Manual of the
GENUS CAREX
in
MEXICO
and
CENTRAL AMERICA
MANUAL OF THE
GENUS CAREX
IN MEXICO
AND CENTRAL AMERICA

By
Frederick J. Hermann
Curator, Forest Service Herbarium

Agriculture Handbook No. 467
FOREST SERVICE    U.S. DEPARTMENT OF AGRICULTURE

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402—Price $2.85 (paper cover)
Stock Number 0100-03259
SUMMARY

Carex, of the family Cyperaceae, is the largest genus of vascular plants in North America, where it comprises over 600 species, and is taxonomically one of the most difficult genera in the flora of that region. It is partial to temperate and cold climates and therefore in predominantly tropical areas, such as Mexico and Central America, is largely restricted to high elevations.

In this taxonomic treatment, the 102 recognized taxa comprise 94 species, 7 varieties and one form,—more than double the number of taxa previously reported from the area in the only recent coverage of the genus for North America.

Keys for the identification of the sections of the genus and for the species are provided, as well as detailed descriptions, synonymy, accounts of geographic distribution and habitats, and illustrations for each species, many of which have never been illustrated before. Included are a systematic list of the taxa, a glossary, and bibliography.

Two new combinations are proposed: Carex schiedeana Kunze var. perstricta (Mack.) F.J. Herm. and C. schiedeana var. stellata (Mack.) F.J. Herm.

Hermann, Frederick J.


An original treatment of the 102 taxa of the genus Carex (family Cyperaceae) now known from Mexico and Central America. Detailed descriptions, keys for identification, and illustrations for each species are included.

Keywords: Plant taxonomy, Carex, Mexico, Central America, phytogeography, Cyperaceae. Oxford number: 187: (728): 175.2

Library of Congress Catalog Card Number: 73-600-298
CONTENTS

Introduction .............................................. 1
Mexican and Central American Carices—
   Systematic List ........................................ 2
Key to Sections ........................................... 6
Key to Species ............................................ 10
Species Descriptions ................................. 22
Addenda ................................................... 208
Bibliography ............................................. 210
Glossary ................................................. 212
Index ..................................................... 216

Issued December 1974
INTRODUCTION

Three factors have indicated the need for an up-to-date treatment of the sedges of Mexico and Central America: (1) The number of taxa (102) now known from the area is considerably more than double that recorded by Mackenzie in *North American Flora*, 1931–35, (2) The genus is a particularly large and taxonomically difficult one, meriting a specialized treatment, including keys for identification, pertinent synonymy, detailed descriptions, habitat preference and altitudinal range, and general and local distribution, (3) There has been no regional account, restricted to the species of the area, and including detailed drawings of the many species never before illustrated, to facilitate the problem of identification of collections from the area. It is hoped that this Handbook may contribute to the understanding of the variation in the many wide-ranging sedges of the United States whose distribution extends south of its border.

All pertinent literature has been reviewed and all collections from the area in the principal Mexican herbaria have been studied, as well as those in the larger herbaria of the United States known to be rich in material from Mexico and Central America (the Field Museum, Gray Herbarium, and the University of Michigan). In addition, many specimens were received from collectors who have recently been active in the region. The type collections of all species originally described from Mexico or Central America have been examined.

Permission to use some of Creutzberg's drawings in Mackenzie's "North American Cariceae" was generously granted by the New York Botanical Garden, to supplement those by Feddema and others published in U.S. Dep. Agric., Agricultural Handbook No. 374, "Manual of the Carices of the Rocky Mountains and Colorado Basin." Species originally described from specimens originating in Mexico and Central America but not heretofore illustrated are represented by plates expertly drawn for the present treatment by Jeanne R. Janish.

Because *Carex* is a genus largely restricted to a temperate or cold climate, its occurrence in Mexico and Central America is rare except in the mountains. Since many of the montane areas have not yet been well explored botanically, it is expected that further collections will disclose species not included in the present list.
MEXICAN AND CENTRAL AMERICAN CARICES—SYSTEMATIC LIST

(Numbers of sections and species in parentheses are those of K. K. Mackenzie in North American Flora, vol. 18. Interpolated species, subsequently reported from North America or recently described, are given decimal numbers following their nearest allies. Varieties are designated alphabetically.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Species</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitatae (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. C. capitata L. (3)</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Divisae (7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. C. praegracilis W. Bot. (19)</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Potosinae (10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. C. potosina Hemsl. (23)</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>Bracteosae (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. C. vallicola Dewey (31)</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>4a. var. hidalgensis F. J. Herm. (31a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. C. involucratella Mack. (36)</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>6. C. occidentalis Bailey (38)</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>7. C. xalapensis Kunth (42)</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Multiflorae (13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. C. agrostoides Mack. (55)</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>9. C. marianensis Stacey (58)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>10. C. percostata F. J. Herm. (58.1)</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Vulpinae (15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. C. chihuahuensis Mack. (73)</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Stellulatae (19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. C. interior Bailey (105)</td>
<td></td>
<td>44</td>
</tr>
<tr>
<td>12a. f. keweenawensis (F. J. Herm.) Fern. (105a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. C. townsendii Mack. (115)</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>14. C. angustior Mack. (117)</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Deweyanae (20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. C. bromoides Schk. (120)</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Ovales (21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Festivae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. C. volcanica F. J. Herm. (126.1)</td>
<td></td>
<td>52</td>
</tr>
</tbody>
</table>
17. C. bonplandii Kunth (134) 54
18. C. purdiei Boott (135) 56
19. C. subbracteata Mack.
   var. tolucensis F. J. Herm. (143a) 58

II. Festucaceae
20. C. diehlii Jones ex F. J. Herm. (166.1) 60
22. C. peucophila Holm (168) 64
23. C. egglestonii Mack.
   var. festivelliformis F. J. Herm. (171a) 66

III. Alatae
24. C. longii Mack. (182) 68

IV. Tribuloidae
25. C. tribuloides Wahl. (186) 70

V. Foeneae
26. C. xerantica Bailey (191) 72

VI. Athrostachyae
27. C. athrostachya Olney (195) 74

10. Section Filifoliae (24)
28. C. arsenii Kükenth. (203) 76
29. C. longissima Jones (203.1) 78
30. C. oreocharis Holm (204) 80

11. Section Montanae (27)
31. C. physorrhyncha Liebm. in Steud. (215) 82
32. C. turbinata Liebm. (218) 84
33. C. leucodonta Holm (219) 86
34. C. geophila Mack. (231) 88

12. Section Triquetrae (31)
35. C. triquetra Boott (252) 90
36. C. planostachys Kunze (253) 92

13. Section Schiedeanae (35)
37. C. schiedeana Kunze (261) 94
37a. var. perstricta (Mack.) F. J. Herm. (260) 96
37b. var. stellata (Mack.) F. J. Herm. (262) 98

14. Section Scabrellae (36)
38. C. scabrella Wahl. (263) 100

15. Section Indicae (37)
39. C. humboldtiana Steud. (264) 102
40. C. standleyana Steyerm. (264.1) 104
41. C. polystachya Sw. ex Wahl. (265) 106
41a. var. bartlettii (O'Neill) Standl. & Steyerm. (265a) 106
42. C. aztecica Mack. (266) 108
43. C. hultenii Asplund (266.1) 110
44. C. madrensis Bailey (267) 112

