

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Transactions of the Nebraska Academy of Sciences  
and Affiliated Societies

Nebraska Academy of Sciences

---

1997

## Keys and Distributional Maps for Nebraska Cyperaceae, Part 2: *Carex* and *Scleria*

Steven B. Rolfsmeier

Barbara Wilson  
*Oregon State University*

Follow this and additional works at: <http://digitalcommons.unl.edu/tnas>



Part of the [Life Sciences Commons](#)

---

Rolfsmeier, Steven B. and Wilson, Barbara, "Keys and Distributional Maps for Nebraska Cyperaceae, Part 2: *Carex* and *Scleria*" (1997).  
*Transactions of the Nebraska Academy of Sciences and Affiliated Societies*. 73.  
<http://digitalcommons.unl.edu/tnas/73>

This Article is brought to you for free and open access by the Nebraska Academy of Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Transactions of the Nebraska Academy of Sciences and Affiliated Societies by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

**KEYS AND DISTRIBUTIONAL MAPS FOR NEBRASKA CYPERACEAE,**

**PART 2: CAREX AND SCLERIA**

**Steven B. Rolfsmeier**

and

**Barbara Wilson\***

2293 Superior Road  
Milford, Nebraska 68405-8420

Department of Biology  
University of Nebraska at Omaha  
Omaha, Nebraska 68182-0040

\*Present address: Department of Botany, Oregon State  
University, Corvallis, Oregon

**ABSTRACT**

Keys and distributional maps are provided for the 71 species and one hybrid of *Carex* and single species of *Scleria* documented for Nebraska. Six species—*Carex albursina*, *C. melanostachya*, *C. mesochorea*, *C. umbellata*, *C. utriculata*, and *Scleria triglomerata*—and a hybrid—*Carex laeviconica* × *C. trichocarpa*—are newly reported for the State, while eight species attributed to the State in the *Flora of the Great Plains* (Great Plains Flora Association 1986) are deleted—*C. crinita*, *C. festucacea*, *C. haydenii*, *C. muehlenbergii* var. *enervis*, *C. normalis*, *C. siccata* (as *C. foenea*), *C. stricta*, and *C. trichocarpa*—based on re-identifications or on specimens of doubtful provenance in the State. Notes on local systematic problems within the genera are also included.

† † †

With 71 species, the sedges (*Carex*) are the largest genus of vascular plants in Nebraska and are common constituents of prairie, woodland and wetlands. All but one (*C. melanostachya*) are native to North America, and several (e. g. *C. filifolia*, *C. nebrascensis*) are economically important range plants. The genus *Scleria* was not documented from Nebraska until the discovery of a population of *S. triglomerata* in 1997, and its occurrence in the State is reported here for the first time. All other Cyperaceae were treated by Rolfsmeier (1995) as Part 1.

Floristic and systematic research on Nebraska Cyperaceae since the publication of the *Flora of the Great Plains* (Great Plains Flora Association 1986) (hereinafter referred to as the *Flora GP*) has resulted in numerous changes to the treatment published there. Six species are newly reported for Nebraska: *Carex albursina*, *C. melanostachya*, *C. mesochorea*, *C. umbellata*, *C. utriculata*, and *Scleria triglomerata*, four of which were newly collected since publication of the *Flora GP*. Additionally, the sterile hybrid *Carex laeviconica* × *C. trichocarpa* is newly reported for the State. Seven species attributed to Nebraska in the

*Flora GP* are deleted based on misidentifications: *Carex festucacea*, *C. haydenii*, *C. muehlenbergii* var. *enervis*, *C. normalis*, *C. siccata* (reported as *C. foenea*), *C. stricta*, and *C. trichocarpa*; and an eighth (*C. crinita*) is deleted based on a specimen which is part of a collection mistakenly attributed to the State. Numerous nomenclatural changes have also been made in *Carex* by researchers preparing treatments for the *Flora of North America*; these are included here wherever possible. Distributional maps for Nebraska Cyperaceae were last published in the *Atlas of the Flora of the Great Plains* (Great Plains Flora Association 1977) (hereinafter referred to as the *Atlas GP*), and are here updated to reflect numerous changes as a result of 20 years of field work and of corrections of numerous erroneous records published in the *Atlas GP*.

The objectives of this paper are to provide up-to-date distributional data for all the unisexual-flowered Cyperaceae in Nebraska, and to present updated “user-friendly” keys that rely as little as possible on characters that are difficult to observe, and accommodate atypical variants of our species.

**METHODS**

The key is adapted from the second author’s unpublished key to *Carex* of eastern Nebraska and southwestern Iowa, which was organized following the excellent treatment of Steyermark (1963). The keys presented here also borrow from Gleason and Cronquist (1991), Kolstad (1986), Larson (1993) and Voss (1972), along with other works cited in the body of the paper. Original characteristics are included based on observations of Nebraska material and on numerous suggestions made by Dr. A. A. Reznicek of the University of Michigan. Descriptions of species are limited to the key; more complete descriptions are available in the *Flora GP* and other sources.

The maps were compiled wholly from observations of specimens rather than from literature reports. The primary sources of data were the herbaria of the University of Nebraska–Lincoln (NEB), University of Nebraska at Omaha (OMA), University of Nebraska at Kearney, Chadron State College (CSCN), and University of Kansas (KANU). Additional data have been included from the Rocky Mountain Herbarium (RM) in Laramie, Wyoming; the University of South Dakota

(SDU) and South Dakota State University (SDC); and, in Nebraska, Wayne State College, Doane College, Cedar Point Biological Station of the University of Nebraska, Crescent Lake National Wildlife Refuge, Nebraska Game and Parks Commission, and the personal collection of Robert Kaul. All distributional data are maintained by the first author in a computerized database.

### KEY TO THE GENERA

1. Culms (aboveground stems) naked, without evident leaves, but bladeless sheaths may be present at base
  2. Inflorescence of a single spikelet at the tip of the culm .....(*Eleocharis*)
  2. Inflorescence of 2–many spikelets, or if 1, then appearing to arise below the tip of the culm .....(*Scirpus*)
1. Culms with evident leaves, at least at base
  3. Flowers unisexual; achene either enclosed in a sac-like structure (perigynium) or hard, bony, whitish, and spherical
    4. Pistillate flower (except for protruding style) and achene enclosed in a loose or tight sac-like structure (perigynium); achene usually flattened or angled (unless infected with gall) and yellowish to dark brown; common .....***Carex*, p. 7**
    4. Pistillate flower and achene not enclosed in a perigynium; achene bony, spherical, and whitish; rare .....***Scleria triglomerata*, p. 25**
  3. Flowers bisexual, with a pistil and 1–several stamens; achene neither enclosed in a perigynium nor spherical
    5. Spikelets with flowers arranged in 2 opposite ranks, the spikelet flattened at maturity
      6. Spikelets borne in the axils of short, stiff leaves along the length of hollow, jointed culms; achenes subtended by bristles .....(*Dulichium*)
      6. Spikelets borne in a terminal inflorescence subtended by several leaflike bracts; culms solid, not jointed; leaves arising from the base; achenes not subtended by bristles .....(*Cyperus*)
    5. Spikelets with flowers spirally arranged in several ranks, the spikelet cylindrical or cone-shaped, not flattened
      7. Inflorescence appearing to arise laterally below the tip of the culm (actually subtended by an erect bract that appears to be a continuation of the culm)
        8. Plants very slender, mostly less than 10 cm tall, with culms less than 0.5 mm thick; bristles absent at base of achene, but a small translucent scale often present .....(*Lipocarpa*)
        8. Plants taller or with thicker culms (usually both); bristles 1–numerous, but no translucent scale evident at base of achene
          9. Achene subtended by numerous silky bristles much longer than the scale; rare in Sandhills fens .....(*Eriophorum*)
          9. Achene subtended by 1–8 bristles, not silky in appearance, shorter than the scale; widespread .....(*Scirpus*)
  7. Inflorescence arising from the tip of the culm
    10. Achene subtended by 3 slender bristles alternating with 3 petal-shaped scales .....(*Fuirena*)
    10. Achene subtended by 0–numerous slender bristles, petal-shaped scales absent
      11. Achene subtended by 1–numerous slender bristles ..... go back to couplet 9
      11. Bristles absent at base of achene
        12. Style not swollen at the base, culms stout (over 3 mm thick 1 cm below inflorescence) and 3-sided; leaf blades over 5 mm wide .....(*Scirpus*)
        12. Style swollen at or near the base; culms slender (1 mm or less thick at 1 cm below inflorescence) and rounded; leaf blades under 3 mm wide
          13. Swollen style base persistent on the achene as a distinct tubercle darker than the achene body and set off from it by a line .....(*Bulbostylis*)
          13. Swollen style base deciduous, not present on mature achene .....(*Fimbristylis*)

**KEY TO CAREX OF NEBRASKA**

Sedges are notoriously difficult to key, possibly because of the reliance in many keys on characters found only in mature, complete specimens. Whenever possible, underground parts should be collected, because presence of rhizomes is an important character for some groups of species, although reliance on this character is kept to a minimum here. More importantly, specimens should be collected with mature perigynia; overmature specimens in which the perigynia have fallen from the plant should be avoided. Immature

material is often difficult or nearly impossible to identify, although wherever possible vegetative and floral characters are included in the key in case mature material is unavailable. Measurements indicate length unless otherwise stated, and geographic notations are for Nebraska only. Names presented in boldface are of species documented from Nebraska; species occurring along our borders and which may be expected in Nebraska are included in the key in lightface type. Nomenclature follows recent taxonomic treatments unless otherwise stated. Synonyms from *Flora GP* and Kartesz (1994) are included.

**CAREX** L. (SEDGE)

Cespitose or rhizomatous perennial herbs; culms sharply to obscurely 3-angled; flowers unisexual (the plants monoecious or infrequently dioecious), borne in spikes of pistillate flowers, staminate flowers or both, perianth lacking, pistillate flower surrounded by a sac-like structure called a perigynium, which encloses the achene at maturity.

1. Spreading hairs > 0.25 mm conspicuous on some part of the leaves (leaf blades, sheaths, or both), bracts, or culms (sometimes these confined to the lower leaf-sheaths or summit of the front of the leaf sheath; otherwise glabrous plants with rough-margined leaves or culms should not be considered hairy)
  2. Perigynia hairy
    3. Perigynia 3.5–5 mm, beaks untoothed; cespitose (clumped) plants of woodland; possible in extreme s-e ..... *C. hirtifolia*
    3. Perigynia 7–12 mm, beaks with teeth 1.3–3 mm; rhizomatous plants of wetlands ..... *C. atherodes*
  2. Perigynia glabrous (margin of beak may be serrulate)
    4. Uppermost spike of staminate flowers only
      5. Perigynia 4.5–7 mm, beaks of perigynia untoothed; cespitose (clumped) plants of woodlands .. ..... *C. hitchcockiana*
      5. Perigynia 7–12 mm, beaks with conspicuous teeth 1.3–3 mm; rhizomatous plants of wetlands ..... *C. atherodes*
    4. Uppermost spike with pistillate flowers above and staminate flowers at the base
      6. Spikes 18–45 mm, 6–8 × longer than broad, and nodding to ascending; perigynia usually > 4 mm ..... *C. davisii*
      6. Spikes (except uppermost) 5–20 mm, 1.5–4 × longer than broad, ascending to erect; perigynia 2–4 mm ..... *C. bushii*
1. Spreading hairs absent from leaves, bracts, and culms, though the leaves or culms may have rough margins
  7. All flowers staminate, no pistillate flowers present (*Note*: If plants appear wholly staminate on first glance check the bases of the spikes carefully for pistillate flowers or perigynia); plants rhizomatous
    8. Culms sharply 3-angled, rough just below the inflorescence; rhizomes stout, 2–3 mm thick, with black scales ..... *C. praegracilis*
    8. Culms bluntly 3-angled to ± round, smooth just below the inflorescence; rhizomes slender, < 2 mm thick, with brownish scales ..... *C. douglasii*
  7. At least some pistillate flowers present; plants cespitose or rhizomatous
    9. Perigynia pubescent (otherwise glabrous perigynia with rough or serrulate edges to the beak should not be considered pubescent) ..... **GROUP I, p. 9**
    9. Perigynia glabrous (edge of beak may be serrulate)
      10. The single pistillate spike apparently arising between 2 leaflike bracts, because the scale of the lowest pistillate flower is prolonged, green, 15–50 mm, and resembles the leaflike bract at the base of the flowering spike; each culm appearing to have only 1 pistillate spike (lateral spikes are borne on basal peduncles) which has 2–4 perigynia; all flowering culms shorter than the clumped leaves; styles 3; body of perigynium ± globose, tapering abruptly to the beak; woodlands

