous with achene, persistent; perigynia 5-8 mm long .....***C. sheldonii*** **p. 235**
1. Leaf sheaths glabrous; style not bony, jointed with achene, deciduous; perigynia less than 5 mm long
    2. Inflorescence bracts with conspicuous sheath at least 5 mm long
        3. Perigynia widely ascending to spreading, usually primarily green, less than 2.5 mm from beak tip to achene; mouth of inflorescence bract sheath usually U-shaped or truncate, usually not purple-banded at top ..... ***C. luzulina*** **p. 157**
        3. Perigynia ascending, usually primarily red brown or purple, more than 2 mm from beak tip to achene; mouth of inflorescence bract sheath from deeply Y- or V-shaped to U-shaped, often purple-banded at top ..... ***C. fissuricola*** **p. 279**
    2. Inflorescence bracts sheathless or with short sheathlike base
        4. Pistillate spikes less than 1.5 cm long; perigynia membranous
            5. Lowest inflorescence bract purple; stigmas usually 4 and achene quadrangular; leaf blades sickle-shaped; pistillate scales ciliate .....***C. concinnoides*** **p. 83**
            5. Lowest inflorescence bract green; stigmas 3 and achene trigonous; leaf blades not sickle-shaped; pistillate scales not ciliate
                6. Leaves firm; lowest inflorescence bract shorter than or equal to inflorescence; plants of dry open places in pinyon-juniper zone of the southernmost part of the Intermountain region .....***C. geophila*** **p. 123**
                6. Leaves soft; lowest inflorescence bract longer than inflorescence; plants of coniferous forest and meadows, northern and southern parts of the Intermountain region .....***C. rossii*** **p. 223**

4. Pistillate spikes cylindrical, 1.5-6 cm long; perigynia firm, thick-walled
    7. Leaf blades flat, not rigid; upper ligules thin and membranous, at least 2 mm long ..... ***C. lanuginosa*** **p. 143**
    7. Leaves canaliculate or rolled, rigid; upper ligules thick and tough, less than 2 mm long ..... ***C. lasiocarpa*** **p. 145**

Group III

Spikes cylindrical; stigmas 3; achene trigonous; style tough, bony, continuous with the achene, often becoming sinuous at maturity.

1. Leaf sheaths hairy; style straight ..... ***C. atherodes*** **p. 53**
1. Leaf sheaths glabrous, style usually sinuous
    2. Lower pistillate spikes on long nodding stalks; pistillate scales usually white or cream with pale reddish center and long awn ..... ***C. hystricina*** **p. 135**
    2. Lower pistillate spikes more or less erect; stalks short or absent; pistillate scales usually green to purplish, at most short-awned
        3. Perigynia ascending, not crowded in spike, usually tapering gradually to beak; beak teeth 0.2-1.5 mm long ..... ***C. vesicaria*** **p. 255**
        3. Perigynia spreading to reflexed, densely crowded in spike, abruptly narrowed to beak; beak teeth 0.1-0.8 mm long
            4. Lowest inflorescence bract no more than twice as long as inflorescence; perigynia 3.5-8 mm long; upper spikes not crowded ..... ***C. urticulata*** **p. 251** (formerly called ***C. rostrata***)
            4. Lowest inflorescence bract at least twice as long as inflorescence; perigynia 7-10 mm long; upper spikes crowded (occasionally spikes few and distant) ..... ***C. retrorsa*** **p. 221**

Group IV

Stigmas 3; achene trigonous; styles deciduous; perigynia glabrous and variously shaped.

1. Leaf blades with long soft hairs ..... ***C. whitneyi*** **p. 259**
1. Leaf blades glabrous
    2. Lower pistillate scales long, leaflike, looking like inflorescence bracts; inflorescence bracts absent; achene more than 2.5 mm long ..... ***C. backii*** **p. 61**
    2. Lower pistillate scales not long and leaflike; inflorescence bracts present; achene less than 2.5 mm long
        3. Lowest inflorescence bract with definite sheath at least 5 mm long
            4. Lower inflorescence bract blades ascending-spreading, much longer than inflorescence; perigynia spreading to reflexed
                5. Perigynia 2-3.5 mm long, beak 0.6-1.2 mm long, straight ..... ***C. oederi*** **p. 191**
                5. Perigynia 3.5-6.2 mm long, beak 1.4-2.3 mm long, falcate ..... ***C. flava*** **p. 115**

4. Lower inflorescence bract blades erect to ascending, shorter than or more or less equaling inflorescence length; perigynia appressed to spreading
    6. Perigynium tapering to conic tip; beak none or less than 0.4 mm long
        7. Perigynia 3.5-4.6 mm long, papillate, glaucous; achenes 2-3.5 mm long ..... ***C. livida*** **p. 155**
        7. Perigynia 2-4 mm long, not papillate or glaucous; achenes less than 2 mm long
            8. Spikes on nodding peduncles; perigynia shiny, brown to olive green; culms in dense tufts ..... ***C. capillaris*** **p. 79**
            8. Spikes erect; perigynia not shiny, green to light brown and often reddish-dotted; culms single or two or three together from long rhizomes ..... ***C. crawei*** **p. 85**
    6. Perigynium abruptly narrowed or tapering to a definite beak at least 0.5 mm long
        9. Terminal spike gynaecandrous or wholly pistillate; perigynia pale below and purple toward beak ..... ***C. fuliginosa*** **var.** ***misandra*** **p. 121**
        9. Terminal spike staminate or androgynous; perigynia purple or green throughout
            10. Perigynia dark purple, 1.7-2.5 mm wide with conspicuous flat margin at least two-thirds as wide as achene, not ciliate; pistillate scales not ciliate; inflorescence bract sheath conspicuously tapered to mouth that is at least 2 mm wide and usually shallowly U-shaped with a wide purple band at top ..... ***C. luzulaifolia*** **p. 279**
            10. Perigynia green to dark purple, less than 1.7 mm wide (if wider and with flat margin, then beak and pistillate scale tip and midrib ciliate); margin none or flat and less than one-half achene width; inflorescence bract sheath linear or slightly tapered to the mouth that is less than 2 mm wide and U-, V-, or Y-shaped with at most a narrow purple band at top
                11. Inflorescence bract sheath linear, mouth usually shallowly U-shaped or truncate; perigynia usually mostly green (purple in *C. luzulina* var. *ablata*), surface smooth, 2-ribbed with raised veins between ribs; less than 2.5 mm from beak tip to achene ..... ***C. luzulina*** **p. 157**
                11. Inflorescence bract sheath linear or slightly tapering to mouth, mouth usually deeply Y- or V-shaped; perigynia usually red brown or purple, surface appearing roughened, 2-ribbed without raised veins between; at least 2 mm from beak tip to achene.. ***C. fissuricola*** **p. 279**

3. Lowest inflorescence bract sheathless or with sheathlike base less than 5 mm long
    12. Terminal spike staminate at tip or throughout
        13. Spikes narrow-cylindric; perigynia at least 60 per spike, obovate, spreading; leaf blades 8-20 mm wide; stem sharply 3-winged ..... ***C. amplifolia* p. 43**
    13. Spikes ovoid to broad-cylindric; perigynia less than 50 per spike, ovate to obovate, ascending or spreading; leaf blades less than 10 mm wide
        14. Perigynium body tapered to broadly conic tip, beak usually absent; style base often persistent, black, and exserted through perigynium beak; roots covered with dense, yellow felty hairs
            15. Terminal spike 1-3 cm long; leaves often canaliculate; culms usually aphyllopodic ..... ***C. limosa* p. 153**
            15. Terminal spike 0.7-1.5 cm long; leaves flat; culms usually phyllopodic ..... ***C. paupercula* p. 197**
        14. Perigynium tapered or abruptly narrowed to short linear beak; style base not persistent, brown, sometimes exserted; roots glabrous or covered with white or brown nonfelty hairs
            16. Perigynia spreading, body spherical or with flat margin around achene, conspicuously many-veined or many-ribbed when dry ..... ***C. raynoldsii* p. 219**
            16. Perigynia ascending, body flat or flat around achene when pressed or dry, more or less veinless and with only 2 ribs
                17. Perigynium broadly elliptic or broadly ovate to nearly round, the 2 ribs more toward ventral surface than at perigynium margins ..... ***C. paysonis* p. 199**
                17. Perigynium obovate to elliptic, the 2 ribs marginal ..... ***C. heteroneura* p. 131**
12. Terminal spike gynaecandrous or mixed
    18. Spikes 6-10, the lowest usually on long, nodding stalk; lowest inflorescence bract longer than inflorescence; perigynia very flat, more than three times as wide as achene and little distended by it ..... ***C. mertensii* p. 161**
    18. Spikes 6 or fewer, the lowest sessile or on upright stalk except in *C. bella*; lowest inflorescence bract shorter than inflorescence; perigynia trigonous to rounded, with or without a distinct flat margin, less than three times as wide as achene and distended by it
        19. Lower leaf sheaths cross-fibrillose; pistillate scales awned; perigynia conspicuously papillate near beak ..... ***C. buxbaumii* p. 75**
        19. Lower leaf sheaths not cross-fibrillose; pistillate scales unawned (sometimes tip attenuate); perigynia papillate or not

20. Spikes all sessile
    21. Perigynia more than twice as long as wide, more or less inflated or trigonous ..... ***C. nelsonii*** **p. 175**
    21. Perigynia less than twice as long as wide, flat ..... ***C. nova*** **p. 185**
20. At least lower spikes on short or long stalks
    22. Pistillate scales with distinct white-hyaline margin and usually white-hyaline tip
        23. Spikes on long, nodding stalks; perigynia not papillate ..... ***C. bella*** **p. 65**
        23. Spikes on short stiff stalks
            24. Pistillate scales more or less covering perigynia; perigynia flattish, 1.3-2 mm wide, body at least one-fourth empty above achene; usually dry rocky habitats ..... ***C. albonigra*** **p. 39**
            24. Pistillate scales shorter than perigynia; perigynia trigonous, 1-1.3 mm wide, body more or less filled by achene; usually wet habitats ..... ***C. norvegica*** **p. 183**
    22. Pistillate scales usually without distinct white margin and tip
        25. Pistillate scales longer but much narrower than perigynia, usually less than 1 mm wide, tip attenuate; inflorescence usually dense ..... ***C. helleri*** **p. 129**
        25. Pistillate scales shorter and narrower than perigynia, at least 1 mm wide, tip rounded to acuminate; inflorescence dense or open
            26. Spikes 2-4 mm wide; perigynia 1.6-3 mm long, achene nearly filling body ..... ***C. parryana*** **p. 195**
            26. Spikes 5-8 mm wide; perigynia 3-4 mm long, achene not filling body
                27. Perigynia 2-3 times as long as wide, olive green to golden brown, often red dotted, flat only above achene ..... ***C. atrosquama*** **p. 57**
                27. Perigynia 1-2 times as long as wide, green or purple, flat above and at margins of achene ..... ***C. heteroneura*** **p. 131**

Group V

Stigmas 2; achenes lenticular; spikes mostly cylindrical, bicolored with green and purplish black or brownish; beak very short, entire or shallowly bidentate.

1. Lowest inflorescence bract with sheath at least 4.5 mm long; solitary pistillate spikes often on long stalks arising near plant base; perigynia fleshy, papillate, white or green to orange
    2. Pistillate scales and perigynia crowded, scales red brown to purplish, often covering perigynia; bract sheath mouth V-shaped; spikes densely clustered (except basal ones), terminal spike pistillate at least at tip ..... ***C. garberi*** **p. 59**
    2. Pistillate scales and perigynia usually not crowded, scales white to reddish brown, shorter than perigynia; bract sheath mouth

U-shaped; spikes not densely clustered, terminal spike staminate or sometimes pistillate at tip

3. Lower pistillate scales closely appressed against perigynia, persisting for a time after perigynia have fallen; staminate portion of terminal spike (1.8)2-3.5 mm wide; perigynia appearing more or less obovate in spike, stalked, nerved but not prominently ribbed, tip conspicuously papillate at 10 times magnification, at complete maturity gold or white when fresh, greenish white or pale gold when dry, usually not squashed toward base ..... ***C. hassei*** **p. 59**
3. Lower pistillate scales not appressed against perigynia, often falling before perigynia; staminate portion of terminal spike 0.9-2 mm wide; perigynium appearing spherical in spike, usually sessile, strongly several-ribbed, tip usually not conspicuously papillate at 10 times magnification, at complete maturity orange when fresh, orange or gold to purplish when dry, often white above, more or less squashed toward base ..... ***C. aurea*** **p. 59**

1. Lowest inflorescence bract sheathless; solitary pistillate spikes not normally present; perigynia membranous, not fleshy, green to brown
   4. Style tough, bony, continuous with achene, persistent; perigynia with marginal ribs but at most only inconspicuous nerves between ribs ..... ***C. saxatilis*** **p. 227**
   4. Style more or less delicate, jointed with achene, usually deciduous; perigynia with or without prominent nerves
      5. Perigynia nerveless or with very indistinct nerves
         6. Perigynia with 1-5 faint nerves on each face; achene one-half to two-thirds as long as perigynium body; culm angles scabrous ..... ***C. angustata*** **p. 45**
         6. Perigynium nerveless; achene about one-half as long as perigynium body; culm angles glabrous
            7. Lowest spike 1-10 cm long, bract usually more or less equaling or surpassing inflorescence length, stalk of inflorescence 0-4.2 cm long; perigynia weakly minutely papillate, green, more or less red-dotted or red-blotched; achene shiny ..... ***C. aquatilis*** **p. 47**
            7. Lowest spike 0.8-3 cm long, bract usually less than one-half inflorescence length, peduncle 0-15 mm long; perigynia strongly minutely papillate, usually purple above or throughout; achene dull
               8. Lower leaf sheaths cross-fibrillose, up to 15 cm long; perigynium tip acute ..... ***C. prionophylla*** **p. 213**
               8. Lower leaf sheaths not cross-fibrillose, up to 5 cm long; perigynium tip rounded ..... ***C. scopulorum*** **p. 233**
      5. Perigynia conspicuously nerved on both surfaces
         9. Perigynium beak 0.2-1 mm long, tip notched at least 0.1 mm, teeth minutely hairy; leaves conspicuously clustered at culm base, fresh leaves blue-glaucous ..... ***C. nebrascensis*** **p. 173**

9. Perigynium beak usually less than 0.4 mm long, tip notched less than 0.1 mm, teeth glabrous; leaves distributed along lower culm, fresh leaves not blue-glaucous
    10. Plants forming dense clumps or tussocks; perigynium green or whitish, constricted just above base, on stalk usually at least 0.1 mm long, conspicuously papillate; lower leaf sheaths glabrous ..... ***C. lenticularis*** **p. 147**
    10. Plants long-rhizomatous, sometimes forming dense swards; perigynium green, brown, or purplish, not constricted above base, sessile, weakly papillate; lower leaf sheaths scabrous ..... ***C. angustata*** **p. 45**

Group VI

Inflorescences elongate to ovoid heads; spikes bisexual (if plants are dioecious then spikes are unisexual), sessile and short; perigynia with dorsal suture or obliquely cleft beak; stigmas 2; achene lenticular.

1. Perigynia 1-3 per spike, blackish at maturity; inflorescence only 3-4 mm wide; terminal spike often with a conspicuous narrow staminate tip ..... ***C. disperma*** **p. 97**
1. Perigynia at least 3 per spike, usually not blackish; inflorescence more than 4 mm wide; terminal spike tip not conspicuous and narrow
    2. Lower perigynium wall thick but soft, filled with spongy tissue, base often white and lumpy
        3. Perigynium long-tapered to poorly defined beak, from beak tip to achene at least one-half total perigynium length, body widest at base
            4. Lower spikes compound; inflorescence paniculate, 2-10 cm long, 1-3 cm wide, spikes numerous
                5. Perigynia conspicuously many-nerved on both sides; larger leaf blades 4-11 mm wide ..... ***C. stipata*** **p. 243**
                5. Perigynia few-nerved dorsally and nerveless ventrally; larger leaf blades 3-6 mm wide ..... ***C. alma*** **p. 41**
            4. Lower spikes simple; inflorescence 1-3 cm long, 0.6-1.8 cm wide, spikes few to numerous
                6. Leaf sheath with thick, tough rim at mouth, not cross-corrugate, dorsally white-spotted ..... ***C. nervina*** **p. 177**
                6. Leaf sheath membranous at mouth, sometimes cross-corrugate, not white-spotted dorsally
                7. Margin of perigynium beak and upper body entire; leaves usually clustered near culm base, sheaths not ventrally cross-corrugate ..... ***C. jonesii*** **p. 141**
                7. Margin of perigynium beak and upper body ciliate-serrulate at least on 1 side; leaves distributed along lower culm, sheaths often ventrally cross-corrugate ..... ***C. neurophora*** **p. 179**
        3. Perigynium short-tapered or abruptly narrowed to conic or linear beak, from beak tip to achene less than one-half total perigynium length, body widest at or above base

8. Perigynium beak 0.2-0.6 mm long, usually less than one-fourth the length of the body; perigynium shiny brown ..... ***C. simulata*** **p. 239**
8. Perigynium beak at least 0.7 mm long, more than one-fourth the length of the body; perigynia green to brown, shiny or dull
9. Perigynium with lengthwise groove 0.1-0.3 mm wide on dorsal surface near base; beak with conspicuous white dorsal suture flap
10. Leaf sheath ventrally copper-colored or purplish near mouth, often cross-corrugated; inflorescence 3.5-8 cm long, flexible, paniculate, lower spikes compound ..... ***C. cusickii*** **p. 89**
10. Leaf sheath ventrally white or with narrow brown margin at mouth, not cross-corrugated; inflorescence 1.5-6 cm long, stiff, racemose or paniculate, lower spikes simple or compound .. ***C. diandra*** **p. 93**
9. Perigynium without dorsal lengthwise groove or with groove less than 0.1 mm wide; beak without conspicuous dorsal suture flap
11. Culms in definite clumps; perigynia up to twice as long as wide; leaf sheath usually ventrally cross-corrugated ..... ***C. vulpinoidea*** **p. 257**
11. Culms single along rhizomes; perigynia more than twice as long as wide; leaf sheaths not cross-corrugated ventrally ..... ***C. praegracilis*** **p. 209**

2. Lower perigynium wall thin, lacking spongy tissue, base not white and lumpy
12. Spikes loosely aggregated into a more or less elongate inflorescence, individual spikes more or less distinct
13. Perigynium very shiny, dorsally bulged so that marginal ribs are actually on ventral face ..... ***C. vallicola*** **p. 253**
13. Perigynium not dorsally bulged, marginal ribs at perigynium margins
14. Perigynia conspicuously spreading; pistillate scales more or less equaling perigynia in length; plants clumped or shortly rhizomatous ..... ***C. occidentalis*** **p. 189**
14. Perigynia ascending; pistillate scales usually shorter than perigynia; plants long-rhizomatous
15. Perigynia up to 4 mm long; plants of moist to wet places, tolerant of alkali ..... ***C. praegracilis*** **p. 209**
15. Perigynia at least 4.2 mm long; plants of dry to moderately moist places, not usually alkaline ..... ***C. siccata*** **p. 237**
12. Spikes closely crowded, forming a globose to subglobose head, individual spikes not easily distinguishable
16. Perigynia flat, broadly ovate
17. Perigynia nerveless, very thin-walled ..... ***C. perglobosa*** **p. 201**

17. Perigynia at least dorsally nerved, thin-walled ..... ***C. foetida* var. *vernacula* p. 117**

16. Perigynia plano-convex; lance-ovate or elliptic

18. Perigynia spreading, body coppery brown with green margins; plants cespitose ..... ***C. hoodii* p. 133**

18. Perigynia ascending or appressed-ascending, body stramineous to blackish; plants long-rhizomatous but sometimes forming dense clumps

19. Stigmas less than 4 mm long, deciduous; style less than 1.5 mm long, included; perigynium 2.5-3.5 mm long; inflorescence on bisexual or pistillate plants less than 2 cm long; plants monoecious or dioecious ..... ***C. eleocharis* p. 107**

19. Stigmas 4-6 mm long, persistent; style 1.8-3.5 mm long, exserted; perigynium 3.5-4.6 mm long; pistillate inflorescences 1.5-3.5 cm long; plants usually dioecious ..... ***C. douglasii* p. 99**

Group VII

Spikes short and sessile; perigynia plano-convex with thin-edged, sharp-edged, or raised margins; terminal spikes gynaecandrous, lateral ones wholly pistillate.

1. Inflorescence a dense suborbicular head 0.6-1.5 cm long, usually dark brown or blackish green, lowest internode less than 1 mm long; perigynium margins entire to beak tip ..... ***C. illota* p. 137**

1. Inflorescence elongate, at least 1.5 cm long, green to medium brown, lowest internode at least 2 mm long; perigynium margins entire or ciliate-serrulate on beak

2. Perigynium filled at least in lower one-half of body with spongy tissue, upper body more or less papillate

3. Perigynium 2-3.4 mm long; beak 0.6-1.2 mm long, more than one-fourth total perigynium length, conic; lower leaf sheaths at least sparsely red-dotted ventrally ..... ***C. arcta* p. 51**

3. Perigynium 1.5-3 mm long; beak less than 0.55 mm long, less than one-fourth total perigynium length, widely conic; lower leaf sheaths not ventrally red-dotted

4. Perigynia usually no more than 10 per spike, ventrally nerveless or only faintly nerved ..... ***C. brunnescens* p. 73**

4. Perigynia usually 15-30 per spike, conspicuously nerved ventrally

5. Perigynium beak with brown dorsal suture flap or stripe; pistillate scales light brown with white margins and tip; inflorescence 1-2.5 cm long ..... ***C. praeceptorum* p. 207**

5. Perigynium beak without brown dorsal suture flap or stripe; pistillate scales white or sometimes gold or pale brown; inflorescence 2-5 cm long ..... ***C. canescens* p. 77**

2. Perigynium with spongy tissue lacking or only near the base, upper body not papillate

6. Perigynium margins thin-edged; spikes closely clustered; plants alpine ..... ***C. bipartita*** **p. 67**
6. Perigynium margins raised into ribs; at least lower spikes not closely clustered with upper ones; plants of lowlands to moderate elevations
    7. Perigynia appressed to ascending, widest above base ..... ***C. deweyana*** **p. 91**
    7. Perigynia spreading to reflexed, widest at base
        8. Perigynium 1.9-3.3 mm long, beak densely serrate, one-fourth to one-third body length; 0.5-1 mm from beak tip to achene; wet places but usually not in sphagnum bogs ..... ***C. interior*** **p. 139**
        8. Perigynium 1.6-4 mm long, beak sparsely serrate, at least equaling body length; 0.8-2 mm from beak tip to achene; in sphagnum bogs ..... ***C. echinata*** **p. 103**

Group VIII

J. Mastrogiuseppe

Spikes gynaecandrous, ovoid to oblong, sessile, aggregated into compact or elongated heads; perigynia plano-convex to flattened, margins winged or thin-edged; beaks ill-defined or abruptly tapering, smooth or serrulate, beak tip usually obliquely cleft.

1. Lower 2-3 inflorescence bracts elongate, more or less leaflike, at least the lowest one usually longer than inflorescence; inflorescence dense and headlike, less than 3 cm long ..... ***C. athrostachya*** **p. 55**
1. Lower 2-3 inflorescence bracts not elongate and leaflike, shorter than inflorescence except sometimes the lowest one; inflorescence dense or open, shorter or longer than 3 cm
    2. Ligule at least 2.5 mm long; leaf sheath usually prolonged ventrally at least 4 mm above collar; inflorescence pale green, silvery green, or whitish ..... ***C. fracta*** **p. 119**
    2. Ligule less than 2.5 mm long; leaf sheath usually prolonged less than 4 mm ventrally above collar; if ligule more than 2.5 mm long and ventral sheath prolonged, inflorescence not pale green, silvery green, or whitish
        3. Perigynia flat in cross section except over achene
            4. Pistillate scales more or less covering perigynia, sometimes exposing beak tip
                5. Spikes more or less distant, lowest inflorescence internode 5-15 mm long, second internode 4-14 mm long; perigynia 0.5-0.8 mm thick
                6. Perigynium beak tip flat and ciliate-serrulate; achenes 1.1-1.75 mm wide ..... ***C. xerantica*** **p. 261**
                6. Perigynium beak tip cylindric and more or less entire for 0.5-1 mm from tip; achenes 1.2-2 mm wide ..... ***C. praticola*** **p. 211**
                5. Spikes densely to loosely aggregated, lowest inflorescence internode 2-10 mm long, second internode 0.5-4.5 mm long; perigynium 0.25-0.5 mm thick

7. Leaf blades flat, 2.3-4 mm wide; lowest inflorescence internode usually 2-3.5 mm long; perigynia usually dark brown at maturity, often green above ..... ***C. arapahoensis*** **p. 49**
7. Leaf blades folded or margins revolute, 0.5-2.5(3) mm wide; lowest inflorescence internode 4-10 mm long; perigynia white, pale gold, coppery, or medium brown ..... ***C. phaeocephala*** **p. 205**

4. Pistillate scales shorter than perigynia, exposing beak and upper body margin
   8. Individual spikes usually indistinct, densely clustered in inflorescence
      9. Perigynia 2-3 times as wide as pistillate scales ..... ***C. proposita*** **p. 215**
      9. Perigynia 1-1.5 times as wide as pistillate scales
         10. Achenes 1.3-2.4 mm long, 1-1.6 mm wide; spikes 9-12 mm long; perigynium wing margins crinkled at least above ..... ***C. straminiformis*** **p. 245**
         10. Achenes 1-1.8 mm long, by 0.7-1.3 mm wide; spikes 5-10 mm long; perigynium wing margins usually not crinkled
            11. Perigynia 4.2-6.5 mm long, usually at least 2.5 mm from beak tip to achene, flat margin including wing 0.3-0.7 mm wide; alpine ..... ***C. haydeniana*** **p. 127**
            11. Perigynia 2.9-5 mm long, usually less than 2.5 mm from beak tip to achene, flat margin including wing 0.2-0.5 mm wide; lowland to subalpine ..... ***C. microptera*** **p. 165**
   8. Individual spikes distinct, loosely aggregated in inflorescence
      12. Flat margin of perigynium including wing less than 0.4 mm wide; perigynia less than 2 mm wide, lanceolate to ovate or obovate
         13. Perigynia 0.2-0.3 mm thick, 0.9-1.25 mm wide, wings 0.1-0.2 mm wide; achene 0.8-1.5 mm long ..... ***C. crawfordii*** **p. 87**
         13. Perigynia 0.4-0.6 mm thick, 1.2-2.5 mm wide, wings 0.2-0.6 mm wide; achene 1.5-2.3 mm long ..... ***C. phaeocephala*** **p. 205**
      12. Flat margin of perigynium including wing less than 0.4 mm wide; perigynia at least 1.8 mm wide, round to broadly ovate
         14. Spikes fusiform or elliptic; achene 0.5-0.9 mm wide ..... ***C. scoparia*** **p. 231**
         14. Spikes lanceolate to broadly ovate; achene 0.85-2 mm wide

15. Perigynia with at least 9 nerves on dorsal face, nerves thin, longer than achene; achene more or less at perigynium base ..... ***C. straminiformis*** **p. 245**
15. Perigynia with less than 9 nerves on dorsal face, nerves thick, often shorter than achene; achene often well above perigynium base
    16. Perigynia 2-3 times as wide as pistillate scales ..... ***C. proposita*** **p. 215**
    16. Perigynia 1-1.5 times as wide as pistillate scales
        17. Perigynia 5.5-7.2 mm long, 2.6-3.8 mm wide, 0.5-0.7 mm thick; leaf blades 2-6 mm wide ..... ***C. egglestonii*** **p. 105**
        17. Perigynia 3.5-6 mm long, 1.2-2.5 mm wide, 0.3-0.5 mm thick; leaf blades 0.5-2.5(3) mm wide ..... ***C. phaeocephala*** **p. 205**

3. Perigynia plano-convex to biconvex in cross section
    18. Perigynia 5.5-8.1 mm long, beak cylindric and more or less entire for at least 0.5 mm from tip
        19. Perigynia broadly ovate, 2.6-3.8 mm wide, flat margin including wing 0.5-1.1 mm wide ..... ***C. egglestonii*** **p. 105**
        19. Perigynia lanceolate to ovate, 1.1-2.5 mm wide, flat margin including wing 0.15-0.5 mm wide
            20. Perigynia 0.4-0.5 mm thick; spikes densely aggregated, 1.5-3 mm between the lowest two..... ***C. ebenea*** **p. 101**
            20. Perigynia 0.5-0.9 mm thick; spikes distant or loosely aggregated, 4-14 mm between the lowest two
                21. Perigynia with 3-10 strong nerves on ventral face at least one-half as long as achene... ***C. petasata*** **p. 203**
                21. Perigynia with at most a few nerves on ventral face less than one-half achene length...***C. praticola*** **p. 211**
    18. Perigynia less than 5.5 mm long, beak tip cylindric and entire or flat and ciliate-serrulate
        22. Perigynia boat-shaped, less than 4.2 mm long, wings curved toward ventral face, less than 0.12 mm wide, beak tips inconspicuous in inflorescence; pistillate scales covering at least perigynium bodies ..... ***C. leporinella*** **p. 149**
        22. Perigynia not boat-shaped, wings not curved toward ventral face, less than or more than 0.12 mm wide; or if perigynia boat-shaped and wings curved toward ventral face, then beak tips conspicuous in inflorescence and most pistillate scales shorter than perigynia
            23. Ventral perigynium face with at least 3 conspicuous nerves longer than achene
                24. Dorsal perigynium face with at least 9 fine nerves longer than achene
                25. Perigynia usually more than 1.8 mm wide, ovate to broadly ovate, less than 2.5 mm from beak tip to achene; inflorescence usually more or less triangular ..... ***C. multicostata*** **p. 169**

25. Perigynia usually less than 1.8 mm wide, lanceolate to fusiform, usually more than 2.5 mm from beak tip to achene; inflorescence usually oblong ..... ***C. specifica*** **p. 241**

24. Dorsal perigynium face with at most 9 thick nerves shorter or longer than achene

26. Pistillate scales more or less covering perigynia; perigynium beak tip red brown with white-hyaline margin ..... ***C. phaeocephala*** **p. 205**

26. Pistillate scales shorter than perigynia, or, if covering perigynia, perigynium beak tip not red brown with white-hyaline margin

27. Inflorescence dense, lowest two internodes together less than one-third, usually about one-fifth, total inflorescence length; perigynia 0.4-0.5(0.6) mm thick ..... ***C. abrupta*** **p. 35**

27. Inflorescence more or less open, lowest two inflorescence internodes together less than one-half, usually about one-third, total inflorescence length; perigynia 0.5-0.6(0.7) mm thick ..... ***C. mariposana*** **p. 159**

23. Ventral perigynium face nerveless or with up to 4 nerves that do not reach top of achene.

28. Perigynia 0.9-1.25 mm wide, 0.2-0.3 mm thick ..... ***C. crawfordii*** **p. 87**

28. Perigynia 1.2-3.4 mm wide, 0.35-0.7 mm thick

29. Achenes 1-1.6 mm long; perigynia usually less than 3.5 mm long

30. Perigynium beak cylindric and more or less entire at least at tip, tip gold to light brown; pistillate scales usually shorter than perigynia ..... ***C. subfusca*** **p. 247**

30. Perigynium beak flat to tip, tip rust brown; pistillate scales more or less covering perigynia, at most the beaks exposed ..... ***C. bebbii*** **p. 63**

29. Achenes at least 1.6 mm long; perigynia usually over 3.5 mm long

31. Perigynium beak cylindric and more or less entire for at least 0.5 mm from tip

32. Perigynia usually gold brown or coppery with a metallic sheen; lowest inflorescence internode usually less than 4 mm; spikes closely aggregated at least near inflorescence tip ..... ***C. pachystachya*** **p. 193**

32. Perigynia cream-colored to brown, without a metallic sheen; lowest inflorescence internode at least 4 mm; spikes loosely aggregated at least near inflorescence base

33. Achenes 0.5-0.7 mm thick; inflorescence resembling a string of beads; plants 20-95 cm tall; lowlands to mid-montane ..... ***C. praticola*** **p. 211**

33. Achenes 0.2-0.5 mm thick; inflorescence not resembling a string of beads; plants 5-40 cm tall; subalpine to alpine ..... ***C. phaeocephala*** **p. 205**

31. Perigynium beak flat and more or less ciliate serrulate to tip or cylindric for less than 0.5 mm

34. Pistillate scales white or tinged with gold or rusty brown; achenes at least 1.3 mm wide

35. Inflorescence dense, stiff; pistillate scales shorter than perigynia, exposing upper bodies; perigynia (2)2.4-3.4 mm wide, 0.5-0.6 mm thick ..... ***C. brevior*** **p. 69**

35. Inflorescence open, flexible; pistillate scales more or less covering perigynia or beak tips exposed; perigynia 1.5-2.5 mm wide, 0.6-0.8 mm thick ..... ***C. aenea*** **p. 37**

34. Pistillate scales gold, orangish, or brown, often with green center; achenes 1.3 mm wide or less ..... ***C. phaeocephala*** **p. 205**

Species Descriptions

Carex abrupta. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex abrupta Mack.
Abrupt-beaked sedge

HABIT: Densely cespitose from very short rhizomes. **Culms:** Erect, 4-6 dm tall, much longer than the leaves, **aphyllopodic**.

LEAVES: Borne toward the base. **Blades:** Flat, 1.5-2.5 mm wide. **Sheaths:** Thin and hyaline ventrally, truncate at the mouth.

BRACTS: Small and inconspicuous.

SPIKES: Several, **gynaecandrous,** sessile, indistinguishable, crowded into a capitate head 9-17 mm long.

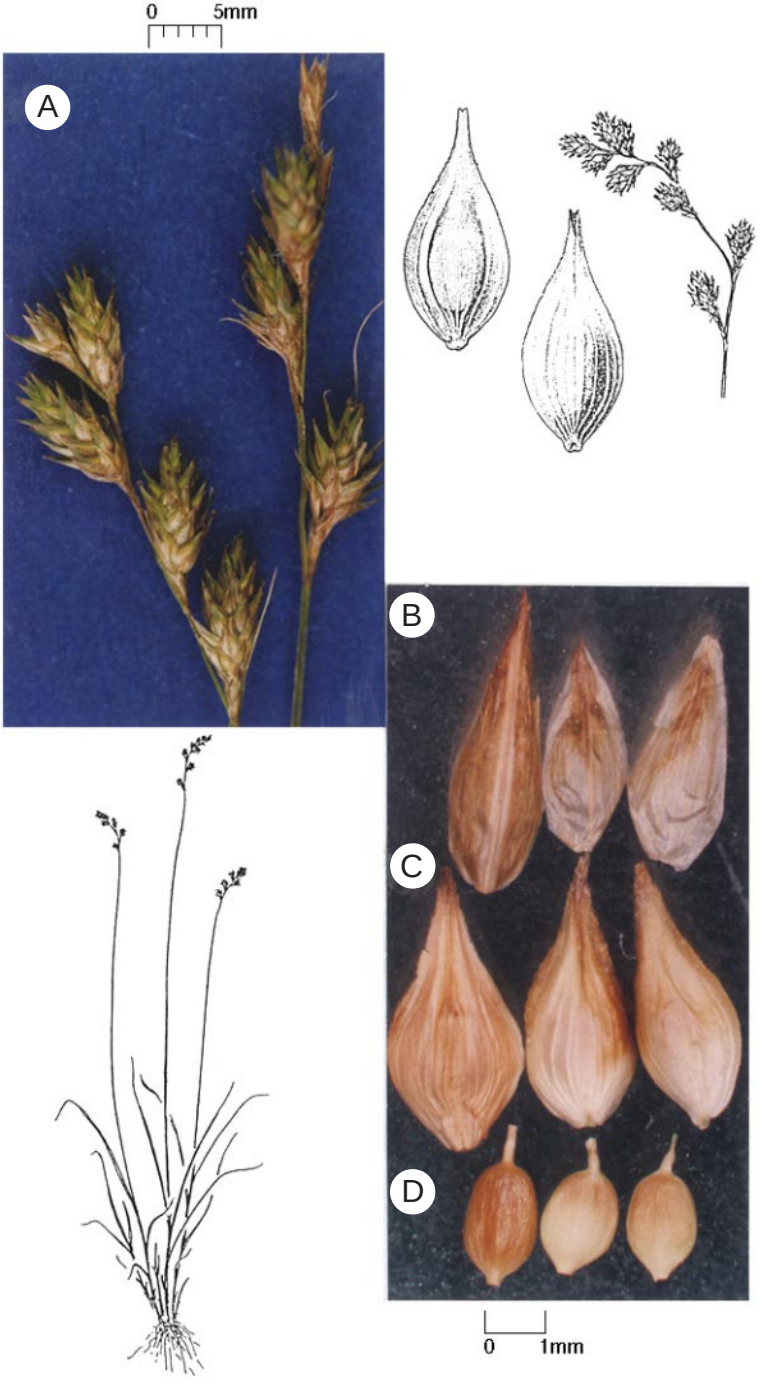
PISTILLATE SCALES: Ovate with an acuminate tip, shorter and narrower than the perigynia, brown with lighter midveins.

PERIGYNIA: Broadly lanceolate to ovate, broad and rounded at the base, abruptly contracted at the apex, usually flat or plano-convex, membranaceous, **wing**-margined to the base, serrulate from the middle to the beak, 3-5.4 mm long, 1-2.1 mm wide. **Nerves:** Several on both surfaces. **Beaks:** One-fourth to one-third the length of the body, usually greater than 1.2 mm long; the upper portion terete, smooth, hyaline-tipped.

ACHENES: Ovate, lenticular, short-stipitate, brown, 1.2-1.8 mm long, 0.7-1.1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common, montane. Yellow pine forests, alpine fell fields, meadows, and open slopes, usually in dry soil. **From 1,400 m to high elevations**. Oregon, California, and Nevada (Sierra Nevada Mountains). **June-August**.

SIMILAR SPECIES: See appendix, table 1.



Carex aenea. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex aenea Fern.
Bronze sedge, Fremont sedge

HABIT: Densely tufted from a short, fibrillose root system. **Culms:** Slender, smooth, wiry, flexuous at the tip, 2-12 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-6, borne on the lower half of the culm. **Blades:** Flat, soft, 2-4 mm wide. **Sheaths:** Tight, green- and white-mottled dorsally, thin and hyaline ventrally, shallowly concave to truncate at the mouth.

BRACTS: Lowest sheathless, somewhat setaceous-prolonged, shorter than the inflorescence; upper often inconspicuous.

SPIKES: 4-10(18), **gynaecandrous**, sessile, mostly clavate-based and separate or the upper 2-3 approximate, forming a flexuous, moniliform pale green to stramineous or medium brown inflorescence 1.5-8 cm long; perigynia ascending.

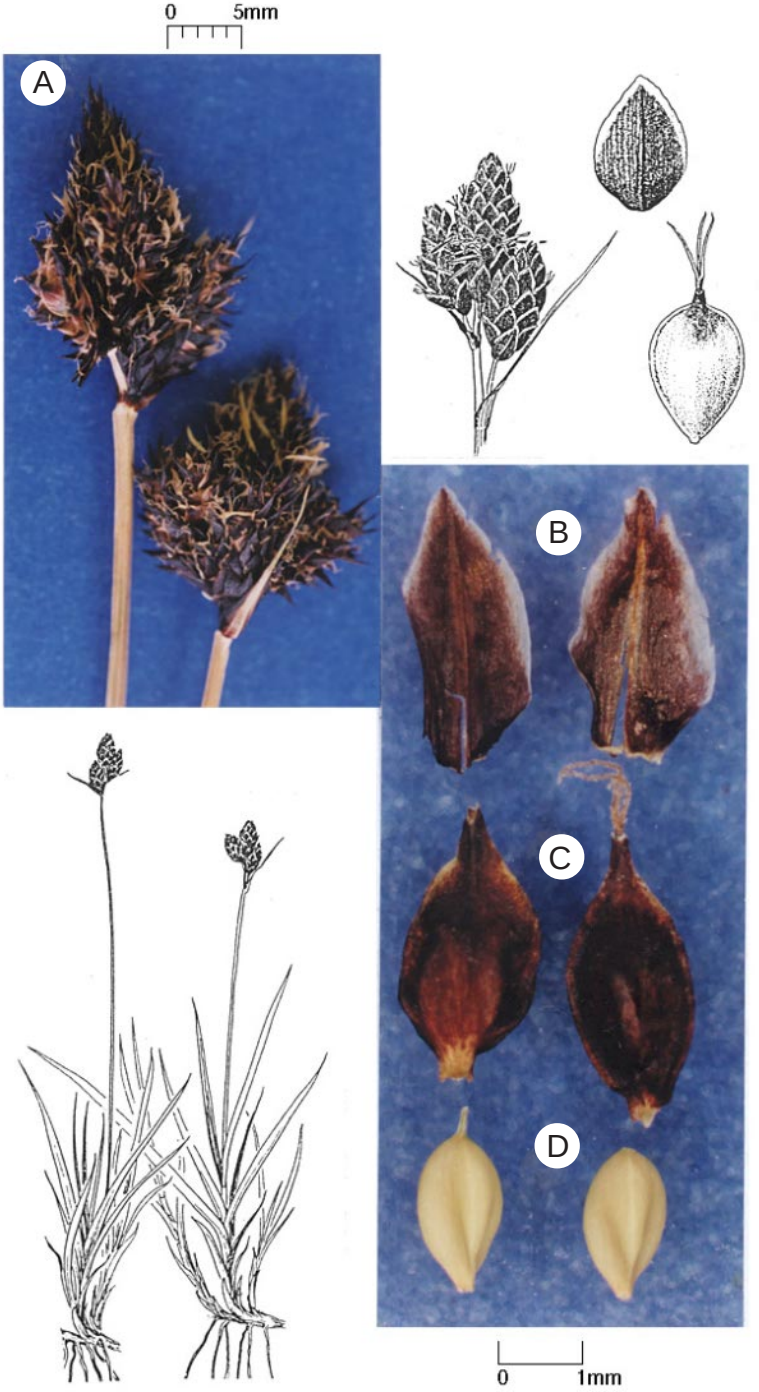
PISTILLATE SCALES: Ovate to broadly lanceolate with an acute tip, nearly as large as the perigynia and concealing them, largely hyaline-scarious except for the firmer midrib, stramineous to medium brown with narrow, hyaline margins.

PERIGYNIA: Ovate, concavo-convex or plano-convex, **wing**-margined, serrulate above the middle, dull green or pale greenish, becoming brownish or stramineous, 3.5-5 mm long, (1.5)1.7-2.5 mm wide. **Nerves:** 4-9 dorsally, often longitudinally more or less wrinkled or ribbed-sulcate; 0 to 8 and weak ventrally. **Beaks:** Tapered, flat, serrulate, one-half the length of the body, obliquely cleft, bidentate.

ACHENES: Broadly oval, lenticular, dull yellowish brown or medium brown, 1.5-2 mm long, 1-1.7 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequent or local in moist or wet places. **Valleys and plains to moderate elevations** in the mountains. Yukon to Labrador, south to British Columbia, Idaho (rare), Montana, and east to Connecticut. **May-July.**

SIMILAR SPECIES: *C. aenea*—Inflorescence moniliform; individual spikes separate, clavate, ovoid, greenish; pistillate scales stramineous or brown; perigynium with a broad, rounded base. *C. praticola*—Inflorescence generally flexuous; individual spikes approximate, oblong, brownish; pistillate scales brown; perigynium with a tapered base.



Carex albonigra. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex albonigra Mack.
Black-and-white scaled sedge

HABIT: Loosely tufted from short rhizomes. **Culms:** Stiff and erect, reddish-tinged at the base, 1-3 dm tall, exceeding the leaves, **phyllopodic,** dried leaves of the previous year conspicuous.

LEAVES: 6-12, clustered toward the base. **Blades:** Firm, short, flat, grayish green, seldom over 10 cm long, mostly 2-7 mm wide. **Sheaths:** Thin and hyaline ventrally, concave or V-shaped at the mouth.

BRACTS: Lowest leaflike, sheathless or short-sheathing, brownish red tinged at the base, equaling or shorter than the inflorescence; upper reduced.

SPIKES: 2-4, oblong, sessile or short-pedunculate, individually distinguishable, closely aggregated into a headlike inflorescence. **Terminal: Gynaecandrous**, 10-15(20) mm long, 6-8 mm wide. **Lateral: Pistillate**, closely flowered, 8-10 mm long, 4-6 mm wide; perigynia black or reddish black, appressed or ascending.

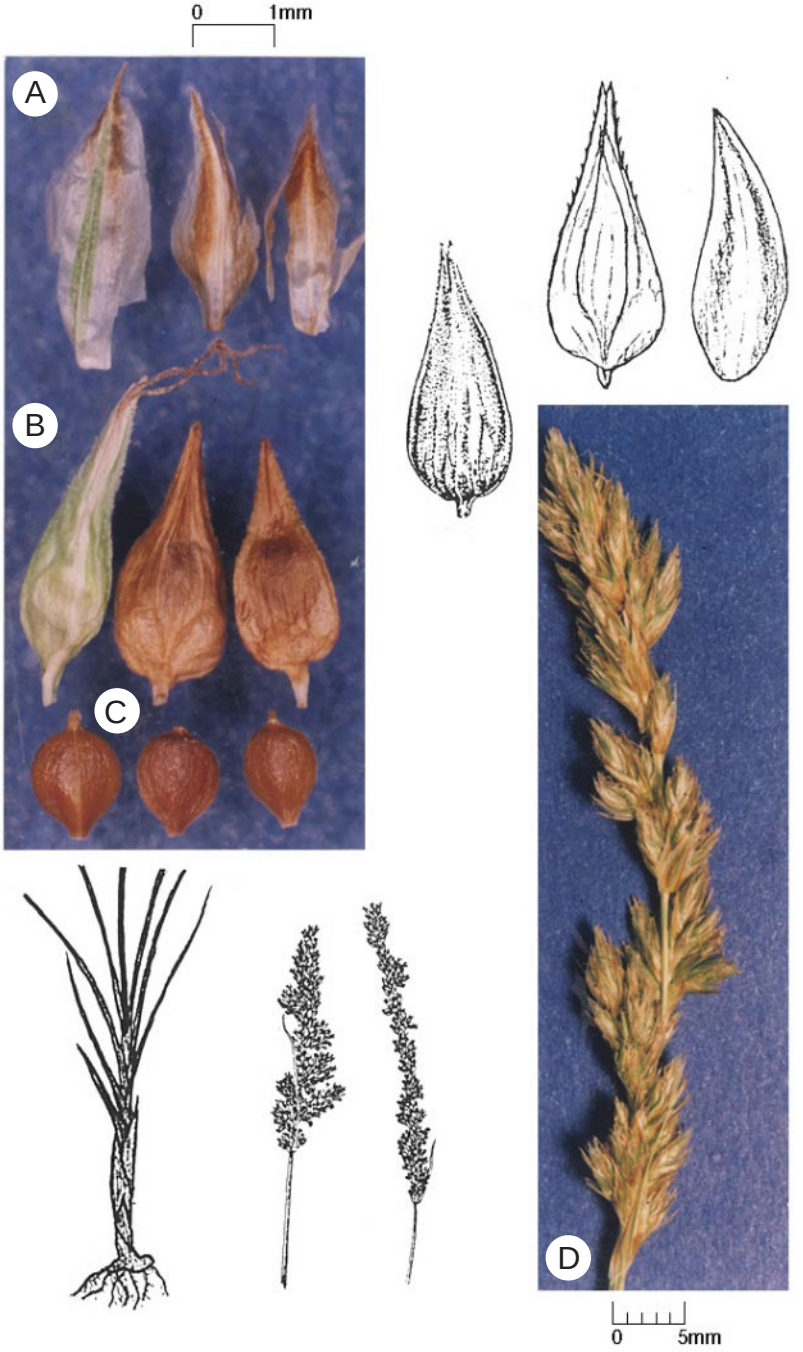
PISTILLATE SCALES: Broadly ovate with an acute to obtuse tip, equaling or shorter than the perigynia, usually concealing them, dark reddish brown or blackish purple with the upper margins often white-hyaline.

PERIGYNIA: Broadly elliptic-obovate to ovate, rounded to somewhat tapered at the base, slightly flattened, minutely papillate-roughened toward the beak, membranous, substipitate, reddish black, 2.5-3.5 mm long, 1.3-2 mm wide. **Nerves:** Absent except for the 2 marginal nerves. **Beaks:** Obscurely bidentate, 0.1-0.5 mm long.

ACHENES: Trigonous, sessile, 1.3-1.9 mm long, 0.7-1.3 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Frequent on open, often dry or rocky slopes and summits at **high elevations**. Alaska and Yukon south to Washington and California and east through Idaho, Nevada (White Pine and Elko Counties), Arizona, Utah, Wyoming, and Colorado. **July-August.**

SIMILAR SPECIES: See appendix, table 2.



Carex alma. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence.
A through C: Left and center—dorsal views; right—ventral view.

Carex alma Bailey
Bountiful sedge

HABIT: Densely clustered without creeping rhizomes. **Culms:** Sharply triangular, roughened above, 3-12 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: Clustered toward the base. **Blades:** Flat or channeled, thick, 3-6 mm wide, strongly serrulate along the margins. **Sheaths:** Tight, thin, purplish dotted ventrally, slightly convex at the mouth.

BRACTS: Small and inconspicuous, sheathless; lowest sometimes elongate and setaceous-tipped.

SPIKES: Numerous, sessile, **androgynous**, densely aggregated into an interrupted oblong or cylindrical head 3-15 cm long, 1-2 cm wide; perigynia appressed or ascending-spreading.

PISTILLATE SCALES: Ovate with an acute to awned tip, about equaling or exceeding the perigynia, greenish or partly castaneous along the median with broad white-hyaline margins.

PERIGYNIA: Ovate to oblong-ovate, round-truncate at the base, strongly plano-convex, thin-walled, spongy at the base, narrowly sharp-margined and serrulate above, substipitate, brown or partly greenish to almost black at maturity, 3-4.2 mm long, 1.5-2.3 mm wide. **Nerves:** Several dorsally, none ventrally. **Beaks:** Flat, somewhat abruptly contracted, serrulate, bidentate, 0.6-1.4 mm long.

ACHENES: Ovoid, lenticular, substipitate, reddish brown at maturity, 1.5-2.5 mm long, 0.9-1.8 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Frequent around springs, along streams, and in other wet places. **Low to moderate elevations** in southern Nevada, western Arizona, Utah (Washington County), and the central and southern Sierra Nevada Mountains, central and southern coast, and southeastern desert mountains of California. **May-July.**

Carex amplifolia. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left—dorsal view; right—ventral view.

Carex amplifolia Boott
Ample-leaved sedge, big-leaf sedge

HABIT: Culms arising singly or few together from long, stout, creeping rhizomes. **Culms:** Coarse and stout, sharply triangular, usually dark red tinged toward the base, 5-10 dm tall, somewhat **aphyllopodic**, dry leaves of the previous year present.

LEAVES: 6-12, well distributed along the culm. **Blades:** Flat, septate-nodulose, light to glaucous-green, 8-20 mm wide. **Sheaths:** Hispidulous dorsally, thin and hyaline ventrally, V-shaped at the mouth.

BRACTS: Leafy, slightly sheathing; lowest usually surpassing the inflorescence.

SPIKES: Several, elongate, well separated, greenish brown. **Staminate:** Terminal, linear, short-peduncled, 5-8 cm long, sometimes with a smaller staminate spike at its base. **Pistillate:** 3-6, lateral, linear-cylindric, closely flowered, short-peduncled or sessile, 3-14 cm long, 6-7 mm wide; the upper approximate; the lower more or less separate; perigynia numerous, spreading.

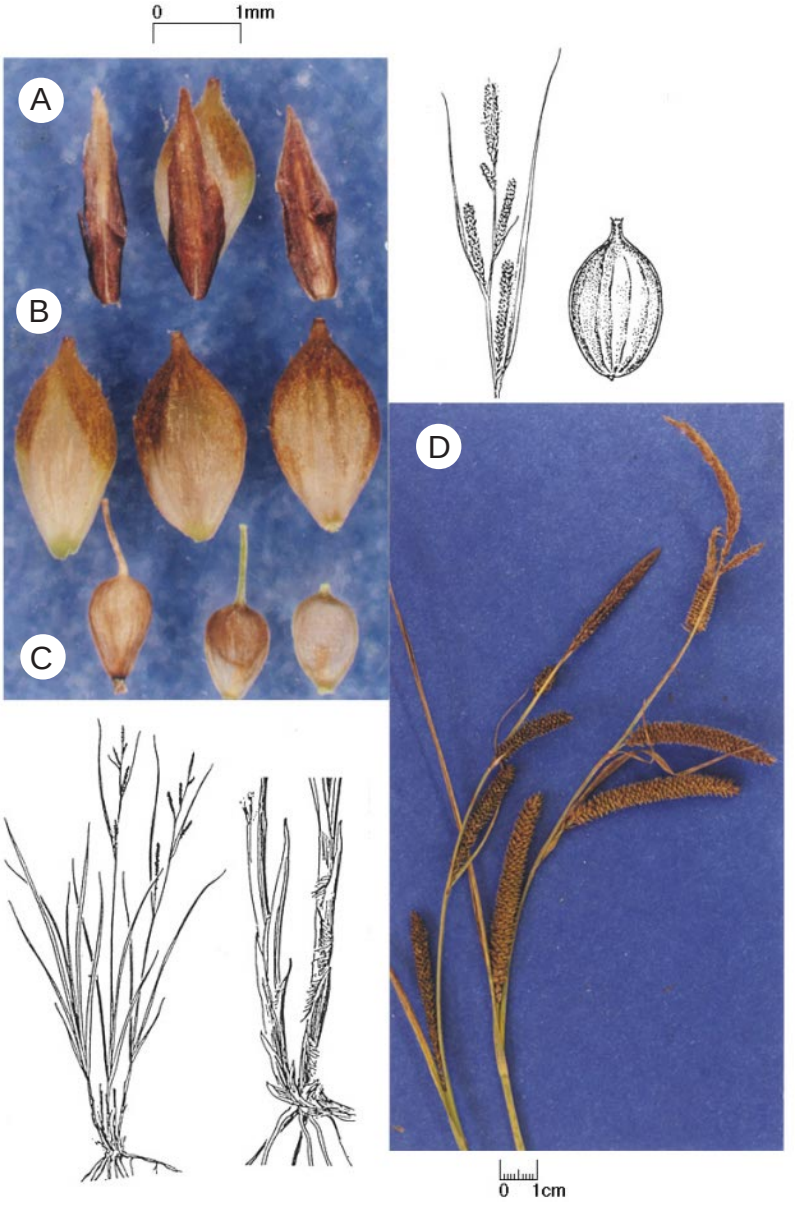
PISTILLATE SCALES: Oblong-ovate to lanceolate with an obtuse, acute to acuminate, or awned tip; narrower than and either shorter to longer than the perigynia; brownish red with a lighter 3-nerved center, darker scarious margins, and a hyaline apex.

PERIGYNIA: Ovoid, inflated but tending to collapse around the achene and becoming somewhat trigonous, thin-walled, membranous, glabrous, brownish green, 2.6-3.5 mm long, 1.2-2 mm wide. **Nerves:** 2-ribbed, otherwise nerveless. **Beaks:** Abruptly contracted, conic, more or less excurved, bidentulate or bidentate, usually hyaline tipped, 0.8-1.2 mm long.

ACHENES: Broadly ovoid or obovoid, trigonous with thickened angles, granular, substipitate, brown, 1.4-2 mm long, 1-1.5 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Swamps, bogs, and other wet places, from **lowlands to moderate elevations** in the mountains. British Columbia to Oregon, California, and Idaho north of the Snake River Plain. Frequent and locally plentiful in the western portion of its range. **May-July.**

DISTINCTIVE CHARACTERISTICS: *C. amplifolia* is characterized by its combination of stout, winged stems, broad leaves, and narrow spikes with many small, dull, greenish brown perigynia.



Carex angustata. (A) Pistillate scales (center scale with perigynium), (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left and center—dorsal views; right—ventral view.

Carex angustata Boott
Narrow fruit sedge

SYNONYM: *C. eurycarpa* Holm.

HABIT: Loosely cespitose or densely tufted from stout, short-creeping, scaly rhizomes, often forming dense swards. **Culms:** Reddish tinged at the base, 4-9 dm tall, 4-5 mm thick, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-4, borne on the lower one-fourth of the culm. **Blades:** Flat with revolute margins, papillate, 2-7 mm wide. **Sheaths:** Reddish ventrally, hispidulous dorsally, the lower ones breaking and becoming cross-filamentose.

BRACTS: Leaflike, sheathless, equaling or exceeding the inflorescence.

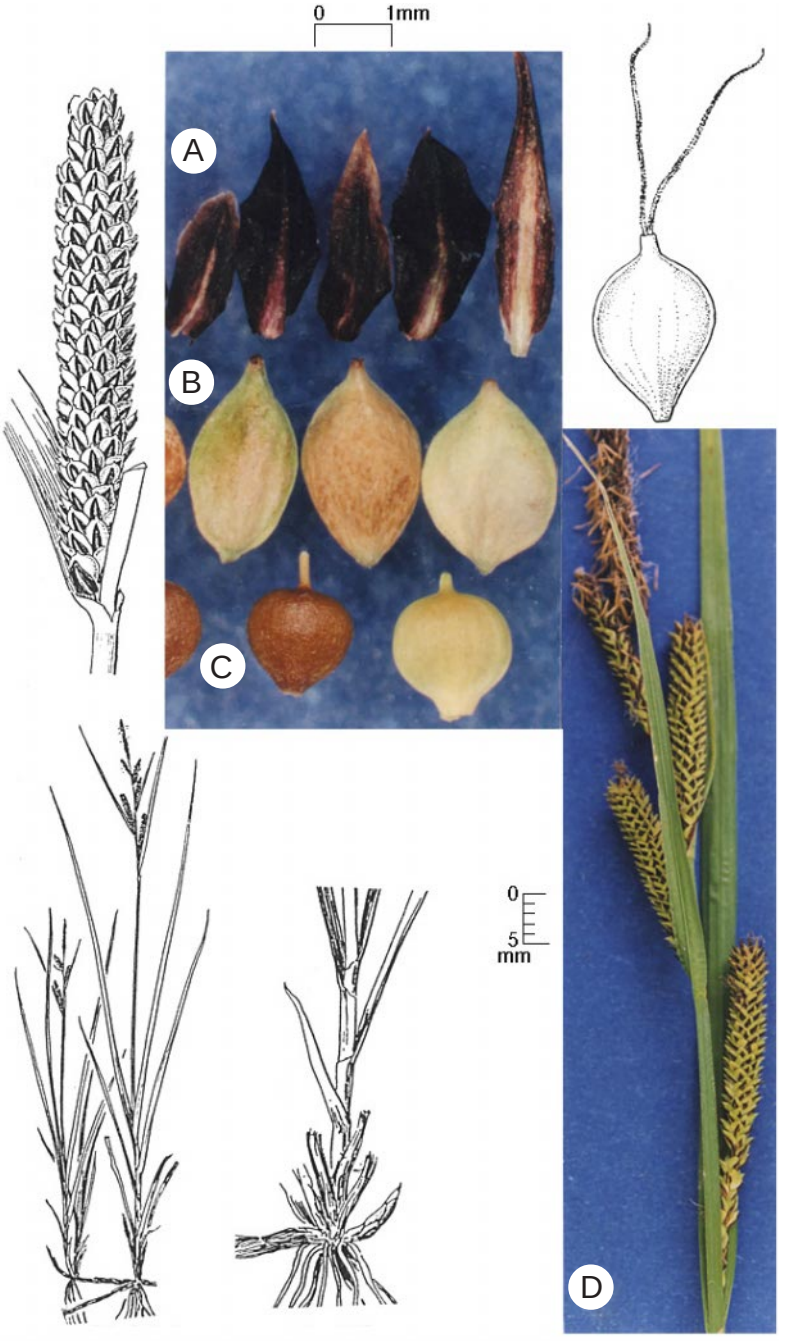
SPIKES: 3-6, elongate, remote, brown. **Staminate:** Terminal, linear, 3-4 cm long, 5 mm wide, peduncled, sometimes with 1 or 2 small lateral staminate spikes near its base. **Pistillate:** 2-4, lateral, sometimes androgynous, erect, sessile or short-peduncled, densely flowered, 2.5-4.5 cm long, 5 mm wide; perigynia appressed-ascending.

PISTILLATE SCALES: Lanceolate with acute to cuspidate tip, equaling or exceeding and narrower than the perigynia, reddish black or brown with a paler midrib.

PERIGYNIA: Obovate to suborbicular-obovate, rounded at the substipitate base, rounded and abruptly apiculate at the apex, unequally biconvex, slightly inflated, granular-roughened, resinous-dotted, brownish, 2.1-3 mm long, 1.2-2 mm wide. **Nerves:** 3-7 on each surface, prominent or weakly striated; margins sharp-nerved, often with a few stiff, deciduous cilia when immature. **Beaks:** Slender, entire, or slightly emarginate, 0.2-0.5 mm long.

ACHENES: Obovate, lenticular, apiculate, substipitate, brownish, 1-1.5 mm long, 0.7-1.3 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Occasional. Wet meadows, margins of streams, and lake shores. **Middle elevations**. Washington to Oregon, northern California, central Idaho, and western Montana. **May-July.**



Carex aquatilis. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left and center—dorsal views; right—ventral view.

Carex aquatilis Wahl.
Water sedge

HABIT: Culms arising singly or few together from stout, scaly rhizomes. **Culms:** Erect, slender, obtusely to sharply angled, reddish tinged at the base, 1-15 dm tall, exceeding the leaves, **phyllopodic**, dried leaves of the previous year present.

LEAVES: 8-15, erect. **Blades:** Long-tapering, flat, light green to glaucous-green. **Sheaths:** Dorsally slightly hispidulous or smooth; ventrally thin and membranous-white when young, becoming reddish- or brownish-dotted distally when mature; concave at the mouth.

BRACTS: Lowest leaflike, sheathless, 7-25 cm long, greater than half the length of the inflorescence or more often equaling or exceeding it; upper reduced.

SPIKES: 3-7, oblong or linear-cylindrical. **Terminal:** 1-3, **staminate**, linear, 1.25 cm long, 2-3 mm wide. **Lateral: Pistillate** or the upper ones often androgynous, erect, sessile, closely flowered, 1-4 cm long, 2.5-4 mm wide; lowest spikes often long-peduncled, arising from near the inflorescence base.

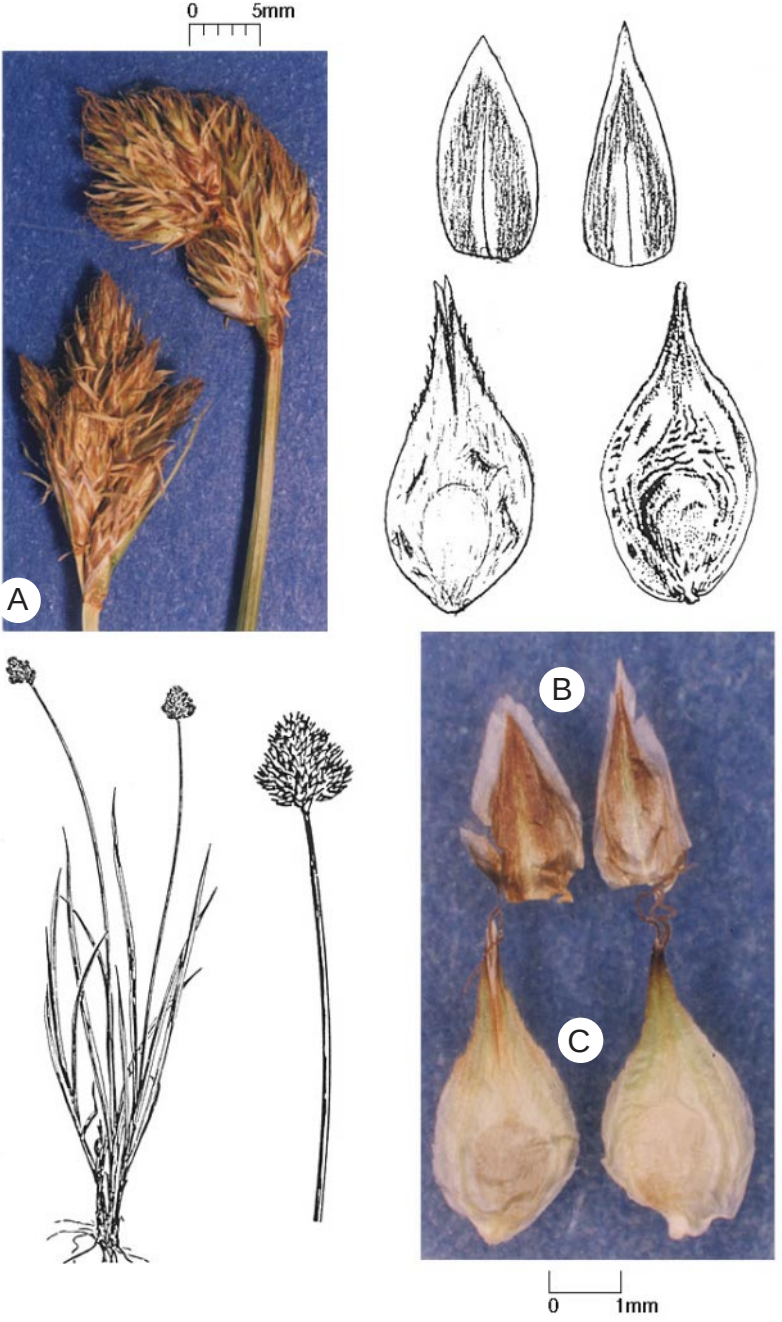
PISTILLATE SCALES: Ovate to oblong-ovate with obtuse to acuminate tip, shorter or longer than the perigynia and normally much narrower; reddish brown to purplish black with paler midrib, often white-hyaline-tipped.

PERIGYNIA: Oval to obovate, unequally biconvex, somewhat flattened, commonly speckled or suffused with reddish brown on a pale background, sessile or short-stipitate, 2-3.6 mm long, 1.2-2.2 mm wide. **Nerves:** Marginal only. **Beaks:** Entire, 0.1-0.3 mm long.

ACHENES: Broadly obovate, abruptly short-apiculate, lenticular, substipitate, yellowish to brownish black, 1-1.8 mm long, 0.7-1.6 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common. Wet meadows, swamps, ponds, lakeshores, and streambanks from **foothills to near timberline**. Circumboreal at high latitudes. In North America extending south through the Cascade Mountains to California and east to Nebraska. In appropriate habitats throughout the Intermountain area. **June-August.**

SIMILAR SPECIES: See appendix, table 3.



Carex arapahoensis. (A) Inflorescences, (B) pistillate scales, (C) perigynia. B and C: Left—dorsal view; right—ventral view.

Carex arapahoensis Clokey
Arapaho sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Sharply triangular and roughened beneath the head, 1.5-4 dm tall, exceeding the leaves, slightly **aphyllopodic**, old leaf bases persistent.

LEAVES: 5-8, clustered toward the base. **Blades:** Slenderly long-tapering distally, flat, thin but firm, 2.3-4 mm wide. **Sheaths:** Tight, hyaline ventrally, usually concave at the mouth.

BRACTS: Lowest scalelike with the midrib broad and indurated toward the base and excurrent as a serrulate awn, sheathless, chartaceous, stramineous, shorter than the inflorescence; upper bracts reduced.

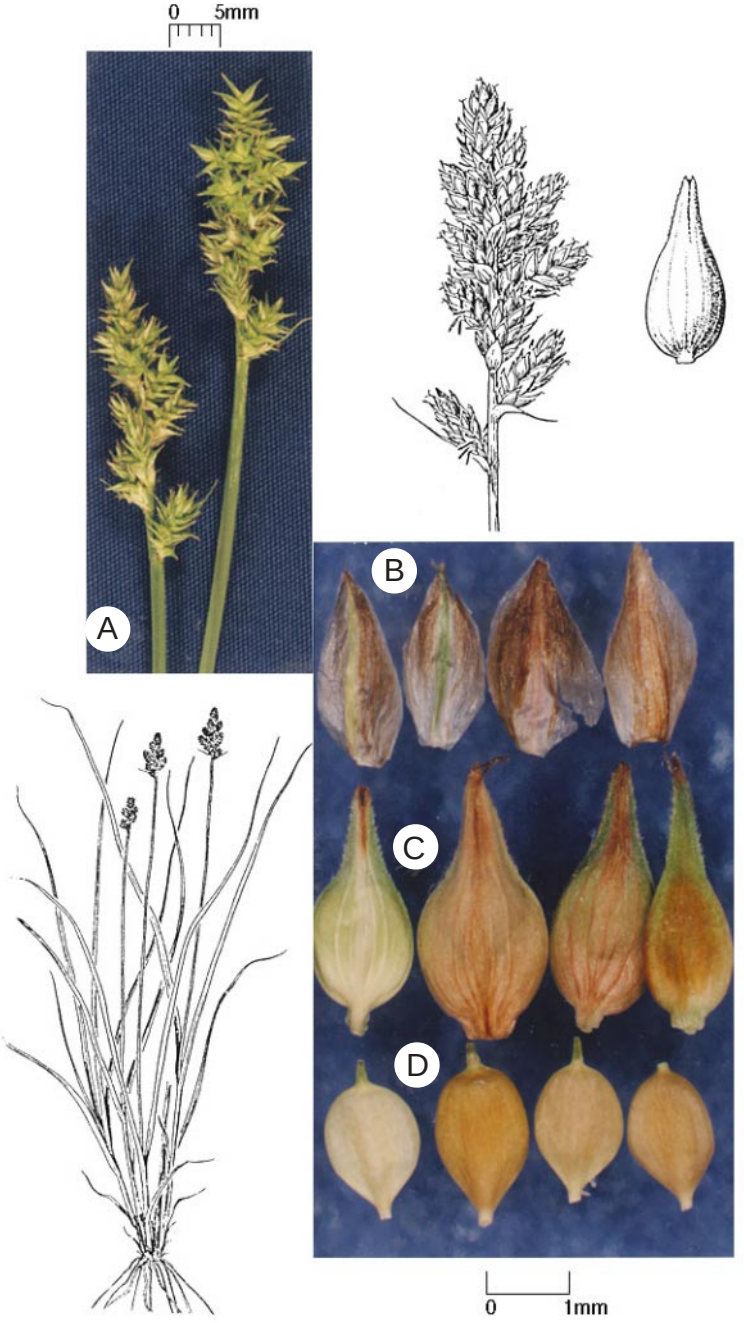
SPIKES: 3-6, **gynaecandrous**, sessile, 8-12 mm long, densely aggregated into a brown, subglobose head 1-2 cm in diameter; anthers long-persistent; perigynia appressed-ascending.

PISTILLATE SCALES: Ovate to broadly ovate with an obtuse to acute tip, appressed, similar in size to the perigynia and nearly concealing them or shorter and narrower, dark chestnut brown with white-hyaline apex and upper margins.

PERIGYNIA: Ovate to obovate, widest and serrulate-margined above the middle, abruptly tapering at the apex, plano-convex to very flat, **wing**-margined, often shallowly puckered ventrally, 4-5.5 mm long, 2-2.7 mm wide, dark reddish brown, brown, stramineous, or partly greenish. **Nerves:** Numerous and fine on both faces or nerveless. **Beaks:** Serrulate except at the tip, 1 mm long; tip very short, terete, white-hyaline, obliquely cleft, obscurely bidentate.

ACHENES: Broadly oval, lenticular, 1.6-2.1 mm long, 1-1.5 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Occasional to frequent on open, often rocky slopes **above timberline**. Southern Wyoming, Utah (La Sal Mountains), and Colorado. **July-August.**



Carex arcta. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex arcta Boott
Bear sedge, clustered sedge, northern clustered sedge

HABIT: Plants densely tufted from very short rhizomes. **Culms:** Sharply triangular, 1-8 dm tall, shorter than the leaves, slightly **aphyllopodic.**

LEAVES: Clustered toward the base. **Blades:** Flat, light green, 1.5-4 mm wide. **Sheaths:** Thin and hyaline ventrally, brownish-tinged at the truncate mouth; lower sheaths at least sparsely red-dotted ventrally.

BRACTS: Lowest sheathless, setaceous-prolonged to 5 cm; upper short and inconspicuous.

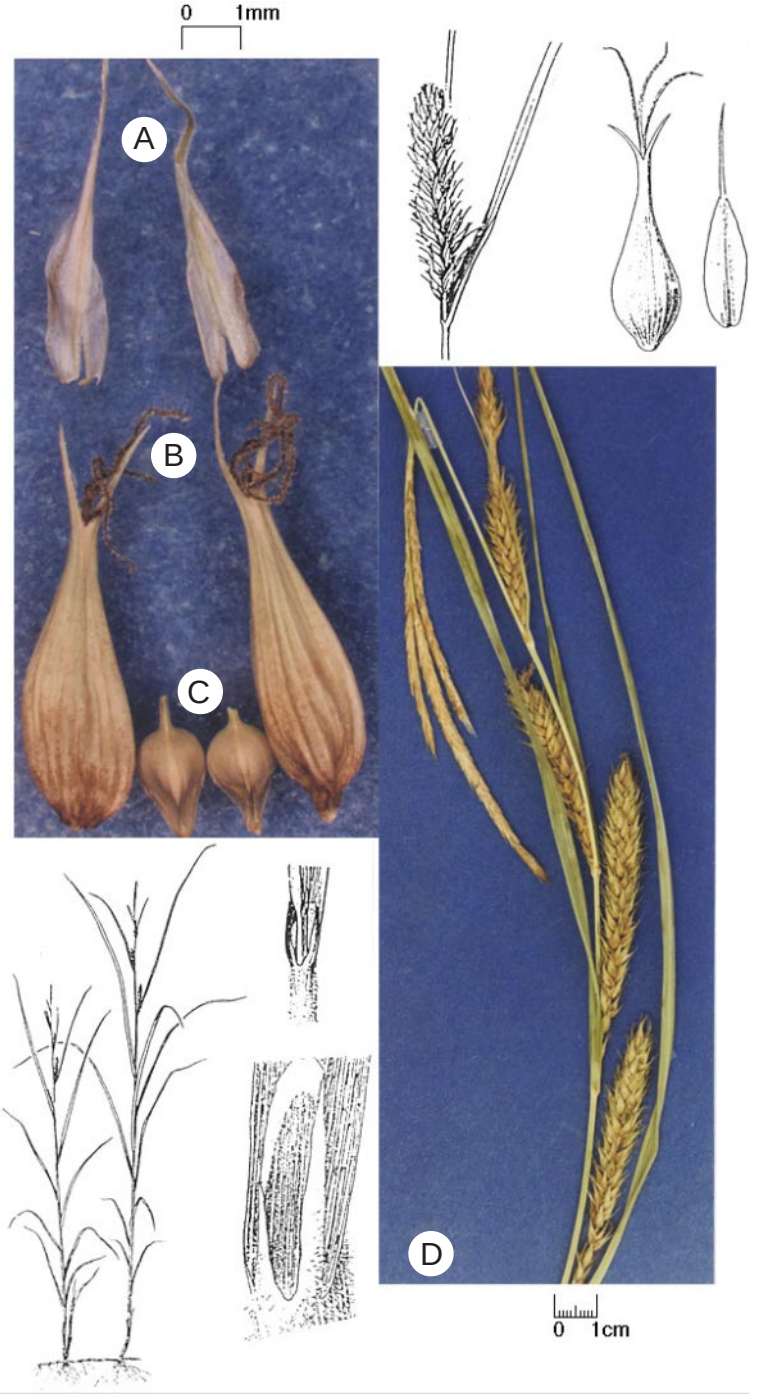
SPIKES: 4-15, **gynaecandrous**, sessile, 5-10 mm long, crowded in a dense, pale green to greenish brown, oblong to elongate head 1.5-4 cm long; upper spikes crowded; lower spikes well-differentiated; **staminate** flowers inconspicuous; perigynia spreading-ascending to widely spreading at maturity.

PISTILLATE SCALES: Ovate with an acute tip, shorter than the perigynia, largely hyaline-scarious, brownish to nearly colorless with a firm, light brownish green midvein.

PERIGYNIA: Ovate or lance-ovate, rounded and somewhat spongy at the stipitate base, plano-convex, thin-edged, not winged, distally serrulate from above the middle, greenish-stramineous with greener margins, becoming greenish brown at maturity, 2-3.4 mm long, 1-1.2 mm wide. **Nerves:** Several dorsally, few or none ventrally. **Beaks:** Tapered, flat, serrulate, bidentate, 0.6-1.2 mm long.

ACHENES: Obovate to ovate, lenticular, slightly tapered to a substipitate base, stramineous to brownish, 1.2-1.6 mm long, 0.8-1.1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Occasional. Streambanks, wet meadows, swampy woods, thickets, and other wet places. **Lowlands to near timberline.** Southern Yukon to Quebec, south to Washington, Oregon, northern California (coast ranges), northern and central Idaho, and northwestern Montana and east to Minnesota and New York. **June-August.**



Carex atherodes. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left—dorsal view; right—ventral view.

Carex atherodes Sprengel
Awned sedge, slough sedge

HABIT: Loosely cespitose from coarse, deep-seated, creeping rhizomes. **Culms:** Sharply triangular, reddish-tinged at the base, 3-15 dm tall, **aphyllopodic.**

LEAVES: Few to several to a culm, not clustered at the base. **Blades:** Thin, flat, strongly septate-nodulose, glabrous above, sparsely hairy toward the base, dull green, 3-12 mm wide. **Sheaths:** Hairy, brownish- or reddish-tinged, deeply concave at the mouth; basal sheath becoming filamentose at maturity.

BRACTS: Lower leaflike, sheathing, exceeding the inflorescence; upper reduced, not sheathing.

SPIKES: Several. **Upper:** 2-6, **staminate**, erect, linear, sessile or short-pedunculate, 2-6(10) cm long, 3-5 mm wide; the upper contiguous; the lower remote, some may have a few perigynia at the base. **Lower:** 2-4, **pistillate,** erect, cylindric, nearly sessile, closely flowered, remote, 2-12 cm long, 8-15 mm wide; upper often staminate at the apex; perigynia ascending-spreading at maturity.

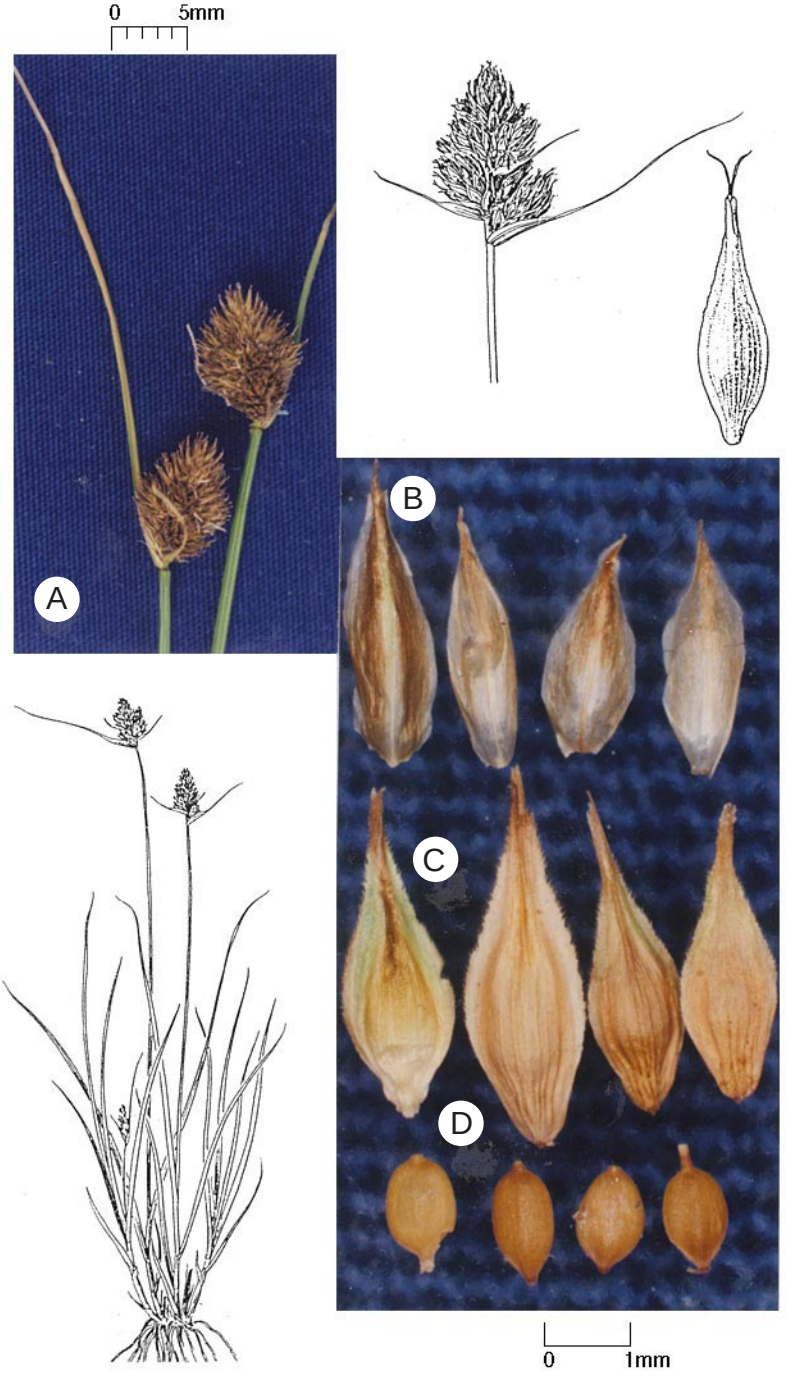
PISTILLATE SCALES: Lanceolate to lance-ovate, abruptly rough-aristate, short-ciliate, from shorter to longer than the perigynia, dull reddish brown or stramineous with a 3-nerved green center and hyaline margins.