16. Section Bicolores (38)
45. C. hassei Bailey (271) 114

17. Section Laxiflorae (40)
46. C. laxiflora Lam.
   var. serrulata F. J. Herm. (269a) 116

18. Section Granulares (41)
47. C. atractodes F. J. Herm. (303.1) 118
48. C. quichensis F. J. Herm. (303.2) 120

19. Section Longicaules (44)
49. C. anisostachys Liebm. (317) 122
50. C. guatemalensis F. J. Herm. (317.1) 124
51. C. longicaulis Böck. (318) 126
52. C. coulteri Boott (319) 128

20. Section Viridiflorae (45)
53. C. viridiflora Mack. (322) 130
54. C. pertenuis Bailey (323) 132
55. C. perlonga Fern. (324) 134
56. C. mackenziana Weatherb. (324.1) 136
57. C. venosivaginata Standl. & Steyerm. (324.2) 138
58. C. huehueticana Standl. & Steyerm. (324.3) 140
59. C. steyermarkii Standl. (324.4) 142
60. C. caxinensis F. J. Herm. (324.5) 144

21. Section Sylvaticae (47)
61. C. conspecta Mack. (346) 146

22. Section Longirostres (49)
62. C. tunimanensis Standl. & Steyerm. (349.1) 148

23. Section Extensae (50)
63. C. distentiformis F. J. Herm. (359.1) 150

24. Section Virescentes (53)
64. C. boliviensis Van Huerck & Muell.-Arg. (375) 152
65. C. complanata Torr. (376) 154

25. Section Fecundae (55)
66. C. tuberculata Liebm. (389) 156
66a. var. ehrenbergiana (Böck.) Kükenth. (390) 158
67. C. psilocarpa Steud. (391) 160
68. C. ballsii Nelmes (391.1) 162
69. C. chordalis Liebm. (392) 164
70. C. chiapensis F. J. Herm. (392.1) 166
<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>71. C. cortesii Liebm. (393)</td>
</tr>
<tr>
<td>72. C. tojquianensis Standl. &amp; Steyerm. (393.1)</td>
</tr>
<tr>
<td>73. C. melanosperma Liebm. (394)</td>
</tr>
<tr>
<td>74. C. donnell-smithii Bailey (395)</td>
</tr>
<tr>
<td>75. C. jamesonii Boott (395.1)</td>
</tr>
<tr>
<td>76. C. lemanniana Boott (396)</td>
</tr>
<tr>
<td>26. Section Atratae (60)</td>
</tr>
<tr>
<td>77. C. bella Bailey (429)</td>
</tr>
<tr>
<td>27. Section Acutae (61)</td>
</tr>
<tr>
<td>78. C. emoryi Dewey (464)</td>
</tr>
<tr>
<td>79. C. endlichii Kükenth. (470)</td>
</tr>
<tr>
<td>80. C. eurycarpa Holm (471)</td>
</tr>
<tr>
<td>28. Section Hispidae (63)</td>
</tr>
<tr>
<td>81. C. spissa Bailey (482)</td>
</tr>
<tr>
<td>81a. var. ultra (Bailey) Kükenth. (483)</td>
</tr>
<tr>
<td>81b. var. seatoniana (Bailey) Kükenth. (484)</td>
</tr>
<tr>
<td>82. C. pringlei Bailey (485)</td>
</tr>
<tr>
<td>29. Section Pseudocypereae (67)</td>
</tr>
<tr>
<td>83. C. hystricina Muhl. (493)</td>
</tr>
<tr>
<td>84. C. thurberi Dewey (494)</td>
</tr>
<tr>
<td>85. C. comosa Boott (495)</td>
</tr>
<tr>
<td>86. C. polysticha Böck. (497)</td>
</tr>
<tr>
<td>30. Section Squarrosae (69)</td>
</tr>
<tr>
<td>87. C. frankii Kunth (507)</td>
</tr>
<tr>
<td>31. Section Vesicariae (70)</td>
</tr>
<tr>
<td>88. C. lurida Wahl. (526)</td>
</tr>
</tbody>
</table>
KEY TO SECTIONS

1. Spike solitary.
   2. Stigmas 2; achenes lenticular........1. CAPITATAE
   2. Stigmas 3; achenes trigonous........10. FILIFOLIAE
      1. Spikes more than 1.
      3. Stigmas mostly 2; achenes lenticular.
         4. Lateral spikes short, sessile; terminal spike androgynous or gynaeandrous.
         5. Culms arising singly or a few together from long-creeping rhizomes.
         6. Perigynia not granular-tuberculate, about 10 to a spike and largely concealed by the scales.................2. DIVISAE
         6. Perigynia granular-tuberculate, few to a spike, not concealed by the scales........3. POTOSINAE
      5. Culms cespitose or the rhizomes short-prolonged and with short internodes, but not long-creeping.
      7. Spikes androgynous.
         8. Perigynia abruptly contracted into a beak.
         9. Spikes few (generally 10 or less, often greenish); sheaths not red-dotted ventrally.........................4. BRACTEOSAE
         9. Spikes numerous, usually brownish or yellowish; leaf-sheaths often red-dotted at the mouth ventrally........5. MULTIFLORAE
     8. Perigynia tapering into a beak........6. VULPINAE
   7. Spikes gynaeandrous.
      10. Perigynia without winged margins, at most thin-edged.
      11. Perigynia spreading or ascending at maturity.7. STELLULATAE
      11. Perigynia appressed................8. DEWEYANAE
      10. Perigynia with winged margins.....9. OVALES
4. Lateral spikes peduncled or, if sessile, elongated; terminal spike staminate, rarely gynaecandrous or androgynous.

12. Spikes androgynous, more or less paniculate...

12. Spikes, or some of them, staminate, pistillate or gynaecandrous, not paniculate.

13. Lowest bract long-sheathing; perigynia whitish-pulverulent at maturity; plants low, usually 5 dm. or less high...

13. Lowest bract usually sheathless, occasionally short-sheathing; perigynia not pulverulent; taller plants, usually more than 5 dm, high...

3. Stigmas mostly 3; achenes trigonous.

14. Perigynia pubescent, puberulent, or ciliate-scabrous.

15. Style jointed with the achene, at length withering and deciduous.

16. Achenes with sides convex above, closely enveloped in the upper part of the perigynium-body; bracts of the non-basal, pistillate spikes sheathless or nearly so...

16. Achenes with flat or concave sides.

17. Bracts sheathless or the lower short-sheathing.

18. Spikes androgynous, the lower paniculate...

18. Spikes not androgynous, not paniculate.

19. Achenes closely enveloped, filling the perigynium body, the latter strongly trigonous

19. Achenes more loosely enveloped, the upper part of the perigynium-body empty, the latter obscurely trigonous..

17. Bracts, at least the lower ones, long-sheathing...

15. Style continuous with the achene, indurated and persistent...


20. Style jointed to the achene, not indurated, at length withering.

22. Upper and lower spikes all androgynous, the lower paniculate.

22. Upper spike or spikes staminate or gynaeandrous, the others pistillate; spikes not paniculate.

23. Perigynia with beak entire or emarginate or obliquely cut, at length bidentulate or bidentate.

24. Pistillate spikes short, oblong to linear, erect or, if drooping, the spikes short and the perigynia acutely trigonous.