11. Scale of lowest pistillate flower 1.2–2.5 mm wide, spreading and not concealing the perigynia; margins of pistillate scales with a wide hyaline (white or translucent) border at the base; edges of leaves and culms green; staminate spike elongated (with 6–many flowers) and equaling or exceeding the body of the uppermost perigynium (and often exceeding entire perigynium); perigynium body definitely globose, with 2 strong nerves, tapering abruptly to the beak; plants green; rich woodlands from Washington C. s ..... *C. jamesii*
11. Scale of lowest pistillate flower 2.4–4.5 mm wide, erect and essentially concealing the perigynia; margins of pistillate scales green throughout or very narrowly hyaline; edges of leaves and culms usually white; staminate spike short (about 3 flowers) and not exceeding the body of the uppermost perigynium; perigynium body relatively ovate, sometimes with a few faint nerves at the base and on the beak (in addition to the 2 strong main nerves), and tapering less abruptly into the beak than in the preceding; fresh plants often with a bluish tint; pine and oak woodland (and borders) in n and Omaha area ..... *C. saximontana*
10. Each spike clearly subtended by either a single leaflike bract or a narrow bract not resembling a leaf; lowest scale of pistillate spike never leaflike, < 10 mm (if bracts appear numerous, each subtends a spike in a cluster of spikes); other characteristics various
12. Styles 3; achenes 3-sided or 3-angled; perigynia 3-sided or round, although inflated perigynia may appear flattened and 2-sided upon drying ..... **GROUP II, p. 10**
12. Styles 2 (rarely 3); achenes 2-sided or 2-angled; perigynia ± flattened or lens-shaped
13. Spikes dissimilar, some completely pistillate or completely staminate; plants mostly rhizomatous, or if caespitose then growing at least knee-high and forming large clumps usually > 20 cm diameter at base ..... **GROUP III, p. 13**
13. Spikes all alike or nearly so, staminate and pistillate flowers in the same spike (on specimens mature enough for identification, staminate flowers may be represented by empty scales, usually at the top or bottom of the spike)
14. Scales of pistillate flowers blunt or rounded at tip, not tapering or slender-pointed (rarely deciduous and absent at maturity); leaves < 3 mm wide; spikes well-separated on slender culms; perigynia mostly spreading to reflexed so spikes appear starlike
15. Terminal spike with a narrow, tapering, wedge-shaped base formed by staminate flowers; culms usually erect; wet meadows in n-c .... *C. interior*
15. All spikes with staminate flowers at the tip (often inconspicuous), all spikes rounded at the base; culms often arching; woodlands in e ½
16. Perigynium beaks glabrous; pistillate scales deciduous and absent at maturity ..... *C. texensis*
16. Perigynium beaks serrulate along margins; pistillate scales persistent
17. Stigmas stout, 0.07–0.10 mm thick, mostly strongly recurved or coiled; achene below center of perigynium; broadest leaves > 1.7 mm wide; base of fertile culm > 1.4 mm wide; frequent. *C. rosea*
17. Stigmas narrow, 0.03–0.06 mm thick, often abruptly curved at the base, otherwise straight to slightly curved; achene central in perigynium; broadest leaves usually 0.9–1.7 mm wide; base of fertile culm usually 0.7–1.4 mm wide; apparently rare ..... *C. radiata*
14. Scales of pistillate flowers tapering, short- to long-pointed or awned; spikes and habit various
18. All spikes wholly pistillate; plants < 3 dm tall, rhizomatous. *C. douglasii*
18. All spikes with staminate and pistillate flowers; habit various
19. Staminate flowers at tips of some or all spikes ..... **GROUP IV, p. 14**
19. Staminate flowers at the base of spike
20. Base of uppermost spike with a narrow, tapering wedge-shaped base formed by staminate flowers, contrasting with the lower spikes, which have rounded bases and appear star-like (perigynia spreading to reflexed at maturity); spikes few-flowered

- and usually widely separated; lower part of mature perigynium corky or spongy-thickened, in contrast to the firm upper part (stick a pin into the perigynium to test this); perigynia not winged; leaves  $\leq 2.5$  mm wide; wet meadows in n-c .. *C. interior*
20. Bases of all spikes similar, rounded or wedge-shaped; disposition of spikes various; lower part of mature perigynium not corky or spongy-thickened; perigynia usually winged; leaves and habitat various ..... **GROUP V, p. 16**

**CAREX, GROUP I** (perigynia pubescent)

1. Spikes solitary on culms; culms equaling or exceeding leaves
  2. Spike entirely pistillate ..... *C. parryana*
  2. Spike staminate above, pistillate at base ..... *C. filifolia*
1. Spikes 2 or more per culm (if appearing solitary, culms very short and hidden among leaf bases)
  3. Uppermost spike with pistillate and staminate flowers ..... *C. parryana*
  3. Uppermost spike entirely staminate
    4. Perigynium beak with conspicuous teeth 0.3–3 mm; rhizomatous plants of wetlands or mesic ground, flowering in May and June, with perigynia maturing in June, July, or early August
      5. Teeth of perigynia beaks erect, 0.5–1 mm; perigynia evenly and usually densely pubescent, the nerves faint or not visible through the hairs; front surface of leaf sheaths copiously red-dotted
        6. Perigynia densely pubescent, the nerves not visible, 2.5–5 mm; pistillate spikes 3–8 mm thick; common ..... *C. pellita*
        6. Perigynia moderately pubescent, the nerves often faint but visible, 5–6 mm; pistillate spikes 8–15 mm thick; possible in extreme s-e (a hybrid of the preceding and *C. hyalinolepis*) ..... *C. xsubimpressa*
      5. Teeth of perigynia beaks erect to outcurved, mostly 1–3 mm; perigynia body usually pubescent only on the nerves (rarely evenly pubescent), which are raised and clearly visible; front surface of leaf sheaths not red-dotted (rarely reddish-tinged at summit)
        7. Teeth of most perigynia beaks clearly outcurved, 1.2–3 mm (longest usually  $> 2$  mm); leaf sheaths usually with a few conspicuous spreading hairs on the front surface or at apex; leaves papillose below (15 $\times$  magnification); vegetative culms hollow .. *C. atherodes*
        7. Teeth of perigynia beaks erect to slightly outcurved, 1–2 (very rarely –3 mm); leaf sheaths scabrous or glabrous on front surface, spreading hairs absent; leaves not papillose; vegetative culms solid
          8. Front surface of uppermost leaf sheath scabrous, at least on the nerves; the apex pale brown (reddish-brown); rare to common in low open ground in e  $\frac{1}{2}$ 
            9. Perigynia sparsely pubescent on the nerves and ribs; leaf sheaths strongly to sparsely scabrous; common ..... *C. laeviconica*
            9. Perigynia moderately and evenly pubescent; leaf sheaths sparsely scabrous on nerves; rare in extreme e ..... *C. laeviconica*  $\times$  *C. trichocarpa*
          8. Front surface of uppermost leaf sheath glabrous, the apex conspicuously reddish-tinged, thickish and opaque; possible in wet woods in extreme e ..... *C. trichocarpa*
  4. Perigynium beak untoothed (sometimes with small toothlike projections  $< 0.2$  mm); cespitose or rhizomatous plants of upland forest and prairie, flowering in April and early May, with perigynia maturing in April, May or early June
    10. Pistillate spikes cylindric,  $> 3 \times$  longer than wide; perigynia often papillate (sandpaper-like) near tip; plants of mesic meadows ..... *C. parryana*
    10. Pistillate spikes ovoid to short-cylindric,  $< 3 \times$  longer than wide; perigynia not papillate; plants of upland forest and prairie
      11. Plants densely cespitose, at least some of the flowering culms consisting only of single pistillate spikes on peduncles much shorter than the leaves and hidden among the leaf bases
        12. Tallest flowering culms (those with both staminate and pistillate spikes) with a long leaflike bract at the base of the inflorescence surpassing the staminate spike; pine forest in the extreme w ..... *C. rossii*

- 12. Tallest flowering culms with a short, scalelike bract not surpassing the staminate spike; tallgrass prairie in the s-e ..... *C. umbellata*
- 11. Plants caespitose to rhizomatous, flowering culms usually bearing both staminate and pistillate spikes and nearly all the same height (basal spikes rare); spikes borne above the leaf bases
  - 13. Leaves narrow and threadlike, about 0.25 mm wide; spike 1, though sometimes appearing as 2, with the staminate flowers slightly separated from the few perigynia below ..... *C. filifolia*
  - 13. Leaves  $\geq 0.5$  mm wide; pistillate and staminate flowers in separate spikes with staminate spike at tip of culm
    - 14. Perigynium body about as long as wide, at maturity globose to elliptic, rarely obscurely 3-angled; long-rhizomatous plants of prairie and open woods
      - 15. Perigynium body 1.1–1.5(–1.7) mm wide, elliptic to obovate, round to obscurely 3-angled in cross section, 1.4–2 mm long; possible in extreme e. .... *C. pennsylvanica*
      - 15. Perigynium body 1.6–2.2 mm wide, globose to broadly elliptic, round in section, 1.8–2.5 mm long; common and widespread ..... *C. heliophila*
    - 14. Perigynium body distinctly longer than wide, at maturity ellipsoid or obovoid and slightly 3-angled in cross section; caespitose to short-rhizomatous plants of woodland
      - 16. Pistillate scales usually brown along the sides, the tips mostly surpassing the bases of the beaks of the perigynia they subtend; achenes  $\leq 1.4$  mm .... *C. albicans*
      - 16. Pistillate scales usually pale (mostly green or white) the tips mostly not surpassing the bases of the perigynium beaks; achenes  $> 1.4$  mm ..... *C. peckii*

**CAREX, GROUP II** (styles 3, achenes 3-sided)

- 1. Leaves threadlike, to 0.7 mm wide; the 2–4 pistillate spikes held above the sessile staminate spike at the tip of the culm on threadlike peduncles ..... *C. eburnea*
- 1. Leaves flat or slightly folded to form a narrow channel along the midrib,  $\geq 2$  mm wide; inflorescence various
  - 2. Uppermost spike pistillate above and staminate below (sometimes entirely pistillate or with intermingled staminate and pistillate flowers in *C. parryana*), and if (very rarely) a few culms have the uppermost spike entirely staminate, others in the same clone have pistillate flowers at the tip. *Note*: if plant appears to have the uppermost spike pistillate and the second entirely staminate, the culm is bent so that the terminal, staminate spike appears misplaced
  - 3. Uppermost spike entirely pistillate or with intermingled staminate and pistillate flowers ..... *C. parryana*
  - 3. Uppermost spike with staminate flowers present only at the base
    - 4. Perigynium beak 2–3.5 mm; mature pistillate spikes 10–22 mm thick, cylindrical or (rarely) globose; very rare and probably extirpated in Nebraska ..... *C. squarrosa*
    - 4. Perigynium beak very short or absent; mature pistillate spikes 2–7 mm thick
      - 5. Spikes relatively long, mostly 5–8  $\times$  or more longer than wide and often nodding to ascending; perigynia 4–6 mm ..... *C. davisii*
      - 5. Spikes relatively short, all except the uppermost 1.5–4  $\times$  longer than wide and usually erect or ascending; perigynia 1.5–4 mm
        - 6. Pistillate spikes ovoid-cylindric, usually  $< 2 \times$  longer than wide; perigynia dark green at maturity (brown in overly mature specimens) and not papillate (sandpaper-like); pistillate scales sometimes with minute hairs; plants usually at least sparsely pubescent on leaf sheaths, caespitose; rare in prairies in s-e ..... *C. bushii*
        - 6. Pistillate spikes narrower,  $> 2 \times$  longer than wide; perigynia light green to pale brown at maturity, often covered with minute white papillae (visible under 20 $\times$  magnification) at least near the tip; plants glabrous (occasionally a few minute hairs present atop the perigynia of *C. parryana*), rhizomatous; uncommon to locally common in low ground and marshes in c and w

7. Leaves distributed along the culm; sheaths with purple dots or short vertical lines on the front surface, the lower ones breaking into a pinnate network of fibers at maturity; pistillate scales distinctly awned; perigynia often evenly and densely papillate over the entire surface; rare in wet meadows in n and c ..  
..... *C. buxbaumii*
7. Leaves clustered at base of plant, the mouth of the uppermost leaf sheath usually  $\leq 5$  cm from the base of the culm; sheaths hyaline on the front surface and not breaking into a fibrous network at maturity; pistillate scales without awns; perigynia often papillate only around the tip (most readily visible on younger perigynia); scattered in meadows in c and w ..... *C. parryana*
2. Uppermost spike with all flowers staminate or staminate above and pistillate below
8. Beak (or top of perigynium if beak absent) abruptly curved to one side
9. Perigynia with many fine, scarcely discernable impressed nerves and a definite, slightly outcurved beak 1 mm long; often at least a few fine hairs present on leaf sheaths; extreme e ..  
..... *C. hitchcockiana*
9. Perigynia with 2 strong marginal nerves or ribs and often many other upraised nerves present on surface (sometimes faint), beak short and obscure if present; sheaths glabrous; widespread
10. Perigynia with 2 strong marginal ribs and several to many faint, scarcely upraised nerves, many not extending the length of the perigynium, glaucous (blue-green), pale green, or yellowish-brown at maturity; pistillate scales usually purplish-brown on each side of the midrib; leaves papillose (15 $\times$  magnification) on lower surface at least near tips; rhizomatous plants growing as single stems (or few together in loose clumps)
11. Lower pistillate spikes densely flowered with about 6 rows of perigynia (fewer in depauperate plants), 4.5–7 mm thick; perigynia  $\pm$  spreading at maturity, somewhat inflated and nearly round in cross section, 2–2.5 mm wide; achenes 1.7–2.2 mm wide; leaves glaucous and stiffly ascending, ligules mostly shorter than wide; usually in upland prairie, occasionally in low meadows ..... *C. meadii*
11. Lower pistillate spikes loosely flowered with 3 rows of perigynia, 3–5 mm thick; perigynia appressed or ascending and obtusely 3-angled to round at maturity, 1.5–2.2 mm wide; achenes 1.2–1.6 (–1.8) mm wide; leaves green and not stiff, ligules mostly longer than wide; wet meadows ..... *C. tetanica*
10. Perigynia with many distinctly upraised nerves mostly extending the entire length in addition to the 2 marginal ribs, pale green or olive to light brown at maturity; pistillate scales white, green, or brown; leaves smooth below; plants densely clumped
12. Broadest leaves 20–40 mm wide; culms narrowly winged and appearing distinctly flattened when pressed; pistillate scales broadly ovate and rounded to obtuse at tip; rare in extreme e ..... *C. albursina*
12. Broadest leaves 5–15 mm wide; culms without conspicuous narrow wings; pistillate scales short to long-pointed at tip; occasional to common, widespread
13. Perigynia tapering and conspicuously narrowed at base, 3-sided and closely surrounding the achenes, green to light brown; pistillate scales usually green or white (brown); common in woodland ..... *C. blanda*
13. Perigynia rounded at the base (or at least not long-tapering), round in cross section and loosely surrounding the achenes, dark green to olive-brown; occasional in wet meadows, sometimes in low woods ..... *C. granularis*
8. Beak or top of perigynium straight
14. Pistillate spikes at maturity widely spreading or drooping on flexuous peduncles
15. Perigynium beak minute, not toothed at apex; rare in Sandhills fens ..... *C. limosa*
15. Perigynium beak well-developed and 2-toothed at apex; widespread
16. Perigynium body subglobose, abruptly tapering to a narrow tubelike beak  $\geq$  the length of the body, teeth of beak short and soft; woodland ..... *C. sprengei*
16. Perigynium body ovoid or lanceolate, tapering gradually into the beak, which is shorter than the body, teeth of beak firm; marshes and open wet ground (sometimes wet woodland)