PERIGYNIA: Lanceolate to lance-ovate, rounded at the short-stipitate base, turgid-inflated below, more flattened at the beak, firm, subcoriaceous, glabrous, pale greenish to stramineous, 7-10 mm long, 1.7-2.5 mm wide. **Nerves:** 12-20 on each surface, conspicuous; prominent marginal nerves lacking. **Beaks:** Somewhat flattened, 1.2-3 mm long, smoothly tapered with long, slender, divergent teeth.

ACHENES: Obovoid, rounded above, tapering toward the base, trigonous with blunt angles, brown, 2-3.2 mm long, 1.2-1.5 mm wide, continuous with the straight or slightly flexuous, persistent, bony style. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Marshes, edges of lakes and rivers in shallow to rather deep water from **lowlands to high elevations** in the mountains. Circumboreal. In North America from Yukon to Ontario and south to Oregon, California, southern Nevada, Idaho, Utah, Colorado, Indiana, Missouri, and New York. **June-September.**

SIMILAR SPECIES: *C. atherodes*—Spikes longer (staminate 2-6[10] cm long; pistillate 2-12 cm long), not strictly unisexual; perigynia glabrous, longer (7-10 mm long); beaks tapering with equal, diverging teeth. *C. sheldonii*—Spikes shorter (staminate 2-3.5 cm long; pistillate 2-6 cm long), strictly unisexual; perigynia hairy, shorter (5-6 [8] mm long); beak strongly tapering with unequal teeth that are not divergent.



Carex athrostachya. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex athrostachya Olney
Slenderbeaked sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Slender, 0.5-10 dm tall, equaling or exceeding the leaves, **aphyllopodic**.

LEAVES: 2-5, usually clustered on the lower one-third of the culm. **Blades:** Flat, firm, yellowish green to bright green, 1.5-4 mm wide. **Sheaths:** Hyaline ventrally, truncate to slightly concave at the mouth.

BRACTS: Lowest usually equaling or surpassing the inflorescence, spreading or ascending, setaceous-prolonged, 4-10 cm long; upper reduced and scalelike.

SPIKES: 4-20, **gynaecandrous**, sessile, 6-10 mm long, closely crowded in a green, stamineous, or medium brown ovoid or globose-ovoid head 1-2.5 cm long and 7-20 mm wide; perigynia appressed-ascending.

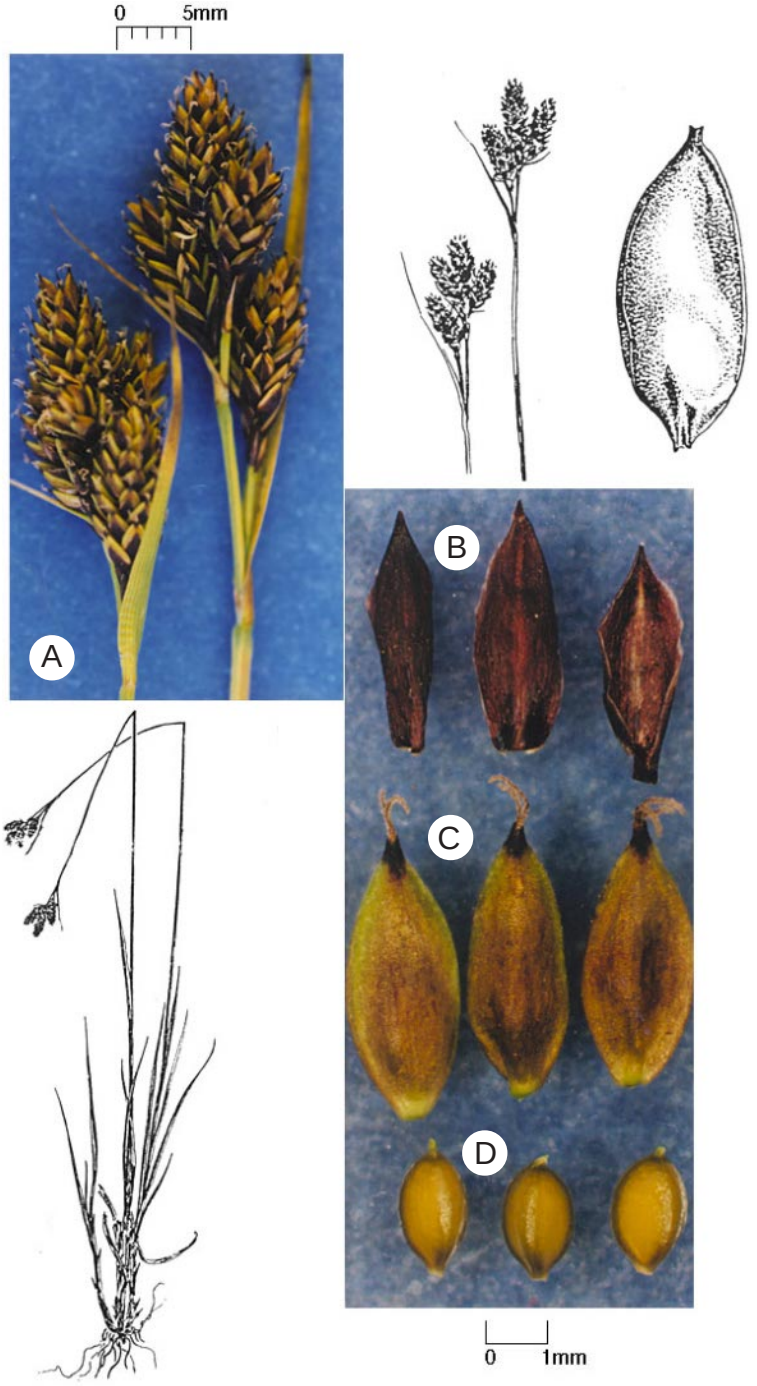
PISTILLATE SCALES: Oblong-ovate with an acute or short-cuspidate tip, slightly shorter than the perigynia, brown to reddish brown with a green or pale center and white-hyaline margins.

PERIGYNIA: Lanceolate or narrowly ovate, flattened or somewhat plano-convex, tapered to the base, **wing**-margined and serrulate distally, membranous, 2.8-4.8 mm long, 0.9-1.8 mm wide. **Nerves:** Several, faint, but often darker brown toward the base dorsally; few or lacking ventrally. **Beaks:** Subterete, narrowly margined or marginless, usually entire or obliquely cleft and shallowly bidentate in the distal 0.5-0.8 mm.

ACHENES: Oblong-oval, lenticular, 0.8-1.2 mm long, 0.7-1.1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common to locally abundant in moist or wet places, often colonizing below the high water line of reservoirs and in ephemeral pools. **Lowlands to moderate elevations** in the mountains. South from Alaska to California and east from Arizona to North Dakota. Found in appropriate habitats throughout the Intermountain Region. **May-July.**

SIMILAR SPECIES: See appendix, table 1.



Carex atrosquama. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex atrosquama Mack.
Dark-scaled sedge

HABIT: Densely cespitose from short, slender rhizomes. **Culms:** Slender, erect or nodding at maturity, dark reddish-tinged at the base, 1.5-5 dm tall, exceeding the leaves, **phyllopodic**, dried leaves of the previous year conspicuous.

LEAVES: 7-10, clustered near the base. **Blades:** Attenuate, firm, flat with slightly revolute margins, 1.5-3.5 mm wide. **Sheaths:** Concave at the mouth; lower sheaths sparingly filamentose; upper sheaths whitish or yellowish white ventrally.

BRACTS: Lowest leaflike, sheathless, shorter to longer than the inflorescence; upper reduced.

SPIKES: 3-4, erect, oblong, densely flowered, greenish gold, 6-20 mm long, 5-6 mm wide, forming an oblong head 2.5-4 cm long and 0.8-1.2 cm wide. **Terminal**: **Gynaecandrous,** clavate at the base, sessile, approximate. **Lateral: Pistillate,** short-pedunculate; lowest somewhat separate; perigynia appressed-ascending.

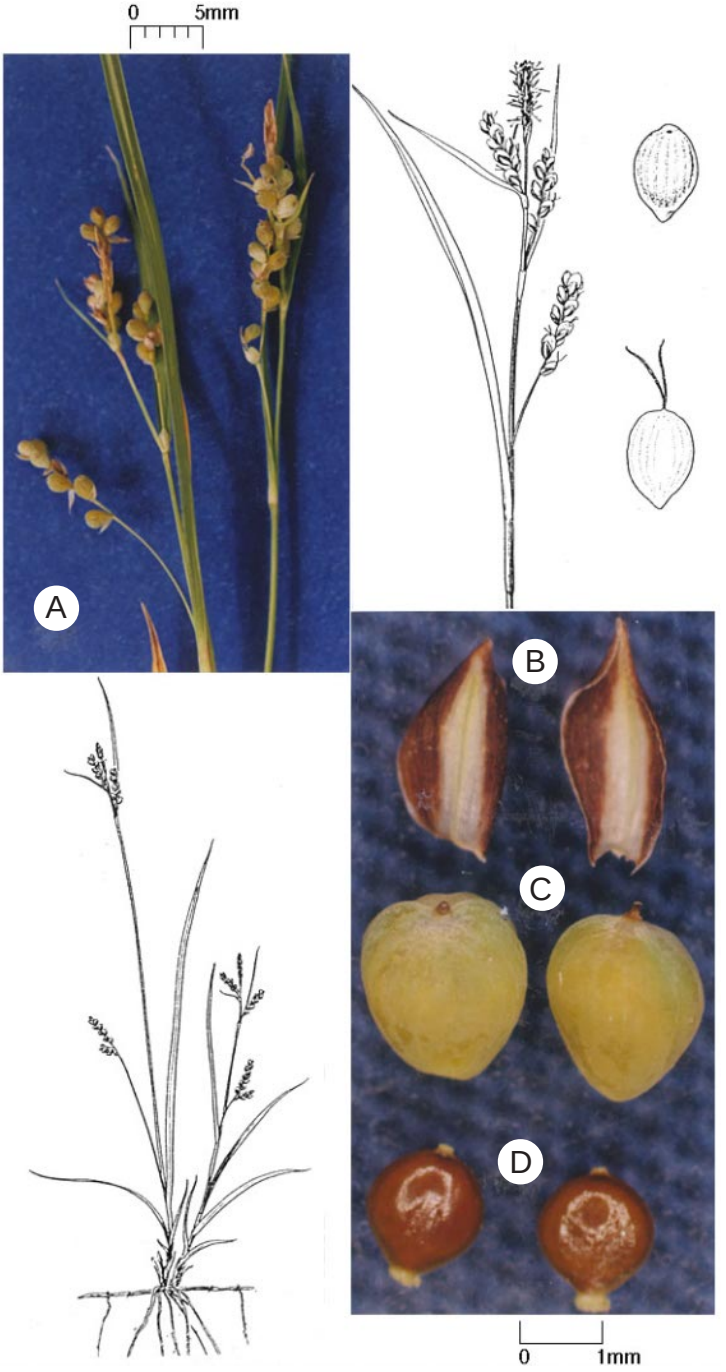
PISTILLATE SCALES: Broadly ovate-oblong with an obtuse or acute tip, shorter and slightly narrower than the perigynia, dark brown to black, the midvein obsolete and upper margins slightly hyaline.

PERIGYNIA: Narrowly oblong, obcompressed to plano-convex, granular-roughened above, olive green to yellowish brown, somewhat reddish-spotted, 4-4.5 mm long, 1.5-1.8 mm wide. **Nerves:** Lacking or marginal only. **Beaks:** Reddish black, sharp-edged, terete at the tip, shallowly bidentate, 0.5 mm long.

ACHENES: Obovoid, trigonous, slightly granular, stipitate, dull yellowish brown, 1.5-2 mm long, 1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Infrequent and local in moist to dry mountain meadows, forest openings, and on rocky alpine slopes at **high elevations**. British Columbia and Alberta south to Oregon, Idaho, Utah (Uinta Mountains), western Montana, and Colorado. **July-August.**

SIMILAR SPECIES: See appendix, table 2.



Carex aurea. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex aurea Nutt.
Golden sedge, golden-fruited sedge

SYNONYMS: *C. garberi* Bailey; *C. hassei* Bailey.

HABIT: Loosely cespitose from long, slender rhizomes. **Culms:** Slender, erect, 0.3-5.5 dm tall, often shorter than the leaves, especially in smaller plants, **phyllopodic** or somewhat aphyllopodic.

LEAVES: 4-7, clustered near the base. **Blades:** Flat but channeled, attenuate at the apex, 1-4(5) mm wide. **Sheaths:** Thin and hyaline ventrally, truncate to shallowly concave at the mouth.

BRACTS: Leaflike, sheathing, well-developed, usually exceeding the inflorescence.

SPIKES: 4-6, linear-oblong, short-peduncled or sessile. **Terminal: Staminate**, sometimes gynaecandrous, rarely androgynous, linear, 3-10 mm long. **Lateral: Pistillate**, 4-20 flowered, widely separate below and sometimes nearly basal, more or less approximate above; perigynia ascending-spreading.

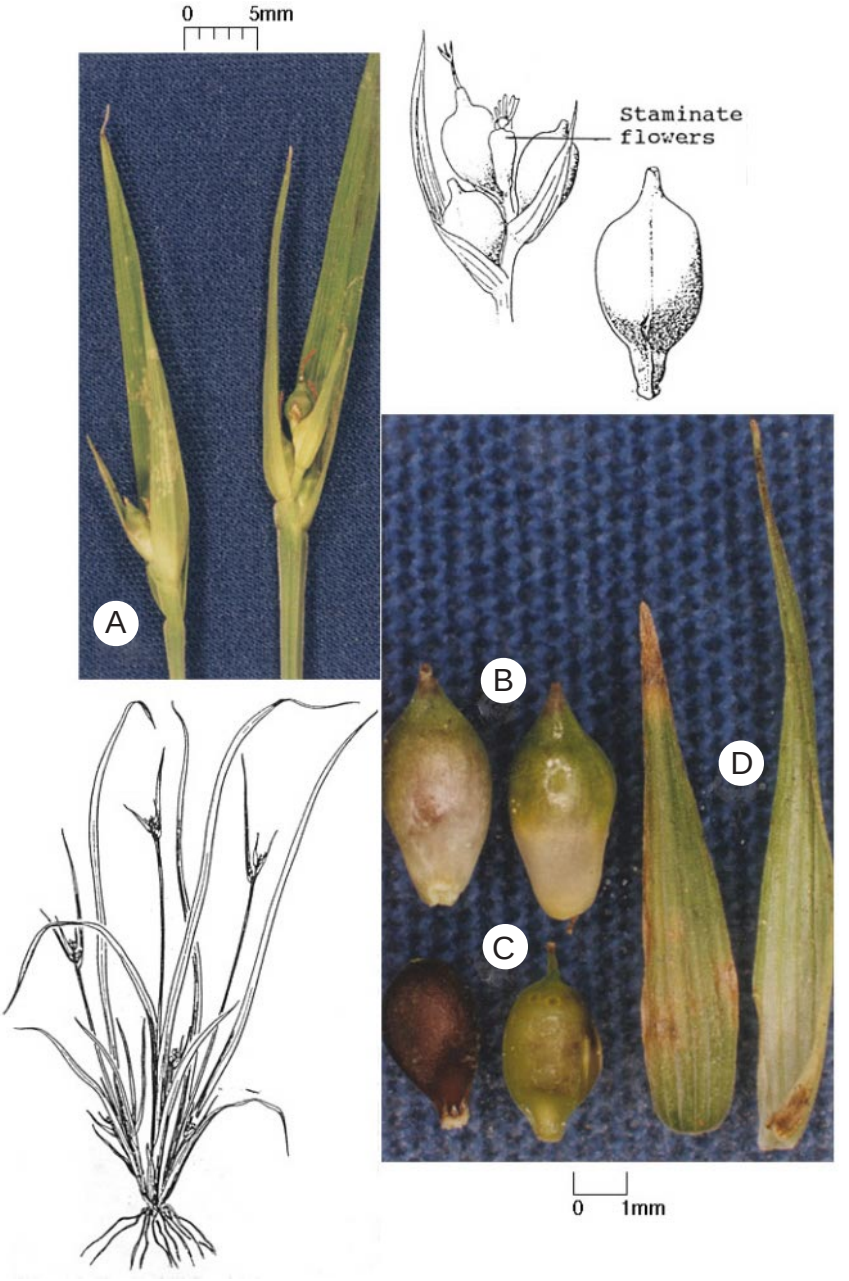
PISTILLATE SCALES: Ovate to orbicular, short cuspidate to obtuse-tipped, shorter and narrower than the perigynia and usually deciduous before them, 3-nerved, reddish brown with a wide pale or greenish center and narrow, white-hyaline margins.

PERIGYNIA: Orbicular-obovoid, sometimes broadly substipitate at the base, more or less rounded distally, whitish-papillate-glaucous on a light green background when young, often becoming fleshy, translucent and golden yellow or yellow orange to brownish at maturity, 1.7-3.0 mm long, 1.5-2 mm wide. **Nerves:** Obscurely to prominently coarse-ribbed on both faces. **Beaks:** None, the orifice entire.

ACHENES: Lenticular, stipitate, brownish, 1.3-2.0 mm long, 1-1.6 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Rather common in moist or wet places, meadows, bogs, and along streambanks. **Lowlands to near timberline**. Alaska to Newfoundland, south to California, Idaho, southern Nevada, Utah, northern New Mexico, Nebraska, northern Indiana, and Pennsylvania. **April-August.**

SIMILAR SPECIES: *C. garberi* and *C. hassei* are sometimes distinguished from *C. aurea*. *C. garberi*—pistillate scales and perigynia crowded; scales red brown to purplish, often covering the perigynia; bract sheath mouth V-shaped; spikes densely clustered. *C. hassei*—pistillate scales and perigynia usually not crowded; scales whitish to reddish brown, shorter than the periynia, appressed, and persisting for a time after the perigynia fall; bract sheath mouth U-shaped; spikes not densely clustered.



Carex backii. (A) Inflorescences, (B) perigynia, (C) achenes, (D) pistillate scales. B through D: Left—dorsal view; right—ventral view.

Carex backii Boott
Back sedge

SYNONYM: *C. saximontana* Mack.

HABIT: Cespitose, forming dense mats from very short rhizomes. **Culms:** Slender, weak, narrowly winged and serrulate on the angles, enlarged upward beneath the inflorescence, 1-2.5 dm tall, shorter than the leaves, slightly **phyllopodic**.

LEAVES: 2-6, clustered near the base. **Blades:** Flat, thick, minutely papillate, deep green, 2-6 mm wide. **Sheaths:** Thin and hyaline ventrally, truncate at the mouth.

BRACTS: None. Lower pistillate scales somewhat bractlike.

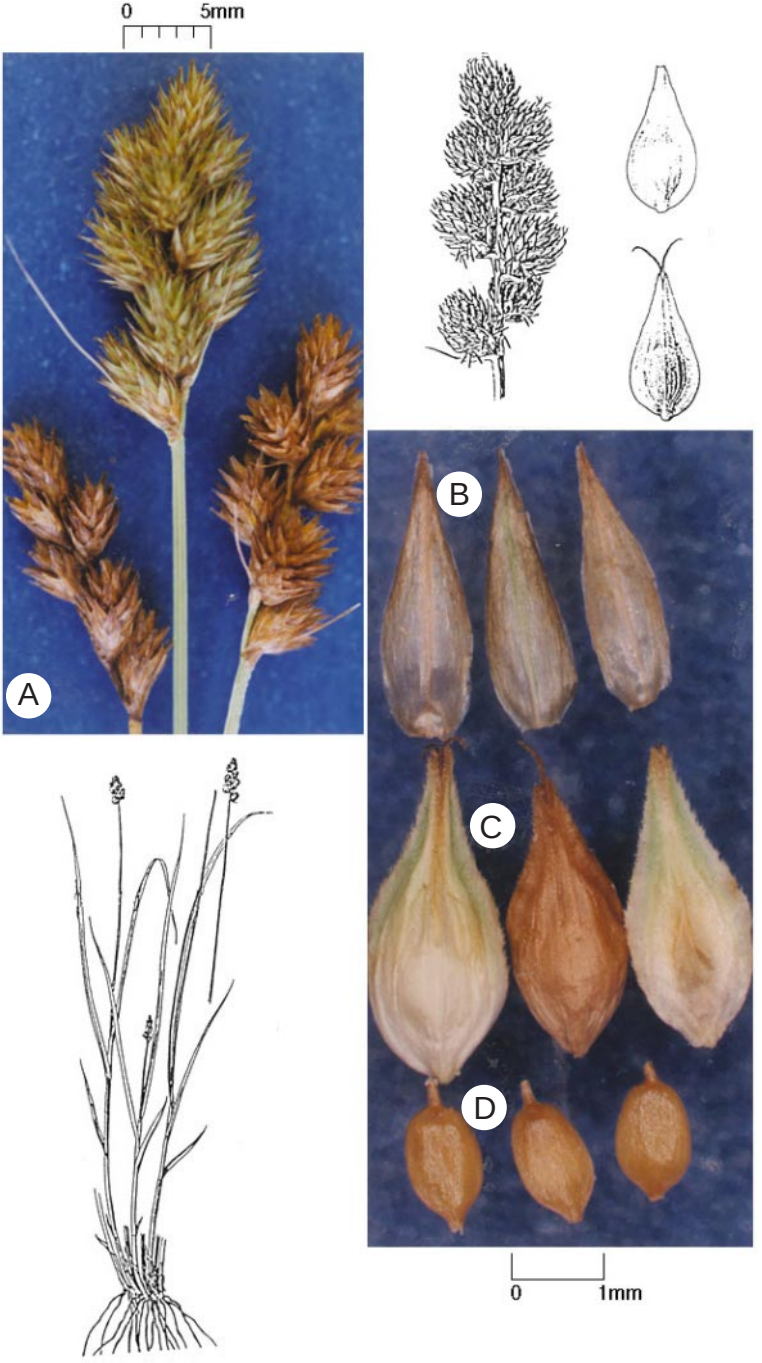
SPIKES: 1-3, **androgynous**, few-flowered; lower spikes, if present, short-pedunculate and basal; staminate portion inconspicuous and surpassed by the uppermost perigynium; perigynia erect on a winged, zigzag rachis.

PISTILLATE SCALES: Bractlike or leaflike, the lowest up to 4 cm long, oblong-obovate to linear, long tapering, obtuse-tipped or cuspidate, connate above the middle, tightly enclosing the rachis and concealing the perigynia, many-nerved, green.

PERIGYNIA: Oblong-ovoid to oblong-orbicular, two-keeled, membranous with a spongy base, substipitate, smooth, greenish, 4-6 mm long, 2.5 mm wide. **Nerves:** Numerous, faint, almost lacking. **Beaks:** Stout, tapering, two-edged, smooth, entire or obliquely cleft, obsolete to 1 mm long.

ACHENES: Triangular-globose, granular, stipitate, yellowish green to black, about 3 mm long. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Dry forests and riparian woods at **mid elevations**. British Columbia to Quebec, south to Washington, Oregon (Wallowa Mountains and Steens Mountain), Idaho, Utah, Montana, Wyoming, Colorado, Massachusetts, and New York. Infrequent in the Intermountain Region. **May-July**.



Carex bebbii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex bebbii Olney
Bebb sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Slender, roughened on the angles below the head, 2-9 dm tall, exceeding the leaves, distinctly **aphyllopodic**.

LEAVES: 3-4, scattered on the lower one-half to one-third of the culm. **Blades:** Flat, 2-4.5 mm wide. **Sheaths:** Narrow, thin and hyaline ventrally, usually concave at the mouth.

BRACTS: Lowest sheathless, setaceous-prolonged, shorter than the inflorescence; upper reduced.

SPIKES: 3-12, **gynaecandrous**, sessile, 5-9 mm long, aggregated into an ovoid to linear-oblong, pale green to stramineous head 1.5-3 cm long and 0.8-1.5 cm wide; internodes short; perigynia crowded, stiffly ascending.

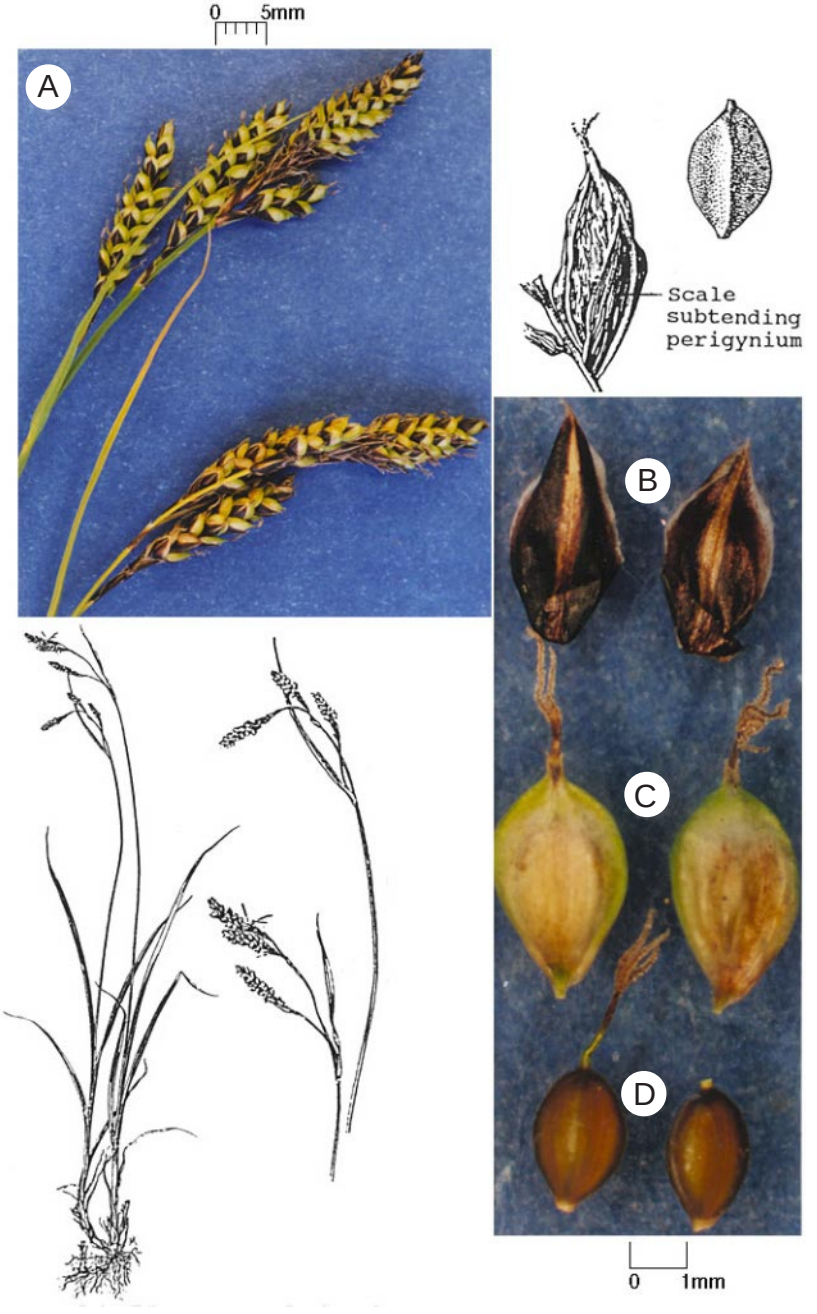
PISTILLATE SCALES: Oblong-lanceolate, somewhat shorter and narrower than the perigynia, mostly hyaline-scarious with a firm green to brown midrib or sometimes brown with a lighter center, occasionally with very narrow and hyaline margins.

PERIGYNIA: Ovate, rounded at the base, mostly flattened to plano-convex, **wing**-margined, serrulate-margined to below the middle, dull green to brownish or stramineous, 2.7-3.7 mm long, 1.1-2 mm wide. **Nerves:** Numerous and fine dorsally, lacking or obscure at the base ventrally. **Beaks:** Gradually tapered, flat, serrulate, obliquely cleft, bidentate, 0.75-1 mm long.

ACHENES: Broadly oval, lenticular, short-stipitate, brown, 1.1-1.5 mm long, 0.6-0.8 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequent and local in wet to swampy meadows, swales, and on banks of ditches from **lowlands to moderate elevations**. British Columbia to Newfoundland and south to northern Oregon, Idaho, Montana, Wyoming, Illinois, and New Jersey. Found in isolated locations in Utah (Uinta Mountains) and Colorado. **June-July.**

SIMILAR SPECIES: *C. bebbii*—Perigynia short-ascending and slightly spreading, giving the spikes a ragged outline; pistillate scale shorter and narrower than the perigynium; perigynium more narrowly wing-margined to the rounded base; beak short, gradually tapering. *C. scoparia*—Pistillate scales and perigynia beaks appressed-ascending giving the spikes a smooth outline; pistillate scale long, narrow, awn-tipped; perigynium distinctly wing-margined, slightly tapering to the base; beak long, more abruptly tapering.



Carex bella. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes.
B through D: Left—dorsal view; right—ventral view.

Carex bella Bailey
Beautiful sedge, showy sedge

HABIT: Cespitose from short-creeping, fibrillose rhizomes. **Culms:** Slender, cinnamon brown and more or less reddish-tinged at the base, 5-9 dm tall, exceeding the leaves, **phyllopodic**, dried leaves of the previous year evident.

LEAVES: 8-12 on the lower one-half of the culm. **Blades:** Erect, flat, 3-6 mm wide. **Sheaths:** Dull reddish-brown-tinged or dotted ventrally, concave at the mouth.

BRACTS: Lowest leaflike, sheathing, 2.5 cm long, equaling or exceeding the inflorescence; upper reduced.

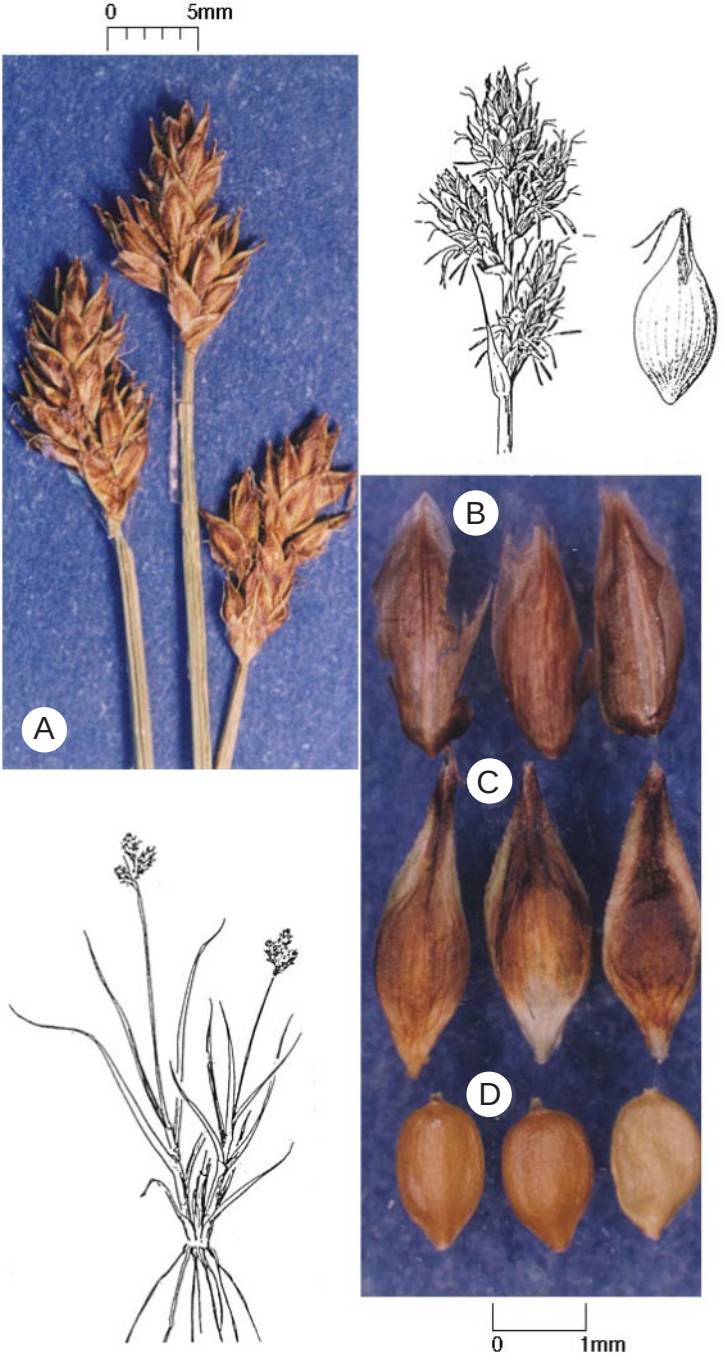
SPIKES: 3-4, linear to oblong-linear, bicolored with green and reddish brown, 12-25 mm long, 4-5.5 mm wide, approximate, but not crowded. **Terminal:** Short-pedunculate, mostly **gynaecandrous**, sometimes the lower half staminate. **Lateral: Gynaecandrous** with few staminate flowers, closely flowered; the upper contiguous, short-pedunculate; the lower strongly separate, drooping on slender, somewhat rough peduncles 1.5-4 cm long; perigynia appressed.

PISTILLATE SCALES: Ovate with obtuse to acute tip, shorter than the perigynia, dark brown or generally reddish brown with pale midrib and shining white-hyaline margins.

PERIGYNIA: Broadly oval to oblong-oval or obovoid, rounded to rather pointed at the base, rounded at the apex, somewhat compressed or flattened, distended by the mature achene, membranous, smooth, puncticulate (at high magnification), greenish, rarely purplish-tinged, 2.5-4 mm long, 1.7-2 mm wide. **Nerves:** 2-3, obscure or lacking on each face; marginal nerves present. **Beaks:** Abrupt, purplish to brownish, shallowly bidentate, 0.2-0.5 mm long.

ACHENES: Ovoid or oblong-ovoid, trigonous, granular, substipitate, yellowish brown, 1.8-2.4 mm long, 1.75 mm wide, nearly filling the perigynia. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Occasional to frequent in moist woods, meadows, open slopes, and streambanks at **high elevations** in the mountains. Utah and northern Colorado to Arizona and New Mexico. **June-August.**



Carex bipartita. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex bipartita All.
Two-parted sedge, two-tipped sedge

HABIT: Loosely cespitose from short rhizomes. **Culms:** Slender, 5-30 cm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: Clustered toward the base. **Blades:** Flat with revolute margins, 1-2.5 mm wide. **Sheaths:** Tight, hyaline ventrally, truncate at the mouth.

BRACTS: Inconspicuous, short, sheathless, largely hyaline-scarious, sometimes shortly awn-tipped.

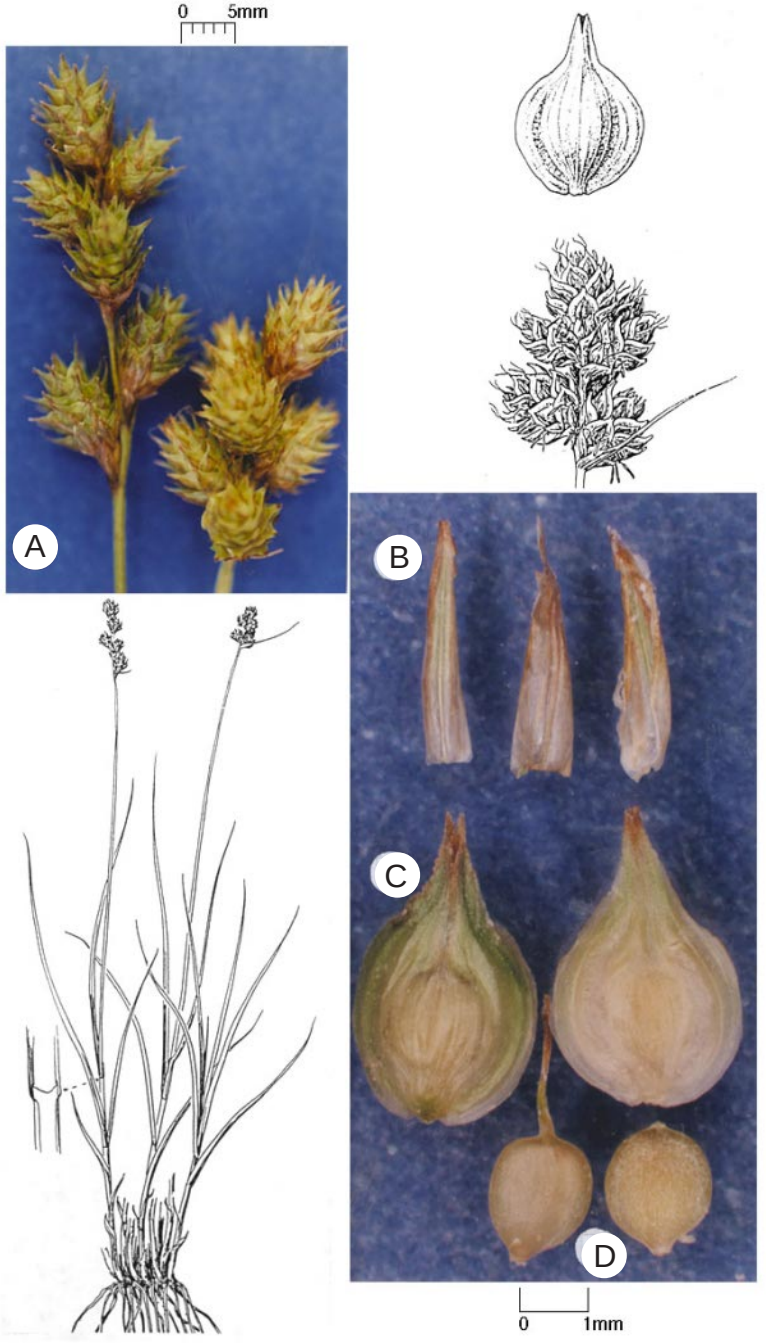
SPIKES: 1-4, **gynaecandrous**, sessile, distinct, reddish brown, 4-6 mm long, aggregated into an oblong or ovoid head, 6-15 mm long; perigynia (10)15-30, closely ascending.

PISTILLATE SCALES: Oblong-ovate with an obtuse tip, about equaling and largely concealing the perigynia, chestnut brown or reddish-tinged with yellowish-brown centers and wide, white-hyaline margins.

PERIGYNIA: Elliptic to obovate, gradually narrowed at the apex, plano-convex or almost flat, sometimes thin-margined, substipitate, minutely rough-textured, yellowish brown, largely paler than the scale, 2-3 mm long, 1-1.5 mm wide. **Nerves:** Fine or obscure on both faces. **Beaks:** Smooth, hyaline-tipped, 0.5 mm long; dorsal suture evident, extending well into the distal portion of the perigynium.

ACHENES: Oval or obovate, lenticular, sessile, 1.2-1.5 mm long, 0.85 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Wet meadows and swamps at **high elevations**. Circumboreal. In North America from British Columbia east across Alberta to Quebec and south through Utah (Uinta Mountains), northern Montana, Wyoming, and Colorado. **July-August.**



Carex brevior. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left (and B, center)—dorsal view; right—ventral view.

Carex brevior (Dewey) Mack.
Brevior sedge, short-beaked sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Sharply triangular, 2-10 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-6, clustered on the lower one-third of the culm. **Blades:** Flat or canaliculate, firm and coarse, 1.5-4 mm wide. **Sheaths:** Tight, conspicuously white-hyaline ventrally, truncate at the mouth.

BRACTS: Lowest sheathless, setaceous-prolonged, shorter than the inflorescence; upper reduced.

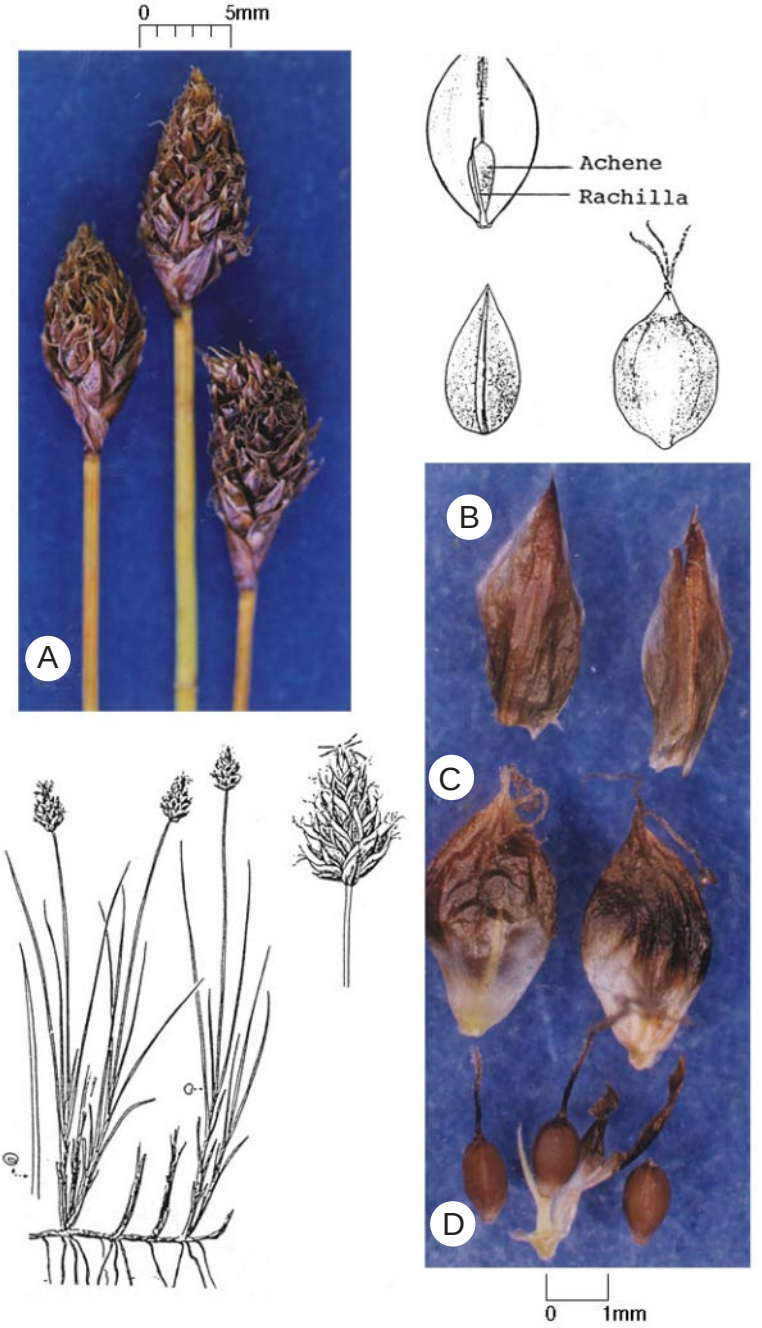
SPIKES: 3-10, **gynaecandrous**, sessile, pale green to stramineous or tan, 6-10 mm long, borne in a moniliform or interrupted to occasionally more congested head 1.5-5 cm long; perigynia crowded, stiffly ascending or spreading-ascending.

PISTILLATE SCALES: Ovate or ovate-lanceolate with an acuminate tip, narrower and shorter than the perigynia, reaching to the middle or tip of the beak, yellowish brown with a green center and narrow hyaline margins.

PERIGYNIA: Broadly ovate to suborbicular, broadest near the middle, flattened, plano-convex, or slightly concavo-convex, strongly **wing**-margined to the rounded or subtruncate base with the margins finely serrulate below, firm, coriaceous, green to greenish white or tan throughout, 3.2-5.5 mm long, (2) 2.4-3.4 mm wide. **Nerves:** Several to many on each face, prominent dorsally, faint or absent ventrally. **Beaks:** Flat, abruptly narrowed, winged, finely serrulate, less than one-third the length of the body, strongly bidentate, 0.8-1.5 mm long.

ACHENES: Orbicular, lenticular, substipitate, yellowish brown at maturity, 1.6-2.2 mm long, 1.3-1.9 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Frequent in moist meadows and swales, moist or dry openings, and along streambanks at **moderate elevations**. British Columbia to Quebec and south, chiefly east of the Continental Divide, but also along major watercourses in Washington, Oregon, Idaho, and Montana. **June-July.**



Carex breweri var. *paddoensis*. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes (center achene with rachilla). B through D: Left (and D, center)—dorsal view; right—ventral view.

Carex breweri Boott var. *paddoensis* (Suksd.) Cronq.
Brewer sedge

SYNONYM: *C. engelmanii* Bailey.

HABIT: Culms arising singly or few together from creeping rhizomes. **Culms:** Slender, erect, terete to semi-terete, smooth, 0.5-3 dm tall, equaling or exceeding the leaves, slightly **phyllopodic**.

LEAVES: Crowded toward the base. **Blades:** Stiff, wiry, slender, involute or deeply channeled, glabrous or with slightly scaberulous margins, 1 mm wide. **Sheaths:** Hyaline ventrally, truncate to concave at the mouth.

BRACTS: None.

SPIKES: Solitary, **androgynous**, stout, ellipsoid or ovoid, dark brown, 1-2 cm long, 6-10 mm wide; **staminate** portion small, not easily distinguished from the pistillate; perigynia numerous, ascending or appressed-ascending.

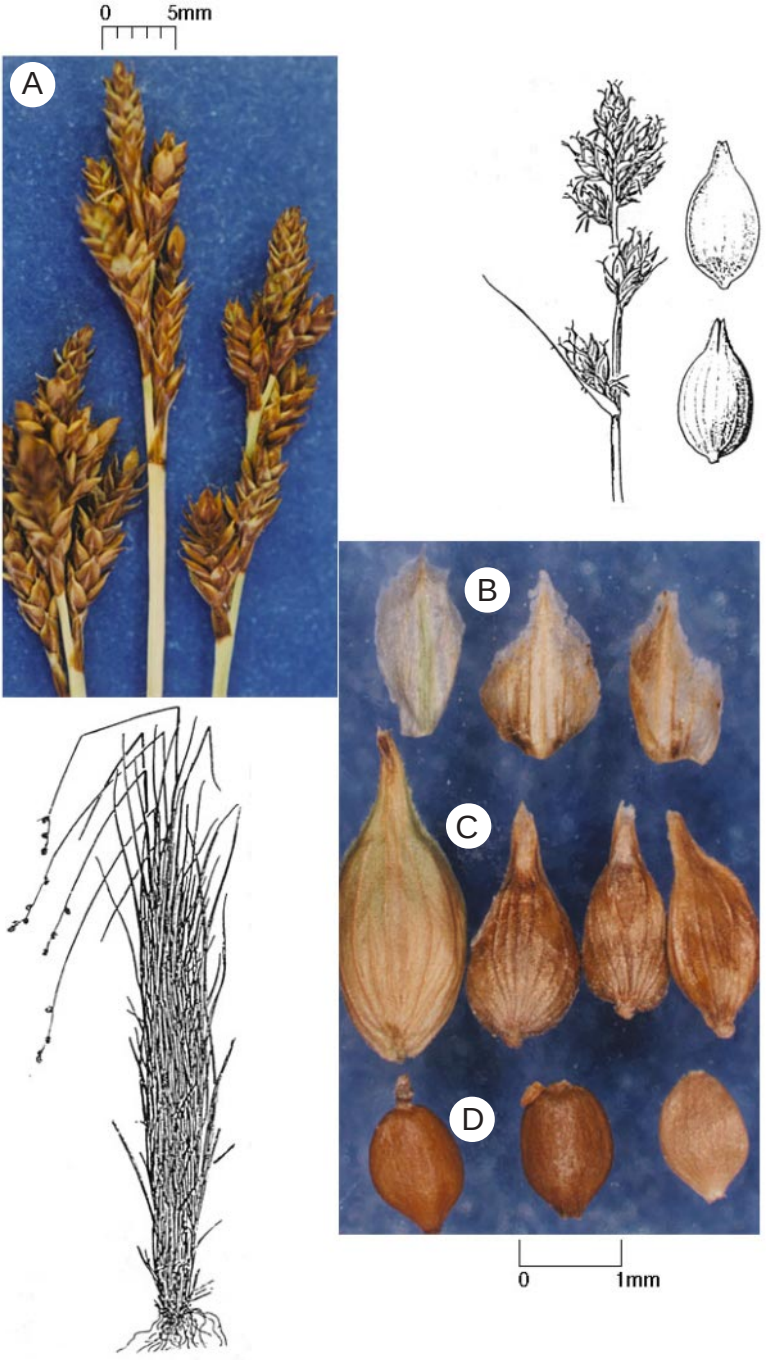
PISTILLATE SCALES: Ovate-oblong with an acute to acuminate tip, equaling or shorter than the perigynia, thin, 1-nerved, light to dark brown, pale or hyaline on the upper margins.

PERIGYNIA: Broadly ovate or elliptic, abruptly contracted at the apex, thin-walled or membranous, glabrous, dark brown, but light-colored at the base and at the apex, 4-7 mm long, 2.1-4.8 mm wide. **Nerves:** Absent or obscure. **Beaks:** Short, pale, obliquely cleft.

ACHENES: Trigonous, about 1-2 mm long, 0.8-1.2 mm wide, dark brown; rachilla well-developed, jointed to an elongate, more or less stout stipe. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: In wet or dry soil or talus at **high elevations** in the mountains. Along the Cascade-Sierra axis from southern British Columbia to California and adjacent Nevada. Rare in western Wyoming, Utah (Bear River, Wasatch, Uinta, and possibly Tushar ranges), and Colorado. **July-August.**

SIMILAR SPECIES: See appendix, table 4.



Carex brunnescens. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex brunnescens (Pers.) Poiret
Brownish sedge

HABIT: Densely cespitose from short rhizomes. **Culms:** Slender, lax, 2-6 dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: Clustered near the base. **Blades:** Flat, thin, deep green, 1-2.5 mm wide. **Sheaths:** Tight, thin and hyaline ventrally, concave at the mouth.

BRACTS: Lower sheathless, setaceous, generally shorter than to surpassing the inflorescence; upper inconspicuous.

SPIKES: 4-9, **gynaecandrous**, sessile, pale to golden brown or brown, 4-8 mm long; lower generally remote; upper approximate; terminal clavate; perigynia 5-15, spreading at maturity.

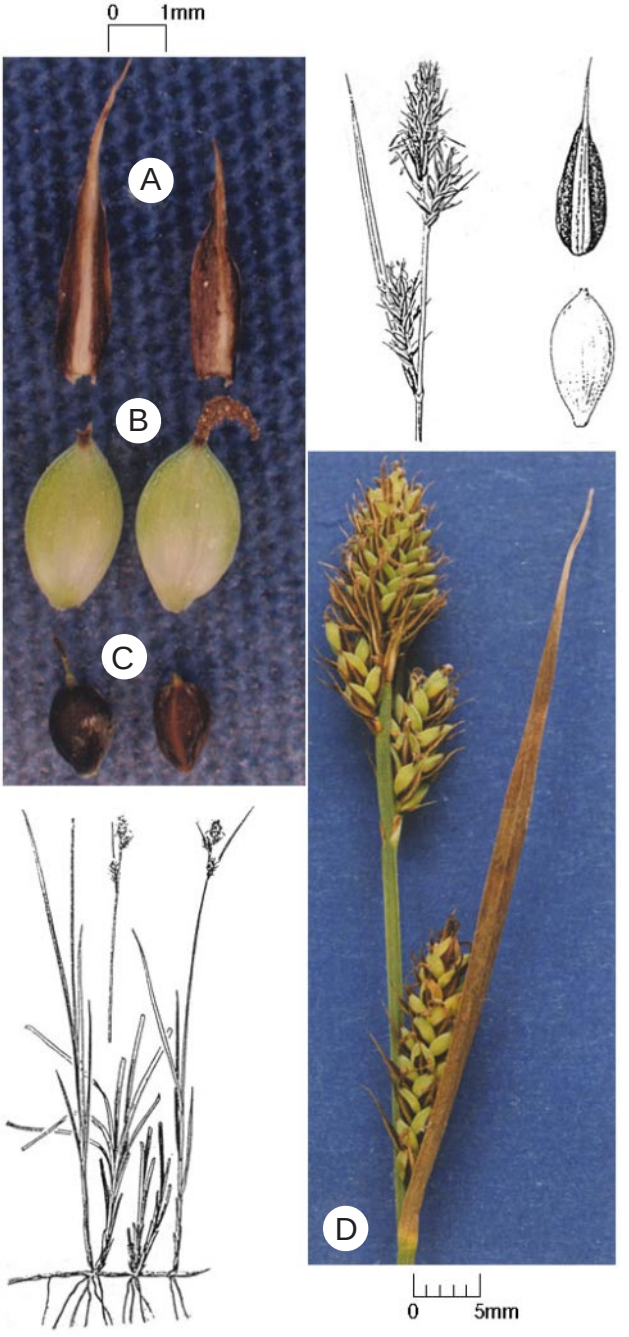
PISTILLATE SCALES: Ovate, with an acute tip, shorter than the perigynia, mostly white-hyaline or scarious with a firm, green midvein.

PERIGYNIA: Oval-ovate, broadest near the middle with raised margins, spongy-thickened below, plano-convex, the wall very thin distally and easily ruptured, not thin-edged, green to pale brown, 1.7-2.7 mm long, 1-1.5 mm wide. **Nerves:** Several, fine dorsally, obscure or lacking ventrally. **Beaks:** Serrulate, obliquely cleft, minutely bidentate, 0.5-0.7 mm long; dorsal suture prominent with a white-hyaline, slightly overlapping flap.

ACHENES: Ovate-orbicular, lenticular, yellowish to brownish, 1.2-1.5 mm long, 1 mm wide; style jointed to the base. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Occasional to frequent in bogs and wet meadows at **high elevations**. Circumboreal. In North America from Alaska to Labrador extending south to Oregon, Idaho, Utah (Uinta Mountains), Wyoming, Colorado, New Jersey, North Carolina, and Georgia. Seldom collected in the Intermountain area. **June-August.**

SIMILAR SPECIES: See appendix, table 5.



Carex buxbaumii. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left—dorsal view; right—ventral view.

Carex buxbaumii Wahl.
Buxbaum sedge

HABIT: Loosely cespitose from long, slender rhizomes. **Culms:** Slender, erect, sharply triangular and rough above, 2.5-10 dm tall, strongly **aphyllopodic.**

LEAVES: 2-4 on the lower one-half of the culm. **Blades:** Erect, thin, flat, sharply keeled, glabrous, bluish green, 1.5-4 mm wide. **Sheaths:** Yellowish-brown-tinged, purple-dotted ventrally, sometimes slightly thickened at the concave mouth; the lower breaking and becoming cross-fibrillose.

BRACTS: Sheathless, dark auricled; lowest shorter to longer than the inflorescence; upper reduced.

SPIKES: 2-5, erect, reddish black or bicolored with green and brown, approximate or the lower separate. **Terminal: Gynaecandrous**, clavate, short-peduncled, 1-3 cm long. **Lateral: Pistillate**, sessile, oblong-ovoid, 5-20 mm long, 6-10 mm wide, closely flowered; perigynia ascending.

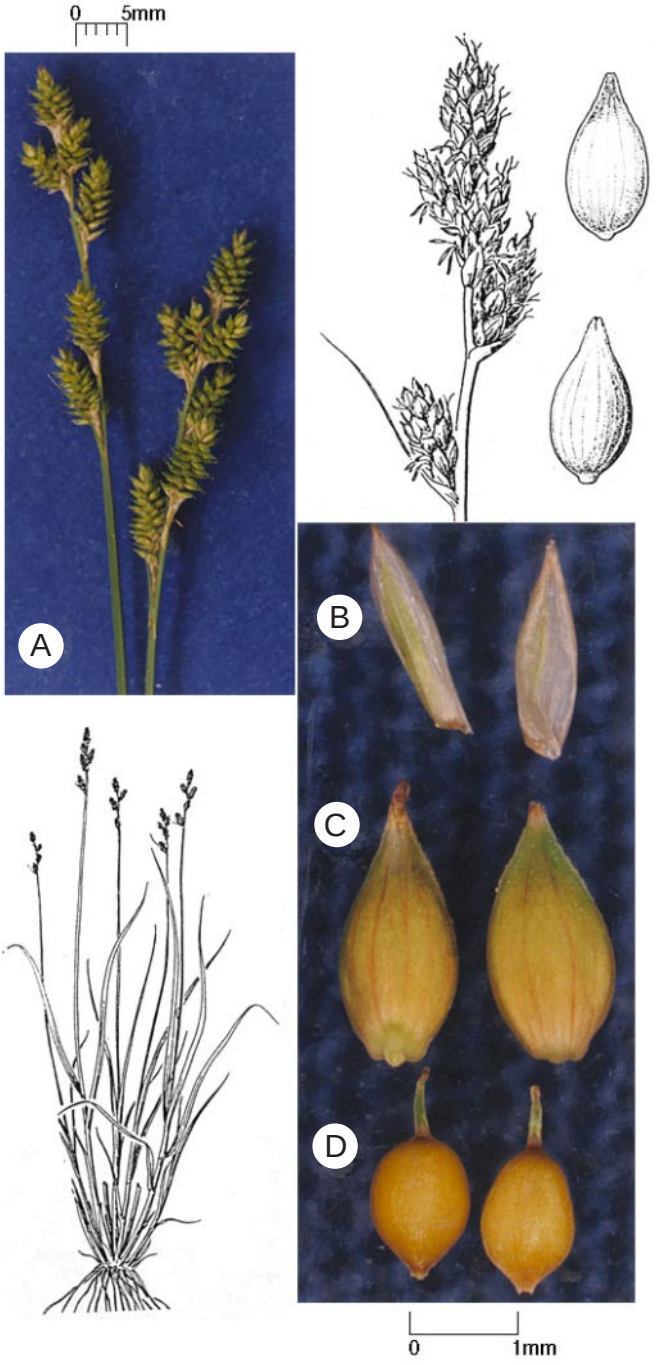
PISTILLATE SCALES: Lanceolate to lance-ovate, tapering to an awn-tip, narrower and longer than the perigynia, reddish black or reddish brown with a pale midrib that extends to the apex.

PERIGYNIA: Elliptic or obovoid, triangular-biconvex, subcoriaceous, densely papillose, light gray green or glaucous green, 2.5-4.3 mm long, 1.4-2.1 mm wide. **Nerves:** 6-8 on each surface, inconspicuous; marginal nerves present. **Beaks:** Reddish-black-tipped, bidentulate, 0.2 mm long.

ACHENES: Suborbicular-obovoid, trigonous, strongly punctate, brownish to blackish, 1.5-2.2 mm long, 1.1-1.5 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Widespread, but uncommon and infrequently collected. Wet meadows, usually at forest edge, also in peat bogs, marshes, and sunny swamps from **sea level to moderate elevations**. Circumboreal. In North America from southern Alaska to Newfoundland and south to California, Nevada, central Idaho, Utah (Uinta Mountains), Colorado, Arkansas, and Georgia. **June-August.**

DISTINCTIVE CHARACTERISTICS: *C. buxbaumii* is characterized by its cross-fibrillose lower leaf sheaths; terminal gynacandrous, clavate spikes; dark, narrow pistillate scales exceeding the perigynia; papillate, more or less glaucous, short-beaked perigynia; and 3 stigmas.



Carex canescens. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex canescens L.
Gray sedge, pale sedge, silvery sedge

HABIT: Loosely to densely clustered on short rhizomes. **Culms:** Often lax and widely spreading, sharply triangular, equaling or exceeding the leaves, 1-8 dm tall, slightly **aphyllopodic**.

LEAVES: Clustered near the base. **Blades:** Flat, soft, glaucous-green, 1.5-4 mm wide. **Sheaths:** Tight, thin and hyaline ventrally, concave at the mouth.

BRACTS: Sheathless, scarious, inconspicuous; lowest sometimes setaceous-tipped, shorter to longer than the inflorescence; upper reduced.

SPIKES: 4-8, **gynaecandrous**, sessile, silvery green, light green, pale gray or pale stramineous, 5-10 mm long, approximate to remote, aggregated into an elongated head 2-5 cm long; perigynia 10-30 per spike, appressed-ascending to spreading-ascending.

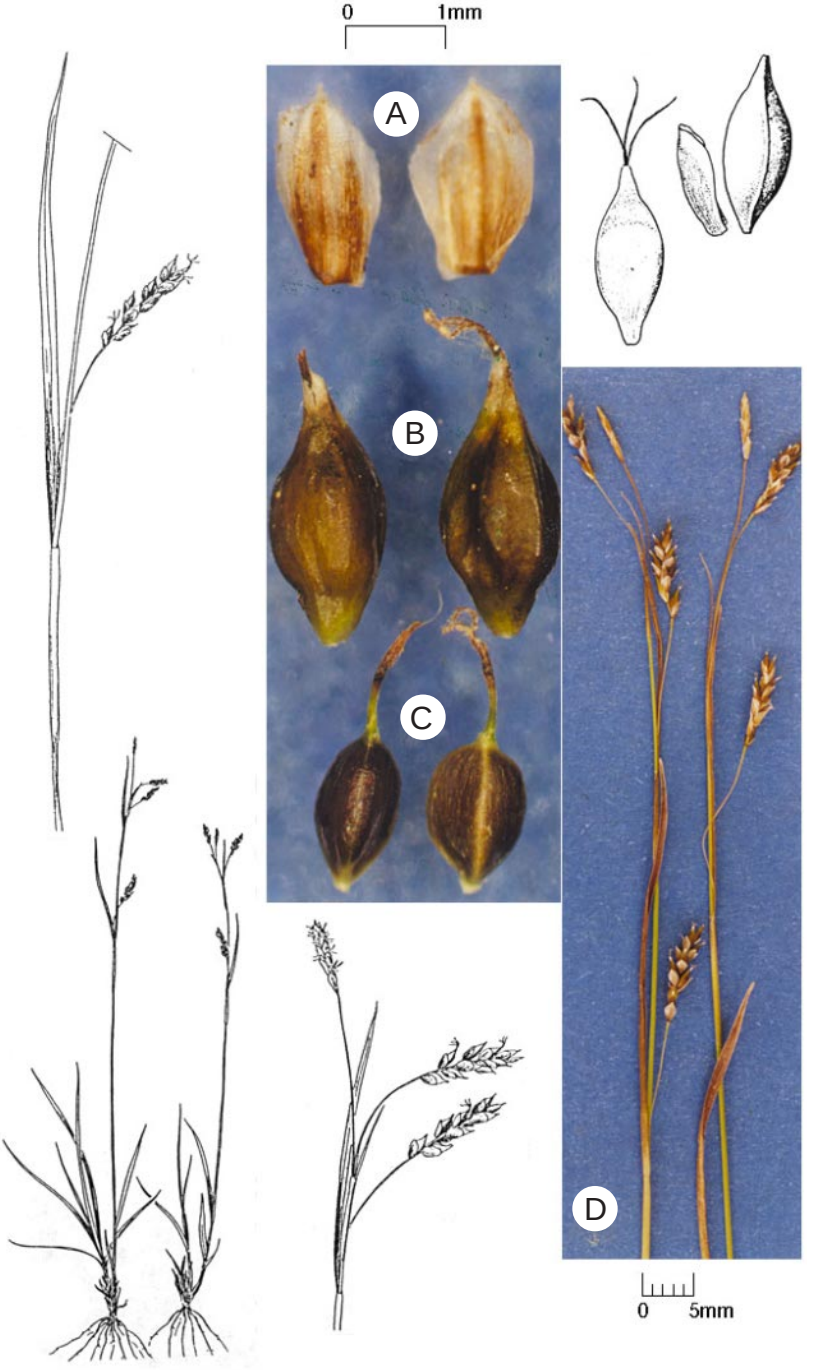
PISTILLATE SCALES: Broadly to narrowly ovate, shorter and narrower than the perigynia, white-hyaline with a greenish midvein.

PERIGYNIA: Ovoid-oblong, spongy-thickened below, short stipitate, plano-convex, margins raised and smooth throughout or minutely serrulate and rough-papillate distally, light green to dull silver or stramineous, brownish golden yellow to dull brown, 1.8-3 mm long, 0.9-1.75 mm wide. **Nerves:** Fine or prominently dark-lined on both surfaces, fewer ventrally than dorsally. **Beaks:** Short, 0.2-0.5 mm long, gradually tapered, shallowly and obliquely cleft, dorsal suture short and inconspicuous or obsolete.

ACHENES: Oblong-obovate, lenticular, contracted at the base, substipitate, 1.2-1.5 mm long, 0.8-1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Wet meadows, bogs, swamps, and lake margins from **lowlands to higher elevations**. Circumboreal. In North America from Alaska to Newfoundland and south to California, Nevada (Elko County), Idaho, Utah, Arizona, New Jersey, and Virginia. **June-August.**

SIMILAR SPECIES: See appendix, table 5.



Carex capillaris. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex capillaris L.
Hair sedge

HABIT: Plants densely tufted from short roots. **Culms:** Very slender, obtusely triangular, smooth, 0.3-6 dm tall, exceeding the leaves, strongly **phyllopodic**.

LEAVES: 5-8, clustered toward the base. **Blades:** Flat, thin but firm, 0.5-4 mm wide. **Sheaths:** Becoming brownish with age, truncate at the mouth.

BRACTS: Lowest leaflike with a well-developed sheath, shorter to longer than the inflorescence; upper reduced.

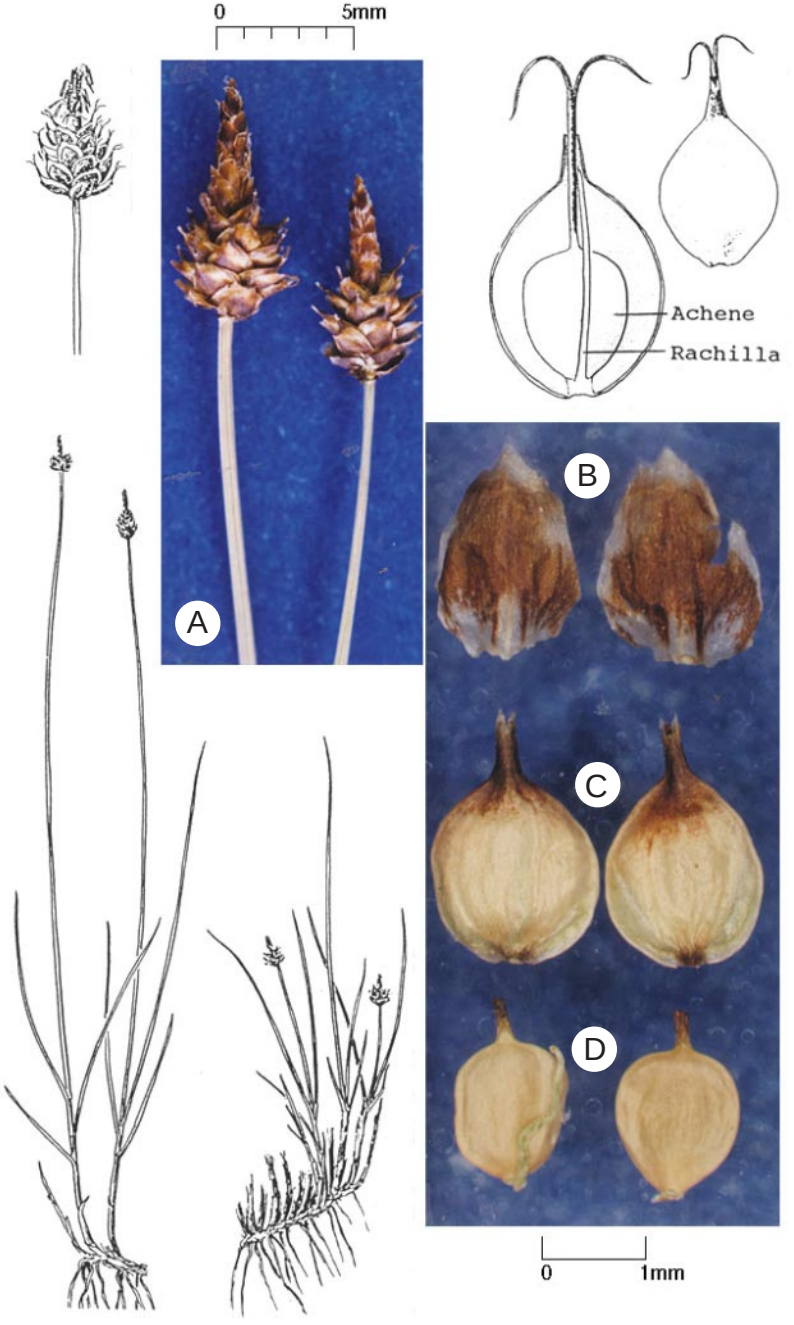
SPIKES: 2-4, brown, linear-oblong on nodding or loosely spreading peduncles. **Terminal: Staminate** or rarely gynaecandrous, 4-10 mm long, 0.75-1 mm wide. **Lateral: Pistillate**, more or less remote, 4-17 mm long, 3-4 mm wide; perigynia 3-25, ascending, loosely arranged.

PISTILLATE SCALES: Ovate, mostly obtuse at the apex, wider and shorter than the perigynia, closely appressed, early deciduous, thin, light brown or greenish, white-hyaline distally.

PERIGYNIA: Ovoid-lanceolate, obtusely trigonous, slightly ciliate and slightly serrulate toward the apex, stipitate, greenish brown or usually shiny brown to brownish olive green, 2-4 mm long, 0.75-1.2 mm wide. **Nerves:** Obliquely 2-ribbed or lacking. **Beaks:** Conic, tapered, 1 mm long, hyaline-tipped, entire.

ACHENES: Obovoid, trigonous with blunt angles, substipitate, brownish to dark greenish brown, green on the angles, 1.2-1.5 mm long, 0.7 mm wide, jointed to the style. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Streambanks, wet meadows, and wet ledges from **moderate to high elevations** in the mountains, up to about timberline. Circumboreal. In North America from southern British Columbia to north-central Washington (Okanogan County), northeastern Oregon (Wallowa Mountains), northeastern Nevada, Utah, Wyoming, New Mexico, Michigan, and New York. **June-August.**



Carex capitata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes (achene on left with rachilla). B through D: Left—dorsal view; right—ventral view.

Carex capitata L.
Capitate sedge

HABIT: Loosely to densely tufted from short-creeping, scaly, purplish red rhizomes. **Culms:** Slender, wiry, purplish red at base, 10-35 cm tall, shorter to longer than the leaves, old leaves present, **aphyllopodic.**

LEAVES: 2-4, borne on the lower third of the culm, shorter to longer than the culms. **Blades:** Involute, filiform, stiff, glabrous or with scaberulous margins, pale green, 1 mm wide. **Sheaths:** Truncate at the mouth.

BRACTS: None.

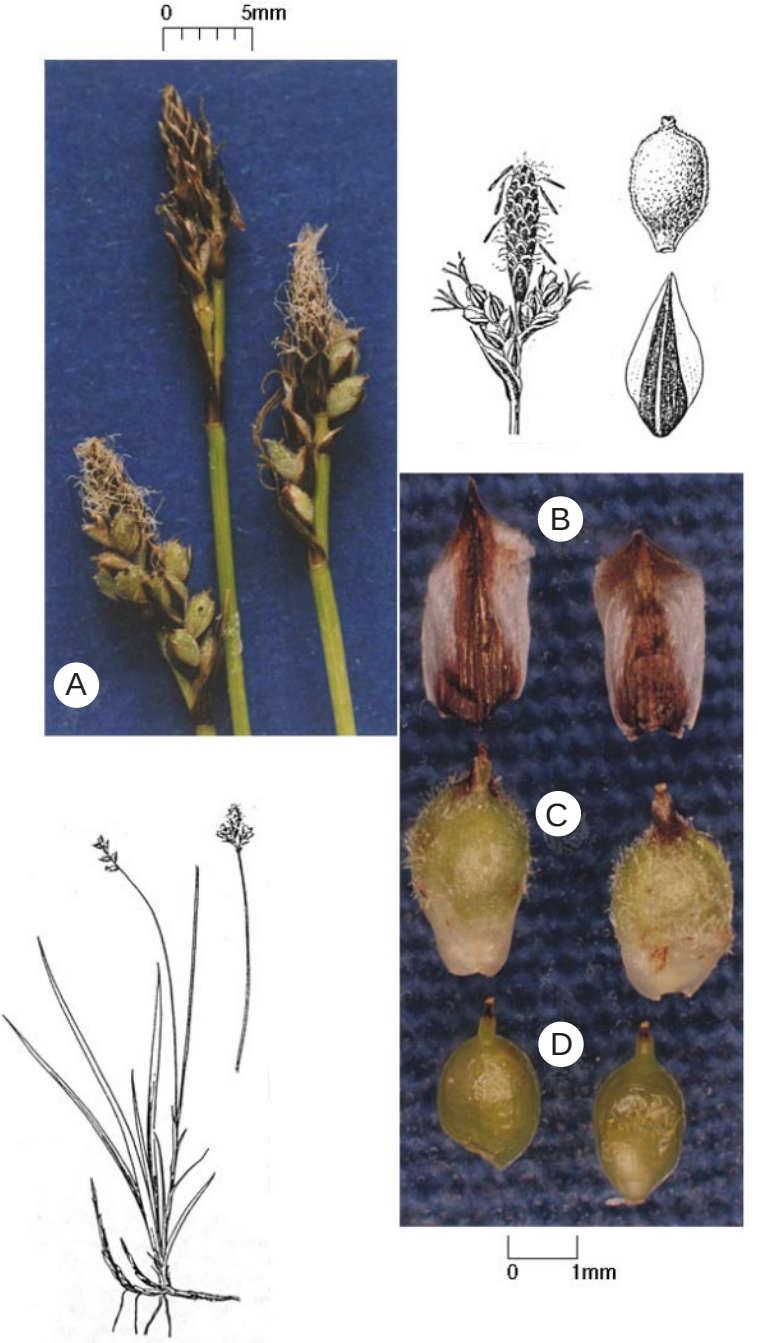
SPIKES: Solitary, **androgynous**, globose or ovoid to lanceolate, generally brownish green, 4-15 mm long, 3-7 mm wide; perigynia spreading or ascending.

PISTILLATE SCALES: Orbicular to broadly ovate with an obtuse tip, shorter and narrower than the perigynia, dark brown with broad white-hyaline margins and apex.

PERIGYNIA: Ovate to orbicular, sessile and broadly rounded below, plano-convex, thin-margined, 2-3.5 mm long, 1.3-2 mm wide. **Nerves:** Absent or few dorsally. **Beaks:** Slender-conic, abruptly contracted, terete, glabrous, greenish or light to dark brown, 0.6-1 mm long, obliquely cleft, slightly hyaline-tipped.

ACHENES: Quadrate-ovate, lenticular, 1-1.8 mm long, 0.5-1.2 mm wide, partially filling the perigynium; rachilla well-developed. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Rare or local. Usually in open, wet places, but sometimes in drier sites at **high elevations**. Circumboreal. In North America from Alaska to Hudson Bay and irregularly southward to California, Nevada, Utah, Wyoming, and New Hampshire. **July-August.**



Carex concinnoides. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes.

Carex concinnoides Mack.
Northwest sedge

HABIT: Loosely cespitose from a well-developed system of scaly, brownish black, creeping rhizomes. **Culms:** Slender, erect or somewhat curved, dark purplish brown at the base, 1.5-3.5 dm tall, varying from shorter to longer than the leaves, **aphyllopodic**.

LEAVES: 6-10, closely clustered near the base. **Blades:** Thick, firm, flat or channeled, 2-5 mm wide. **Sheaths:** Tight, thin and hyaline ventrally, truncate to shallowly concave at the mouth.

BRACTS: Bladeless and sheathless, shorter than the inflorescence; margins hyaline, purplish-red-tinged.

SPIKES: 2-4, linear to oblong, sessile or nearly so, bicolored with green and reddish purple. **Terminal: Staminate**, 8-22 mm long, 2-3 mm wide. **Lateral: Pistillate**, erect, approximate, l0-15 mm long, 4-5 mm wide, closely flowered; perigynia 5-10, ascending.

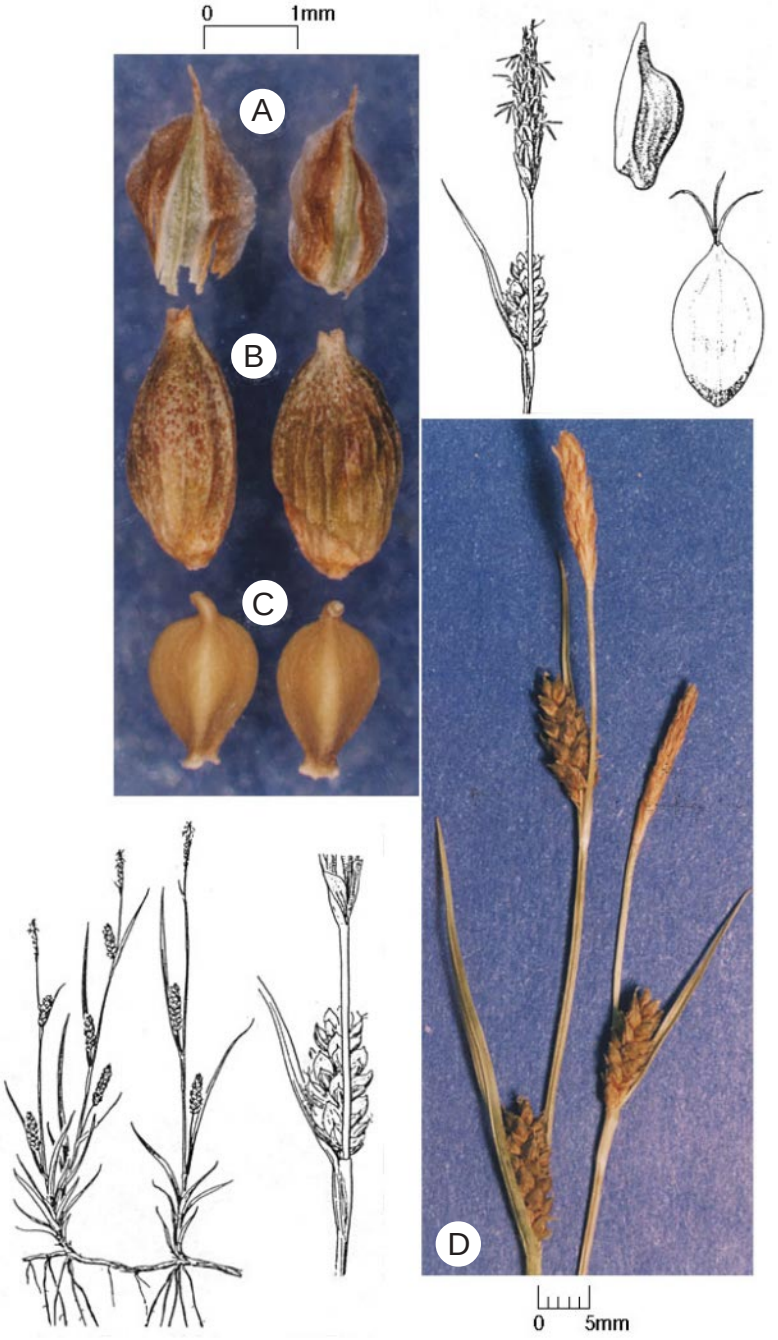
PISTILLATE SCALES: Ovate-lanceolate to obovate with an acute to acuminate tip, ciliate, equaling to or narrower and sometimes shorter than the perigynia, dark purplish red with conspicuous white-hyaline margins.

PERIGYNIA: Oblong-obovoid, obscurely trigonous, light green with copious, loose pubescence, 2.5-3 mm long, 1.5 mm wide. **Nerves:** Marginally ribbed, otherwise obscure or lacking. **Beaks:** Abrupt, often reddish purple, obliquely cleft, 0.5 mm long.