25. Perigynia tapering at the base, trigonous; achenes closely enveloped.

25. Perigynia rounded at the base, suborbicular in cross-section; achenes loosely enveloped.

24. Pistillate spikes elongate, linear to cylindric, slender-peduncled, the lower drooping.

26. Lateral spikes androgynous, often in pairs.

26. Lateral spikes not androgynous, not in pairs.

23. Perigynia with beak bidentate.

27. Perigynium-beak obliquely cut, at length bidentate.

27. Perigynium-beak equally bidentate.

22. Longirostres

23. Extensae

21. Lower bracts sheathless or very short-sheathing.
28. Leaves more or less pubescent, at least toward the base.
29. Perigynia beaked, the orifice bidentate ..............
       ...........19. LONGICAULES
29. Perigynia beakless, the orifice entire or emarginate...
       ...........24. VIRESCENTES
28. Leaves glabrous throughout.
30. Spikes numerous, adrogy nous, often paniculate......
       ...........25. FECUNDAE
30. Spikes gynaecandrous (the lateral with few staminate flowers), not paniculate....
       ...........60. ATRATAE
20. Style continuous with the achene and of the same bony texture, not withering.
31. Leaves not septate-nodulose; perigynia nerveless or nearly so, not ribbed or strongly nerved......28. HISPIDAE
31. Leaves septate-nodulose; perigynia strongly nerved or ribbed.
32. Perigynia finely and closely ribbed
        ...........29. PSEUDOCYPETERAE
32. Perigynia coarsely ribbed.
33. Perigynium-body obovoid or obconic, truncately contracted into the prominent beak....30. SQUARROSAE
33. Perigynum-body ovoid or globose-ovoid, not truncately contracted ..............
        ...........31. VESICARIAE
KEY TO SPECIES

1. CAPITATAE

One species...........................................1. C. capitata

2. DIVISAE

One species...........................................2. C. praegracilis

3. POTOSINAE

One species...........................................3. C. potosina

4. BRACTEOSAE

1. Beak of perigynium only minutely bidentulatt, obliquely cleft dorsally; spikes with few (1–6, rarely 10), erect or ascending perigynia...........................................4. C. vallicola

2. Inflorescence ovoid, oblong-ovoid, or suborbicular, the spikes densely capitate..............5. C. involucratella

3. Scales about the length of, and wider than, the perigynia, and largely concealing them....6. C. occidentalis

4. Mature perigynium bulging dorsally, displacing the thickened margins onto the ventral face..............4a. C. vallicola var. hidalgensis

5. MULTIFLORAE

1. Scales strongly white-hyaline-margined........8. C. agrostoides

2. Perigynia plano-convex, 3.5–4 x 1.5–2 mm., obscurely nerv ed ventrally, the beak one-half the length of the body; sheaths short-prolonged and high-convex at the mouth...
9. C. marianensis

2. Perigynia unequally biconvex, 4.5 x 2.25–2.5 mm., strongly ribbed and sulcate on both faces, the beak one-fourth the length of the body; sheaths not obviously prolonged at the mouth. 10. C. percostata

6. VULPINAE

One species 11. C. chihuahuensis

7. STELLULATAE

1. Perigynium-beak very shallowly bidentulate, one-fourth to one-third the length of the body, the ventral false suture inconspicuous.
2. Perigynia ventrally nerveless or few-nerved only at the base. 12. C. interior
2. Perigynia conspicuously nerved ventrally. 12a. C. interior f. keweenawensis

1. Perigynium-beak sharply bidentate, one-third the length of to equaling the body, the ventral false suture conspicuous.
3. Perigynia ovate, abruptly short-beaked, the beak less than half the length of the body. 13. C. townsendii
3. Perigynia lanceolate, tapering into a beak more than half of to about the length of the body. 14. C. angustior

8. DEWEYANAE

One species 15. C. bromoides

9. OVALES

1. Bracts not conspicuously exceeding the head (except rarely in C. brevior), usually inconspicuous.
2. Beak of perigynium slender and nearly terete, scarcely margined at the tip, the upper 0.25–2 mm. of its length, little if at all serrulate. 1. FESTIVAE
2. Beak of perigynium flat and margined to the tip, serrulate to the apex.
3. Scales shorter than the perigynia, noticeably narrower above and largely exposing the perigynia.
4. Wing of perigynium not narrowed near the middle of the body; leaf-blades of the sterile culms erect or ascending, usually clustered toward the apex; sterile culms often poorly developed.
5. Perigynium-body not obovate, widest near the middle or base. 2. FESTUCACEAE
5. Perigynium-body obovate, widest near the top. 3. ALATAE
4. Wing of perigynium rather abruptly narrowed near the middle of the body; leaf-blades of sterile culms widely spreading, numerous, not clustered at the apex; sterile culms strongly developed.

3. Scales about the length of the perigynia and nearly the same width above, nearly concealing the perigynia above.

1. Bracts conspicuously exceeding the head.

Subsection 1. Festivae

1. Perigynia much flattened, rather thin and scale-like except where distended by the achene; inflorescence a short, dense head. 16. C. volcanica

Subsection 2. Festuceae

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

2. Scales little, if at all, reddish-brown-tinged. 21. C. brevior

Subsection 3. Alatae

One species. 24. C. longii

Subsection 4. Tribuloideae

One species. 25. C. tribuloides

12
Subsection 5. Foeneae

One species...........................................26. C. xerantica

Subsection 6. Athrostachyae

One species...........................................27. C. athrostachya

10. FILIFOLIAE

1. Spikes with 15–40 perigynia, beak of perigynium sharply bidentate.
2. Beak of perigynium short (0.5 mm.); pistillate scales obtuse; spikes short (2.5–4 cm.); leaves linear, 1.5–2 mm. wide..............................28. C. arsenii
2. Beak of perigynium long (1 mm.); pistillate scales aristate; spikes longer (up to 6 cm.); leaves setaceous, 0.5 mm. wide..............................29. C. longissima
1. Spikes with 2–15 perigynia; beak of perigynium obliquely cut; leaves 1.5–2 mm. wide.........................30. C. oreocharis

11. MONTANAE

1. Fertile culms all alike, elongated, 5–50 cm. long, bearing both staminate and pistillate spikes; basal spikes absent.
2. Perigynium-body (excluding stipitate base and beak) narrowly obovoid, much longer than wide.......................31. C. physorhyncha
2. Perigynium-body (excluding stipitate base and beak) nearly globose, about as long as wide.
3. Perigynium-beak shallowly bidentate, the body many-nerved; pistillate scales obtuse to cuspidate, reddish-brown-tinged; staminate scales strongly reddish-brown-tinged; culms slender..................32. C. turbinata
3. Perigynium-beak deeply bidentate, often ciliate, the body many-ribbed; pistillate scales acuminate to short-awned, light-colored; staminate scales greenish-white, slightly or not at all reddish-brown-tinged; culms strict.........................33. C. leucodonta
1. Fertile culms of two types, some short, 1–5 cm. long, partly hidden among the densely tufted leaf-bases and bearing only pistillate spikes, others elongated, 5–12 cm. long and bearing both staminate and pistillate spikes.......34. C. geophila

12. TRIQUETRAE

1. Long-peduncled basal pistillate spikes not present; perigynia obscurely, if at all, nerved; pistillate scales copper-red......35. C. triquetra
1. Long-peduncled basal pistillate spikes numerous, perigynia
finely many-ribbed; pistillate scales greenish-white..................36. *C. planostachys*

**13. SCHIEDEANAE**

1. Leaf-blades and culms strongly vesicular-roughened above, glaucous-green, the margins often strongly revolute; perigynia oblong-ovoid, 1–1.25 mm. wide..................37a. *C. schiedeana var. perstricta*