- 17. Teeth of perigynium beak 0.3–1 mm, nearly straight; mature perigynia ascending or spreading in the spike, not reflexed; plant red-purple at base ..... *C. hystericina*
- 17. Teeth of perigynium beak 1.2–2.2 mm, strongly curved outward; most mature perigynia, at least the lower ones, reflexed; plant green at base ..... *C. comosa*
- 14. Pistillate spikes on erect or ascending peduncles or sessile
  - 18. Perigynium beak prominently 2-toothed, the teeth  $\geq 0.4$  mm
    - 19. Pistillate spikes 15–30 mm thick; perigynia 10–20 mm ..... *C. lupulina*
    - 19. Pistillate spikes 8–12 mm thick; perigynia 3.5–8 mm
      - 20. Perigynium body broadest in upper half, abruptly narrowing to the beak; scales of pistillate flowers with a long awn much surpassing the perigynium body ..... *C. frankii*
      - 20. Perigynium body broadest in the lower half or near the center, usually tapering gradually to the beak; scales of pistillate flowers mostly not surpassing the perigynium body (sometimes slightly surpassing it)
        - 21. Staminate spike only 1 at tip of each flowering culm; pistillate scales with a rough awn  $\geq$  the body of the scale; perigynia strongly 12–17 nerved, green at maturity; plants cespitose ..... **go back to couplet 17**
        - 21. Staminate spikes 2–6 at the tip of each flowering culm (frequently only 1 is evident in the rare *C. melanostachya*, which has dark reddish-brown perigynia); pistillate scales and perigynia various; plants rhizomatous
        - 22. Perigynia strongly 7–9 nerved, inflated; style strongly S-curved toward the base; culms spongy-thickened at base; rare in Sandhills wetlands ..... *C. utriculata*
        - 22. Perigynia with 10 or more nerves (these sometimes impressed and difficult to discern), slightly to strongly inflated; style straight or slightly bent at the base; culms not spongy-thickened at base; widespread
          - 23. Teeth of perigynium beak 1–3 mm, straight or recurved
            - 24. Teeth of perigynium beak mostly outcurved, 1.3–3 mm (longest usually  $> 2$  mm); summit of leaf sheath usually sparsely pubescent with conspicuous hairs  $> 0.25$  mm; leaves densely papillose below (15 $\times$  magnification); vegetative culms hollow; occasional in wetland, in c, scattered e ... ..... *C. atherodes*
            - 24. Teeth of perigynium beak straight, 1–2 mm; summit of front surface of leaf sheath often strongly scabrous with tiny protrusions  $< 0.25$  mm; leaves smooth below; vegetative culms solid; frequent in low areas in the e  $\frac{1}{3}$  ..... *C. laeviconica*
- 23. Teeth of perigynium beak  $< 1$  mm, erect or slightly curved
  - 25. Leaves narrow, mostly 2–4 mm wide; culms with 1 conspicuous staminate spike above and 1 or 2 reduced spikes below (these sometimes absent); pistillate scales dark brown on the sides; rare in disturbed ground ..... *C. melanostachya*
  - 25. Leaves wider, mostly 8–15 mm wide; culms with 2–4 conspicuous staminate spikes; pistillate scales whitish or pale brown on the sides; occasional in wet ground
    - 26. Mature perigynia with conspicuous raised nerves; ligules 12–60 mm, the longest  $\geq 2 \times$  longer than wide; fertile culms with reddish bladeless sheaths at the base; leaves green. .... *C. lacustris*
    - 26. Mature perigynia with fine, impressed to barely elevated nerves; ligules 1–10 mm, the longest  $< 2 \times$  longer than wide; fertile culms with disintegrating

- remains of leaves at the base, whitish, brownish or  
barely reddish; leaves glaucous or pale bluish green....  
.....*C. hyalinolepis*
18. Perigynium beak either without teeth or with a slight notch with inconspicuous projections < 0.2 mm
27. Uppermost spike clearly longer than lateral spikes, often clearly pistillate in the lower portion; pistillate scales broadly acute at the tip, occasionally minutely mucronate .....*C. parryana*
27. Uppermost spike shorter than lateral spikes, always staminate throughout; pistillate scales narrowed to a point, often with a conspicuous awn
28. Perigynia glaucous, pale green or yellowish-brown at maturity; pistillate scales usually purplish-brown on either side of the midrib; plants rhizomatous
29. Perigynia with 2 conspicuous marginal ribs, otherwise nerveless or with faint, scarcely upraised nerves, widest in the upper half and tapering to the base; pistillate spikes 1 or 2, usually borne on the upper half of the culm .....**go back to couplet 11**
29. Perigynia with 2 conspicuous marginal ribs in addition to 10 or more conspicuous raised nerves on the surface, broadest at or below the middle and rounded at the base; pistillate spikes 3 or 4, scattered along the length of the culm .....*C. crawei*
28. Perigynia green to dark green or brown at maturity; pistillate scales whitish or greenish to brown; plants cespitose or rhizomatous
30. Perigynia with conspicuous raised nerves, rounded at the base
31. Staminate spike on a short peduncle or sessile, not conspicuously raised above the pistillate spikes, which are often clustered around the staminate spike at the tip of the culm; plants cespitose .....*C. granularis*
31. Staminate spike on a long peduncle conspicuously raised above the pistillate spikes, which are scattered along the culm; plants rhizomatous .....*C. crawei*
30. Perigynia with many fine, impressed nerves scarcely discernible, tapering to somewhat rounded at base
32. Perigynia widest well above the middle; usually some hairs present on the leaf sheaths .....*C. hitchcockiana*
32. Perigynia widest near the middle or slightly above; leaf sheaths glabrous
33. Perigynia spirally arranged in spikes, gradually tapering or rounded at the tip, often nearly circular in cross section, (1.8–) 2–2.6 mm wide; achenes shorter than and not filling the perigynium, 1.7–2.1(–2.2) mm wide, on a short, stout stalk (stipe) 0.2–0.5 mm; base of plant greenish-white or brown (reddish); very common in woodlands and moist open areas in e ¼ .....*C. grisea*
33. Perigynia arranged in vertical rows (distichous) in spikes, abruptly constricted to a short beak to 0.7 mm, definitely 3-angled in cross section, 1.6–1.9(–2.0) mm wide; achenes nearly completely filling the perigynium, 1.3–1.7 mm wide, on a narrow stipe 0.5–1 mm; base of plant dark purplish-red; frequent in rich woods in extreme e .....*C. oligocarpa*

**CAREX, GROUP III** (styles 2, achenes 2-sided, spikes not all alike)

1. Inflorescence of distinctly separated spikes, the spikes longer (3–20 ×) than broad
2. Perigynia whitish-powdery to golden-orange at maturity (drying dark brown); achenes dark brown to blackish at maturity; bract of the lowermost pistillate spike usually sheathing the culm; culms usually < 4 dm tall .....*C. aurea*

2. Perigynia green to brown at maturity; achenes tan to brown at maturity; bract of the lowermost pistillate spike usually sheathless or barely sheathing; culms usually > 4 dm tall
3. Perigynium beak short but definitely discernable, with 2 small teeth at the tip; perigynium strongly nerved at least on the dorsal side; pistillate spikes  $\geq 6$  mm thick ..... *C. nebrascensis*
3. Perigynium beak small or absent, untoothed when present; perigynium nerveless or faintly nerved; pistillate spikes usually < 5 mm thick
  4. Bract of lowest pistillate spike much surpassing entire mature inflorescence; leaf sheaths glabrous and usually dorsally suffused with a distinctive reddish-tan tinge, front surface not breaking into a fibrous pinnate network at maturity; Sandhills fens ..... *C. aquatilis*
  4. Bract of lowest pistillate spike not surpassing (sometimes equaling or barely exceeding) entire inflorescence. (*Note*: since the bract seems to reach full size before the rest of the inflorescence, immature plants may be misidentified); sheaths various; widespread
    5. Front surface of lower leaf sheaths filamentous, splitting to form a pinnate network of fibers; intact sheath deeply asymmetrically concave at summit, back surface of leaf sheath scabrous; possible in n and n-e ..... *C. stricta*
    5. Front surface of lower leaf sheaths not filamentous, intact sheath convex at summit, though often irregular in outline, bulging upward on one side or in the center, dorsal surface of leaf sheath glabrous; common and widespread ..... *C. emoryi*
1. Inflorescence a  $\pm$  continuous 15–60 mm cluster of short, usually crowded spikes, each spike only slightly longer than broad and only 4–12 mm, spikes often difficult to distinguish from one another
  6. Uppermost spike pistillate above, staminate below, strongly tapering or wedge-shaped at base; perigynia of lower spikes spreading, exceeding pistillate scales and clearly visible; plants cespitose ..... *C. interior*
  6. Uppermost spike staminate above or throughout, or wholly pistillate, rounded to slightly tapered at base; perigynia ascending and  $\pm$  completely covered by the pistillate scales; plants rhizomatous
    7. Culm obtusely 3-angled to nearly round and smooth just below inflorescence, < 3 dm tall
      8. Perigynium beak nearly as long as the body, which is nerved on the front surface; inflorescence often > 15 mm wide ..... *C. douglasii*
      8. Perigynium beak half as long as the body, which is nerveless on the front surface; inflorescence usually < 12 mm wide ..... *C. eleocharis*
    7. Culms sharply 3-angled and sometimes rough just below the inflorescence, (1–)3–8 dm tall
      8. Leaf sheath prolonged at the summit to form a collar around the culm, front surface green or greenish striped (except for a V-shaped hyaline area near the mouth); perigynium finely nerved ventrally, beak  $\frac{1}{4}$ – $\frac{1}{2}$  as long as body ..... *C. sartwellii*
      8. Leaf sheath not prolonged at the summit to form a collar around the culm, fronts of leaf sheaths hyaline (clear and membranous); perigynia nerveless ventrally, beak  $\frac{1}{2}$  or more as long as body ..... *C. praegracilis*

**CAREX, GROUP IV** (styles 2, achenes 2-sided, spikes all staminate above, pistillate below)

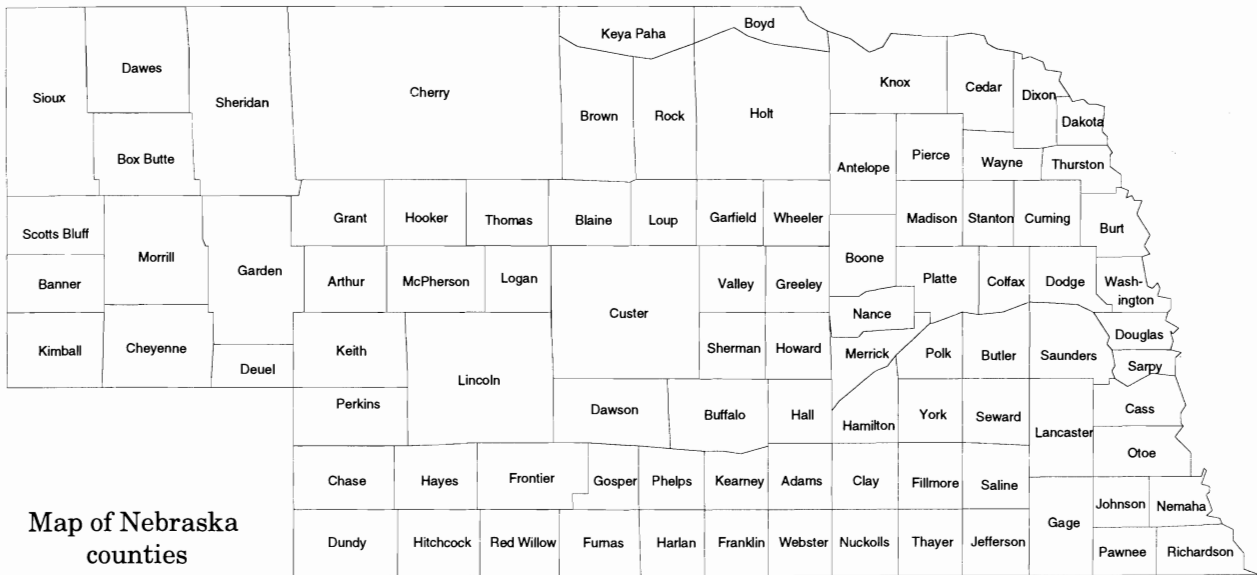
1. Perigynium beaks entire or obliquely cut at the tip, without distinct teeth; mature perigynia brown; plants mostly of peaty soils in and around the Sandhills
  2. Front surface of leaf sheath white-hyaline and only slightly copper-tinged at the mouth (though strongly red-dotted on rest of sheath front); spikes closely crowded; perigynia shiny at maturity; culms erect ..... *C. diandra*
  2. Front surface of leaf sheath strongly copper-tinged at mouth and often on whole surface; lower spikes often somewhat separate; perigynia dull at maturity; culms often arching ..... *C. prairea*
1. Perigynium beak with 2 distinct teeth at tip (sometimes inconspicuous); mature perigynia green to yellowish-brown or brown
  3. Base of mature perigynium strongly corky or soft-thickened (stick a pin in the perigynium to test this); culms frequently winged
    4. Perigynium beak with smooth margins; spikes well separated and non-overlapping; mature perigynia 2.6–3.4 mm; culms unwinged ..... *C. texensis*
    4. Perigynium beak serrulate; spikes crowded and overlapping at least in upper part of inflorescence; mature perigynia (3.5–)4–8 mm; culms usually winged