ACHENES: Oblong-obovoid, trigonous or tetragonous, rounded at the top, broadly tapered to the substipitate base, slenderly apiculate, greenish, becoming brownish at maturity, 2-3 mm long, 1.25 mm wide. **Stigmas:** 3 or 4, long, slender, brownish at maturity.

HABITAT AND DISTRIBUTION: Frequent to locally common in dry or moist woods or coniferous forests. **Low to moderate elevations**. British Columbia and Alberta south to northern California, central Idaho, and Montana. **April-July**.

SIMILAR SPECIES: See appendix, table 6.



Carex crawei. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex crawei Dewey
Crawe sedge

HABIT: Culms arising singly or few together from well-developed, creeping rhizomes. **Culms:** Slender but stiff, 0.8-3(4) dm tall, exceeding the leaves, slightly **phyllopodic.**

LEAVES: 6-12. **Blades:** Stiff, thick, flat, usually recurved-spreading, roughened on the margins towards the apex, 1.5-3 mm wide. **Sheaths:** Tight, hyaline ventrally, occasionally brown-dotted toward the mouth.

BRACTS: Lowest leaflike with well-developed sheath, shorter than the inflorescence; upper slightly reduced.

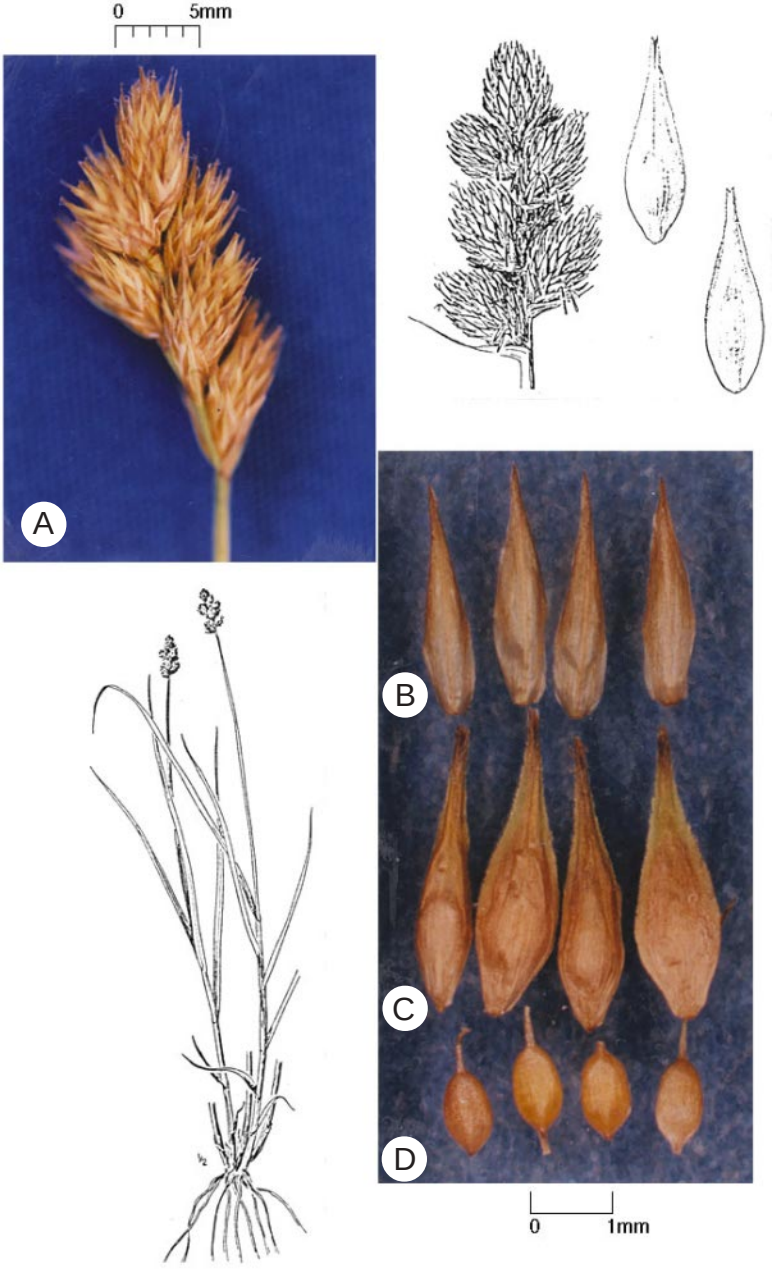
SPIKES: 3-5, narrowly oblong to cylindric, short- to long-pedunculate, green to brown. **Terminal: Staminate**, pedunculate, 1-3 cm long, 2-3 mm wide. **Lateral: Pistillate** or androgynous, 1-3 cm long, 5-6 mm wide, closely flowered, widely separate, the lowest often nearly basal; perigynia 10-45, ascending.

PISTILLATE SCALES: Broadly ovate with the midrib often excurrent, equaling or narrower and shorter than the perigynia, reddish brown with hyaline margins and green center.

PERIGYNIA: Ovoid or oblong-ovoid, rounded at the sessile base, sometimes flattened on the adaxial side, abruptly contracted at the apex, somewhat terete, yellowish green to light brown, often finely reddish-brown-speckled, 2-3.5 mm long, 1.25-2 mm wide. **Nerves:** Obscure to coarse on both faces, numerous. **Beaks:** Straight, entire or minutely bidentulate, 0.4 mm long.

ACHENES: Obovoid, trigonous, stipitate, brown, 1.3-2 mm long, 1.25 mm wide; style deciduous, leaving a straight or bent-recurved apiculus. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Boggy meadows and wet places in **foothills, valleys, and plains**. Often associated with limestone and marlbogs. British Columbia to Quebec and south to Washington (reputedly), Utah (Kane County), Montana, Wyoming, Missouri, and New Jersey. Seldom collected in the Intermountain area. **May-July.**



Carex crawfordii. (A) Inflorescence, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex crawfordii Fern.
Crawford sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Stiff, 1-8 dm tall, exceeding the leaves, distinctly **aphyllopodic**.

LEAVES: 3-4, borne on the lower one-third of the culm. **Blades:** Flat or channeled, firm, 1-4 mm wide. **Sheaths:** Thin, hyaline ventrally, concave at the mouth.

BRACTS: Sheathless; lowest setaceous-prolonged, shorter to about equaling the inflorescence; upper short and inconspicuous.

SPIKES: 3-15, **gynaecandrous**, sessile, pale green to stramineous or tan, 5-10 mm long, closely aggregated into an oblong or linear-oblong inflorescence 1.2-3 cm long and 0.8-1.5 cm wide; perigynia erect-ascending.

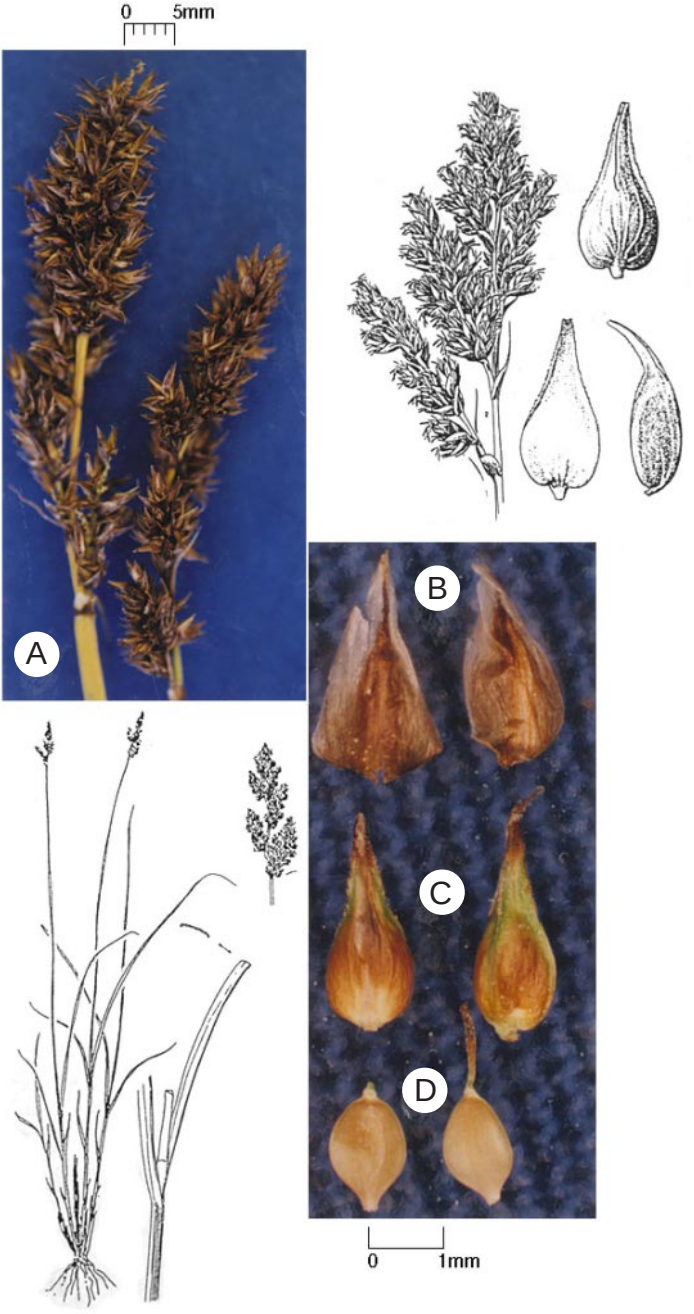
PISTILLATE SCALES: Ovate to ovate-lanceolate, equaling to shorter and distally narrower than the perigynia, tan or light brown, mostly hyaline-scarious, firmer, and sometimes greenish along the midrib.

PERIGYNIA: Lanceolate-subulate, flat or plano-convex, thin, narrowly **winged**, serrulate above the middle, brown or pale green to stramineous, 3-4 mm long, 0.9-1.2 mm wide. **Nerves:** Several, faint on both faces or nearly absent ventrally. **Beaks:** Flat, narrow, tapered, serrulate, obliquely cleft, bidentate.

ACHENES: Oblong, lenticular, 0.8-1.5 mm long, 0.5-0.8 mm wide. **Stigmas:** 2, styles usually persistent.

HABITAT AND DISTRIBUTION: Infrequent, but occasionally locally abundant. Moist or wet places at **low to moderate elevations**. Alaska to Newfoundland, south to central Washington and Idaho, and east to Michigan and New Jersey. **June-August.**

SIMILAR SPECIES: See appendix, table 1.



Carex cusickii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex cusickii Mack.
Cusick sedge

HABIT: One of the most grasslike sedges, more or less cespitose from creeping rhizomes. **Culms:** Sharply triangular, roughened on the angles above, 3-12 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: Loosely clustered near base. **Blades:** Flat with revolute margins, 2.5-6 mm wide. **Sheaths:** More or less septate-nodulose dorsally, red-dotted and often cross-corrugated ventrally, concave and copper colored at the mouth; older sheaths reddish-ribbed ventrally.

BRACTS: Small, inconspicuous, scarcely different from the pistillate scales.

SPIKES: Small, sessile, numerous, **androgynous;** inflorescence compound, grasslike, brown, 3.5-8 cm long, 1-2 cm wide; lower spike clusters separate; upper spike clusters aggregated; staminate flowers inconspicuous; perigynia spreading at maturity.

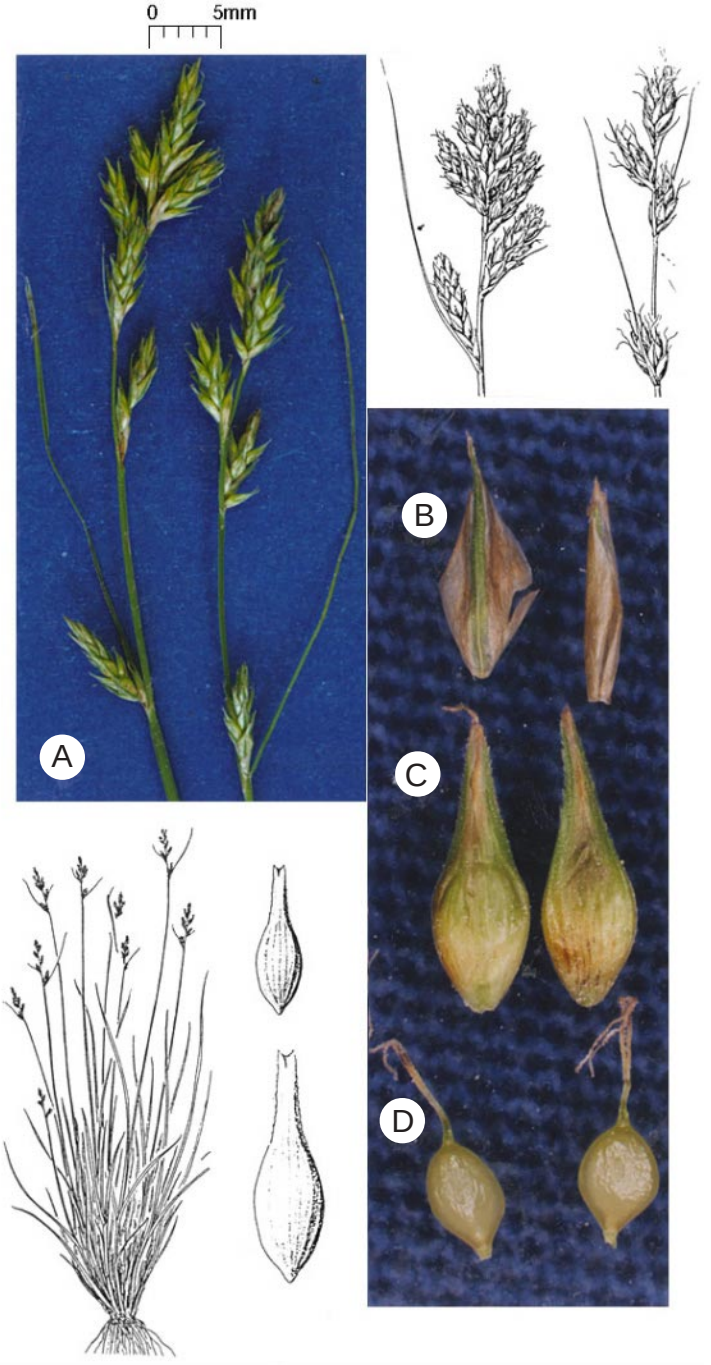
PISTILLATE SCALES: Ovate-triangular with an acute tip, brown with hyaline margins and lighter-colored midvein that is sometimes excurrent, equaling the perigynia, largely concealing and falling with them.

PERIGYNIA: Ovate to lance-ovate, biconvex or plano-convex, strongly spongy-thickened and truncate at the base, sharp-edged, coriaceous, glossy, substipitate, light brown with green margins to brownish black at maturity, 2-4 mm long, 1.1-2 mm wide. **Nerves:** Few dorsally, often obscurely nerved toward the base ventrally. **Beaks:** Abruptly narrowed, less than half the length of the body, coarsely-serrulate-margined, shallowly bidentate; dorsal suture prominent distally.

ACHENES: Suborbicular to obovoid, lenticular, substipitate, brownish at maturity, 1-1.8 mm long, 0.8-1.2 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequent in wet meadows and along borders of ponds and slow streams. **Sea level to moderate elevations**. British Columbia to coastal California, central Idaho, Montana, Wyoming, and perhaps in Utah. **May-August**.

SIMILAR SPECIES: *C. cusickii*—Inflorescence a compound grasslike head; perigynium usually plano-convex with a long, ill-defined beak, and sometimes with a pair of veins bordering a concave median strip on the dorsal side, the latter a characteristic of *C. diandra*. *C. diandra*—Head not compound or less obviously compound; perigynium usually unequally biconvex; beak short; well-defined; dorsal suture covered by a flap.



Carex deweyana. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex deweyana Schwein.
Dewey sedge

SYNONYMS: *C. bolanderi* (Olney) W. Boott; *C. leptopoda* Mack.

HABIT: Loosely to densely clumped from short rhizomes. **Culms:** Weak and spreading, roughened beneath the inflorescence, 2-12 dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: Borne on the lower part of the culm. **Blades:** Flat, soft, thin, light green or glaucous to yellowish green, 2-5 mm wide. **Sheaths:** Tight, hyaline ventrally, truncate to concave at the mouth.

BRACTS: Lowest sheathless, setaceous-prolonged, but shorter than the inflorescence; upper reduced and inconspicuous.

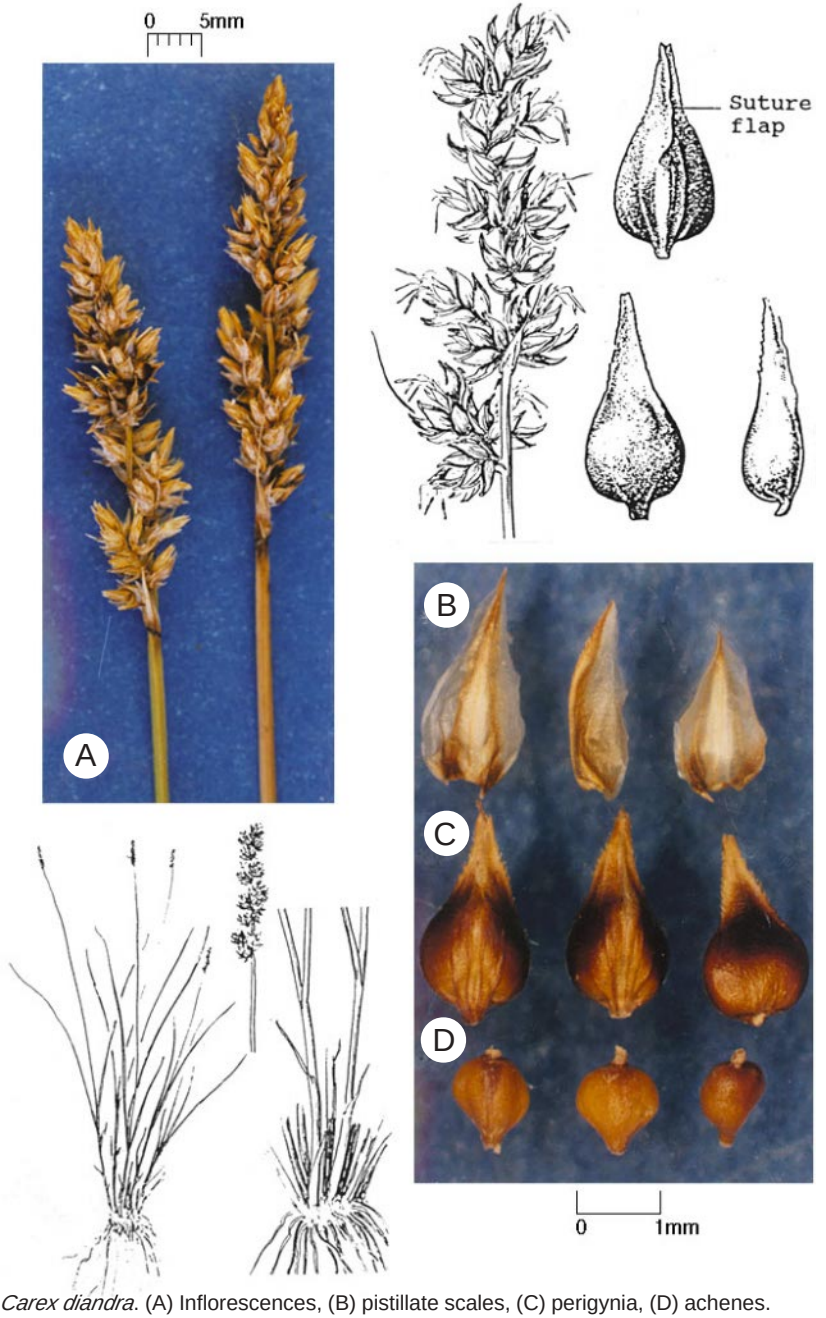
SPIKES: 2-10, **gynaecandrous**, sessile, 7-20 mm long, light green or greenish tan, approximate and loosely aggregated or the lowest one remote; inflorescence flexuous, 2-6 cm long; perigynia appressed-ascending to spreading.

PISTILLATE SCALES: Ovate to oblong-ovate, covering the body of the perigynium but not the beak, very thin, scarious, whitish to light brown; midrib fimer, greenish, sometimes prolonged as a short awn-tip.

PERIGYNIA: Oblong-lanceolate or narrowly elliptic, plano-convex, spongy-thickened below, gradually tapering at the apex, tan or stramineous and greenish distally and marginally, sometimes greenish throughout, 2.8-4.8 mm long, 1-1.5 mm wide. **Nerves:** Several dorsally, absent to few ventrally; marginal nerves raised, but not thin-edged. **Beaks:** Prominent, slender, serrulate, sometimes to the distal part of the body, obliquely cleft, bidentate, 1.1-2.7 mm long.

ACHENES: Suborbicular, lenticular, yellowish brown at maturity, 1.5-2.25 mm long, 1.25-1.75 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Rare to locally frequent in forest openings, moist woodlands, and along streambanks from **near sea level to near timberline**. British Columbia to Labrador and south through Idaho, Utah, Wyoming, Colorado, Iowa, Michigan, and Pennsylvania. **June-August.**



Carex diandra. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex diandra Schrank
Lesser panicled sedge

HABIT: Densely cespitose from short, fibrillose rhizomes. **Culms:** Sharply triangular, strongly roughened on the angles, 3-10 dm tall, equaling or exceeding the leaves, **aphyllopodic**.

LEAVES: Borne on the lower one-third of the culm. **Blades:** Elongate, canaliculate to plicate, 1-3 mm wide. **Sheaths:** Thin, tight, striate, red-dotted or plain ventrally, truncate to shallowly concave at the mouth.

BRACTS: Lowest sometimes elongate and setaceous, sheathless; upper small and inconspicuous.

SPIKES: Numerous, **androgynous**, small, few-flowered, sessile, tan to brown, closely aggregated into a linear, simple or inconspicuously compound inflorescence, 1.5-6 cm long and 7-10 mm wide; perigynia spreading-ascending at maturity and early deciduous.

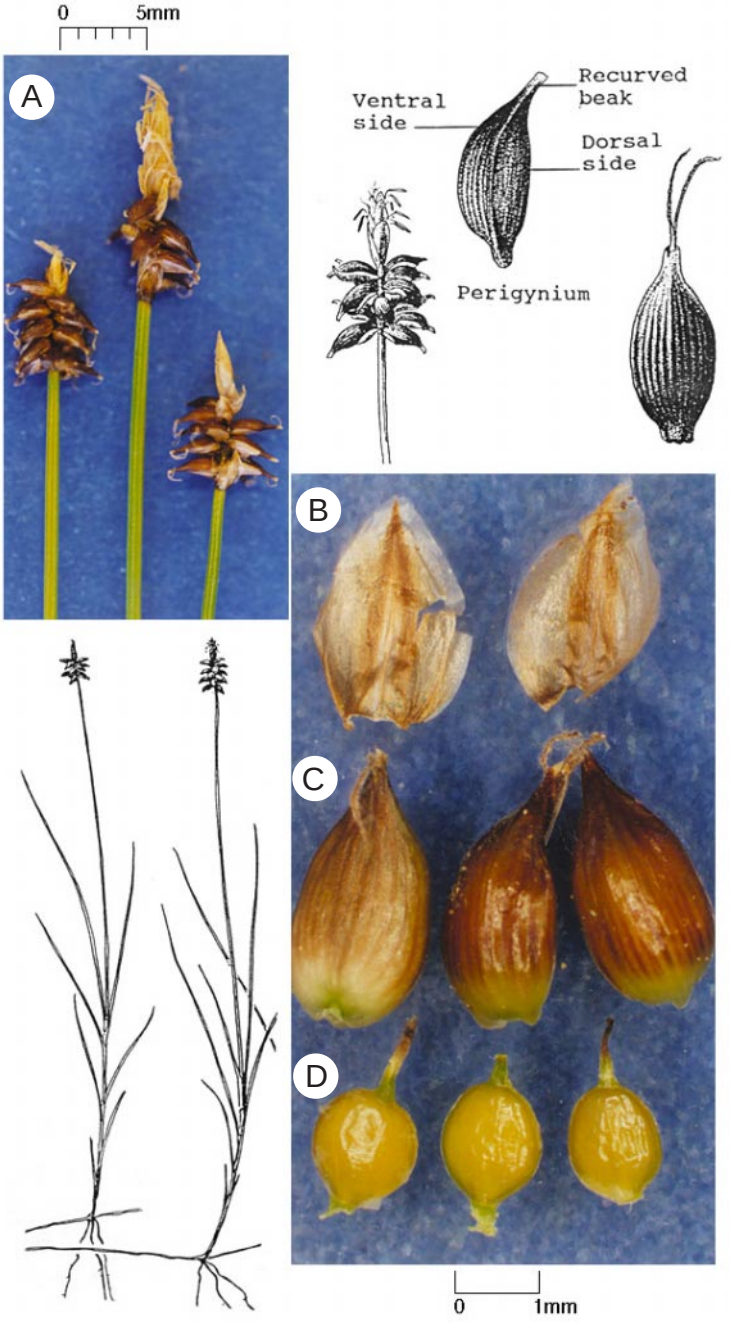
PISTILLATE SCALES: Ovate to oblong-ovate with an acute to cuspidate tip, equal to shorter and sometimes wider than the perigynia, brownish with a pale midrib and wide-hyaline margins,

PERIGYNIA: Ovate or lance-ovate, unequally biconvex, tapering at the apex, firm and thick-walled, glossy, short-stipitate, dark brown, lighter toward the base and apex, 2-3 mm long, 0.9-1.4 mm wide. **Nerves:** A pair of veins border the thin median strip (an extension of the dorsal suture). **Beaks:** Coarse, tapering, thin-walled, serrulate-margined, occasionally the flap of the dorsal suture conspicuous, greenish to whitish.

ACHENES: Broadly obovate, lenticular, abruptly tapered at the substipitate base, apiculate with the apex truncate, 1-1.4 mm long, 0.8-1 mm wide, brown, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Swamps, sphagnum bogs, lake margins, and wet, often calcareous meadows **at moderate elevations**. Circumboreal. In North America from Yukon to Newfoundland and south to California, Nevada, Utah, Wyoming, Colorado, Iowa, and New Jersey. Seldom collected south of the Canadian border in the cordilleran region. **June-July**.

SIMILAR SPECIES: See *C. cusickii*.



Carex dioica. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right (and C and D, center)—ventral view.

Carex dioica L.
Bog sedge, yellow bog sedge

SYNONYM: *C. gynocrates* Wormskj. ex Drejer.

HABIT: Culms arising singly from long, slender rhizomes. **Culms:** Filiform, terete, stiff, smooth, 2-30 cm tall, exceeding the leaves, **phyllopodic**.

LEAVES: Loosely clustered toward the base. **Blades:** Narrowly involute, 3-15 cm long, 0.4-0.9 mm wide. **Sheaths:** Thin and white-hyaline ventrally when young, brown when mature, shallowly to deeply concave at the mouth.

BRACTS: None.

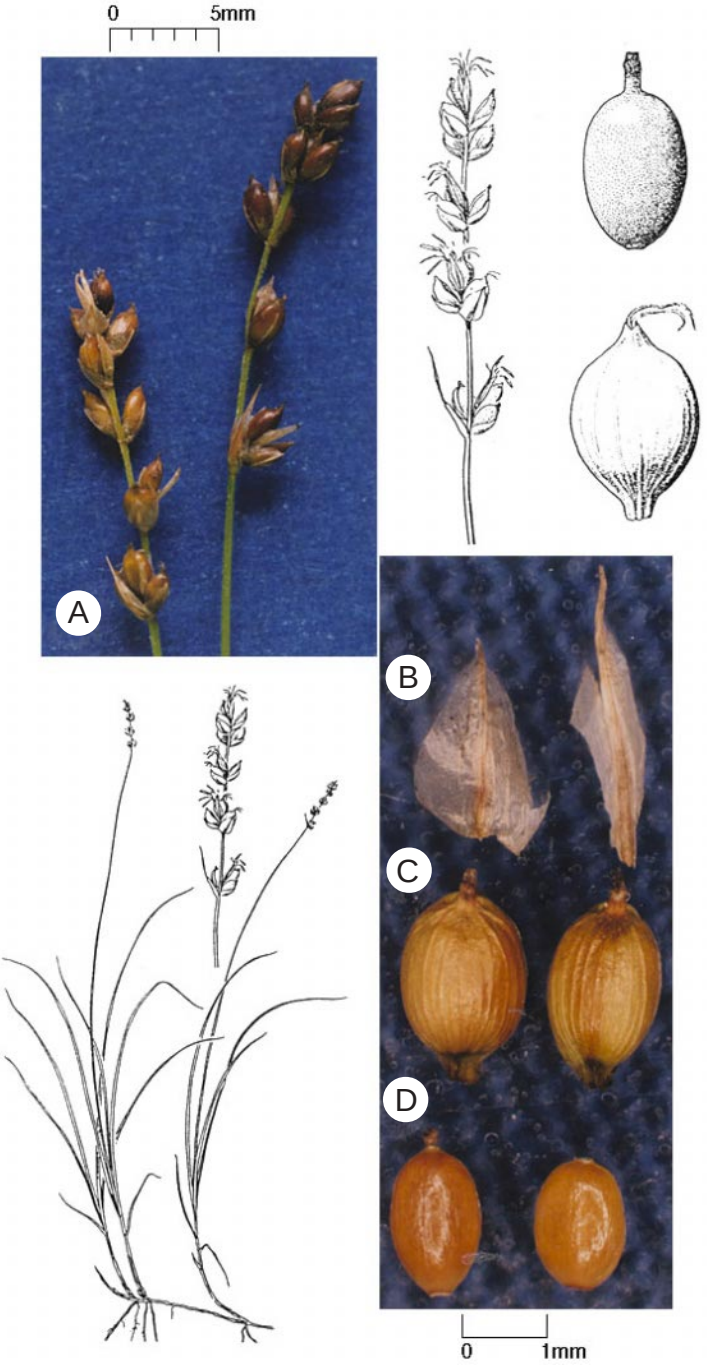
SPIKES: Solitary, chestnut brown, varying from **androgynous** to almost wholly staminate or almost wholly pistillate, 5-15 mm long; staminate portion paler, slender; perigynia crowded, widely spreading.

PISTILLATE SCALES: Scarious or almost hyaline, broadly ovate with an obtuse tip, usually shorter and wider than the perigynia, persistent, light reddish brown to brown.

PERIGYNIA: Slenderly ovoid, thick-walled with especially the lower portion spongy-thickened, biconvex at maturity, plump, coriaceous, glossy, short-stipitate, the stipe apparent when dry, yellowish to brownish black or chestnut brown, 2.5-4 mm long, 1.5-2 mm wide. **Nerves:** Numerous, conspicuously reaching the base of the beak dorsally, obscure or conspicuous ventrally; marginal nerves not prominent. **Beaks:** Abruptly contracted, sparingly serrulate, obliquely cleft and recurved, 0.5 mm long.

ACHENES: Broadly obovate or ovate, lenticular, glossy, yellowish brown, 1.5-2 mm long, 1.2-1.5 mm wide; rachilla obsolete. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Sphagnum bogs and wet, marshy places. Rare and restricted to **middle and upper elevations** in the mountains. Circumboreal. In North America from Washington (Okanogan County) to northeastern Oregon (Wallowa Mountains), Nevada, Utah, Colorado, and east to Pennsylvania. **July-August.**



Carex disperma. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex disperma Dewey
Soft-leaved sedge

HABIT: Loosely tufted from long, slender rhizomes. **Culms:** Very slender and weak, usually nodding, 1-6 dm tall, exceeding the leaves, somewhat **aphyllopodic**.

LEAVES: Borne on the lower part of the culm. **Blades:** Flat, thin, soft, light green, 0.75-2 mm wide. **Sheaths:** Tight, very thin and hyaline ventrally, truncate at the mouth.

BRACTS: Filiform-foliaceous to 2 cm long or short and scarious; margins hyaline; midrib firm, often prolonged as an awn.

SPIKES: Androgynous, but sometimes appearing gynaecandrous due to growth of the perigynia, sessile, green, becoming dark brown, to 5 mm long; 2-6 flowered with 1-3 perigynia; the inflorescence interrupted-linear with the lower spikes separate and the upper somewhat contiguous; perigynia spreading-ascending.

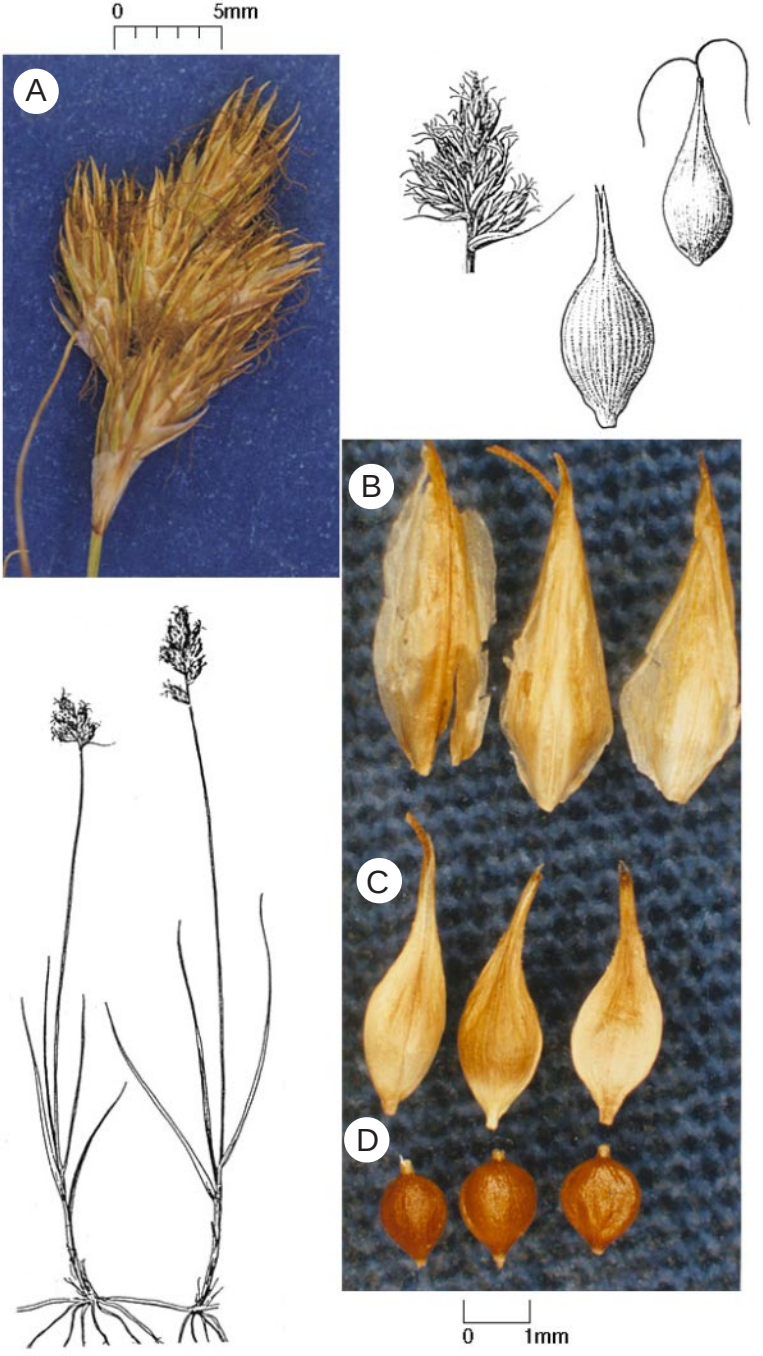
PISTILLATE SCALES: Ovate-triangular and acute to awned at the tip, shorter than to equaling the perigynia, largely scarious or hyaline-scarious, stramineous or pale.

PERIGYNIA: Elliptic-ovoid, unequally biconvex, leathery, plump with spongy tissue filling the wall from the base to near the beak, short-stipitate, light green to yellowish green, becoming golden brown to dark brown, 2-3 mm long, 1-1.6 mm wide. **Nerves:** Numerous on both surfaces and reaching to the beak; marginal nerves not obvious. **Beaks:** Abruptly contracted, very short or obsolete, entire or obliquely cleft, minutely bidentate.

ACHENES: Oblong-elliptic, lenticular, glossy, golden brown, 1-2 mm long, 0.9-1.3 mm wide; style short, semi-persistent as a slender apiculus. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common in swamps, bogs, wet meadows, and moist shady woods in the mountains and on peaty banks of streams and lakes at **moderate to high elevations.** In North America from Alaska to Laborador and south to California, central Idaho, Nevada, Utah, Wyoming, Arizona, and New Jersey. **June-August.**

SIMILAR SPECIES: *C. disperma*—Culms slender and flexible; inflorescence with an interrupted-linear outline; perigynium many-nerved; achene lenticular; occurs in moist or wet places and shady woods. *C. vallicola*—Culms stiff and erect; inflorescence with a ragged outline due to the few-flowered spikes; perigynium with 2 ventro-marginal nerves; beak a little longer; achene orbicular; occurs in sagebrush-grass areas.



Carex douglasii. (A) Inflorescence (pistillate), (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex douglasii Boott
Douglas sedge

HABIT: Not tufted, developing from slender, creeping rhizomes. **Culms:** Slender, stiff, smooth, obtusely triangular, (0.5)1-3 dm tall, usually exceeding the leaves, **phyllopodic**.

LEAVES: 3-8, clustered near the base. **Blades:** Involute but sometimes flattened or canaliculate toward the base, 1-2.5 mm wide. **Sheaths:** Old sheaths persistent, at the base, hyaline ventrally, brown or black, truncate at the mouth.

BRACTS: Scarious-setaceous, shorter than the inflorescence.

SPIKES: Several, ovoid-fusiform, sessile, 1-1.5 cm long; plants **dioecious** or rarely incompletely so. **Staminate**: Inflorescence of many aggregated spikes, rhomboidal to linear-oblong, rarely some spikes androgynous. **Pistillate:** Inflorescence with many spikes, suborbicular to oblong, stramineous at maturity, 1.5-5 cm long, 1-2.5 cm wide; perigynia appressed-ascending.

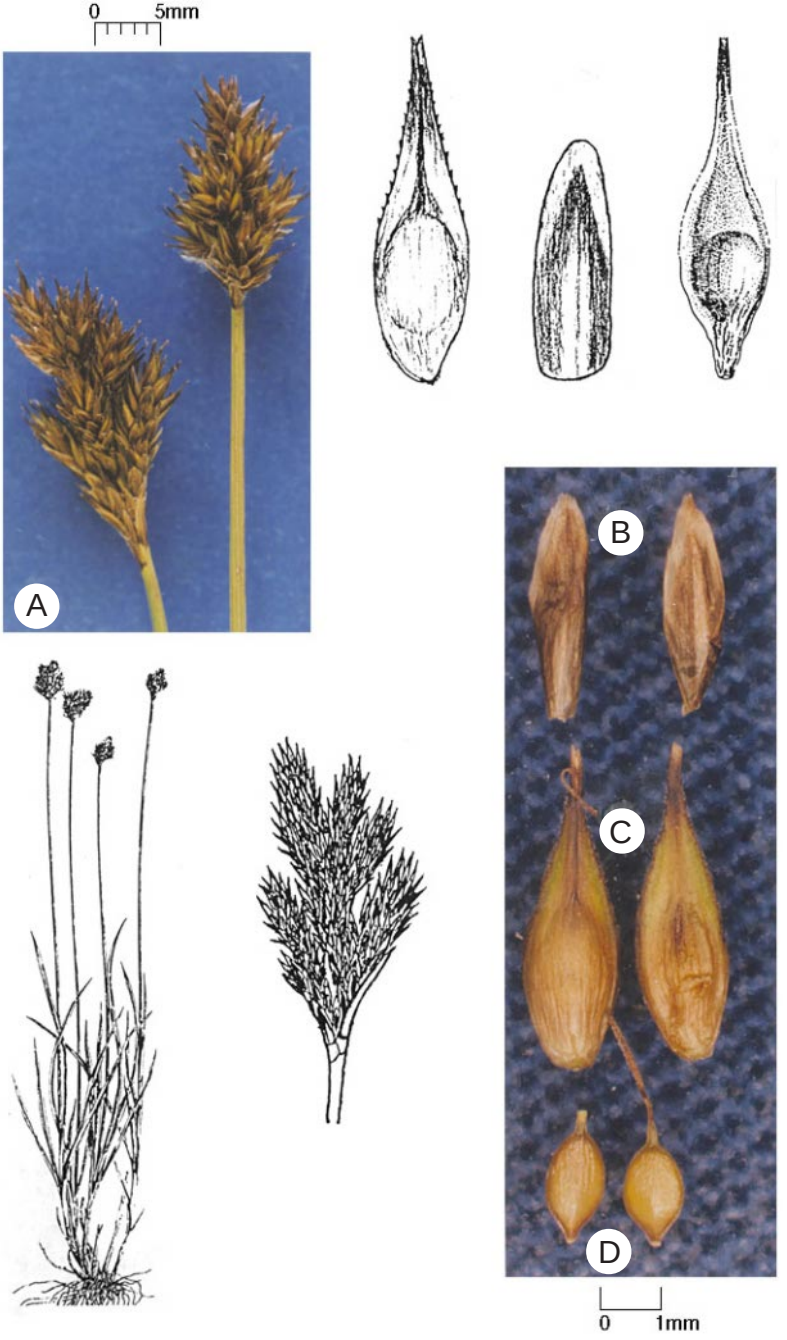
PISTILLATE SCALES: Lanceolate to ovate-lanceolate with an acuminate to cuspidate tip, exceeding and covering the perigynia, stramineous with a green or pale 3-nerved center.

PERIGYNIA: Ovate-lanceolate, rounded or narrowly tapering to the stipitate base, plano-convex, sharp-edged and finely serrulate distally, firm-walled, smooth, stramineous to brownish throughout, 3.5-4.6 mm long, 1.3-1.8 mm wide. **Nerves:** Obscurely many-striated on both faces; marginal nerves well-developed. **Beaks:** Tapered, slender, serrulate, obliquely cleft, bidentulate, 1.75 mm long.

ACHENES: Obovate, lenticular, glossy brown, 1.4-1.9 mm long, 1-1.5 mm wide, closely enveloped by the perigynia. **Stigmas:** 2, 4-6 mm long. Style and stigmas very long and conspicuous at flowering, sometimes persistent at maturity.

HABITAT AND DISTRIBUTION: Common and widely distributed on dry to fairly wet, often alkaline places on open plains and foothills from **low to moderate elevations.** British Columbia to Manitoba and south from California to New Mexico. Found in appropriate habitats throughout the Intermountain area. **May-August.**

SIMILAR SPEICES: *C. praegracilis* is sometimes fully dioecious, but is distinguished by its loosely aggregated, elongate head compared to the ovoid-fusiform head of *C. douglasii*.



Carex ebenea. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex ebenea Rydb.
Ebony sedge

HABIT: Tufted without creeping rhizomes. **Culms:** Conspicuously striate, obtusely triangular, thick at the base, 1-5.5 dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: 3-5, clustered toward the base. **Blades:** Flat, firm, 2-4 mm wide. **Sheaths:** Ventrally with a narrow strip of thin and hyaline material, truncate to shallowly concave at the mouth.

BRACTS: Sheathless, scarious-margined at the base, setaceous or short-awned, shorter than the inflorescence.

SPIKES: 5-10, **gynaecandrous**, sessile, narrowly oblong, 7-15 mm long, closely aggregated into a dense, globose-ovoid, greenish black to brownish gold head 1.5-3 cm long, 12-28 mm wide, tapering at the base; perigynia appressed-ascending.

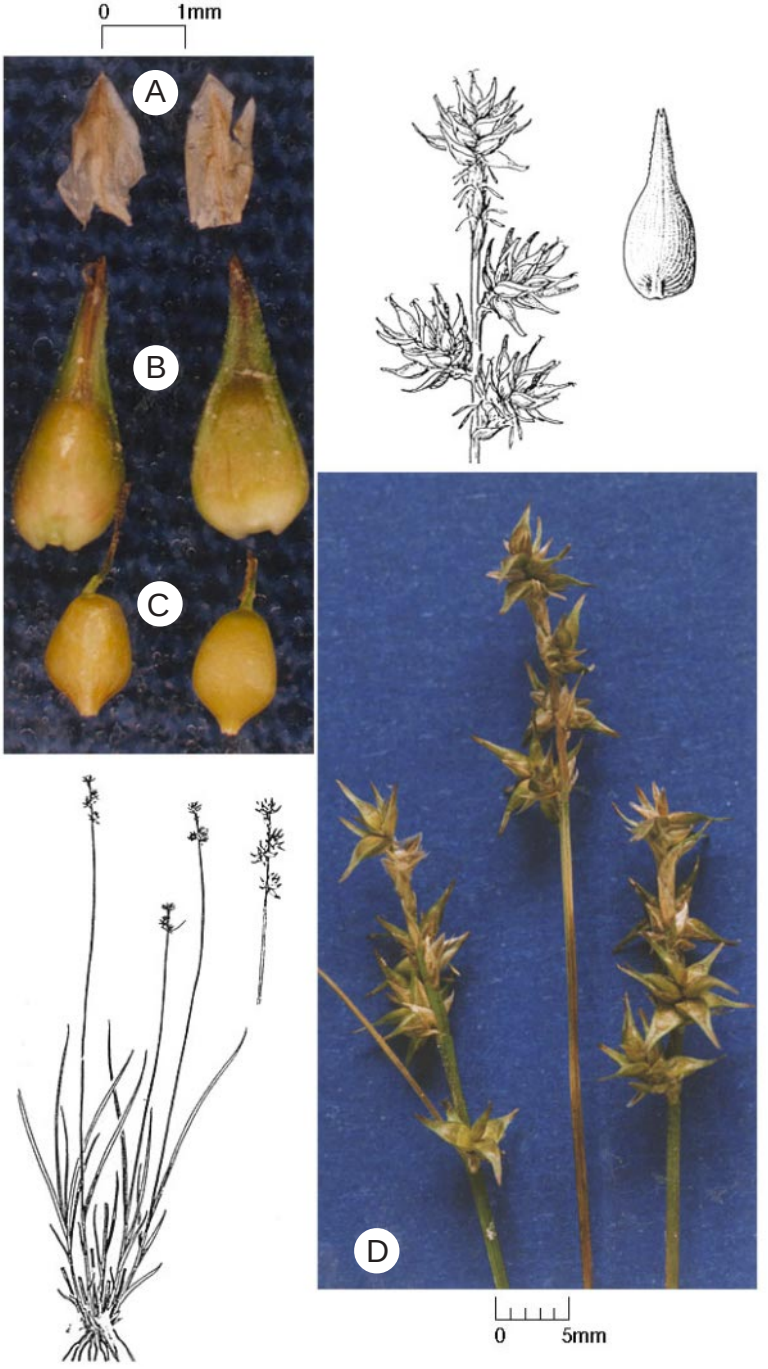
PISTILLATE SCALES: Ovate-lanceolate with an acute to obtuse tip, brownish black or black with the margins very narrow and hyaline, shorter and narrower than the perigynia, exposing their beaks and margins.

PERIGYNIA: Narrowly lanceolate to oblanceolate, flat or plano-convex, narrowly **wing**-margined or thin-edged to the round-tapering spongy base, margins serrulate above the middle, coppery brown with green margins to golden brown throughout or brownish black, 3.5-7.1 mm long, 1.1-1.7 mm wide. **Nerves:** Fine, usually several on both surfaces. **Beaks:** Slender, serrulate, 0.9-1.5 mm long; the distal part darker, terete, hyaline-tipped, obliquely cleft and only shallowly, if at all bidentate; dorsal suture present with overlapping hyaline margins.

ACHENES: Oval-oblong, lenticular, 1.3-2 mm long, 1.25 mm wide, jointed to the stipe that traverses the spongy base. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Fairly common to locally abundant in wet to moderately dry places at **high elevations** in the mountains. In the Rocky Mountain region from central Idaho and Montana to Utah (Uinta, LaSal, and Abajo Mountains), western Wyoming, northern Arizona, and New Mexico. **June-August.**

SIMILAR SPECIES: See appendix, table 1. *C. ebenea*—Culms obtusely triangular; leaves flat, clustered toward the base; perigynium coppery brown, widest below the middle; beak terete, shallowly bidentate. *C. leporinella*—Culms sharply triangular; leaves involute, not clustered; perigynium brown or pale, widest about the middle; beak flat, deeply bidentate.



Carex echinata. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex echinata Murray
Spiny star sedge

SYNONYM: *C. muricata* L.

HABIT: Densely tufted. **Culms:** 1-6 dm tall, equaling to exceeding the leaves, somewhat **aphyllopodic.**

LEAVES: All borne on the lower part of culm. **Blades:** Elongate, slender, light green, 1-3.3 mm wide. **Sheaths:** Thin, hyaline ventrally, slightly thickened, and shallowly concave at the mouth.

BRACTS: Lowest small and inconspicuous to setaceous-prolonged, sheathless; upper reduced and scale-like.

SPIKES: 3-6, green, turning to brown, clustered to remote, forming an elongated to oblong head. **Terminal: Gynaecandrous**. **Lateral: Gynaecandrous** or wholly **pistillate**; perigynia 5-15, crowded, widely spreading to deflexed at maturity.

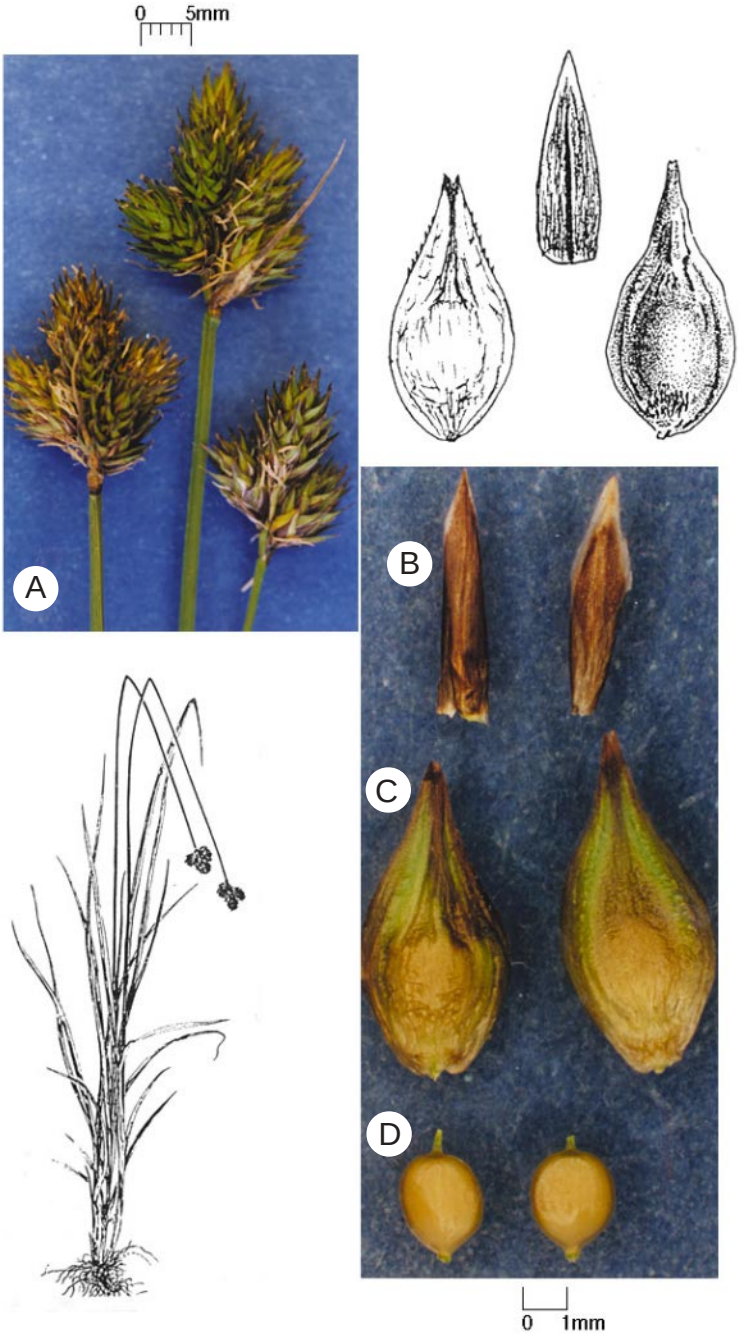
PISTILLATE SCALES: Broadly ovate, acute or cuspidate at the tip, shorter and narrower than the perigynia, hyaline or scarious, brownish tinged, greenish along the firm midvein.

PERIGYNIA: Lance-triangular to lance-ovate, plano-convex, thin-walled or subcoriaceous with abundant spongy tissue at the base, sharp edged, serrulate distally, green or tan, 1.6-3.5(4.0) mm long, 0.8-2 mm wide. **Nerves:** Few to many dorsally, few or absent ventrally, prominent on the margins. **Beaks:** Slender, abruptly tapered, greener than the body, bidentate, 1.1-1.6 mm long.

ACHENE: Ovate, lenticular, substipitate, golden yellow at maturity, 1.1-1.6 mm long, 0.8-1.3 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Swamps, sphagnum bogs, and other wet places from **sea level to moderate elevations**. Circumboreal. In North America extending south to central Oregon and California and east to Utah, Colorado, Wisconsin, and North Carolina. **May-August.**

SIMILAR SPECIES: *C. echinata*—Perigynium beak slender; longer (1.1-1.6 mm long), equaling the body, thin-walled, bidentate; style slender. *C. interior*—Perigynium beak broader and shorter (0.5-1 mm long), thick-walled, very shallowly bidentate; style stout.



Carex egglestonii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex egglestonii Mack.
Eggleston sedge

HABIT: Densely tufted from short, woody rhizomes. **Culms:** Stiffly erect, 1.5-6 dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: 4-6, crowded on the lower one-third of the culm. **Blades:** Flat, thick, 2-6 mm wide. **Sheaths:** Strongly white-hyaline ventrally, truncate to concave at the mouth.

BRACTS: Lowest sheathless, setaceous, prolonged, but shorter than the inflorescence, sometimes short and inconspicuous; upper inconspicuous.

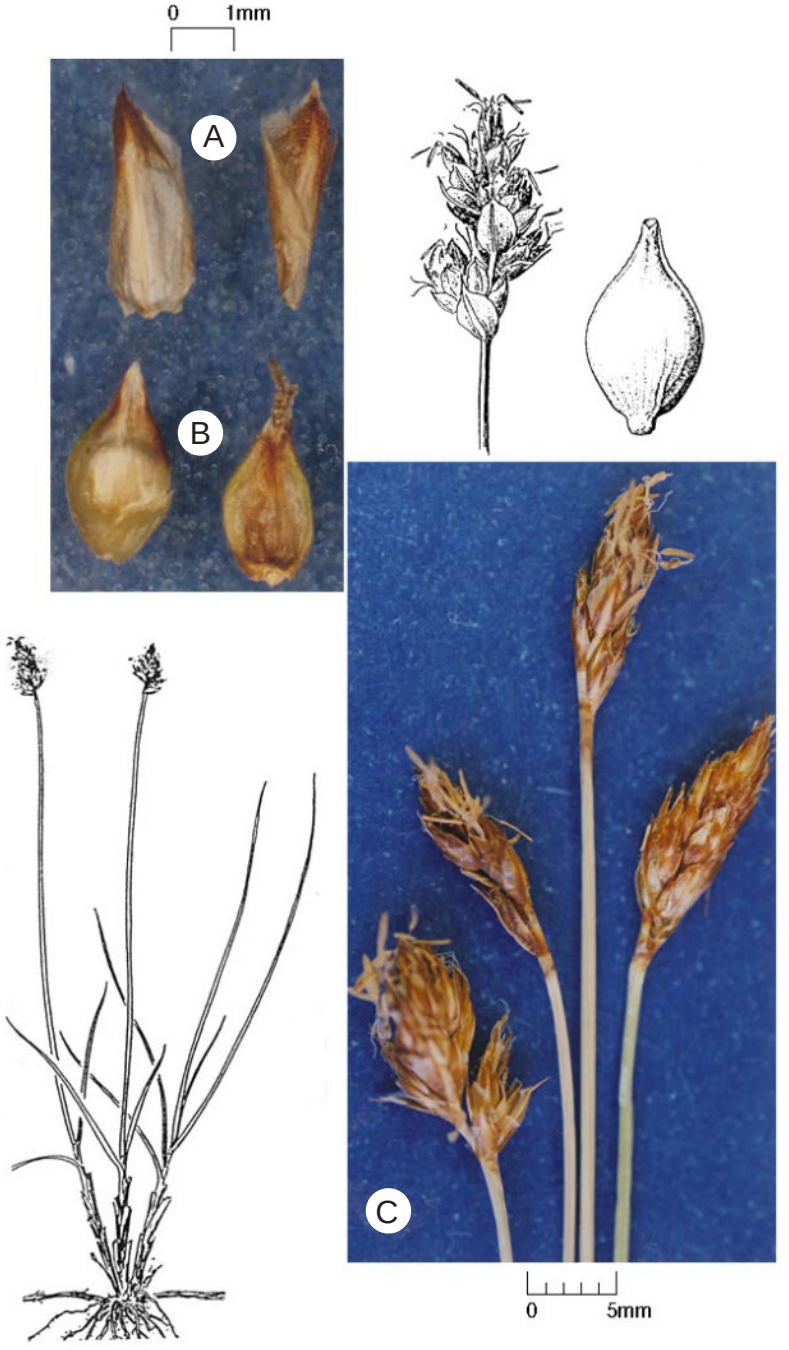
SPIKES: 3-6, **gynaecandrous**, sessile, broadly oblong, 9-15 mm long, distinguishable, but densely aggregated into an ovoid blackish green to golden brown head 18-25 mm long; perigynia appressed-ascending, tips and margins exposed.

PISTILLATE SCALES: Ovate-lanceolate with an acute to short-acuminate tip, shorter and narrower than the perigynia, chestnut brown with a lighter midvein, white-hyaline along the narrow and somewhat stiff margins.

PERIGYNIA: Ovate, flattened concavo-convex, thin, broadly **winged** to the rounded base with the margins somewhat finely wrinkled and serrulate to below the middle, tapering at the apex, membranaceous, olive green to brownish, coppery-tinged toward the margins, 5.5-7.2 mm long, 2.6-3.8 mm wide. **Nerves:** Obscure and numerous on both sides, present on the dorsal side only or lacking except for a pair of prominent, inframarginal nerves delimiting the wing-margin. **Beaks:** Flat with winged, serrulate margins, obliquely cleft, bidentate, 1.5 mm long.

ACHENES: Obovoid-oblong, lenticular, rounded to truncate distally, golden brown at maturity, substipitate, 1.9-2.3 mm long, 1-2 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Dry meadows and open slopes at **high elevations** in the mountains. In the southern Rocky Mountains and Colorado Plateau from Utah to southern Wyoming and Colorado. **June-August.**



Carex eleocharis. (A) Pistillate scales, (B) perigynia, (C) inflorescences. A and B: Left—dorsal view; right—ventral view.

Carex eleocharis Bailey
Narrowleaf sedge, needleleaf sedge

SYNONYM: *Carex stenophylla* Wahl.

HABIT: Culms arising singly or few together from slender, well-developed brown rhizomes. **Culms:** Slender, smooth, obtusely angled, erect, 0.5-2 dm tall, slightly **phyllopodic,** old leaf bases present.

LEAVES: 1-4, closely clustered at or near the base of the culm. **Blades:** Slender, canaliculate and firm or flat and sometimes involute, 0.3-1.5 mm wide, tapering to a long tip. **Sheaths:** Hyaline ventrally, overlapping, shallowly concave at the mouth.

BRACTS: Short and inconspicuous, ovate, cuspidate, resembling the pistillate scales.

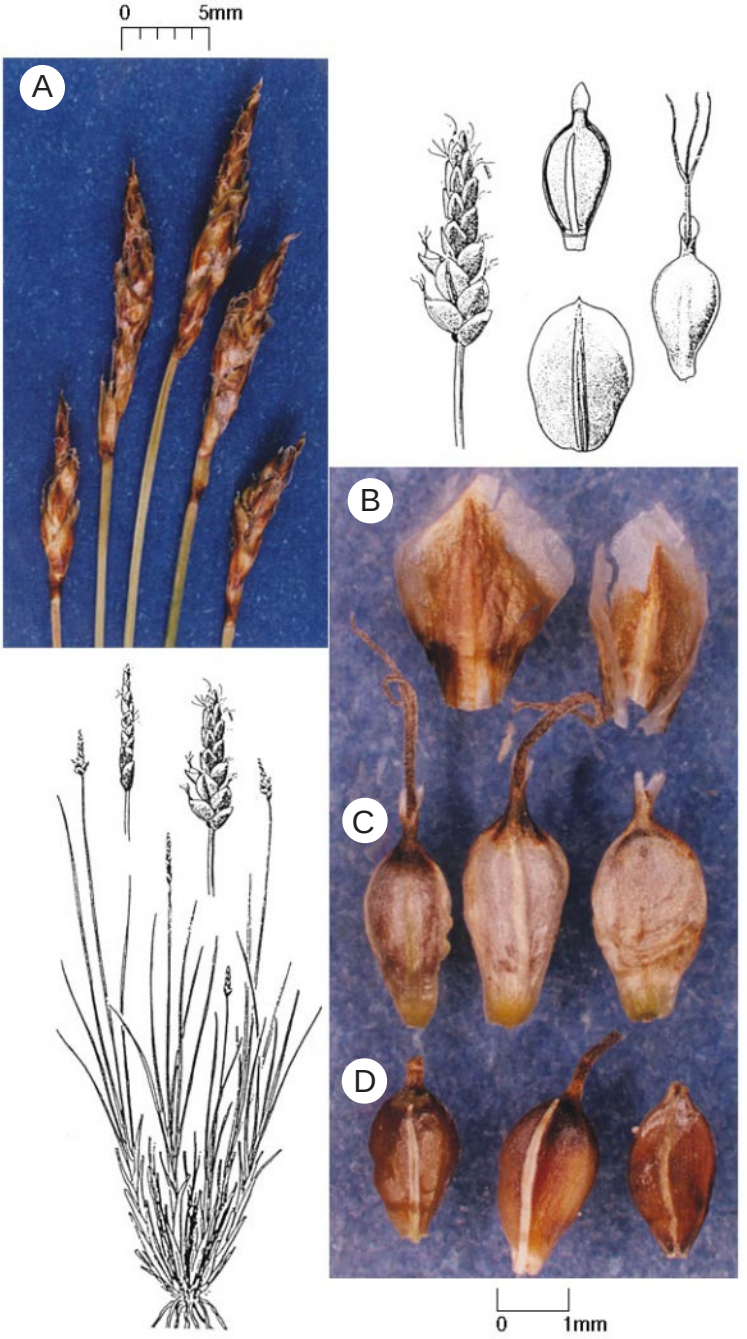
SPIKES: Several indistinguishable, **androgynous** or rarely **unisexual**, small, sessile, aggregated into an ovoid or oblong-cylindric, brown to reddish brown head 8-17 mm long; perigynia few, appressed-ascending.

PISTILLATE SCALES: Broadly ovate with a firm and often shortly exserted midrib, equaling or surpassing the perigynia and concealing them, stramineous to brownish.

PERIGYNIA: Broadly elliptic-ovate, plano-convex, coriaceous, shining, often broadly short-stipitate, greenish brown to brownish black at maturity, 2.5-3.5 mm long, 1.5-2 mm wide. **Nerves:** Dorsally absent or about 10, obscurely striated; ventrally absent or several; marginal nerves prominent. **Beaks:** Abruptly contracted into a smooth or serrulate obliquely cleft beak, sometimes bidentate and hyaline tipped, 0.5-1.0 mm long.

ACHENES: Orbicular-ovate, lenticular, apiculate, jointed at the short style, 1.5-2.1 mm long, 1.25-1.7 mm wide, closely filling the perigynium. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common and locally abundant on open, dry to moderately wet, often grassy places, from the **plains to fairly high elevations** in the mountains. Oregon and Idaho south to California (where rare) and east to Arizona, Nevada, Utah, and through the Rocky Mountains to Iowa and Nebraska. **May-August.**



Carex elynoides. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes (left and center each with rachilla). B through D: Left (and C and D, center)—dorsal view; right—ventral view.

Carex elynoides Holm
Blackroot sedge, kobresia-like sedge

HABIT: Dwarfed, densely tufted without creeping rhizomes. **Culms:** Very slender, wiry, 1.5 dm tall, about equaling the leaves, old leaf bases persistent.

LEAVES: Mostly basal. **Blades:** Acicular, stiff and wiry, involute, glabrous or with scaberulous margins, bright green, 0.5 mm wide. **Sheaths:** Thin, hyaline ventrally, shallowly concave at the mouth.

BRACTS: None.

SPIKES: Solitary, **androgynous**, erect, linear, tan to reddish brown, 10-15 mm long; perigynia 4-12, erect-ascending.

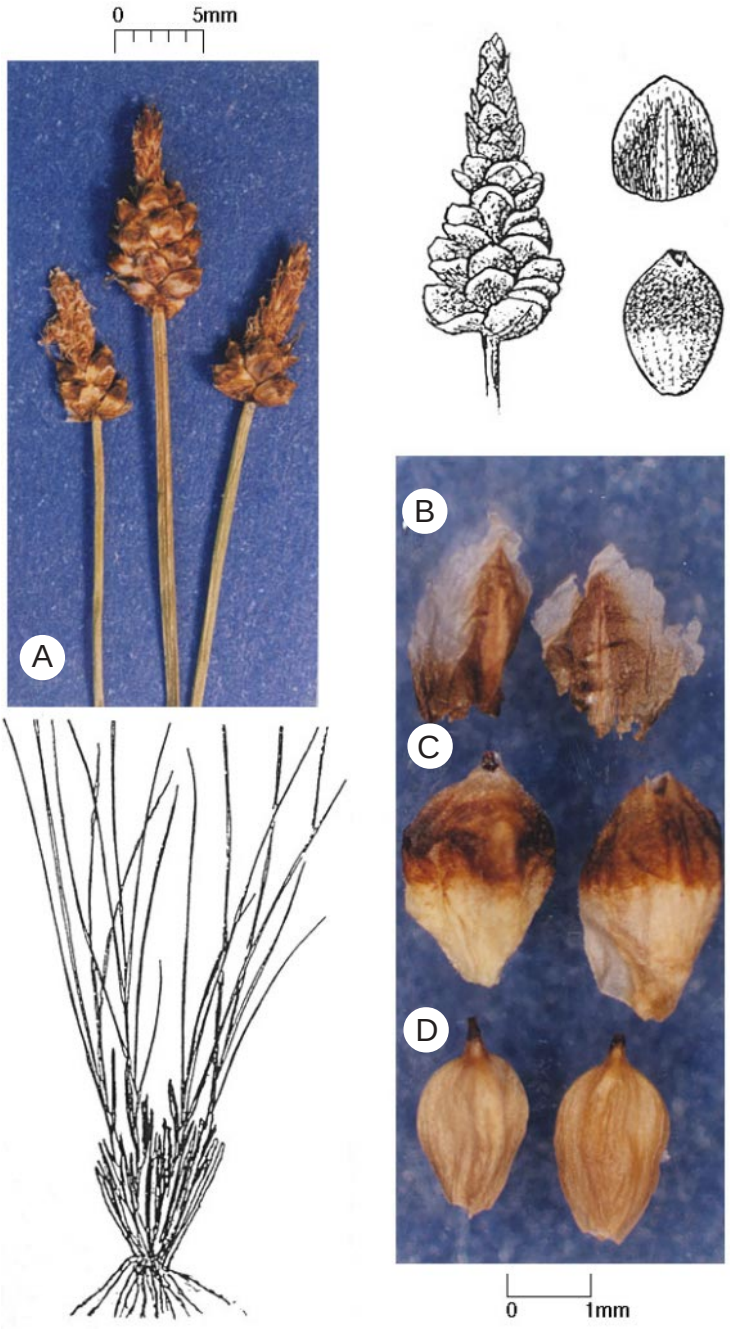
PISTILLATE SCALES: Very broad, tending to wrap around the spike rachis, acute to broadly rounded above or the lowest ones mucronate-awned, wider and equaling to longer than the perigynia and completely concealing them, light to dark brown with a paler midvein and broad white-hyaline tip and margins.

PERIGYNIA: Obpyramidal or ellipsoid, 3-angled, membranous, dark greenish-tinged or brown above, paler below, 2.5-4.5 mm long, 1.8-2.2 mm wide. **Nerves:** Obscurely 2-ribbed. **Beaks:** Slender, cylindrical, abruptly narrowed, inconspicuously short-hairy or glabrous, truncately cut, hyaline at the tip, 0.4-1 mm long.

ACHENES: Oblong-obovoid, sharply trigonous, brown to black at maturity, 1.5-2 mm long, 1.2-2 mm wide; rachilla well-developed. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Open dry slopes at **high elevations** in the mountains. Nevada (White Pine and Elko Counties) eastward across Idaho, Utah, southwestern Montana, Wyoming, and Colorado. **July-August.**

SIMILAR SPECIES: See appendix, table 7.



Carex exserta. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex exserta Mack.
Shorthair sedge

SYNONYM: *C. filifollia* Nutt. var. *erostrata* Kükenth.

HABIT: Densely cespitose from very short rhizomes. **Culms**: Erect, slender, wiry, terete, smooth, 0.5-2.5 dm tall, exceeding the leaves, old leaf bases persistent.

LEAVES: Clustered toward the base. **Blades**: Filiform, channeled, 0.25-0.7 mm wide. **Sheaths**: Thin and hyaline ventrally, truncate at the mouth.

BRACTS: None.

SPIKES: Solitary, **androgynous**, narrowly oblong-lanceolate, conic above (staminate portion), broader below with a truncate base, tan to brown or reddish brown, 0.7-2 cm long; perigynia spreading-ascending.

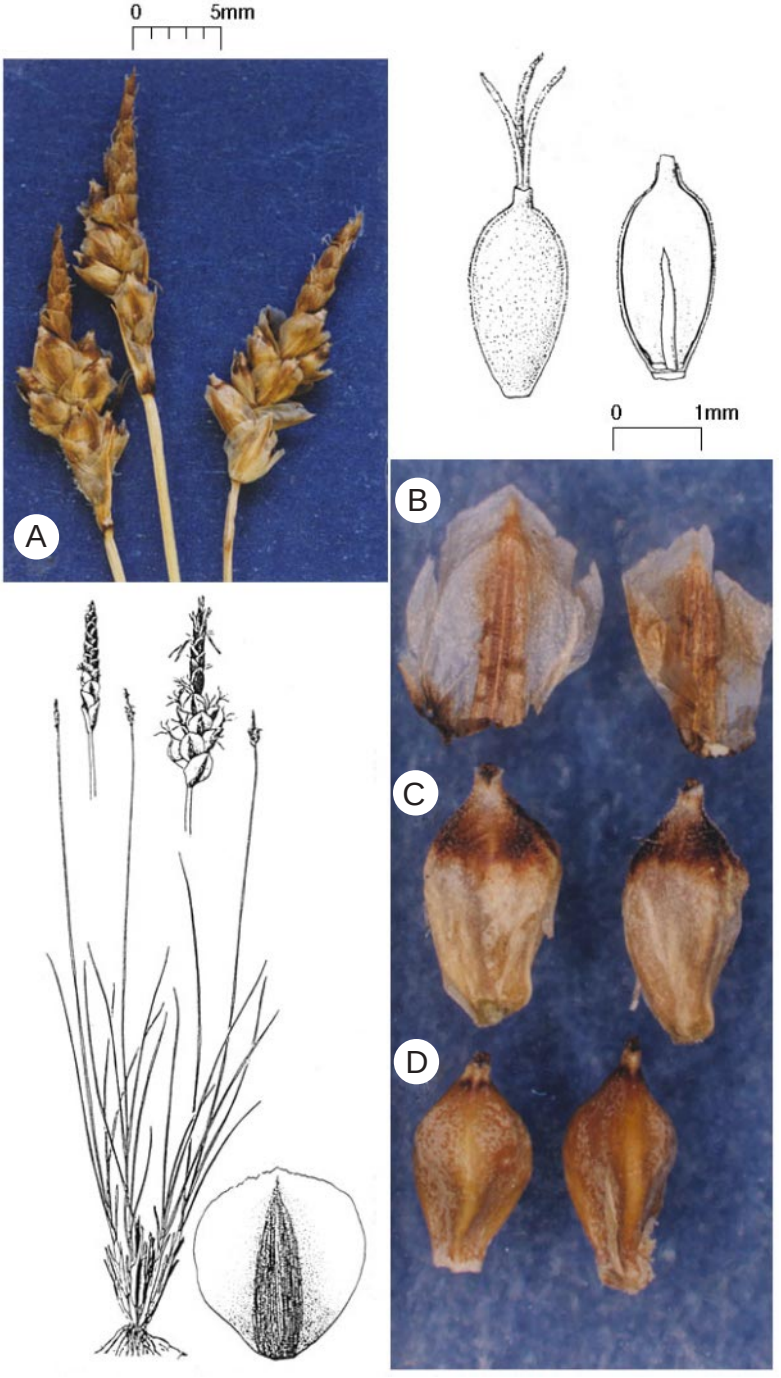
PISTILLATE SCALES: Ovate to obovate and orbicular with an obtuse tip, shorter than the perigynia, brownish with a paler 1-nerved midvein and white-hyaline margins.

PERIGYNIA: Obovoid or roundish, membranaceous, 2-3 mm long, 1.5-2.1 mm wide, upper portion reddish brown with short to inconspicuous hairs; lower portion much lighter. **Nerves**: Faintly 2-ribbed. **Beaks**: Hyaline and fragile, entire or very slightly bidentate, 0-0.3 mm long.

ACHENES: Obovoid, trigonous, apiculate, stramineous to brownish, 1.5-2.2 mm long, 1.2-1.8 mm wide; rachilla well-developed. **Stigmas**: 3.

HABITAT AND DISTRIBUTION: Common. In dry to moist soil on open slopes, talus, and flats at moderate to high elevations. California (Inyo, San Bernadino, Sierra Nevada, and White Mountains) and Oregon (Warner Mountains). **June-August**.

SIMILAR SPECIES: See appendix, table 7.



Carex filifolia. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes (achene on right with rachilla). B through D: Left—dorsal view; right—ventral view.

Carex filifolia Nutt.
Sheepswool sedge, thread-leaved sedge

HABIT: Densely tufted without creeping rhizomes, forming a dense sod, sometimes giving the appearance that all clumps are connected. **Culms**: Slender, wiry, terete, 0.5-3 dm tall, equaling or exceeding the leaves, **phyllopodic**, old leaf bases persistent.

LEAVES: 2-3. **Blades**: Acicular, involute, slender, stiff, wiry, 0.2-0.4 mm wide. **Sheaths**: Thin and hyaline ventrally, truncate at the mouth; basal sheaths persistent, striate, filamentose.

BRACTS: None.

SPIKES: Solitary, **androgynous**, erect, narrowly conic with a tapered base, tan to brown, 1-3 cm long, 3-6 mm wide; **staminate** portion terminal, slenderly conic; lower portion with 5-15 erect-ascending perigynia.

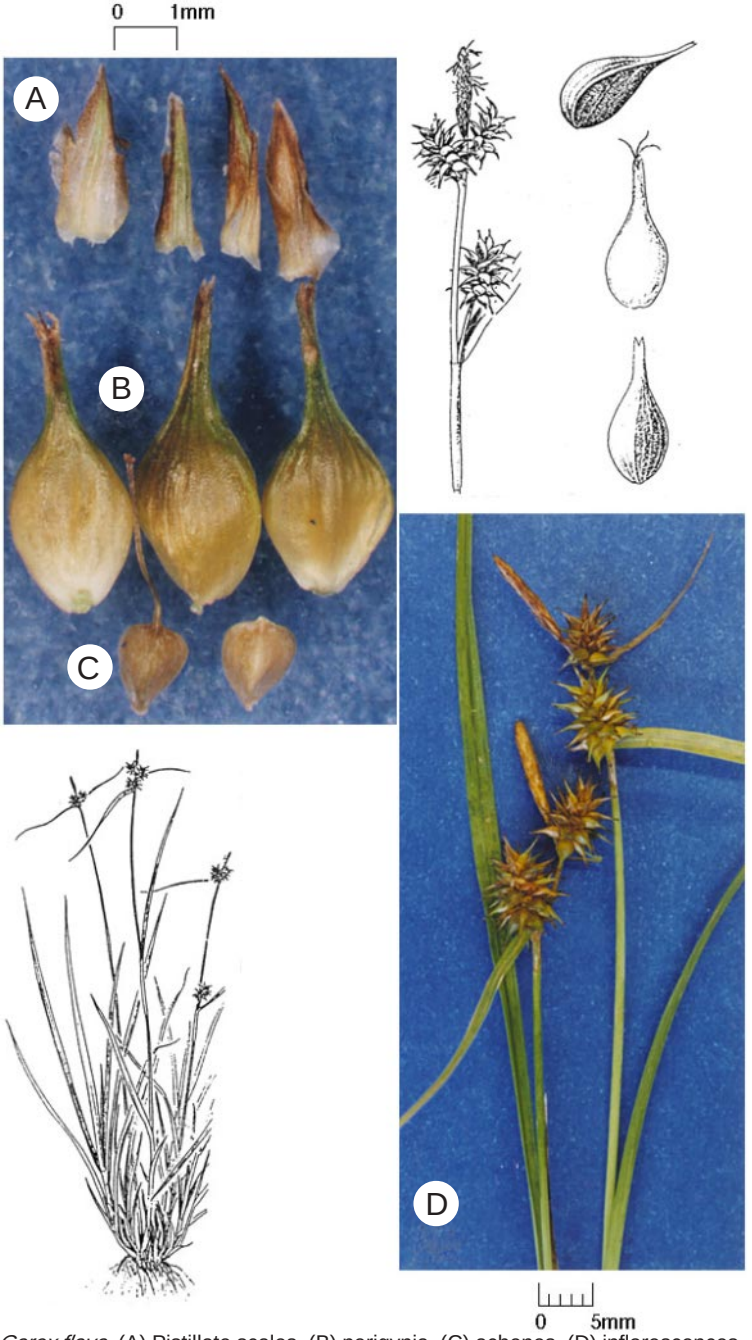
PISTILLATE SCALES: Broadly obovate, broadly rounded or erose distally (the lowest ones more pointed), equaling or larger than and entirely concealing the perigynia, brown with wide white-hyaline margins, occasionally with a pale midvein or sometimes obscurely 3-veined.

PERIGYNIA: Obovoid or spherical-obovoid to obpyramidal, dull-whitish or straw-colored, often darker just below the beak, 3-4.5 mm long, 2-2.3 mm wide, copiously, but very minutely hirtellous-puberulent, at least above the middle. **Nerves**: Obscurely 2-ribbed, otherwise nerveless or nearly so. **Beaks**: Stout, abruptly contracted, hyaline-tipped, truncately cut, 0.1-0.8 mm long.

ACHENES: Obovoid, apiculate, trigonous, tapering at the base, 2.2-3 mm long; rachilla well-developed. **Stigmas**: 3.

HABITAT AND DISTRIBUTION: Dry, open slopes or plains, often with sagebrush or in grassy prairies, from **plains and valleys to moderate elevations** in the mountains. Yukon to Oregon (Harney and Malheur Counties) and California and east through central Idaho, Nevada (Elko County), Utah (Daggett and Emery Counties), New Mexico, Nebraska, and Texas. **June-August**.

SIMILAR SPECIES: See appendix, table 7.



Carex flava. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left (and A and B, center)—dorsal view; right—ventral view.

Carex flava L.
Yellow sedge

HABIT: Densely cespitose from very short rhizomes. **Culms**: Stiff, somewhat fibrillose at the base, 1-8 dm tall, exceeding the leaves, **phyllopodic**.

LEAVES: 4-8, clustered toward the base. **Blades**: Flat or channeled, 2-5.5 mm wide. **Sheaths:** Dull white ventrally, truncate at the mouth.

BRACTS: Lowest leaflike, erect, divergent, exceeding the inflorescence; sheaths of lower bracts variable, 2-20 mm long; upper bracts often sheathless and reduced.

SPIKES: 3-6, greenish brown to yellowish brown, sessile or short-pedunculate. **Terminal**: **Staminate** linear, 0.5-2.4 cm long, 2-3 mm wide, pedunculate. **Lateral**: **Pistillate**, short-oblong to suborbicular, 5-18 mm long, 7-12 mm wide; the lower pedunculate, contiguous or more or less separate, the uppermost nearly sessile; perigynia crowded in several to many rows, widely spreading to deflexed.