1. Leaf-blades not vesicular-roughened above, light-green; perigynia 1.25–1.75 mm. wide.
2. Perigynia obvoid, 1.75 mm. wide, strongly white-hispid-hirsute, the beak bidentate; leaf-blades flat or channelled at the base, the margins little or not at all revolute..................37. *C. schiedeana*
2. Perigynia oval-ovoid, 1.25–1.5 mm. wide, white-stellate, short-hispid, the beak emarginate; leaf-blades with revolute margins..................37b. *C. schiedeana var. stellata*

**14. SCABRELLAE**

One species..............................................38. *C. scabrella*

**15. INDICAE**

1. Spikes very numerous, widely spreading, in 6–10 panicles, the upper panicles in pairs; perigynia prominently beaked.
2. Mature perigynia (3.5) 4–5 mm. long; achenes 3–3.25 mm. long; pistillate scales 3.4–5 mm. long; style very short, thickish.
3. Perigynia obscurely few-nerved, except for the two prominent lateral nerves, the beak emarginate, obliquely cut, hyaline, papery; pistillate scales chestnut-brown..................39. *C. humboldtiana*
3. Perigynia strongly many-nerved, the beak bidentate, not hyaline; pistillate scales pale-brown or reddish-streaked..................40. *C. standleyana*
2. Mature perigynia 2.3–3.5 mm. long; achenes 1.5–2 mm. long; pistillate scales 2–3 mm. long.
4. Scales acuminate to strongly awned, light reddish-brown or straw-colored; spikes oblong-ovoid to linear-ovlong; perigynia finely many-nerved, the beak greenish, strongly bidentate; style long, rather slender.
5. Perigynia glabrous; scales acuminate or with an awn 1–2 mm. long..................41. *C. polystachya*
5. Perigynia hispidulous; scales acuminate or with an awn 1–10 mm. long.41a. *C. polystachya var. bartlettii*
4. Scales obtuse, acute or the lower short-awned, dark reddish-brown; spikes oblong-ovoid or suborbicular; peri-
gynia less strongly nerved, the beak strongly reddish-brown-tinged, rather shallowly bidentate; style very short, thickish.

6. Leaf-blades 2.5–5 (10) mm. wide; perigynia elliptic-ovoid, 1–1.25 mm. wide, conspicuously nerved, the orifice hyaline, papery, the teeth often poorly defined

6. Leaf-blades averaging 15 cm. wide; perigynia broadly ovoid or subglobose, 1.5–2 mm. wide, very faintly nerved, the orifice not hyaline, the teeth distinct.

1. Spikes rather few, appressed-ascending, in 1–3 panicles, none in pairs; perigynia short-beaked, the beak minutely bidentate; style very short, thickish.

44. C. madrensis

16. BICOLORES

One species.

45. C. hassei

17. LAXIFLORAEE

One species.

46. C. laxiflora var. serrulata

18. GRANULARES

1. More or less cespitose; rootstocks moderately stout, dark-brown; ligule prolonged, acuminate; spikes short (the terminal 6–15 mm., the lateral 5–14 mm. long), the lateral not staminate at the apex; scales short (2 mm.), half the length of the perigynia; perigynia tapering into the beak; style-base not bent.

47. C. atractodes

1. Densely cespitose; rootstocks slender, pale-brown; ligule not conspicuously prolonged, blunt; spikes long (the terminal 14–25 mm., the lateral 20–30 mm. long), the lateral often staminate at the apex; scales 3 mm. long, nearly equaling the perigynia; perigynia abruptly beaked; style-base sharply bent.

48. C. quichensis

19. LONGICAULES

1. Pistillate (lateral) spikes linear, 2.5–3 mm. wide; perigynia 2.5–3.5 mm. long, elliptic-lanceolate or oval-ovoid, glabrous or the margins and beak sparsely pilose.

2. Spikes long (7–20 mm.), slender, many (10–25)-flowered, the terminal androecynous or staminate, the lowest strongly peduncled; perigynia glabrous, green, the lateral ribs not prominent, abruptly contracted into a smooth, short (0.5 mm. long) beak; achenes sessile.

49. C. anisostachys

2. Spikes short (4–12 mm.), stouter, few (5–12)-flowered,
sessile or subsessile, the terminal usually gynaecandrous; perigynia sparsely pilose, red-dotted, the lateral ribs prominent, tapering into an often ciliate beak one-third to one-half the length of the body; achenes short-stipitate

.......................... 50. C. guatemalensis

1. Pistillate (lateral) spikes oblong or linear-oblong, 4–6 mm. wide; perigynia 3.5–4 mm. long, ovoid or obovoid, pubescent or glabrous.

3. Perigynia and scales glabrous or nearly so, the beak bidentate or bidentulate; leaf-blades sparingly pilose beneath.......................... 51. C. longicaulis

3. Perigynia strongly short-pilose, the beak strongly bidentate; scales sparingly pilose; leaf-blades strongly villous beneath.......................... 52. C. coulteri

20. VIRIDIFLORAE

1. Perigynia abruptly beaked (the beak praemorse), conspicuously stipitate, largely concealed by the scales; leaves narrow (3–4 mm. wide).......................... 60. C. caxinensis

1. Perigynia tapering into the beak, sessile, conspicuous in the spikes.

2. Leaves narrow, 2–6 mm. wide.

3. Culms loosely cespitose, the rootstocks elongate; perigynia scarcely beaked......................... 54. C. pertenuis

3. Culms densely cespitose, from a short rootstock; perigynia definitely beaked.

4. Sheaths hispidulous (sometimes very minutely) dorsally.

5. Leaf-blades channeled above and more or less keeled below, 2–4 mm. wide; perigynia 10–40, their beaks sparsely ciliate-serrulate, 0.6–0.8 mm. long...

.......................... 53. C. viridiflora

5. Leaf-blades nearly flat, 3.25–5.5 mm. wide, glabrous; perigynia 30–80, their beaks smooth, 1–1.5 mm. long

.......................... 55. C. perlonga

4. Sheaths glabrous dorsally.

6. Perigynia 3.5–4 mm. long, 2-nerved, sparsely strigose; leaves 5–6 mm. wide........................ 56. C. mackenziana

6. Perigynia 3 mm. long, 2-ribbed and strongly 6–8-nerved, glabrous; leaves 2.5–4.5 cm. long, septate-nodulose........................ 57. C. venosivaginata

2. Leaves broad, 5–24 mm. wide.

7. Scales abruptly aristate; perigynia 3.5 mm. long; leaves 5–15 mm. wide.......................... 58. C. huehuetuca

7. Scales acute, muticous or inconspicuously mucronate; perigynia 5 mm. long; leaves 16–24 mm. wide........

.......................... 59. C. steyermarkii

16
21. SYLVATICAE
One species..........................61. C. conspecta

22. LONGIROSTRES
One species..........................62. C. tunimanensis

23. EXTENSÆ
One species..........................63. C. distentiformis

24. VIRESCENTES
1. Culms from woody, elongate rootstocks, becoming decumbent; perigynia 3 mm. long, strongly ribbed dorsally......