5. Perigynium 6–8 mm long, the base dilated into a ring-shaped structure wider than rest of body, beak 2–3 × as long as body; front surface of leaf sheath flat; very rare (possibly extirpated) in s-e.....*C. crus-corvi*
5. Perigynium 3.5–6 mm long, base of perigynium confluent with and not much broader than rest of body, beak 0.5–2 × as long as body; front surface of leaf sheath cross-rugulose (with a series of parallel furrows at a right angle to the axis of the culm); uncommon to common and widespread
  6. Perigynium beak about half as long as body, rounded at the base, ventrally nerveless (or with 1–3 short nerves at base); uncommon in floodplain woods in s-e.....*C. conjuncta*
  6. Perigynium beak 1–2 × as long as body, truncate at base; strongly several-nerved ventrally (rarely nerveless); common and widespread .....*C. stipata*
3. Base of mature perigynium not corky or soft-thickened (slightly so at most), relatively firm and about the same texture as the rest of the perigynium; culms unwinged
  7. Inflorescence with obvious branches or at least 2 or more spikes at the lower nodes, which are usually distinctly separated from the upper spikes; perigynia brown to yellow-brown or golden at maturity
    8. Larger perigynia (3.3–)3.5–5.5 mm; leaf sheaths loose and baggy and septate-nodulose (with occasional dark diagonal ridges uniting the vertical veins) on dorsal side; usually in upland prairie (occasionally in woodland)
      9. Pistillate scales mostly not surpassing base of beaks of the perigynia they subtend; anthers 0.7–1.3 mm; rich woods in extreme e.....*C. sparganioides*
      9. Pistillate scales surpassing the beaks of the perigynia they subtend; anthers 1.3–3 mm; usually in the open .....*C. gravida*
    8. Larger perigynia 2–3 mm; leaf sheaths tight, not septate-nodulose; low prairie and wet places
      10. Mature perigynia brown, beaks about equaling bodies, and so comprising about half the length of most mature perigynia; leaves mostly surpassing the flowering culms; common in wet places from marshes to seasonally damp roadside ditches .....*C. vulpinoidea*
      10. Mature perigynia yellow-brown to golden; beaks shorter than the bodies, comprising  $\leq \frac{1}{3}$  of total perigynium length; leaves mostly shorter than the culms; uncommon plants of mesic prairie in s-e.....*C. brachyglossa*
  7. Inflorescence unbranched, only 1 spike per node (if appearing as 2 or more at the lower nodes, the inflorescence a dense uninterrupted ovoid to capitate cluster); perigynia green, brown, or yellow-brown (pale yellow) at maturity
    11. Leaf sheaths loose and baggy and easily breaking or tearing, dorsal surface white with green veins or mottled green-and-white and septate-nodulose (with occasional dark diagonal ridges uniting the vertical veins)
    12. Pistillate scales ovate with acute or short-cuspidate tips almost or not at all reaching the bases of the beaks of the perigynia they subtend; anthers 0.7–1.1(–1.3) mm; stigmas short and stout, protruding only slightly from the perigynium beak; lower spikes well-separated .....*C. sparganioides*
    12. Pistillate scales with narrowly acuminate or awned tips reaching or exceeding the bases of the beaks of the perigynia they subtend; anthers 1.5–3 mm; stigmas elongate and slender, when intact protruding 1.5 mm or more from the perigynium beak; lower spikes slightly separated to overlapping
      13. Front surface of leaf sheath thin, hyaline, and easily breaking at the straight to slightly concave summit (sometimes slightly thickened and scarcely yellow-tinged); perigynia brown or pale yellow-brown at maturity (sometimes remaining green when growing in shade); spikes usually arranged in a dense head, the lowermost overlapping; edges of culms minutely roughened (run your fingers along the culm below the inflorescence); common, usually in open uplands .....*C. gravida*
      13. Front surface of leaf sheath thickened and yellow to brown and firm at the concave summit; perigynia green (at least along the edges) at maturity; lowermost spikes often slightly separated; edges of culms smooth to slightly roughened; less common and more shade-tolerant than the preceding .....*C. aggregata*

- 11. Leaf sheaths tight, closely enveloping the culms and usually remaining intact at maturity, variously green, white, or mottled on dorsal surface, usually not septate-nodulose
- 14. Pistillate scales mostly surpassing the perigynia they subtend and largely hiding them from view; plants rhizomatous, with stems occurring singly or few together in loose clumps (rarely cespitose)
  - 15. Plants rhizomatous, larger perigynia  $\leq 1.5$  mm wide ..... **go to couplet 6 in GROUP III**
  - 15. Plants cespitose, larger perigynia 2.2–3 mm wide; possible in extreme s and s-e ..... **C. austrina**
- 14. Pistillate scales mostly not surpassing the perigynia, which are readily visible; plants cespitose
  - 16. Larger perigynia (3.5–)3.9–4.7 mm long
    - 17. Front surface of leaf sheath thin or slightly thickened at the summit ..... **C. gravida**
    - 17. Front surface of leaf sheath thickened and yellow-brown at the summit
      - 18. Back surfaces of most leaf sheaths green; perigynia usually brown at maturity; tips of some pistillate scales equaling the perigynia they subtend. .... **C. austrina**
      - 18. Back surfaces of leaf sheaths white or pale green and septate-nodulose, or green mottled with white; perigynia remaining green at maturity; tips of pistillate scales shorter than perigynia ..... **C. aggregata**
  - 16. Larger perigynia 2–3.5 mm long
    - 19. Inflorescence a crowded to interrupted elongate-oblong spike 15–40 mm, usually with spaces between the clearly distinguishable lower spikes, and with conspicuously protruding bracts; possible in extreme s-e ..... **C. muehlenbergii**
    - 19. Inflorescence a dense, crowded capitate to ovoid cluster, usually 4–25 mm, nearly always uninterrupted, the individual spikes sometimes indistinguishable except for the narrow bracts protruding only slightly from the inflorescence; occasional to common in e
      - 20. Perigynium gently rounded to a very short beak ( $<$  half as long as body) which is sometimes smooth or sparsely serrulate near the base where it joins the body, bodies of most mature perigynia widest at or near the rounded to truncate bases; moist meadows, woodlands, and lawns in e half ..... **C. leavenworthii**
      - 20. Perigynium tapering to a longer beak ( $>$  half as long as body) which is always strongly serrulate, bodies of most mature perigynia widest at or below the middle
        - 21. Mature culms much exceeding leaves; upper leaf surfaces densely covered with papillate projections visible at  $30\times$  magnification; open areas in s-e ..... **C. mesochorea**
        - 21. Mature culms about equaling to slightly exceeding leaves; upper leaf surfaces lacking papillae; woods in extreme e ..... **C. cephalophora**

**CAREX, GROUP V** (styles 2, achenes 2-sided, spikes all pistillate above, staminate below [sect. *Ovales*])

- 1. Pistillate scales as long and nearly as wide as the perigynia and usually concealing them at maturity; uncommon in pine woodlands in n-w ..... **C. xerantica**
- 1. Pistillate scales shorter and narrower than the perigynia and largely exposing the upper margins and beaks at maturity
  - 2. Larger perigynia  $\geq 2$  mm wide
    - 3. Perigynia lanceolate,  $\geq 2.5\times$  as long as wide; achenes 0.7–0.8 mm wide; spikes mostly tapering to a pointed tip ..... **C. scoparia**
    - 3. Perigynia lanceolate to suborbicular,  $\leq 2.5\times$  as long as wide; achenes  $\geq 1$  mm wide; spikes mostly rounded at tip
      - 4. Perigynia very thin, membranous, and nearly translucent, nearly flat, except where distended over the achene, the larger (4.5–)5–7 mm  $\times$  2.7–4.3(–4.8) mm ..... **C. bicknellii**



Map of Nebraska counties

4. Perigynia thicker, more leathery and opaque, plano-convex (nearly flat on one side, but raised on the other), the larger 3–4.3 mm × 2–2.8 mm
5. Larger achenes 1.3–1.5 mm wide; spikes often tapered at base, sometimes strongly so, and rounded to bluntly pointed in outline toward the tip, usually slightly separated, brown, or brown and green; perigynia bodies ± orbicular, tapering abruptly into the beak, nerveless ventrally (or nearly so), usually ascending in the spike at maturity; scales of pistillate flowers usually slender-pointed and almost as long as the perigynia; usually in uplands but also in low, moist ground in the open ..... *C. brevior*
5. Larger achenes 1–1.25 mm wide; spikes rounded at the base as well as the top, often closely aggregated, green or drab whitish-green at maturity; perigynia bodies lanceolate to ovate, tapering gradually into the beak, ventrally 3–5 nerved over the achene (sometimes nerveless); scales of pistillate flowers more blunt or dull-pointed, reaching only to the base of the beak; low, moist meadows and upland woods ..... *C. molesta*
2. Larger perigynia < 2 mm wide
  6. Lowermost spikes well separated to slightly overlapping, inflorescence erect to lax or nodding; achenes (0.9–)1.0–1.3 mm wide; uncommon in e ½
  7. Base of spikes strongly clavate (wedge-shaped); perigynia bodies orbicular, tapering abruptly to the beak; possible in extreme s-e ..... *C. festucea*
  7. Base of spikes rounded; perigynia bodies ovate, gradually tapering to the beak
  8. Inflorescence usually very lax, arching or nodding, rachis usually thin and wiry, often < 0.5 mm wide above lowest spike; broadest leaves 1.4–3 mm wide; fertile culms often with only 3 or 4 leaves, sterile culms uncommon; uncommon in low, wet woods (sometimes upland woods) in e ½ ..... *C. tenera*
  8. Inflorescence erect or slightly flexuous, rachis stiff, usually 0.5–0.7(–1) mm wide above lowest spike; broadest leaves 2.5–6 mm wide; fertile culms often with 4 or more leaves, sterile culms common; possible in extreme e ..... *C. normalis*
  6. Lowermost spikes usually distinctly overlapping, inflorescence erect; achenes 0.7–0.8 mm wide; widespread in c and e
    9. Perigynia 2.4–3.9 mm × 1.1–1.5 mm, 2–3 × long as wide
      10. Perigynia strongly spreading, their beaks stiffly recurved at maturity, wing strongly narrowed or obsolete below middle of body, strongly distended over achene; front surface of leaf sheath green except for a V-shaped white-hyaline area near the summit; occasional e and c ..... *C. cristatella*
      10. Perigynia ascending, their beaks not recurved, wing-margined for entire length, not distended over the achene; front surface of leaf sheath hyaline; uncommon n and c ..... *C. bebbii*

- 9. Perigynia 4–5.5 mm × 1–2 mm, 2.5–4 × long as wide
  - 11. Broadest leaves 1–3 mm wide; perigynium wing-margined for entire length; wet, sandy soil in the open ..... ***C. scoparia***
  - 11. Broadest leaves 3–7 mm wide; perigynium wing strongly narrowed to obsolete below middle of body; wet, silty soil usually in floodplain woods ..... ***C. tribuloides***

***Carex aggregata*** Mack.: Occasional to frequent in woodlands and other shady areas, e ½, scattered w. Evidently weedy in some areas, and probably more widespread than our records indicate. Though often treated as a variety of *C. sparganioides*, *C. aggregata* is rarely confused with that species in our area. *C. aggregata* is sometimes confused with *C. gravida* (particularly shade forms of the latter). *C. aggregata* can usually be distinguished by the leaf sheaths, which are concave, thickened, often yellow to brown at the summit of the front side, and frequently green-and-white-mottled on the dorsal surface of at least some sheaths.

***Carex albicans*** Willd. ex Spreng. var. ***albicans*** [*C. artitecta* Mack.]: Occasional to common in upland oak bluff forest along the Missouri, Platte, and Big Nemaha rivers. Recent workers have merged *C. artitecta* and the eastern *C. emmonsii* into a single species; nomenclature is outlined by Rettig (1989, 1990). *C. albicans* is one of the first herbaceous plants to flower in the Spring in e Nebraska, with staminate spikes maturing as early as late March.

***Carex albursina*** Sheld.: Rare in rich oak woodlands. Known from a single population discovered in 1994 n of Omaha. Its distinctive, broad leaves resemble lily or orchid leaves.