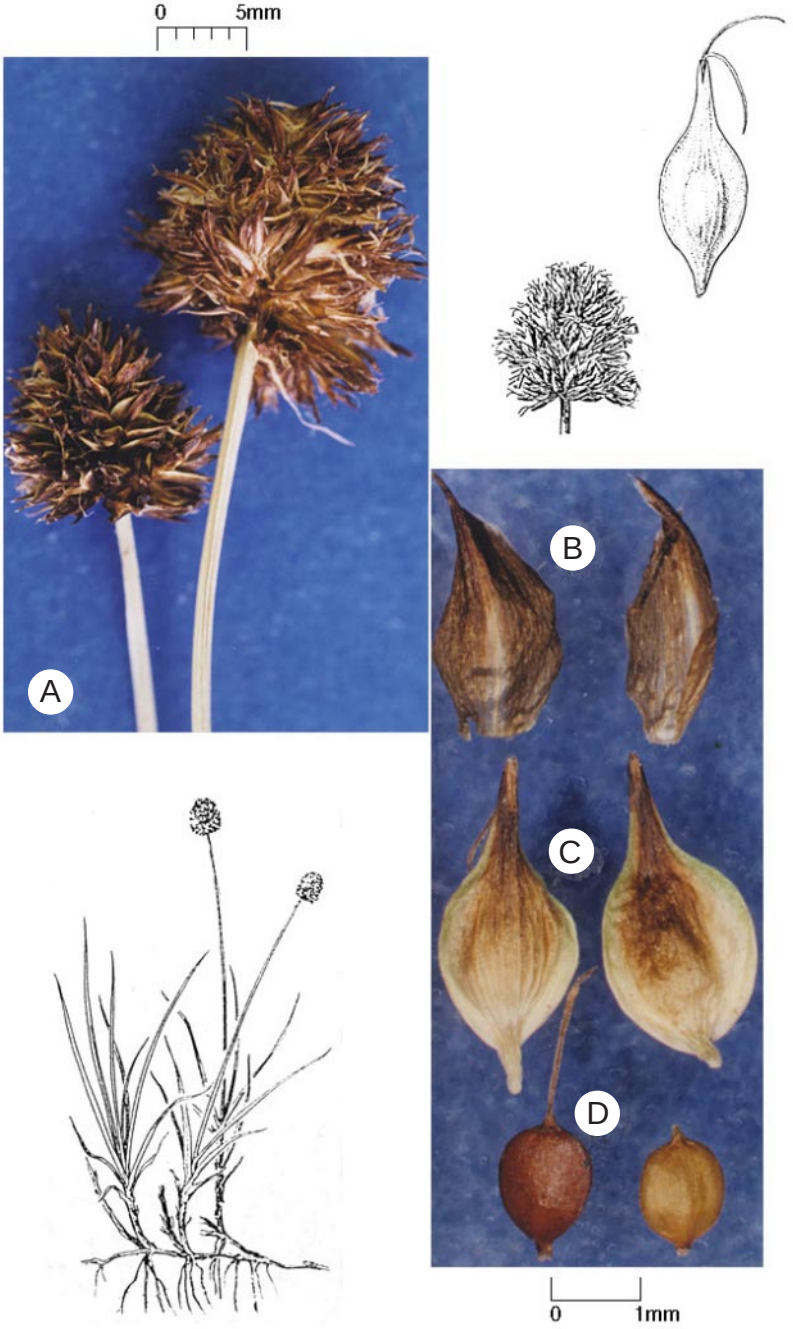
PISTILLATE SCALES: Ovate to ovate-lanceolate with an acute to cuspidate tip, narrower and shorter than the perigynia, reddish with a pale, 3-nerved center and slender, hyaline margins.

PERIGYNIA: Obovoid, falcate little inflated, puncticulate, yellowish green, becoming more yellow with age, 3.5-6.2 mm long, 1.25-2 mm wide. **Nerves:** Several to many, conspicuous. **Beaks**: Conic, slender, reddish-tinged, serrulate, abruptly contracted, deflexed, 1.4-2.3 mm long; teeth bidentate.

ACHENES: Obpyramidal, trigonous, abruptly tapered to the base, truncated at the apex, yellow brown at maturity, 1.2-1.6 mm long, 1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Wet, usually sandy meadows, sometimes on calcareous soils **at low to mid elevations**. Circumboreal. In North America from British Columbia to Newfoundland, south to central Idaho and Montana (Yellowstone National Park), and east through Indiana to New Jersey and Pennsylvania. Rather rare in Idaho. **June-August**.

SIMILAR SPECIES: *C. flava*—Plants generally taller (1-8 dm tall); perigynia larger, (3.5-6.2 mm long, 1.25-2 mm wide) with longer beak, (1.4-2.3 mm long), widely spreading to deflexed. *C. oederi*—Plants shorter (0.6-4 dm tall); perigynia smaller, (2.3-5 mm long, 0.9-1.5 mm wide) with shorter beaks (0.8-1.1 mm long), crowded, spreading.



Carex foetida var. *vernacula*. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex foetida All. var. *vernacula* (Bailey) Kükenth.
Foetid sedge

SYNONYMS: *C. foetida* All., *C. vernacula* Bailey.

HABIT: Cespitose or loosely aggregated from short rhizomes or the culms borne singly on somewhat elongate rhizomes. **Culms:** Triangular, 0.5-3 dm tall, exceeding the leaves, **phyllopodic**.

LEAVES: Borne on the lower one-third of the culm. **Blades:** Flat, thick, firm, 2-4 mm wide, gradually tapering to a slender tip. **Sheath:** Thin and hyaline ventrally, concave at the mouth.

BRACTS: Lowest short and inconspicuous; otherwise none.

SPIKES: Numerous, **androgynous**, sessile, indistinguishable, closely aggregated into a compact, brown, globose or ovoid head 8-16 mm long; perigynia spreading-ascending, anthers numerous and conspicuous.

PISTILLATE SCALES: Broadly ovate, acute to acuminate at the tip, equaling or slightly shorter than the perigynia and concealing them, shining dark brown, hyaline-scarious throughout except for the slender, often paler midrib.

PERIGYNIA: Lanceolate or narrowly elliptic to obovate, broadly tapered to the slender stipitate base, flattened, brownish with thin, pale green margins, 3-3.8 mm long, 1-1.8 mm wide. **Nerves:** Lacking or 5-10 toward the base on both surfaces, well-developed on the margins. **Beaks:** Prominent, 0.8-1.7 mm long, abruptly tapered to a slender, obliquely cleft tip.

ACHENES: Ovate, lenticular, short-stipitate, light to dark brown, 1.1-1.5 mm long, 0.7-1.1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: In moist or wet places at **high elevations** especially at the edges of melting snowfields and in meltwater streams. Irregularly distributed from southern Washington to the Sierra Nevada and adjacent White Mountains of California, Utah, and Nevada, the Wallowa Mountains and Steens Mountain of Oregon, and the southern Rocky Mountains of Wyoming and Colorado. **June-August.**

Carex fracta. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left and center—dorsal views; right—ventral view.

Carex fracta Mack.
Fragile-sheathed sedge

HABIT: Loosely to densely cespitose from very short rhizomes. **Culms:** Coarse, erect, 4-10 dm tall, greatly exceeding the leaves, **aphyllopodic**.

LEAVES: All borne on the lower one-half of the culm, but not clustered. **Blades:** Flat, elongate, 3-7 mm wide. **Sheaths:** White-hyaline ventrally or green-ribbed to within 10 mm of the mouth; a prominent tongue-like extension 2-4 mm long above the mouth surpasses the base of the blade.

BRACTS: Lowest usually setaceous-prolonged, shorter than or sometimes equaling or slightly exceeding the inflorescence; upper reduced and inconspicuous.

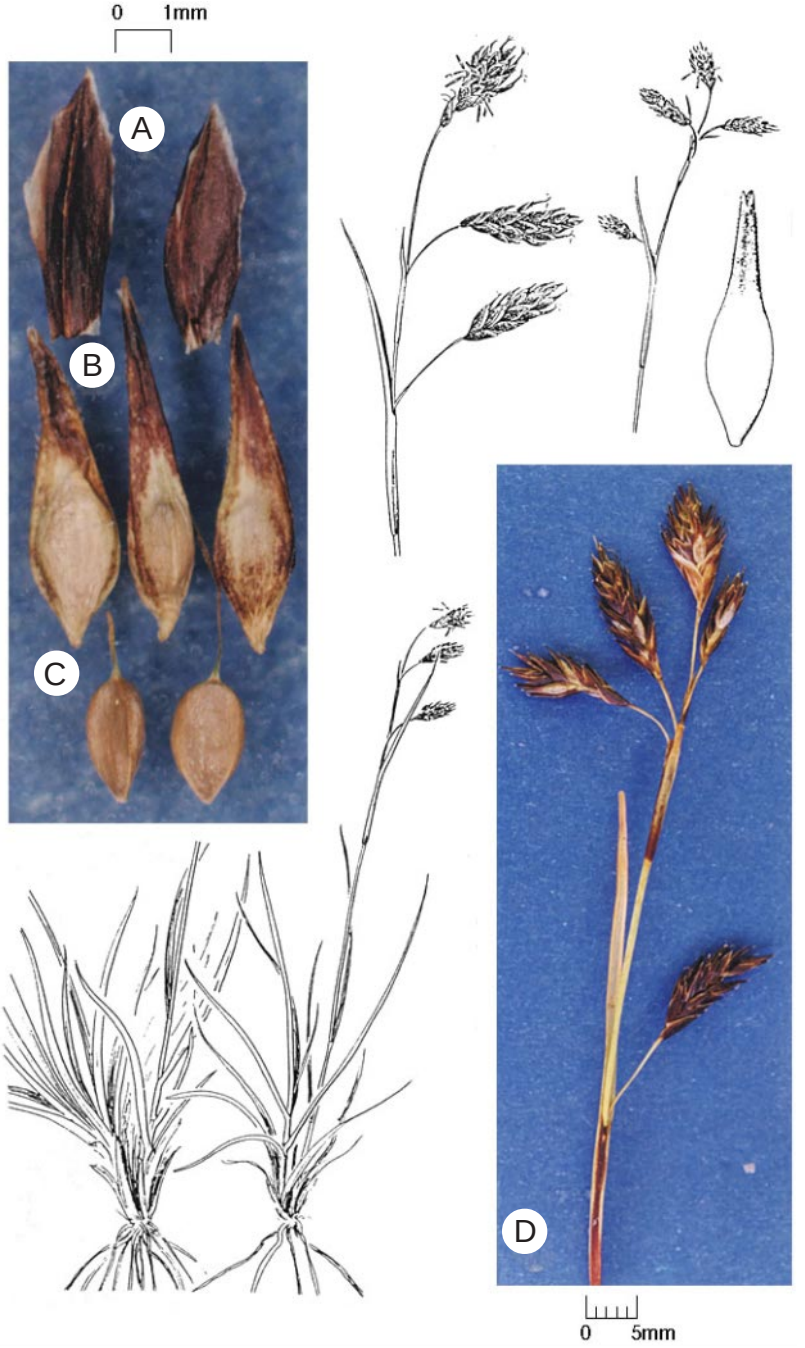
SPIKES: 7-35, **gynaecandrous**, sessile, 1 cm long, crowded into a green to pale gold, oblong-ovoid to spiciform-cylindric inflorescence 3-8 cm long; head often compound; perigynia appressed-ascending.

PISTILLATE SCALES: Ovate-lanceolate, acuminate or shortly awn-tipped, equaling or shorter and narrower than the perigynia, green along the midstripe with wide, white-hyaline-scarious margins.

PERIGYNIA: Ovate to lance-ovate, plano-convex or flattened, slightly to prominently **wing**-margined, serrulate on the upper half, 2.5-4.5(5.2) mm long, 1.0-1.8 mm wide, green, especially on the upper margins, or greenish-stramineous. **Nerves:** Several on both surfaces. **Beak:** Prominent, slender, narrowly tapered, obliquely cleft, serrulate, but smooth in the distal 0.5 mm.

ACHENES: Apiculate, lenticular, substipitate, stramineous to brown, 1.2-2 mm long, 0.8-1.2 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common in wet or dry meadows and moist slopes in open forests. **Foothills to near timberline** in the mountains. Washington to California in the coast ranges and Cascade-Sierra axis to the mountains of southern California. **July-August**.



Carex fuliginosa var. *misandra.* (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left (and B, center)—dorsal view; right—ventral view.

Carex fuliginosa var. *misandra* O.F. Lang
Few-flowered sedge, shortleaved sedge

SYNONYMS: *C. misandra* R. Br.

HABIT: Densely tufted without creeping rhizomes. **Culms:** Slender, erect, nodding, 0.5-3 dm tall, much longer than the leaves, strongly **phyllopodic**.

LEAVES: Numerous, clustered near the base. **Blades:** Flat, thick, firm, 1-4 mm wide. **Sheaths:** Thin, reddish brown ventrally, concave at the mouth.

BRACTS: The lowest leaflike, long-sheathing, shorter than the inflorescence; the upper reduced.

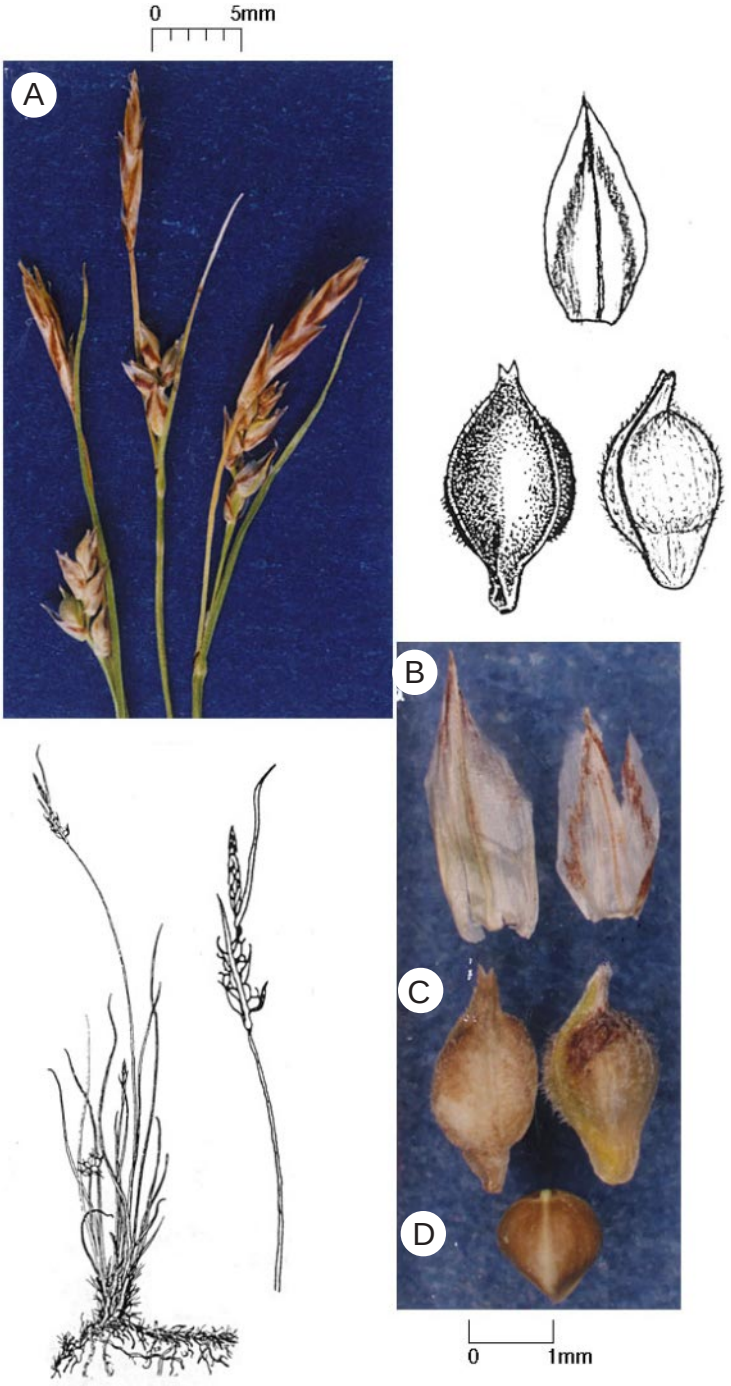
SPIKES: 3-4, nodding, linear-oblong, reddish brown, pedunculate, 1-1.5(2) cm long. **Terminal: Gynaecandrous** or sometimes wholly **pistillate** (rarely staminate). **Lateral: Pistillate**, approximate or the lower ones somewhat remote and often nodding; perigynia appressed-ascending.

PISTILLATE SCALES: Ovate, wider, but shorter than the perigynia, thin, brown to black, the margins and apex narrowly white-hyaline.

PERIGYNIA: Mostly narrowly lanceolate, flattened-trigonous, tapering to a substipitate base, long-tapering toward the apex, ciliate-serrulate on the margins above the middle, membranous, dark brown or purplish black above, pale brown or greenish white below, 3.3-5.5 mm long, 0.9-1.3 mm wide. **Nerves:** Few toward the base on both surfaces, otherwise lacking except for the well-developed marginal nerves. **Beaks:** Poorly defined, tapered, slender; tip white-hyaline, obliquely cleft, bidentulate or bidentate.

ACHENES: Obovoid, triquetrous, striate, brown, 1.4-2 mm long, 0.75-1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Infrequent and local in meadows and on open slopes **above timberline**. Circumboreal. In North America from Alaska to Quebec and Labrador south to Alberta. Apparently disjunct in Montana, Wyoming, Utah, and Colorado. **July-August.**



Carex geophila. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achene. B and C: Left—dorsal view; right—ventral view.

Carex geophila Mack.
Ground-loving sedge

HABIT: Densely cespitose, developing from branched rhizomes. **Culms:** Slender, rough on the angles, 2-10 cm tall, shorter than to equaling the leaves, **phyllopodic**, old fibrillose sheaths persistent at the base.

LEAVES: 5-10, clustered toward the base. **Blades:** Firm, roughened, channeled above, 1-2.5 mm wide. **Sheaths:** Slightly ribbed and hyaline ventrally, truncate at the mouth.

BRACTS: Lowest sheathless or short-sheathing, shorter than to slightly surpassing the inflorescence; upper reduced and scalelike or lacking.

SPIKES: 2-5, slender, tan to brown. **Terminal: Staminate**, linear, usually pedunculate, 5-12 mm long. **Lateral:** 2-4, **pistillate**, sessile or short-pedunculate, few-flowered, usually borne near the staminate, but sometimes with 1 or more small pistillate spikes near the base of the culm; perigynia spreading-ascending.

PISTILLATE SCALES: Ovate with an acute to cuspidate tip, equaling or shorter than the perigynia, reddish brown with a greenish or paler center and hyaline margins; lower ones longer.

PERIGYNIA: Subglobose to ellipsoid or obovoid, tapering to a narrow substipitate base and abruptly contracted at the apex, puberulent, pale green to stramineous, occasionally with some reddish-purple streaks, 2.7-4 mm long, 1.75 mm wide. **Nerves:** Two-keeled (nerves marginal), otherwise nerveless or lightly nerved at the base. **Beaks:** Conic, short, serrulate, shallowly bidentate, 0.4-1.2 mm long.

ACHENES: Trigonous with convex sides and prominent angles, rounded and apiculate to retuse at the apex, stipitate, 1.6-2.8 mm long, 1.75 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Dry, open places in the pinyon-juniper zone or on wooded slopes. **Moderate elevations.** Southern Utah and southwestern Colorado to Arizona, New Mexico, and Mexico. **May-July.**

SIMILAR SPECIES: See appendix, table 6.

Carex geyeri. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex geyeri Boott
Elk sedge, Geyer sedge

HABIT: Loosely to rather densely clustered from a system of branching rhizomes, sometimes forming tussocks. **Culms:** Stiffly erect, sharply triangular, very rough above, 1-5 dm tall, shorter to longer than the leaves, strongly **aphyllopodic**.

LEAVES: Generally 2. **Blades:** Flat or channeled, stiff with rough margins, leathery, medium to dark green, 1.5-4 mm wide. **Sheaths:** Tight, hyaline ventrally, truncate at the mouth, the lower enclosing the remainder of the leaves and the fruiting culm, fascicle-like in appearance.

BRACTS: None.

SPIKES: Solitary, tan to brown, **androgynous**; **staminate** portion linear, 1-2.5 cm long; perigynia 1-3, somewhat remote near the base, appressed-ascending.

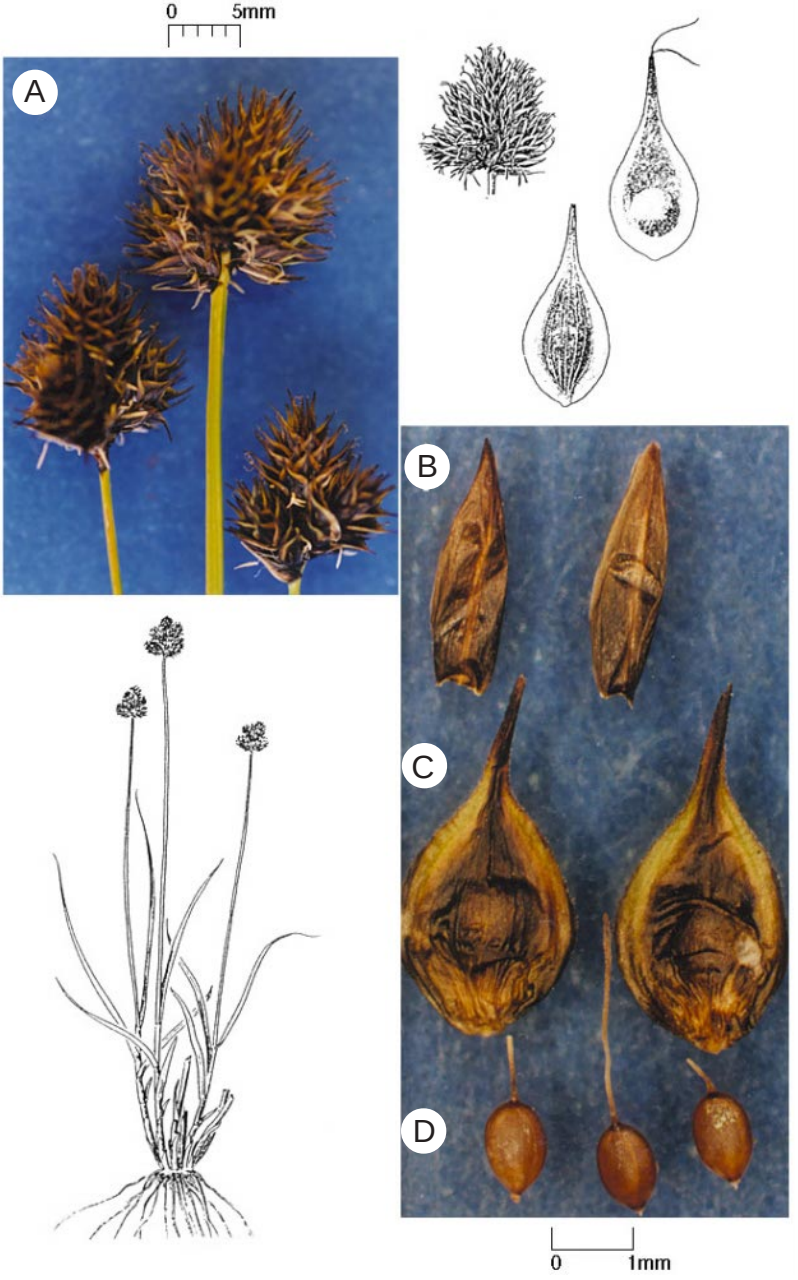
PISTILLATE SCALES: Persistent, narrowly oblong, brownish to greenish, often with a paler midrib, hyaline-margined; the lower short-awned and surpassing the perigynium; the upper shorter and more acuminate or obtuse at the tip.

PERIGYNIA: Oblong-ovoid, tapering at the somewhat spongy base, rounded and abruptly contracted at the apex, triangular, glossy, glabrous, stoutly short-stipitate, greenish to greenish-stramineous or brownish, 5-7 mm long, 1.7-3.5 mm wide. **Nerves:** Two-ribbed, otherwise absent. **Beaks:** Very short or obsolete, bidentate or nearly so.

ACHENES: Obpyramidal, apiculate, sharply trigonous, 4-6.2 mm long, 1.2-3 mm wide, filling the perigynium; rachilla varies from lacking to equaling the achene. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common. Woodlands, open slopes, and dry meadows at **moderate to high elevations** in foothills and mountains. British Columbia and Alberta south to Oregon, northern California (where rare), Idaho, Nevada, Utah, Wyoming, and Colorado. One of the most common sedges in the northwest and northern Great Basin. **April-July.**

SIMILAR SPECIES: *C. geyeri*—Culms loosely to densely clustered from creeping rhizomes; lower pistillate scales short-awned, surpassing the perigynia; perigynia oblong-ovoid to triangular, glossy, nerved on the margins only; common in the Intermountain area. *C. multicaulis*—Culms densely clustered without creeping rhizomes; lower pistillate scales leaf-like, much longer than the inflorescence; perigynia oblong-ovate, triangular, or ellipsoid, not glossy; nerves many, faint; occurs in the Sierra Nevada Mountains and Elko County, Nevada.



Carex haydeniana. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right (and D, center)—ventral view.

Carex haydeniana Olney
Cloud sedge, Hayden sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Slender, erect to decumbent, 1-4 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-5, loosely clustered near the base of the culm. **Blades:** Flat, firm, 1.5-4 mm wide. **Sheaths:** Hyaline ventrally, concave to convex at the mouth.

BRACTS: Scalelike or prolonged, but much shorter than the inflorescence.

SPIKES: 4-7(9), **gynaecandrous**, sessile, 7-10 mm long, indistinguishable and densely aggregated into a triangular-ovoid, blackish-green to golden-brown head that is broadest at the truncate base and 1-2 cm long; perigynia appressed-ascending.

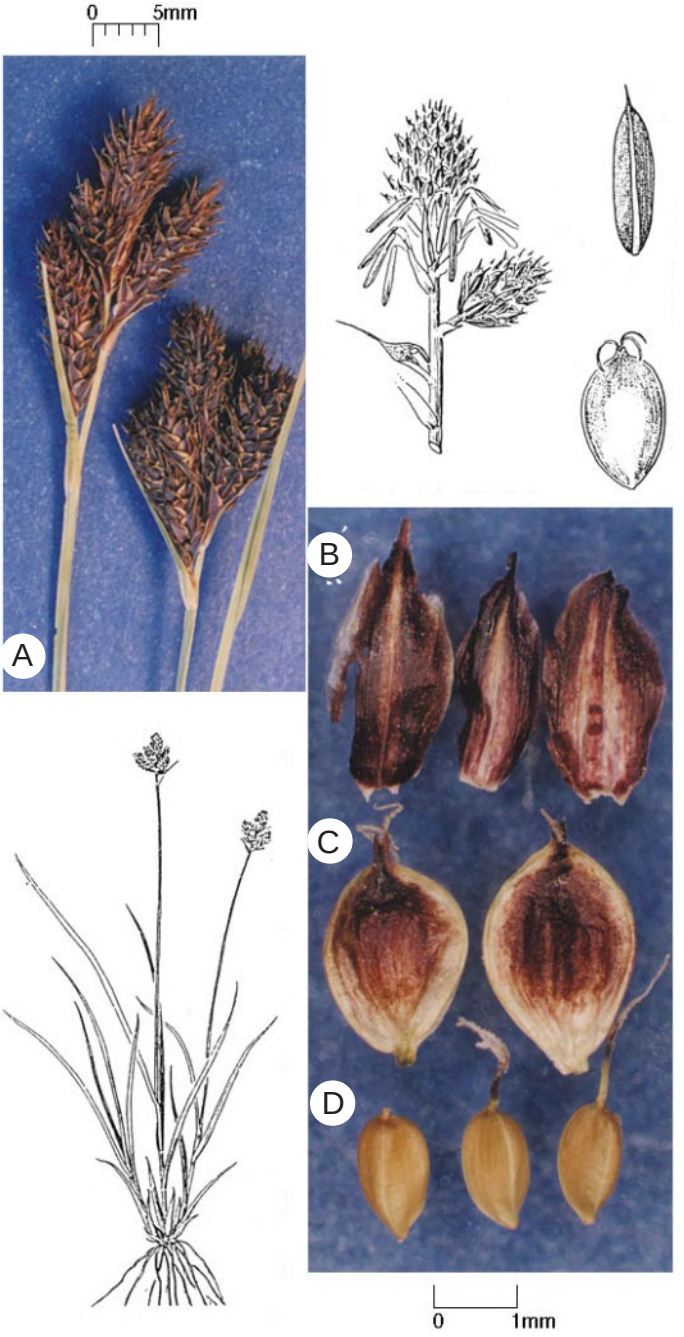
PISTILLATE SCALES: Oblong-ovate to ovate with an acute tip, shorter and much narrower than the perigynia, scarious or hyaline-scarious, brownish black or black with a paler midvein.

PERIGYNIA: Broadly ovate to ovate-lanceolate, thin and very flat except where distended by the achene, abruptly contracted distally, doubly serrulate-margined to below the middle and strongly winged to the broadly rounded base, blackish at the center, pale or greenish stramineous along the margins and at the base, 4.2-6.5 mm long, 1.5-2.6 mm wide. **Nerves:** Prominent or occasionally absent dorsally; obscure or absent ventrally, or occasionally present at the base; inframarginal nerves delimit the wing from the perigynium body. **Beaks:** Slender, half the length of the body; the distal 0.5-1 mm terete, not markedly serrulate; tip dark, obliquely cleft, only obscurely bidentate.

ACHENES: Oblong, ovoid, lenticular, 1.3-1.7 mm long, 0.75-1.1 mm wide, jointed to a 0.5 mm stipe that traverses a loosely spongy area at the base of the perigynium. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: In moist to moderately dry places at **high elevations**, usually above timberline. British Columbia and Alberta south to Oregon, California, Idaho, central Nevada, Utah, Arizona, Wyoming, and Colorado. **June-August.**

SIMILAR SPECIES: See appendix, table 1.



Carex helleri. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left (and B and D, center)—dorsal view; right—ventral view.

Carex helleri Mack.
Heller sedge

HABIT: Densely cespitose from short rhizomes. **Culms:** 0.5-5 dm tall, exceeding the leaves, **phyllopodic.**

LEAVES: Borne on the lower one-half of the culm but not clustered. **Blades:** Flat, 1.5-3.5 mm wide, 15 cm long. **Sheaths:** Thin, hyaline ventrally, concave at the mouth.

BRACTS: Lowest leaflike, sheathless or nearly so, shorter than the inflorescence; upper reduced.

SPIKES: 3-5, oblong, sessile, 1-2 cm long, closely aggregated, forming a dense reddish brown to dark brown head, individual spikes have rough outline due to the short awn-tipped pistillate scales. **Terminal: Gynaecandrous,** clavate. **Lateral: Pistillate**; perigynia crowded, ascending.

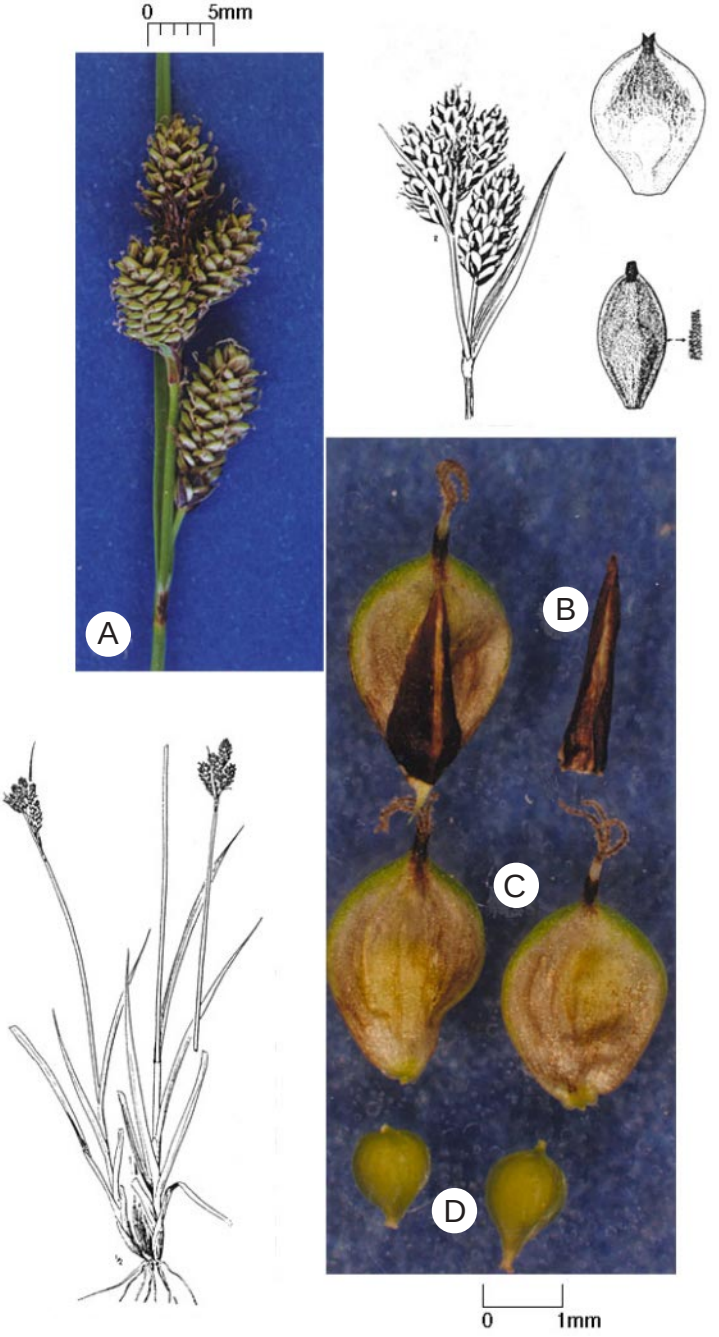
PISTILLATE SCALES: Lanceolate-ovate, acuminate, attenuate, or short-awn-tipped, narrower and longer than the perigynia, purplish black with a paler midrib and sometimes with obscurely white-hyaline margins.

PERIGYNIA: Oval to obovate or roundish, flattened (except where distended by the achene), thin with a darker center and pale or greenish margins, membranaceous throughout, 2.5-3.8 mm long, 1.5-2.8 mm wide. **Nerves:** Lacking or faint on both surfaces; marginal nerves present. **Beaks:** Very short, 0.2-0.5 mm long, shallowly bidentate.

ACHENES: Short-oblong, trigonous, and sharply angled, pale brown, 1.2-1.8 mm long, 0.7-1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Open, often dry or rocky places at **high elevations**. Cascade and Sweetwater Mountains of California, and the Sierra Nevada and White Mountains along the California-Nevada border. To be expected in other Nevada ranges. **July-August**.

SIMILAR SPECIES: See appendix, table 2.



Carex heteroneura. (A) Inflorescence, (B) pistillate scales (scale on left with perigynium), (C) perigynia, (D) achenes. B through D: Left— dorsal view; right—ventral view.

Carex heteroneura (Mack.) Cronq.
Black sedge, blackened sedge, dark sedge

SYNONYM: *C. atrata* L.

HABIT: Dense, small to large tufts without creeping rhizomes. **Culms:** Slender and erect or nodding, 1.5-8 dm tall, exceeding the leaves, **aphyllopodic**, dried leaves of previous year conspicuous.

LEAVES: 7-10, clustered near the base. **Blades:** Flat with slightly revolute margins, channeled above, 2-8 mm wide. **Sheaths:** Brownish-tinged, the basal sheath reddish-tinged, thin and hyaline ventrally, concave to convex at the mouth.

BRACTS: Lowest leaflike, sheathless, dark-auricled, shorter to longer than the inflorescence; upper reduced.

SPIKES: 2-7, erect or nodding, ovoid to oblong-ovoid, 10-24 mm long, 7-10 mm wide, crowded, but not densely capitate-clustered, sessile or the lowest often on a stiff peduncle. **Terminal: Gynaecandrous,** broadly clavate (pistillate flowers sometimes few). **Lateral: Gynaecandrous** (staminate flowers few); perigynia 15-20, appressed.

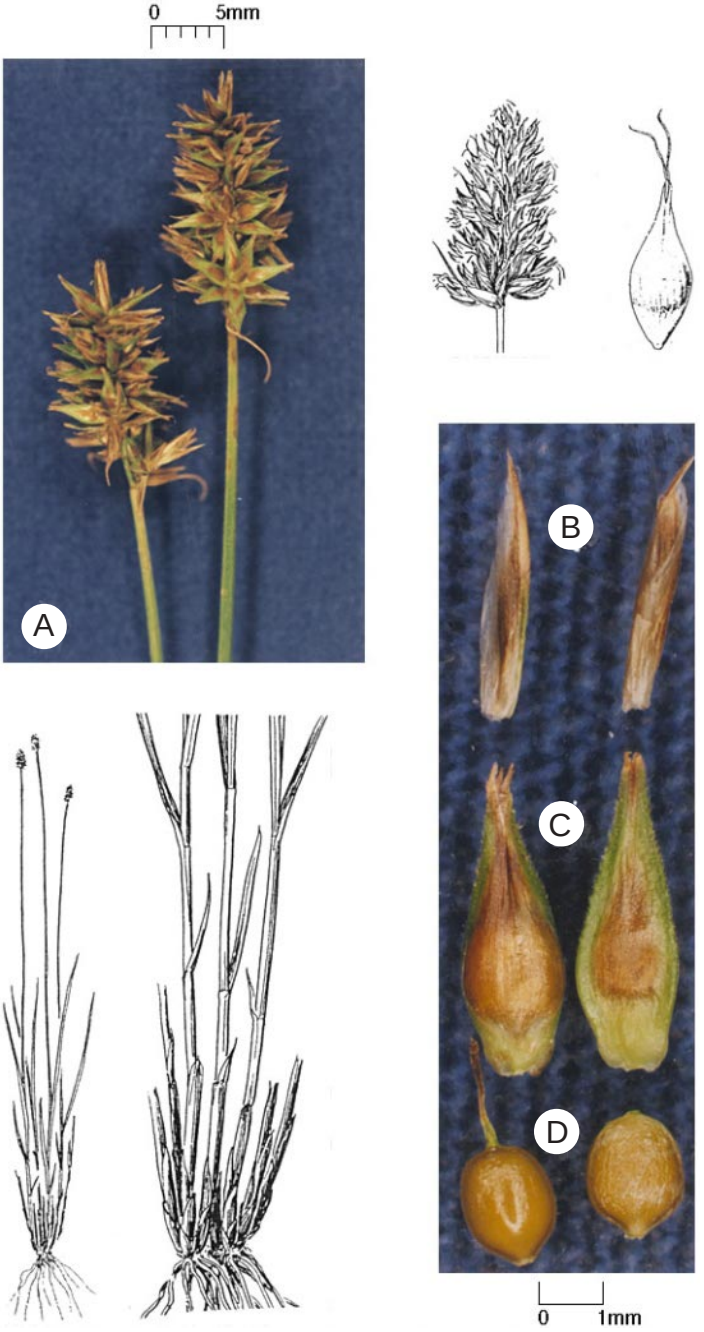
PISTILLATE SCALES: Ovate or oblong-ovate with an acute to acuminate tip, longer or shorter than the perigynia and narrower, dark reddish brown to almost black with a lighter midrib and sometimes with whitish-hyaline margins.

PERIGYNIA: Broadly oval to obovate, flattened, glabrous or papillate-roughened, stramineous or suffused with dark purple or black with pale or greenish margins and usually darker center, 3-4 mm long, 1.5-3 mm wide. **Nerves:** Absent except for the two marginal nerves. **Beaks:** Slender, reddish black, scarcely cleft or bidentate, 0.5 mm long.

ACHENES: Trigonous, not sharply angled, tending to be short-stipitate, yellowish brown at maturity, 1.2-2.2 mm long, 0.75-1 mm wide, much smaller than the perigynium. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common in wet meadows and on open, dry slopes at **moderate to high elevations**. Circumboreal. In North America extending south to southern Oregon, California, Idaho, Nevada, Utah, northern Arizona, western Montana, Wyoming, and Colorado. **June-August.**

SIMILAR SPECIES: See appendix, table 2.



Carex hoodii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex hoodii Boott
Hood sedge

HABIT: Densely clustered from very short, stout, black, fibrillose roots. **Culms:** Slender, sharply triangular, 2-8 dm tall, exceeding the leaves, strongly **aphyllopodic.**

LEAVES: 2-3, borne on the lower part of the culm, but not clustered. **Blades:** Flat, 1.5-3.5 mm wide. **Sheaths:** Tight, very thin ventrally, truncate at the mouth.

BRACTS: Lowest sheathless, rudimentary to 1.5 cm long, but shorter than the inflorescence; upper inconspicuous.

SPIKES: 4-8, **androgynous**, sessile, indistinguishable and closely to loosely aggregated into a dense, stiff, ovoid or oblong-cylindric green to brown inflorescence 1-2 cm long; perigynia spreading at maturity.

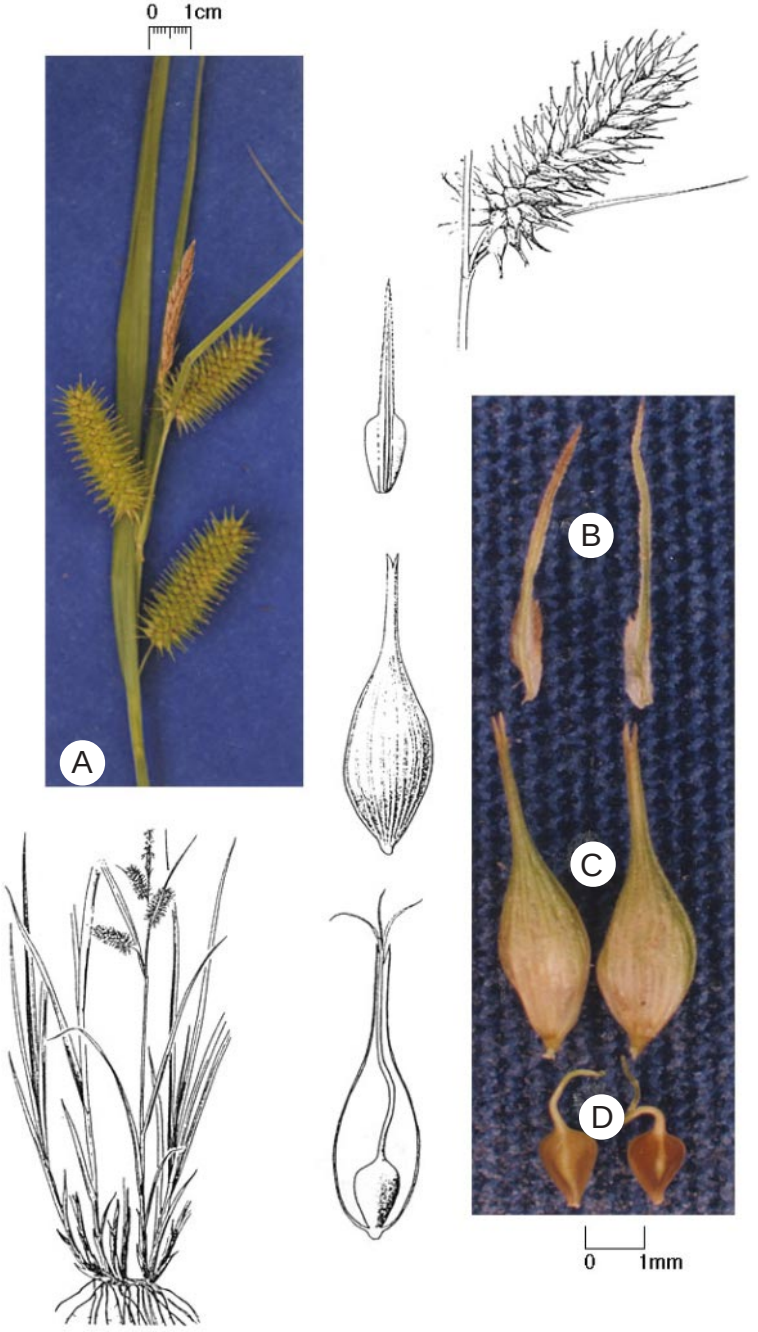
PISTILLATE SCALES: Ovate-triangular with an acute or cuspidate to acuminate tip, shorter and narrower than the perigynia, greenish to stramineous or coppery brown and scarious with a green midrib and hyaline margins.

PERIGYNIA: Narrowly elliptic to broadly elliptic-ovate, truncate at the base when fresh, abruptly tapered to a pointed base when dry, strongly plano-convex, serrulate along the margins to the middle or below, glossy, coppery brown with broad green sharp-edged margins, 3.5-5 mm long, 1.5-2.5 mm wide. **Nerves:** Several inconspicuous or lacking on both surfaces; marginal nerves present, sometimes appearing ventromarginal. **Beaks:** Abruptly contracted, but more sharp-edged than wing-margined, serrulate, obliquely cleft, 0.7-1.5 mm long.

ACHENES: Quadrate-orbicular, lenticular, yellowish brown, 1.7-2.1 mm long, 1.3-1.7 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common and widespread in the mountains from **foothills to near timberline** on open and thinly wooded slopes and in dry or moderately moist meadows and forest openings. British Columbia to California and east to Alberta, Idaho, Nevada, Utah, Wyoming, Colorado, and South Dakota. **May-August.**

DISTINCTIVE CHARACTERISTICS: The species is characterized by its glossy, coppery-brown perigynia with broad green margins.



Carex hystricina. (A) Inflorescence, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex hystricina Muhl.
Bottlebrush sedge, porcupine sedge

HABIT: Cespitose from short, stout rhizomes, sometimes forming dense patches. **Culms:** Sharply triangular, often roughened above, 1.5-10 dm tall, reddish-tinged at the base, slightly **aphyllopodic**.

LEAVES: 3-7, not clustered. **Blades:** Flaccid, flat with slightly revolute margins, thin, glabrous, septate-nodulose, yellowish green, 2-10 mm wide. **Sheaths:** Membranous, ribbed ventrally, mostly green, concave at the mouth; basal sheaths becoming filamentose.

BRACTS: Leaflike, barely sheathing; lowest exceeding the inflorescence; upper reduced.

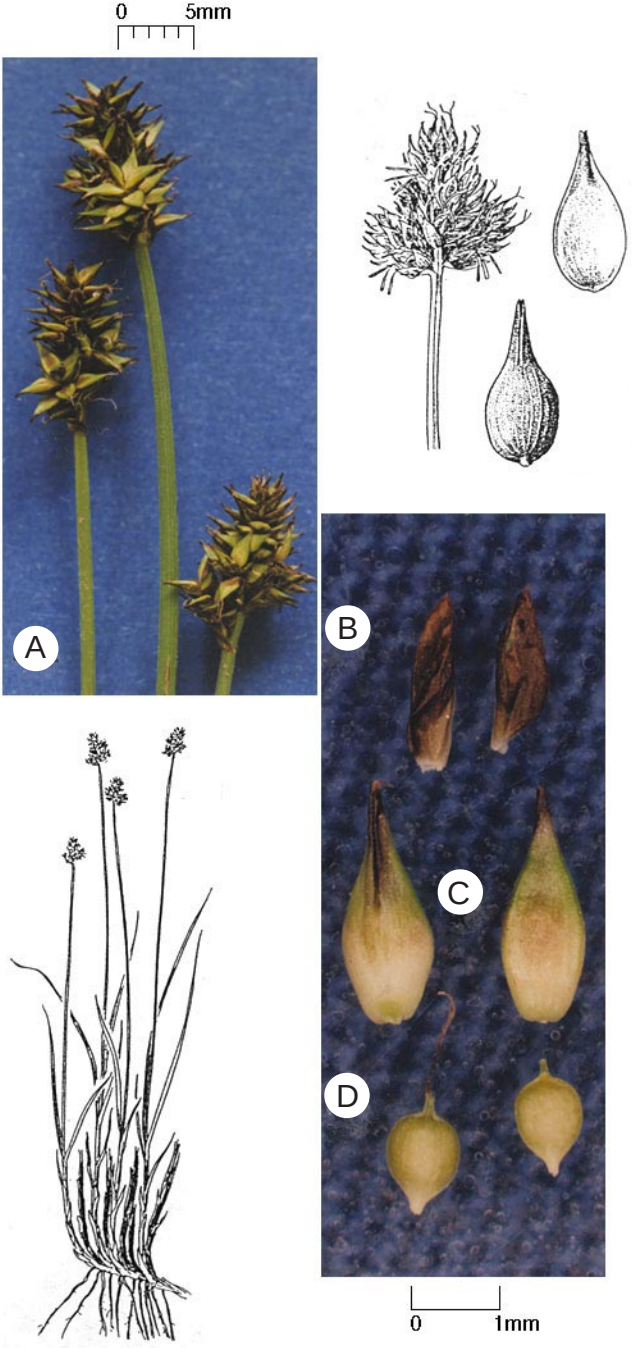
SPIKES: Several, green, ascending-spreading. **Staminate:** terminal, peduncled, linear, brown, 1-5 cm long, 2.5-4 mm wide. **Pistillate:** 1-4, oblong or oblong-cylindric, densely flowered, 1-6 cm long, 10-15 mm wide, approximate or the lowest strongly remote and nodding; perigynia spreading, porcupine-like**.**

PISTILLATE SCALES: Ovate or oblanceolate, equaling or much narrower and shorter than the perigynia, 1-6 mm long, scarious or hyaline, ciliate-serrulate distally, pale to reddish brown with a 3-nerved green to reddish center; the center excurrent as a long, rough awn, 2-6 mm long.

PERIGYNIA: Slightly inflated, lanceolate or lance-ovoid, rounded at the short-stipitate base, thin-textured, glabrous and glossy, light green or greenish-stramineous, 5-7 mm long, 1.5-2 mm wide. **Nerves:** Prominently 12-20 ribbed on each surface; marginal nerves not evident. **Beaks:** Slender, 2-2.5 mm long, deeply bidentate with the teeth erect and rigid.

ACHENE: Obovoid-triangular, trigonous, thickened at the blunt angles, granular, brownish, 1.2-2 mm long, 0.9-1.3 mm wide, continuous with the slender, bony style that becomes flexuous at maturity. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Seldom collected. Occasional on wet ground near streams, meadows, and marshes from **lowlands to middle elevations.** Washington to Quebec, south to California, Arizona, Texas, Virginia, and Kentucky. **May-July.**



Carex illota. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex illota Bailey
Sheep sedge, small-headed sedge

HABIT: Cespitose from short, creeping rhizomes. **Culms:** Slender but stiff, roughened at the angles below the inflorescence, 1-3(4) dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: 2-5, clustered near the base. **Blades:** Flat or channeled, 1-3 mm wide. **Sheaths:** Tight, truncate to shallowly concave and sometimes yellowish brown at the mouth.

BRACTS: Small, inconspicuous, short awned, scarious golden to dark brown with narrow hyaline margins.

SPIKES: 3-6, short, sessile, **gynaecandrous**, dark brown to greenish black or more commonly black, indistinguishable and closely aggregated into a dense, suborbicular head that is lobate in outline, 6-15 mm long and 5-12 mm wide; perigynia spreading with exserted tips, giving a ragged appearance to the spike.

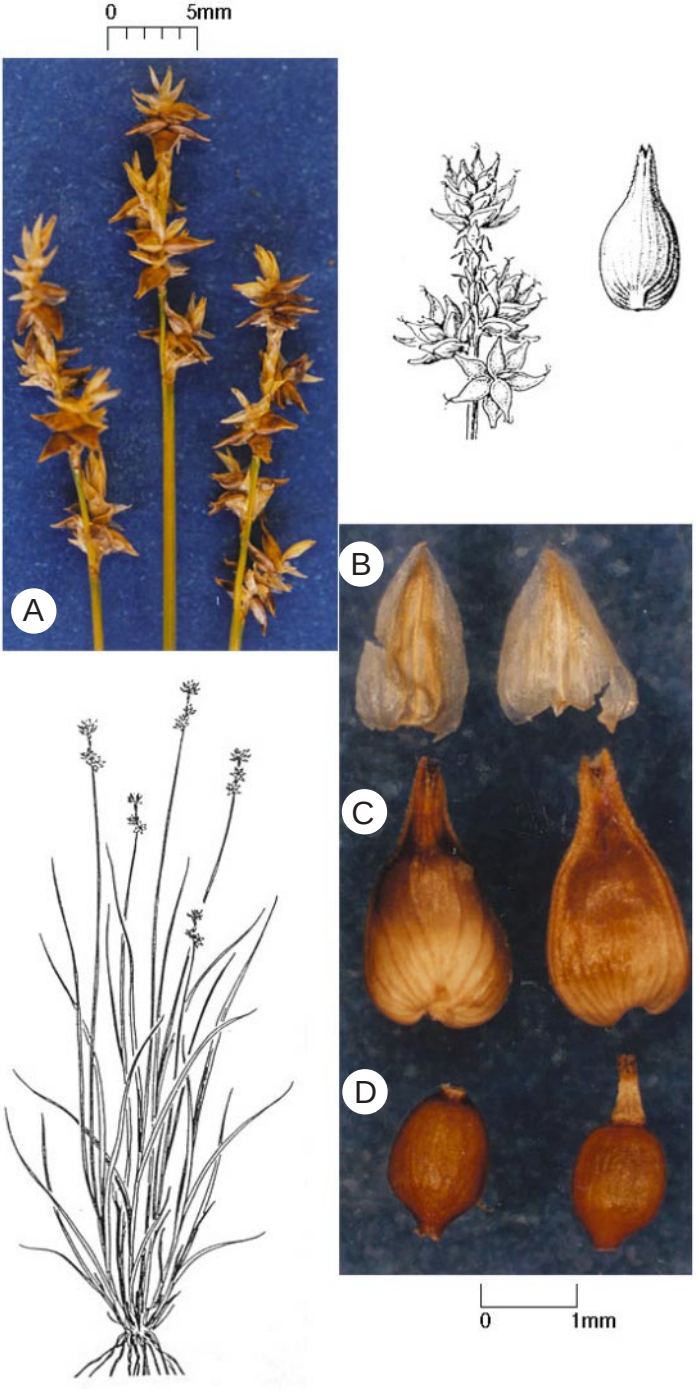
PISTILLATE SCALES: Broadly ovate with an obtuse tip, shorter and narrower than the perigynia, dark brown or greenish black with a yellowish-brown center and very narrow, obscure, gold-hyaline margins.

PERIGYNIA: Lanceolate to narrowly ovate, plano-convex, sharp-edged above, not wing-margined, raised margins below, slightly spongy at the base, smooth, greenish-fuscous to brown or brownish-stramineous toward the base, 2.5-3.2 mm long, 0.9-1.3 mm wide. **Nerves:** Several, faint dorsally; none or few, obscure ventrally. **Beaks:** Tapering, smooth, entire margined throughout, not serrulate, 0.8-2 mm long, dark at the dorsal suture, obliquely cleft at the tip.

ACHENES: Broadly oval, lenticular, substipitate, yellowish brown, 1.2-1.5 mm long, 0.8-1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Often abundant on wet mountain meadows, boggy montane lakeshores, and streambanks. **High altitudes.** British Columbia, Washington, and northwestern Montana, south to California, Nevada, central Idaho, Utah, and Colorado. **July-August.**

SIMILAR SPECIES: See appendix, table 9.



Carex interior. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex interior Bailey
Inland sedge

HABIT: Densely tufted from short, dark-colored rhizomes. **Culms:** Slender, firm, wiry, sharply triangular, 1.5-5 dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: 3. **Blades:** Thin, flat or slightly channeled, 1-3 mm wide. **Sheaths:** Tight, membranous, truncate to shallowly concave at the mouth.

BRACTS: Small and inconspicuous, scarcely different from the pistillate scales.

SPIKES: 2-6, **gynaecandrous**, short sessile, stramineous to reddish brown, approximate or remote. **Terminal:** With a conspicuous, slender, staminate base. **Lateral:** Sometimes wholly pistillate; perigynia few, widely spreading at maturity.

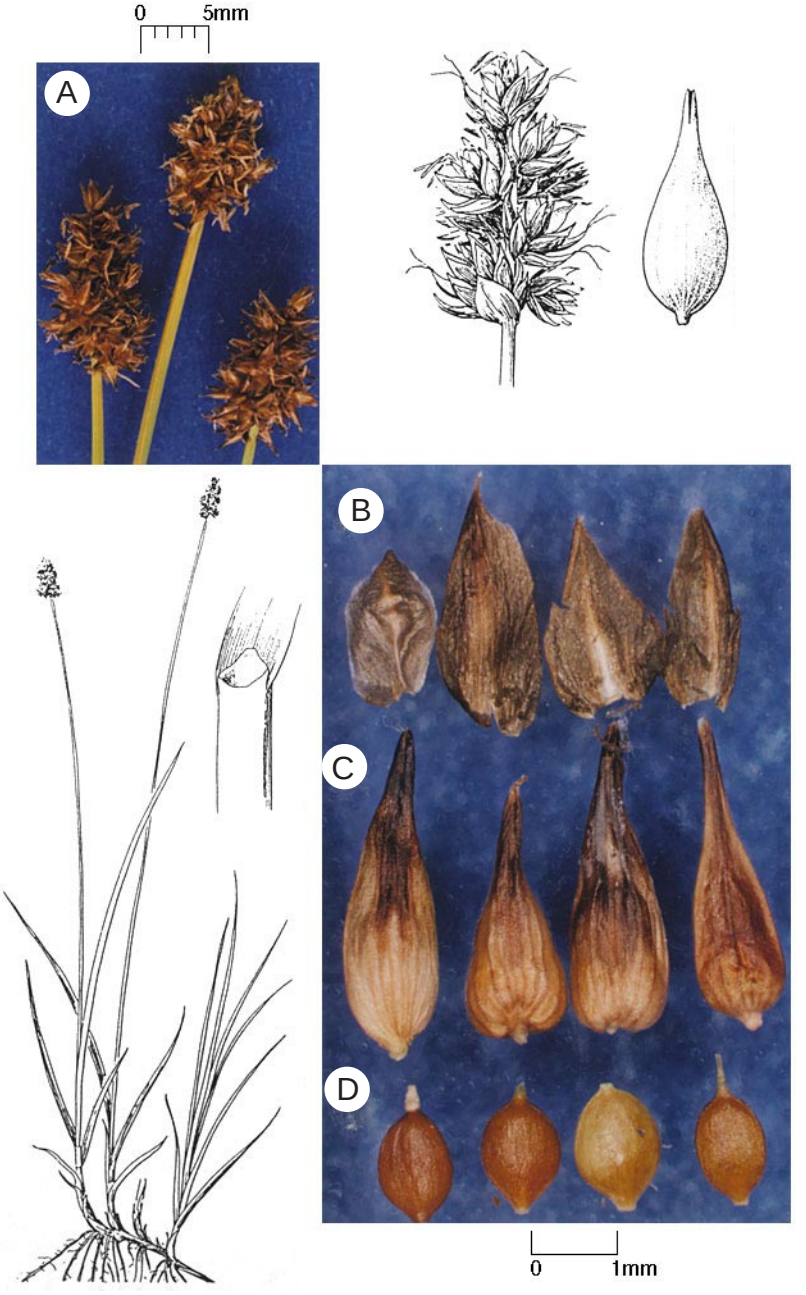
PISTILLATE SCALES: Broadly ovoid with an obtuse tip, shorter than the perigynia, yellowish brown with a green center and broad white-hyaline margins, becoming stramineous at maturity.

PERIGYNIA: Ovate or triangular-ovate to broadly lance-triangular, plano-convex, plump, firm, somewhat leathery, spongy thickened at the base, shining, olive green becoming brown, 1.9-3.3 mm long, 1.5-2 mm wide. **Nerves:** 4-12 dorsally, 0-7 ventrally; marginal nerves raised proximally, thin edged distally. **Beaks:** Broad, serrulate-margined distally, very shallowly bidentate, 0.5-1.0 mm long.

ACHENES: Broadly ovate-orbicular, lenticular, 1.2-1.8 mm long, 0.9-1.5 mm wide, jointed to the short, stout style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Widely distributed in wet meadows, bogs, swamps, and along streambanks at **moderate to higher elevations**. British Columbia to Labrador and south to California, Utah, northern Mexico, Kansas, and Pennsylvania. Seldom collected in the Intermountain area, but expected in appropriate habitats. **May-August.**

SIMILAR SPECIES: See *C. echinata*.



Carex jonesii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex jonesii Bailey
Jones sedge

HABIT: Mostly clustered or arising singly on short, compactly branched rhizomes. **Culms:** Slender, sharply triangular, 1.5-6 dm tall, exceeding the leaves, somewhat **aphyllopodic**.

LEAVES: 3-4, closely clustered near the base. **Blades:** Flat, 1.5-3 mm wide. **Sheaths:** Ventral side pale and thin, plane or seldom cross-corrugated, truncate or concave at the mouth.

BRACTS: Short and inconspicuous, sheathless, not much larger than the pistillate scales.

SPIKES: 4-8, **androgynous**, small, sessile, chestnut brown, few-flowered, indistinguishable and densely aggregated into an orbicular or short-oblong head 8-20 mm long, 6-12 mm wide; perigynia divaricate (widely spreading) at maturity.

PISTILLATE SCALES: Triangular-ovate, with acute to acuminate tips, equaling or shorter than the perigynia and sometimes concealing them, brown to black with a lighter midvein, hyaline-scarious.

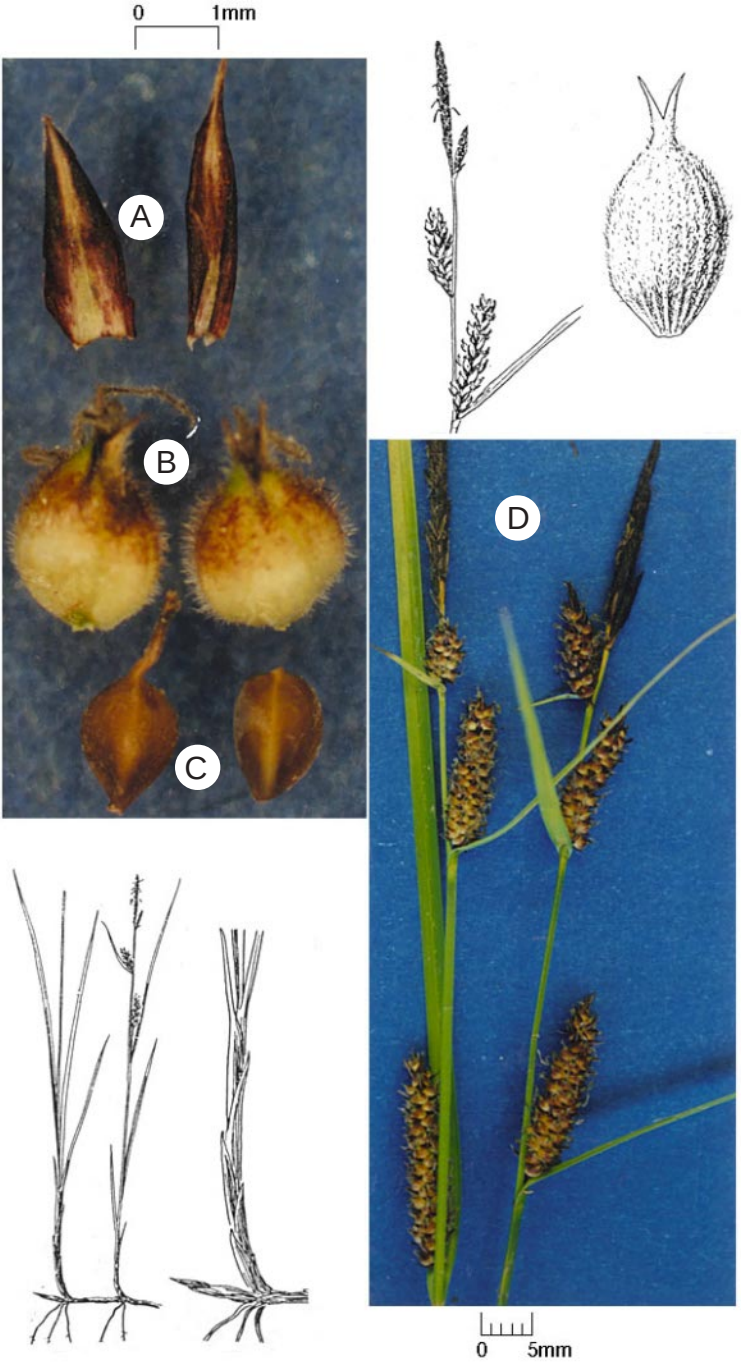
PERIGYNIA: Ovate-lanceolate to lance-triangular or broadly lanceolate, plano-convex, commonly with raised margins proximally, slightly spongy at the base, shining, brown to orange brown or stramineous, sometimes partly green, 2.5-4.8 mm long, 0.9-1.4 mm wide. **Nerves:** Several on both surfaces, sometimes dark-colored. **Beaks**

: Tapered gradually or abruptly, sharp-edged, smooth to slightly serrulate, obliquely cleft, obscurely bidentate, about 0.5-2 mm long.

ACHENES: Broadly obovate, lenticular, substipitate, dark golden brown, 1-1.8 mm long, 0.5-1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: From plentiful to scattered in moist or wet meadows, bogs, and along streambanks at **moderate to high elevations** in the mountains. Through the mountains of eastern Oregon to central Idaho and at scattered locations in Nevada, Utah, Wyoming, and Colorado. **June-August.**

SIMILAR SPECIES: See appendix, table 9.



Carex lanuginosa. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex lanuginosa Michx.
Woolly sedge

SYNONYM: *C. pellita* Muhl.

HABIT: Stems arising singly or few together from well-developed, creeping rhizomes. **Culms:** Stiff, erect, sharply triangular, dark red at the base, 3-11 dm tall, often shorter than the leaves, **aphyllopodic**.

LEAVES: 2-5, borne well above the base. **Blades:** Flat with revolute margins, dull green, 2-5 mm wide. **Sheaths:** Wine red-tinged and deeply concave at the mouth; the lower sheaths breaking and becoming cross-filamentose.

BRACTS: Leafy, sheathless or very short-sheathing, equaling or slightly exceeding the inflorescence.

SPIKES: Several, elongate, brown or greenish to reddish purple. **Terminal: Staminate**, slender, peduncled, 2-5 cm long, often closely subtended by 1 or 2 shorter, sessile staminate spikes. **Lateral:** 2-3, **pistillate,** oblong-cylindric, closely many-flowered, rather remote, 1-5 cm long, 5-8 mm wide; perigynia widely spreading, sessile or the lowest one on an erect, slender peduncle.

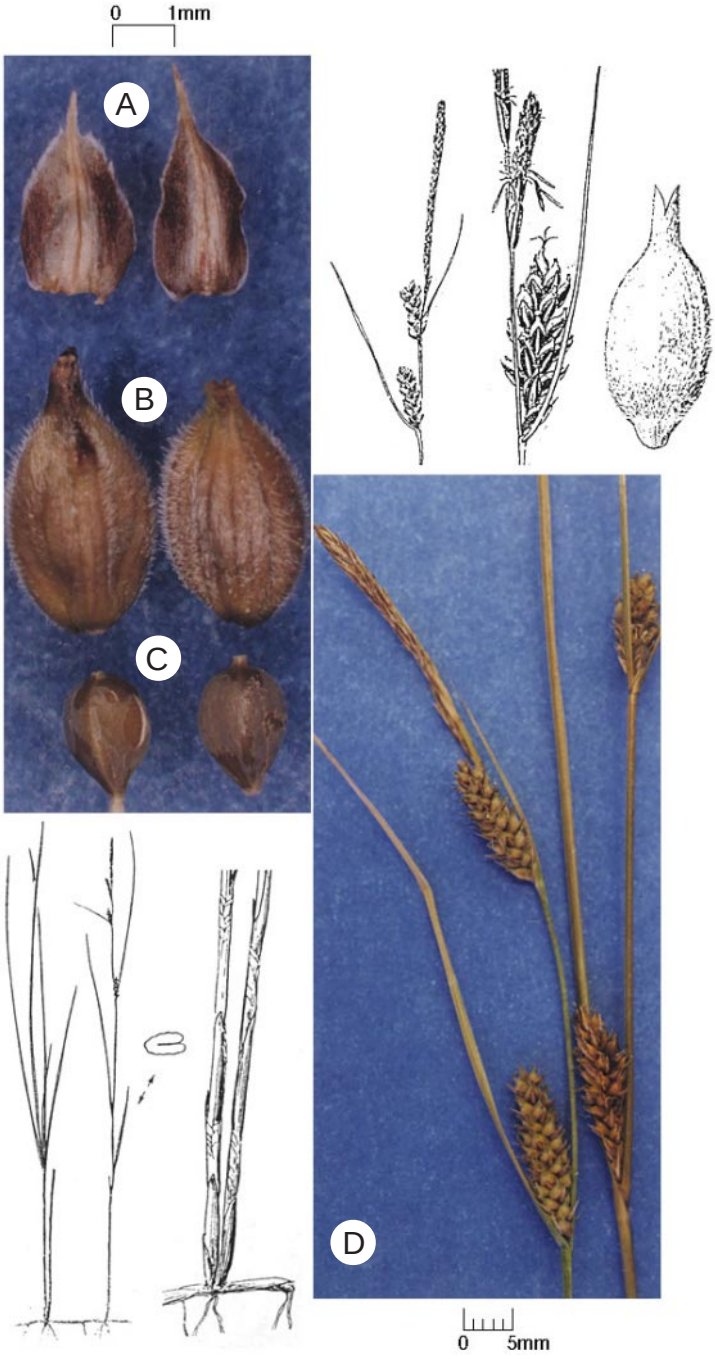
PISTILLATE SCALES: Lanceolate, long-acuminate or mucronate at the tip with a densely hairy awn, somewhat ciliate, narrower and often shorter than the perigynia, reddish brown with a broad 3-nerved green or pale center and hyaline margins.

PERIGYNIA: Broadly ovoid or broadly ellipsoid, suborbicular in cross section, somewhat inflated, rounded at the sessile base, somewhat spongy, thick-walled, coriaceous, densely short-hairy, brownish green to reddish brown, often paler toward the base, (2.5)3-5 mm long, 1.5-2 mm wide. **Nerves:** Numerous, hidden by the pubescence. **Beaks:** 0.5-1.5 mm long, deeply bidentate, forked.

ACHENES: Broadly obovoid, trigonous with slightly concave to roundish sides and blunt angles, yellowish brown to medium brown, 1.5-2 mm long, 1-1.5 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common and widespread along streambanks and in wet meadows, swamps, and other wet places, sometimes in shallow water, also on somewhat dry ground. From **lowlands to moderate elevations** in the mountains. Alaska to New Brunswick, south to California, New Mexico, and Tennessee. Occurring in appropriate habitats throughout the Intermountain area. **April-August.**

SIMILAR SPECIES: *C. lanuginosa*—Culms sharply triangular; leaves flat; ligules long and membranous; perigynium beak forked. *C. lasiocarpa*—Culms obtusely triangular; leaves inrolled or folded; ligules short, thick, tough; perigynium beak bidentate, but usually not forked.



Carex lasiocarpa. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex lasiocarpa Ehrh.
Wool-fruit sedge, slender sedge

HABIT: Stems arising singly or few together from long, creeping rhizomes. **Culms:** Slender, obtusely triangular, smooth, wine red at the base, 3-12 dm tall, **aphyllopodic**.

LEAVES: 2-5, borne well above the base. **Blades:** Inrolled or folded at least distally, long-attenuate, light green, 1-1.5(2) mm wide. **Sheaths:** Yellowish-brown-tinged ventrally, concave at the mouth; the lower sheaths long, breaking and becoming strongly cross-filamentose.

BRACTS: Sheathless or nearly so, equaling or exceeding the inflorescence.

SPIKES: Several, greenish to brown or purplish brown, rather remote. **Staminate:** Usually 2; the terminal peduncled, 1.5-6 cm long; the lateral shorter and sessile, subtending the terminal. **Pistillate:** 1-3, oblong-cylindric, sessile or nearly so, 1-4.5 cm long, closely flowered; perigynia ascending.

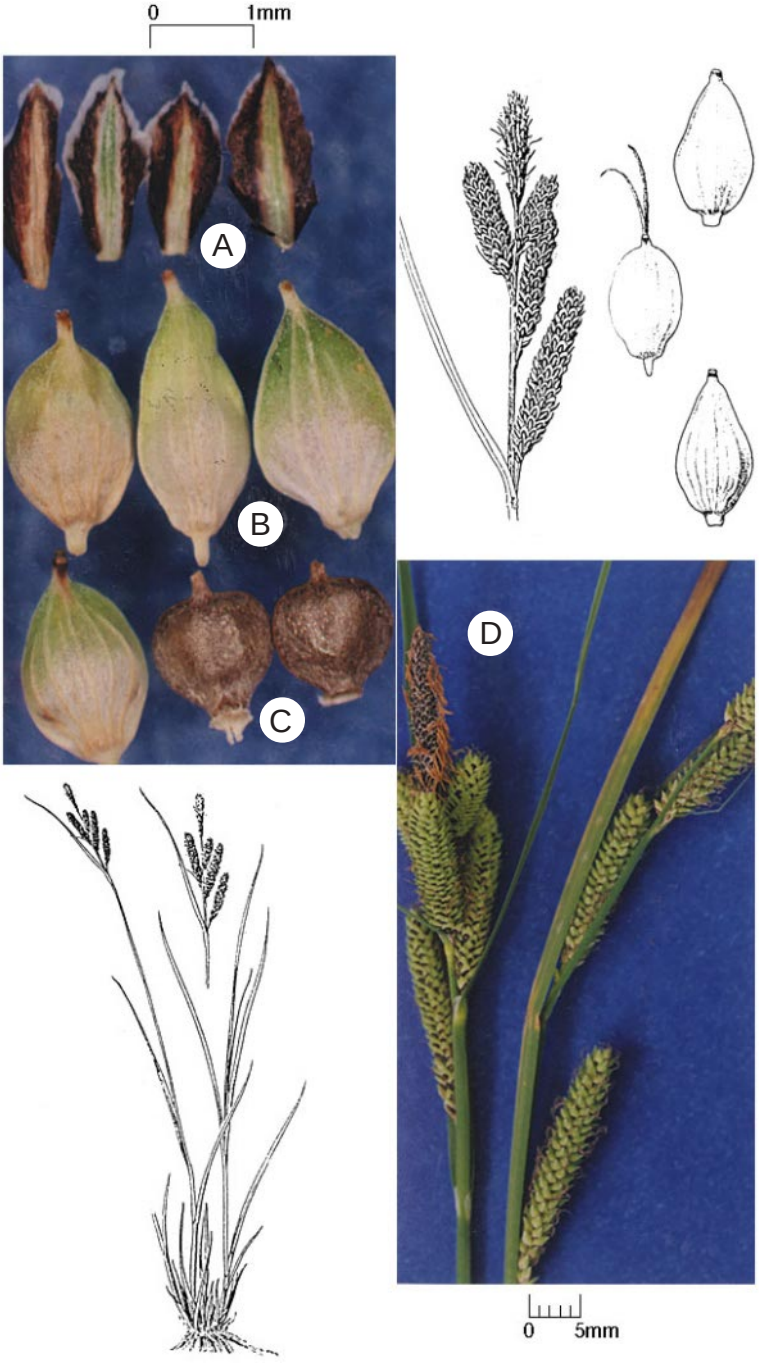
PISTILLATE SCALES: Lanceolate to ovate-lanceolate, somewhat ciliate at the tip, purplish brown with a broad 3-nerved green or pale center and narrow, dull-hyaline margins, narrower than the perigynia; the lower mucronate-awned and exceeding the perigynia; the upper acute and shorter.

PERIGYNIA: Ellipsoid to ovoid, somewhat inflated, round-tapering at the base, contracted at the apex, coriaceous, short-hairy, soft, dull brown to green, 2.8-5 mm long, 1.5-2 mm wide. **Nerves:** Numerous, sometimes obscure. **Beaks:** Shallowly bidentate, usually not forking, 0.5-1.2 mm long.

ACHENES: Broadly obovoid, trigonous with blunt angles, yellowish brown to darker brown, 1.5-2.1 mm long, 1.5 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Locally common in swamps and wet meadows **at mid elevations** in Idaho, western Montana, and Utah. Alaska to Newfoundland, irregularly southward to Oregon and through Iowa to New Jersey. **May-September.**

SIMILAR SPECIES: See *C. lanuginosa*.



Carex lenticularis. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left and center—dorsal views; right—ventral view.

Carex lenticularis Michx.
Lens sedge, lenticular-achened sedge, tufted sedge

HABIT: Cespitose, forming large clumps or tussocks. **Culms:** Slender, erect, 1-8 dm tall, shorter to longer than the leaves, brown at the base, **phyllopodic** or somewhat aphyllopodic, leaves of the previous year not obvious.

LEAVES: 4-9, clustered on the lower one-third of the culm. **Blades:** Erect, thin, flat above, 1-4 mm wide. **Sheaths:** Sometimes yellowish-brown-dotted ventrally, concave at the mouth.

BRACTS: Leaflike, erect, very short-sheathing, equaling or exceeding the inflorescence.

SPIKES: 3-6, erect, elongate, bicolored with green and reddish purple, more or less remote. **Terminal: Staminate**, sometimes with a few basal perigynia, linear, pedunculate, 0.8-3 cm long, 2.5 mm wide. **Lateral:** 3-5, **pistillate,** erect, cylindric, often attenuate toward the base, 1.5-5 cm long, 3-5 mm wide, sessile or the lower ones peduncled, closely flowered above, approximate; perigynia ascending, early deciduous.

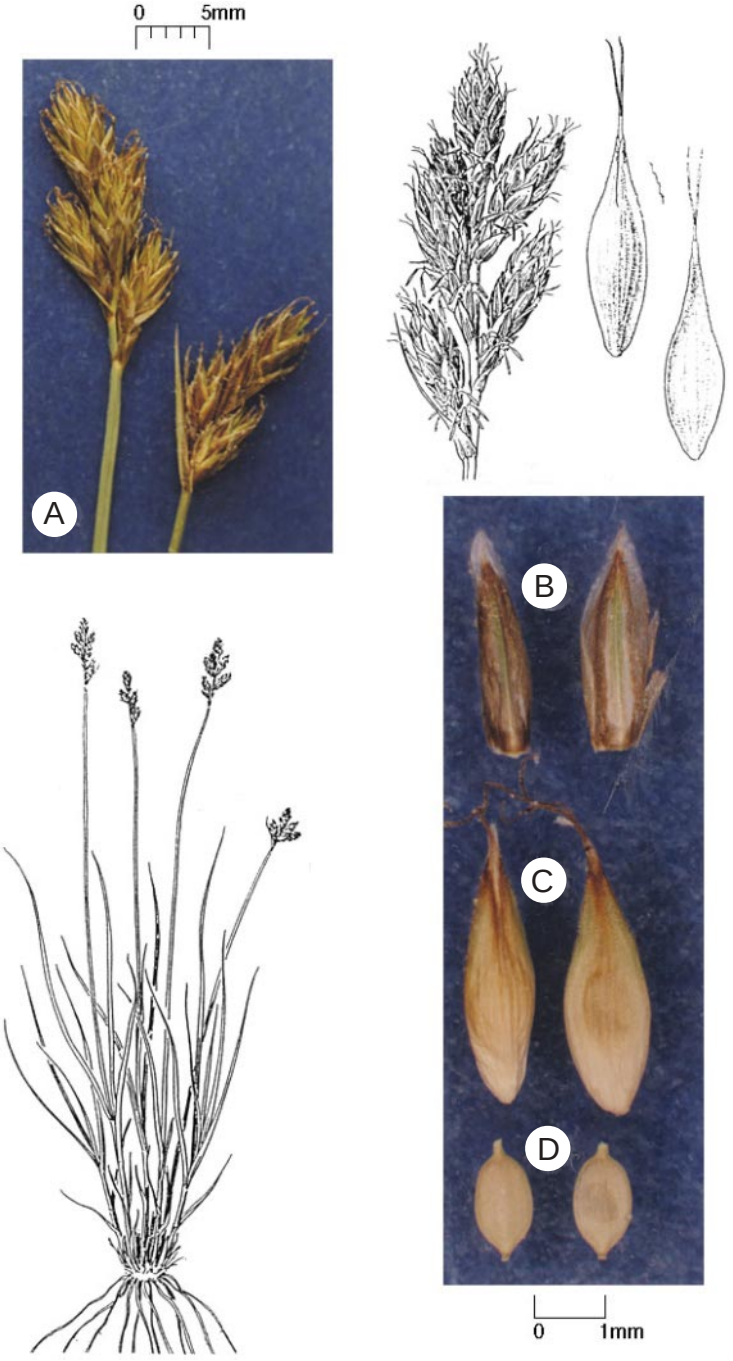
PISTILLATE SCALES: Suborbicular-ovate to oblong-ovate with an obtuse tip, narrower and often shorter than the perigynia, dark reddish- or brownish-red-tinged with a broad, 3-nerved green center not extending to the apex, hyaline along the margins.