2. Culms cespite, erect; perigynia 2–2.5 mm. long, nerved dorsally..........................65. C. complanata

25. FECUNDÆ
1. Achenes, at full maturity, strongly constricted in the middle.
2. Perigynia obtusely trigonous, not oblique, the short beak straight.
3. Perigynia obovoid or broadly obovoid, 2–3 mm. long, 1.5–2 mm. wide, prominently 2-keeled, otherwise nerveless.
4. Spikes all androgynous; perigynia obovoid, strongly purple-resinous, the beak bidentate; achenes oblong-obovoid; spikes 3–6 cm. long; lower sheaths usually cinnamon-brown..............66. C. tuberculata
4. Upper spikes staminate or nearly so; perigynia broadly obovoid, obscurely resinous, the beak shallowly bidentate; achenes obovoid; spikes 3–10 cm. long; lower sheaths usually reddish-purple............66a. C. tuberculata var. ehrenbergiana
3. Perigynia elliptic obovoid, 3–3.5 mm. long, 1.5 mm. wide.
5. Spikes 8–12; perigynia finely several-nerved as well as strongly 2-keeled, substipitate; leaf-sheaths yellowish-brown tinged and red-dotted..................67. C. psilocarpa
5. Spikes about 20; perigynia nerveless, strongly stipitate; leaf-sheaths reddish-brown.............68. C. ballstii
2. Perigynia compressed-triangular, oblique, the long beak somewhat excurved..................75. C. jamesonii
1. Achenes not constricted in the middle; perigynia compressed-triangular, oblique, the long beak somewhat ex-
curved; perigynia nerved as well as 2-keeled (except in C. cortesii and C. donnell-smithii).

6. Achenes trigonous; stigmas 3; perigynia not hispid-serrulate (in C. tojquianensis sometimes minutely hispidulous above).


8. Bract-sheaths long-sheathing (up to 8 cm.); ligule wider than long; perigynium-beak obliquely cut, at most minutely bidentate.............70. C. chiapensis

9. Bract-sheaths scarcely sheathing (rarely developing, a sheath up to 1.7 cm. in C. chordalis); ligule much longer than wide; perigynium-beak clearly bidentate.

10. Perigynia serrulate on the angles, shorter than the spikes; spikes 15–45, 2.5–15 cm. long; scales rough-awned or cuspidate.

11. Perigynia nerved as well as 2-keeled; spikes linear-cylindric, 5–15 cm. long; lower sheaths usually cinnamon-brown........69. C. chordalis

12. Perigynia 2-keeled, otherwise nerveless or nearly so; spikes 2.5–7 cm. long; lower sheaths dull purplish-brown........71. C. cortesii

13. Peduncles smooth, longer than the spikes; spikes 3–4, 2–3.5 cm. long; scales obtuse to subacute........72. C. tojquianensis

7. Achenes oblong-ovoid, purplish-black at maturity; lower sheaths purplish-brown.

14. Perigynia 2.5 mm. long, their beaks with very short teeth; spikes 2.5–7 cm. long; scales reddish-brown ........73. C. melanosperma

15. Perigynia 3.5–5 mm. long, their beaks with slender teeth 0.5 mm. long; spikes 3–12 cm. long; scales purplish-black ........74. C. donnell-smithii

6. Achenes lenticular; stigmas 2; perigynia hispid-serrulate above....................76. C. lemanniana

26. ATRATAE

One species.................................77. C. bella

27. ACUTAE

1. Perigynium-beak entire or slightly emarginate; achenes 1.5 mm. long.

2. Ligule much wider than long; sheaths glabrous ventrally; strongly septate-nodulose dorsally; long horizontal rootstocks numerous.............78. C. emoryi

2. Ligule as long as wide; sheaths hispidulous, only sparingly septate-nodulose dorsally; horizontal rootstocks short, stout.........................80. C. eurycarpa

18
1. Perigynium-beak bidentulate; achenes 1.75 mm. long......79. C. endlichii

28. HISPIDAE

1. Perigynia 3–4.5 mm. long, broadly obovoid, very abruptly short-beaked, obscurely few- to several-nerved, wider than, and not concealed by, the scales; achenes substipitate; lowest bract short-sheathing.

2. Perigynia squarrose-spreading, at maturity becoming inflated, glabrous; achenes elliptic-obovoid; style abruptly bent.........................81. C. spissa

2. Perigynia usually appressed-ascending, little or not at all inflated.

3. Perigynia glabrous, red-striolate; achenes elliptic-obovoid; style straight; scales acute to moderately short-awned..................81a. C. spissa var. ultra

3. Perigynia sparsely setose-scabrous toward the apex, red-dotted; achenes narrowly oblong-obovoid; style usually abruptly bent; scales acuminate, usually long-aristate..................81b. C. spissa var. seatoniana

1. Perigynia 7–8 mm. long, elliptic-lanceolate, tapering at the apex, slenderly many-nerved, largely concealed by the scales; achenes long-stipitate; style elongate, straight; lowest bract long-sheathing.......................82. C. pringlei

29. PSEUDOCYPEREA

1. Perigynia suborbicular in cross-section, more or less inflated, membranaceous or submembranaceous; rootstocks with long, slender, horizontal stolons; leaves septate-nodulose.

2. Perigynia 5–7 mm. long, inflated, the beak about 2 mm. long; achenes obovoid; body of scale small.........................83. C. hystricina

2. Perigynia 4–5 mm. long, slightly inflated, the beak 1.5 mm. long, their lateral ribs vanishing at the base of the beak; achenes oblong-obovoid; body of scale large..........................84. C. thurberi

1. Perigynia (especially the beak) flattened-triangular, scarcely inflated, coriaceous, their lateral ribs prominently extending into the teeth of the beak; culms not stoloniferous; leaves very strongly septate-nodulose.

3. Teeth of perigynia recurved-spreading, 1.25–2 mm. long; body of beak 1.5–2 mm. long; perigynium-stipe strongly oblique.................................85. C. comosa

3. Teeth of perigynia erect, 1 mm. long; body of beak 1 mm. long; perigynium-stipe straight.............86. C. polysticha
30. SQUARROSÆ

One species......................................................87. *C. frankii*

31. VESICARIAE

One species.....................................................88. *C. lurida*
SPECIES DESCRIPTIONS

1. § CAPITATAE

1. Carex capitata L. (3)


Loosely to densely cespitose, with short-creeping, purplish-red rootstocks; *culms* 10–35 cm. high, slender, wiry, shorter than to much longer than, the leaves, purplish-red at the base, the old leaves persistent; *leaves* usually 2–4 to a culm, the blades involute, filiform, stiff, pale-green, the sheaths truncate at the mouth with a very short ligule; *spike* solitary, androgynous, globose or ovoid, 4–10 mm. long, 3–7 mm. wide, generally brownish-green; *bract* none; *pistillate scales* orbicular to broadly ovate, obtuse, dark-brown with broad hyaline margins and apex, shorter and narrower than the perigynia; *perigynia* spreading or ascending, plano-convex, ovate, 2.3–3.5 mm. long, 1.5 mm. wide, nerveless ventrally, finely few-nerved dorsally, sessile, the margin smoother with only very sparse hairs, abruptly contracted into a smooth, brownish short beak, less than 1 mm. long; *achenes* lenticular, 1.5×1 mm.; *stigmas* 2, slender; *rachilla* bristlelike, shorter than the achene.