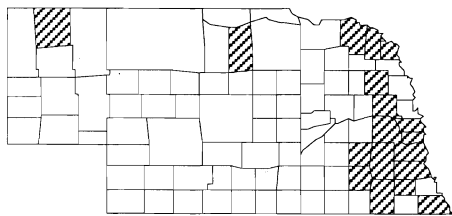
***Carex aquatilis*** Wahl. var. ***substricta*** Kükenth. [*C. aquatilis* var. *altior* (Rydb.) Fern., misapplied]: Locally common in Sandhills fens. The type of *C. aquatilis* var. *altior* is an

immature specimen of *C. emoryi*. Most reports of this species in the *Atlas GP* were based on *C. emoryi*.

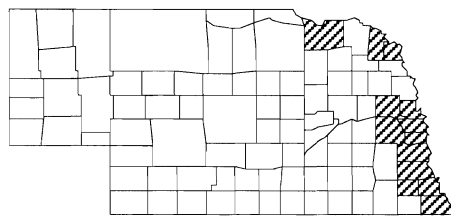
***Carex atherodes*** Spreng.: Occasional to locally common in marshes, wet meadows, and along pond margins in the Sandhills, and scattered locations to the w, e, and s. Many Nebraska specimens of this sedge have scattered hairs on the perigynia, a feature which has gone unreported in most manuals. Although *C. atherodes* is frequently distinguished by its pubescent sheaths, these are occasionally ± glabrous, particularly on plants growing in areas of high water fluctuation (e.g. irrigation ditches). Nonetheless, a few hairs are often still visible near the summit or on the front surface of the leaf sheaths.

***Carex aurea*** Nutt.: Occasional to locally common in wet meadows, streambanks, moist canyon bottoms in the Sandhills, along the Platte and Loup rivers, and in the Panhandle. The distinctive golden-orange perigynia of mature plants fall readily from the spikes and are infrequently represented in herbarium material.

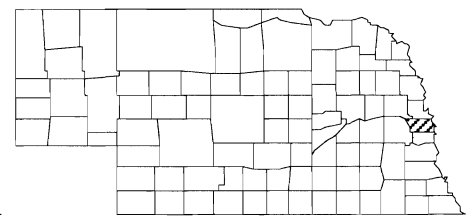
***Carex austrina*** Mack. [*C. muhlenbergii* Schkuhr ex Willd. var. *australis* Olney]: Uncommon in prairie. Collected once from a prairie near Verdon in Richardson C. but likely elsewhere along our s border in s-e Nebraska. Nebraska records dotted in the *Atlas GP* represent *C. gravida* specimens with tight sheaths, which strongly resemble *C. austrina* but lack the thickened concave



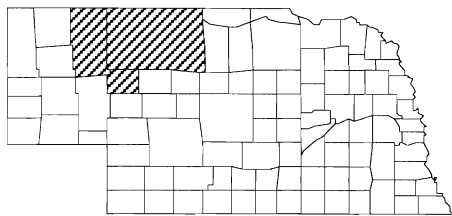
*Carex aggregata*



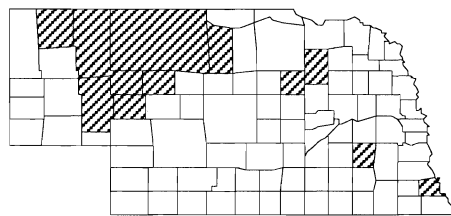
*Carex albicans albicans*



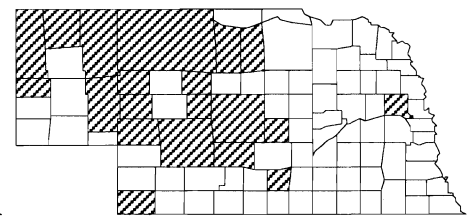
*Carex albursina*



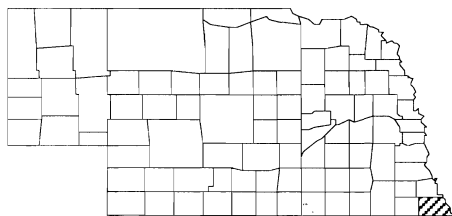
*Carex aquatilis substricta*



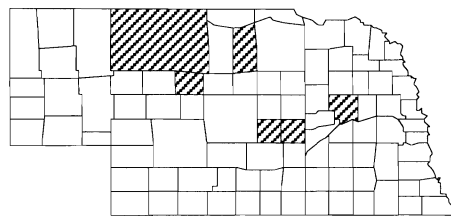
*Carex atherodes*



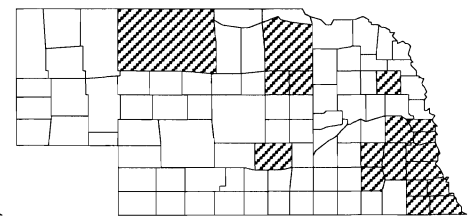
*Carex aurea*



*Carex austrina*



*Carex bebbii*



*Carex bicknellii bicknellii*

sheath summits typical of that species (cf. Jones, 1994).

**Carex bebbii** Olney ex Fern.: Uncommon in marshy areas and shores in the Sandhills and Loup River system.

**Carex bicknellii** Britt. var. *bicknellii*: Occasional in upland prairie in s-e, scattered in mesic meadows in e Sandhills. All our plants appear to be the typical variety, which has minutely papillate leaf sheaths. The mature spikes of some plants are a distinctive orange-brown or copper color.

**Carex blanda** Dew.: Common in woodlands, moist ravine bottoms, stream margins, shaded lawns, in e ½ and n, evidently absent from the Sandhills, s-w and Panhandle (except Pine Ridge).

**Carex brachyglossa** Mack. [*C. annectens* Bickn. var. *xanthocarpa* (Bickn.) Wieg.]: Uncommon in low prairie in extreme s-e. The type of *C. annectens* is actually a specimen of *C. vulpinoidea*. *C. brachyglossa* resembles the much more common *C. vulpinoidea* but can be distinguished by its golden-colored perigynia and "tidier" appearance of the inflorescence due to the shorter perigynia beaks. Specimens keyed here should be compared with specimens of *C. vulpinoidea* if possible.

**Carex brevior** (Dew.) Mack. ex Lunell: Common in upland and lowland prairie, meadows, roadside ditches, lawns, and open woodland throughout, somewhat less common w. Depauperate specimens sometimes key to *C. festucacea*, but can be distinguished by their shorter achenes (1.3–1.7 mm vs. 1.7–2 mm in *C. brevior*).

**Carex bushii** Mack.: Uncommon in tall-grass prairie along our s border in Gage, Jefferson, and Pawnee counties; first collected in 1974.

**Carex buxbaumii** Wahl.: Evidently rare in wet meadows in e Sandhills and along Loup River. A 1996 collection from

Howard C. is the first made in Nebraska since 1939.

**Carex cephalophora** Muhl. ex Willd.: Occasional in oak bluff forest along Missouri and Big Nemaha rivers. Most Nebraska specimens referred here in the past are the similar and more widespread *C. leavenworthii*, or *C. mesochorea*.

**Carex comosa** F. Boott: Occasional in marshes, wet meadows and drainage ditches mostly in Sandhills and vicinity, scattered e along the Elkhorn, Loup, and Platte rivers.

**Carex conjuncta** F. Boott: Uncommon in wet riparian woods in s-e; collected only a few times and probably overlooked. Plants in the Seward C. population have arching, nearly reclining culms and resemble an overgrown *C. gravida*.

**Carex crawei** Dew.: Occasional to common in wet meadows, mostly in the Sandhills, Loup River system, and along the Platte River. Frequently growing with and often confused for *C. granularis* and *C. tetanica*.

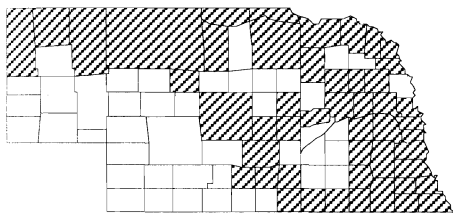
**Carex cristatella** Britt.: Occasional in low moist ground, marshes, along shores, and in wet woods in e ½.

**Carex crus-corvi** Shuttlew. ex Kunze: Very rare in marshes and around pond margins in s-e, last collected in 1910.

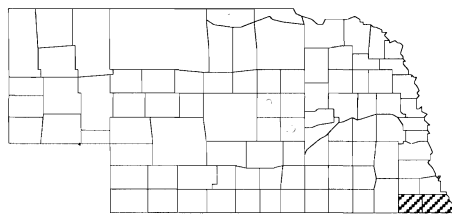
**Carex davisii** Schwein. & Torr.: Locally common in moist, wooded areas, rarely along roadsides in the e ½, extending slightly westward in the Big and Little Blue river valleys.

**Carex diandra** Schrank: Uncommon in marshes, seeps, fens, and rarely sandbars in Sandhills and the Loup River system.

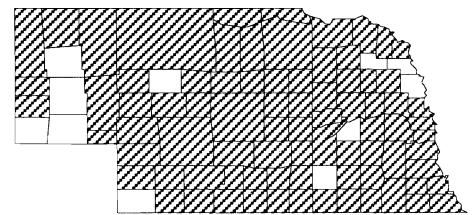
**Carex douglasii** F. Boott: Occasional in low ground, shores, sometimes upland prairie, often where slightly alkaline in w and w-c.



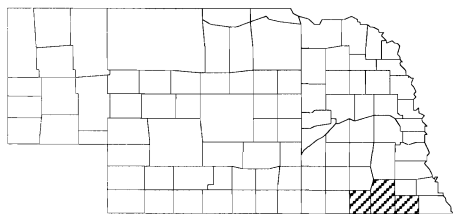
*Carex blanda*



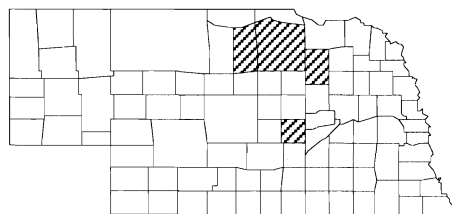
*Carex brachyglossa*



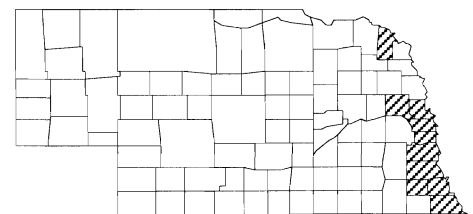
*Carex brevior*



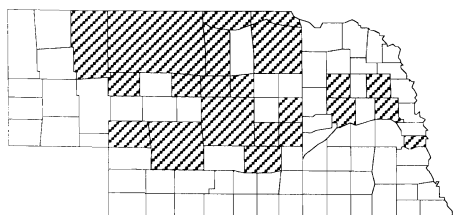
*Carex bushii*



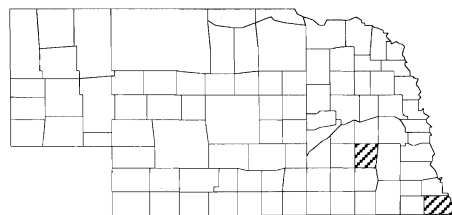
*Carex buxbaumii*



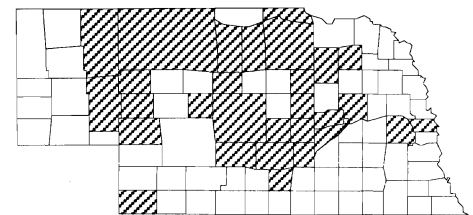
*Carex cephalophora*



*Carex comosa*



*Carex conjuncta*



*Carex crawei*



**Carex eburnea** F. Boott: Locally common in upland woods and margins, mostly along the Missouri and Niobrara River and tributaries in n and n-e, scattered s.

**Carex eleocharis** Bailey [*C. duriuscula* C. A. Mey.]: Frequent in upland prairie, along roadsides and in waste ground throughout, although rare to absent in much of e ½. Very similar and sometimes merged with Eurasian *C. duriuscula* or *C. stenophylla*. In e Nebraska, this species is most likely to occur along roadsides and margins of parking lots. It is tolerant of disturbance and evidently increases in overgrazed rangeland.

**Carex emoryi** Dew.: Streambanks, wet ditches, marshes and fens; nearly throughout, though possibly absent from s-w. Frequently confused with *C. aquatilis* and *C. stricta* but far more common and widespread than either. In many keys, the three are separated on the basis of the shape of the mature perigynia, but specimens with mature perigynia are seldom collected, since these seem to fall from the plant soon after they are mature or are infected with galls. Standley (1989) indicates they can be reliably separated by vegetative characters alone.

**Carex filifolia** Nutt.: Common in upland, often rocky mixed- and short-grass prairie in Panhandle and adjacent s-w, and scattered e to Custer C. and along Niobrara R. This species has a short, strap-shaped structure alongside the achene, which is interpreted as a vestigial rachilla, a feature considered primitive in the genus. *C. filifolia* is one of our most economically important sedges, being one of the dominant species in most upland rangeland in the Sandhills, and it decreases with grazing. Local ranchers often call the plant "black-root".

**Carex frankii** Kunth: Uncommon in low wet ground in extreme s-e. First collected in the State in 1974 and only

a few times since.