PERIGYNIA: Ovate, broadly elliptic or sometimes narrowly elliptic, biconvex and sharply 2-edged, round-tapering or rounded-truncate at the slender base, short-stipitate, slightly swollen just above the stipe (torulose), membranaceous, green, sometimes slightly yellow-glandular-dotted, 1.8-3.5 mm long, 1-1.8 mm wide. **Nerves:** Few on both surfaces, some extend prominently toward the beak when dry. **Beaks:** Well-defined, firm, slender, entire with a dark tip, 0.1-0.3 mm long.

ACHENE: Oblong-quadrangular, lenticular, papillate, sessile to broadly stipitate, brown, 1.-1.5 mm long, 0.8-1.6 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Widespread in North America. Wet meadows, springs, lakeshores, and streambanks. **Sea level to higher elevations**, but not reaching timberline. California, Nevada, Idaho, Utah, Wyoming, Montana, and Colorado. **May-August.**

SIMILAR SPECIES: See appendix, table 3.



Carex leporinella. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex leporinella Mack.
Sierra-hare sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Stiff, sharply triangular, smooth, 1-3 dm tall, equaling or exceeding the leaves, **aphyllopodic**.

LEAVES: 3-5(8), borne on the lower one-fourth of the culm. **Blades:** Involute, firm, 0.75-1.5 mm wide. **Sheaths:** Hyaline ventrally, usually concave at the mouth.

BRACTS: The lowest sheathless, setaceous-tipped, shorter than to about equaling the inflorescence; the upper reduced.

SPIKES: 3-10, **gynaecandrous**, sessile, greenish brown to brown, 6-12 mm long, individually distinct but aggregated into a stiff, erect, oblong, or ovoid-globose head 1.2-3.5 cm long, 4-8 mm wide; perigynia closely appressed.

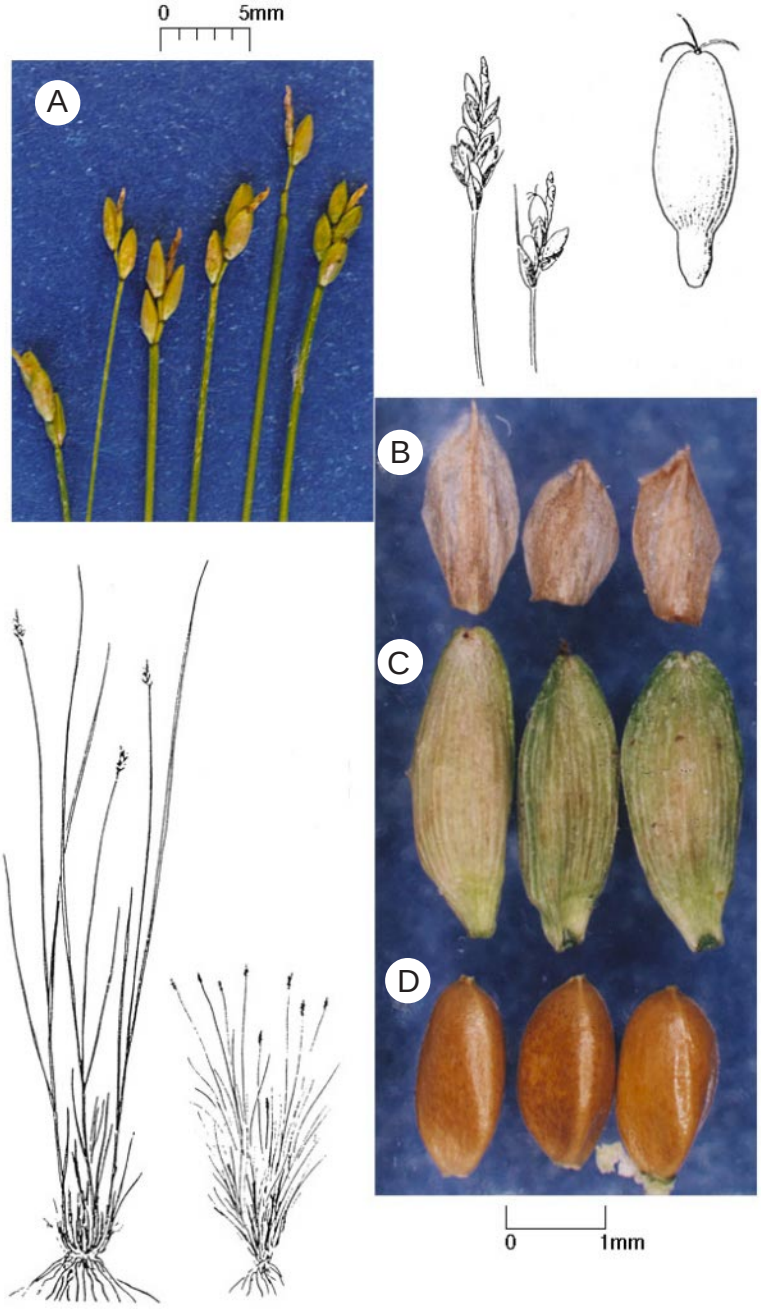
PISTILLATE SCALES: Oblong-ovate with an acute or obtuse tip, commonly concealing the perigynia, reddish brown with a pale or greenish midrib and white-hyaline margins.

PERIGYNIA: Ovate to elliptic-ovate or linear-oblanceolate, plano-convex, widest about the middle, very narrowly wing-margined (wings typically curved toward the ventral surface) and serrulate above, brown to stramineous or partly greenish, especially the upper margins, 3.2-4.2 mm long, 0.8-1.2 mm wide. **Nerves:** Fine, numerous on both sides or few ventrally. **Beaks:** Tapered, 1 mm long; margins flattened, serrulate; tip very short, terete, smooth, obliquely cleft, deeply bidentate; apex and dorsal flap of the suture white-hyaline.

ACHENES: Obovoid-oblong, lenticular, substipitate, pale to medium brown, 1.4-2 mm long, 0.7-0.9 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequent and local on open, rocky slopes and flats, and in meadows from **moderate to high elevations**. Southern Washington south through the White Mountains of California and eastward through northeastern Oregon, central Idaho, Utah, and western Wyoming. **July-September.**

SIMILAR SPECIES: See *C. ebenea*.



Carex leptalea. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex leptalea Wahl.
Bristlestalked sedge, flaccid sedge

HABIT: Stems usually densely clustered from slender, freely branching rhizomes. **Culms:** Triangular, slender, sometimes arching, 1.5-7 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 2. **Blades:** Flat or canaliculate, thin, soft and lax, deep green, 0.5-1.3 mm wide. **Sheaths:** Membranous, brownish-tinged at maturity, concave at the mouth.

BRACTS: None.

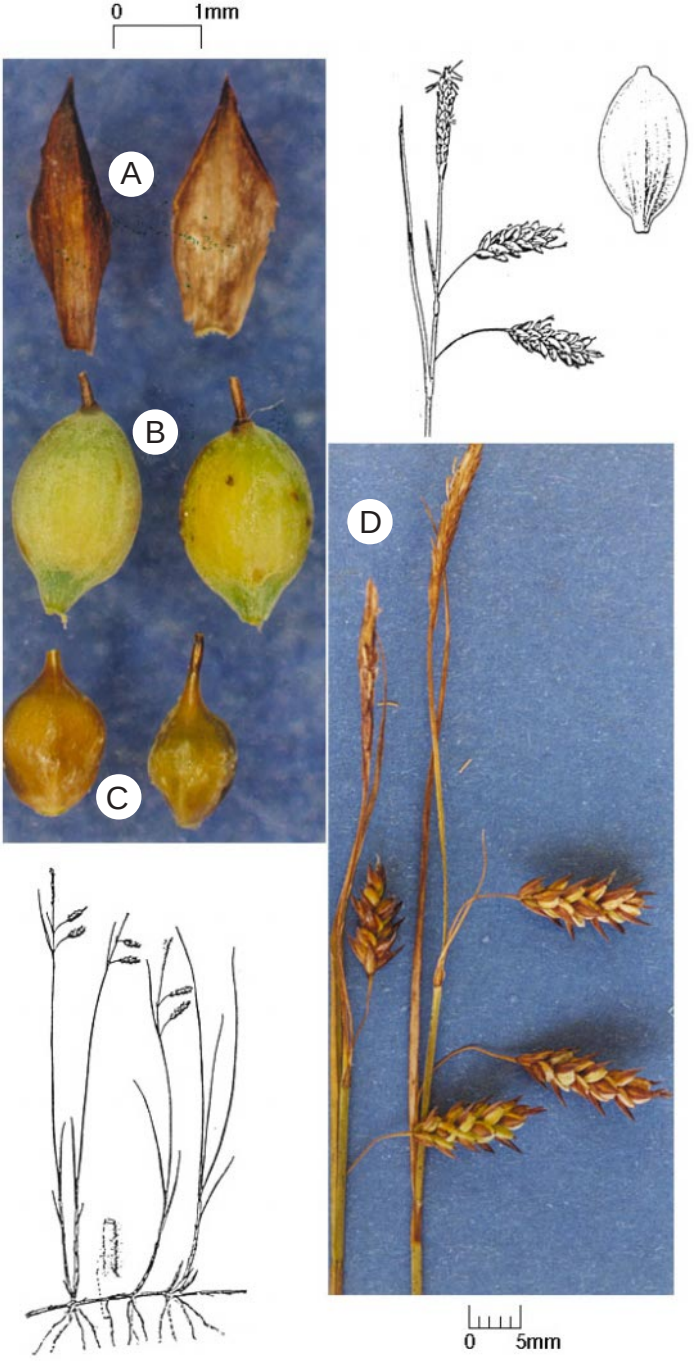
SPIKES: Solitary, **androgynous**, erect, linear-oblong, green to yellowish green, 4-16 mm long, 2-3 mm thick; staminate portion often short and slender, 0.5-0.8 mm wide, sometimes inconspicuous; perigynia few, subalternate on the rachis, appressed-ascending.

PISTILLATE SCALES: Ovate-orbicular, small, shorter than the perigynia, green to brown, deciduous; the lowest sometimes elongate and resembling a setaceous bract; the upper obtuse to short-awned, early deciduous.

PERIGYNIA: Oval-elliptic, circular in cross section and somewhat two-edged, spongy at the base, slightly tapered to a rounded, entire or emarginate apex, often substipitate, pale green or yellowish green to stramineous throughout, membranaceous, 2.5-5 mm long, 1-1.5 mm wide. **Nerves:** Finely many-striate on both surfaces; marginal nerves present. **Beaks:** Lacking.

ACHENES: Oblong-ovoid, triquetrous, glossy, yellow to brown, nearly filling the perigynium, 1.3-2 mm long, 0.8-1 mm wide, the style deciduous; rachilla absent. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Occasional in sphagnum bogs and swamps, often along small streams, lake shores, and on low, wet ground. **Lower to higher elevations.** Alaska to Labrador and south to northern California, Idaho, northeastern Utah, Colorado, Texas, and Florida. **May-August.**



Carex limosa. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex limosa L.
Mud sedge, shore sedge

HABIT: Clums arising singly or few together; rhizomes slender, scaly; roots covered with a yellowish-brown tomentum. **Culms:** Slender, sharply triangular, reddish at the base, 2-6 dm tall, exceeding the leaves, usually **aphyllopodic,** old leaves present.

LEAVES: 1-3. **Blades:** Canaliculate or deeply channeled, somewhat glaucous, gray green, 1-3 mm wide. **Sheaths:** Thin, hyaline ventrally, shallowly concave at the mouth; lower sheaths sometimes slightly filamentose.

BRACTS: The lowest narrowly leaflike or occasionally setaceous, sheathless or short-sheathed, brown-auricled, 2-10 cm long; the upper reduced.

SPIKES: 2-4, reddish to yellowish brown on long, nodding peduncles. **Terminal: Staminate**, erect or drooping, linear, 1-3 cm long, 2.5 mm wide. **Lateral:** 1-3, **pistillate,** occasionally with a few staminate flowers at the tip, nodding, 1-2.5 cm long, 5-8 mm wide, not crowded; perigynia appressed or ascending to spreading.

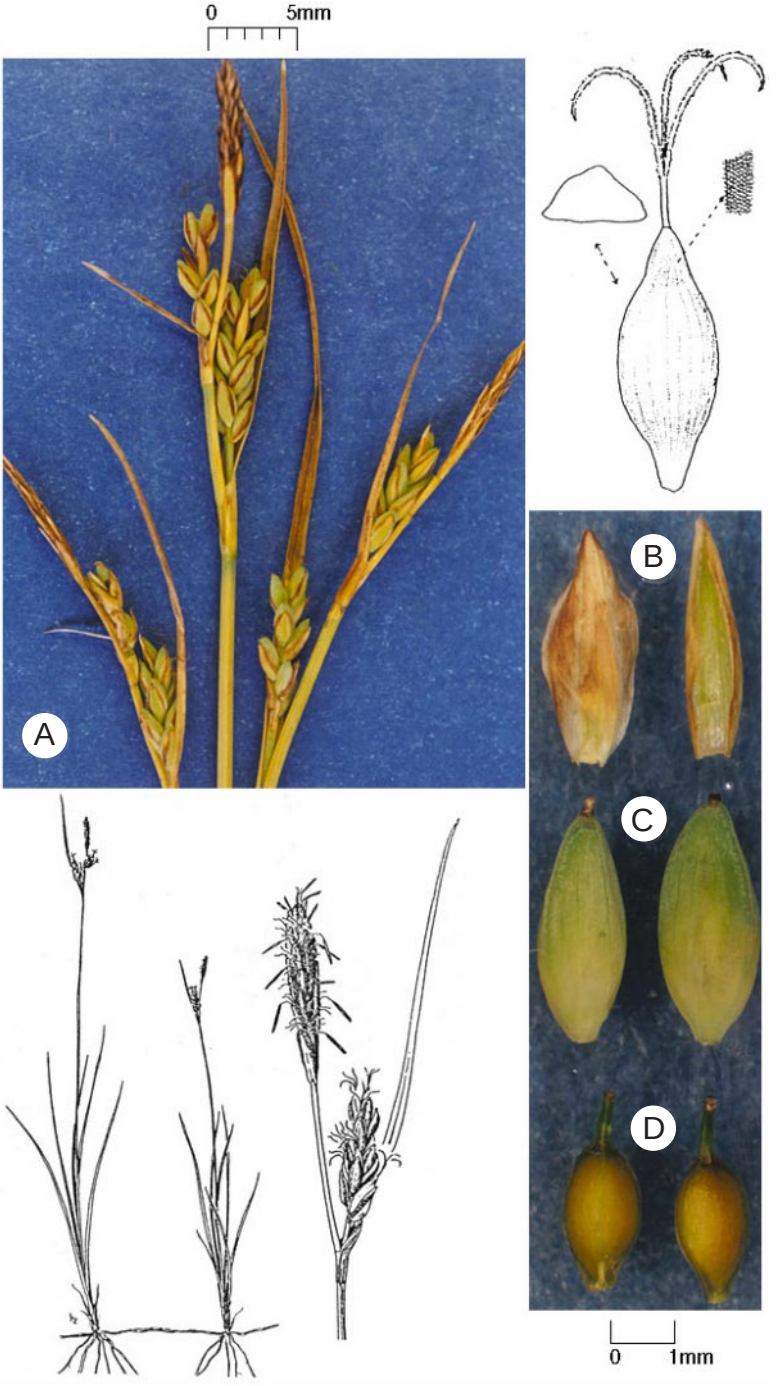
PISTILLATE SCALES: Variable in size and shape, commonly ovate to suborbicular, short-tapering, obtuse or cuspidate at the apex, narrower and shorter than the perigynia to nearly equaling them, yellowish brown to dark reddish brown with a green 1- to 3-nerved center.

PERIGYNIA: Broadly ovoid, somewhat compressed, rounded-truncate and substipitate at the base, rounded at the apex or broadly tapering to a very short conic tip, coriaceous, densely papillate, yellowish green or glaucous-green to stramineous, 2.3-4.2 mm long, 2 mm wide. **Nerves:** 4-7 evident on each face; marginal nerves prominent. **Beaks:** Absent or up to 0.2 mm long, entire or emarginate.

ACHENES: Oblong-ovoid, trigonous, sessile, light brown becoming dark brown at maturity, 1.5-2.7 mm long, 1-1.8 mm wide, loosely filling the perigynium. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Occasional in sphagnum bogs and wet meadows at **higher elevations**. Circumboreal. In North America extending south to California, Idaho, and Montana. Reported from isolated locations in Nevada (Elko County), Utah (Uinta Mountains), and Wyoming. **July-August.**

SIMILAR SPECIES: *C. limosa*—Leaves canaliculate or channeled; pistillate scales yellowish to reddish brown, usually 3-nerved, obtuse to acuminate; staminate spike generally stiff, 1-3 cm long. *C. paupercula*—Leaves flat, pistillate scales brown, 1-nerved, short-awned; staminate spike shorter, 4-15 mm long, usually slenderly pedunculate.



Carex livida. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex livida (Wahl.) Willd.
Livid sedge, pale sedge

HABIT: Stems arising singly or few together from slender, creeping rhizomes. **Culms:** Slender, erect, triangular, 0.5-6 dm tall, longer or shorter than the leaves, **phyllopodic**, basal leaves persistent.

LEAVES: 6-12, mainly basal**. Blades:** Firm, narrow, often channeled, somewhat glaucous, 0.5-3.5 mm wide. **Sheaths:** Smooth, thin, membranous, concave at the mouth.

BRACTS: The lowest leaflike with the sheath well-developed, equaling or exceeding the inflorescence; the upper reduced.

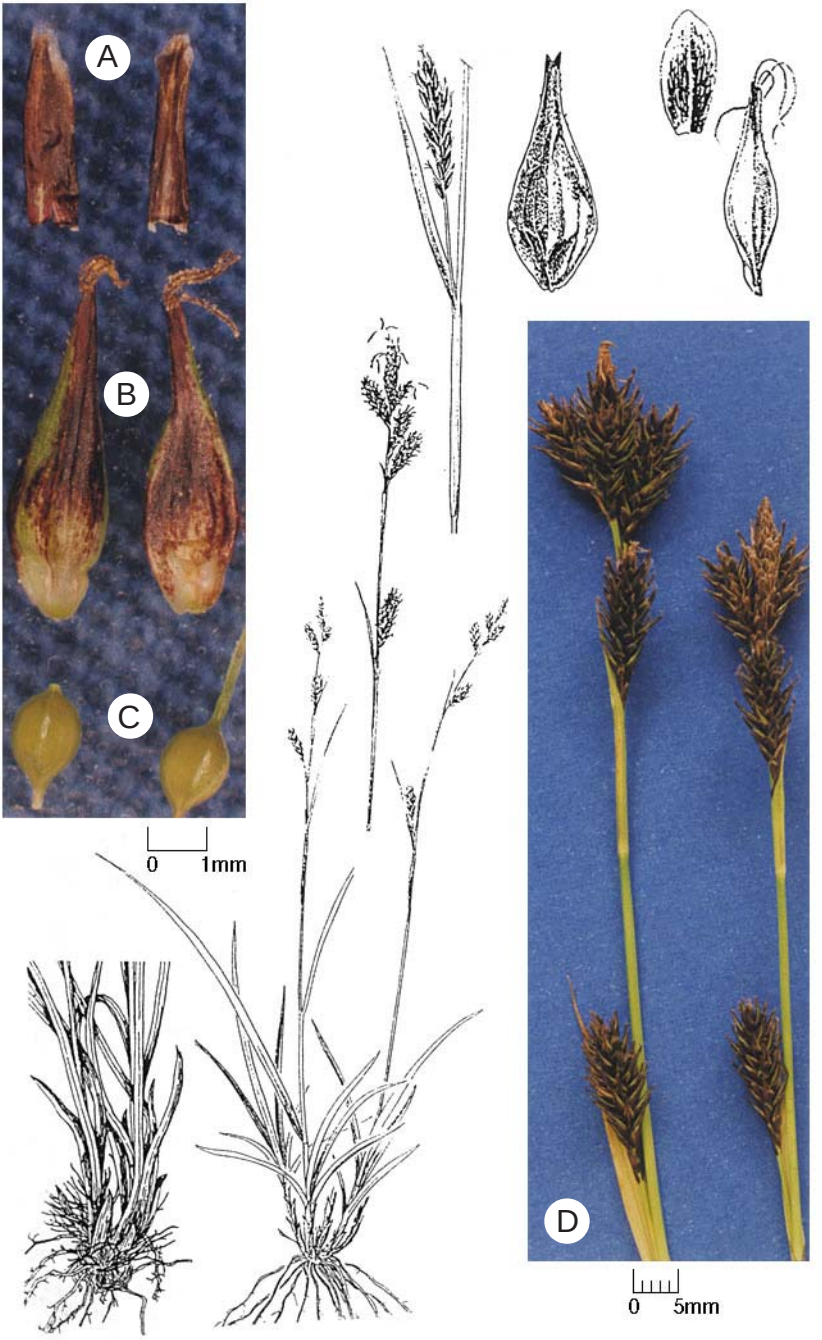
SPIKES: 2-4, green to yellow green, sessile or short-pedunculate. **Terminal: Staminate**, erect, linear, 0.7-3 cm long, 3-4 mm wide. **Lateral: Pistillate**, narrowly oblong, slender, loosely flowered, 1-2.5 cm long, 5 mm wide, approximate to somewhat remote; perigynia appressed.

PISTILLATE SCALES: Ovate, obtuse to somewhat acute or mucronate at the tip, equaling or shorter and narrower than the perigynia but partially enveloping the perigynia bases, the center broad and pale green with white or brown hyaline-scarious margins.

PERIGYNIA: Narrowly rhombic or elliptic, obtusely trigonous with a broadly short-stipitate base when dry, broadly tapered at the apex, coriaceous, puncticulate or papillate, glaucous-green, 2.2-4.5 mm long, 1.2-2.4 mm wide. **Nerves:** Lacking or obscure on both faces; marginally ribbed. **Beaks:** Absent or up to 0.2 mm long; orifice darkly rimmed, entire.

ACHENES: Broadly ovoid, trigonous, dark brown at maturity, 2-3.5 mm long, 0.9-1.8 mm wide, jointed to the style. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Peat bogs and swampy woods from **low to moderately high elevations**. Circumboreal. In North America from Alberta to Washington and east through northern Idaho, Montana, Utah (Uinta Mountains), and Wyoming to Michigan and New Jersey. **May-July**.



Carex luzulina. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex luzulina Olney
Wingseed sedge, woodrush sedge

HABIT: Densely cespitose from short, slender rhizomes. **Culms:** Fibrillose and brownish-tinged at the base, 1.5-9 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 6-12, mostly crowded near the base, some cauline. **Blades:** Flat, thick, stiff, 3-9 mm wide. **Sheaths:** Hyaline ventrally, convex to concave at the mouth.

BRACTS: Leaflike, long-sheathing, shorter than the inflorescence, usually u-shaped or truncate.

SPIKES: 3-6, erect, greenish brown or brown to reddish brown. **Terminal: Staminate** or **androgynous**, sessile or subsessile, 1-2 cm long, slightly exceeding the uppermost pistillate spike. **Lateral: Pistillate** or **androgynous**, oblong, 1-3 cm long, 6-9 mm wide; the upper crowded, sessile; the lower remote, long-pedunculate; perigynia spreading-ascending.

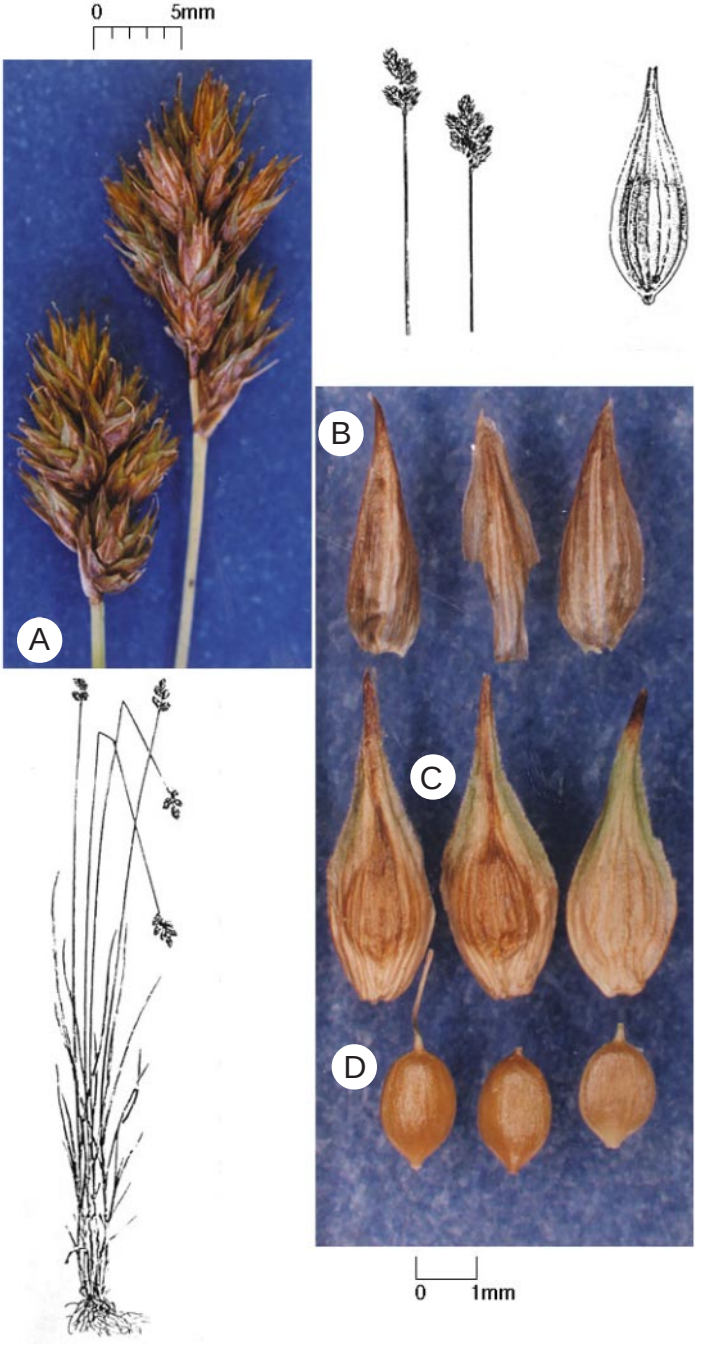
PISTILLATE SCALES: Ovate, obtuse to acute or erose at the tip with the midvein often extending to the apex, shorter than the perigynia, glabrous to ciliate at the tip, reddish brown or purple with a paler center and hyaline margins.

PERIGYNIA: Lanceolate with ciliate-serrulate margins, somewhat flattened-trigonous or compressed, glabrous or occasionally ciliate, puncticulate, light green to yellow green, often purplish-black-tinged, 3-4.5 mm long, 0.9-1.6 mm wide. **Nerves:** Few, obscure on both faces; present on the sharp-edged margins. **Beaks:** Ill-defined, tapering, ciliate, bidentulate, 0.5-1 mm long.

ACHENES: Obovoid, sharply trigonous with concave sides, slenderly stipitate, brown when mature, 1.3-2 mm long, 0.7-1.1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common in mountain meadows and bogs. **Foothills to timberline**. British Columbia south to California and east to Idaho, Nevada, Utah (Wasatch and Tushar Mountains), southwestern Montana, and western Wyoming. **June-August**.

SIMILAR SPECIES: See appendix, table 8.



Carex mariposana. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex mariposana Bailey
Mariposa sedge

HABIT: Densely cespitose from very short rhizomes. **Culms:** Slender, more or less erect, 2.5-8 dm tall, **aphyllopodic**.

LEAVES: 3-5 on the lower one-fourth of the culm. **Blades:** Flat, firm, rather thick, 2-3 mm wide. **Sheaths:** Tight, hyaline ventrally, smooth or cross-rugose, truncate at the mouth.

BRACTS: The lowest short and inconspicuous, sheathless, scarious-setaceous, much shorter than the spike, the upper reduced.

SPIKES: 4-12, **gynaecandrous**, sessile, greenish to reddish brown, closely or loosely aggregated into an oval or oblong head 1.7-3.5 cm long; lower spikes slightly to widely separate; perigynia appressed-ascending.

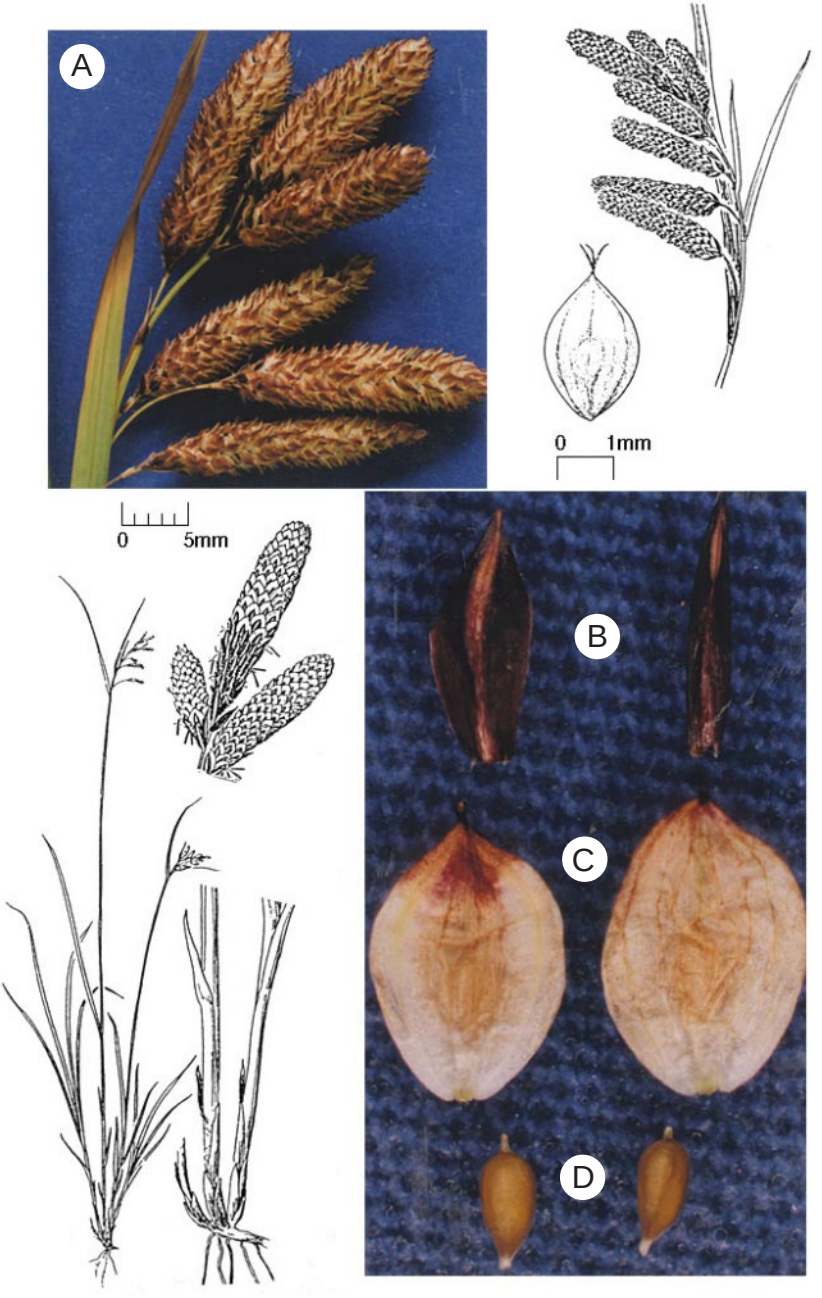
PISTILLATE SCALES: Ovate or lance-ovate with an acute to acuminate tip, narrower than the perigynia and shorter than to equaling them in length, reddish brown with hyaline-scarious margins and a paler midrib.

PERIGYNIA: Lance-ovate to ovate, plano-convex, tapering at the apex, wing-margined and serrulate above, membranous, deep green, becoming straw-colored or reddish brown, especially in the center, 3.4-5(5.3) mm long, 1.1-1.2 mm wide. **Nerves:** Several, conspicuous on both faces. **Beaks:** Ill-defined, long and slender, tapering, smooth toward the tip, about one-third of the perigynium length, reddish brown; the tip terete, entire.

ACHENES: Elliptic to ovate, lenticular, shiny brown, 1.5-2 mm long, 1-1.5 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Dry meadows and slopes in **montane and subalpine** areas. California to Nevada and north to Custer County, Idaho. **June-August.**

SIMILAR SPECIES: See appendix, table 1.



Carex mertensii. (A) Inflorescence, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex mertensii Prescott
Merten sedge

HABIT: Sparsely to densely clustered from short rhizomes. **Culms:** Erect, sharply triangular and narrowly winged, very rough on the angles, 3-12 dm tall, **aphyllopodic**.

LEAVES: 3-6, scattered on the lower one-half of the culm. **Blades:** Flat with slightly revolute margins, 3-10 mm wide. **Sheaths:** Rather loose, brownish-tinged, membranous and hyaline ventrally.

BRACTS: The lowest leaflike, sheathless or nearly so, exceeding the inflorescence; the upper reduced.

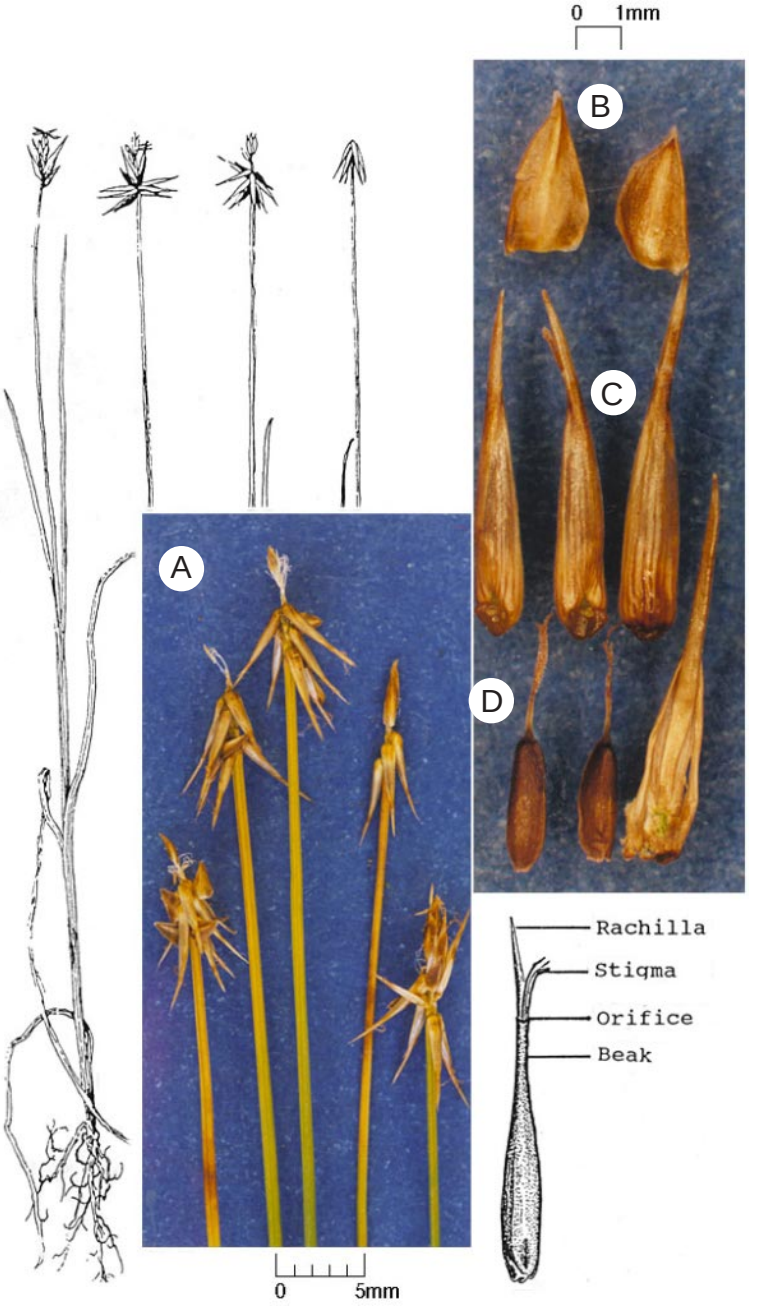
SPIKES: 5-10, drooping, cylindric, reddish tan to stramineous, 1-4 cm long, 7-9 mm wide. **Terminal**: Evidently **gynaecandrous,** varying to almost entirely staminate. **Lateral**: **Pistillate** or with a few staminate flowers at the base, closely flowered; perigynia appressed-ascending.

PISTILLATE SCALES: Ovate-lanceolate with the tip acute or mucronate, much narrower and shorter than the perigynia, exposing much of their margins, dark reddish brown with a conspicuous, pale-nerved center and narrow hyaline margins.

PERIGYNIA: Broadly ovate or obovate, very thin and flattened except where distended by the achene, rounded at the base, abruptly contracted at the apex, papery, light green, becoming whitish or pale brown, red-spotted to reddish toward the beak, 4-5.4 mm long, 2.1-3.5 mm wide. **Nerves:** Finely few-nerved on both faces; marginal nerves present. **Beaks:** Slender, very short, reddish-tipped, entire or emarginate, 0.1-0.7 mm long.

ACHENES: Oblong-obovoid, trigonous, stipitate, yellowish brown to silvery brown, 1.3-2 mm long, 0.7-1.1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Locally common. Open rocky slopes and wet places in forests. **Low to high elevations.** Alaska and Yukon south to Washington, Oregon, California (Klamath Mountains), central Idaho, and western Montana. **May-August.**



Carex microglochin. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes (left and center) and section of perigynium showing rachilla extending beyond the beak orifice (right). B and C: Left (and C center)—dorsal view; right—ventral view. D: Left—dorsal view; center—ventral view.

Carex microglochin Wahl.
Small-tipped sedge

HABIT: Culms arising singly or few together from slender, creeping rhizomes. **Culms:** Slender, erect, stiff, prominently ribbed, terete to semiterete, smooth, brownish at the base, exceeding the leaves, 2-25 cm tall, **phyllopodic**.

LEAVES: 4-8, clustered toward the base. **Blades:** Erect-ascending, involute, stiff, 0.3-0.6 mm wide. **Sheaths:** Thin, membranaceous ventrally, truncate at the mouth.

BRACTS: None.

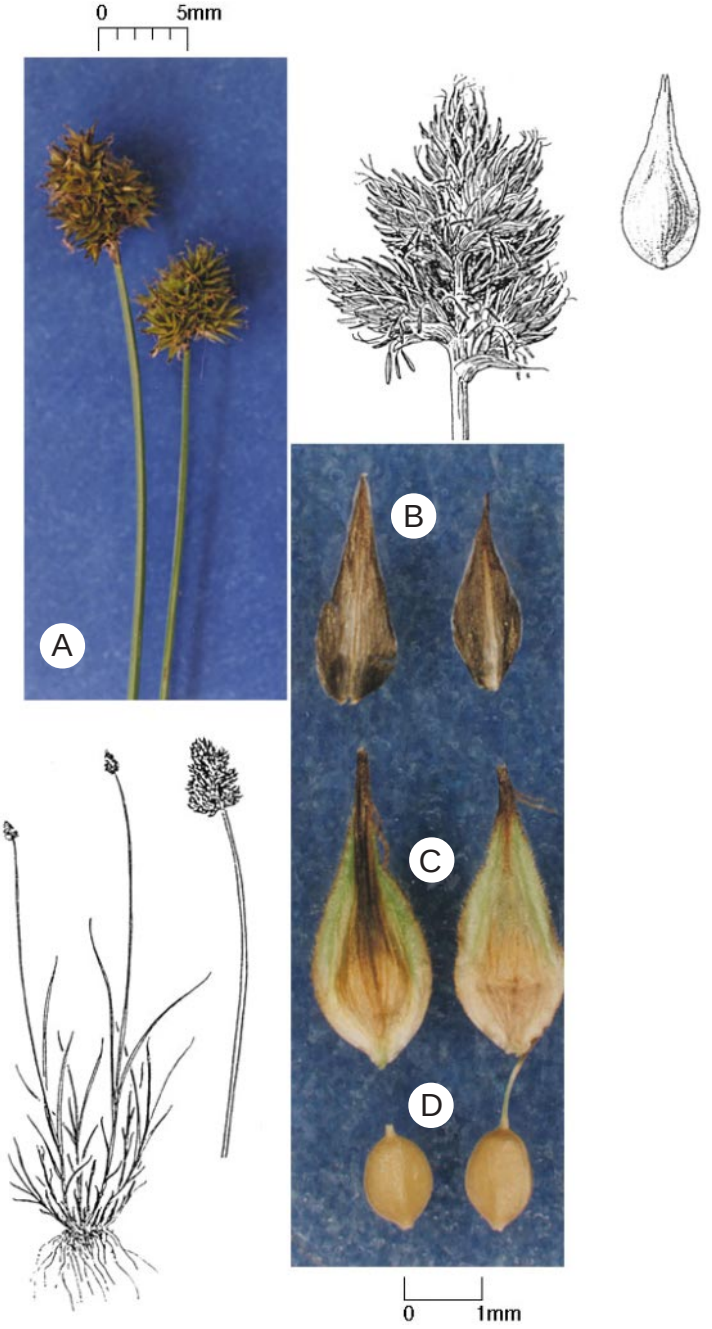
SPIKES: Solitary, **androgynous**, yellowish brown to golden brown when mature, 7-15 mm long, 6-9 mm wide, few-flowered; perigynia ascending but soon deflexed and easily detached.

PISTILLATE SCALES: Oblong to ovate-triangular with an acute to obtuse tip, wider but much shorter than the perigynia, light chestnut brown with a lighter center, scarious or with hyaline margins, very early deciduous.

PERIGYNIA: Linear-lanceolate, suborbicular in cross section, obliquely substipitate and round-truncated at the base, spongy, smooth, shiny, membranaceous, light green to brownish green or straw-colored, 3-5 mm long, 0.8-1 mm wide. **Nerves:** Many-striated on both surfaces. **Beaks:** Not well differentiated from the body, smooth, long tapering; the orifice prominently hyaline, obliquely truncate, filled with the projecting rachilla.

ACHENES: Narrowly oblong-ovoid, trigonous with somewhat rounded angles, yellowish brown to brownish, 2.5 mm long, 0.5-0.75 mm wide, abruptly contracted into and continuous with the long, slender, straight, barely exserted style; rachilla longer than the achene. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Rare and local in moist, sunny, usually calcareous boggy habitats in meadows of **alpine zones**. Alaska to Quebec and Greenland and south to western Montana, Utah, and Colorado. **June-July**.



Carex microptera. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex microptera Mack.
Small-winged sedge

HABIT: Densely tufted without creeping rhizomes. **Culms:** Sharply triangular above, conspicuously striate, 2-10 dm tall, exceeding the leaves, slightly **aphyllopodic**.

LEAVES: 3-5, borne on the lower one-third of the culm. **Blades:** Flat, firm, 2-4.5 mm wide. **Sheaths:** Tight, white-hyaline ventrally, truncate at the mouth.

BRACT: Sheathless, setaceous above an expanded, scarious-margined base, short-awned, shorter to slightly longer than the inflorescence or reduced and not much different from the pistillate scales.

SPIKES: 5-10, **gynaecandrous**, sessile, green to greenish black, becoming brown at maturity, not over 1 cm long, indistinguishable and densely aggregated into an ovoid or suborbicular, truncate-based head, 12-20 mm long and 10-16 mm wide; perigynia spreading-ascending at maturity.

PISTILLATE SCALES: Ovate-lanceolate with an acute tip, narrower and shorter than the perigynia, scarious or hyaline-scarious, light to dark brown or greenish black with a faint midrib.

PERIGYNIA: Broadly ovate-lanceolate to lanceolate, thin and flattened except where distended by the achene (occasionally air trapped within the perigynium makes it appear plano-convex), serrulate to the middle and narrowly to broadly wing-margined to the round-tapering base, varying from green to stramineous, often tan, or brown to blackish medially and along the edges, 2.9-5 mm long, 1.1-2.4 mm wide. **Nerves:** Several, light or obscure on each side. **Beaks:** Ill-defined, gradually tapered, one-half to one-third the length of the body, serrulate except the distal 0.3 to 0.6 mm that is subterete, dark-tipped, obliquely cleft, obscurely bidentate or entire.

ACHENES: Broadly ovoid to obovoid, lenticular, brown at maturity, 1-1.6 mm long, 0.7-1.4 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common species of moist or wet places, from **foothills to moderately high elevations** in the mountains. British Columbia and Saskatchewan south to California, Arizona, and South Dakota. **May-August.**

SIMILAR SPECIES: See appendix, table 1.

Carex multicaulis. (A) Perigynia subtended by pistillate scales, (B) inflorescences.

Carex multicaulis Bailey
Many-stemmed sedge

HABIT: Loosely to densely cespitose in rather small tufts; rhizomes short or prolonged. **Culms:** Numerous, terete or obtusely triangular, 1.5-6 dm tall, mostly exceeding the leaves, very rarely the leaves elongated and surpassing the culms, **aphyllopodic.**

LEAVES: 1-2, near the base. **Blades:** Folded or involute, 1-2 mm wide. **Sheaths:** Thin hyaline and ribbed ventrally, truncate to shallowly concave at the mouth.

BRACTS: None, the lowest pistillate scale is bractlike.

SPIKES: Solitary, **androgynous**, elongate, green becoming stramineous or brown; staminate part linear and compact, 1-2.5 cm long; pistillate part with 1-6 appressed-ascending perigynia.

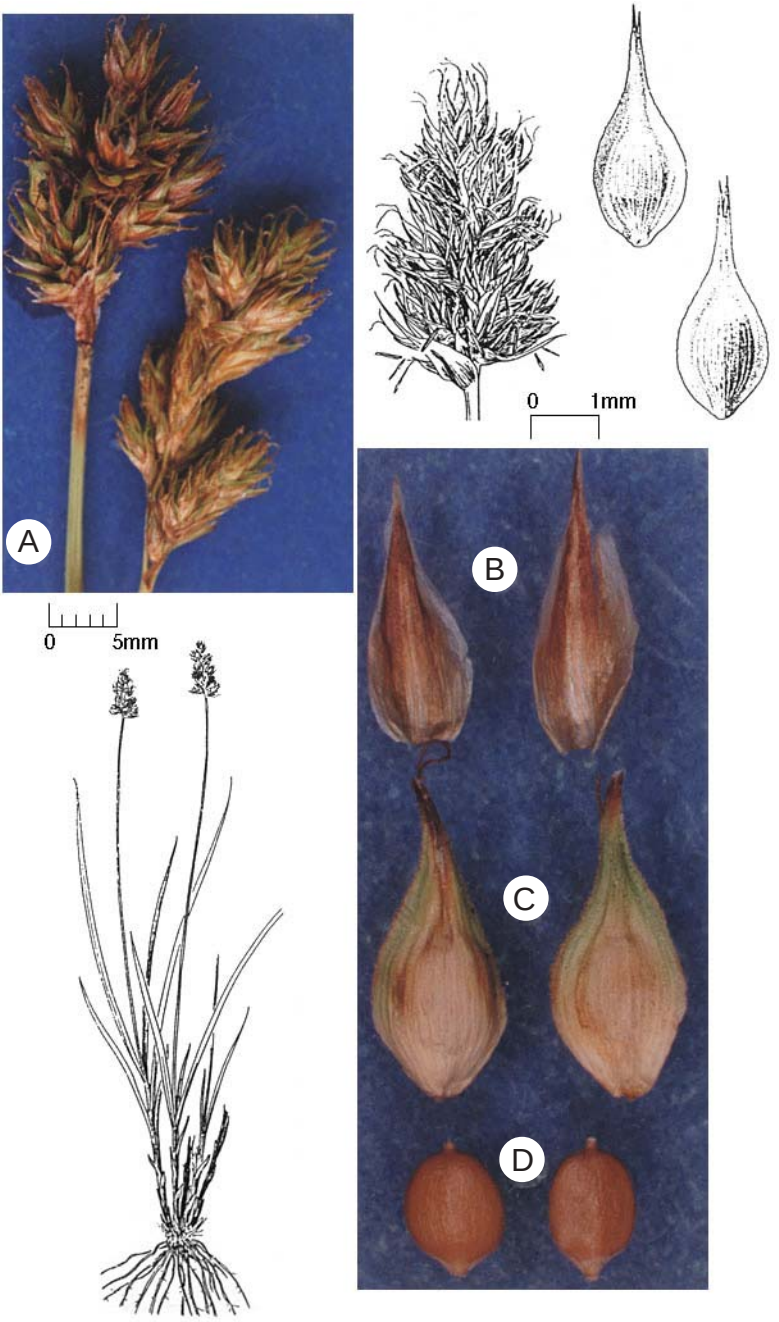
PISTILLATE SCALES: Persistent, lowest leaf like, surpassing the inflorescence, upper ones oblong-obovate with a green center and white-hyaline margins, progressively reduced upward; uppermost scales shorter than or equaling the perigynia.

PERIGYNIA: Oblong-ovate or ellipsoid, triangular, short-stipitate, pale greenish or brown, 5-8 mm long, 2.2-2.5 mm wide. **Nerves:** Many, faintly obscure on both surfaces or lacking; present on the margins. **Beaks:** Obsolete or short, abruptly contracted, minutely ciliate.

ACHENES: Obpyramidal, trigonous, 4-6 mm long, 2.1-2.3 mm wide, filling the perigynium and commonly exserted at the tip; the rachilla persistent. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common on dry soils of dense or open forests. **Low to moderate elevations.** From the Cascade Mountains and Klamath region of southern Oregon through the coast ranges and Sierra Nevada Mountains of California. Apparently isolated in northeastern Nevada. **April-June.**

SIMILAR SPECIES: See *C. geyeri*.



Carex multicostata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex multicostata Mack.
Many-ribbed sedge

HABIT: Loosely to densely tufted without creeping rhizomes. **Culms:** Stout, multi-striate, 1.5-9 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-4, crowded toward the base. **Blades:** Flat, 2-6 mm wide. **Sheaths:** Membranous and hyaline ventrally, truncate at the mouth.

BRACTS: Setaceous or short and inconspicuous, scarious, brownish, sheathless, much shorter than the inflorescence.

SPIKES: 3-10, **gynaecandrous**, sessile, green to dark brown, readily distinguishable but crowded in a narrow to pyramidal head 1-4 cm long and up to 2 cm wide; perigynia appressed to spreading-ascending.

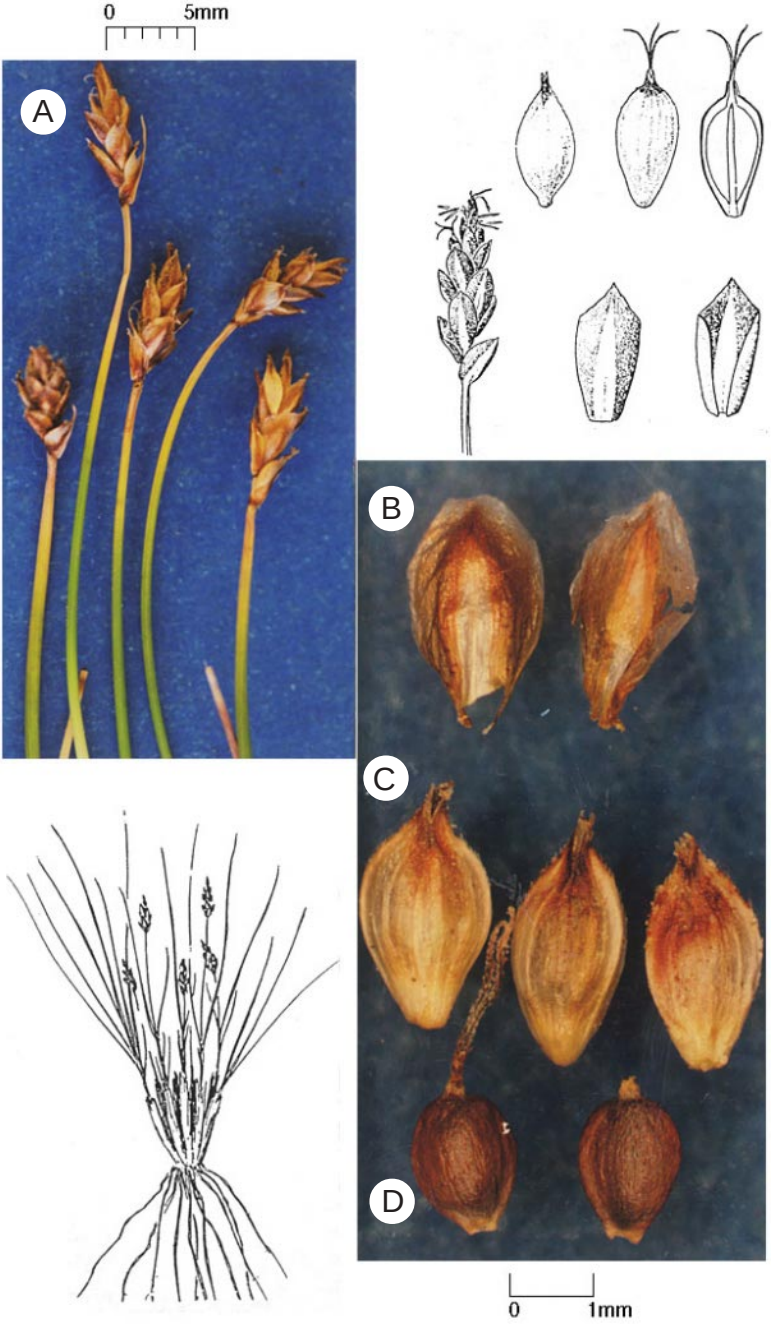
PISTILLATE SCALES: Ovate with an obtuse to acute or slightly cuspidate tip, somewhat shorter and narrower than the perigynia, scarious, light reddish brown to dark brown with a pale 3-nerved center and broad, shining white-hyaline margins.

PERIGYNIA: Narrowly to broadly ovate, plano-convex, abruptly tapered at the apex, serrulate to below the middle and wing-margined to the rounded base, thick-walled, subcoriaceous, green to stramineous or brown with greenish upper wing margins, 3.5-6.3 mm long, 1.5-2.5 mm wide. **Nerves:** 10 or more on each surface, obscure to conspicuous, longitudinally sulcate-wrinkled dorsally, fine-nerved or smooth ventrally. **Beaks:** Subterete or flattened; the distal 0.5-1.0 mm marginless, entire or bidentate, dark at the tip.

ACHENES: Quadrate-suborbicular, lenticular, substipitate, yellow or light brown, 1.7-2.7 mm long, 1.1-1.7 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Uncommon to frequent in wet to dry meadows, along streambanks, and on open, moist slopes at **moderate elevations**. From the Cascade-Sierran region of Washington, Oregon, and California through eastern Oregon, Nevada, central Idaho, and Montana. **July-August**.

SIMILAR SPECIES: *C. multicostata*—Usually with a more or less pyramidal inflorescence and ovate perigynia that are green with a light center and a broadly tapered base. *C. specifica*—Usually with an elliptic to oblong inflorescence and lanceolate, stramineous perigynia with brown or darker center and a narrowly tapered base.



Carex nardina. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left (and C, center)—dorsal view; right ventral view.

Carex nardina Fries
Spikenard sedge

SYNONYM: *C. hepburnii* Boott.

HABIT: Densely cespitose without creeping rhizomes. **Culms:** Slender, terete, smooth and wiry, 1-1.5 dm high, shorter to longer than the leaves, **phyllopodic,** old leaf sheaths persistent, forming a fasciculate base.

LEAVES: Few, mostly basal. **Blades:** Very slender, involute, stiff and wirelike, 0.25-0.5 mm wide, 1-10 cm long. **Sheaths:** Abruptly contracted into the blade, thin, hyaline, truncate at the mouth.

BRACTS: None.

SPIKES: Solitary, **androgynous**, oblong to ovoid, stramineous to reddish brown, 1.5 cm long, 2-4 mm wide; perigynia 5-15, erect-appressed.

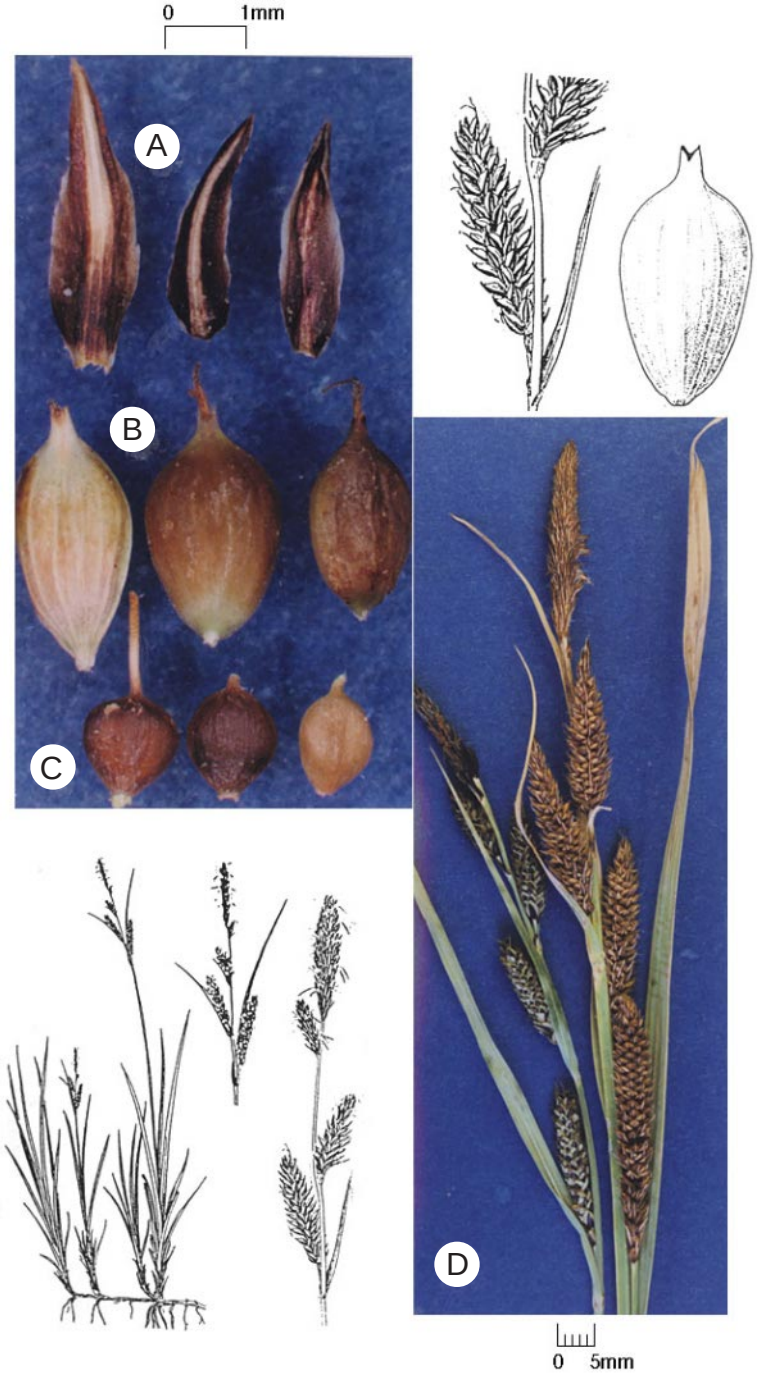
PISTILLATE SCALES: Ovate to obovate or orbicular with an acute to obtuse or rounded tip, the lower ones occasionally mucronate-awned, brown with a paler midvein and hyaline margins, equaling the perigynia in both width and length.

PERIGYNIA: Lanceolate to oblong-obovate, biconvex or plano-convex, tapering to the base, round-tapering or abruptly contracted at the apex, sharply angled along the margins, obscurely serrulate or glabrous distally, coriaceous, stramineous, reddish toward the apex, 3-4.5 mm long, 1.25-2 mm wide. **Nerves:** Lacking or obscure to prominent and numerous on both surfaces. **Beaks:** Up to 0.8 mm long, serrulate, hyaline-tipped, emarginate or obliquely cleft.

ACHENES: Lenticular or trigonous, dark dull brown at maturity, 1.6-2 mm long, 1-1.2 mm wide; rachilla well-developed. **Stigmas:** 2 or 3.

HABITAT AND DISTRIBUTION: Dry alpine summits, cliff crevices, talus, and open dry slopes at **high elevations**. Circumboreal. In North America extending south to Washington, Idaho, Nevada, Utah, Wyoming, and Colorado. **June-August.**

SIMILAR SPECIES: See appendix, table 7.



Carex nebrascensis. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left and center—dorsal views; right—ventral view.

Carex nebrascensis Dewey
Nebraska sedge

HABIT: Culms arising singly from long, stout, scaly rhizomes, sometimes forming dense stands. **Culms:** Coarse, sharply triangular, brown to reddish-tinged at the base, 2-12 dm tall, shorter to longer than the leaves, **phyllopodic,** dried leaves of the previous year present.

LEAVES: 8-15, loosely clustered, borne on the lower one-fourth of the culm, light green to more commonly glaucous and bluish green. **Blades:** Thick, firm, flat or channeled toward the base, septate-nodulose, 3-12 mm wide. **Sheath:** Membranous to hyaline ventrally, concave at the mouth.

BRACTS: Leaflike, not sheathing, dark-auricled; the lowest usually exceeding the inflorescence.

SPIKES: 3-6, slender, elongate, bicolored green and reddish purple when immature, rather remote. **Terminal:** 1 or 2, **staminate**, broadly linear, 1.5-4 cm long, 3-6 mm wide, the lower **staminate** spike often smaller than the upper. **Lateral:** 3-5, **pistillate,** erect, the upper ones may be **androgynous**, oblong to cylindric, sessile or the lower ones pedunculate, 1.5-7 cm long, 5-9 mm wide, approximate or sometimes remote, very closely 30- to 150-flowered; perigynia ascending to spreading.

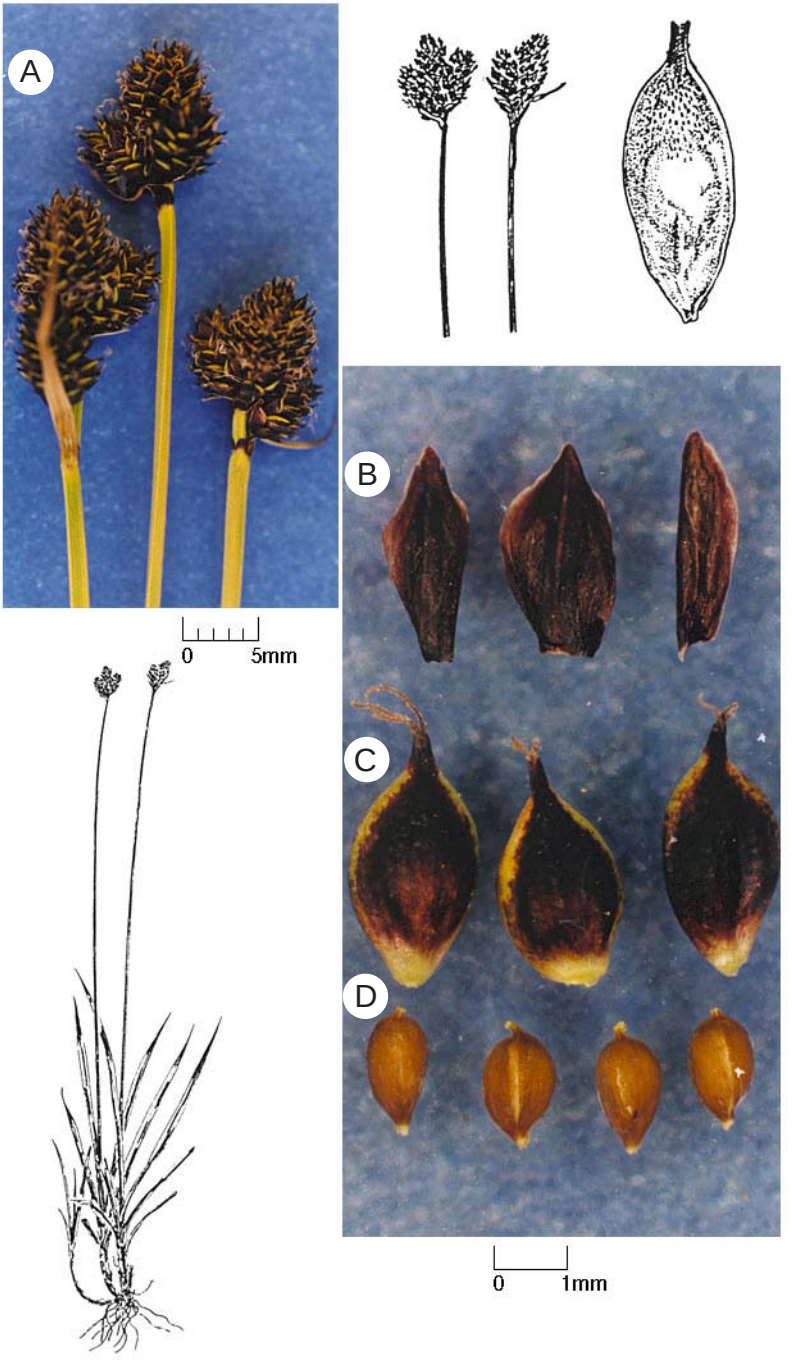
PISTILLATE SCALES: Lanceolate with an acuminate or occasionally obtuse tip, narrower than and shorter than to longer than the perigynia, reddish or brownish black, often with hyaline margins; the excurrent greenish midrib often extending to a serrulate awn.

PERIGYNIA: Oblong-ovate, unequally biconvex, flattened or slightly inflated, usually leathery, granular, sessile, straw colored or yellowish brown to light brown, becoming red-dotted at maturity, 2.7-4.1 mm long, 1.5-2.5 mm wide. **Nerves:** 5-10 on both surfaces, obscure to prominent; marginal nerves prominent. **Beaks:** Abruptly contracted to prominently or obscurely bidentate, somewhat dark and subciliate between the teeth, 0.2-1 mm long.

ACHENE: Obovate, elliptic or nearly orbicular, lenticular, light to dark brown, 1.2-2.5 mm long, 0.9-1.8 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Wet meadows, swamps, and ditches, often in alkaline soil from **lowlands to moderate elevations**. Common and widely distributed, wholly east of the Cascade Mountains. British Columbia south to California and east to New Mexico, Kansas, and South Dakota. One of the more tolerant sedges to disturbances such as grazing. **May-August.**

SIMILAR SPECIES: See appendix, table 3.



Carex nelsonii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex nelsonii Mack.
Nelson sedge

HABIT: Loosely cespitose from short, slender, creeping rhizomes. **Culms:** Stiff, erect, fibrillose, brown, slightly dark red tinged at the base, 1.5-3 dm tall, exceeding the leaves, slightly **aphyllopodic,** dried leaves of previous year present.

LEAVES: 5-12, closely clustered near the base. **Blades:** Thick, flat with revolute margins, channeled at the base, short-attenuate, 3-4 mm wide. **Sheaths:** Whitish ventrally, truncate at the mouth.

BRACTS: Scalelike and inconspicuous or the lowest slightly prolonged, sheathless, shorter than the inflorescence.

SPIKES: 2-4, sessile, golden brown to reddish black, closely aggregated, more or less indistinguishable, forming a dense, oblong or obovoid head, 10-12 mm long, 5-10 mm wide. **Terminal: Gynaecandrous**, rather clavate at the base. **Lateral: Pistillate**, densely flowered; perigynia appressed.

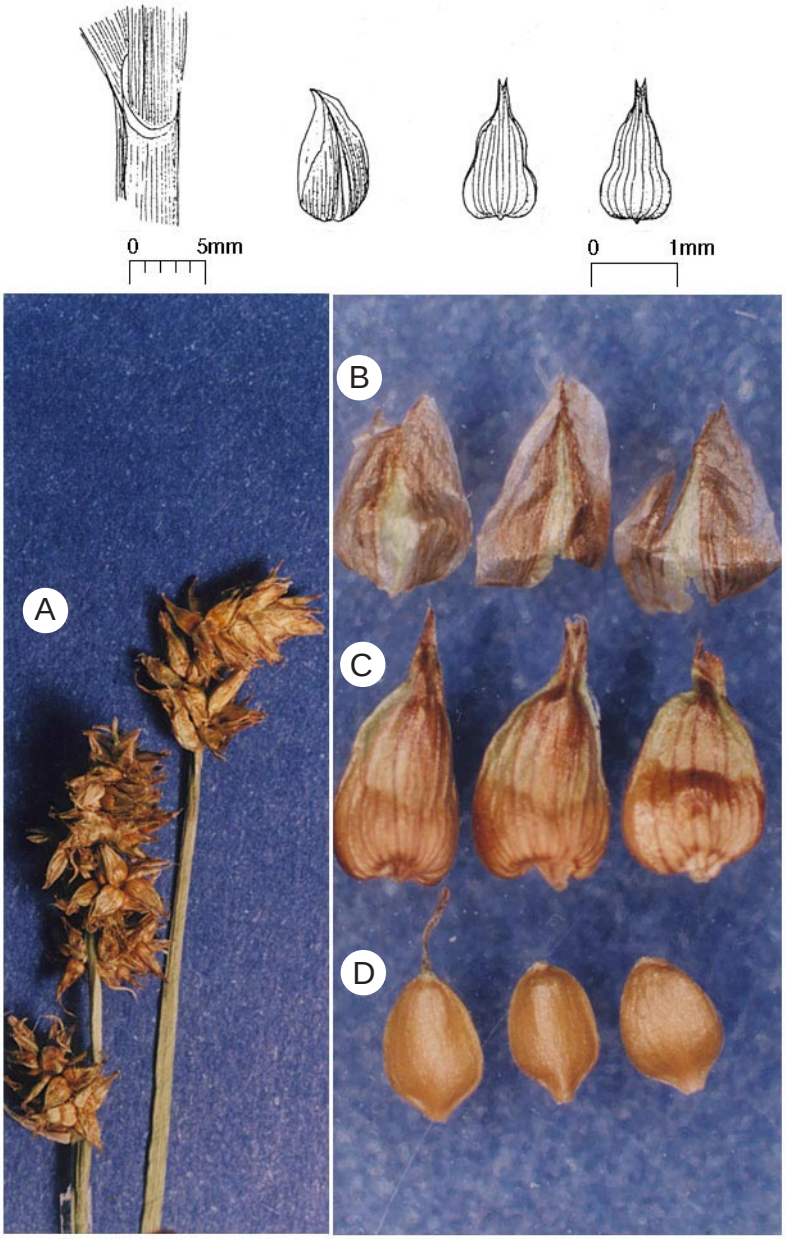
PISTILLATE SCALES: Ovate or lance-ovate with the tip obtuse or slightly acute, shorter and narrower than the perigynia, black, often conspicuously rough-papillose, the midvein obsolete and upper margins slightly or nonhyaline.

PERIGYNIA: Oblong to oblong-obovoid, somewhat inflated, tapered to rounded at the base, abruptly contracted at the apex, papillate and ciliate-serrulate on the margins above, puncticulate, yellow green, strongly blotched with dark reddish black, 4 mm long, 1.5 mm wide. **Nerves:** Absent except for the two lateral ribs. **Beaks:** Cylindric, sparsely ciliate-serrulate, reddish black, bidentate, 1 mm long.

ACHENES: Obovoid, trigonous, apiculate, substipitate, granular, yellowish green to brown, 1.5 mm long, 0.75 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Frequent in mountain meadows and on rocky slopes at **higher elevations**. Utah, Wyoming, and Colorado. **July-August.**

SIMILAR SPECIES: *C. nelsonii*—In the Intermountain Region above 3,660 m in the Uinta Mountains of Utah; perigynia smaller (4 mm long, 1.5 mm wide), puncticulate, granular, slightly compressed, and mostly dark except for the margins. *C. nova*—Occurs at elevations lower than 3,050 m; perigynia larger (2.8-4.5 mm long; 2-3.5 mm wide), flattened, membranous, and pale throughout except for the beak.



Carex nervina. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex nervina Bailey
Nerved sedge

HABIT: Cespitose, often forming large clumps from short rhizomes. **Culms:** Sharply angled, sometimes winged, spongy when fresh, 4-8 dm tall, equaling or exceeding the leaves, slightly **phyllopodic**.

LEAVES: 4-6, not clustered at the base. **Blades:** Flat, 3.5-5 mm wide. **Sheaths:** Hyaline, smooth or prominently ribbed ventrally, green- and white-mottled dorsally, truncate or U-shaped with a thick rim at the mouth.

BRACTS: Short and inconspicuous.

SPIKES: Several, **androgynous**, greenish brown or brown to reddish-tinged, densely aggregated into an oblong or oblong-ovoid head 1.5-3 cm long and 6-18 mm wide, indistinguishable except for the lower ones which are sometimes separate; perigynia widely spreading at maturity.

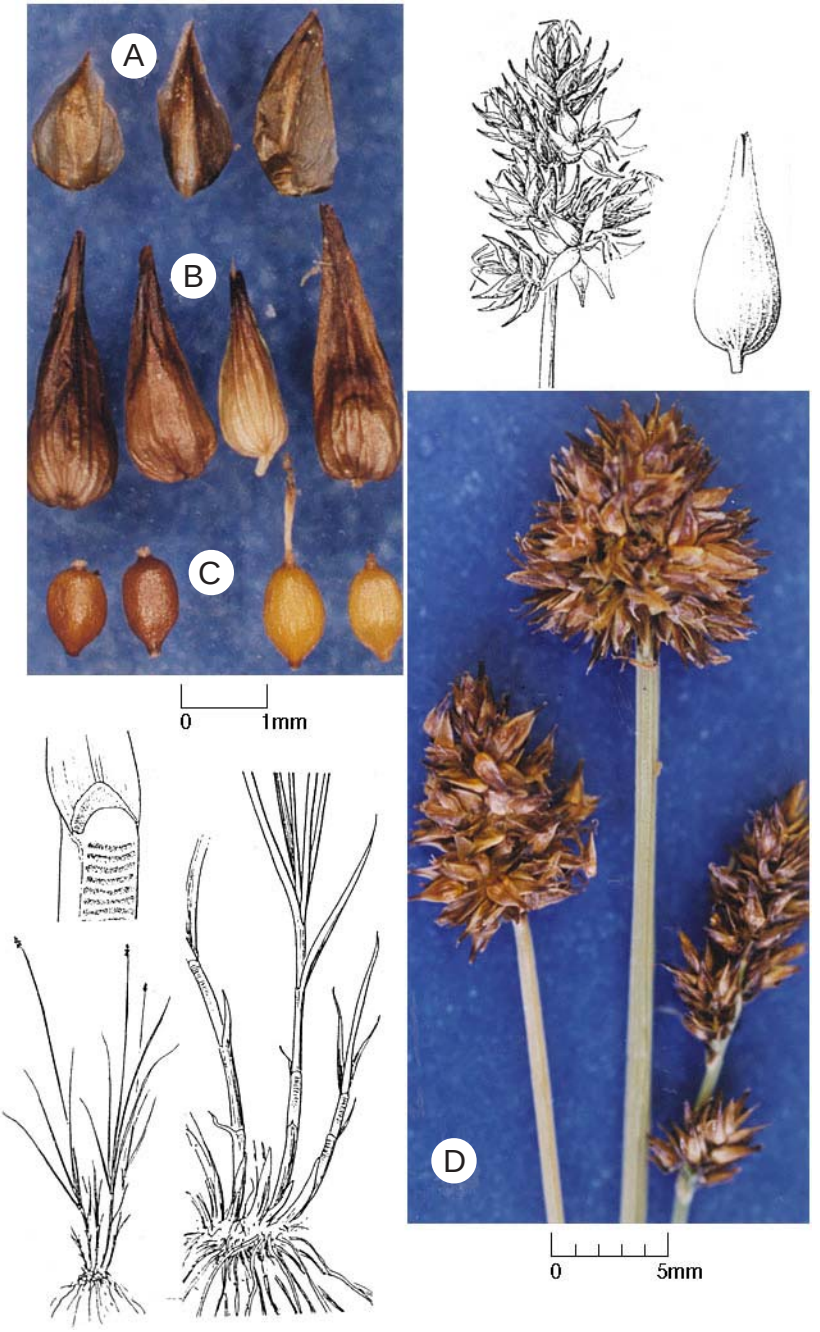
PISTILLATE SCALES: Ovate with an obtuse to acute tip, equaling or shorter than the perigynia and about as wide, thin, brownish with pronounced white-hyaline margins and a pale center.

PERIGYNIA: Broadly lanceolate to narrowly ovate, plano-convex, widest at the truncate base, distended by spongy tissue at maturity, tapered above and contracted at the apex, sharp-margined, substipitate, smooth, green to shiny brown, 2.8-4.5 mm long, 1-1.8 mm wide. **Nerves:** Numerous, conspicuous. **Beaks:** Slender, slightly serrulate, obliquely cleft, 0.8-1.7 mm long.

ACHENES: Ovate, lenticular, abruptly tapered at the base, rounded above, medium brown, 1.2-1.8 mm long, 1-1.3 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: In moist to wet places along streams and in meadows at **moderate elevations**. From the Cascade Mountains through southern Oregon to northern California and western Nevada. **June-August**.

SIMILAR SPECIES: See appendix, table 9.



Carex neurophora. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left and center—dorsal views; right—ventral view.

Carex neurophora Mack.
Alpine nerved sedge

HABIT: Clustered without creeping rhizomes. **Culms:** Sharply triangular, 2-8 dm tall, exceeding the leaves, strongly **aphyllopodic**.

BRACTS: Small and inconspicuous, sheathless, setaceous, shorter than the inflorescence.

SPIKES: 5-10, **androgynous**, sessile, brown, reddish-tinged, few-flowered, indistinguishable and densely aggregated into an ovoid to oblong head 1.5-2.5 cm long and 6-15 mm thick; mature perigynia spreading.

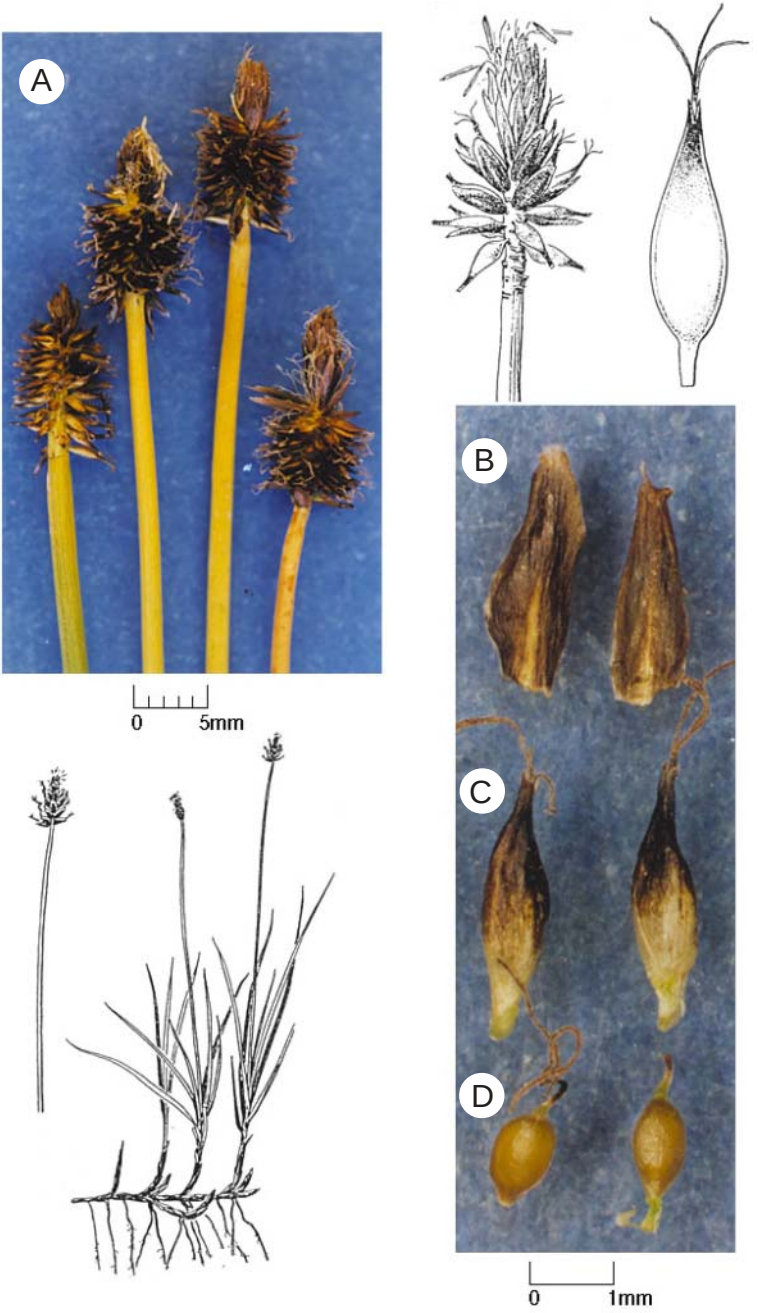
PISTILLATE SCALES: Ovate, largely hyaline-scarious, brown or brownish-stramineous with a green or pale midrib, as wide as the perigynia, but only half as long.