Known in our area from only a single collection: marshes, Mound Valley, south of Pacheco, Chihuahua, *C. V. Hartman 687*, June 10, 1891 (F; GH; US). Alpine or subalpine; Greenland to Hudson Bay and Alaska, southward very locally to New Hampshire, Alberta, Wyoming, Nevada, California, and northern Mexico; also northern Eurasia.
Plate 1. CAREX CAPITATA
2. § DIVISAE

2. Carex praegracilis W. Boott (19)

Carex praegracilis W. Boott, Bot. Gaz. 9: 87. 1884

Rootstocks thick, blackish, long-creeping; culms arising singly in small clumps, 20–75 cm. high, sharply triangular, usually roughened above and exceeding the leaves; leaves clustered near the base of the culms, flattened or somewhat channeled, 1.5–3 mm. wide, the sheaths truncate at the mouth, the ligule very short; spikes 5–15, densely aggregated into a linear-oblong or oblong-ovoid head 1–5 cm. long, 5–10 mm. thick, the lower spikes sometimes separate, androgynous (occasionally almost entirely stamine or pistillate), the staminate flowers inconspicuous; scales ovate, acuminate, or cuspidate, light chestnut with conspicuous hyaline margins and pale midrib, wider and longer than the perigynia; perigynia plano-convex, ovate to ovate-lanceolate, sharp-margined, 3–4 mm. long, about 1.5 mm. wide, brownish-black at maturity, coriaceous, dull, flat and nerveless ventrally, rounded and lightly several-nerved dorsally, short-stipitate, tapering into a serrulate beak half the length of the body or more, the orifice with overlapping hyaline edges; achenes lenticular, obovoid, about 1.25 mm. long; stigmas slender, reddish-brown.

A polymorphic species fairly common in moist, open habitats, chiefly on the plains but occasionally in open woods up to 9,000 ft. from Chihuahua southward to the Distrito Federal. Manitoba, Iowa, and Kansas westward to the Yukon, British Columbia, California, and Mexico, and adventive eastward.
Plate 2. CAREX PRAEGRACILIS
3. § POTOSINAЕ

3. Carex potosina Hemsl. (23)


Cespitose, but with long, slender, deep-seated, brown, scaly root-stocks; culms stiff, 1.5–3 dm. high, clothed at the base with old leaves; leaves with well-developed blades 4–10 to a culm, on the lower fourth, the blades 1–2 dm. long, 2–3 mm. wide, rather thick, flat, canaliculate, the margins roughened toward the apex, the sheaths tight, thin and hyaline ventrally, thickened and prolonged at the mouth, the ligule wider than long; spikes 2–5, androgynous, 7×5 mm., forming a head 1–3 cm. long, 7 mm. wide; lower bracts 3–12 cm. long, 1 mm. wide, enlarged at the base, the upper scale-like; scales acuminated to awned, yellowish-brown with green, three-nerved center and hyaline margins; staminate flowers inconspicuous; perigynia few, erect-ascending or spreading, plano-convex, ovate, 5 mm. long, 2.5 mm. wide, very thick, coriaceous, sulcate-nerved dorsally, strongly granular-tuberculate, serrulate to the middle, sharp-edged to the sub stipitate base, rather abruptly narrowed into a serrulate, bidentate and obliquely cut beak about 2 mm. long, dark-chocolate-brown with green upper margins; achenes lenticular, 2.5×2 mm., sub stipitate, jointed with the deciduous style which is enlarged at the base.

Frequent on dry plains and slopes up to 7,000 ft., Coahuila, Zacatecas, and San Luis Potosí.
Plate 3. CAREX POTOSINA
4. § BRACTEOSAE

4. Carex vallicola Dewey (31)


Cespitose from short-prolonged, fibrillose rootstocks; *culms* slender, 2–6 dm. high, roughened on the angles below the head; *leaves* about 3 to a culm, 1–1.5 mm. wide, thin, the sheaths light, thin ventrally, the ligule very short, wider than long; *spikes* closely aggregated into a dense, terminal, oblong-linear head, 1.5–2.5 cm. long, 6–8 mm. wide, the staminate flowers terminal and inconspicuous; *scales* broadly triangular, shorter than the perigynia, hyaline with the centers brownish and one–three-nerved, acute to short-cuspidate; *perigynia* plano-convex, oblong-elliptic, 3.5–3.75 mm. long, 1.75–2.25 mm. wide, margined, greenish or brownish-tinged, nerveless ventrally, obscurely nervèd dorsally, glossy at maturity, the margin more or less serrulate above, abruptly narrowed into a minutely serrulate beak about 1 mm. long, obliquely cut and only shallowly bidentulate; *achenes* lenticular, orbicular, substipitate, 2×2 mm.

Rare or infrequent in dry soil in the mountains up to 9,500 ft.; Hidalgo and the State of Mexico. South Dakota to Montana, Oregon, California and Mexico.

A characteristic of *C. vallicola* (and its var. *hidalgensis*) that distinguishes it readily from other sedges is the dorsal bulging of the mature perigynium. The distention is so pronounced that the resultant stretching of the perigynium walls displaces the thickened margins so that they run down the ventral surface of the perigynium.

4a. Carex vallicola var. hidalgensis F. J. Herm. (31a)


Differs from typical *C. vallicola* in its markedly broader and prominently bidentate perigynium-beak which is not hyaline-tipped. Also the inflorescence tends to be broader and subcapitate rather than spiciform as in the typical form.

Rare or local on open mountain slopes; known only from two collections in the State of Hidalgo, Mexico (Buena Vista, C. G. Pringle 13,429 (GH; MICH), Aug. 6, 1904, and Pachuca, E. Hernandez X. 465 (in part) (MICH), Aug. 27, 1944).
Plate 4a. CAREX VALLICOLA
VAR. HIDALGENSIS

Plate 4. CAREX VALLICOLA
5. *Carex involucratella* Mack. (36)


Rootstock short, stout, black, woody and fibrillose; *culms* 3–7 dm. high, phyllopodic, pale-brownish at the base, the old leaves conspicuous; *leaves* with well-developed blades 6–8 to a culm, on the lower fourth, the blades 1.5–3 dm. long, 3–5.5 mm. wide, rather thick, flat or channelled, roughened on the margins, the sheaths tight, concave and slightly thickened at the mouth, the ligule wider than long, usually colored on the margin; *spikes* 10–20, androgynous, forming a head 2–3 cm. long, 1.35–1.60 cm. wide; *lower bracts* elongate, the upper scale-like; *scales* acute or cuspidate, greenish or whitish with light-yellowish-brown hyaline margins, three-nerved; *staminate flowers* inconspicuous; *perigynia* 10–20 to a spike, appressed or ascending, plano-convex, 4.25 mm. long, 2.5–3 mm. wide, submembranaceous, stramineous, ribbed dorsally, sharp-margined, serrulate above, stipitate, the beak 1.5 mm. long, serrulate, dorsally cleft, bidentate, the teeth triangular-subulate, appressed, the sutures conspicuous; *achenes* lenticular, 2 × 1.75 mm., substipitate, apiculate, jointed with the short basally enlarged style.

Infrequent or rare on dryish hillsides and roadsides in central Mexico (San Luis Potosí, Queretaro, and Distrito Federal).
Plate 5. CAREX INVOLUCRATELLA
6. Carex occidentalis Bailey (38)


Rootstocks short-creeping, stout, black, fibrillose; *culms* slender, exceeding the leaves, sharply triangular, roughened above; *leaves* flat but the margins somewhat revolute, 1.5–2.5 mm. wide, the sheaths tight, the ligule variable, sometimes longer than wide but as often wider than long; *spikes* 4–10, the upper aggregated and indistinguishable in the lax, oblong to linear-oblong head, 1.5–3 cm. long, the lower somewhat separate, androgynous, the staminate flowers inconspicuous, the perigynia loosely ascending or somewhat spreading; *scales* ovate-triangular, about the length of the perigynia but somewhat wider and largely concealing them, acuminate or short-awned, brownish with opaque margins and green center; *perigynia* plano-convex, oblong-elliptic, 2.5–4.5 mm. long, 1.5–1.75 mm. wide, greenish straw-colored, in age brownish, the sharp margin narrow and green, sparingly serrulate above the middle, stipitate, abruptly narrowed into a serrulate, shallowly bidentate beak about one-third to one-half the length of the body; *achenes* lenticular, oblong-orbicular, 2×1.5 mm.