**Carex granularis** Muhl. ex Willd. var. **haleana** (Olney) Porter: Occasional to locally common in wet meadows and low woodland in c, scattered e along Platte River. Variety *granularis* is possible in the extreme s-e, and may be distinguished by the following:

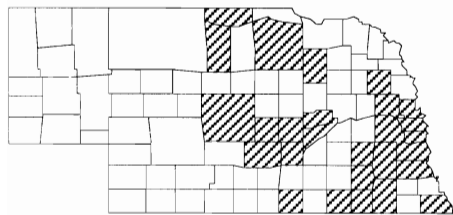
1. Larger perigynia 2–2.8 mm × 1–1.5 mm, ascending at maturity ..... var. **haleana**

1. Larger perigynia 2.5–4 mm × 1.5–2.5 mm, spreading at maturity ..... var. **granularis**

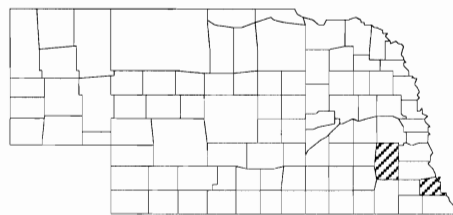
**Carex gravida** Bailey: Frequent to common in upland and lowland prairie, moist meadows, streambanks, open woods and lawns through much of State, apparently absent from the Sandhills and Panhandle (except Pine Ridge). In extreme s-c and s-w, robust plants with branched inflorescences are found which frequently have ventrally nerved perigynia. These are traditionally treated as var. *lunelliana* (Mack.) Herm., but according to Reznicek (pers. comm.) the type of that variety may not be separable from typical *C. gravida*. Very variable in Nebraska, and frequently mistaken for *C. aggregata*, *C. muehlenbergii*, or even *C. stipata*.

**Carex grisea** Wahl. [*C. amphibola* Steud. var. *turgida* Fern.]: Common in woodland and low open areas in e ¼. The name *C. grisea* has priority over *C. amphibola*.

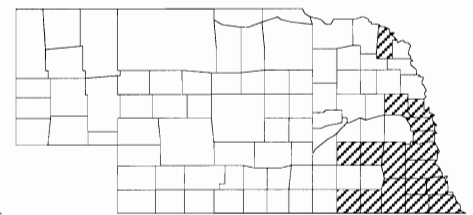
**Carex heliophila** Mack. [*C. inops* Bailey subsp. *heliophila* (Mack.) Crins]: Common in upland prairie and open woods nearly throughout, though evidently absent from most of Panhandle. Crins and Ball (1983) have sub-merged *C. heliophila* into western *C. inops* based on numerical analyses. Although the two overlap in most measurements, they are wholly allopatric and differ in overall appearance. *C. heliophila* is far more likely to be



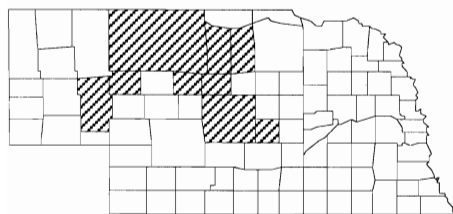
*Carex cristatella*



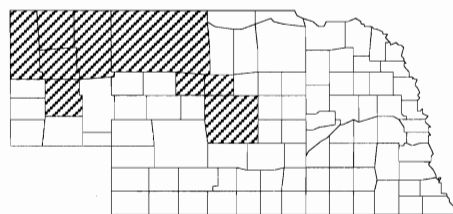
*Carex crus-corvi*



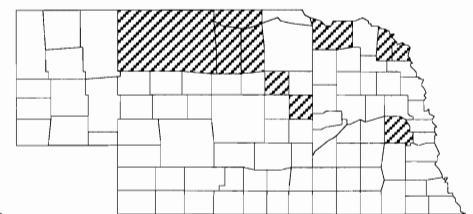
*Carex davisii*



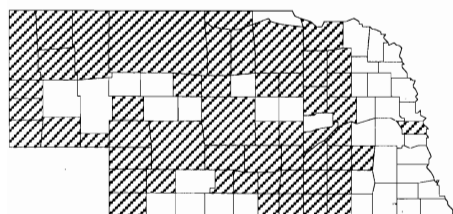
*Carex diandra*



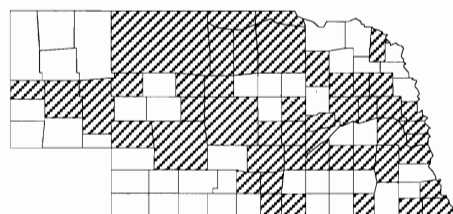
*Carex douglasii*



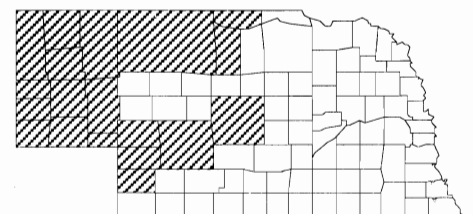
*Carex eburnea*



*Carex eleocharis*



*Carex emoryi*



*Carex filifolia*

confused with eastern *C. pennsylvanica* in the field and in herbaria. We choose to maintain the 3 as separate species. This sedge is often a dominant constituent of upland Sandhills prairie.

***Carex hitchcockiana*** Dew.: Occasional in rich oak bluff forest along the Missouri River.

***Carex hyalinolepis*** Steud.: Uncommon in low wet ground and borders of oxbow ponds in e ½ and Buffalo C. Most reports of *C. lacustris* from s-e in the *Atlas GP* are referable here.

***Carex hystericina*** Muhl. ex Willd. Frequent in marshes, shores and wet woods throughout, but rare or absent in some areas.

***Carex interior*** Bailey: Occasional to locally common in wet meadows, seeps, and fens in Sandhills and Loup River system.

***Carex jamesii*** Schwein.: Occasional to locally common in rich oak bluff forest along the Missouri and Big Nemaha Rivers, from Washington C. s. Though very similar to *C. saximontana* in most respects, the two are fairly distinct in the field, where *C. jamesii* is readily distinguished by its upright culms, light green color, and preference for low, moist sites, whereas *C. saximontana* has culms that are often arching and have a bluish-green tint, and is usually found on upper slopes. *C. jamesii* may, in fact, be confused with *C. oligocarpa*, with which it often grows, in the field. The ranges of *C. jamesii* and *C. saximontana* overlap only in the Omaha area.

***Carex lacustris*** Willd.: Occasional to locally abundant in marshes, seeps and fens in the Sandhills and scattered places in n-e and in the vicinity of Omaha.

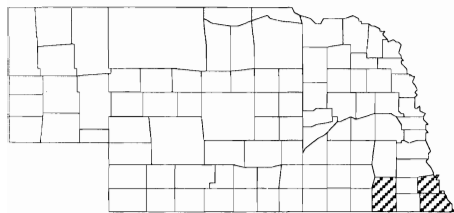
***Carex laeviconica*** Dew.: Frequent in marshes, wet prairie, roadside ditches, and low woodlands in e ½. Like *C.*

*atherodes*, this species may sometimes have scattered hairs on the perigynia. The two species are sometimes difficult to distinguish. *C. laeviconica* is far more common in the e, appears to prefer fine, silty soils, and is frequently found away from permanently wet sites. *C. atherodes* is mostly restricted to the Sandhills wetlands and is rarely scattered e.

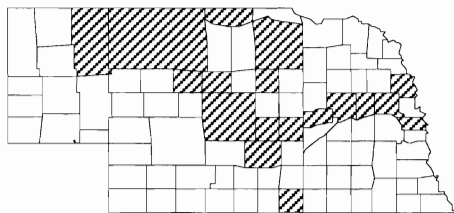
***Carex laeviconica* × *C. trichocarpa***: Rare in disturbed ground. A sterile hybrid collected once along a roadside in Burt C., where it is at the western limit of its known range. Our specimen mostly resembles *C. laeviconica* but has perigynia that are distinctly and evenly pubescent.

***Carex leavenworthii*** Dew.: Occasional to locally common in low woodlands, along roadsides, prairie swales, lawns, and sometimes upland prairie and woods; most common in s-e though scattered to c. The distribution of this often-overlooked sedge has been underestimated, since most Nebraska specimens have been confused with *C. cephalophora* in herbaria. The inflorescence of *C. leavenworthii* tends to have a "tidier" appearance than that of *C. cephalophora* due to the shorter perigynium beaks. The latter is usually taller and mostly restricted to upland oak woods, whereas *C. leavenworthii* may occur in a variety of habitats. In recent years, many collections of *C. leavenworthii* have been made in lawns, which are similar in some respects to its preferred native habitat (low, mesic, often shaded ground). Collections have been made from lawns in Beatrice, Crete, Humboldt, Kearney, Lincoln and Seward so far.

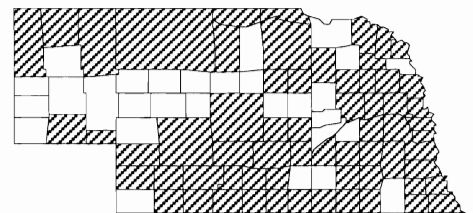
***Carex limosa*** L.: Rare in Sandhills fens. Known from a few old (ca 1890) collections from Cherry County until rediscovered there in 1992.



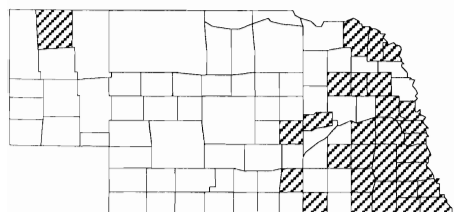
*Carex frankii*



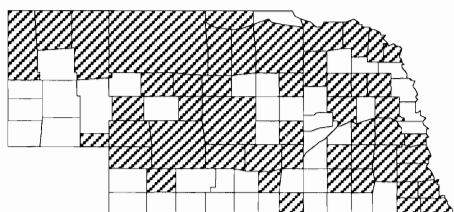
*Carex granularis haleana*



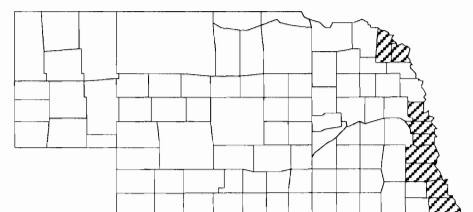
*Carex gravida*



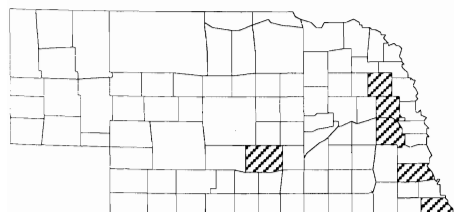
*Carex grisea*



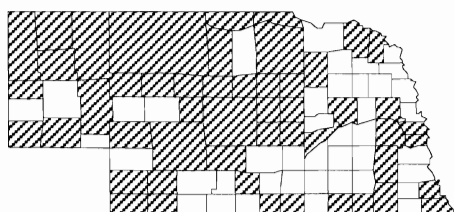
*Carex heliophila*



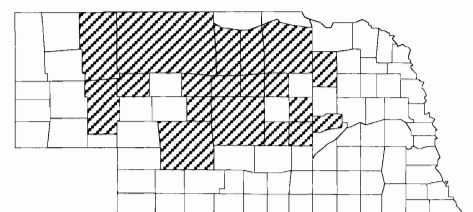
*Carex hitchcockiana*



*Carex hyalinolepis*



*Carex hystericina*



*Carex interior*

***Carex lupulina*** Muhl. ex Willd.: Rare in low, wet ground, often in floodplain woods. Known from a few sites along the Platte River from Fremont to s of Valley. The Custer C. report in the *Atlas GP* is from a fragmentary collection from 1901, fallen from a load of hay cut near Callaway.

***Carex meadii*** Dew.: Occasional to frequent in upland prairie and in low meadows; most common in e ¼, scattered to c. Although frequently found in upland prairie in the e, *C. meadii* is never common where it occurs. Small or depauperate plants may be confused with the related *C. tetanica*, which is normally restricted to wetter sites (such as subirrigated meadows) and is most common in c.

***Carex melanostachya*** M. Bieb. ex Willd.: Rare in disturbed ground along roadsides. Collected once from a roadside in Cedar C. in 1989. Our specimens appeared quite glaucous in the field, were strongly rhizomatous, and superficially resembled depauperate *C. nebrascensis*. The 3-branched styles and 3-sided achenes of *C. melanostachya* readily separate the two.