PERIGYNIA: Lanceolate or lance-triangular, plano-convex, tapering more or less evenly from the base to the apex, sharp-edged, minutely serrulate distally, short-stipitate, shining, brownish-stramineous to dark chestnut, lighter colored and somewhat spongy at the base, 2.9-4 mm long, 0.8-1.5 mm wide. **Nerves:** Finely striate, prominent or riblike, numerous on both surfaces. **Beaks:** Tapered, more or less lightly serrulate distally, one-half the length of the body, obliquely cleft, scarcely bidentate.

ACHENES: Ovate, lenticular, 1.1-1.6 mm long, 0.8-1 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Swamps, moist or wet meadows, and streambanks at **moderate elevations** in the mountains. Washington and Oregon east to Idaho, Utah, Montana, Wyoming, and Colorado. Reported from Elko County, Nevada. **July-August.**

SIMILAR SPECIES: See appendix, table 9.



Carex nigricans. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex nigricans C. A. Meyer
Black alpine sedge

HABIT: Sometimes loosely cespitose from long, stout, creeping rhizomes. **Culms:** Stiff, obtusely angled to semi-terete, 0.4-3 dm tall, **phyllopodic,** dried leaves present at the base.

LEAVES: 4-9, crowded near the base. **Blades:** Stiff, flat or channeled, 4-13 cm long, 1.5-3 mm wide. **Sheaths:** Thin, hyaline, truncate at the mouth.

BRACTS: None.

SPIKES: Solitary, **androgynous**, rarely wholly **staminate** or wholly **pistillate**, oblong or oblong-ovoid, dark brown to black, 7-20 mm long, 6-10 mm thick; perigynia 20-50, dense, appressed-ascending, becoming widely spreading and deciduous at maturity.

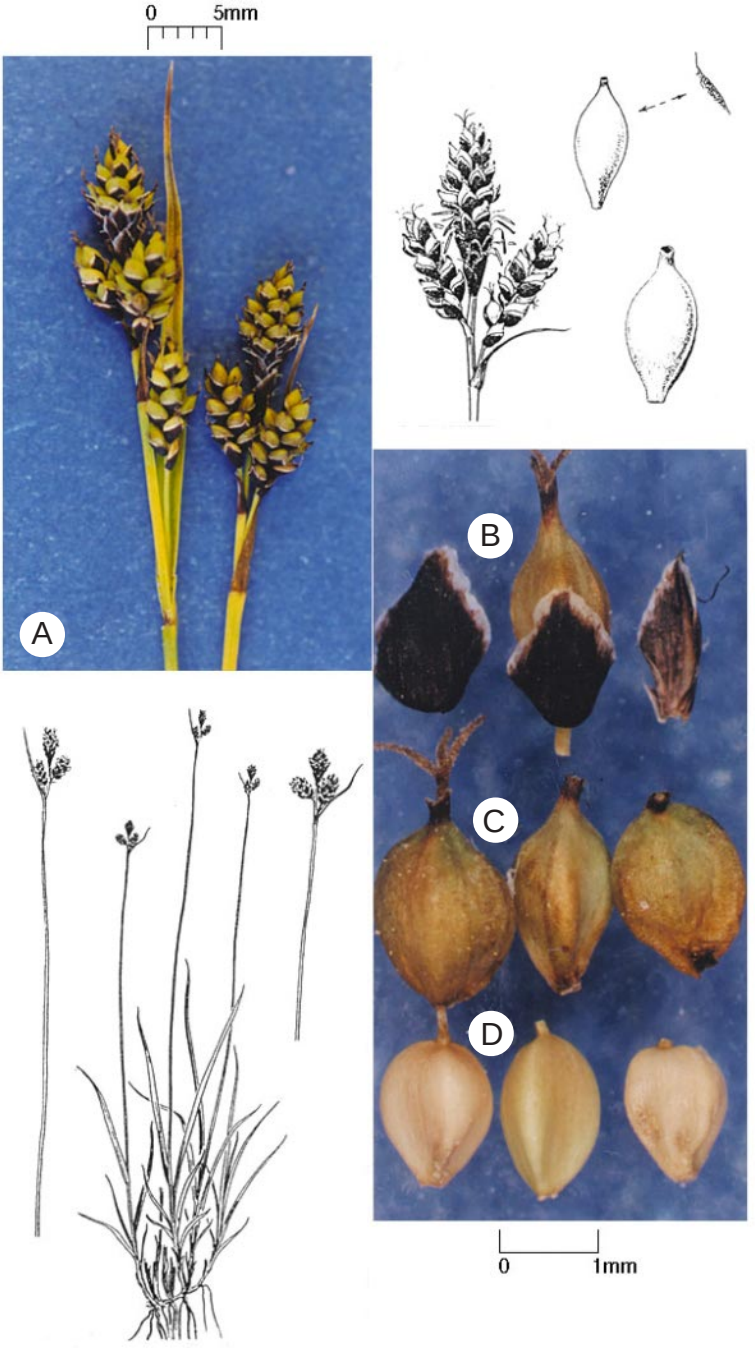
PISTILLATE SCALES: Broadly ovate with obtuse to acute tips, equaling or shorter than the perigynia, black, thin-margined, sometimes with a pale midrib, soon becoming spreading and deciduous as the fruit approaches maturity, each scale leaving a conspicuous ridge on the spike axis. **Staminate scales:** persistent, appressed.

PERIGYNIA: Lanceolate to narrowly ovate, smooth and shining, slender-stipitate, dark brown or black distally, paler and more stramineous or greenish toward the base, 3-4.5 mm long, 0.8-1.5 mm wide. **Nerves:** Absent to conspicuously nerved or with marginal nerves only. **Beaks:** Tapering, terete, narrow, smooth, obliquely cleft, 0.5 mm long.

ACHENES: Oblong-elliptic, somewhat unequally trigonous, 1.1-2 mm long, 0.6-0.9 mm wide, jointed to the style; rachilla obsolete. **Stigmas:** 3 or sometimes 2.

HABITAT AND DISTRIBUTION: Common in meadows, along streambanks, and in other moist or wet places at **high elevations** in the mountains. Alaska to California, eastern Oregon, Utah (Uinta and Wasatch Mountains), and Colorado. Not yet recorded from Nevada. **June-August.**

SIMILAR SPECIES: See appendix, table 4.



Carex norvegica. (A) Inflorescences, (B) pistillate scales (center scale subtends a perigynium), (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex norvegica Retz.
Norway sedge, Scandinavian sedge

HABIT: Loosely to densely tufted on a compact system of slender, branched rhizomes. **Culms:** Slender, lax, sharply triangular above, 2-8 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 5-7, aggregated toward the base, but some cauline. **Blades:** Pale green, flat, soft, glabrous, 1.5-3 mm wide. **Sheaths:** Ventrally hyaline, truncate to concave at the mouth.

BRACTS: Generally leaflike, sheathless, shorter to longer than the inflorescence.

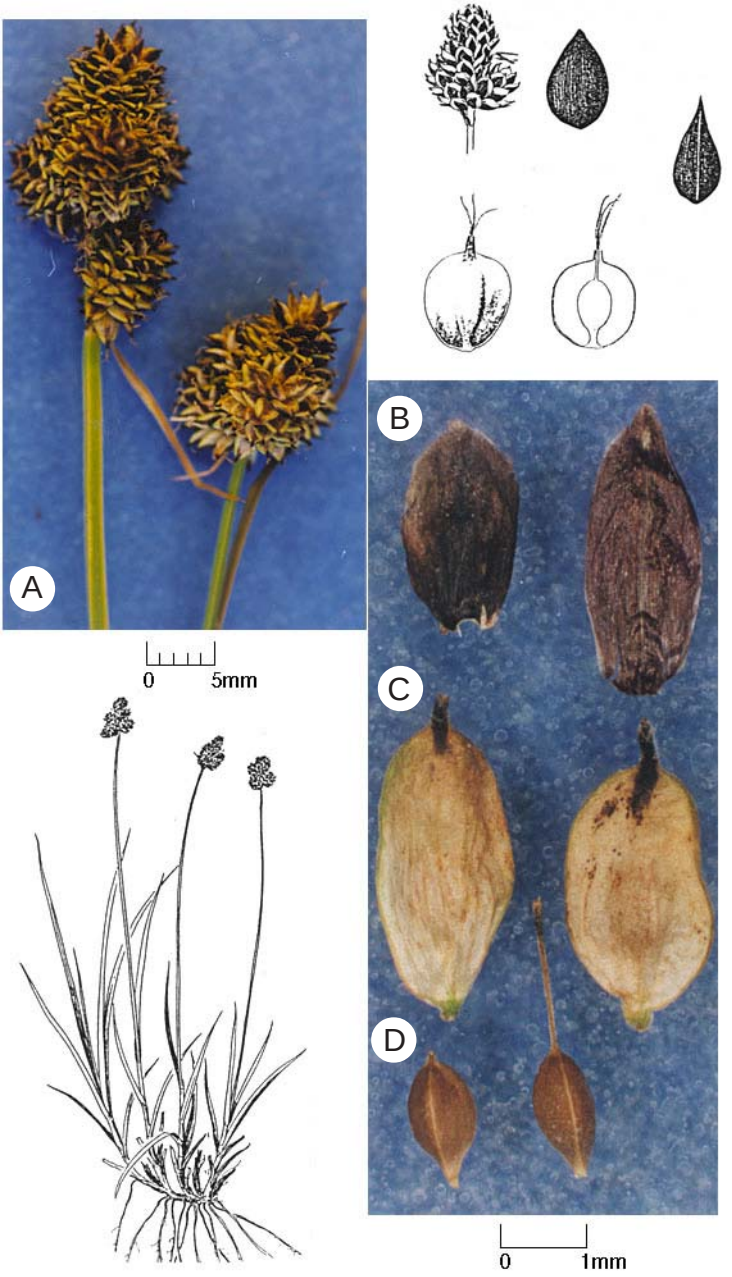
SPIKES: 2-5, erect or closely ascending, sessile or short-pedunculate, bicolored with green and blackish purple, relatively small, approximate. **Terminal: Gynaecandrous**, short-oblong to suborbicular, slender at the base, 3.5-14 mm long, 3-5 mm wide. **Lateral: Pistillate**, seldom over 10 mm long, closely 8- to 25-flowered; perigynia ascending.

PISTILLATE SCALES: Broadly ovate with an obtuse tip, equaling or shorter than the perigynia and usually as wide, purplish black to brownish black with white-hyaline margins, the midrib inconspicuous or sometimes lighter.

PERIGYNIA: More or less obovate, elliptic, distended by the achene, glabrous but minutely rough-textured, coppery yellow or light green to sometimes dark purple, 2.1-3 mm long, 1-1.3 mm wide. **Nerves:** Absent, inconspicuous, or few on both surfaces; marginal nerves well-developed. **Beaks:** Black or dark reddish-tinged, bidentate, 0.3-0.5 mm long.

ACHENES: Trigonous, sessile, pale to brown, 1.2-1.7 mm long, 0.7-1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Frequent on moist, open slopes and in partially shaded microhabitats in subalpine meadows and along streambanks at **high elevations**. Circumboreal. Alaska to Labrador and south through Washington, New Mexico, and Michigan. In the Intermountain area in California (White Mountains), Nevada (Ruby Mountains), Idaho, and Utah. **June-August.**



Carex nova. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex nova Bailey
Black sedge, new sedge

HABIT: Densely tufted on a system of short, branched, sometimes scarcely evident rhizomes. **Culms:** Somewhat lax, brownish to reddish at the base, 1.5-6 dm tall, often exceeding the leaves, slightly **aphyllopodic,** sheaths of the previous year persistent.

LEAVES: 8-15, clustered at the base. **Blades:** Erect, firm, flat with slightly revolute margins, roughened at the attenuate apex, 2-5 mm wide. **Sheaths**: Very thin, hyaline, concave at the mouth.

BRACTS: Slender, inconspicuous to foliaceous-prolonged, sheathless, shorter than the inflorescence.

SPIKES: 3-5, short, broad, obscurely bicolored with greenish black to brown and tan, closely aggregated and difficult to differentiate in a densely capitate, lobate inflorescence. **Terminal: Gynaecandrous** with few staminate flowers, sessile, commonly about 1 cm long. **Lateral: Pistillate**, crowded, rarely over 1 cm long; perigynia spreading.

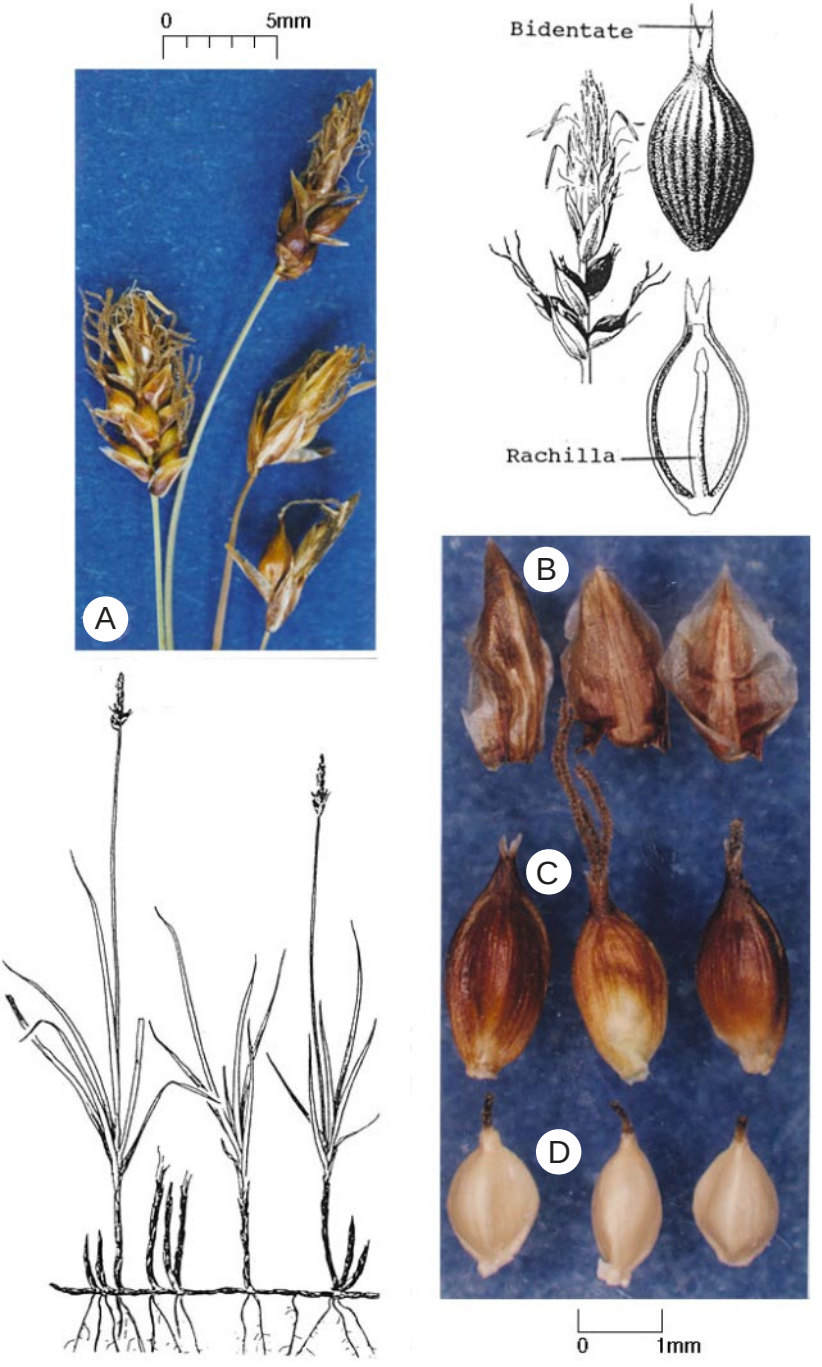
PISTILLATE SCALES: Ovate-oblong to linear-oblong with an obtuse to acuminate tip, equaling or shorter than the perigynia and about as wide, dark brown to purplish black throughout.

PERIGYNIA: Broadly elliptic to oblong or subrotund, strongly flattened, membranous, glabrous, substipitate, stramineous or green to dark purple or brown with pale margins, 2.8-4.5 mm long, 2-3.5 mm wide. **Nerves:** Marginal nerves present, ciliate-scabrous. **Beaks:** Abruptly contracted, slender, black, shallowly or obscurely bidentate, 0.3-0.6 mm long.

ACHENES: Trigonous, commonly sharp-angled, evidently stipitate, brown, 1.5-2 mm long, 1 mm wide, much smaller than the perigynium. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common in meadows and on moist, open slopes and streambanks at **high elevations** in the mountains, often above timberline. Oregon (Harney County), central Idaho, Nevada (Elko County), Utah, western Montana, Wyoming, Colorado, and New Mexico. **June-August**.

SIMILAR SPECIES: See *C. nelsonii.*



Carex obtusata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex obtusata Liljeblad
Obtuse sedge, blunt sedge

HABIT: Scattered on elongate, dark, scaly, tough, but mostly slender rhizomes. **Culms:** 1-3 together, slender, triangular, rough, reddish to reddish brown at the base, 0.5-2 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: Several, crowded near ground level. **Blades:** Stiff, flat or channeled, 0.5-1.5 mm wide. **Sheaths:** Tight, hyaline, somewhat thickened and truncate at the mouth; older sheaths with reddish brown spots.

BRACTS: None.

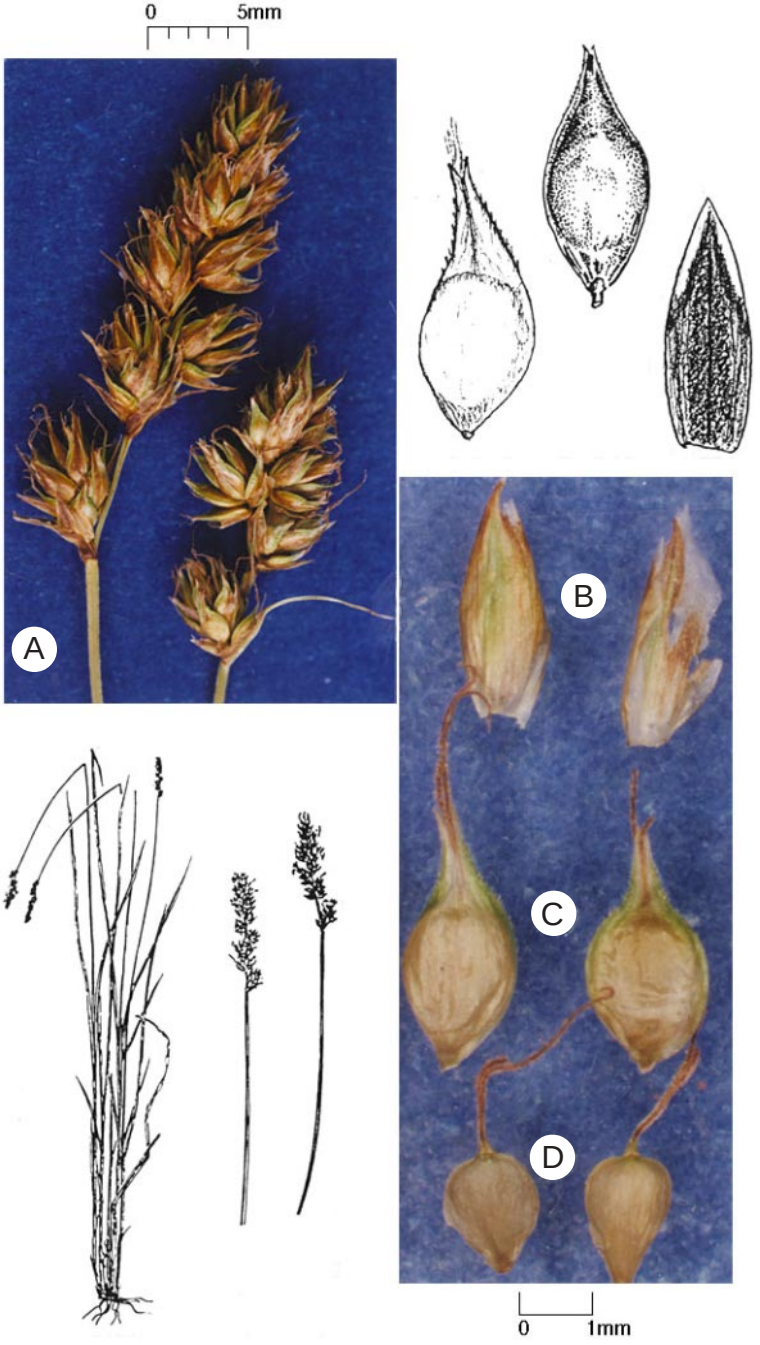
SPIKES: Solitary, **androgynous**, stramineous to chestnut, 5-15 mm long, 3-6 mm wide; **staminate** portion well-developed; perigynia 1-10, spreading-ascending at maturity.

PISTILLATE SCALES: Ovate to ovate-lanceolate with a sharply acute or cuspidate tip, shorter to longer than the perigynia, thin, pale brown to chestnut with hyaline margins and often paler midvein.

PERIGYNIA: Oblong-obovoid (suborbicular-triangular in cross section), plump, thick-walled, coriaceous, glossy, dark chestnut or blackish brown, 3-4 mm long, 1.5-2 mm wide. **Nerves:** Numerous, prominent on both surfaces. **Beaks:** Contracted, smooth, 0.5-1 mm long; tip hyaline, obliquely cleft, bidentate.

ACHENES: Oblong-obovoid to orbicular, trigonous, yellowish to creamy brown, 1.75 mm long, 1 mm wide; the rachilla well-developed, often with a flattened terminal appendage. **Stigmas:** 3, usually persistent.

HABITAT AND DISTRIBUTION: Infrequent to locally common in open, fairly dry, often grassy places. **Plains and foothills to high elevations** in the mountains. Yukon and Manitoba south to Utah, Montana, Wyoming, Colorado, and New Mexico and across the plains to South Dakota, Nebraska, and Minnesota. **June-August**.



Carex occidentalis. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex occidentalis Bailey
Western sedge

HABIT: Densely clustered from short, stout, creeping black, fibrillose rhizomes. **Culms:** Slender, semi-terete to sharply triangular, smooth below, roughened above, 1.5-8 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: Several. **Blades:** Flat with slightly revolute margins, 1-2.5 mm wide. **Sheaths:** Tight, thin, brownish, truncate to shallowly concave at the mouth.

BRACTS: Setaceous to poorly developed or none.

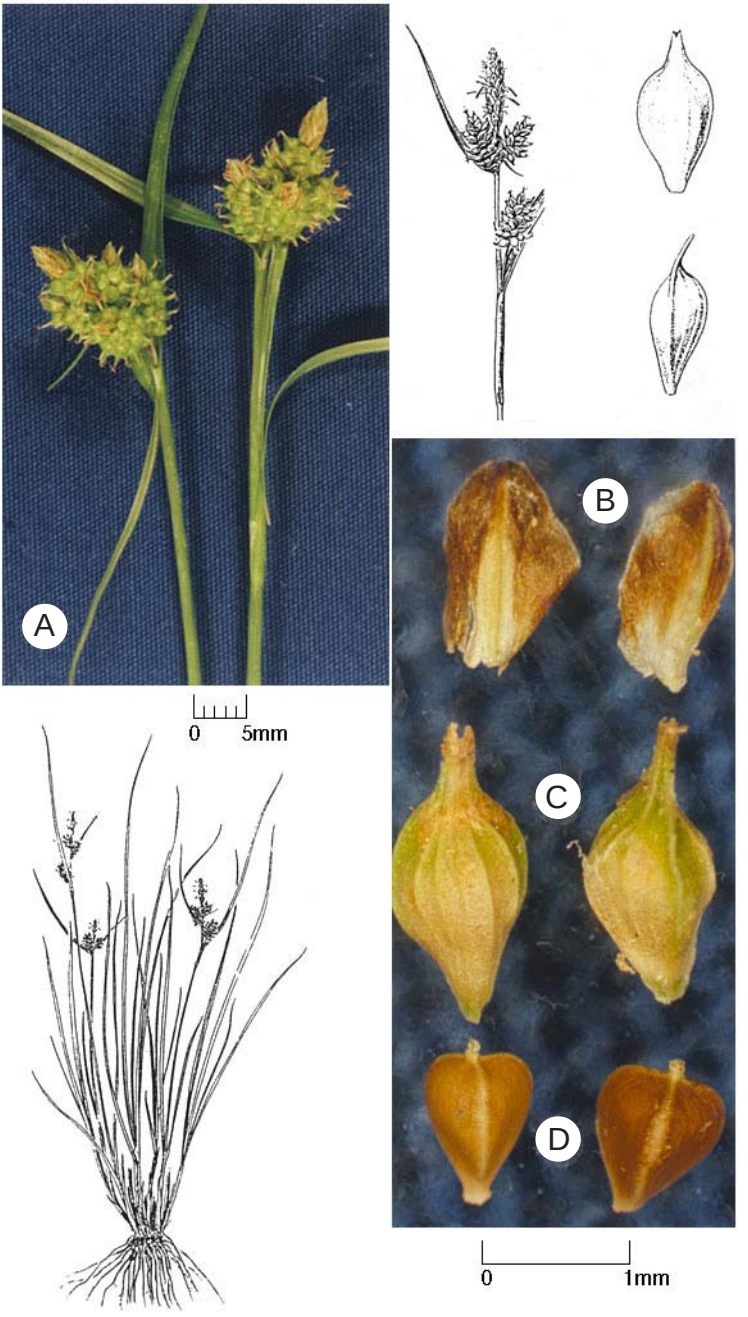
SPIKES: 4-10, **androgynous**, stramineous to brown or reddish-tinged, forming an oblong to linear-oblong head 1.5-3.5 cm long; the upper spikes aggregated and indistinguishable; the lower somewhat separate; **staminate** flowers inconspicuous; perigynia loosely ascending or spreading.

PISTILLATE SCALES: Ovate-triangular with an acuminate or short-awned tip, equal in length but wider than the perigynia, brownish with opaque or narrow hyaline margins and green center.

PERIGYNIA: Oblong-elliptic, plano-convex, sparingly serrulate above the middle, stipitate, green to straw-colored, smooth and shiny, brown at maturity, 2.5-4.5 mm long, 1.5-1.9 mm wide; margins sharp, narrow, green, smooth, shiny. **Nerves:** Inconspicuous or absent, marginal only. **Beaks:** Abruptly narrowed, serrulate, flat, shallowly to deeply bidentate, 0.2-1.2 mm long.

ACHENES: Oblong-orbicular, lenticular, light brown at maturity, 1.3-2.4 mm long, 0.9-1.5 mm wide. Stigmas: 2.

HABITAT AND DISTRIBUTION: Occasional to frequent in dry habitats, generally at **mid elevations**, but extending upward to **subalpine or alpine areas**. Southern California to Nevada, Utah, Arizona, southern Wyoming, Colorado, and New Mexico. **July-August**.



Carex oederi. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex oederi Retz.
Green sedge

SYNONYMS: *C. oederi* Retz. var. *viridula* Kükenth; *C. viridula* (Michx.) Kükenth.

PLANT HABIT: Cespitose. **Culms:** Smooth and not prominently angled, 0.6-4 dm tall, shorter to longer than the leaves, **phyllopodic**.

LEAVES: 4-8, basal and cauline or all basal. **Blades:** Elongate, sometimes flat, tending to be channeled, narrow, bright green or yellowish green, 1-3 mm wide. **Sheaths:** Thin, hyaline, truncate to shallowly concave at the mouth.

BRACTS: Conspicuous, leaflike, elongate, surpassing the inflorescence; bracts subtending spikes in the terminal cluster sheathless, those subtending remote spikes with well-developed sheaths and long blades.

SPIKES: 3-6, sessile or short-pedunculate, green, becoming stramineous, heads varying from aggregated to remote. **Terminal: Staminate**, linear, 3-21 mm long. **Lateral: Pistillate**, stout, 5-14 mm long, 4-7 mm wide, compound, the lower spikes sometimes remote; perigynia 15-30, crowded, spreading.

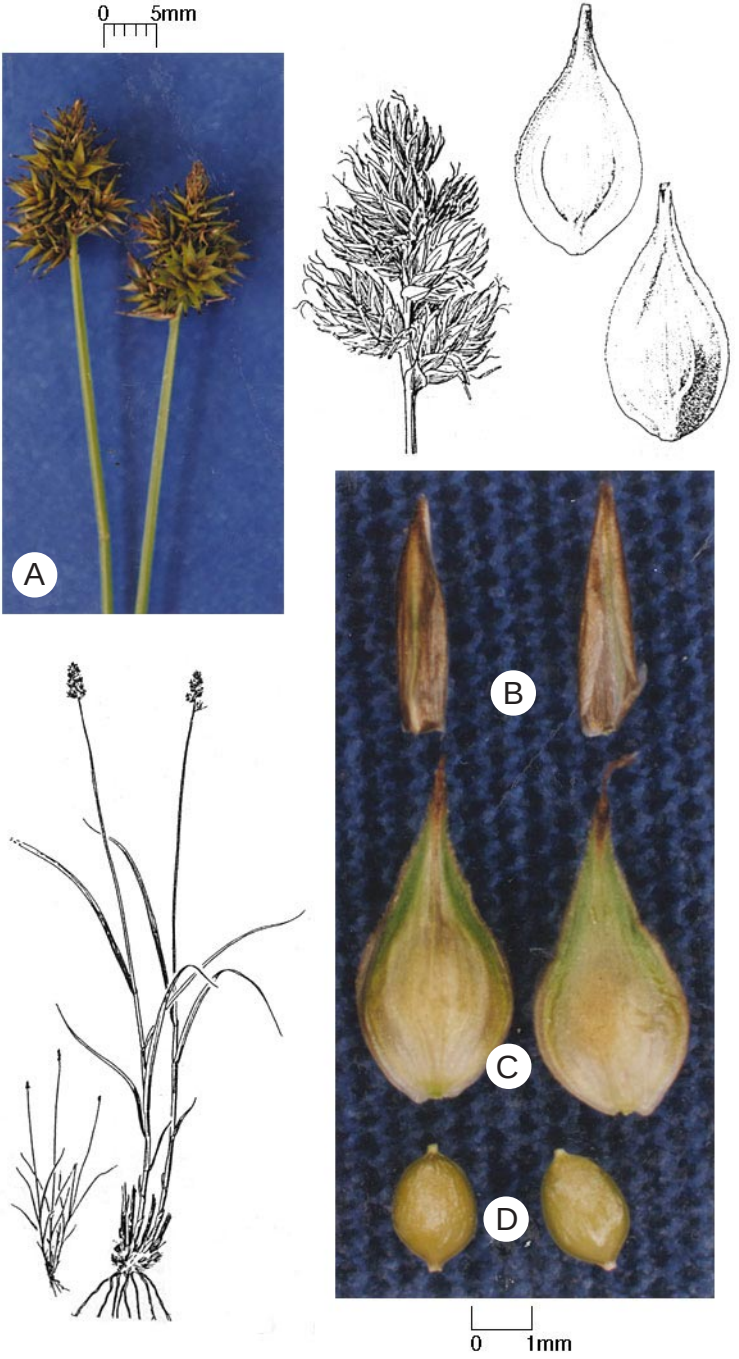
PISTILLATE SCALES: Obovate with a short-cuspidate or obtuse tip, shorter and narrower than the perigynia, medium brown to stramineous except for the firm, light or green midrib and narrow, more or less white-hyaline margins, or sometimes wholly pale and hyaline-scarious except for the midrib.

PERIGYNIA: Obovoid, distended by the achene but distally empty and slightly inflated, pale or bright green to stramineous or yellow, 2-3.5 mm long, 0.9-1.5 mm wide. **Nerves:** Several to many on each surface, prominent and riblike; marginal nerves present. **Beaks:** Narrowly conic, abruptly contracted, slightly bent, very shortly bidentate, 0.6-1.2 mm long.

ACHENES: Tapered at the base, truncate at the apex, trigonous, golden brown to dark brown, 1-1.8 mm long, 0.8-1.1 mm wide, jointed to the style. **Stigmas**: 3.

HABITAT AND DISTRIBUTION: Infrequent. On sphagnum or sandy or saline soils on wet, low ground. **Sea level to moderate elevations**. Circumboreal. In North America extending south to northern California, southern Nevada, Idaho, Utah, New Mexico, Indiana, and New Jersey. **June-August**.

SIMILAR SPECIES: See *C. flava*.



Carex pachystachya. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex pachystachya Cham.
Chamisso sedge, thick-headed sedge

HABIT: Small, dense clumps from short, black rhizomes. **Culms:** Slender, conspicuously striate, 1.5-10 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-5, borne on the lower one-third of the culm. **Blades:** Flat, (1.5)2-5(6.5) mm wide. **Sheaths:** Tight, white-hyaline ventrally, truncate or concave at the mouth.

BRACTS: Small and inconspicuous, setaceous.

SPIKES: 4-12, **gynaecandrous**, sessile, greenish black, becoming golden brown or dark brown, 7-12 mm long, closely aggregated into a dense suborbicular or oblong head 1-2.5(3) cm long and 7-15 mm thick (but occasionally all or the lower spikes separate); perigynia ascending-spreading to spreading at maturity.

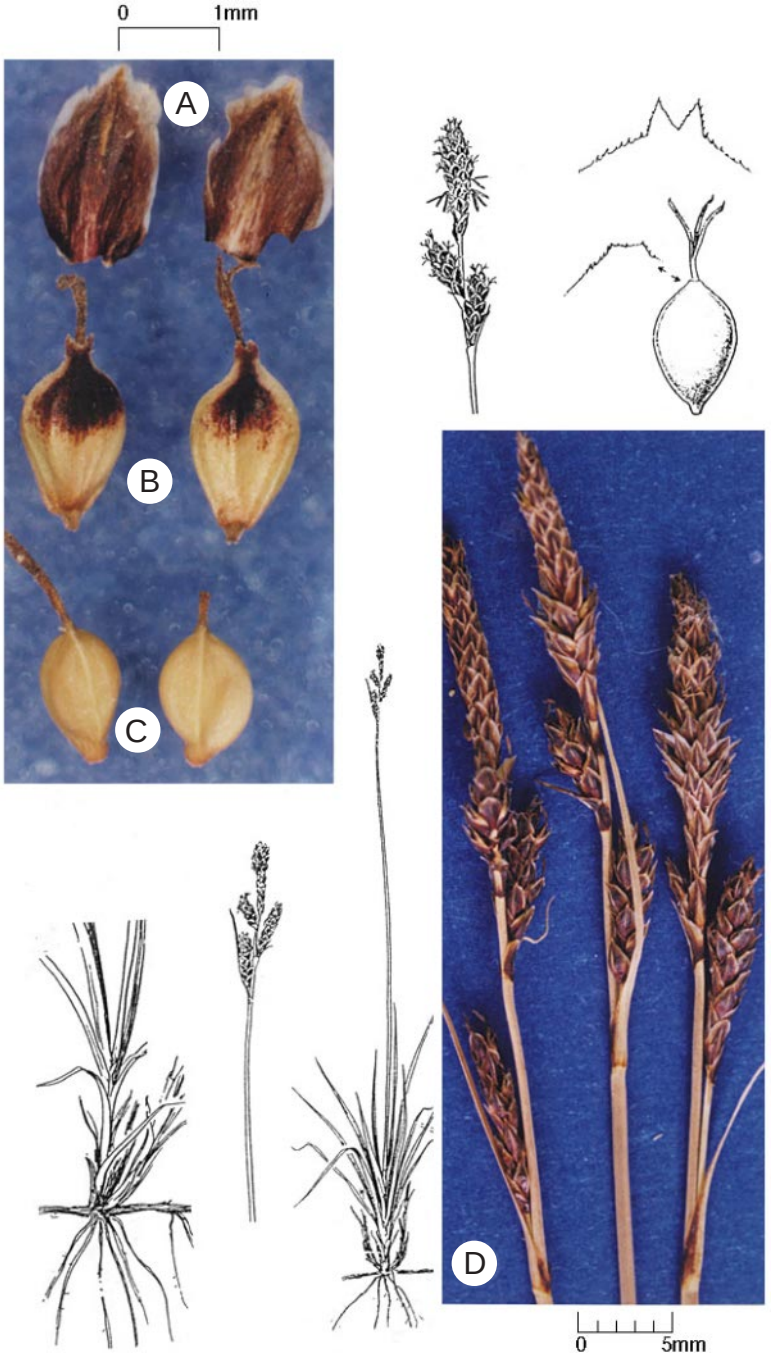
PISTILLATE SCALES: Ovate with an acute tip, often shorter and somewhat narrower than the perigynia, chestnut brown to reddish brown or blackish throughout.

PERIGYNIA: Narrowly to broadly ovate, plano-convex, base and margins often filled with spongy tissue, abruptly tapering at the apex, wing-margined and narrowly serrulate, tan with pale green or greenish-stramineous margins, copper-colored or golden brown at maturity, 2.8-5 mm long, 1.1-2.3 mm wide. **Nerves:** Several, fine dorsally; generally few, obscure, or lacking ventrally; usually with prominent inframarginal nerves delimiting the wing. **Beaks:** Slender, less than half the length of the body; the tip short or long, terete, smooth, dark brown, entire to shallowly bidentate.

ACHENES: Short-oblong, ovate, lenticular, flat ventrally, convex dorsally, green, becoming brown at maturity, 1.2-1.9 mm long, 0.8-1.5 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Locally common in wet to moist meadows, open woods, and on rather dry slopes **from sea level to timberline**. From coastal Alaska south to California and east through Alberta, Idaho, and western Montana. Occasional in northern Wyoming. **June-August**.

SIMILAR SPECIES: See appendix, table 1.



Carex parryana. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex parryana Dewey
Parry sedge

HABIT: Loosely tufted with scaly, long or short creeping rhizomes. **Culms:** Stiff, obtusely triangular, reddish-tinged, 1.5-6 dm tall, exceeding the leaves, **phyllopodic**, dried leaves of previous years conspicuous.

LEAVES: 5-12, crowded near the base of the culm. **Blades:** Thin, firm and stiff, flat to channeled with revolute margins, 2-4 mm wide. **Sheaths:** Very thin ventrally, concave at the mouth.

BRACTS: Sheathless or nearly so, reddish-tinged at the base, usually shorter than the inflorescence.

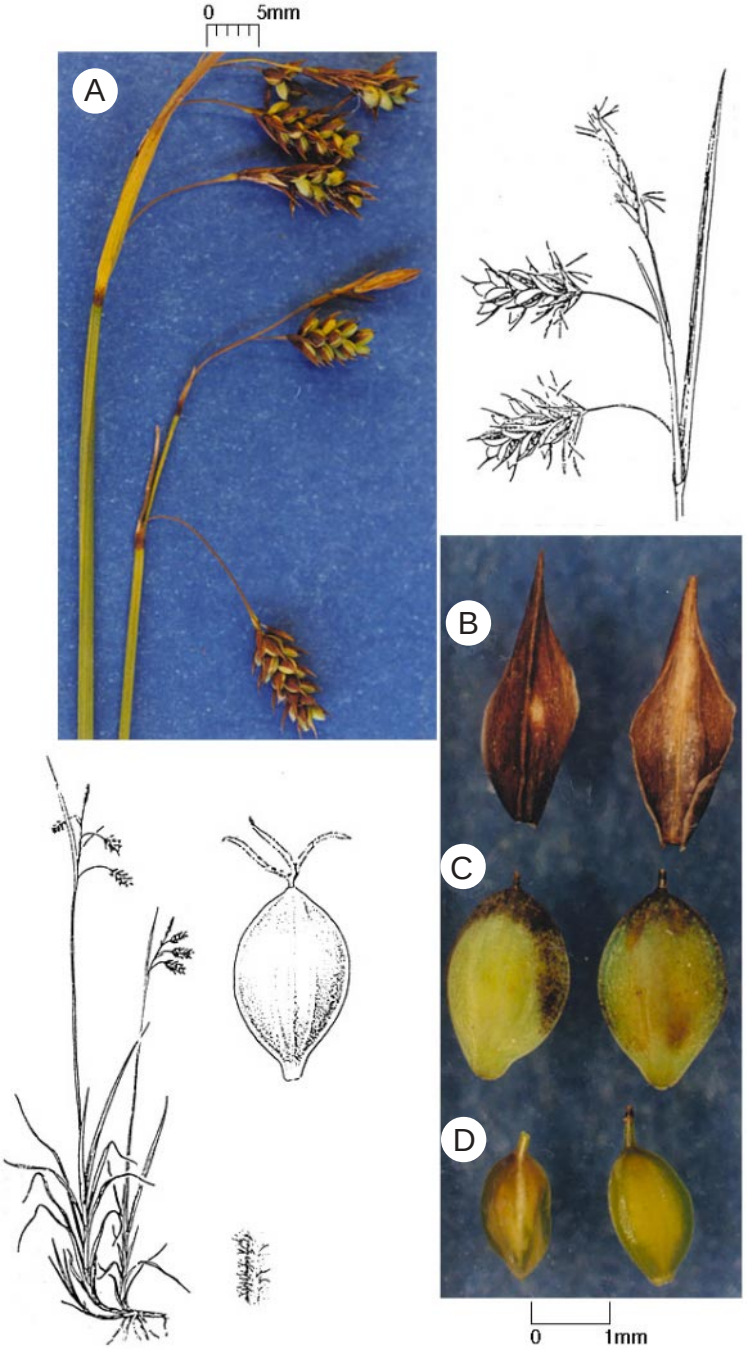
SPIKES: 1-5, slender, cylindric, purplish to reddish brown. **Terminal:** Frequently **staminate**, gynaecandrous, or with intermingled male and female flowers, short-peduncled, 1.5-3 cm long, usually longer than the lateral spikes. **Lateral: Pistillate**, erect, linear, 0.7-2 cm long, 2-4 mm wide; perigynia appressed.

PISTILLATE SCALES: Suborbicular with the tip obtuse or short-mucronate, equaling the perigynia and concealing them, stramineous to dark reddish brown with a green midrib and white-hyaline margins.

PERIGYNIA: Broadly obovoid, unequally trigonous, tapering at the base, somewhat rounded toward the apex, glabrous, short-stipitate, stramineous but reddish-tinged and rough-granular or shortly strigose-hirtellous toward the apex, 1.6-3 mm long, 1-1.5 mm wide. **Nerves:** Nearly absent on both surfaces; marginal nerves prominent. **Beaks:** Very short or obsolete, often slightly to strongly ciliate, bidentulate, 0.1-0.2 mm long.

ACHENES: Obovoid, trigonous or triquetrous, slightly granular, short-stipitate, brown, 1.4-1.8 mm long, 1-1.25 mm wide, jointed to the style. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Rare to infrequent and very local. In meadows, swales, and on low, moist ground around streams and lakes. Prairies and high plains at **moderate elevations** in the mountains. Chiefly east of the Continental Divide from Alberta to Manitoba south to central and eastern Idaho, Montana, Wyoming, northern Utah, Wyoming, Colorado, and North Dakota. Isolated in central Nevada and in the White Mountains of California. **June-August**.



Carex paupercula. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex paupercula Michx.
Little sedge, poor sedge

HABIT: Loosely clustered in small tufts from short or long rhizomes; roots covered with a yellowish brown tomentum. **Culms:** Slender, reddish brown to brown at the base, 1-8 dm tall, exceeding the leaves, often **phyllopodic**, old leaves persistent.

LEAVES: 3-12, borne on the lower one-half of the culm. **Blades:** Flat, sometimes with slightly revolute margins, 2-4 mm wide. **Sheaths:** Very thin, plain or red-dotted ventrally, concave at the mouth.

BRACTS: The lowest leaflike, sheathless to slightly sheathing, reddish at the node, 2-10 cm long, equaling or exceeding the inflorescence; the upper reduced.

SPIKES: 1-5, pedunculate, bicolored with green and blackish brown or chestnut. **Terminal: Staminate** or occasionally with a few perigynia above, erect to somewhat lax, linear, 4-15 mm long and 2-4 mm wide. **Lateral: Pistillate**, often with a few staminate flowers at the base, erect or nodding, suborbicular to oblong, 4-22 mm long, 4-8 mm wide; perigynia ascending, the spreading pistillate scales giving the spikes a ragged appearance.

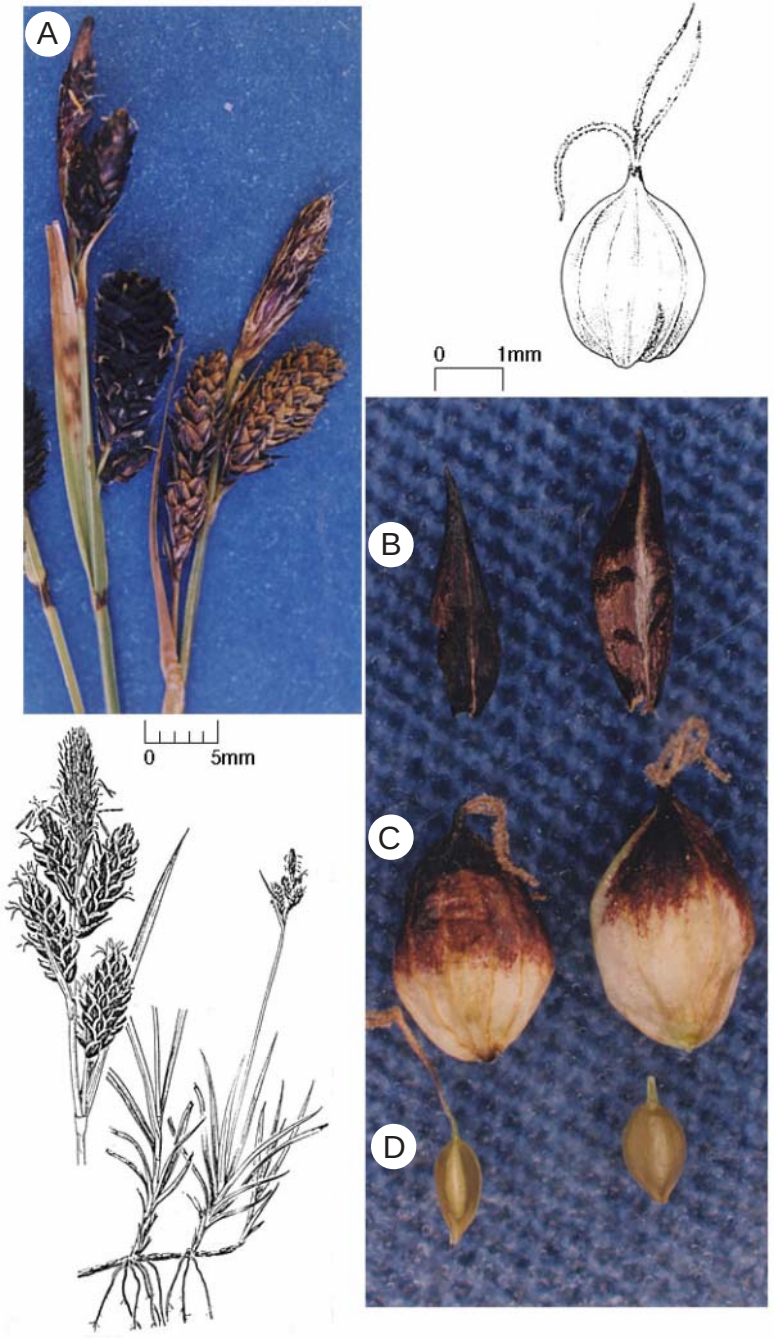
PISTILLATE SCALES: Lanceolate to ovate-lanceolate, tapering at the apex, often with a short awn, narrower and longer than the perigynia, light to dark brown; midrib prominent, with or without a green midstripe.

PERIGYNIA: Elliptic to ovate, compressed-trigonous, thick, occasionally somewhat flattened and two-edged, coriaceous, densely papillate, stipitate, stramineous or glaucous-green, often dark brown toward the apex, 2.2-3(3.8) mm long, 1.7-2.2 mm wide. **Nerves:** 3-6, obscure to prominent on each face; marginal nerves prominent. **Beaks:** Absent or very short, entire or emarginate, 0.1 mm long.

ACHENES: Ovoid-oblong, trigonous, slightly tapered to the base, apiculate, yellowish green becoming brownish, 2 mm long, 1.2 mm wide, loosely enveloped in the perigynium. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Infrequent or rare in sphagnum bogs and wet meadows at **middle elevations**. Circumboreal. In the Intermountain area in Washington, Nevada (Elko County), northern Idaho, Utah (Uinta Mountains), Wyoming, and Colorado. **June-August**.

SIMILAR SPECIES: See *C. limosa*.



Carex paysonis. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex paysonis Clokey
Payson sedge

HABIT: Culms borne singly or few together from sparse, coarse, creeping rhizomes. **Culms:** Stiffly erect, sharply triangular, brownish-tinged, becoming fibrous at the base, 1-5 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 8-15, clustered near the base. **Blades:** Firm, flat, 2-8 mm wide with a slight bluish cast. **Sheaths:** Short, thin and fragile, yellowish-tinged, truncate to concave at the mouth.

BRACTS: The lower 1 or 2 leaflike, sheathless, dark-auricled, equaling or shorter than the inflorescence; the upper reduced.

SPIKES: 2-6, erect, sessile, or the lower pedunculate and nodding, stout. **Terminal: Staminate** or occasionally **androgynous**, linear or narrowly oblong, 1.5-3.25 mm long, 3-4.5 mm wide. **Lateral:** 3-5, **pistillate** or **androgynous**, erect, cylindric to oblong, 0.5-2.5 cm long, 4-6 mm wide, approximate or remote, densely flowered; perigynia appressed-ascending.

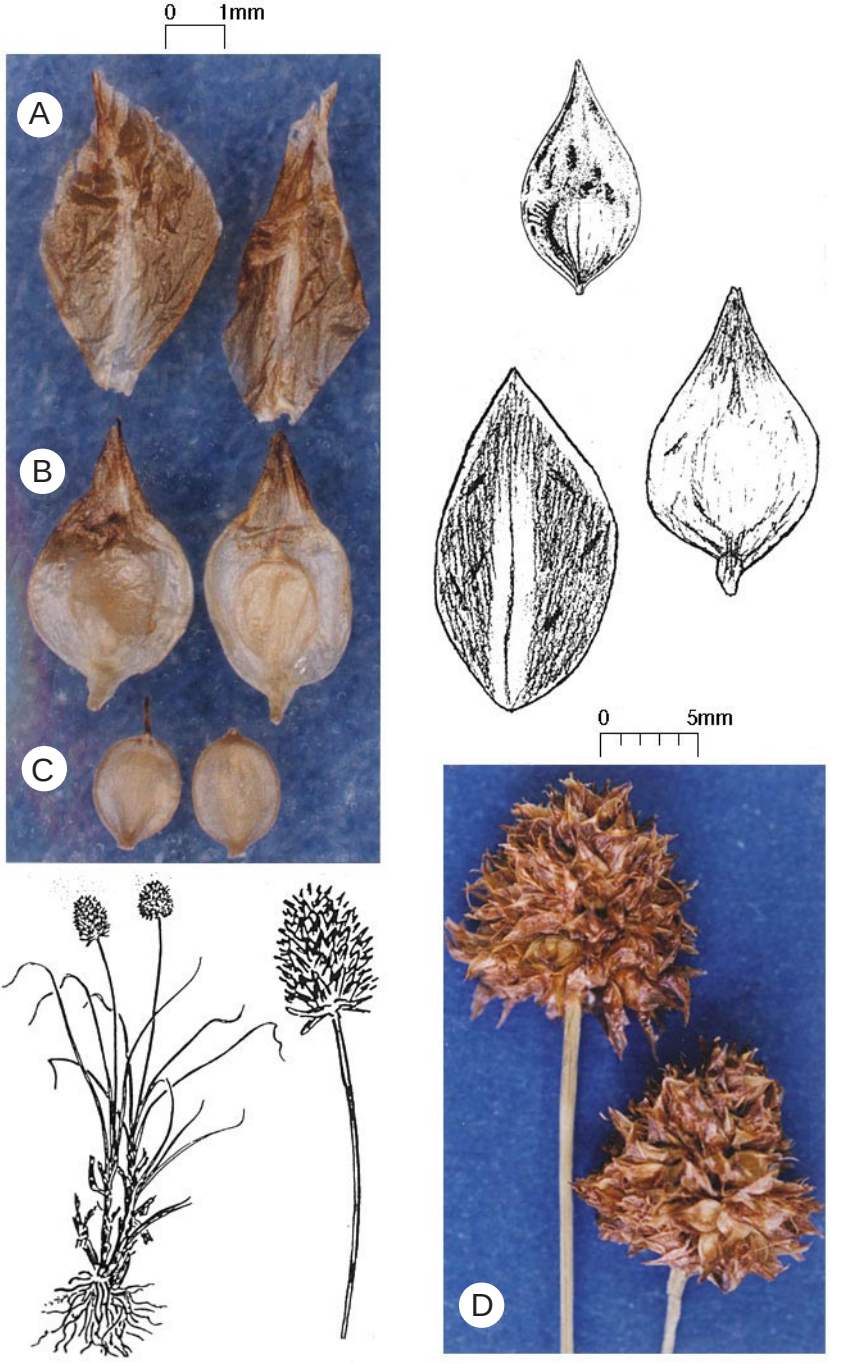
PISTILLATE SCALES: Ovate to ovate-lanceolate, acute to acuminate, equaling or somewhat shorter and narrower than the perigynia, dark reddish brown with a pale midrib.

PERIGYNIA: Broadly elliptic, elliptic-ovate, or subrotund, flattened (when pressed) or inflated, contracted at the apex, thin-walled, glabrous or finely papillate, pale or partly to wholly purplish, 2-4.3 mm long, 1.5-2.2 mm wide. **Nerves:** Few, prominent to obscure or absent on both surfaces. **Beaks:** Abrupt, shallowly or scarcely bidentate, 0.2-0.5 mm long.

ACHENES: Trigonous, sessile or nearly so, 1.2-1.7 mm long, 1 mm wide, brown, much narrower and shorter than the perigynia. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common in moist meadows and on open, often rocky slopes at **high elevations**. Northeastern Oregon through central Idaho, eastern Nevada, Utah (Uinta Mountains), and Wyoming. **June-August**.

SIMILAR SPECIES: *C. paysonis*—Terminal spike staminate or with a few perigynia at the base; perigynia ascending, inflated (fresh material), coarse-nerved, thin-walled. *C. raynoldsii*—Terminal wholly staminate; perigynia spreading-ascending and not as inflated, striately nerved with thick, tough walls. The perigynia of *C. raynoldsii* appear plump and conspicuous in the inflorescence. The achenes (1.8-2.5 mm long, 1.1-1.7 mm wide) are much larger than those of *C. paysonis* (1.2-1.7 mm long, 1 mm wide) and usually fill most of the perigynium cavity (except for the flat distal margins).



Carex perglobosa. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex perglobosa Mack.
Globe sedge, Mount Baldy sedge

HABIT: Loosely cespitose from slender, creeping, dark brown branching rhizomes. **Culms:** Erect, terete or semi-terete, smooth, 3-20 cm tall, shorter to longer than the leaves, **phyllopodic**.

LEAVES: 3-6, closely clustered toward the base. **Blades:** Fascicled, flat, thick and firm, 0.75-3 mm wide. **Sheaths:** Thin-hyaline ventrally, old sheaths present.

BRACTS: None or inconspicuous to elongate and green, almost equaling the inflorescence.

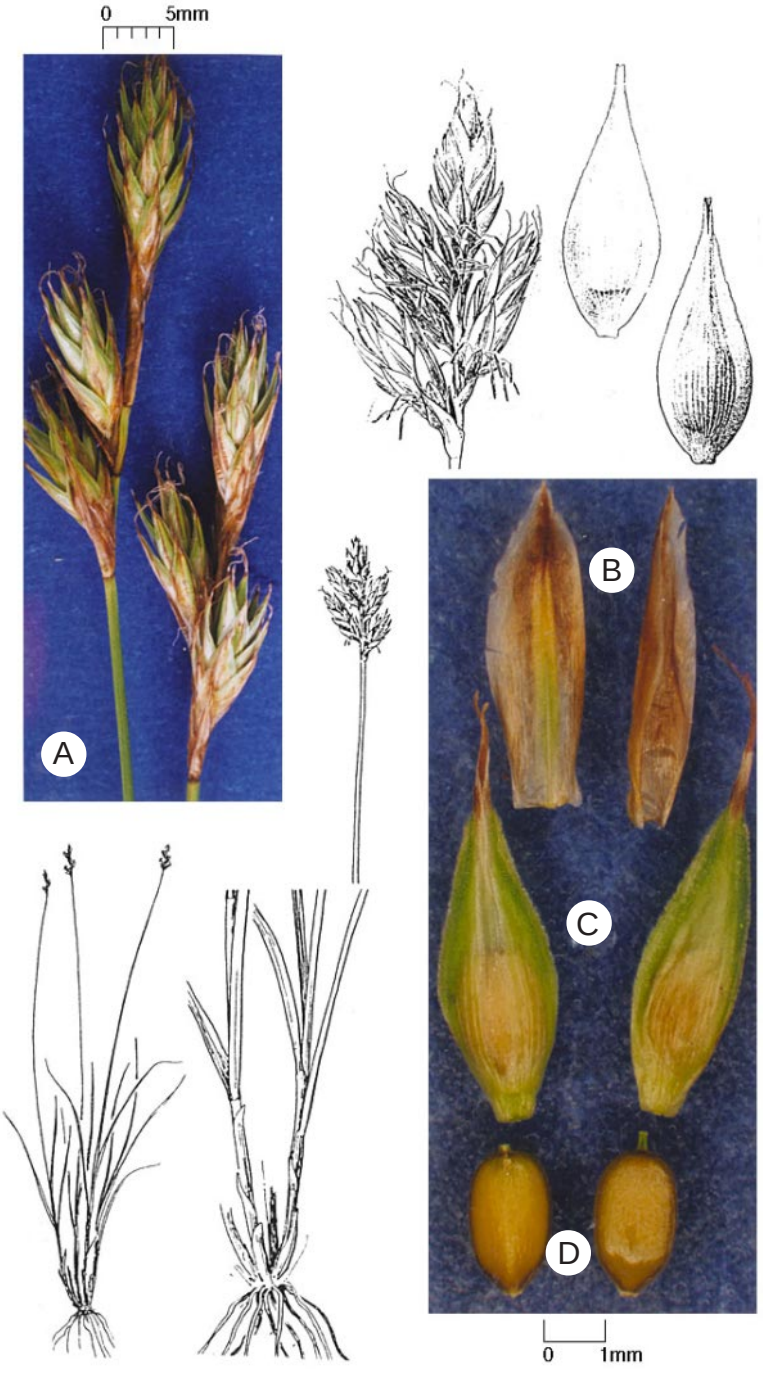
SPIKES: Numerous, **androgynous**, sessile, light to dark brown, indistinguishable, closely compact into a globose or ovoid to broadly oblong head 10-18 mm long; perigynia ascending.

PISTILLATE SCALES: Ovate-orbicular with an obtuse to acute tip, equaling the perigynia, very thin, shiny, hyaline-scarious except for the slender midrib, brown with hyaline margins and apex.

PERIGYNIA: Broadly elliptic or ovate-elliptic, plano-convex to inflated or flattened, tapering to a broad or pointed base and to the apex, very thin-walled, thin margined, without wings, shiny-brown or greenish-stramineous, 3.6-4.7 mm long, 1.75-2.6 mm wide. **Nerves:** Several toward the base on both sides, faint; marginal nerves prominent. **Beaks:** Ill-defined, thin, darkly colored; the tip obliquely cleft or bidentulate.

ACHENES: Ovate to obovate, lenticular, light brown, 1.4-1.7 mm long, 1-1.2 mm wide. **Stigmas:** 2, slender.

HABITAT AND DISTRIBUTION: Dry, open slopes and summits at **high elevations**. Southeastern Utah and Colorado. **July-September**.



Carex petasata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex petasata Dewey
Liddon sedge

HABIT: Tufted, usually without creeping rhizomes. **Culms:** Erect, stiff, smooth, 3-9 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 2-5. **Blades:** Flat, firm, 2-4(5) mm wide. **Sheaths:** Tight, white-hyaline ventrally, concave or truncate at the mouth.

BRACTS: Short and inconspicuous, sheathless, setaceous, brownish-scarious.

SPIKES: 3-6, **gynaecandrous**, ascending, sessile, green becoming stramineous, 9-18 mm long, loosely aggregated into an erect head 2-5 cm long and 1-1.5 cm wide; the terminal spike often strongly clavate; the first two internodes mostly 3-9 mm long; perigynia loosely appressed-ascending to appressed, giving the ovate spike a smooth outline.

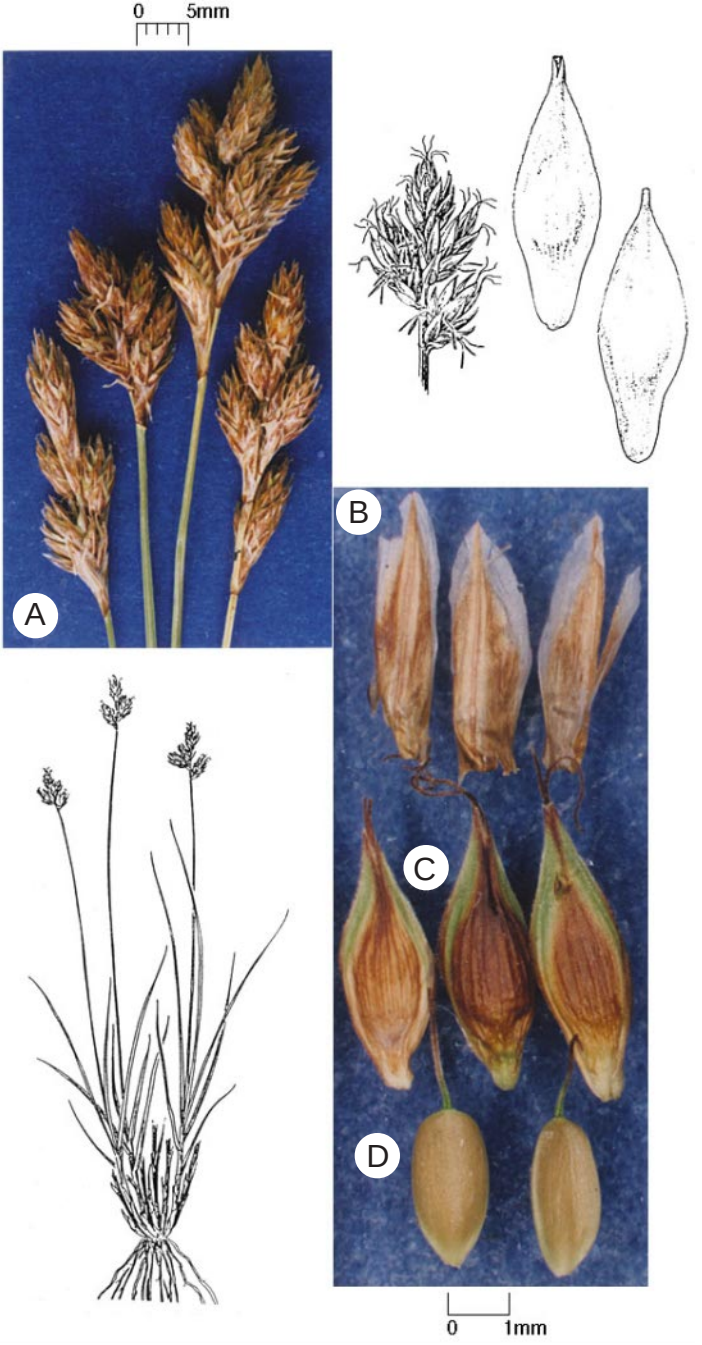
PISTILLATE SCALES: Ovate, usually as long and as wide as the perigynia and largely concealing them, stramineous or light reddish brown with a paler center and broad, silvery white-hyaline margins.

PERIGYNIA: Oblong-lanceolate, plano-convex or concavo-convex, widest below the middle, wing-margined, the margins serrulate to below the middle, membranous, stramineous or pale green to brownish green, 5.8-8 mm long, 1.5-2.25 mm wide. **Nerves:** Slender, usually numerous on both sides. **Beaks:** Terete, serrulate below, smooth above, reddish brown, hyaline-tipped, shallowly and obliquely cleft.

ACHENES: Oblong, lenticular, glossy, brown, 2.2-3 mm long, (1.1)1.3-1.8 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Frequent to common on open slopes of grasslands or sagebrush-grasslands, sometimes in wet or dry meadows and in open woods from **plains to fairly high elevations** in the mountains. British Columbia through Saskatchewan, south to Oregon, California (where rare), Nevada, Idaho, Utah, Wyoming, Colorado, and Arizona. **June-August**.

SIMILAR SPECIES: See appendix, table 10.



Carex phaeocephala. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left (and B and C, center)—dorsal views; right—ventral view.

Carex phaeocephala Piper
Dunhead sedge, hare sedge, mountain hare sedge

HABIT: Cespitose from compactly matted roots. **Culms:** Slender, stiff, 0.5-3(4) dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-6, clustered near the base of the culm. **Blades:** Stiff, flat, channeled or folded, 0.5-2.5(3) mm wide. **Sheaths:** Tight, hyaline, concave to convex at the mouth.

BRACTS: The lowest inconspicuous, sheathless, awn-tipped, shorter than the inflorescence.

SPIKES: 3-7, **gynaecandrous**, sessile, green, becoming brown or reddish brown, 7-14 mm long, borne in a stiff and compact or slightly loose head mostly 1-3.5 cm long and 0.5-1.2 cm wide; the first internode up to 10 mm long, the second 2-6 mm long; perigynia appressed to ascending-spreading.

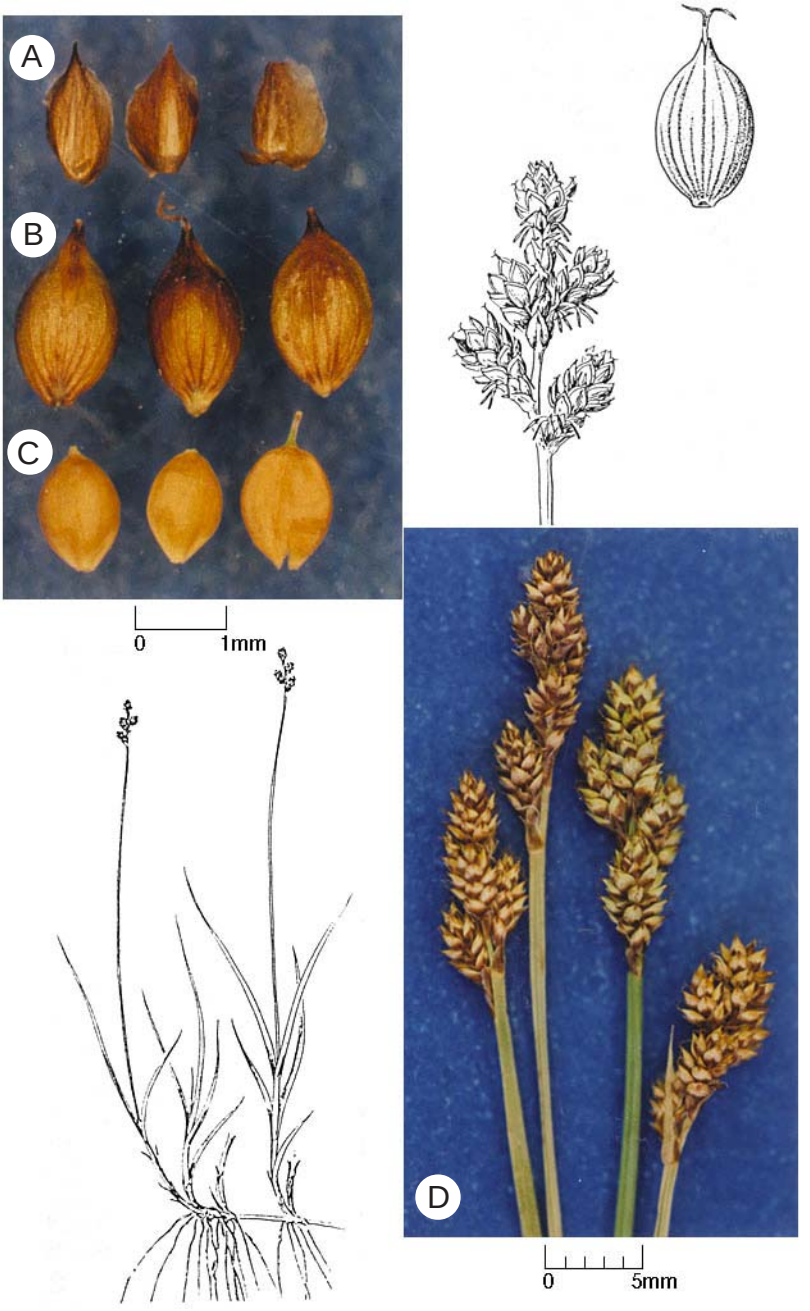
PISTILLATE SCALES: Ovate with an acute tip, as long and as wide as the perigynia and largely concealing them except for the beak tips, brownish black to reddish brown with a lighter center and broad hyaline margins.

PERIGYNIA: Oblong to broadly ovate, more or less flat to plano-convex or concavo-convex, slightly tapered toward the blunt base, often widest near the center, tapering to the apex, **winged** to the base and serrulate above, subcoriaceous, tan or brown to brownish-black, commonly with greener bluish-tinged margins, 3.5-6 mm long, 1.2-2.5 mm wide. **Nerves:** Several dorsally, lacking or sometimes evident ventrally. **Beaks:** Tapering, usually terete and slender, serrulate below, nearly smooth above, dark brown, white-hyaline at the tip, obliquely cleft.

ACHENES: Oblong to oblong-obovoid, lenticular to plano-convex or concavo-convex, nearly sessile or long-stipitate, greenish brown, becoming brown at maturity, 1.5-2.3 mm long, 0.85-1.3 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Frequent to common in open, moist to dry, often rocky places at **high altitudes** in the mountains. British Columbia and Alberta south to California and Colorado. Occurs in appropriate habitats throughout the Intermountain region. **July-August**.

SIMILAR SPECIES: See appendix, table 10.



Carex praeceptorum. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left and center—dorsal views; right—ventral view.

Carex praeceptorum Mack.
Early sedge, teacher sedge

HABIT: Cespitose with small clumps developing from short rhizomes. **Culms:** Sharply triangular, 1-3 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: Several, clustered toward the base. **Blades:** Canaliculate, light green, 1.2-2.5 mm wide. **Sheaths:** Tight, hyaline ventrally, truncate to shallowly concave at the mouth.

BRACTS: Inconspicuous, sheathless, largely hyaline-scarious, sometimes shortly awn-tipped.

SPIKES: 4-6, **gynaecandrous**, sessile, short, 5-12 mm long, 2.5-4 mm wide, green, becoming golden brown, readily distinguishable but closely aggregated into an elongate to ovoid or oblong-ovoid head 1-2.5 cm long; perigynia 9-20, ascending, slightly spreading at maturity.

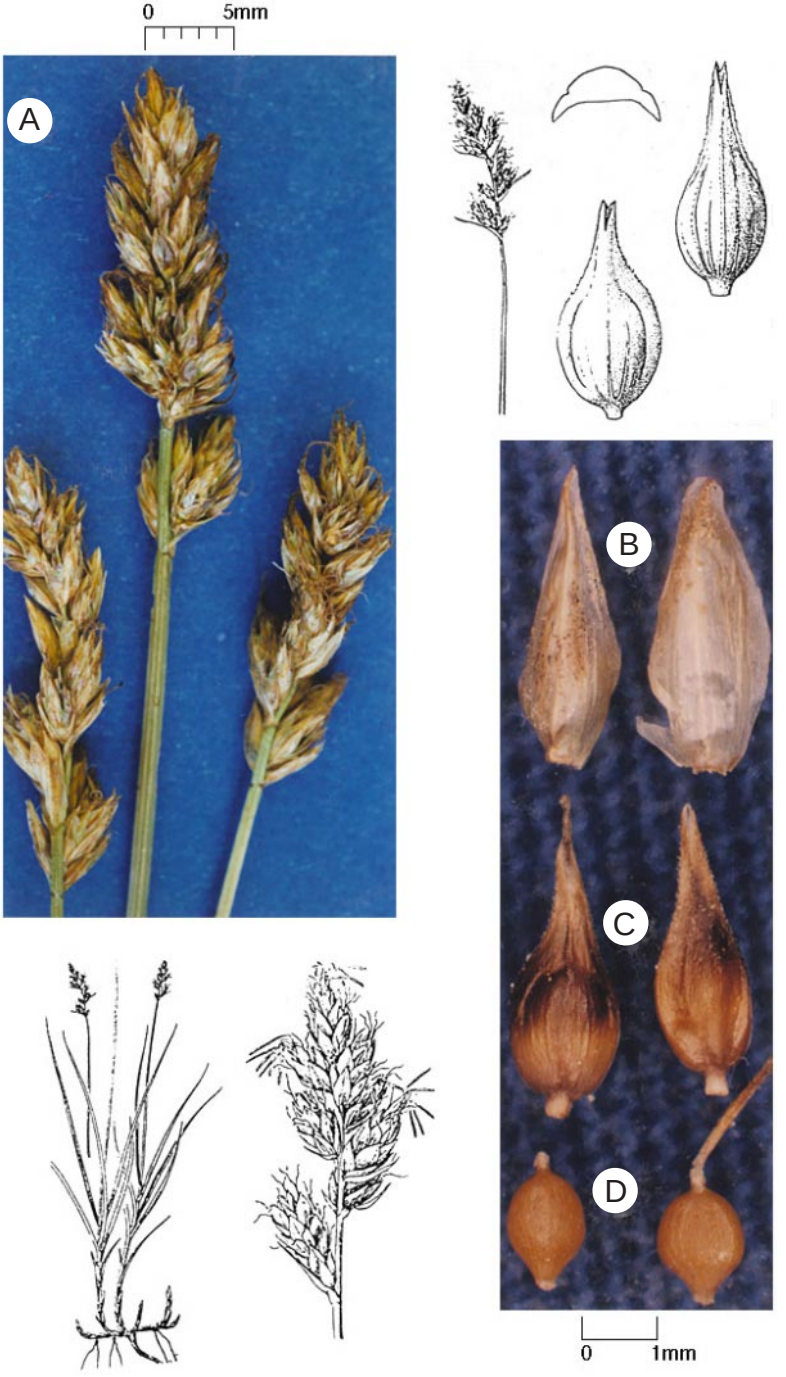
PISTILLATE SCALES: Ovate, slightly shorter than the perigynia, brown or chestnut-tinged with broad pale or green center and hyaline margins.

PERIGYNIA: Ovate, plano-convex, spongy-thickened from the base to upper body, abruptly contracted at the apex, substipitate, white-punctate or rough-textured, yellowish brown to brownish green, often paler than the scale but the exposed parts darker, 1.5-2.5 mm long, 1-1.2 mm wide. **Nerves:** Several on both sides, slightly raised and often darker than the body. **Beaks:** Sparingly serrulate, entire at the tip, 0.25-0.5 mm long; dorsal suture short, lighter to darker than the surrounding tissue, commonly extending the length of the beak apiculation.

ACHENES: Broadly ovate, lenticular, reddish to yellowish brown, 1.25-1.5 mm long, 0.8-1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequent in wet meadows, alpine bogs, and boggy banks of alpine streams or ponds at **high elevations**. Washington south to Oregon and California and east across central Idaho, Nevada (Elko County), Utah, northwestern Wyoming, and Colorado. **July-August.**

SIMILAR SPECIES: See appendix, table 5.



Carex praegracilis. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex praegracilis W. Boott
Blackcreeper sedge, clustered field sedge, field clustered sedge, silver sedge

HABIT: Culms arising singly or few together from stout, elongate, black or brownish black creeping rhizomes, sometimes forming dense colonies. **Culms:** Smooth, sharply triangular, 2-7.5 dm tall, exceeding the leaves, somewhat **aphyllopodic**.

LEAVES: Several, all borne near the base. **Blades:** Flattened or somewhat channeled, firm, 1-3 mm wide. **Sheaths:** Hyaline-membranous ventrally, slightly and narrowly truncate or concave at the mouth.

BRACTS: Inconspicuous, setaceous, scarious, shorter than the inflorescence.

SPIKES: 5-15, **androgynous** (plants sometimes dioecious), sessile, stramineous or brown, aggregated into a thick-cylindric or oblong-ovoid head 1-5 cm long and 5-10(15) mm wide; the lower spikes sometimes separate; perigynia appressed-ascending.

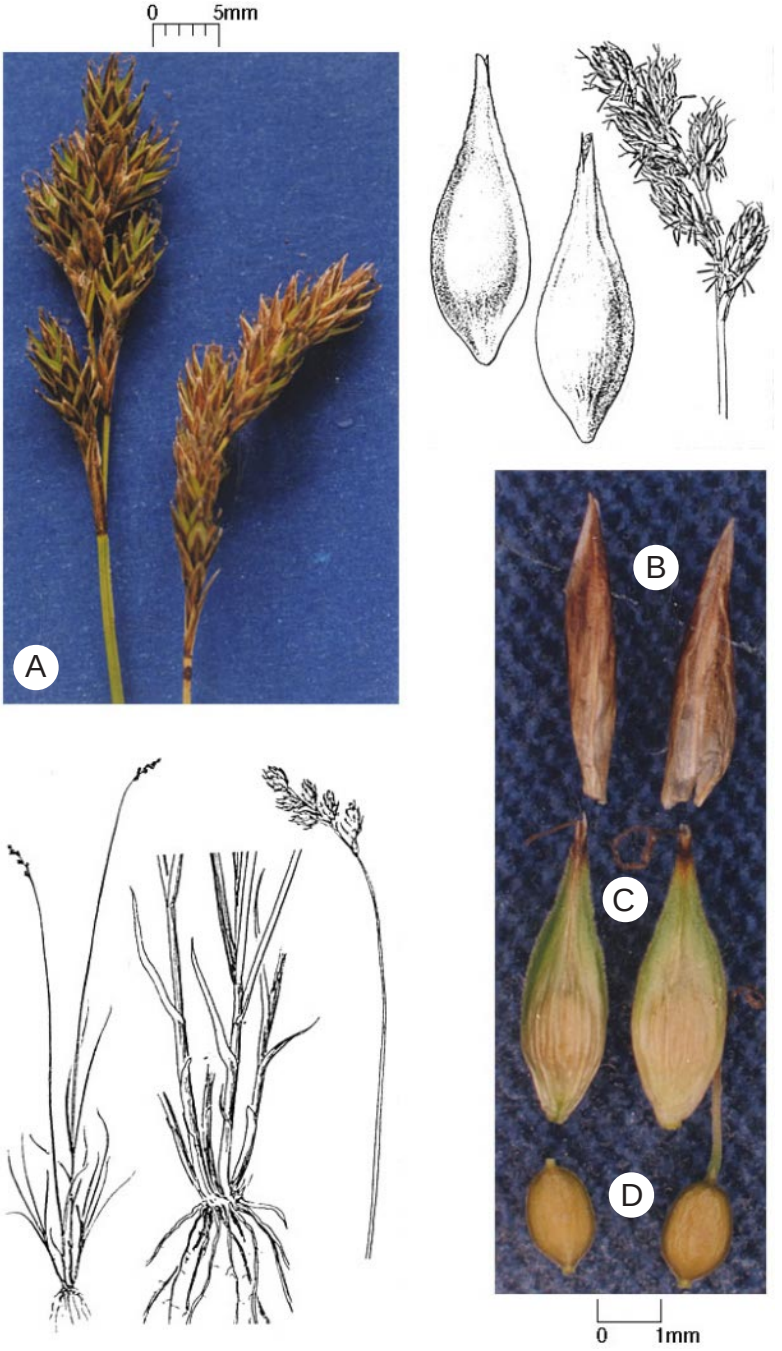
PISTILLATE SCALES: Ovate with an acuminate or cuspidate tip, wider and longer to equaling the perigynia and completely concealing them, stramineous to brown with conspicuously hyaline margins and a pale midrib.