The occurrence of this species in Mexico is questionable since the record is based upon two very depauperate, atypical specimens (*E. Hernandez X. 486 & 487*) from a roadside bank (9,200 ft.), Real del Monte, near Pachuca, Hidalgo (Aug. 27, 1944), and a very immature collection (*D. E. Breedlove 19,216*) from a steep, moist slope, 3 mi. N. of Los Ornos along road to Ocurahui, Mun. de Badiraguato, 6,500 ft., Sinaloa.

Wyoming, Colorado, and Utah southward to New Mexico, Arizona, central Mexico (?), and California.
Plate 6. CAREX OCCIDENTALIS
7. Carex xalapensis Kunth (42)


Cespitose from short, stout, black, fibrillose rootstocks; _culms_ 6–9 dm. high, 2.5–3 mm. thick at the dull-brown base, the old leaves conspicuous; _leaves_ with well-developed blades about 5 to a culm, on the lower third, the blades 1–3.5 dm. long, 2.5–3.25 mm. wide, stiff, flat or channelled, roughened on the margins and toward the apex, the sheaths tight, concave and slightly thickened at the yellowish-brown-tinged mouth, the dark-margined ligule wider than long; _spikes_ 6–12, androgynous, 5 mm. long, forming a head 15–35 mm. long, about 1 cm. wide; _lower 2–3 bracts_ 2–4 cm. long, slightly enlarged at the base; _scales_ acuminate or cuspidate, reddish-brown or yellowish-brown-tinged, the center green, three-nerved, the margins hyaline; _staminate flowers_ inconspicuous; _perigynia_ 10–20 to a spike, 3–3.5 mm. long, 2–2.25 mm. wide, ascending-spreading, plano-convex, membranaceous, light-green to yellowish-brown, few-nerved dorsally, sharply margined, serrulate above, coryck-thickened below, sub stipitate, the beak 1 mm. long, dorsally cleft, bidentate, the teeth subulate-triangular, the sutures conspicuous; _achenes_ lenticular, 1 mm. long, filling the perigynia, stipitate, apiculate, jointed with the style at its enlarged base.

Fairly common on open or wooded, usually dryish slopes; occasional in moist (especially pine) woods, up to 9,200 ft., from Chihuahua, south to Chiapas, and Guatemala.
Plate 7. CAREX XALAPENSIS
5. § MULTIFLORAE

8. Carex agrostoides Mack. (55)


Densely cespitose from short, stout rootstocks; _culms_ 4–8 dm. high, exceeding the leaves, roughened on the angles, the base clothed with dried leaves; _leaves_ very long-attenuate, 1–5 mm. wide, stiff, flat below becoming involute and roughened above, the sheaths tight, conspicuously white-hyaline and somewhat red-dotted ventrally, the ligule wider than long; _spikes_ very numerous, androgynous or staminate at the base and apex, aggregated into a decompound head 4–12 cm. long, 8–20 mm. thick, the lower usually more or less separate, the perigynia appressed; _scales_ oblong-ovate or lanceolate, rather obtuse or acuminate or short-awned, greenish-straw-colored or pale brown, the three-nerved, green center becoming whitish in age, the margins conspicuously hyaline, wider but slightly shorter than the perigynia; _perigynia_ plano-convex, lanceolate-cuneate, 2.5–3.5 mm. long, 0.9–1.5 mm. wide, light greenish, becoming straw-colored, narrowly sharp-margined to the round-tapering, short-stipitate base, serrulate above, nerveless ventrally, obscurely few-nerved dorsally, tapering above into a serrulate, bidentate, white-tipped beak as long as or longer than the body; _achenes_ lenticular, narrowly oblong-ovoid, yellowish-brown, 1.5 × 0.5 mm., substipitate.

Occasional in arid habitats from Baja California and Chihuahua to Durango, Mexico. Southern Arizona and New Mexico to Mexico.
Plate 8. CAREX AGROSTOIDES
9. Carex marianensis Stacey (58)


Rootstocks short, woody, blackish, fibrillose; *culms* 6–9 dm. high, 4–5.5 mm. thick at the light-brownish base, smooth, phyllo-podic; *leaves* with well-developed blades 5–8 to a culm, on the lower fourth, the blades 1–2 dm. long, 3.5–6 mm. wide, flat, roughened on the slightly revolute margins toward the apex, the sheaths tight, septate-nodulose dorsally, usually red-dotted ventrally and high-convex near the mouth, the ligule very short; *spikes* 8–20, androgynous, forming a head 2–8 cm. long, 8–20 mm. wide; *lower bracts* setaceous, the upper scale-like; *scales* acute or cuspidate, light-brown with one- three-nerved center and hyaline margins; *staminate flowers* inconspicuous; *perigynia* 5–20 to a spike, plano-convex, 3.5–4 mm. long, 1.5–2 mm. wide, appressed or spreading, membranaceous, greenish-straw-colored, obscurely nerved, sharp-edged, serrulate above, spongy at the base, the beak 1.25 mm. long, serrulate, dorsally cleft, bidentate; *achenes* lenticular, 2×1.5 mm., yellowish, stipitate, apiculate, jointed with the style.

Fairly common in meadows, occasionally in forests, chiefly in the mountains up to 11,000 ft.; endemic to Mexico, from Chihuahua to Chiapas.
Plate 9. CAREX MARIANENSIS
10. Carex percostata F. J. Herm. (58.1)


Rootstocks stout, woody, short-creeping, blackish, fibrillose; *culms* 3–6 dm. high, erect, about twice the length of the leaves, bluntly triangular and coarsely ribbed, smooth except below the head where scaberulous, phyllopodic; *leaves* 3–6 to a fertile culm, clustered near the base, the blades flat, stiff, dull-green, 1–3 dm. long, 3–4 mm. wide, the margins roughened toward the long-attenuate apex, the sheaths hyaline ventrally, scarcely prolonged at the mouth, the ligule short, usually broader than long; *head* broadly oblong to ovoid-oblong, 2–2.5 cm. long, 1–1.5 cm. wide, the spikes 7–12, androgynous, aggregated or the lower more or less separate, ovoid, with 5–8 ascending or at length spreading perigynia, the staminate portion prominent; *bracts* squamiform, the lower one or two generally abruptly setaceous-prolonged; *scales* ovate, acute or short-cuspidate, narrower than, and about the length of, the bodies of the perigynia, dirty-brown with very narrow hyaline margins and stramineous, one-three-nerved center; *perigynia* unequally biconvex, oblong-ovoid, 4–5 mm. long, 2.25–2.5 mm. wide, lustrous, tawny-stramineous, the upper half becoming brown, coriaceous, heavily 10–15-ribbed and furrowed on both faces, scarcely sharp-edged, serrulate on the upper third, abruptly tapering into a serrulate, bidentulate, dorsally cleft beak one-fourth the length of the body, the base very spongy and rounded or abruptly tapering to a short stipe; *achenes* lenticular, obovate, olive-brown, 2.5×2.2 mm., apiculate.