***Carex mesochorea*** Mack. [*C. cephalophora* Muhl. ex Willd. var. *mesochorea* (Mack.) Gl.]: Occasional to locally common in upland or lowland tall-grass prairie, rarely in lawns; s-e. Although common around Lincoln, the presence of this species in Nebraska had gone undetected until Stanley Jones annotated specimens in 1992. Most of our material had been identified as *C. cephalophora*, within which this species has traditionally been submerged, though the two are amply distinct in our area. *C. mesochorea* is immediately distinguishable in the field by its habitat (prairie versus woodland), coarser habit, and culms which clearly exceed the leaves. This species usually bears a stronger superficial resemblance to *C. gravigida* than to *C. cephalophora*. Although usually found

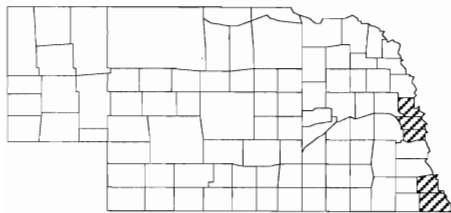
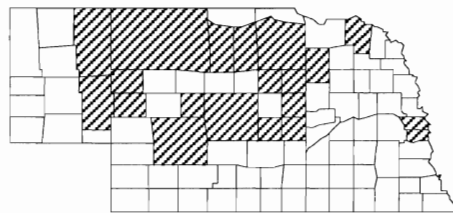
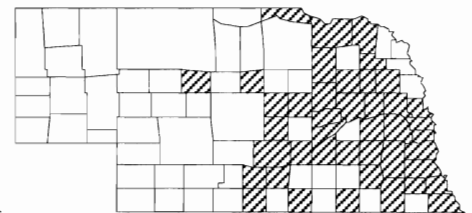
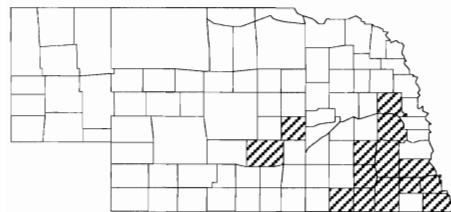
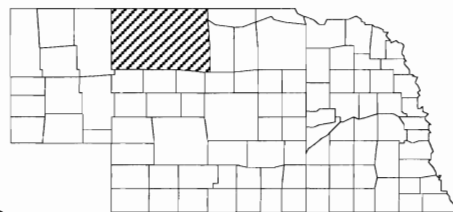
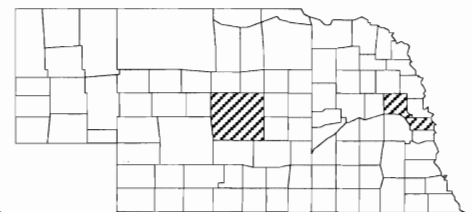
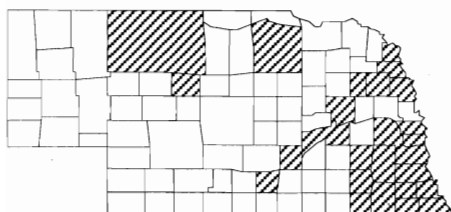
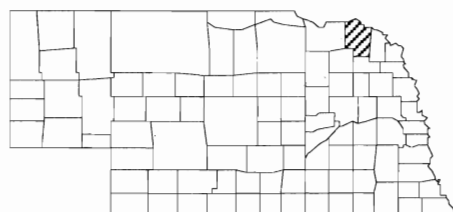
in native habitats, *C. mesochorea* was not collected in Nebraska until 1947 and may have invaded the State from the e.

***Carex molesta*** Mack. ex Bright: Frequent to common in moist meadows, low prairie, roadside ditches and woodlands in e ¼, scattered to c. This sedge is extremely variable and sometimes morphologically overlaps *C. brevior*. When growing in its typical habitat of low, moist ground in the open, *C. molesta* is often readily distinguishable by its densely crowded inflorescences of rounded spikes with spreading perigynia that remain green at maturity. In drier, upland sites, the two may be difficult to distinguish. Specimens of *C. molesta* growing in upland oak woods have a very different, more delicate appearance than well-grown plants in the open, and many of these were reported as *C. normalis* in the *Atlas GP*. The differences among these three species are covered in detail by Zager (1991).

***Carex nebrascensis*** Dew.: Common in marshes, wet meadows, pond margins and fens in w and c. The very blue-green glaucous leaves are distinctive.

***Carex oligocarpa*** Schkuhr ex Willd.: Occasional in rich oak bluff forest along the Missouri and Big Nemaha rivers in extreme e.

***Carex parryana*** Dew. subsp. *hallii* (Olney) D. Murr. [*C. hallii* Olney]: Moist meadows and seeps, often where slightly alkaline; c and w. According to Murray (1969) there is a continuum of variation between *C. parryana* and *C. hallii*. The two may be found together in the Rocky Mountains. This distinctive sedge is rarely confused with other species but is often difficult to identify because of variation in placement of the staminate flowers. It may have a single, pistillate spike, or when 2 or

*Carex jamesii**Carex lacustris**Carex laeviconica**Carex leavenworthii**Carex limosa**Carex lupulina**Carex meadii**Carex melanostachya**Carex mesochorea*

more spikes are present, the terminal one may be wholly staminate, pistillate at the tip and staminate below, or have intermingled staminate and pistillate flowers.

***Carex peckii*** Howe: Occasional in upland oak woods in the Niobrara River drainage in n-c. This sedge superficially resembles *C. albicans* and may be present but overlooked in n-e.

***Carex pellita*** Muhl. ex Willd. [*C. lanuginosa* Michx., misapplied]: Common in marshes, wet meadows, low prairies, road ditches statewide, our commonest species. The type of *C. lanuginosa* is a specimen of *C. lasiocarpa*. Distinguishable in the vegetative stage from our other wetland sedges by the filamentous, often red-spotted and minutely scabrous front leaf sheath surfaces and leaves that are scabrous to minutely pubescent on the upper surface just above the summit of the sheath.

***Carex praegracilis*** W. Boott: Frequent to common in mesic meadows, low prairie, roadsides, and occasionally uplands, often in alkaline soil; throughout, though rare to uncommon in e  $\frac{1}{4}$ .

***Carex prairea*** Dew. ex Wood: Occasional to locally common in wet meadows, fens and seeps in the Sandhills. Commonly forming large tussocks with arching culms in fens.

***Carex radiata*** (Wahl.) Small [*C. rosea* Schkuhr, misapplied]: Evidently rare in wet floodplain woods; collected once near Fremont in 1979 (Rothenberger 1996) and relocated there in 1995. The type of *C. rosea*, a name long applied to this species, is actually a specimen of *C. convoluta*. Nomenclatural changes are outlined by Webber and Ball (1984). This species is very similar to the next and should be sought elsewhere in e Nebraska.

***Carex rosea*** Schkuhr ex Willd. [*C. convoluta* Mack.]: Occasional to common in upland oak woods in e  $\frac{1}{2}$ . All reports

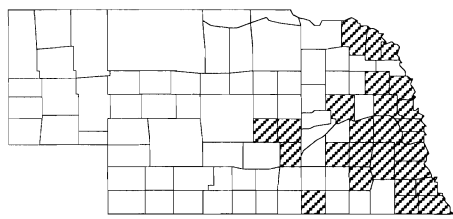
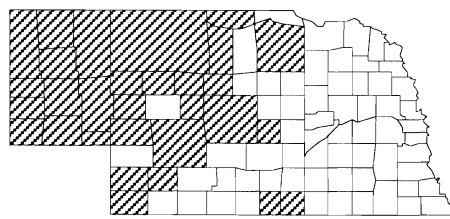
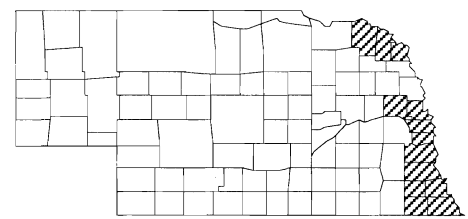
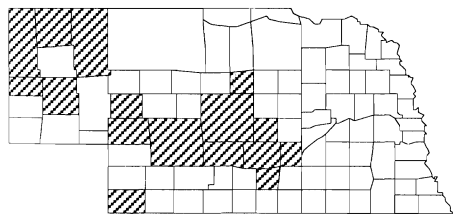
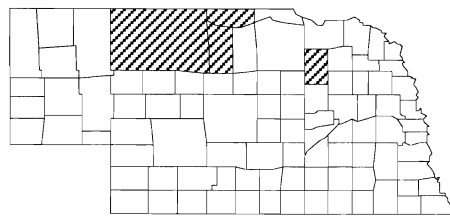
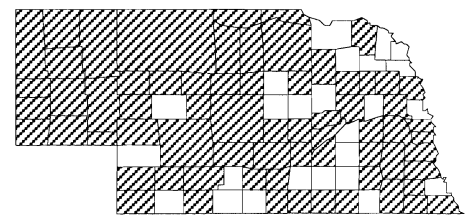
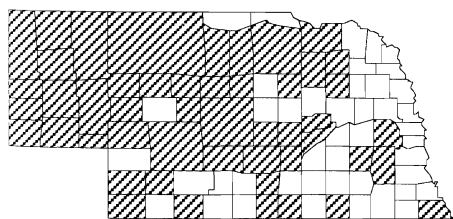
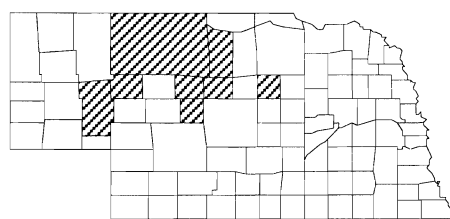
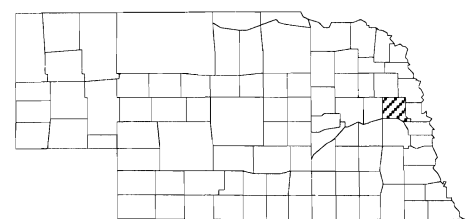
of *C. convoluta* and *C. rosea* in the *Atlas GP* represent this species.

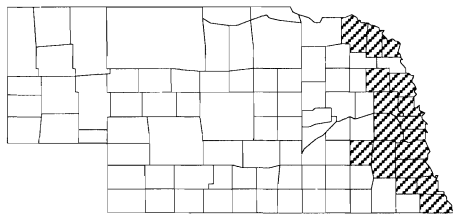
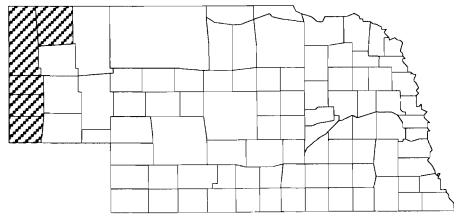
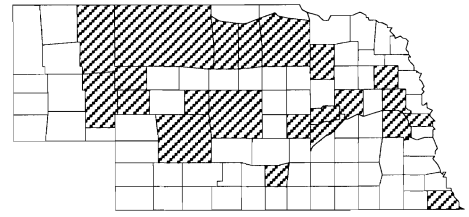
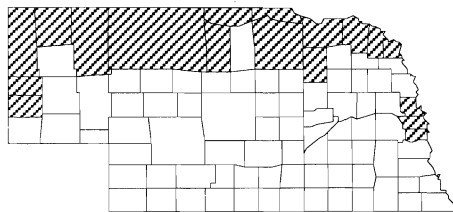
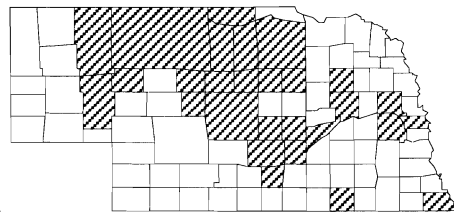
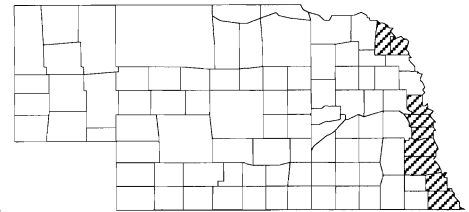
***Carex rossii*** F. Boott: Occasional to frequent in upland pine woods in the Panhandle. Prior to 1991, this species was known from two collections made in the Pine Ridge in 1940. Recent field work has proven it to be relatively common there and in pine stands from the Wildcat Hills southward. *C. rossii* is extremely easy to overlook, since it commonly produces only basal culms which are barely visible among the leaves.

***Carex sartwellii*** Dew.: Occasional in wet meadows in the Sandhills and along the Platte River. This sedge resembles *C. praegracilis* but can be distinguished by the green sheath fronts. It is far less commonly collected than *C. praegracilis*.

***Carex saximontana*** Mack.: Common in pine woods in Niobrara River drainage and Panhandle, also in oak woods along the Missouri River in n-e and in the Omaha area. This species is far more common than indicated by the *Atlas GP*, but it is easily overlooked since the perigynia are often hidden from view by the lowermost pistillate scale.

***Carex scoparia*** Schkuhr ex Willd. Frequent to common in marshes, wet meadows and shores, usually in sandy soil; mostly in the Sandhills and along the Loup and Platte rivers, scattered and uncommon in s-e. This species is often mistakenly identified as *C. tribuloides*, probably because some treatments use the green sheath fronts as a means of separating the two. Many of our specimens of *C. scoparia* have sheath fronts that are mostly green with at most a slender hyaline stripe down the middle. The two are more consistently separated by leaf width and the shape of the spikes. *C. scoparia* usually occurs in

*Carex molesta**Carex nebrascensis**Carex oligocarpa**Carex parryana hallii**Carex peckii**Carex pellita**Carex praegracilis**Carex prairea**Carex radiata*

*Carex rosea**Carex rossii**Carex sartwellii**Carex saximontana**Carex scoparia**Carex sparganioides*

sandy soils and is almost always found in the open, whereas the far less common *C. tribuloides* prefers finer soils and is usually found in shade.

***Carex sparganioides*** Willd.: Occasional in moist, rich oak bluff forest along the Missouri R. in extreme e.

***Carex spengelii*** Dew. ex Spreng.: Occasional to locally abundant in upland and lowland woods in n ½, uncommon in s-e. This sedge is frequent in upland pine and oak woods in the n, and in n-e Nebraska it is often a dominant ground cover in the oak bluff forest along the Missouri River; s of Omaha it becomes uncommon to rare and is unknown from some sites such as Indian Cave State Park. It is locally common in the Salt Creek drainage and along the Big Nemaha River.

***Carex squarrosa*** L.: Rare and evidently introduced in wet ground along railroad tracks w of Lincoln. Collected once, in 1887, and almost certainly now extirpated.

***Carex stipata*** Muhl. ex Willd.: Common in marshes and along streams and wet ditches, sometimes in wet woods; nearly throughout, evidently absent from most of the Panhandle. The beaks of the spreading perigynia give the inflorescence a "prickly" appearance.