PERIGYNIA: Ovate to ovate-lanceolate, plano-convex to concavo-convex, tending to be spongy based, sharp-edged and serrulate distally, short-stipitate, light to dark brown with pale green margins when fresh, (2.8)3-4 mm long, 1.3-1.6 mm wide. **Nerves:** Several, faint dorsally, absent ventrally. **Beaks:** Prominent and tapering, obliquely cleft and sometimes bidentate, 0.6-1.3 mm long; the orifice with overlapping hyaline edges.

ACHENES: Obovoid, lenticular, light to dark brown, 1.2-1.9 mm long, 1-1.4 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: A variable and very widely distributed species of open, moist or wet, often alkaline places, but not confined to alkaline sites. **Plains and lowlands to moderate elevations** in the mountains. Yukon and British Columbia, south to California and Mexico and east to Manitoba, Iowa, and Kansas. Common in the interior of North America. **May-August**.

SIMILAR SPECIES: See *C. douglasii*.



Carex praticola. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex praticola Rydb.
Meadow sedge

HABIT: Densely or loosely tufted without creeping rhizomes. **Culms:** Slender, slightly flexuous, 2-9.5 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 2-4, borne on the lower part of the culm but not closely clustered. **Blades:** Flat, 1-4 mm wide. **Sheaths:** Tight, thin, membranous or hyaline ventrally, concave or truncate at the mouth.

BRACTS: Lowest sheathless, setaceous-prolonged, green to brown, shorter than the inflorescence.

SPIKES: 2-7, **gynaecandrous**, often slender-based, sessile, approximate, blackish green becoming brown, 7-18 mm long; the loose head flexuous or nodding; the two lowest internodes each 4-15 mm long; perigynia appressed to ascending-spreading.

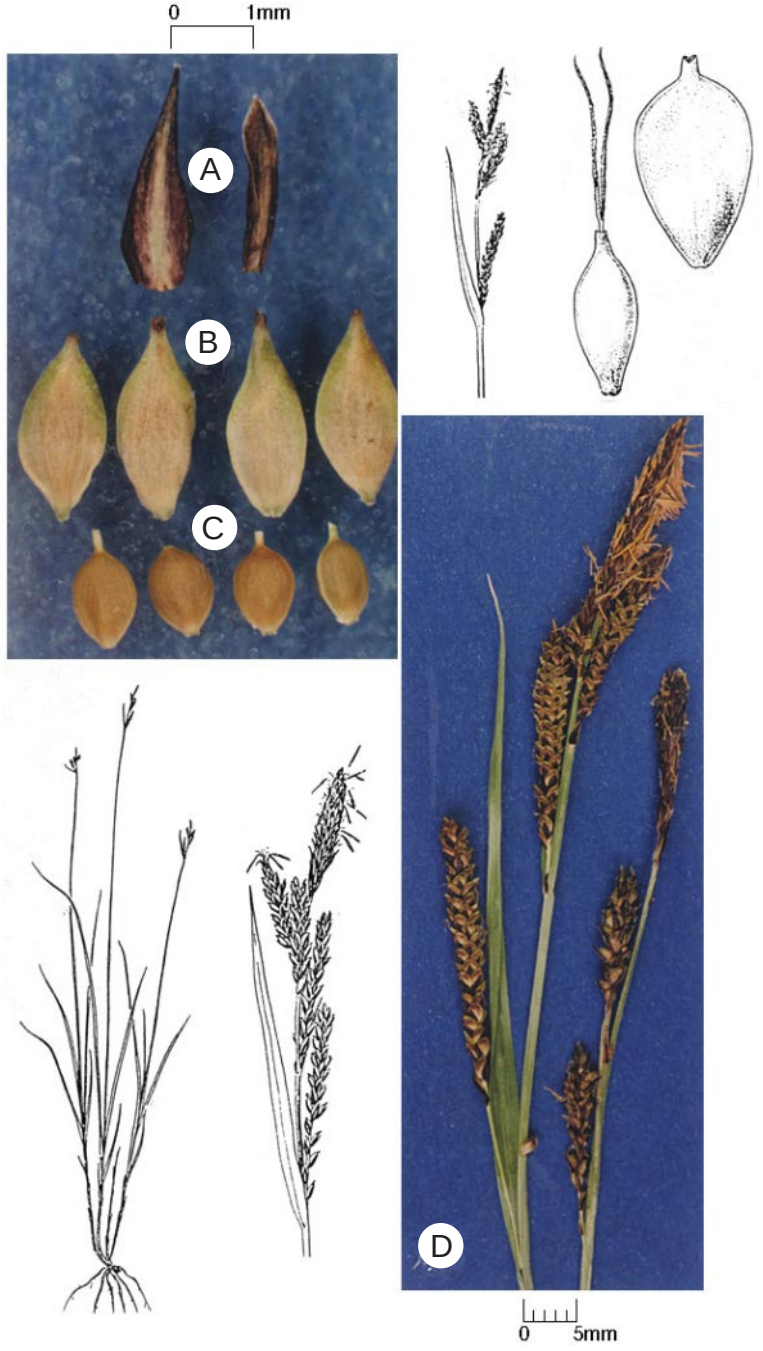
PISTILLATE SCALES: Narrowly ovate, nearly as long and wide as the perigynia and concealing them, stramineous or dull reddish brown with a green or lighter center and silvery-white-hyaline margins.

PERIGYNIA: Ovate-lanceolate, concavo-convex or plano-convex, tapered to the base, gradually tapering at the apex, wing-margined and serrulate to the base, semitranslucent, rather glossy, pale green to stramineous or brownish, (3.7)4.3-6.5 mm long, 1.3-2.5 mm wide. **Nerves:** Evident and fine dorsally, lacking or nearly so ventrally. **Beaks:** Ill-defined, gradually tapering, one-third to one-half the length of the body, commonly brown, serrulate, the distal 0.5 mm or more slender and entire, obliquely cleft.

ACHENES: Ovoid, lenticular, substipitate, yellow brown, 1.5-2.7 mm long, (0.9)1.2-2 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequent, but sometimes locally plentiful in moist or wet meadows, along streambanks, and in moist, open woods. **Low to moderate elevations**. In North America from Alaska to Labrador and south to northeastern Oregon, northwestern California, central and southeastern Idaho, northeastern Utah, Colorado, and North Dakota. **June-August.**

SIMILAR SPECIES: See *C. aenea*.



Carex prionophylla. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left (and B and C, center)—dorsal view; right—ventral view.

Carex prionophylla Holm
Firethread sedge, saw-leaved sedge

HABIT: Densely clumped to sometimes solitary from short, stout rhizomes. **Culms:** Erect or decumbent, sharply triangular, strongly serrulate at the angles, 4-15 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-5, clustered well above the base of the culm. **Blades:** Flat with slightly revolute margins, thick, scabrous, 3-6 dm long, 2-5 mm wide. **Sheaths:** Strongly hispidulous dorsally, tinged with yellowish brown; red-dotted and fragile ventrally; basal sheaths cross-fibrillose, purplish, up to 15 cm long.

BRACTS: Leaflike or setaceous, sheathless, dark-auricled, 1-6 cm long, shorter than the inflorescence.

SPIKES: 3-5, erect and rather crowded, oblong or linear-cylindrical, greenish black to bluish purple. **Terminal: Staminate**, sometimes with a few basal perigynia, short-peduncled, 1.8-2.5 cm long, 3-4.5 mm wide. **Lateral: Pistillate**, or androgynous, sessile or the lowest ones slightly peduncled, 1-3(5) cm long, 3-4 mm wide, approximate or the lowest somewhat separate, closely 15-40 flowered; perigynia appressed.

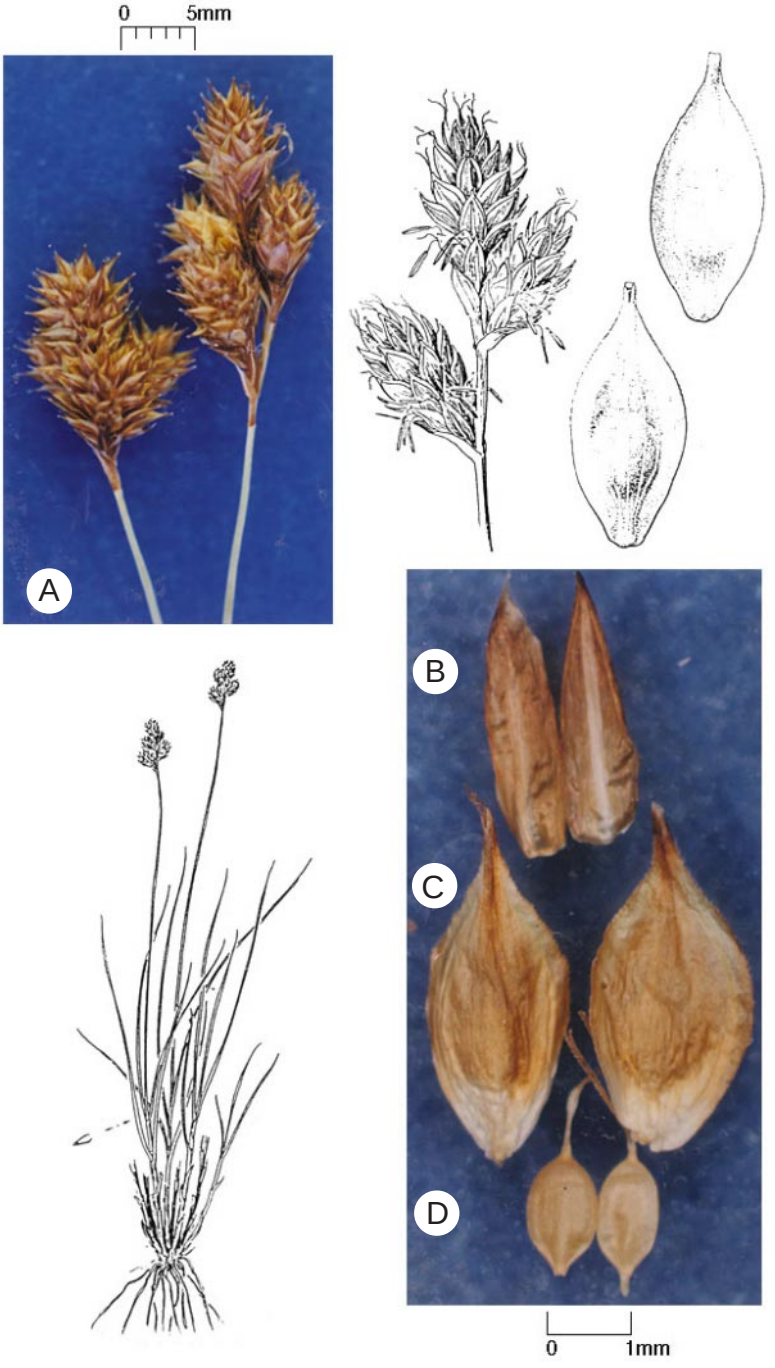
PISTILLATE SCALES: Oblong-ovate, mostly acute at the tip, half as wide as and usually shorter than the perigynia, scarious, reddish brown to purplish black, sometimes with a lighter midvein.

PERIGYNIA: Generally elliptic to obovate or oblong-ovate, compressed, slightly inflated distally, loosely enclosing the achene, more or less acute or tapered at the minutely beaked apex, membranous and granular, pale greenish to coppery tan or partly suffused with purple, 2.3-3.4 mm long, 1.2-1.7 mm wide. **Nerves:** Lacking except for two marginal ribs. **Beaks:** Reddish black, entire, 0.2-0.3 mm long.

ACHENES: Ovate to obovate, lenticular, subsessile, 1.2-1.7 mm long, 1-1.2 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Moist or wet meadows, lakeshores, mountain streams, and alpine tundra from **middle to higher elevations**. Northeastern Washington, northeastern Oregon, northern and central Idaho, and northwestern Montana. **June-August.**

SIMILAR SPECIES: See appendix, table 3.



Carex proposita. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex proposita Mack.
Smoky Mountain sedge

HABIT: Densely cespitose without creeping rhizomes. **Culms:** Slender, stiff, sharply triangular and roughened above, 1-3.5 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 2-4(5), borne on the lower part of the culm. **Blades:** Narrow and firm, channeled and trigonous distally, 0.5-2.5 mm wide. **Sheaths:** Tight, truncate at the mouth.

BRACTS: The lowest prolonged, but shorter than the inflorescence; the upper inconspicuous.

SPIKES: 2-6, **gynaecandrous**, sessile, brown to golden brown; individual spikes distinguishable, but aggregated into an ovoid or oblong head 1.5-3 cm long and 7-18 mm wide; perigynia appressed-ascending to ascending-spreading.

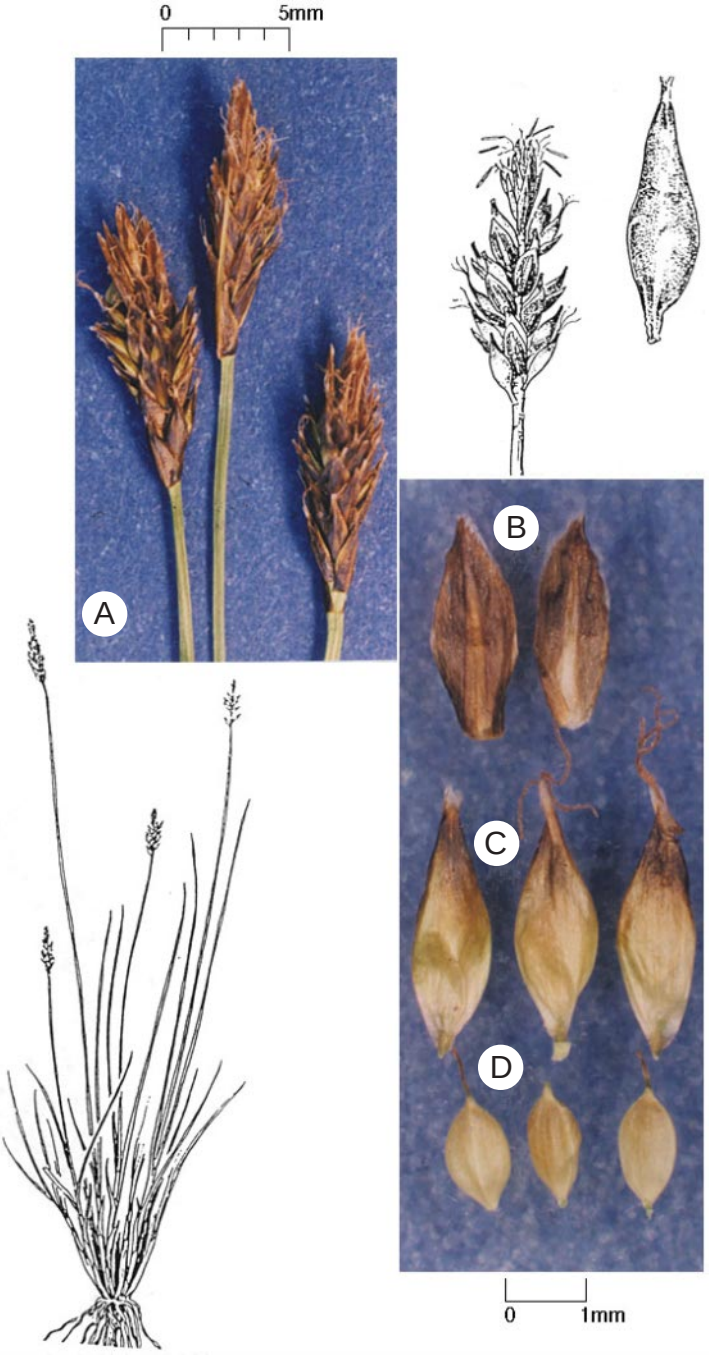
PISTILLATE SCALES: Oblong-ovate to lanceolate with an obtuse or acute tip, shorter and much narrower than the perigynia, gold or tan to dark brown with narrow, hyaline margins.

PERIGYNIA: Broadly ovate to suborbicular, thin, membranous, flat, rounded to slightly tapered at the base, tapering or abruptly contracted at the apex, **wing**-margined and serrulate upward from below the middle, greenish with lighter or gold to coppery center toward the base, 3.5-5.8(6.3) mm long, 1.7-3.1 mm wide. **Nerves:** Numerous, but obscure dorsally, absent ventrally; inframarginal nerves delimiting the wing from the cavity. **Beaks:** Dark brown, slender, terete, entire or bidentate, 1 mm long.

ACHENES: Oblong-ovoid, lenticular, brownish yellow, 1.4-2.1 mm long, 0.75-1.3 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Dry, open, rocky slopes and ridges, often on talus. **High elevations.** Washington (Wenatchee Mountains), California (Sierra Nevada Mountains), and central Idaho. **July-August.**

SIMILAR SPECIES: *C. proposita*—Perigynium broadest at the middle; beak tip terete and more or less smooth; blades channeled. *C. straminiformis*—Perigynium broadest below the middle; beak tip more or less flat and ciliate-serrulate; blades flat.



Carex pyrenaica. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes.B through D: Left (and C and D, center)—dorsal view; right—ventral view.

Carex pyrenaica Wahl.
Pyrenaean sedge

HABIT: Densely cespitose without creeping rhizomes. **Culms:** Erect, slender and wiry, 0.3-3 dm tall, equaling or exceeding the leaves, somewhat **aphyllopodic,** old basal sheaths persistent.

LEAVES: 2-4, often clustered near the base. **Blades:** Flat or deeply channeled, wiry, 2-10 cm long, 0.25-1.5 mm wide. **Sheaths:** Thin, hyaline ventrally, slightly concave at the mouth.

BRACTS: None. Lowest pistillate scale occasionally bractlike.

SPIKES: Solitary, dark brown to red brown, **androgynous**, linear-oblong, 5-20 mm long, 3-5 mm wide; **staminate** portion small and inconspicuous; perigynia ascending.

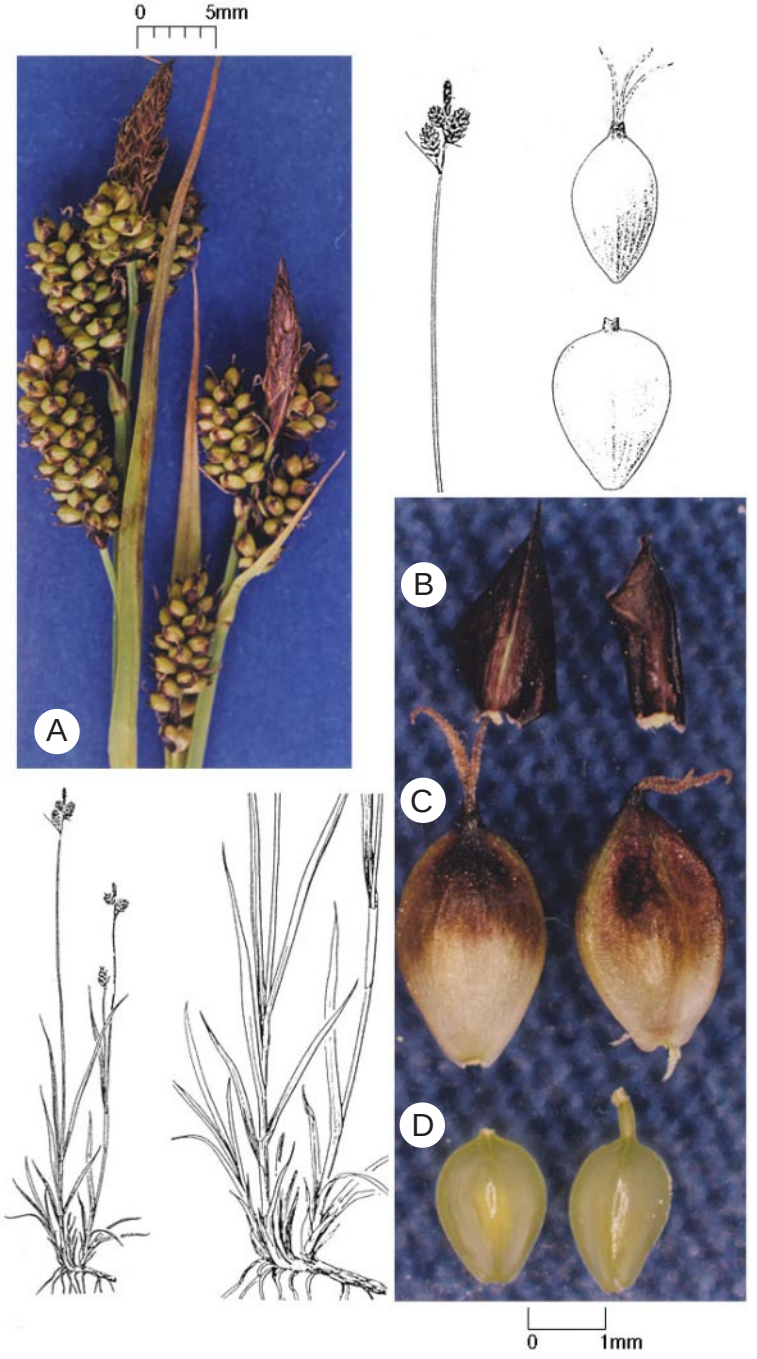
PISTILLATE SCALES: Lowest pistillate scale sometimes setaceous and bractlike, upper ones oblong to ovate with an obtuse to somewhat acute tips, dark brown to blackish chestnut with pale centers and narrow hyaline margins, shorter, but usually wider than the perigynia, early to tardily deciduous.

PERIGYNIA: Lanceolate to elliptic-ovate, tapering to a narrow apex, smooth and shiny, stipitate, dark brown or black distally, paler or green to stramineous below, 3-4.5 mm long, 0.7-1.5 mm long. **Nerves:** Lacking on both surfaces; marginal nerves present. **Beaks:** Ill-defined, obliquely cleft, hyaline-tipped, 0.5 mm long.

ACHENES: Somewhat obovoid, trigonous, attached to its base by a long slender stipe that breaks easily, pale to brown, 1.2-1.8 mm long, 0.7-1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Cliff crevices, ledges, open slopes, and meadows at **high elevations**. From the cordilleran region of western North America south to Washington (Cascade Mountains), Oregon (Wallowa Mountains), Utah (above timberline in the Uinta Mountains), and Colorado. **June-August.**

SIMILAR SPECIES: See appendix, table 4.



Carex raynoldsii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex raynoldsii Dewey
Raynold sedge

HABIT: Loosely cespitose from stout, scaly rhizomes. **Culms:** Stout, erect, stiff, sharp-angled, reddish-tinged at the base, 2-8 dm tall, exceeding the leaves, **phyllopodic** or slightly aphyllopodic, dried leaves of the previous year conspicuous.

LEAVES: 5-10, clustered toward the base. **Blades:** Ascending, stiff, flat with revolute margins, attenuate, roughened toward the apex, 2-8 mm wide. **Sheaths:** Yellowish-tinged ventrally, concave at the mouth.

BRACTS: The lowest leaflike, sheathless, dark-auricled, equaling or shorter than the inflorescence; the upper reduced.

SPIKES: Several, bicolored with green and purplish black, approximate, sometimes capitate-crowded. **Terminal: Staminate**, linear, sessile, 1-2 cm long, 3-4.5 mm wide. **Lateral:** 2-4, **pistillate**, erect, oblong, 1-2 cm long, 6-8 mm wide, densely flowered, the upper sessile, the lower pedunculate; perigynia spreading-ascending to spreading, very conspicuous.

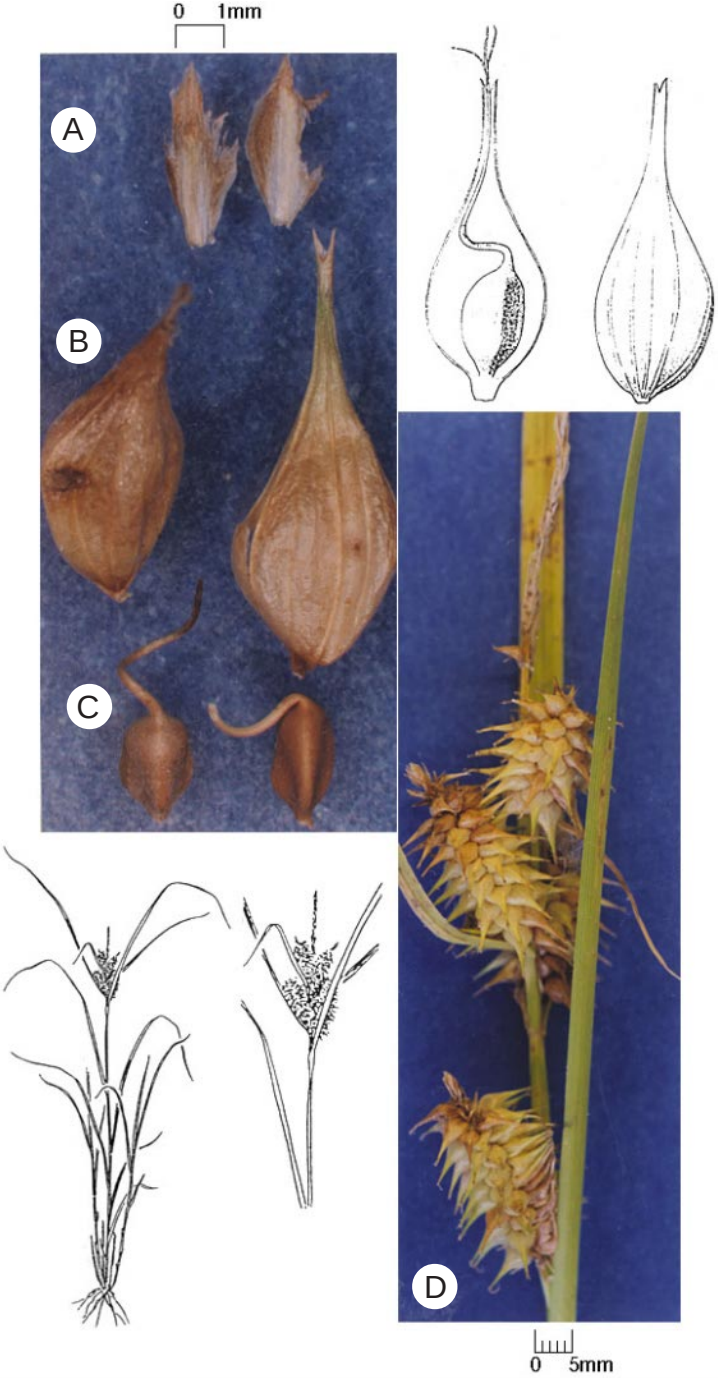
PISTILLATE SCALES: Broadly ovate with an acute to obtuse or acuminate tip, shorter and distally narrower than the perigynia exposing much of their distal margins, dark reddish black with a pale midrib.

PERIGYNIA: Oval to oblong-ovoid, broadly tapering at the substipitate base, rounded and abruptly contracted at the apex, firm-walled, somewhat inflated, yellowish green to yellowish brown or suffused with brownish purple, (3)3.3-4.5 mm long, 1.6-2.1 mm wide. **Nerves:** Several on both surfaces, riblike or sometimes obscure especially when young and fresh; marginal nerves present. **Beaks:** Reddish-tinged, entire or very shallowly bidentate, 0.1-0.5 mm long.

ACHENES: Obovoid, trigonous with thick angles, minutely granular, broadly substipitate, yellowish brown when mature, 1.8-2.5 mm long, 1.1-1.7 mm wide, loosely filling the perigynia except for the usually flat upper margins. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Common in moist or dry meadows and on open or wooded slopes from **foothills to high elevations**. British Columbia and Alberta south to California, Nevada, Idaho, Utah, and Colorado. **June-August.**

SIMILAR SPECIES: See *C. paysonis*.



Carex retrorsa. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescence. A through C: Left—dorsal view; right—ventral view.

Carex retrorsa Schwein.
Knot-sheath sedge, retrorse sedge

HABIT: Densely clustered on very short rhizomes. **Culms:** Stout, stiff, obtusely triangular below, sharply triangular distally, 2-10 dm tall, much exceeded by the upper leaves and bracts, **aphyllopodic**.

LEAVES: 4-7. **Blades:** Thin, but firm, flat, septate-nodulose, 3-10 mm wide. **Sheaths:** Long, loose, prolonged at the truncate summit; lower sheaths becoming cross-filamentose.

BRACTS: Leaflike, more or less sheathing, several times longer than the inflorescence.

SPIKES: Several, sessile or short-peduncled, at least the upper ones crowded. **Terminal: Staminate**, linear, 1-4, often with a few perigynia at the middle or below, 2-4 cm long, 2-4 mm wide, lateral ones smaller. **Lateral: Pistillate** or androgynous, 3-8, erect, upper ones aggregated, lower one sometimes separate, oblong-cylindric to short-oblong, 1.5-8 cm long, 14-20 mm wide, densely flowered; perigynia green, becoming yellowish or stramineous, the upper widely spreading, the middle and lower usually deflexed.

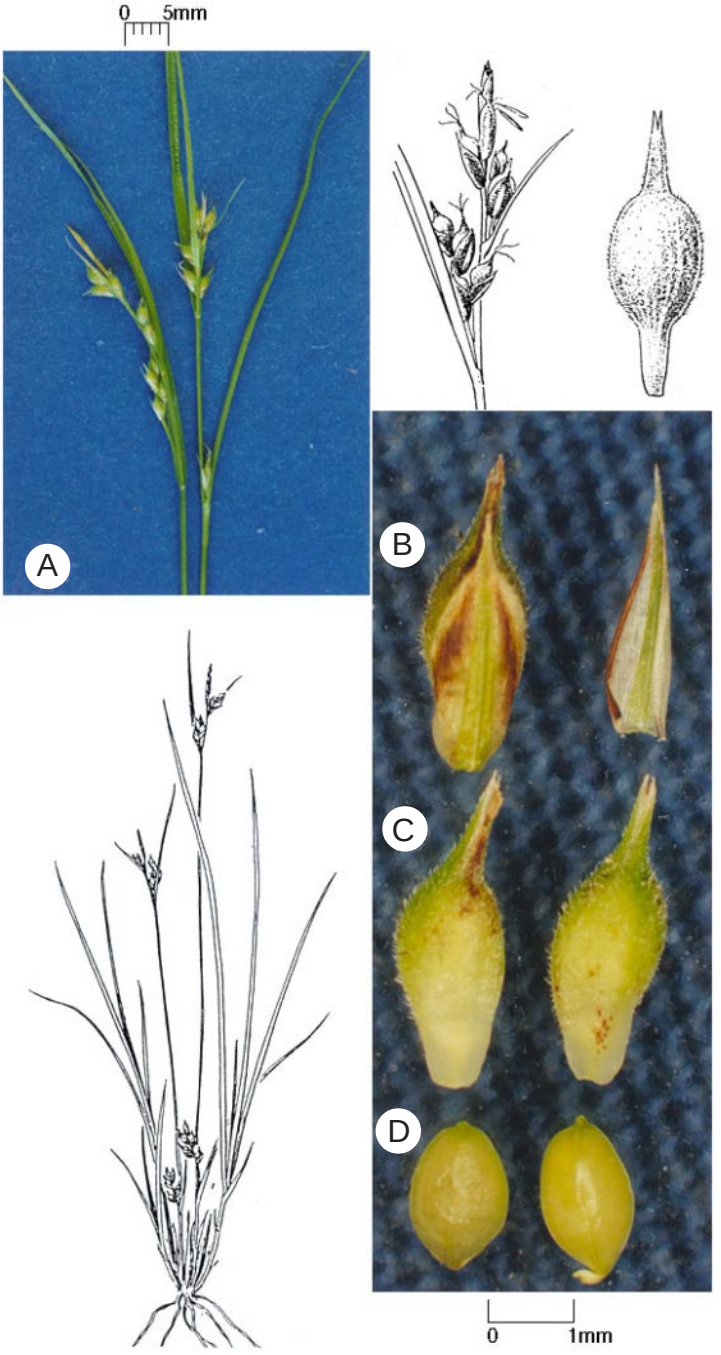
PISTILLATE SCALES: Lanceolate with an acute or cuspidate tip, yellowish brown or reddish brown with a 3-nerved green center, shorter to equal in length, but much narrower than the perigynia.

PERIGYNIA: Ellipsoid or lance-ovoid, much inflated, rounded at the base, somewhat obliquely narrowed at the apex, membranous, glabrous, shining, yellowish green or becoming light brownish-tinged, 7-10 mm long. **Nerves:** 8-12 on each side, coarse, riblike, obscure or absent on the margins. **Beaks:** Slender, conic, smooth, 2-3.5 mm long, bidentate; teeth stiff, erect.

ACHENES: Oblong-obovoid with blunt angles, trigonous, granular, brown, 1.9-2.5 mm long, 1.25 mm wide, continuous with the persistent, contorted or bent, bony style. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Rare or infrequent. Wet meadows, bogs, swamps, and edges of streams, lakes, and rivers. **Foothills and lowlands.** British Columbia to Quebec and south to Washington, northeastern Oregon, Idaho (northern Snake River Plain), Utah (Weber County), Wyoming, Colorado, and New Jersey. **July-September.**

SIMILAR SPECIES: See appendix, table 11.



Carex rossii. (A) Inflorescences, (B) pistillate scales (scale on left subtends a perigynium), (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex rossii Boott
Ross sedge

HABIT: Loosely to densely cespitose from very short to somewhat prolonged rhizomes. **Culms:** Slender, sharply triangular, scabrous, 0.5-4 dm tall, shorter to longer than the leaves, more or less **aphyllopodic**, usually with persistent reddish sheaths at the base.

LEAVES: Clustered toward the base. **Blades:** Thin, firm to rather lax, flat with slightly revolute margins, glabrous or slightly scabrous, 1-4 mm wide. **Sheaths:** Hyaline and slightly filamentose ventrally, concave or truncate at the mouth.

BRACTS: The lowest leaflike, mostly sheathless, surpassing the inflorescence; the upper leaflike but reduced.

SPIKES: 2-6, short and slender, green to greenish and purple-tinged. **Terminal: Staminate**, linear, sessile or short-peduncled, 3-10 mm long, 1-2.5 mm wide. **Lateral: Pistillate**, few-flowered; the upper approximate, sessile or short-peduncled; the lower widely separate, arising from near the culm base on slender, elongate peduncles; perigynia ascending.

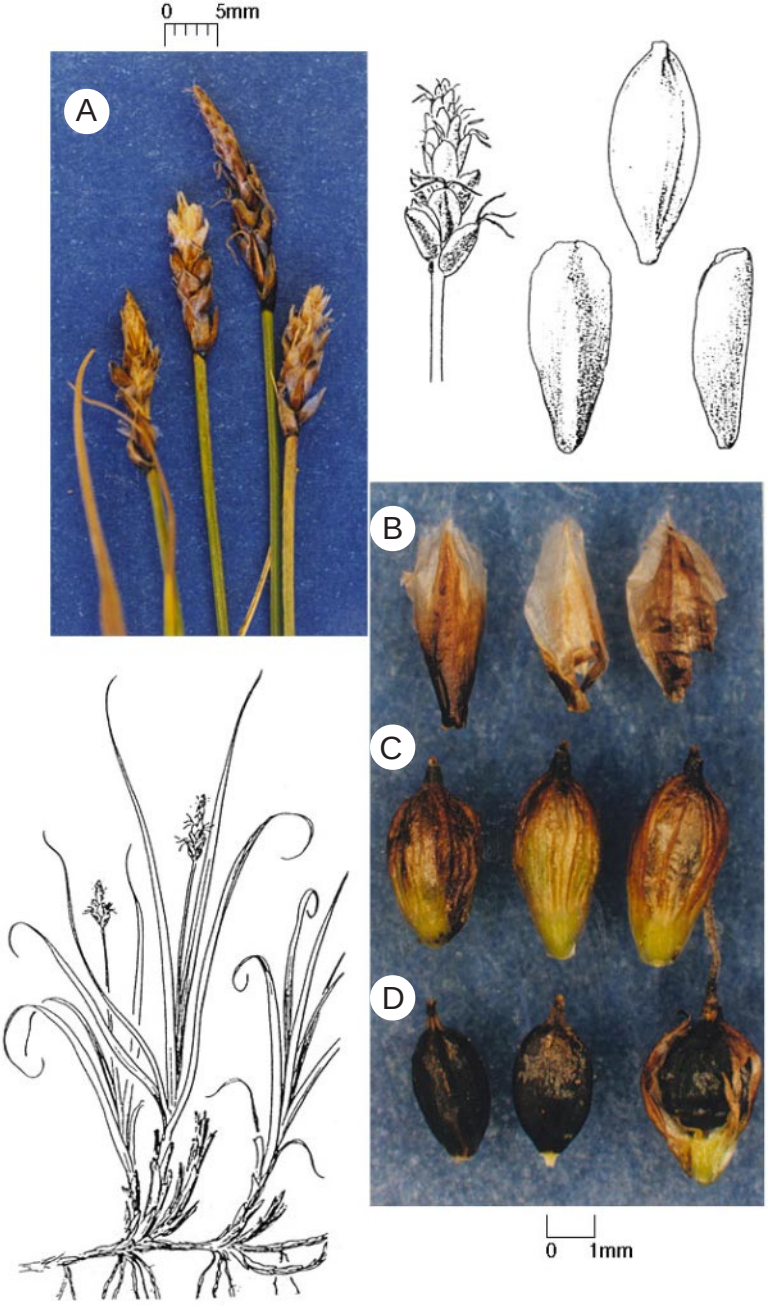
PISTILLATE SCALES: Ovate with an acute to cuspidate or awned tip, appressed, shorter than the perigynia, usually with a greenish center and midrib and reddish brown margins.

PERIGYNIA: Subglobose with the base short and stipelike or obovoid and narrowed to the base, abruptly contracted above, finely puberulent, usually greenish but slightly reddish brown above, 2.4-5 mm long, 1-2.5 mm wide. **Nerves:** Marginal nerves prominent, otherwise none. **Beaks:** Conic, ciliate-serrulate, deeply and obliquely cleft, 1.0-1.7 mm long.

ACHENES: Slightly obovoid to ovoid, trigonous with convex sides, yellowish green to brown when mature, 1.3-2.4 mm long, 1-1.7 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Occasional to frequent in dry to moderately moist sites in areas that will support coniferous forests and in adjacent meadows and prairies. **Near sea level to above timberline**. Yukon south to California and eastward to Idaho, Utah, Arizona, Wyoming, Colorado, and irregularly east and north to Michigan. **June-July**.

SIMILAR SPECIES: See appendix, table 6.



Carex rupestris. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes (achene on right partially enveloped in the perigynium and with a twisted rachilla at its base). B and C: Left and center—dorsal views; right—ventral view. D: Left and right—dorsal views; center—ventral view.

Carex rupestris All.
Curly sedge, rock sedge

HABIT: Culms arising singly or loosely tufted from slender, scaly, creeping rhizomes. **Culms:** Rather stout and stiffly erect, dark reddish purple at the base, 4-15 cm tall, shorter than to equaling the leaves, slightly **phyllopodic,** leaf sheaths of the previous year persistent.

LEAVES: 8-12, clustered near the base. **Blades:** More or less circinate, flat, channeled, somewhat thick, attenuated at the apex, 1-3 mm wide. **Sheaths:** Hyaline ventrally, truncate at the mouth.

BRACTS: None.

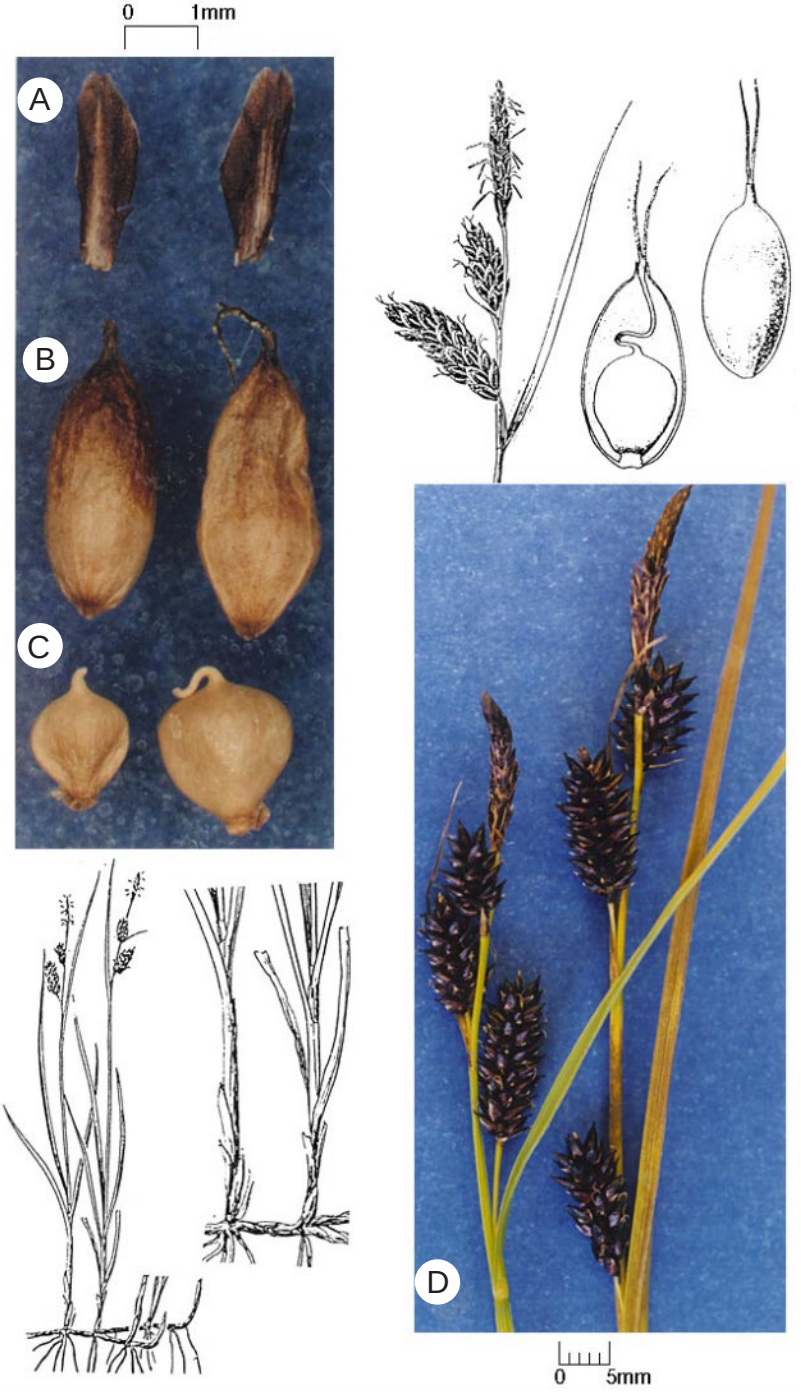
SPIKES: Solitary, reddish brown, **androgynous**, oblong to linear, 1-2 cm long, 3-4.5 mm wide; the pistillate portion closely to sparsely flowered; perigynia erect to ascending.

PISTILLATE SCALES: Orbiculate-ovate with an acute to obtuse or broadly rounded tip, shorter to longer than the perigynia and largely concealing them, more or less scarious with hyaline margins, brown to deep chestnut.

PERIGYNIA: Oblong-obovoid, thin-walled, smooth, narrow or substipitate at the base, green below, brown to reddish brown above, 3-4 mm long, 1.75 mm wide. **Nerves:** Several on both surfaces, slightly raised; marginal nerves present. **Beaks:** Slender, terete, entire, obscurely hyaline-tipped, 0.2 mm long.

ACHENES: Oblong, trigonous, apiculate, smooth and shining, dark brown or black, completely filling the perigynium, 2.5 mm long, 1.5 mm wide; rachilla absent. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Infrequent but sometimes locally plentiful on dry, alpine summits, open slopes, and tundra. **High elevations**. Circumboreal. In North America from Alberta to Quebec, extending southward irregularly to eastern Idaho, Utah (above timberline in the Uinta Mountains), Wyoming, and Colorado. **July-August.**



Carex saxatilis. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex saxatilis L.
Rock sedge, russet sedge

HABIT: Culms arise singly or in small clusters from well-developed, creeping rhizomes; turf-forming. **Culms:** Slender, erect, sharply triangular, reddish-tinged at the base, 2-8 dm tall, **phyllopodic**, leaves of previous year present.

LEAVES: 3-7, clustered on the lower one-third of the culm. **Blades:** Ascending, flat with revolute margins, glabrous, often septate-nodulose, very rough toward the apex, 1.5-5 mm wide. **Sheaths:** Tight, truncate to concave at the mouth, basal sheaths cross-filamentose when mature.

BRACTS: Leaflike, barely sheathing, 3-15 cm long, shorter or longer than the inflorescence.

SPIKES: 3-5, often glossy and purplish black. **Terminal: Staminate,** linear, peduncled, dark brown, 1-5 cm long, 2.5 mm thick, sometimes with an additional sessile staminate spike. **Lateral:** 1-3, **pistillate**, spreading or drooping, sessile to pedunculate, oblong to oblong-cylindric, densely flowered, 1-3.5 cm long, 5-12 mm thick, often widely separate; perigynia ascending.

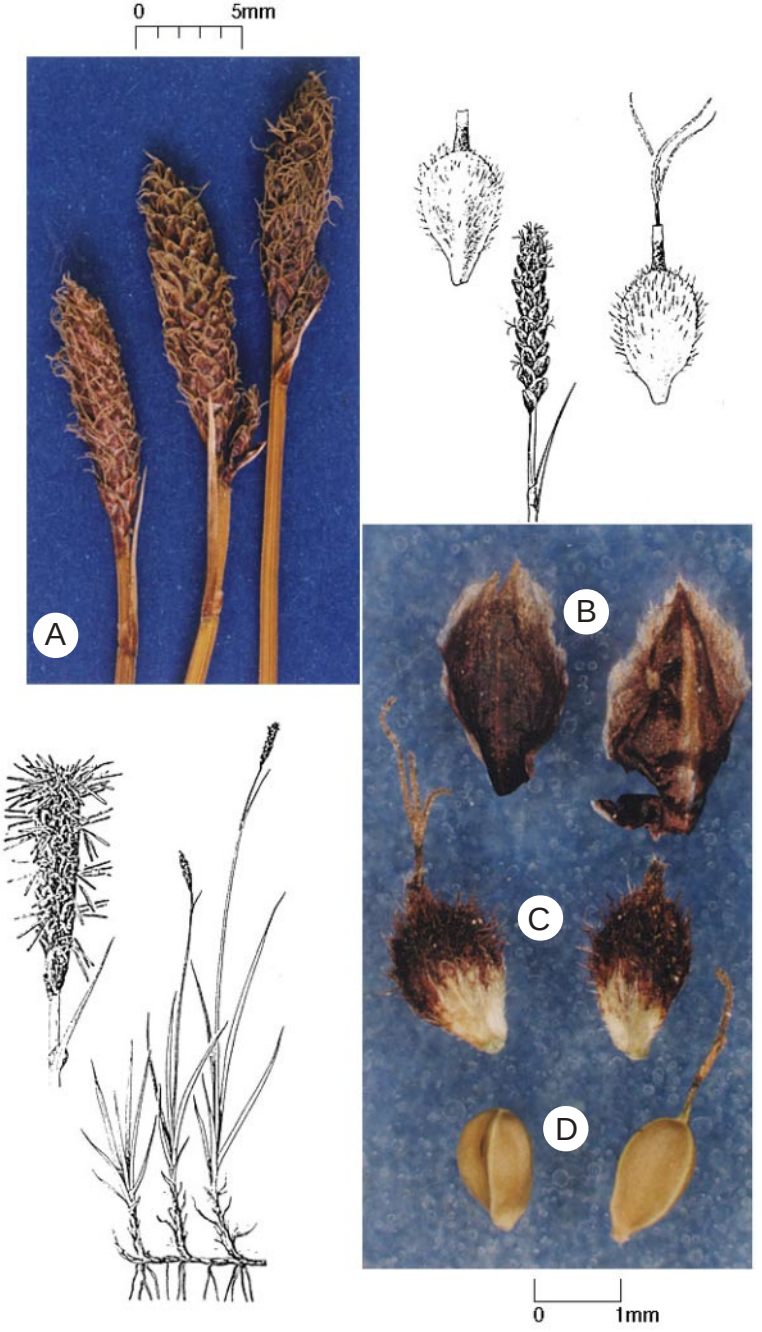
PISTILLATE SCALES: Ovate or ovate-lanceolate with an obtuse to acuminate and often erose apex, shorter and narrower than the perigynia, dark reddish black with a lighter midrib and hyaline margins.

PERIGYNIA: Ovoid-lanceolate or elliptic-ovate, biconvex, rounded at the substipitate base, abruptly contracted at the apex, membranous, puncticulate, dull greenish yellow with the upper half reddish black-tinged at maturity, 3-5 mm long, 2 mm wide. **Nerves:** Few, obscure, or none dorsally, absent ventrally, evident on the margins. **Beaks:** Slender, dark-tinged at the tip, obliquely cleft and scarcely bidentate, 0.5 mm long.

ACHENES: Broadly ovoid or obovoid, lenticular or sometimes trigonous, sessile, puncticulate, yellowish, 1.7-2 mm long, 1.5-1.7 mm wide, tapering into and continuous with the persistent, bony style that becomes contorted at maturity. **Stigmas:** 2 or sometimes 3.

HABITAT AND DISTRIBUTION: Infrequent to common in wet meadows, bogs, and on stream and pond margins from **middle altitudes to timberline**. Circumboreal. In North America south to Washington and east to Nevada, central Idaho, Utah, Wyoming, Colorado, Hudson Bay, and Labrador. **June-August.**

DISTINCTIVE CHARACTERISTICS: *C. saxatilis* is the only species in the Intermountain Region with a persistent, contorted, bony style and two stigmas.



Carex scirpoidea var. *pseudoscirpoidea*. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex scirpoidea Michx. var. *pseudoscirpoidea* (Rydb.) Cronq.
Canada single-spike sedge, downy sedge

HABIT: Culms arising singly or few together from stout, woody, branching, creeping rhizomes. **Culms:** Stiff, triangular, purplish red at the base, 1-4(8) dm tall, exceeding the leaves, **phyllopodic to aphyllopodic**.

LEAVES: 2-4, clustered near the base. **Blades:** Mostly flat, firm, 1-4 mm wide. **Sheaths:** Tight, slightly filamentose, hyaline and puberulent ventrally, concave at the mouth.

BRACTS: None or inconspicuous to short-prolonged, narrow, dark-auricled, and somewhat removed from the inflorescence.

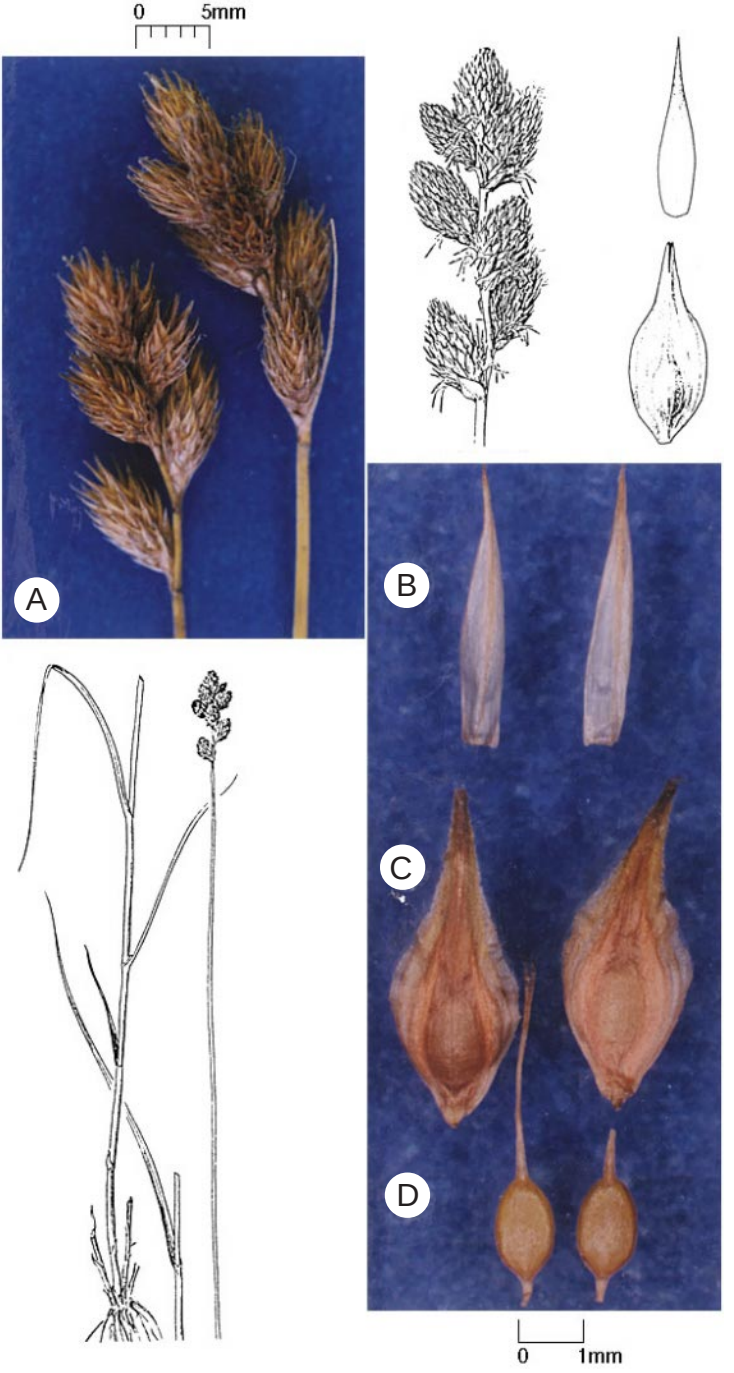
SPIKES: Usually solitary, erect, plants **dioecious**, pistillate and staminate spikes similar in size, shape, and color. **Terminal:** Cylindric, 1.5-4 cm long, 3-6 mm thick, densely flowered. **Lateral:** Sometimes 1-2 at the base of the main spike on pistillate plants, small, sessile; perigynia erect-appressed.

PISTILLATE SCALES: Obovate-oblong with an obtuse to broadly acute tip, deep brown to black with a pale midrib and hyaline margins, puberulent and fringed-ciliate along the upper margins, shorter to longer and wider than the perigynia.

PERIGYNIA: Ovoid or oblong-obovoid, tapering to the base, rounded tapering at the apex, short-hairy, especially the upper half, reddish purplish brown, lighter toward the base, 2-3.5 mm long, 1-1.7 mm wide. **Nerves:** Few at the base, obscure. **Beaks:** Slender, terete, 0.25 mm long; the tip somewhat hyaline-erose or bidentulate.

ACHENES: Oblong-ovate or obovoid, sharply trigonous to slightly triquetrous, brownish yellow, substipitate, 1.5-2.1 mm long, 0.75-1 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Wet to dry meadows, streambanks, and open, rocky slopes. **High elevations.** In North America from Alaska to Labrador, south to California, Nevada, southern Utah, Arizona, Wyoming, and Colorado and east to Michigan and New York. **June-August**.



Carex scoparia. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex scoparia Schkuhr
Pointed-broom sedge, swamp sedge

HABIT: Densely cespitose from short rhizomes. **Culms:** Sharply triangular, the angles rough below the inflorescence, 1.5-10 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 2-6, borne on the lower part of the culm but not clustered. **Blades:** Flat or canaliculate, yellowish green, 1-3 mm wide. **Sheaths:** Thin or green-ribbed ventrally, concave at the mouth.

BRACTS: The lowest sometimes setaceous-prolonged, shorter to longer than the spike, sheathless; the upper reduced and inconspicuous.

SPIKES: 3-12, **gynaecandrous**, sessile, oblong-ovoid, green, becoming stramineous or brown, individual spikes distinct, 8-14 mm long, 3-5 mm wide, aggregated into an oblong, linear-oblong or globose head 2-4 cm long; perigynia erect to ascending with appressed to erect beaks.

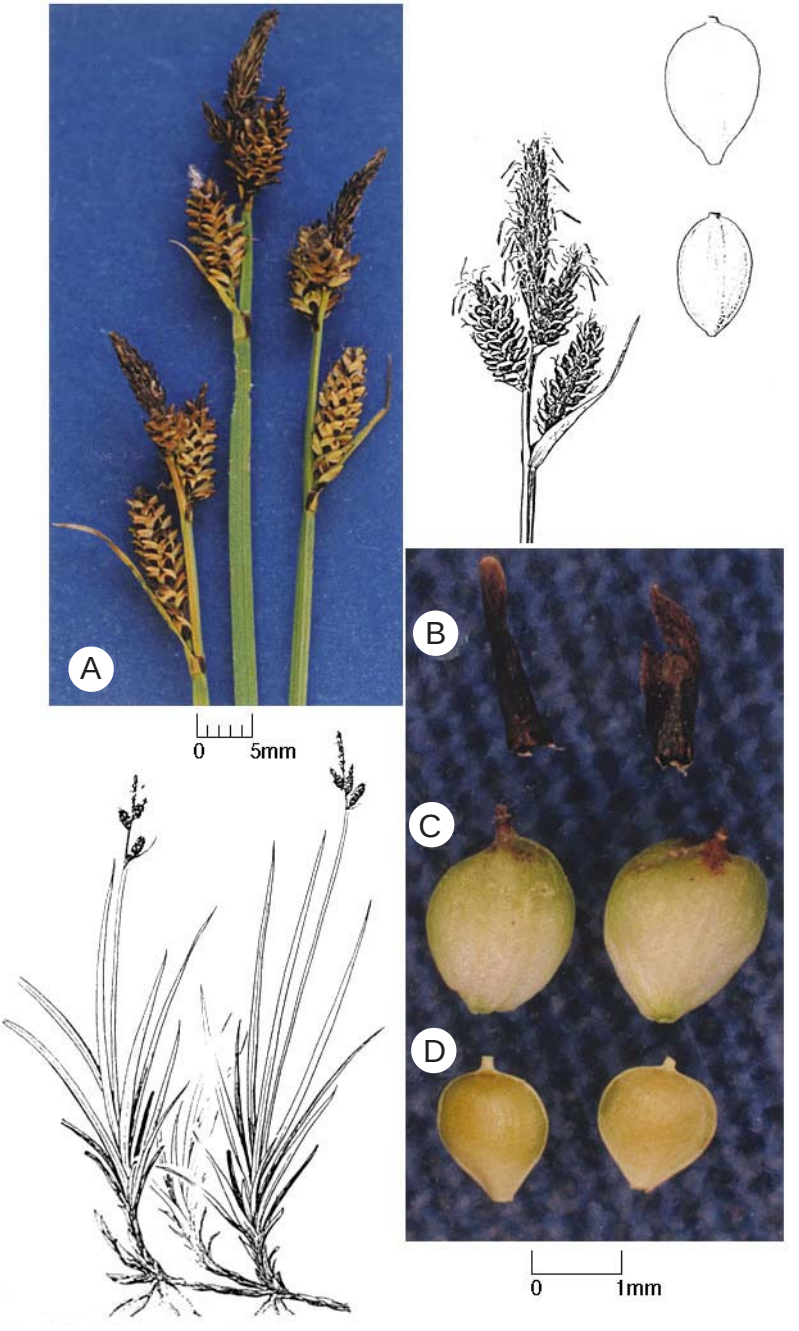
PISTILLATE SCALES: Lanceolate, ovate or oblong-ovate, tapering to a firm, often short awn-pointed tip, much narrower and shorter than the perigynia, light brown with a green center and narrow, white-hyaline margins.

PERIGYNIA: Lanceolate to narrowly ovate-lanceolate, flat, thin and scale-like, slightly tapering to the base and gradually tapering to the apex, widest just below the middle, broadly and thinly **wing**-margined (almost hyaline) to the base, serrulate to below the middle, pale green to stramineous, 4-7 mm long, 1.2-2 mm wide. **Nerves:** Several on both sides, usually faint ventrally. **Beaks:** Ill-defined, flat, serrulate, obliquely cleft, shallowly bidentate.

ACHENES: Ovate-oblong, lenticular, brown, short-stipitate, 1.3-1.8 mm long, 0.5-0.9 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Occasional. In moist to swampy places at **low elevations**. British Columbia to Newfoundland, south to Oregon, California, Idaho, Utah (Kane County), Arizona, Colorado, and New Mexico and east to Arkansas and Florida. **July-August**.

SIMILAR SPECIES: See *C. bebbii*.



Carex scopulorum. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex scopulorum Holm
Cliff sedge, Holm Rocky Mountain sedge, mountain sedge, rock sedge

HABIT: Scattered or loosely clustered from dark reddish-tinged, scaly rhizomes; sod-forming. **Culms:** Stiffly erect, stout, 1-4(6) dm tall, exceeding the leaves, **phyllopodic** to **aphyllopodic.**

LEAVES: 8-15, clustered at the base. **Blades:** Firm, flat with revolute margins, 2-7 mm wide. **Sheaths:** Thin, reddish-tinged ventrally, shallowly concave at the mouth.

BRACTS: Lowest foliaceous or setaceous, sheathless, black-auriculate, 1-7 cm long, shorter than the inflorescence; upper reduced and scalelike.

SPIKES: 3-6, erect, short, oblong to cylindrical, bicolored with green or tan and purplish black, occasionally solid purplish black, crowded or the lowest one removed, 1-3 cm long. **Terminal: Staminate** or androgynous, occasionally gynaecandrous. **Lateral:** Wholly **pistillate** or sometimes androgynous, closely many-flowered, sessile or lowest ones short-pedunculate; perigynia squarrose-spreading.

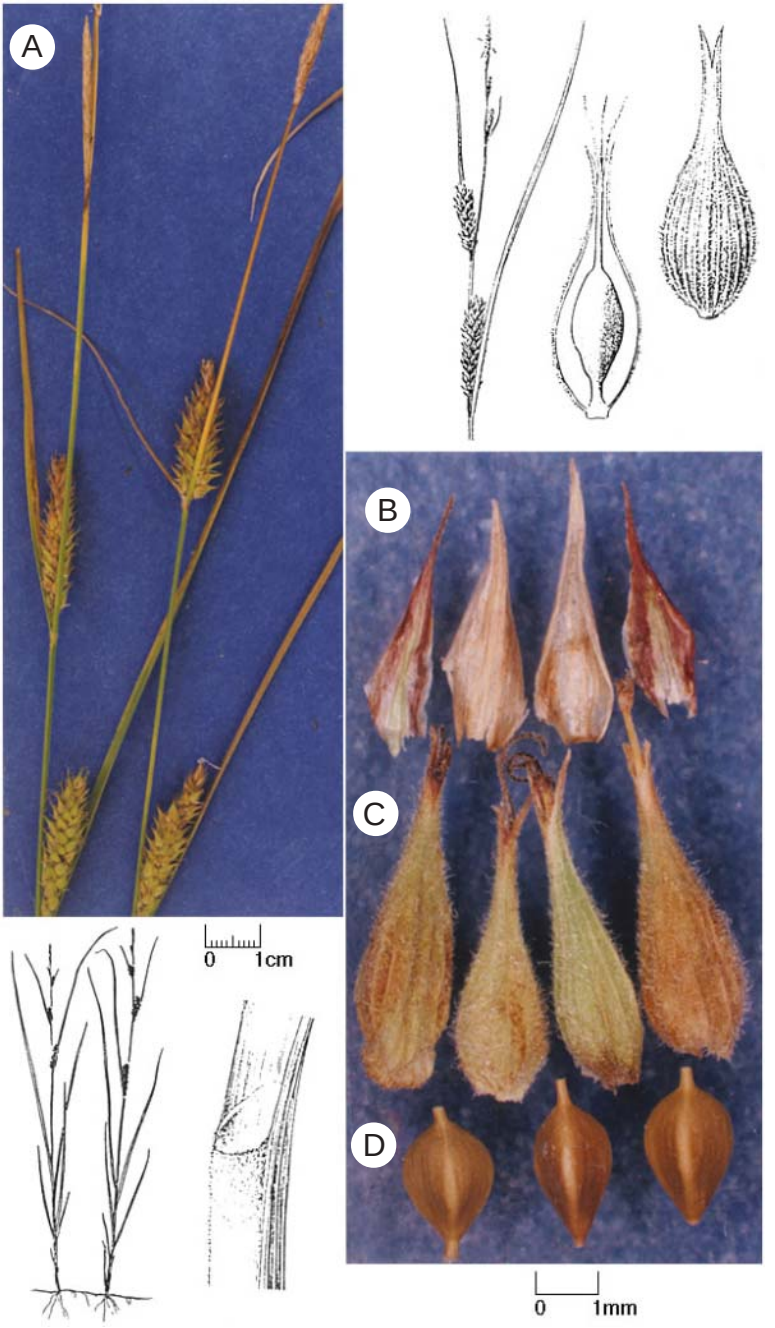
PISTILLATE SCALES: Obovate, usually with an obtuse tip, narrower and shorter than or equaling the perigynia, scarious throughout, black or purplish black to dark reddish brown.

PERIGYNIA: Orbicular to broadly obovoid, strongly biconvex and turgid, rounded to a sessile or stipitate base, as well as at the apex, tending to be inflated distally, pale green to coppery tan or suffused with dark purple, 1.8-3.5(4) mm long, 1.5-2.3 mm wide. **Nerves:** Absent except on the margins. **Beaks:** Often slightly bent, entire, reddish black, 0.1-0.4 mm long.

ACHENES: Suborbicular or broadly ovoid to obovoid, normally lenticular or a few trigonous, minutely apiculate, light brown, 1.2-1.8 mm long, 0.9-1.5 mm wide. **Stigmas:** 2, sometimes 3.

HABITAT AND DISTRIBUTION: Locally abundant. Wet meadows and open slopes, lakeshores, and streambanks at **middle and upper elevations**. Southern British Columbia to California and eastward to Idaho, Wyoming, and Colorado. Apparently missing from large parts of Nevada and Utah. **July-August.**

SIMILAR SPECIES: See appendix, table 3.



Carex sheldonii. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B and C: Left and left-center—dorsal views; right-center and right—ventral views.

Carex sheldonii Mack.
Sheldon sedge

HABIT: Culms arising singly or in small tufts from creeping rhizomes, sometimes forming dense swards. **Culms:** Erect, obtusely angled, glabrous, brown, stout at the base, 4-10 cm tall, slightly **aphyllopodic**.

LEAVES: About 4, borne on the lower one-half of the culm. **Blades:** Flat, firm but thin, light green, 3-6 mm wide. **Sheaths:** Yellowish brown, membranous, usually villous-hirsute ventrally, darker at the concave mouth; basal sheaths becoming cross-filamentose.

BRACTS: Lower leaflike, not sheathing, exceeding the inflorescence; upper reduced and not sheathing.

SPIKES: Several, green or yellowish green, becoming stramineous, remote. **Terminal:** 2-3, **staminate**, linear, 2-3.5 mm long, 3 mm wide; the upper longer and peduncled; basal sessile. **Lateral: Pistillate,** 2-3, erect, cylindrical, sessile, 2-6 cm long, 8-10 mm wide, closely flowered but not crowded, widely separated; perigynia ascending,

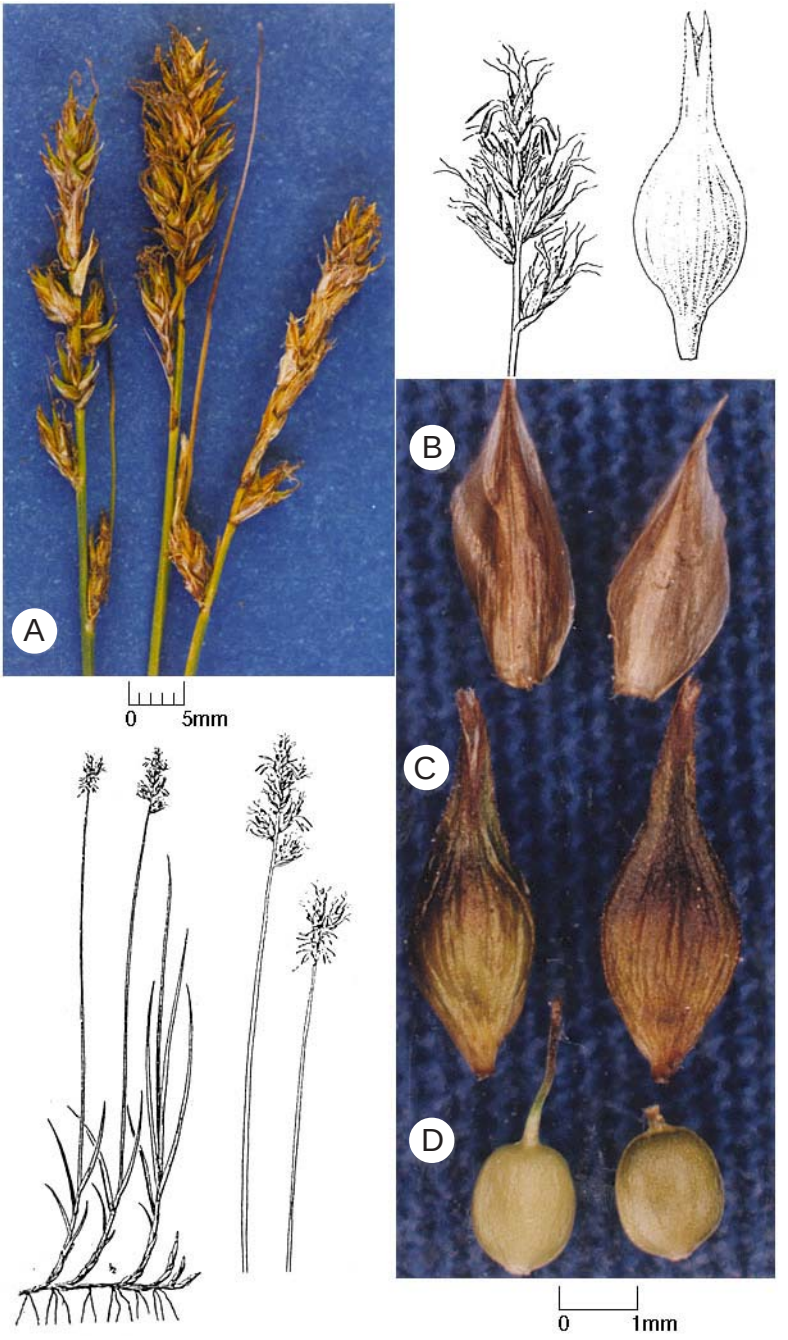
PISTILLATE SCALES: Ovate-lanceolate with the tip acuminate to cuspidate or awned, narrower and shorter than the perigynia, reddish brown with a strongly 3- to 5-nerved green or pale center and hyaline or stramineous margins.

PERIGYNIA: Ovate-lanceolate, flattened distally, rounded at the sessile base, tapered at the apex, subcoriaceous, short-pubescent, green becoming straw-colored or brownish, occasionally suffused with purplish brown, 5-6(8) mm long, about 2 mm wide. **Nerves:** 12-20, conspicuous; marginal nerves obscure or lacking. **Beaks:** Strongly tapering, frequently dark-tinged, 2 mm long; teeth prominent, often unequal, outcurved.

ACHENES: Oblong-obovoid, obtusely trigonous, short-stipitate, yellowish brown, 1.8-2.5 mm long, 0.7-1.2 mm wide, continuous with the straight, persistent, bony style. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Infrequent to rare in wet meadows, marshes, roadside ditches, and streambanks. **Foothills to moderate elevations.** Oregon (northern Harney County), northeastern California, central and west-central Idaho, and Utah. **June-August.**

SIMILAR SPECIES: See *C. atherodes*.



Carex siccata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex siccata Dewey
Dry sedge, silvertop sedge

HABIT: Culms arising singly from brown, slender to stout, creeping rhizomes. **Culms:** Slender, mostly 1.5-6(9) dm tall, exceeding the leaves, from somewhat to distinctly **aphyllopodic.**

LEAVES: Several, borne on the lower one-fourth of the culm. **Blades:** Flat, 1-3 mm wide. **Sheaths:** Ventrally hyaline, truncate at the mouth, overlapping.

BRACTS: Prolonged to inconspicuous, setaceous, shorter than the inflorescence.

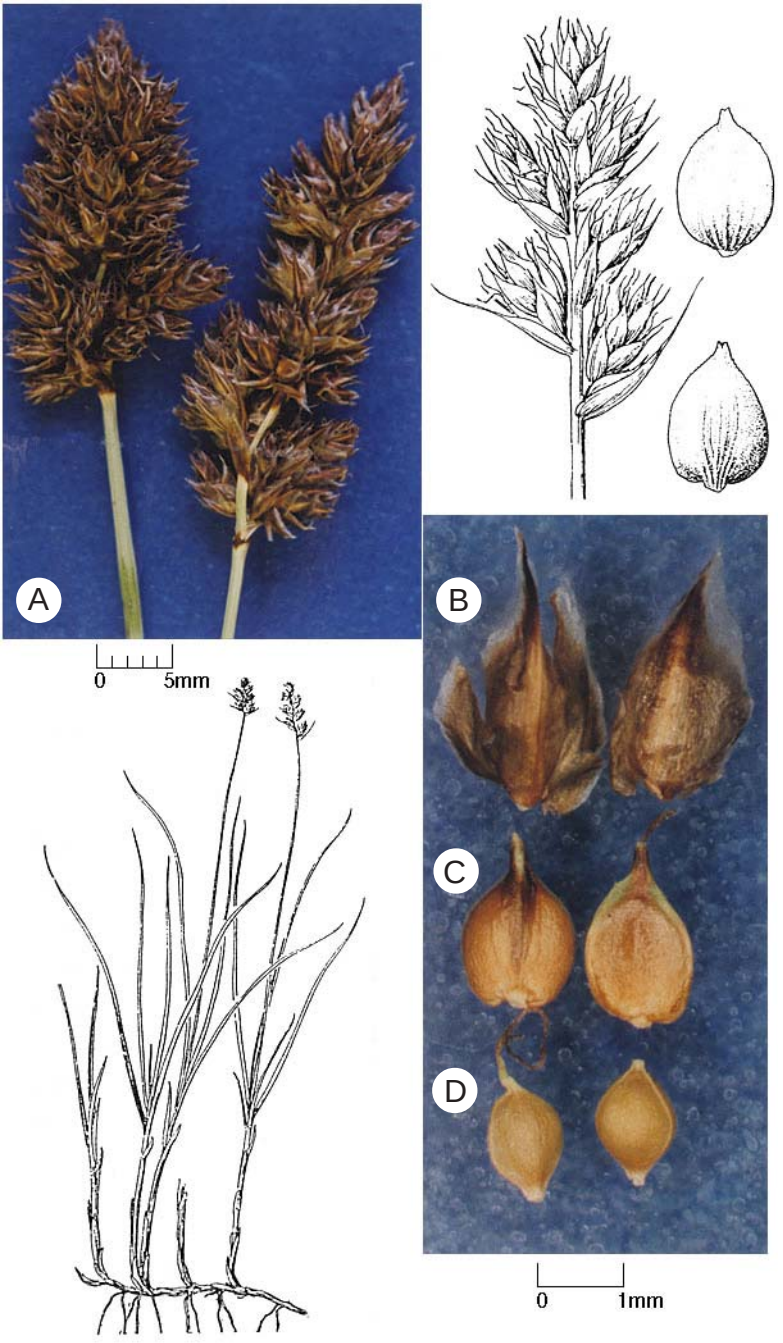
SPIKES: 3-12, **androgynous** (sometimes appearing falsely gynaecandrous), sessile, greenish brown to golden brown, 5-10 mm long, 2.5-5 mm wide, readily distinguishable to indistinguishable (especially the upper ones), but aggregated into a cylindric or clavate-cylindric head 1.5-3.5 cm long and about 1 cm wide; the lowest sometimes removed from the main cluster; perigynia appressed.

PISTILLATE SCALES: Broadly ovate, shorter than to equaling the perigynia and concealing them, brown with a firmer, often pale or greenish midvein, tending to be hyaline-margined.

PERIGYNIA: Lance-ovate to elliptic, plano-convex, abruptly tapered toward the stipitate base, sharp-edged proximally, becoming thin-margined distally, serrulate over most of its length, sometimes rather granular-tuberculate, greenish brown or greenish black with the green margins disappearing at maturity, 3-6 mm long, 1.5-2 mm wide. **Nerves:** Several, coarse dorsally; few, obscure ventrally. **Beaks:** Flattened and serrulate, over one-half as long as the body, narrowly hyaline at the obliquely and deeply cleft and obscurely to prominently bidentate tip.

ACHENES: Quadrate-orbicular, lenticular, brown at maturity, 1.7-2.2 mm long, filling the perigynium. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Frequent, but usually rather local on dry to moderately wet, open or thinly wooded grassy slopes from the **base of the mountains to near timberline**. Alaska to Washington, Utah, Arizona, and Wyoming, and east to Maine and New Jersey. **June-August.**



Carex simulata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex simulata Mack.
Analogue sedge, short-beaked sedge

HABIT: Culms arising singly or few together from well-developed, creeping, brown rhizomes. **Culms:** Sharply triangular, 1-9 dm tall, usually exceeding the leaves, **aphyllopodic**.

LEAVES: 2-5, clustered toward the base. **Blades:** Flat or canaliculate, 1-4 mm wide. **Sheaths:** Membranous ventrally, truncate or concave at the mouth.

BRACTS: Small and inconspicuous, sometimes setaceous, shorter than the inflorescence.

SPIKES: 8-25 or more, **androgynous or unisexual** (and the plants subdioecious), short, sessile, medium to dark brown, aggregated into a distinguishable or indistinguishable oblong-ovoid to linear-oblong head 1.5-3 cm long and up to 1.5 cm thick.

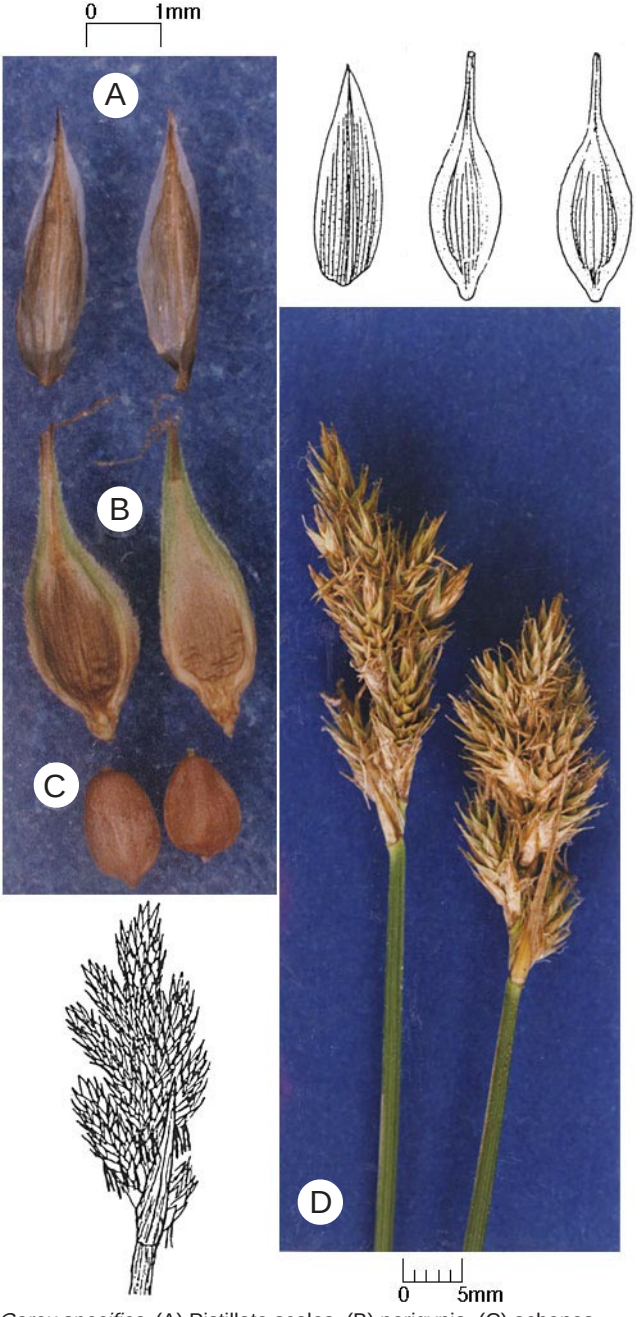
PISTILLATE SCALES: Ovate-triangular, cuspidate, wider and longer than the perigynia and completely concealing them, green to black or brown with narrow, hyaline margins and a conspicuously lighter midvein.

PERIGYNIA: Broadly ovate, plano-convex or unequally biconvex, the base spongy, especially laterally; **margins raised**, narrowly winged and serrulate at the junction of the beak and the body, coriaceous, usually glossy, yellowish brown to chestnut brown at maturity with the margins greenish distally when immature, 1.7-2.7 mm long, 1.3-1.6 mm wide. **Nerves:** Lacking or few on each surface, hardly reaching the middle, not reaching the margins. **Beaks:** Abruptly narrowed, 0.2-0.6 mm long, margins of the dorsal suture slightly hyaline and overlapping.

ACHENES: Obovoid or rhombic-elliptic, lenticular, yellow brown, 1.1-2.3 mm long, 0.7-1 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Widespread, sometimes common in wet meadows and swamps from **foothills to moderate elevations** in the mountains. Washington to California and eastward to Idaho, Utah, Montana, Wyoming, and New Mexico. **June-August.**

DISTINCTIVE CHARACTERISTICS: Perigynia are shiny brown and very short beaked.



Carex specifica. (A) Pistillate scales, (B) perigynia, (C) achenes, (D) inflorescences. A through C: Left—dorsal view; right—ventral view.

Carex specifica Bailey
Specific sedge

HABIT: Loosely cespitose from short rhizomes. **Culms:** Erect, somewhat smooth, exceeding the leaves, 3-8.5 dm tall, **aphyllopodic to phyllopodic**.

LEAVES: Borne on the lower one-third of the culm. **Blades:** Flat or channeled, 2-5 mm wide. **Sheaths:** More or less firm and green-ribbed ventrally, or narrowly hyalined, concave to convex at the mouth, sometimes prolonged above the collar.

BRACTS: Short and inconspicuous; the lowest sometimes long-awned.

SPIKES: Several, **gynaecandrous**, sessile, golden brown to brown at maturity, individual spikes distinguishable, but aggregated into an oblong or roundish head 1.5-4 cm long; the lowest spike somewhat removed; perigynia appressed-ascending.

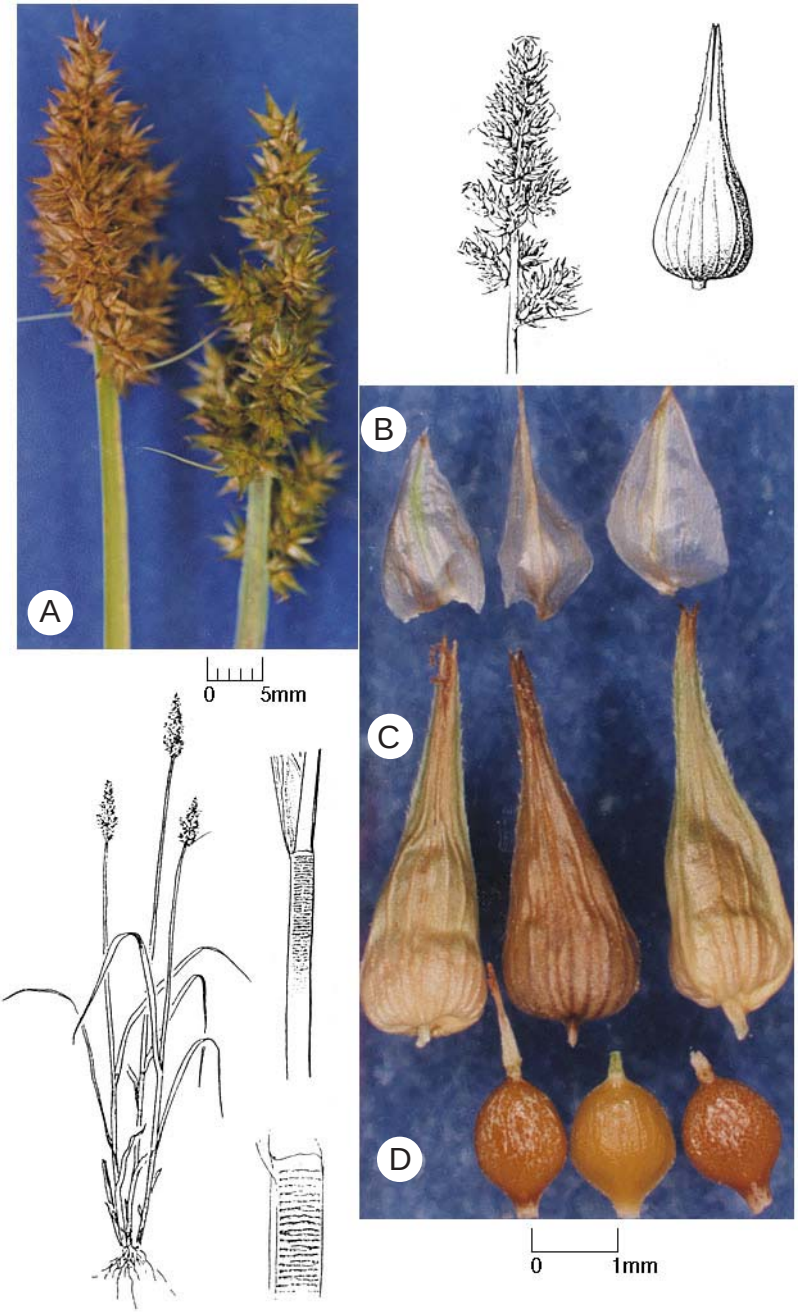
PISTILLATE SCALES: Lanceolate-ovate with the tip acute to slightly acuminate, scarcely shorter and narrower to nearly as wide as the perigynia, reddish to golden brown or brown with usually a lighter midvein and white-hyaline margins.

PERIGYNIA: Narrowly to broadly ovate or lanceolate, plano-convex broadly to narrowly tapering at the base, gradually tapering at the apex, **wing-margined**, serrulate from the middle upward, green to gold, sometimes reddish brown toward the margins which usually remain green, 4.8-7 mm long, 1.2-2.3 mm wide. **Nerves:** Numerous on both surfaces or obscure ventrally. **Beaks:** Ill-defined, reddish-tinged, narrowly winged except the last 0.3 mm; tip smooth and terete, slightly hyaline, obliquely cleft.

ACHENES: Broadly oblong, lenticular, substipitate, brown, 1.7-2.3 mm long, 1-1.5 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Dry meadows and open forest at **middle to high elevations**. In the Sierra Nevada Mountains from Tulare County, California to western Nevada. **June-August**.

SIMILAR SPECIES: See *C. multicostata*.



Carex stipata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes.
B through D: Left and center—dorsal views; right—ventral view.

Carex stipata Muhl.
Awl-fruit sedge, prickly sedge, saw-beak sedge

HABIT: Densely clumped from short, stout rhizomes. **Culms:** Stout, 4-6 mm thick, sharply concave-triangular with the angles narrow-winged and serrulate above, 3.5-10 dm tall, equaling the leaves, slightly **aphyllopodic**.

LEAVES: Blades: Flat, coarse, flaccid, yellowish green, 4-11 mm wide. **Sheaths:** Septate-nodulose dorsally; thin, fragile, and cross-rugulose ventrally; convex at the mouth.

BRACTS: Sheathless, short and inconspicuous or sometimes setaceous and surpassing the inflorescence.

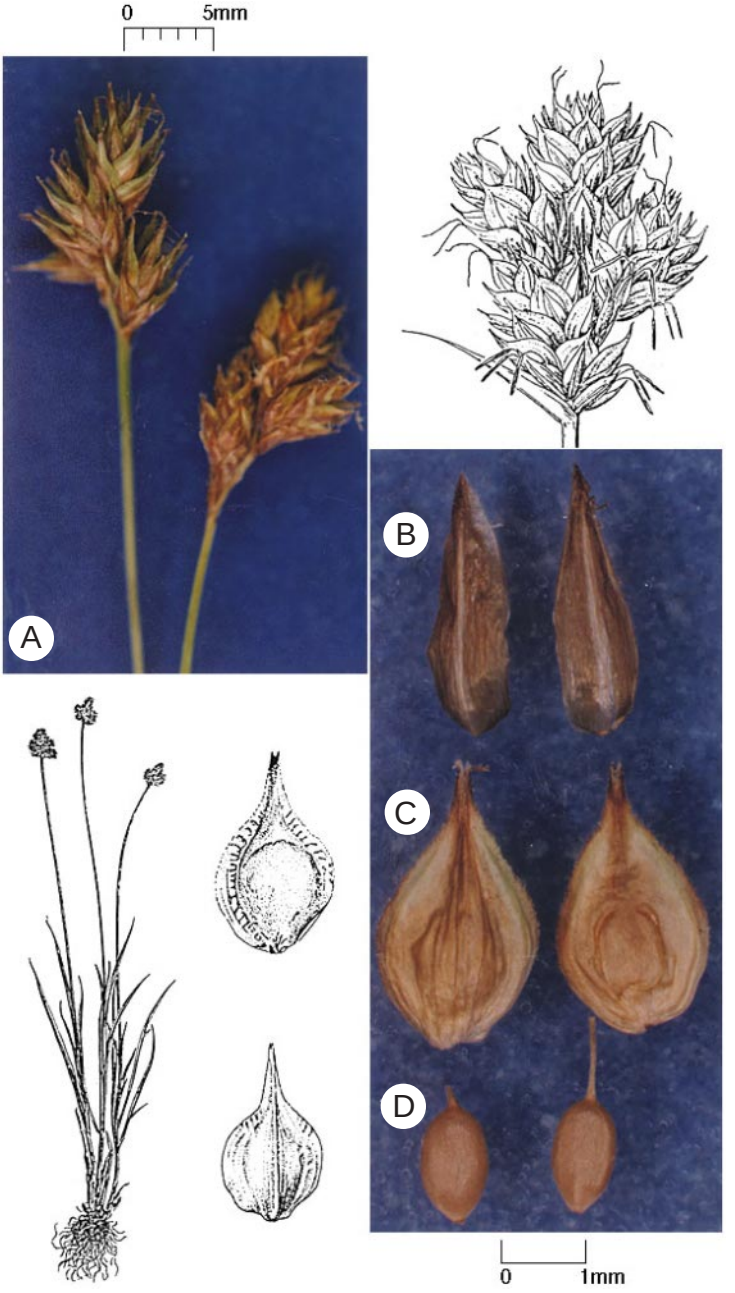
SPIKES: Numerous, **androgynous**, small, sessile, yellowish brown to dark brown at maturity, lower distinguishable, upper indistinguishable, aggregated into a compound oblong-linear to ovoid head 3-10 cm long, 1-3 cm thick; perigynia spreading; beaks prominent, giving the spikes a prickly appearance; perigynia and scales deciduous.

PISTILLATE SCALES: Ovate-triangular with an acuminate or cuspidate tip, shorter than the perigynia, brownish to greenish along the midrib with hyaline or brownish margins.

PERIGYNIA: Lance-triangular to narrowly ovate, plano-convex or biconvex, conspicuously spongy-thickened at the base, sharp-edged to the base, serrulate-margined (not winged) distally, stipitate, greenish-stramineous becoming yellowish brown to dark brown at maturity, 3.6-6 mm long, 1.5-1.8 mm wide. **Nerves:** Sometimes darker than the body, prominent on both surfaces. **Beaks:** Tapered with long, thin, ill-defined, serrulate margins, about the length of the body, obliquely cleft and slightly bidentate.

ACHENES: Broadly ovate to ovate-orbicular, lenticular, substipitate, golden brown at maturity, 1.3-2.3 mm long, 1.3-1.8 mm wide, jointed at the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Occasional in swamps, wet meadows, and along ditches at **low and mid elevations**. Alaska to Newfoundland, south to California, Idaho, Utah, Montana, Wyoming, New Mexico, and North Carolina. In the Intermountain area known mainly along the northern border, missing from most of our range. **May-August.**



Carex straminiformis. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex straminiformis Bailey
Mount Shasta sedge, Shasta sedge

HABIT: Densely tufted from short, woody roots. **Culms:** Firm, stout, often incurved, 1-5 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-7, crowded on the lower one-fourth of the culm. **Blades:** Flat, thick, 2-3.5(4) mm wide. **Sheaths:** Hyaline, concave to convex at the mouth.

BRACTS: Sheathless, short and inconspicuous.

SPIKES: 3-10, **gynaecandrous**, sessile, greenish brown to chestnut, 1.2 cm long or less, closely aggregated into an ovate or roundish head 1.3-3.2 cm long and 12-20 mm thick; perigynia ascending-spreading; beaks conspicuous.

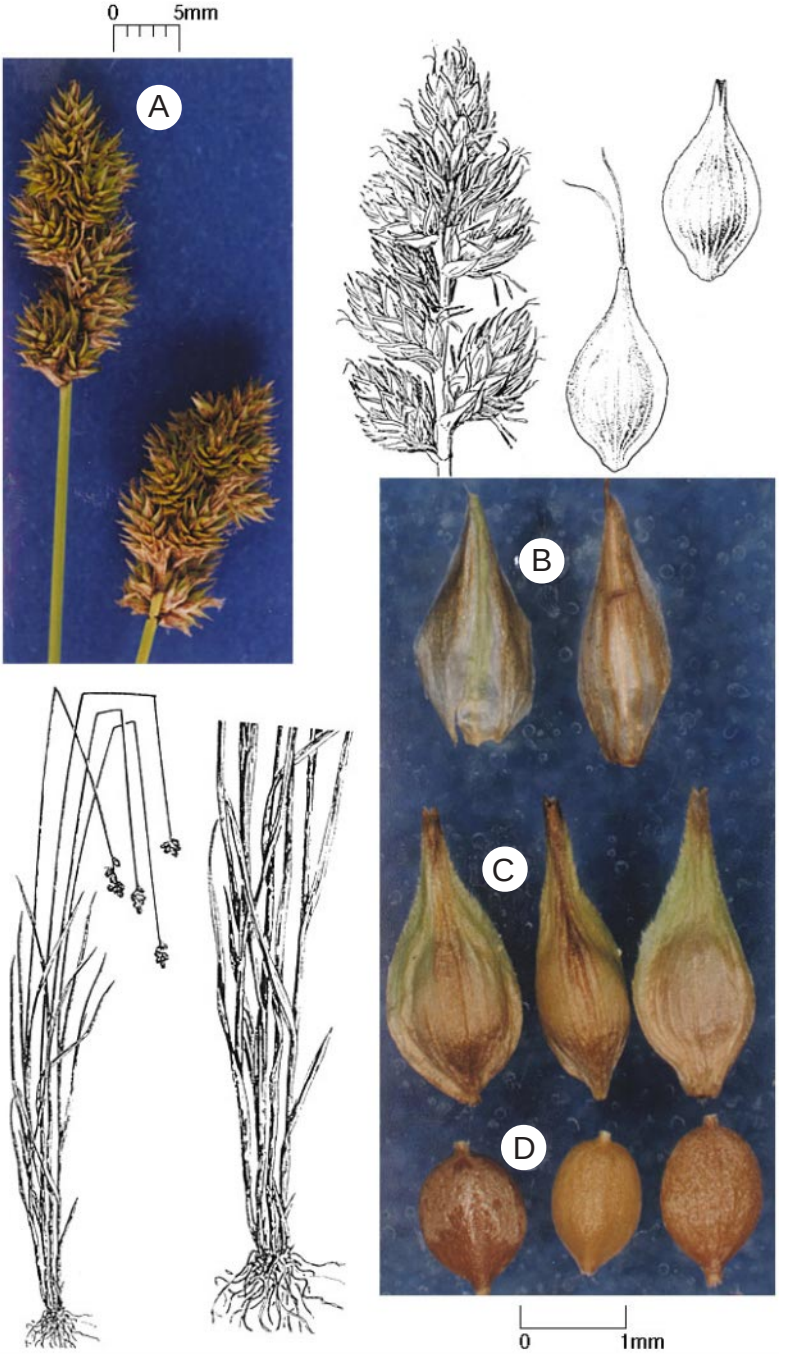
PISTILLATE SCALES: Ovate-lanceolate with an acute tip, shorter and narrower than the perigynia, reddish chestnut to brownish black with a pale or green midrib and whitish margins.

PERIGYNIA: Ovate to broadly ovate, flattened, concavo-convex (usually quite thin), strongly winged and usually wrinkle-margined to the base, membranous, light green to stramineous, 4.1-5.8 mm long, 1.7-3.4 mm wide. **Nerves:** Numerous dorsally, absent or nearly so ventrally. **Beaks:** Abruptly narrowed, flattened, serrulate more or less to the top, bidentate, about a third the length of body.

ACHENES: Broadly oval, lenticular, nearly sessile, brown, 1.3-2.4 mm long, 1-1.6 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: On open slopes, often near persistent snowbanks at **high altitudes**, near or above timberline. Occurs irregularly from southern Washington to the White Mountains of California and Nevada. Disjunct in central Idaho and Utah (Uinta and Wasatch Mountains). **June-August.**

SIMILAR SPECIES: See *C. proposita*.



Carex subfusca. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left (and C and D, center)—dorsal view; right—ventral view.

Carex subfusca W. Boott
Brown sedge, rusty sedge

SYNONYM: *C. teneraeformis* Mack**.**

HABIT: Densely tufted from short rhizomes. **Culms:** Erect, stiff, smooth, 2-10.5 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 3-5 on the lower one-fourth of the culm. **Blades:** Somewhat stiff, flat, 2-4 mm wide. **Sheaths:** Sparingly septate-nodulose dorsally, thin and hyaline ventrally, truncate or concave at the mouth.

BRACTS: Small and inconspicuous, setaceous.

SPIKES: 4-12, **gynaecandrous**, sessile, greenish, becoming straw-colored or brown, distinguishable, but clustered into an oblong or ovoid head 1-3.5 cm long and 7-12 mm wide; perigynia spreading to appressed-ascending.

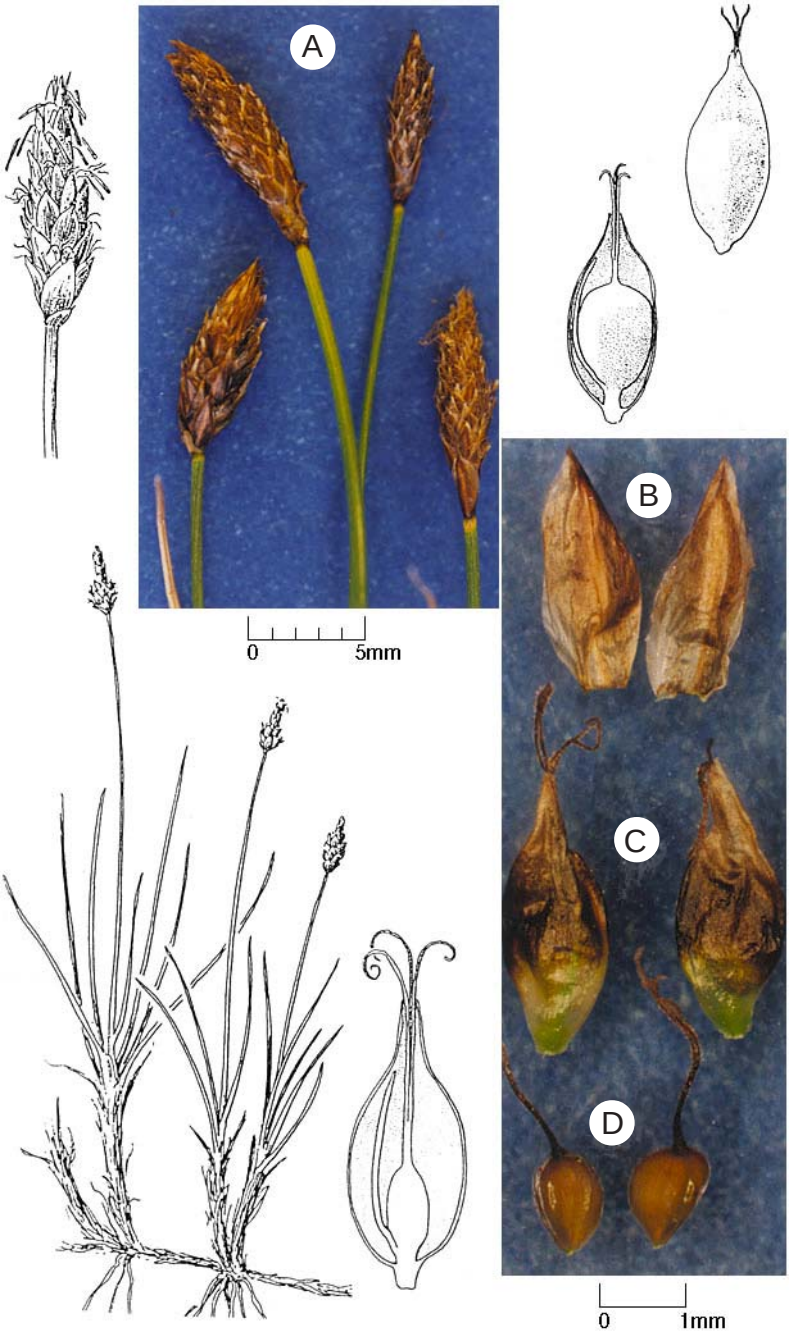
PISTILLATE SCALES: Ovate with an obtuse to acuminate tip, shorter and narrower than to more or less covering the perigynia, greenish-stramineous with a lighter center and margins.

PERIGYNIA: Narrowly to broadly ovate, plano-convex, rounded or round-tapering at the base, tapering or abruptly contracted at the apex, narrowly winged with serrulate margins, thick, subcoriaceous, green to straw-colored, 1.4-4.3 mm long, 0.9-1.9 mm wide. **Nerves:** Several, fine or coarse dorsally; lacking or several ventrally. **Beaks:** Somewhat flattened, serrulate, half as long as the body, shallowly bidentate.

ACHENES: Short-oval, lenticular, substipitate, brown, 1-1.6 mm long, 0.7-1.2 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Locally common in moist or dry meadows and along forest borders. At **moderate elevations** in the mountains. British Columbia to southern California, eastward to Arizona and Utah. **May-July.**

SIMILAR SPECIES: See appendix, table 1.



Carex subnigricans. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex subnigricans Stacey
Dark alpine sedge

HABIT: Loosely to densely cespitose from long, creeping rhizomes; sod-forming. **Culms:** Stiff, 5-20 cm tall, exceeding the leaves, old sheaths persistent.

LEAVES: Clustered toward the base. **Blades:** Involute-filiform, slender, stiff and wiry, 10 cm long, 0.25-1.25 mm wide. **Sheaths:** Dorsally striate, glabrous or with slightly scaberulous margins, membranous to hyaline ventrally, truncate to shallowly concave at the mouth.

BRACTS: None.

SPIKES: Solitary, **androgynous**, oblong-lanceolate to narrowly elliptic or conic, light to dark brown or chestnut, 8-20 mm long, 3-6 mm thick, when immature the terminal **staminate** portion not easily distinguished from the lower **pistillate** portion; perigynia appressed-ascending.

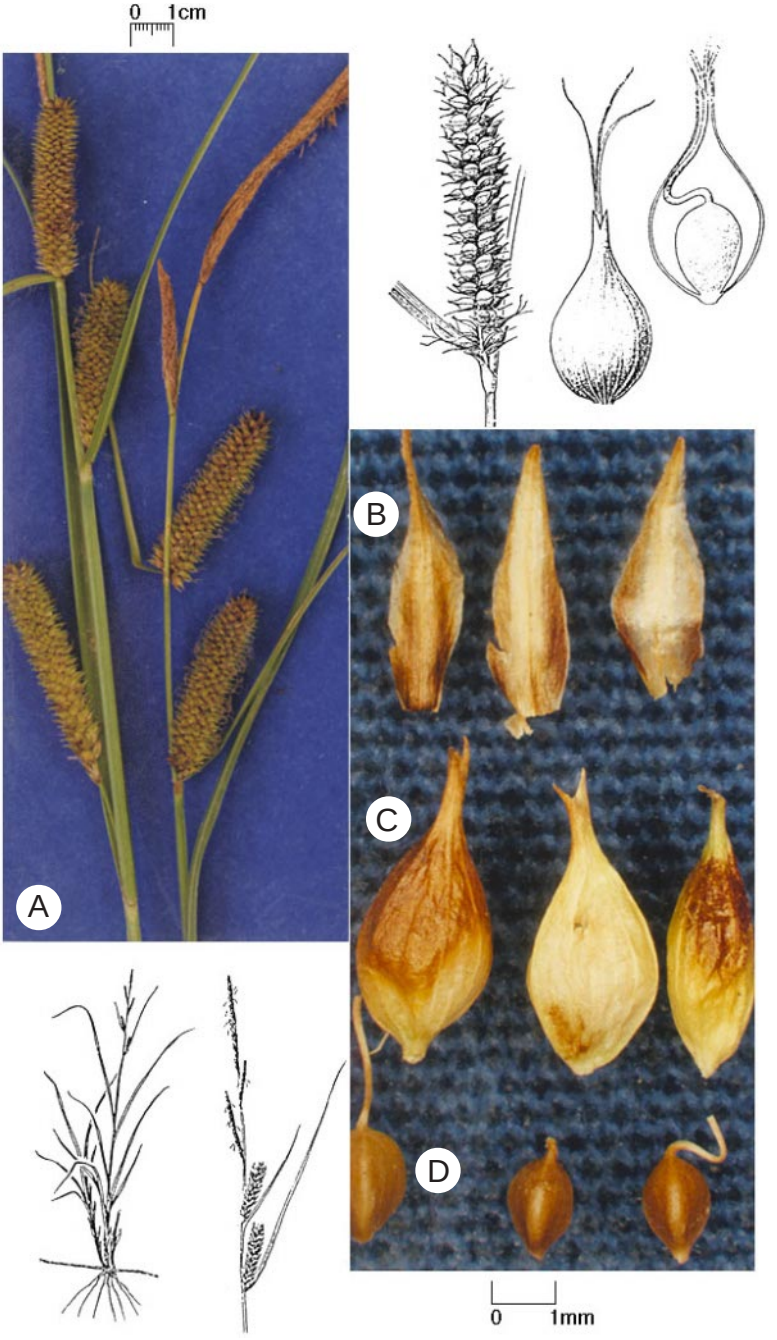
PISTILLATE SCALES: Oblong-elliptic, acute to obtuse at the tip, about equaling the perigynia, thin and fragile, reddish brown to stramineous with the margins and tip tending to be paler and somewhat hyaline, 1-nerved or nearly nerveless.

PERIGYNIA: Rather numerous, lanceolate to ovate-lanceolate, slightly inflated but strongly distended by the achene, substipitate, thin-walled, glabrous, brown, pale or greenish at the base, 2.5-4.1 mm long, 0.9-2 mm wide. **Nerves:** Lacking or nearly so. **Beaks:** Short and tapering, obliquely cleft, obscurely hyaline at the tip.

ACHENES: Ovoid to obovoid, trigonous, 1.25 mm long, 0.75 mm wide; partially to nearly filling the perigynium; rachilla well-developed. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: On moist, rocky slopes and in meadows at **high elevations** in the mountains. From Oregon through California, central Idaho, Utah (Tushar Mountains, Uinta Mountains, and Aquarius Plateau), and Wyoming. **June-August.**

SIMILAR SPECIES: See appendix, table 4.



Carex utriculata. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex utriculata Boott
Beaked sedge, bladder sedge

OTHER NAMES: Formerly called *C. rostrata* Stokes.

HABIT: Culms arising singly or few together from stout, deep-seated rhizomes, sometimes forming a dense sod. **Culms:** Stout, erect, bluntly triangular below the spikes, smooth, light brown or red-tinged at the thick and spongy base, 3-12 dm tall, exceeded by the upper leaves, slightly **aphyllopodic**.

LEAVES: 4-10, not clustered. **Blades:** Stiff, flat, thick, glabrous, septate-nodulose, 2-12 mm wide. **Sheaths:** Concave or truncate at the mouth; basal sheaths sometimes cross-filamentose.

BRACTS: Leaflike, strongly sheathing, exceeding the inflorescence.

SPIKES: Several, yellowish green becoming stramineous or reddish purple, remote, forming an elongate inflorescence. **Staminate:** 2-4; terminal narrowly linear, 1-7 cm long, 2-4 mm thick, peduncled; lateral smaller. **Pistillate or androgynous:** 2-5, lateral, erect, cylindric and oblong, 2-10 cm long, 1-1.5 cm thick, short-peduncled to sessile, widely separate; perigynia ascending-spreading to squarrose-spreading at maturity.

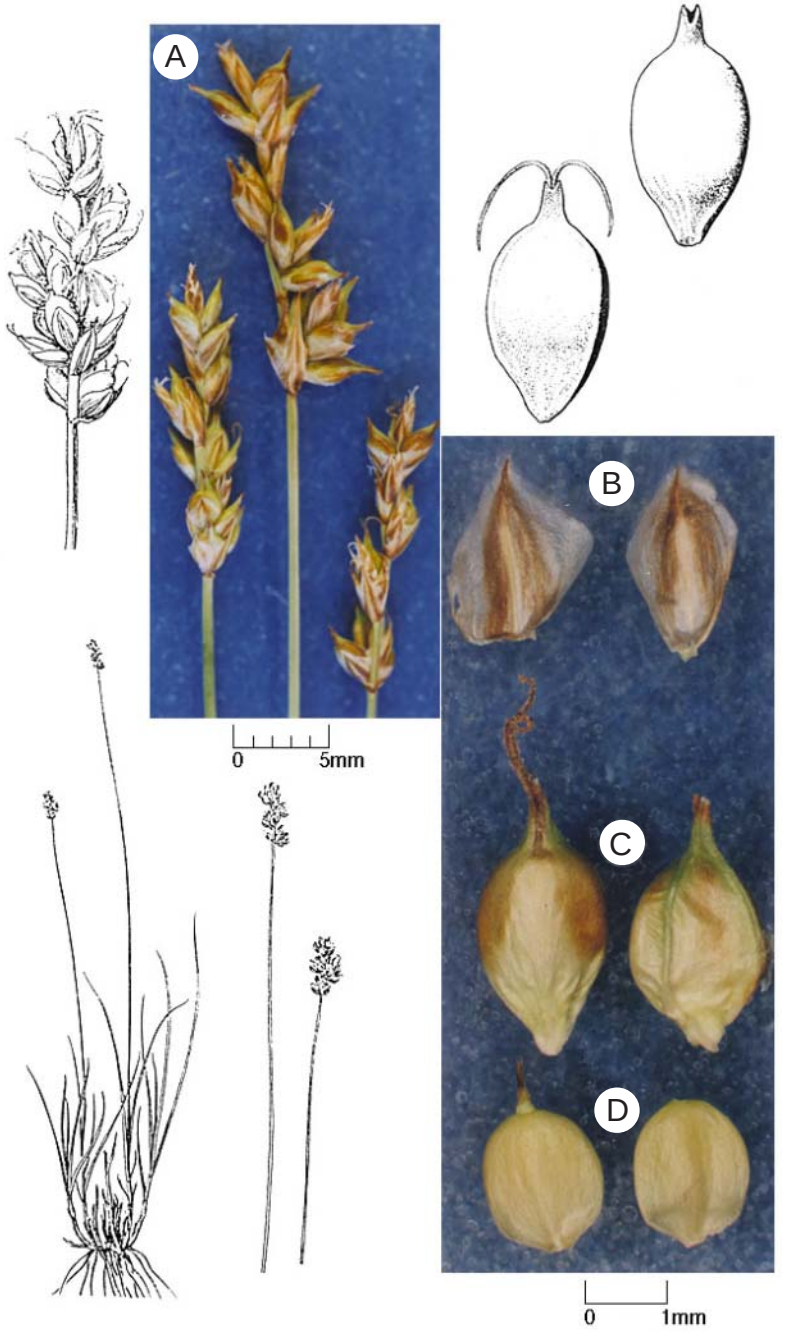
PISTILLATE SCALES: Ovate or lanceolate with an acute to long-acuminate or short-awned tip, narrower than and either longer or shorter than the perigynia, light brown or reddish brown with a 3-nerved center and hyaline margins.

PERIGYNIA: Broadly ellipsoid to ovoid or subglobose, strongly inflated, abruptly contracted at the apex, membranous but firm, glabrous, shining, yellowish green, straw-colored or reddish-tinged at maturity, 3.5-8 mm long, 1.3-3.5 mm wide. **Nerves:** 8-16, prominent on both surfaces; evident marginal nerves lacking. **Beaks:** Conic or cylindric, smooth, bidentate, 1-2 mm long; teeth slender, stiff, erect, 0.1-0.8 mm long.

ACHENES: Obovoid with blunt angles, trigonous, substipitate, yellowish brown, 1.1-2 mm long, 0.9-1.3 mm wide; the style persistent, bony, usually becoming flexuous at maturity. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: One of the most common species in the Intermountain area. Wet meadows, swamps, marshes, and wet soil or shallow water at the margins of ponds, lakes, and streams. **Lowlands to moderate elevations.** Circumboreal. In North America extending south to California, Nevada, southern Utah, New Mexico, Nebraska, Indiana, and Delaware. **June-August.**

SIMILAR SPECIES: See appendix, table 11.



Carex vallicola. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex vallicola Dewey
Valley sedge

HABIT: Clustered on short stout, pale or brown, rhizomes. **Culms:** Slender, roughened on the angles, 1.5-6 dm tall, longer than the leaves, slightly **aphyllopodic.**

LEAVES: 3, clustered at the base. **Blades:** Flat or canaliculate, slender, 0.5-2 mm wide. **Sheaths:** Light, thin, and hyaline ventrally, truncate to shallowly concave at the mouth.

BRACTS: Sheathless, short or sometimes filiform-elongate to 3 cm long.

SPIKES: Several, **androgynous**, small, sessile, green becoming stramineous, few-flowered, loosely aggregated into an irregular, narrowly oblong-cylindric head 1-3 cm long, 4-8 mm wide; perigynia spreading or spreading-ascending, producing a ragged appearance.

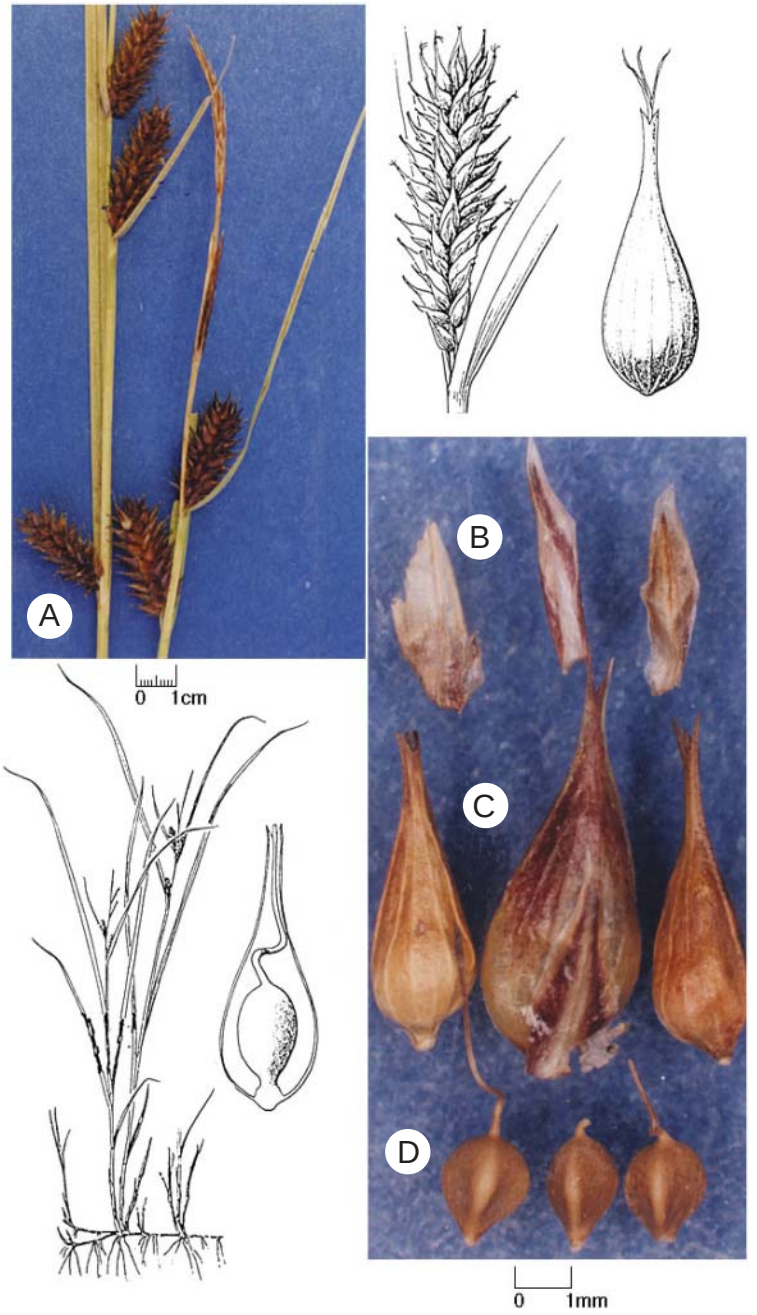
PISTILLATE SCALES: Broadly triangular with an acute tip, shorter than the perigynia, broadly white-hyaline on the margins with a brownish or pale-nerved center.

PERIGYNIA: Oblong-elliptic, strongly plano-convex, broadly rounded on the convex dorsal side, glossy at maturity, greenish or greenish-stramineous and coppery-tinged, 2.5-4 mm long, 1.5-2.5 mm wide. **Nerves:** Displaced from margins somewhat onto the ventral side (ventro-marginal); otherwise appearing nerveless or with obscure basal nerves. **Beaks:** Abruptly narrowed, minutely serrulate, obliquely cleft, slightly bidentate, reddish brown at the tip, 0.6-1 mm long.

ACHENES: Orbicular, lenticular, stramineous or pale, 1.6-2.5 mm long, about 1.4-2.1 mm wide, filling the perigynium, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Common on wet or moderately dry slopes from **foothills to moderate elevations** in the mountains, often with sagebrush or under aspen. Eastern Oregon to California and east to Idaho, Montana, Wyoming, western South Dakota, New Mexico, and Mexico. **April-August.**

SIMILAR SPECIES: See *C. disperma*.



Carex vesicaria. (A) Inflorescences, (B) pistillate scales, (C) perigynia (center perigynium is subtended by a pistillate scale), (D) achenes. B: Left—dorsal view; center and right—ventral views. C and D: Left and center—dorsal views; right—ventral view.

Carex vesicaria L.
Blister sedge, inflated sedge

HABIT: Loosely cespitose from short, stout rhizomes. **Culms:** Sharply triangular, slightly reddish-tinged at the somewhat spongy base, 3-10 dm tall, **aphyllopodic**.

LEAVES: 4-10, not clustered. **Blades:** Flat, glabrous, tending to be septate-nodulose, 1-7 mm wide. **Sheaths:** Hyaline ventrally, truncate or concave at the mouth; basal sheath becoming cross-filamentose.

BRACTS: Well-developed, not sheathing, elongate, exceeding the inflorescence.

SPIKES: Several, erect, sessile or short-pedunculate, yellow brown to purplish brown, remote. **Terminal: Staminate** (sometimes with a few perigynia), 2-4, narrowly linear, 2-7 cm long, 2.5-4 mm thick, the upper terminal and peduncled, the lateral sessile. **Lateral: Pistillate,** 1-3, oblong-cylindric to narrowly cylindric, 2-7.5 cm long, 5-15 mm wide, loosely 30- to 100-flowered; perigynia appressed or ascending.

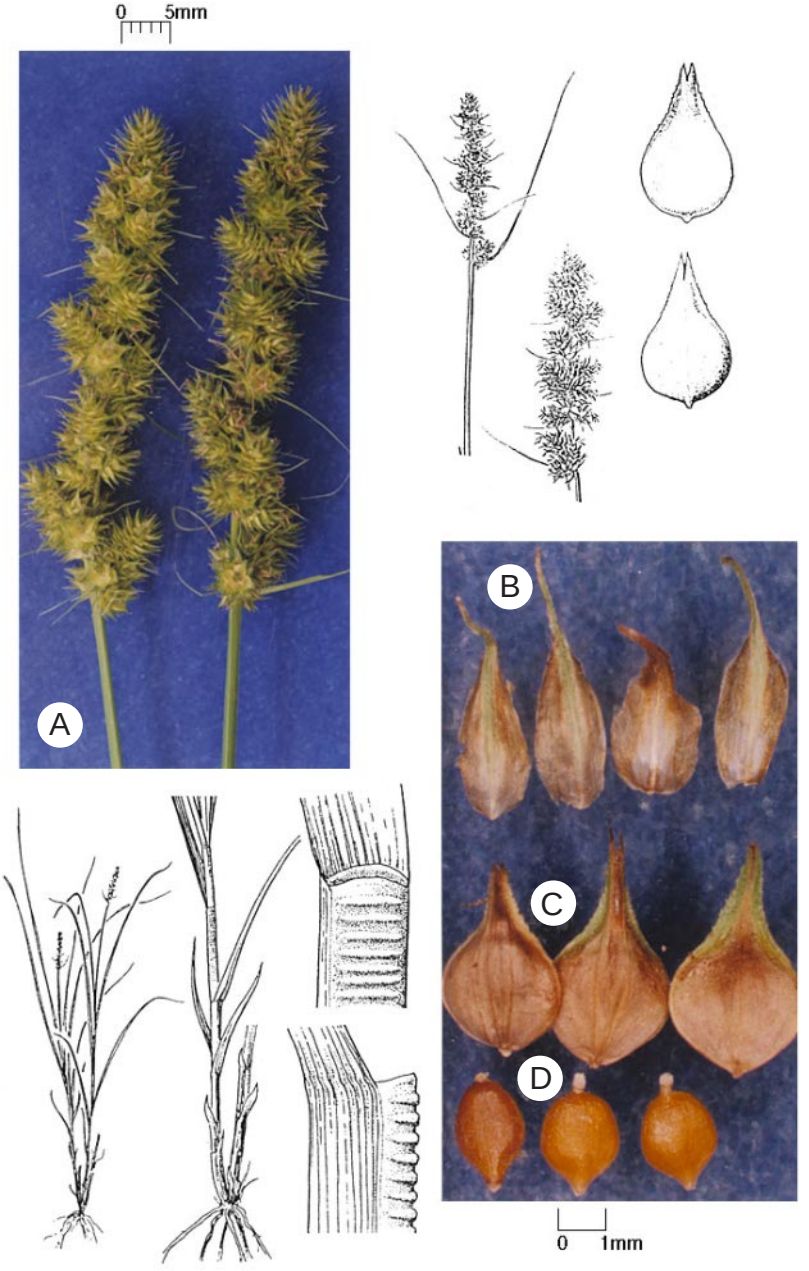
PISTILLATE SCALES: Ovate to lanceolate with the tip acute to acuminate or slightly awned, narrower and shorter than or equaling the perigynia, reddish brown to yellowish brown with lighter center and hyaline margins.

PERIGYNIA: Lanceolate or ovoid-lanceolate, turgid-inflated below, gradually tapering to the apex, glabrous and shining, puncticulate, yellowish green or stramineous to castaneous or reddish brown, 4-11 mm long, 1.7-3 mm wide. **Nerves:** Strongly 10- to 20-ribbed on each surface, prominent marginal nerves lacking. **Beaks:** Slender, conic, smooth, bidentate, 1.8-2.5 mm long; teeth 0.3-1.5 mm long, slender, stiff, erect to outcurved.

ACHENES: Obovoid with blunt angles, trigonous, yellow to brown, 1.7-3 mm long, 1.1-1.8 mm wide, continuous with the long, persistent, bony style that becomes bent or flexuous at maturity. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: Frequent to common in wet soil or shallow water of bogs or swamps and along margins of ponds or streams from **lowlands to moderate elevations**. Circumboreal, extending south in North America to California, Arizona, New Mexico, Missouri, Indiana, and Delaware. **June-August.**

SIMILAR SPECIES: See appendix, table 11.



Carex vulpinoidea. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left and center—dorsal views; right—ventral view.

Carex vulpinoidea Michx.
Fox sedge

HABIT: Stems clustered, arising from stout rhizomes. **Culms:** Stiff, sharply triangular, roughened on the angles above, 2-10 dm tall, shorter than the leaves, slightly **aphyllopodic**.

LEAVES: Scattered along the lower one-half of the culm. **Blades:** Flat, 2-5 mm wide. **Sheaths:** Ventral side membranous, sparsely red-dotted or plain and usually cross-rugose on older sheaths, truncate to slightly convex at the mouth.

BRACTS: Lowest sheathless, setaceous-prolonged, up to 5 cm long, shorter than or occasionally exceeding the inflorescence; upper reduced.

SPIKES: Numerous, **androgynous**, small, sessile, green becoming brown or ashy brown, few-flowered, densely aggregated into a compound, linear cylindric head 2-15 cm long and up to 1-2 cm thick; perigynia spreading at maturity.

PISTILLATE SCALES: Ovate with the 3-nerved center terminating in a long, rough or glabrous awn, equaling or shorter and narrower than the perigynia, brownish or stramineous with hyaline-scarious margins.

PERIGYNIA: Broadly ovate to ovate-lanceolate, plano-convex or flattened, sharp-edged, spongy-margined to the rounded base, serrulate distally along the margins, yellowish green to brown or stramineous, greenish distally and toward the thin-edged or narrowly winged upper margins, 1.7-3 mm long, 1-1.2 mm wide. **Nerves:** Obscurely 3 or few and short mid-dorsally, absent ventrally. **Beaks:** Tapered gradually or abruptly, flattened, serrulate, bidentate, 0.7-1.8 mm long.

ACHENES: Orbicular-ovate, lenticular, tapering at the base, 1.2-1.6 mm long, 0.8-1 mm wide, jointed to the style. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: In marshes, standing water, ditches, and other wet places in the **foothills and lowlands**. British Columbia to Newfoundland, south to northern California, Arizona, Colorado, and Florida. In Idaho along the northern margin of the Snake River Plain. **May-August.**

Carex whitneyi. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex whitneyi Olney
Whitney sedge

SYNONYM: *C. jepsonii* Howell.

HABIT: Densely cespitose from short, stout rhizomes. **Culms:** 2-10 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: Blades: Flat with somewhat revolute margins, pubescent above and below with long soft hairs, 2-3 mm wide. **Sheaths:** Hyaline and brownish ventrally, deeply concave or V-shaped at the mouth.

BRACTS: Lowest leaflike, slightly sheathing, equaling or exceeding the inflorescence; the upper reduced.

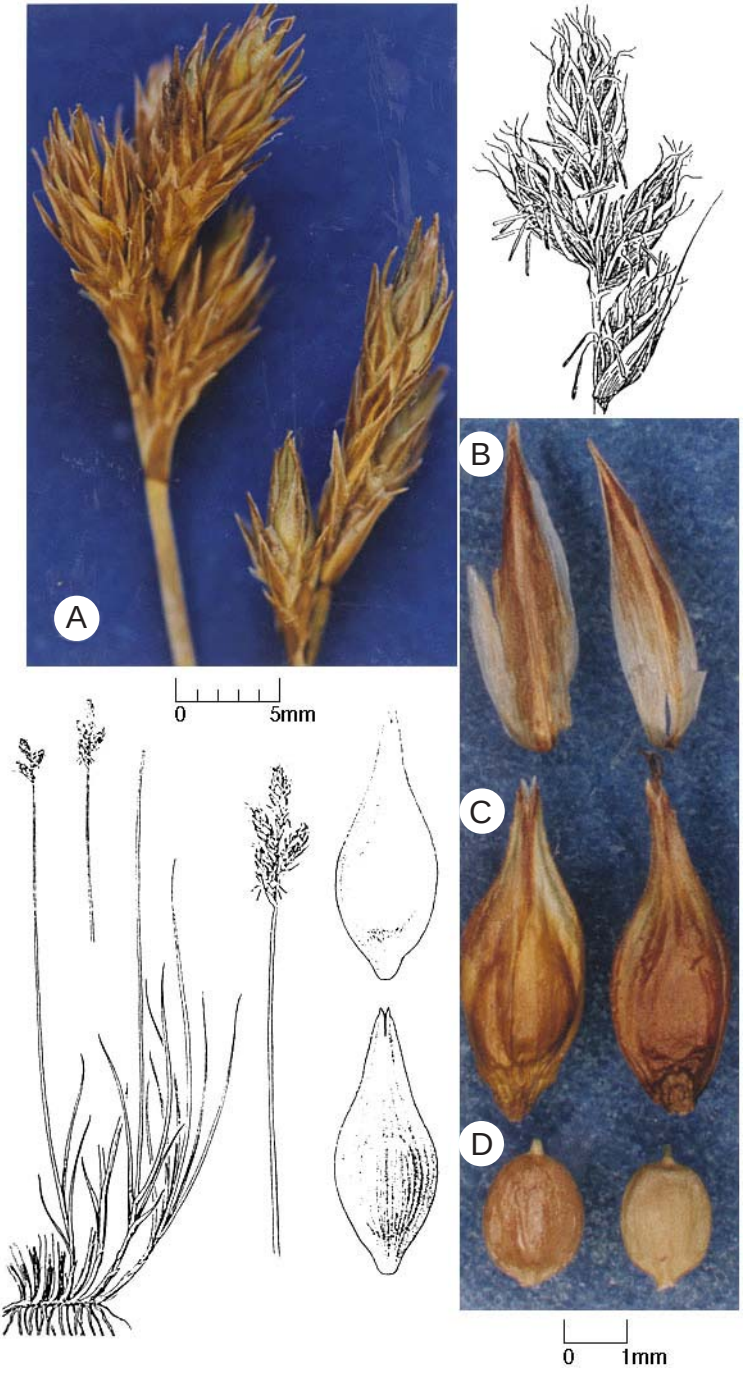
SPIKES: 3-4, sessile to short-pedunculate, greenish becoming stamineous at maturity. **Terminal: Staminate**, linear, 0.5-2 cm long. **Lateral: Pistillate**, oblong or linear, 1-2.5 cm long, 5-7 mm wide, approximate or the lowest separate; perigynia appressed-ascending.

PISTILLATE SCALES: Ovate with an acute to short-acuminate tip, shorter to longer than the perigynia, greenish and 3-nerved with hyaline margins.

PERIGYNIA: Ovoid, abruptly contracted on both ends, prominently angled, glabrous, green, 3.2-5.5 mm long, 1.5-2.5 mm wide. **Nerves:** Evident on both faces, coarse and somewhat raised, reaching the beak. **Beaks:** Abruptly tapering, bidentate, narrowly white-margined, firm at the bidentate tip, 0.2-1 mm long.

ACHENES: Somewhat obovoid, slightly triquetrous, brown, 2.8-3.9 mm long, 1.2-2.4 mm wide. **Stigmas:** 3.

HABITAT AND DISTRIBUTION: On somewhat dry, sandy or gravelly flats in meadows or open forest at **middle to high elevations**. Occurs in southern Oregon, California, and western Nevada. **June-July**.



Carex xerantica. (A) Inflorescences, (B) pistillate scales, (C) perigynia, (D) achenes. B through D: Left—dorsal view; right—ventral view.

Carex xerantica Bailey
Dryland sedge

HABIT: Tufted without creeping rhizomes. **Culms:** Stiff, erect, 3-7 dm tall, exceeding the leaves, **aphyllopodic**.

LEAVES: 2-3, somewhat crowded toward the base. **Blades:** Stiff, firm, 1.5-3 mm wide. **Sheaths:** Membranous-hyaline ventrally, truncate to concave or occasionally V-shaped at the mouth and occasionally prolonged above the collar.

BRACTS: Sheathless, inconspicuous or the lowest setaceous-prolonged, shorter than the inflorescence.

SPIKES: 3-6, green to medium brown, **gynaecandrous**, sessile, approximate but distinct, usually forming a stiff, elongate head 2-5 cm long; the first two internodes each 3-18 mm long; perigynia closely appressed or ascending.

PISTILLATE SCALES: Ovate, varying from shorter and narrower than the perigynia to more often nearly concealing them, thin, stiff with an acuminate tip, light reddish brown with a green or pale-nerved center and white-hyaline margins.

PERIGYNIA: Ovate, flat to slightly or strongly plano-convex or concavo-convex, abruptly tapering to the base, gradually tapering at the apex, **wing**-margined to the base and serrulate to below the middle, 3.7-7 mm long, 1.6-2.8 mm wide, greenish, stramineous, or pale brown with a reddish brown tip. **Nerves:** Usually 10 or more on each side or nearly absent ventrally. **Beaks:** Flattened, strongly margined and serrulate to the tip, obliquely cleft and minutely bidentate, 2.2-3.6 mm long; dorsal suture often extending halfway or more down the length of the beak, margins of the flap slightly hyaline.

ACHENES: Quadrate-orbicular, lenticular or slightly plano-convex, 1.7-2.6 mm long, 1.1-1.75 mm wide. **Stigmas:** 2.

HABITAT AND DISTRIBUTION: Infrequently collected in grasslands and prairies and on open slopes at **higher elevations**. From Alberta east to Manitoba and south to the high plateaus of Utah, Arizona, and Colorado. **June-August.**

SIMILAR SPECIES: See appendix, table 10.

Glossary

Abaxial—The side away from the axis (dorsal).

Achene—A small, dry, hard, one-celled, one-seeded, indehiscent fruit with the seed attached to the pericarp at one point.

Acicular—Needle-shaped.

Acuminate—Gradually tapered to a narrow tip.

Acute—Sharp-pointed, the tip forming an angle of less than 90 degrees.

Adaxial—The side toward the axis (ventral).

Aggregated—Crowded into a dense cluster, but not united.

Androgynous—Having staminate flowers above the pistillate flowers in the same spike.

Aphyllopodic—With the lowermost leaves greatly reduced, bladeless or nearly so; blades, when present, nongreen, short, firm, pointed.

Apiculate—Ending abruptly in a small point.

Approximate—Close together (opposite of remote).

Aristate—With a stiff bristle.

Attenuate—Slenderly tapering or prolonged; more gradual than acuminate.

Auricle—A small projecting lobe or appendage.

Awn—A bristle-shaped appendage.

Beak—A firm, prolonged, slender tip (the distal portion of the perigynium in *Carex*).

Biconvex—Convex on both sides.

Bidentate—Having two teeth.

Bidentulate—Minutely bidentate.

Blade—The broad, usually flat part of a leaf.

Bract—A modified leaf subtending a spike or inflorescence.

Canaliculate—Longitudinally channeled or grooved.

Capitate—Headlike; collected into a head or dense cluster.

Cartilaginous—Tough and firm, but somewhat flexible like cartilage.

Castaneous—Chestnut colored; dark brown.

Cauline—Of or on the stem.

Cespitose—Growing in low, dense tufts; clumped or clustered.

Chartaceous—Papery in texture.

Ciliate—Marginally fringed with hairs.

Circinate—Coiled from the tip downward.

Clavate—Shaped like a club.

Collar—The area on the abaxial surface of the grass leaf at the junction of the blade and sheath.

Compound—Having two or more similar parts in one organ.

Concave—With the surface bowed inward (see Convex).

Concavo-convex—With one surface bowed inward and the other outward.

Contiguous—Near, next, adjacent to.

Convex—With the surface bowed outward (see Concave).

Coriaceous—Thick and leathery in texture.

Corrugated—Wrinkled crosswise or horizontally.

Cross-fibrillose—With soft tissues of a structure (for example, the leaf sheath) broken down, leaving a central longitudinal fiber and short, curving horizontal fibers connecting it with the edges.

Crowded—Close together.

Culm—Stem of a grass, sedge, or rush.

Cuspidate—Tipped with a cusp, a sharp and firm point.

Cylindric—Having the form of a cylinder.

Deciduous—Not persistent; falling off.

Decumbent—With a prostrate or curved base and an erect or ascending tip.

Deflexed—Bent or turned abruptly downward.

Dioecious—Bearing staminate and pistillate flowers on different plants.

Distal—Toward or at the tip or far end.

Divaricate—Widely divergent or spreading from the axis.

Dorsal—Pertaining to the back, or outer surface; the side away from the axis.

Dorsal suture—A seam visible near the tip of the dorsal (abaxial) side of the perigynium in some sedge species. It represents the line along which the lateral margins of the bract forming the perigynium are fused and is sometimes like a seam with a flap.

Elliptic—With the form of a flattened circle, widest in the center and with the ends equal.

Emarginate—With a broad, shallow notch at the apex.

Entire—With a smooth margin (for example, a perigynium beak without a notch or dentation).

Erose—With an irregular margin, as if gnawed or shallowly shredded (see Lacerate).

Excurrent—Running through and beyond, as a midrib projecting beyond a leaf apex.

Exserted—Projecting beyond the containing structure.

Falcate—sickle-shaped; curved like a hawk's beak.

Fasciculate—In close bundles or clusters.

Fibrillose—Bearing delicate fibers or hairs.

Filamentous—Threadlike, very slender.

Flaccid—Weak and lax.

Flexuous—Wavy, flexible, curved in a zigzag fashion.

Foliaceous—Leaflike, usually green.

Fuscous—Gray brown.

Fusiform—Spindle-shaped, thickest near the middle and tapering at both ends.

Glabrous—Smooth, without hairs or glands.

Glaucous—With a waxy bluish or whitish covering.

Globose—Spherical.

Gynaecandrous—Having pistillate flowers above staminate flowers in the same spike.

Head—A rounded or flat-topped cluster of sessile or subsessile flowers or fruits.

Hirsute—With rather coarse or stiff hairs.

Hirtellous—Minutely hirsute.

Hispid—Ruff with firm, stiff hairs.

Hispidulous—Minutely hispid; bristly-hairy.

Hyaline—Thin and translucent.

Indistinguishable—Not distinctive or separable.

Indurated—Hardened.

Inflorescence—A flower cluster.

Inframarginal—Beneath, within, or less than the margins.

Internodes—The portion of a stem or other structure between two other nodes.

Involute—With the edges rolled inward toward the upper (ventral) side.

Lacerate—With the margins irregular, appearing to have been torn. Margins more deeply shredded than described for erose.

Lanceolate—Narrow and tapering to the apex, broadest toward the base, four to six times as long as broad.

Lenticular—In the shape of a lens, biconvex.

Ligule—The membranous appendage arising from the adaxial surface of the grass leaf at the junction of the sheath and blade.

Membranaceous—Thin, soft, and pliable like a membrane.

Membranous—See membranaceous.

Moniliform—Resembling a string of beads.

Monoecious—With staminate and pistillate flowers borne on the same plant.

Mucronate—Tipped with a short, sharp, slender point.

Nerve—A simple or unbranched vein or slender rib of a leaf, bract, perigynium, or other organ.

Node—The point on the stem where leaves and branches originate; the joint of a stem; the point on an axis that bears other structures.

Ob—Latin prefix, meaning in a reverse direction.

Oblanceolate—Lanceolate but with the narrowest part toward the base.

Obliquely cleft—An opening with the sides unequal or slanting.

Obovate—Ovate, but attached at the narrow end (two dimensional).

Obovoid—A three-dimensional figure, obovate in outline.

Obsolete—Rudimentary, scarcely detectable.

Obtuse—Blunt to almost rounded at the end.

Orbicular—Circular or nearly so in outline.

Orifice—An opening.

Ovary—The expanded lower portion of the pistil that contains the ovule(s).

Ovate—Flat and having the outline of an egg; broadest toward the base, one and one-half times as long as broad (two dimensional).

Ovoid—A three-dimensional figure, ovate in outline.

Ovule—The structure that becomes a seed after fertilization.

Papillose—Bearing minute rounded or fingerlike projections.

Pedicel—The stalk of a single flower in an inflorescence.

Peduncle—The stalk of an inflorescence or solitary flower.

Perigynium (plural = perigynia)—An inflated saclike structure enclosing the ovary (achene) in the genus *Carex*.

Phyllopodic—With the lowermost leaf blades well developed.

Pistil—The female (seed bearing) structure of a flower, consisting usually of an ovary and one or more styles and stigmas.

Pistillate flower—A flower with one or more pistils, but no stamens.

Plane—With a flat surface.

Plano-convex—Flat on one surface, rounded on the other. In a plano-convex perigynium, the dorsal side is convex or rounded and the ventral side is flat.

Plicate—Plaited; folded like a fan.

Proximal—Toward the base.

Puberulent—Minutely hairy.

Pubescent—Covered with hairs, hairy.

Punctate—Dotted with depressions or translucent glands.

Puncticulate—Minutely punctate, diminutive of punctate.

Rachilla—The axis of the spikelet in grasses and some sedges. The presence of a rachilla alongside the achene within the perigynium of some sedges demonstrates that each pistillate flower represents an inflorescence branch reduced to a single flower. It is commonly present in single-spiked sedges.

Remote—Removed to, or situated at a distance from (opposite of approximate).

Retrorse—Bent or turned abruptly backward.

Revolute—Rolled back from the margins or apex toward the dorsal side.

Rhizome—A usually prostrate stem, rooting at the nodes.

Rhombic—Diamond shaped.

Rib—A primary or prominent vein of a leaf, bract, or other structure.

Rugose—Wrinkled.

Rugulose—Diminutive of rugose.

Scabrous—Rough to the touch due to the presence of short, stiff hairs or stout projections.

Scale—A small, thin, or flat structure.

Scarious—Thin, dry, and chaffy in texture, not green.

Separate—Distinct from each other.

Septate—Divided by transverse partitions.

Septate-nodulose—Divided by small transverse knobs or nodules.

Serrate—With short, sharp teeth pointing forward.

Serrulate—Minutely serrate.

Sessile—Without a stalk, attached directly at the base.

Setaceous—Bristle-shaped.

Sheath—The basal portion of the rush, sedge, or grass leaf that forms a tubular cover surrounding the stem.

Spiciform—Spikelike.

Spike—An unbranched, elongate inflorescence with sessile or subsessile flowers maturing from the base upwards.

Squarrose—Spreading rigidly at right angles or recurved.

Staminate flower—A flower with one or more stamens, but no pistils.

Stigma—The apical part of the pistil on which the pollen is deposited and where it germinates.

Stipe—A stalklike structure.

Stipitate—Having a stipe or stalk.

Stramineous—Straw-colored.

Striate—Marked with fine longitudinal lines or streaks; finely nerved.

Strigose—With short, stiff, appressed hairs.

Striolate—Minutely striate; diminutive of striate.

Style—The slender stalk that connects the stigma to the ovary.

Sub- —Latin prefix, meaning under, almost, or not quite.

Subulate—Awl-shaped; flat, narrow, and tapering gradually to a sharp apex.

Suffused—Tinged, diffused, overspread.

Sulcate—Longitudinally grooved or furrowed.

Sward—Turf.

Terete—Cylindrical; circular in cross section.

Tomentum—A covering of tangled or matted, woolly hairs.

Torose—Cylindrical with alternate swellings and contractions.

Torulose—Diminutive of torose. In sedges, generally used with reference to a perigynium with a swollen base that is more or less adnate to the achene.

Trigonous—With three angles.

Triquetrous—With three sharp or projecting angles.

Truncate—Cut squarely across at the apex or base.

Tuberculate—Bearing small swellings or projections (tubercles).

Tufted—Growing in tufts or clumps; cespitose.

Tussock—A clump or tuft of grass-like plants.

Ventral—Pertaining to the inner face of an organ, the side toward or facing the axis, adaxial.

Ventromarginal—Toward the ventral side of the margin.

Villose—Pubescent with long, soft, often bent or curved, but not matted hairs.

Wing—A thin, flat appendage or the border of an organ.

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Appendix: Species Comparisons

Table 1—Spikes gynaecandrous; heads ovoid to elongate; perigynia plano-convex to flattened; margins winged or thin-edged; beaks cylindrical, serrulate or smooth.

Species	Inflorescence shape and color at maturity	Perigynium shape	Perigynium dimensions			Perigynium nerves		Beak dimensions		Achene length	Habitat
			Length	Width	Thickness	Dorsal	Ventral	Length	Tip to achene[a]		
			- - - - - - - - - *mm* - - - - - - - -			- - - *Number* - - -		- - - - - - - - - *mm* - - - - - - - - - -			
Carex abrupta	Orbicular, brownish	Broadly lanceolate, flat or plano-convex, broadly rounded at the base, contracted at the beak	3–5.4	1–2.1	0.4–0.5	(5)7–10	3–7	(0)0.5–0.8	(1.6)2–2.3	1.2–1.8	Montane, moist mountain meadows and dry slopes
C. athrostachya	Ovoid, green to stramineous or brown	Narrowly ovate, flat to plano-convex, tapering at the base, gradually tapering at the beak	2.8–4.8	0.9–1.8		7–9	5–7	0.5–0.8	1.5–2	0.8–1.2	Lowlands to moderate elevations, moist to wet sites, ephemeral pools, reservoir draw-down areas
C. crawfordii	Oblong, pale green to stramineous or tan	Lanceolate-subulate, flat, slightly tapering at the base, gradually tapering at the beak	3–4	0.4–1.2		8–10	0–7 (obscure)	0–0.2	1.7–2.2	0.8–1.1	Lowlands to moderate elevations, moist to wet open or wooded areas
C. ebenea	Ovoid, brownish gold to greenish black	Narrowly lanceolate or oblanceolate, flat or plano-convex, usually tapering at the base, gradually tapering at the beak	3.5–7.1	1.1–1.7	0.4–0.5	7–9	0–5	0.9–1.5	1.5–2.2	1.3–2	Subalpine to alpine, at least seasonally moist to wet mountain meadows
C. haydeniana	Triangular-ovoid, blackish green to blackish gold	Broadly ovate, flat, broadly rounded at the base, abruptly tapering at the slender beak	4.5–6.5	1.5–2.6	0.3–0.5	(0)4–9	0–3(8)	0.3–0.7	2.6–3.5	1.3–1.7	Subalpine to alpine, moist to mesic open areas

(con.)

Table 1—con.

Species	Inflorescence shape and color at maturity	Perigynium shape	Perigynium dimensions			Perigynium nerves		Beak dimensions		Achene length	Habitat
			Length	Width	Thickness	Dorsal	Ventral	Length	Tip to achene[a]		
			- - - - - - - - - mm - - - - - - - -			- - - Number - - -		- - - - - - - - - mm - - - - - - - - - -			
C. mariposana	Oblong, green to reddish brown	Ovate, plano-convex, slightly tapering at the base, gradually tapering to a long beak	3.4–5	1.1–2.2	0.5–0.6	6–11	(0)4–5	0.5–0.6	1.5–2.2	1.5–2	Montane to subalpine, mesic to moist mountain meadows and slopes
C. microptera	Suborbicular, greenish black to brown	Lanceolate-ovate, flat, round-tapering at the base, gradually tapering at the beak	2.9–5	1.1–2.4	0.3–0.5	(0)3–8 (10)	0–8	0.2–0.6 (0.9)	1.6–2.7 (3.5)	1–1.6	Montane to subalpine, moderately wet to moderately dry meadows and slopes
C. pachystachya	Suborbicular or oblong, golden brown to brown	Broadly ovate, plano-convex, broadly rounded at the base, abruptly tapering at the short beak	2.8–5	1.1–2.3	0.5–0.7	(0)2–9	0 to obscure	0.4–0.7	1.5–2 (2.9)	1.2–1.9	Coastal to alpine, wet to moist or moderately dry sites on open slopes or in wooded areas
C. subfusca	Oblong or ovoid, brown to stramineous	Broadly or narrowly ovate, plano-convex, slightly tapering at the rounded base, abruptly contracted at the beak	1.4–4.3	0.9–1.9	0.4–0.5	(0)2–11	0–6	0–0.7	(1.1)1.3–2	1–1.6	Mid-elevations, seasonally moist or wet mountain meadows

[a]See figure 10.

Table 2—Spikes gynaecandrous, broadly oblong, sessile to short-pedunculate, forming capitate to oblong heads; perigynia orbicular to oblong, usually flattened; nerves marginal; stigmas 3; styles deciduous.

Species	Pistillate scales	Perigynium shape	Perigynium dimensions	Perigynium color and texture	Distribution
Carex albonigra	Often concealing the perigynium; apex usually obtuse; margins white-hyaline	Elliptic to ovate, slightly flattened, tapered toward the base and apex	2.5–3.5 mm long, 1.3–2 mm wide	Reddish black, minutely papillate-roughened	Frequent, high elevations
C. atrosquama	Shorter than the perigynia; tip obtuse to acute	Narrowly elliptic-obovoid, somewhat plano-convex, tapered at the base and apex	4–4.5 mm long, 1.5–1.8 mm wide	Olive green to yellowish brown, granular-roughened, puncticulate	Infrequent and local, high elevations
C. helleri	Longer and usually narrower than the perigynium; tip attenuate to acute or short-awned	Ovate or orbicular, flattened, rounded to slightly tapered at the base, rounded at the apex	2.5–3.8 mm long, 1.5–2.8 mm wide	Darker center and paler margins, membranous	California, Nevada (Cascade, Sweetwater, Sierra Nevada, and White Mountains), high elevations
C. heteroneura	Tip acute to acuminate; margins not obviously hyaline	Broadly ovate, strongly flattened, rounded at the base and apex	3–4 mm long, 1.5–3 mm wide	Stramineous or suffused with purple, membranous	Common, moderate to high elevations

Table 3—Spikes unisexual, usually cylindrical; terminal spike staminate and linear; perigynia biconvex; stigmas 2.

Species	Plant habit	Bracts	Perigynium	Beak
Carex aquatilis	Not clumping, phyllopodic	Lowest bract usually longer than the inflorescence	2–3.6 mm long, 1.2–2.2 mm wide; nerveless (except the margins), membranous, commonly speckled with reddish brown	0.1–0.3 mm long, entire
C. lenticularis	Clumping, phyllopodic	Lowest bract longer than the inflorescence	1.8–3.5 mm long, 1–1.8 mm wide; nerved, membranous, stipitate, light green, early and readily deciduous	Slender, 0.1–0.3 mm long, entire, dark-tipped
C. nebrascensis	Not clumping, phyllopodic	Lowest bract usually longer than the inflorescence	2.7–4.1 mm long, 1.5–2.5 mm wide; nerved, usually leathery, stramineous to brown or reddish brown	Abruptly contracted, 0.2–1 mm long, bidentate, subciliate between the teeth
C. prionophylla	Clumping, aphyllopodic	Lowest bract shorter than the inflorescence	2.3–3.4 mm long, 1.2–1.7 mm wide; nerveless, membranous, coppery tan	0.2–0.3 mm long, entire, reddish black tipped
C. scopulorum[a]	Not clumping, phyllopodic, sod-forming	Lowest bract generally shorter than the inflorescence	1.8–3.5 mm long, 1.5–2.3 mm wide, nerveless, membranous, greenish to coppery tan	0.1–0.4 mm long, slightly bent, entire

[a]*C. scopulorum*: spikes generally shorter than those of the other species, approximate and squarrose in outline; perigynium usually orbicular; and achenes occasionally trigonous rather than lenticular.

Table 4—Spike solitary; inflorescence black to reddish brown.

Species	Plant habit	Spikes	Perigynium	Beak
Carex breweri var. *paddoensis*	Culms arising singly to loosely cespitose	Dark brown, stout, ellipsoid or ovoid; perigynia ascending	Broadly ovate or elliptic; body dark brown, usually paler at the base	Abruptly contracted, short, obliquely cleft
C. nigricans	Loosely cespitose	Generally black, bottlebrush shaped; perigynia widely spreading	Lanceolate to narrowly ovate, black, especially distally	Obliquely cleft, not hyaline-tipped
C. pyrenaica	Densely cespitose	Generally brown with a ragged outline; perigynia spreading-ascending	Lanceolate to elliptic-ovate, slightly blackish brown distally	Prominently hyaline-tipped
C. subnigricans	Loosely to densely cespitose, sod-forming	Generally reddish brown with a smooth outline; perigynia appressed-ascending	Lanceolate-ovate, slightly inflated, dark brown or blackish brown	Obliquely cleft and slightly hyaline-tipped

Table 5—Spikes gynaecandrous, oblong, small, sessile, forming an oblong or elongate head; perigynia ovoid to ovoid-oblong with raised margins, plano-convex; stigmas 2.

Species	Perigynium dimensions	Perigynium color and texture	Beak
Carex brunnescens	1.7–2.7 mm long, 1–1.5 mm wide	Green to pale brown at maturity, thin-walled distally (often ruptures), spongy-thickened below	Abruptly tapered, slender, 0.5–0.7 mm long; flap of dorsal suture appears hyaline
C. canescens	1.8–3 mm long, 0.9–1.75 mm wide	Dull grayish brown or silvery at maturity, rough to papillate, but not thin-walled distally, spongy-thickened below	Ill-defined, gradually tapered, 0.2–0.5 mm long; dorsal suture obsolete on the beak, paler than the surrounding tissue
C. praeceptorum	1.5–2.5 mm long, 1–1.2 mm wide	Golden-tinged, slightly roughened (papillate), spongy thickened below	Abruptly contracted, 0.25–0.5 mm long; dorsal suture overlapping or folded, darker than the tissue

Table 6—Spikes usually sessile, small, few-flowered; terminal spike staminate; perigynia pubescent, ovoid-rounded, beakless or short-beaked; stigmas 3.

Species	Bract (lowest)	Pistillate spikes	Perigynium	Beak	Habitat
Carex concinnoides	Shorter than the inflorescence	Bicolored with reddish purple and green, generally oblong, sessile, closely 5–10 flowered, approximate	Copiously loose-hairy; base broadly sub-stipitate; marginal nerves not keeled; stigmas usually 3 or 4	Abruptly contracted, obliquely cleft, 0.1–0.5 mm long, reddish purple	Dry woods, low to moderate elevations
C. geophila	Shorter than to slightly surpassing the inflorescence	Tan to brown, sessile, 2–5 flowered, generally approximate	Puberulent; base narrowly stipitate; marginal nerves keeled; stigmas 3	Shallowly bidentate, 0.4–1.2 mm long	Pinyon-juniper woodlands, moderate elevations
C. rossii	Leaflike, generally much surpassing the inflorescence	Green to purplish brown, sessile to pedunculate, 2–5 flowered, approximate to widely separate	Finely puberulent; base narrowly stipitate; marginal nerves prominent, but not keeled; stigmas 3	Conic, obliquely cleft, deeply bidentate, 1.1–1.7 mm long	Conifer forests, sea level to near timberline

Table 7—Spikes solitary, usually brown to tan.

Species	Spike	Perigynium	Beak	Elevation
Carex elynoides	Linear with a smooth outline, tan to reddish brown; perigynia erect-ascending or appressed	Obpyramidal, glabrous, thin-membranous	Slender, 0.4–1 mm long, conspicuously hyaline-tipped	Alpine
C. exserta	Narrowly conic or oblong; truncate at the base at maturity, tan to reddish brown; perigynia spreading-ascending	Obovoid, minutely hairy	Beakless, minutely bidentate	Mid to high
C. filifolia	Narrowly conic with a ragged outline, tan to golden brown; perigynia erect-ascending	Obovoid to obpyramidal, minutely hairy	Abruptly contracted, short, 0.1–0.8 mm long, obscurely hyaline-tipped	Mid
C. nardina	Oblong to ovoid, stramineous to reddish or golden brown; perigynia erect-appressed	Biconvex or plano-convex, upper margins serrulate, lower margins glabrous	0.8 mm long, serrulate, bidentulate, obscurely hyaline-tipped	High

Table 8—Bract sheathing; spikes usually sessile, small, few-flowered; terminal spike staminate; perigynia pubescent, ovoid-roundish with flat margins, beakless or short-beaked.

Species	Involucral bract			Spikes	
	Blade	Sheath-shape	Mouth	Lowest	Upper
Carex fissuricola	Longer than the inflorescence	Linear or tapering to the wide mouth	Generally Y- or V-shaped, with a purple margin	Often long-exserted, more or less nodding	Often clustered
C. luzulaifolia	Almost none or very short	Conspicuously tapering to the wide mouth	Shallowly U-shaped, with a wide purple margin	Very long exserted, nodding	Distant
C. luzulina var. *ablata*	Shorter than the inflorescence	Linear	Shallowly U-shaped or truncate	Short-exserted, ascending	Sometimes clustered
C. luzulina var. *luzulina*	Shorter than the inflorescence	Linear	Shallowly U-shaped or truncate	Short-exserted, ascending	Generally densely clustered

	Pistillate scales		Perigynium				
	Size and color	Pubescence	Color	Length	Width	Margins	Pubescence
				- - - - *mm* - - - -			
Carex fissuricola	Brown to purple	Ciliate on the margin and midrib	Brown to purple	3.2–5.5	0.9–2	Less than one-half the achene width	Sparsely pubescent when young
C. luzulaifolia	Dark purple with white margins	Glabrous (sometimes with a ciliate awn)	Dark purple	4–5.3	1.7–2.5	Generally less than three-fourths the achene width	Glabrous
C. luzulina var. *ablata*	Greater than 0.2 mm wide, purple with a pale midrib	Generally ciliate near the tip	Generally mostly purple	3–4.5	0.9–1.5	Generally none or greater than one-half the achene width	Ciliate near and on the beak
C. luzulina var. *luzulina*	Less than 0.2 mm wide, red brown with a pale midrib	Ciliate near the tip	Generally green to reddish brown, occasionally purple	3–4.5	0.9–1.6	Generally none or greater than one-half the achene width	Ciliate near and on the beak, occasionally hirsute on the body

Table 9—Spikes short, sessile, indistinguishable; perigynia plano-convex, lanceolate-ovate with a dorsal suture; margins raised or sharp-edged.

Species	Habit	Leaves and leaf sheaths	Perigynium	Beak
Carex illota	Slightly aphyllopodic, clumped, 1–3(4) dm tall	Clustered near the base; ventral sheath yellowish brown at the shallowly concave mouth	Narrowly ovate to lanceolate, 2.5–3.2 mm long, 0.9–1.3 mm wide, greenish fuscous to brown	Tapering to a smooth, slender, entire beak
C. jonesii	Slightly aphyllopodic, arising singly from rhizomes or forming small clumps 1.5–6 dm tall	Closely clustered near the base; ventral leaf sheaths plane, truncate to concave at the mouth	Ovate-lanceolate to lance-triangular, 2.5–4.8 mm long, 0.9–1.4 mm wide	Ill-defined, generally smooth and terete
C. nervina	Slightly phyllopodic, cespitose, often forming tussocks 4–8 dm tall	Not clustered at the base; leaf sheaths ribbed ventrally, U-shaped at the mouth with a thickened rim	Broadly lance-triangular to ovate; the base distended by spongy tissue, 2.8–4.5 mm long, 1–1.8 mm wide	Well-defined, abruptly contracted, slightly serrulate
C. neurophora	Strongly aphyllopodic, cespitose, often forming tussocks 2–8 dm tall	Not clustered near the base; leaf sheaths conspicuously cross-rugose ventrally, occasionally somewhat cartilaginous at the convex mouth	Lanceolate to lance-triangular, 2.9–4 mm long, 0.8–1.5 mm wide	Ill-defined, generally more sharp-edged and slightly more serrulate than in *C. jonesii*

Table 10—Spikes gynaecandrous; heads ovoid to elongate; perigynia plano-convex to concavo-convex to flattened; margins winged.

Species	Habit	Perigynium	Beak	Achene
Carex petasata	Not densely cespitose, to 9 dm tall	5.8–8 mm long, 1.5–2.25 mm wide, widest below the middle, slightly tapered to the truncate base, membranous, finely nerved, brownish green to stramineous	Upper part smooth and terete, obliquely cleft; 3.2–4.6 mm long from beak tip to achene	Oblong, glossy, 2.2–3 mm long, located at the base of the perigynium cavity
C. phaeocephala	Densely cespitose, to 3 dm tall	3.5–6 mm long, usually widest at the middle, tapering to the blunt base, subcoriaceous, coarsely nerved, tan to brownish black with green margins	Upper part smooth and terete, obliquely cleft, 1.8–2.6 mm long from beak tip to achene	Oblong, not glossy, 1.5–2.3 mm long, often located toward the middle of the perigynium cavity
C. xerantica	Not densely cespitose, to 7 dm tall	3.7–7 mm long, widest below the middle, abruptly tapered to a narrow base, lightly nerved to nearly nerveless	Flattened, strongly margined and serrulate up to the tip, bidentate, 2.2–3.6 mm long from beak tip to achene	Quadrate-lenticular, not glossy, 1.7–2.6 mm long, located toward the base of the perigynium cavity

Table 11—Perigynia smooth, inflated, bidentate; achene trigonous, flexuous, and continuous with the bony style.

Species	Habit	Spike	Perigynium	Beak
Carex retrorsa	Densely cespitose	Approximate; perigynia spreading to deflexed, not crowded	Lance-ovoid, membranaceous	Slender-conic, 2–3.5 mm long
C. utriculata (C. rostrata)	Singly to loosely clumped, forms swards	Remote; perigynia spreading and crowded	Broadly ellipsoid, membranaceous, but firm	More or less abruptly contracted, 1–2 mm long
C. vesicaria	Not cespitose, forms swards	Remote; perigynia ascending, not crowded	Lanceolate to lance-ovoid, membranaceous, puncticulate	Gradually tapering, slender, conic, 1.8–2.5 mm long

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Descriptions of morphological characteristics, habitat, and geographic distributions are provided for 114 sedges (*Carex* spp.) of the Intermountain area. A dichotomous key, color photographs, line drawings, and discussions highlighting differences among similar species aid identification. An illustrated morphology, glossary, and index of common names simplify use. The guide is not inclusive; comprehensive local floras should be checked to confirm identifications.

Keywords: *Carex*, *Cyperaceae*, grasslike species, plant taxonomy, riparian, wetlands

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