***Carex tenera*** Dew. var. *echinodes* (Fern.) Wieg.: Uncommon to locally common in wet woodlands, occasionally in upland woods, in e ½. This infrequently collected sedge is locally common in floodplain forest along the Platte River e of Columbus. In some woods it is among the most conspicuous sedges with tall, slender arching culms with lax, nodding inflorescences and well-separated spikes. It also occurs in upland woods in the e, where it is generally smaller, with flexuous (but not nodding) inflorescences that are slightly more crowded. Most collections of these have been mistakenly identified as *C. normalis*.

***Carex tetanica*** Schkuhr: Occasional in wet meadows in the Sandhills, the Loup River system, and along the Platte River, evidently scattered w. Frequently mistaken for *C.*

*crawei* and *C. granularis* in herbaria, and often found growing with both in the field. Robust specimens may be confused with *C. meadii*, but they are not usually found growing with that species.

***Carex texensis*** (Torr.) Bailey: Rare in oak woods and lawns. Collected twice in woods in extreme s-e and once in a lawn in Kearney (Buffalo C.). This species (like *C. leavenworthii*) may be introduced in lawns and could appear elsewhere in the State.

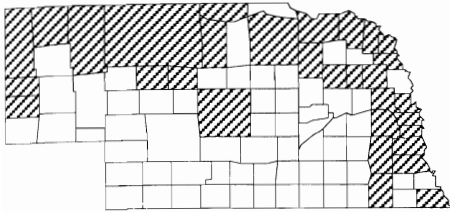
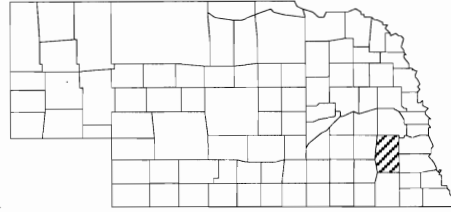
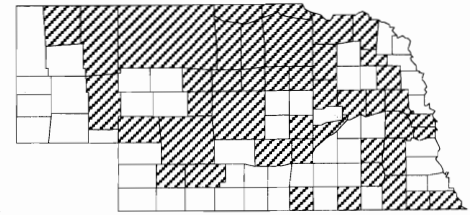
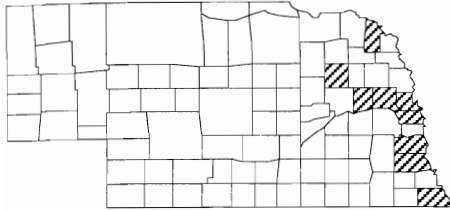
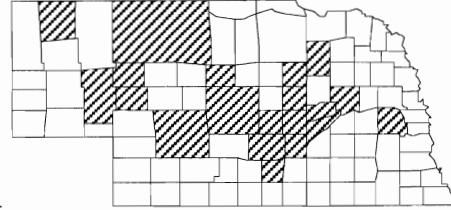
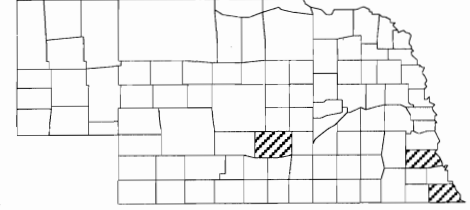
***Carex tribuloides*** Wahl.: Uncommon to locally common in low moist ground, usually in floodplain woods but sometimes in the open; mostly s-e Nebraska, though scattered to the c, evidently uncommon throughout, except in the Big Blue River drainage where locally common. Frequently confused with *C. scoparia*; see comments under that species.

***Carex umbellata*** Schkuhr ex Willd. [including *C. micro-rhyncha* Mack.]: Apparently rare in upland prairie in extreme s-e, but exceedingly inconspicuous and likely more widespread. First collected near Rulo by Ronald McGregor in 1992.

***Carex utriculata*** F. Boott [*C. rostrata* Stokes ex Willd., misapplied]: Rare in marshes in the n Sandhills. Collections housed at the University of Nebraska at Kearney and made in Brown and Cherry C. in 1971 were evidently overlooked during preparation of the *Atlas GP* and the *Flora GP*.

***Carex vulpinoidea*** Michx.: Common in marshes, wet meadows, streambanks, and shores nearly throughout, though evidently uncommon or absent in much of the Panhandle.

***Carex xerantica*** Bailey: Occasional on upper slopes of pine woodlands in n-w. The large pistillate scales give the spikes a pale whitish-brown cast more typical of immature specimens of *C. praegracilis* than our other members of section *Ouales*.

*Carex sprengelii**Carex squarrosa**Carex stipata**Carex tenera echinodes**Carex tetanica**Carex texensis*

### SCLERIA BERG. (NUT-RUSH)

(Ours) perennial herbs; culms 3-angled; flowers unisexual (monoecious), the 1-flowered pistillate spikelet usually mixed with clusters of staminate spikelets, perianth lacking, achene spherical, whitish, bony, subtended by a disk (hypogium) covered with a white crust.

*Scleria triglomerata* Michx.: Rare in sandy, lowland tall-grass prairie. First collected in 1997 near the Platte River close to Yutan in Saunders County.

### EXCLUDED SPECIES

*Carex crinita* Lam. was reported from Cass C. in the *Atlas GP*, based on a specimen which is part of a collection likely made in Illinois and mistakenly attributed to Nebraska.

*Carex festucacea* Muhl. ex Willd. was reported from Richardson C. by both the *Atlas GP* and Rothrock (1991), based on an unusually small specimen of *C. brevior*. It could appear there.

*Carex gracilescens* Steud. was reported for Pawnee C. by Bryson (1980) based on an atypical specimen of *C. blanda*. *C. gracilescens* can be distinguished from that species by its conspicuous dark reddish coloration at the base of the plant.

*C. haydenii* Dew. was reported from Lincoln C. in the *Atlas GP* based on an immature specimen of *C. nebrascensis*.

*C. muehlenbergii* Schkuhr ex Willd. var. *enervis* F. Boott was reported from e Nebraska and Dawes C., based mostly on specimens of *C. aggregata* and *C. gravida* with tight sheaths. A specimen annotated as this species by S. Jones appears to be an overly mature *C. cephalophora*. *C. muehlenbergii* var. *enervis* is possible in the extreme s-e. Plants keying here should be checked against Jones (1994) and herbarium material if possible.

*Carex normalis* Mack. was reported from e Nebraska in the *Atlas GP* based on specimens of *C. molesta* and *C. tenera* from upland woods. *C. normalis* can usually be separated from the former by its narrower perigynia and from the latter by its wider leaves, but is quite variable. Specimens keying here should be checked against specimens

in a reliable herbarium.

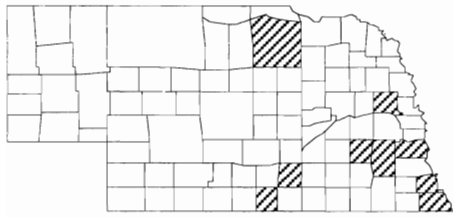
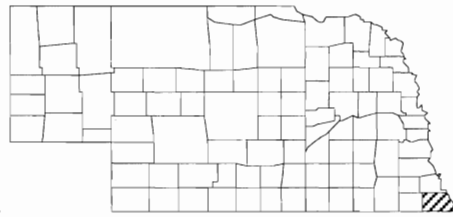
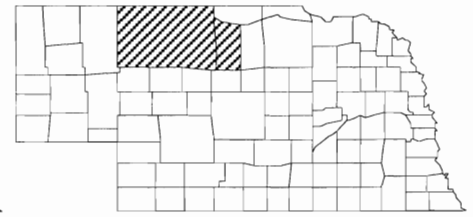
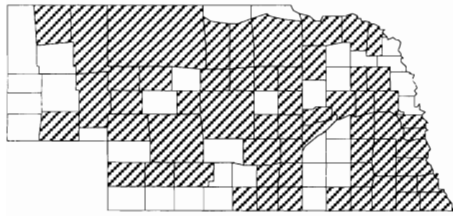
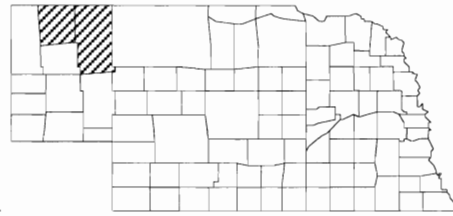
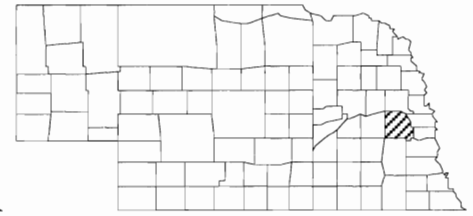
*Carex siccata* Dew. [*C. foenea* Willd., misapplied] was reported in the *Atlas GP* from Loup C. based on a specimen of *C. praegracilis*.

*Carex stricta* Lam. was reported from much of the State, based on specimens of *C. emoryi*. *C. stricta* could be present in fens in the n-e. Standley (1989) reported it from n Nebraska, but did not cite a specimen. It was not found in Sandhills fens during an intensive survey in 1996 and is excluded pending confirmation of the Nebraska report.

*Carex trichocarpa* Muhl. ex Willd. was reported for the State in the *Flora GP*, based on a hybrid of this species with *C. laeviconica*. *C. trichocarpa* could be present in extreme e Nebraska.

### ACKNOWLEDGMENTS

We would like to thank Dr. Anton Reznicek of the University of Michigan for his many helpful suggestions and annotation of herbarium material for this study; Dr. Gary Larson, South Dakota State University; and Dr. Ronald McGregor, University of Kansas, who provided helpful comments on earlier versions of the manuscript. We also thank Drs. Robert Kaul, UNL, and David Sutherland, UNO, for their patience and numerous suggestions through numerous revisions and delays over the two years this paper was in press.

*Carex tribuloides**Carex umbellata**Carex utriculata**Carex vulpinoidea**Carex xerantica**Scleria triglomerata*

Dr. Sutherland put together the maps. Finally we thank the curators and staff of the herbaria listed in the introduction for access to their facilities.

#### LITERATURE CITED

- Bryson, C. T. 1980. *A revision of the North American Carex section Laxiflorae (Cyperaceae)*. Mississippi State University, Unpublished Ph.D. dissertation: 191 pp.
- Crins, W. J., and P. W. Ball. 1983. The taxonomy of the *Carex pensylvanica* complex (Cyperaceae) in North America. *Canadian Journal of Botany* 61: 1,692–1,717.
- Gleason, H. A., and A. Cronquist. 1991. *Manual of vascular plants of northeastern United States and adjacent Canada*. New York, Van Nostrand: 810 pp.
- Great Plains Flora Association. 1977. *Atlas of the flora of the Great Plains*. Ames, Iowa State University Press: 600 pp.
- . 1986. *Flora of the Great Plains*. Lawrence, Kansas, University Press of Kansas: 1,392 pp.
- Jones, S. D. 1994. A new species of *Carex* (Cyperaceae: *Phaetoglochin*) and notes on sections *Bracteosae* and *Phaetoglochin*. *Sida* 16: 341–353.
- Kartesz, J. T. 1994. *A synonymized checklist of the vascular flora of the United States, Canada, and Greenland*, Vol 1, 2nd ed. Portland, Timber Press: 622 pp.
- Kolstad, O. A. 1986. Cyperaceae. In: Great Plains Flora Association, *Flora of the Great Plains*. Lawrence, University Press of Kansas: 1,392 pp.
- Larson, G. E. 1993. *Aquatic and wetland vascular plants of the northern Great Plains*. General Technical Report RM-238. Fort Collins, U. S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station: 681 pp.
- Murray, D. F. 1969. Taxonomy of *Carex* sect. *Atratae* (Cyperaceae) in the southern Rocky Mountains. *Brittonia* 21: 55–76.
- Rettig, J. H. 1989. Nomenclatural changes in the *Carex pensylvanica* group (section *Acrocystis*, Cyperaceae) of North America. *Sida* 13: 449–452.
- . 1990. Correct names for the varieties of *Carex albicans* / *C. emmonsii*. *Sida* 14: 132–133.
- Rolfmeier, S. 1995. Keys and distributional maps for Nebraska Cyperaceae, Part 1: *Bulbostylis*, *Cyperus*, *Dulichium*, *Eleocharis*, *Eriophorum*, *Fimbristylis*, *Fuirena*, *Lipocarpha*, and *Scirpus*. *Transactions of the Nebraska Academy of Sciences* 22: 27–42.
- Rothenberg, S. J. 1996. Cyperaceae in Dodge County, Nebraska, new records. *The Prairie Naturalist* 28: 27–29.
- Rothrock, P. E. 1991. The identity of *Carex albolutescens*, *C. festucacea*, and *C. longii* (Cyperaceae). *Rhodora* 93: 51–66.
- Standley, L. A. 1989. Taxonomic revision of the *Carex stricta* (Cyperaceae) complex in eastern North America. *Canadian Journal of Botany* 67: 1–14.
- Steyermark, J. A. 1963. *Flora of Missouri*. Ames, Iowa State University Press: 1,728 pp.
- Voss, E. G. 1972. *Michigan flora: Part 1. gymnosperms and monocots*. Bloomfield Hills, Cranbrook Institute of Science and University of Michigan Herbarium: 488 pp.
- Webber, J. M., and P. W. Ball. 1984. The taxonomy of the *Carex rosea* group (section *Phaetoglochin*) in Canada. *Canadian Journal of Botany* 62: 2,058–2,073.
- Zager, S. C. 1991. Multivariate analysis of the *Carex brevior* group in Iowa. Unpublished M. S. thesis, University of Northern Iowa, Cedar Falls.