Infrequent in meadows and swales, up to 7,000 ft.; Chihuahua, Durango, and Guerrero.
Plate 10. CAREX PERCOSTATA
6. § VULPINAE

11. Carex chihuahuensis Mack. (73)


Loosely cespitose from long-creeping rootstocks; _culms_ 2–4 dm. high, aphyllopodic, slender, exceeding the leaves; _leaves_ clustered toward the base, flat or channeled, rather thick, 2–3 mm. wide, roughened toward the apex, the sheaths tight, somewhat red-dotted toward the mouth, the ligule very short, wider than long; _spikes_ densely aggregated (or the lower separate) into a simple or somewhat compound, ovoid or oblong head, 2–7 cm. long, 7–15 mm. thick, the spikes scarcely distinguishable, the apical staminate flowers inconspicuous; _scales_ oblong-ovate, obtuse, brown or light brownish with paler center and white-hyaline margins, as wide as but somewhat shorter than the perigynia; _perigynia_ plano-convex, narrowly ovate, 3.5 mm. long, 1.5 mm. wide, straw-colored or yellowish-brown-tinged, sharp-margined, conspicuously several-nerved dorsally and less so ventrally, short-stipitate, serrulate above the middle, tapering into a serrulate, deeply bidentate beak one-fourth to one-third the length of the body; _achenes_ lenticular, oval, 1.5 × 1 mm.

Local in the mountains of Chihuahua, in both moist and rocky habitats at 5,000 to 8,000 ft.; also in southeastern Arizona (Pinaleno Mountains, Graham County).
Plate 11. CAREX CHIHUAHUENSIS
12. Carex interior Bailey (105)


Densely cespitose from short, dark-colored rootstocks; *culms* erect or ascending, slender but firm, wiry and strict, sharply triangular, 1.5–5 dm. high, usually longer than the leaves; *leaves* about 3 to a culm, thin, flat or slightly channeled, 1–3 mm. wide, the sheaths tight, the ligule wider than long; *spikes* 2–4 (–6), somewhat, but not closely, crowded into an oblong head, the terminal usually gynaecandrous and long-clavate, but sometimes entirely staminate and narrowly linear or almost entirely pistillate and oblong, the 1–10 perigynia of the lateral spikes widely spreading at maturity; *scales* broadly ovate, very obtuse, yellowish-brown with broad white-hyaline margins and green center, half the length of the bodies of the perigynia; *perigynia* concavo-convex, oblong-ovoid to deltoid, 2.25–3.25 mm. long, 1.5–2 mm. wide, plump and firm, the body broadest just above the base, thick-margined, olive-green becoming brown, several-nerved dorsally, nerveless to definitely nerved ventrally, rather abruptly narrowed into a sparingly serrulate, shallowly bidentate beak about one-third or one-fourth the length of the body, the ventral false suture inconspicuous; *achenes* lenticular, broadly ovate-orbicular, 1.25 × 1.5 mm.

In our area known from a single collection from Mexico: Cañada de Contreras, vicinity of Dinamo Quarter, 9,800 ft., Distrito Federal. Labrador to British Columbia, southward to Pennsylvania, Kansas, northern California, and central Mexico.

12a. *Carex interior* f. *keweenawensis* (F. J. Herm.) Fern. (105a)


Differing from typical *C. interior* in having the perigynia conspicuously nerved ventrally instead of nerveless or few-nerved only at the base.

Known in our area from two collections in Mexico: Colonia Garcia, and near Colonia Juarez, Sierra Madre, Chihuahua.
Plate 12. CAREX INTERIOR
13. Carex townsendii Mack. (115)

*Carex townsendii* Mack., *N. Amer. Fl.* 18(2) : 111. 1931.

Cespitose from short, blackish, fibrillose rootstocks; *culms* 2–3.5 dm. high, smooth or roughened beneath the head, brownish and fibrillose at the base; *leaves* 5–6 to a culm, on the lower third, the blades 1–2 dm. long, 2–2.5 mm. wide, canaliculate, rather thick, stiff, light-green, roughened above, erect or recurved-spreading, the sheaths tight, hyaline and yellowish-green-tinged ventrally, convex and slightly thickened at the mouth, the ligule wider than long; *spikes* 5–8, pistillate or the uppermost gynaecandrous, 5–8 mm. long, 5–6 mm. wide, forming a head 2–4 cm. long; *lower bract* setaceous, the others scale-like; *scales* rather obtuse, chestnut-brown with three-nerved, green center and hyaline margins; *staminate* flowers few; *perigynia* 8–20 to a spike, 3–3.5 mm. long, 1.5–1.75 mm. wide, spreading, plano-convex, rather thick, membranaceous, lightly nervèd dorsally, sharp-edged, serrulate toward the beak, spongy at the base, the beak 1 mm. long, serrulate, obliquely cut dorsally, bidentate; *achenes* lenticular, 1.75×1.5 mm., yellowish-brown, stipitate, apiculate, jointed with the deciduous style.

Occasional in bogs and on banks of streams in the mountains, up to 11,000 ft., from Chihuahua to Guatemala.
Plate 13. CAREX TOWSENDII
14. *Carex angustior* Mack. (117)

*Carex angustior* Mack. in Rydb., Fl. Rocky Mts. 124. 1917.

Densely cespitose from very short rootstocks; *culms* very slender but strict, 1–6 dm. high, sharp-angled and roughened above, about equaling the leaves; *leaves* 2–4 to a culm, 0.75–2 mm. wide, flat or channeled, the sheaths tight, more or less red-dotted ventrally, the ligule as wide as long; *spikes* 2–5, approximate or little separate, the terminal gynaeandrous, the lateral pistillate, 5–15-flowered, forming a head 1–2(3) cm. long, the perigynia widely spreading at maturity; *scales* ovate, shorter than the perigynia, yellowish with green midrib; *perigynia* plano-convex, lanceolate to lanceolate-ovate, 2.5–3.5 mm. long. 1–1.4 mm. wide, nerveless ventrally and obscurely nervèd dorsally, yellowish-brown, sharp-edged with slightly raised smooth margins, tapering into a sparingly serrulate, deeply bidentate beak more than half the length of the body; *achenes* lenticular, ovate, 1.75 × 1 mm., yellowish.

Infrequent, usually in wet soil at high elevations; Distrito Federal (Desierto de los Leones), Mexico and Departments of Huehuetenango and Totonicapan, Guatemala. Newfoundland to Maryland and in the mountains to North Carolina, westward to Washington, California, Mexico, and Guatemala.
Plate 14. CAREX ANGUSTIOR
8. § DEWEYANAE

15. Carex bromoides Schkuhr (120)

*Carex bromoides* Schkuhr in Willd., Sp. Pl. 4: 258. 1805.

Densely cespitose from long, blackish, fibrillose rootstocks; *culms* 2.5–8 dm. high, slender, rough on the angles above, brownish and clothed with old leaves at the base; *leaves* with well-developed blades 2–5 to a fertile culm, on the lower fourth, the blades 3–7 cm. (up to 7 dm. on the sterile culms) long, 1–2.5 mm. wide, flat, roughened on the margins and toward the apex, the sheaths tight, thin and hyaline ventrally, concave and slightly thickened and prolonged at the mouth; *spikes* 2–7, gynaecandrous, androgynous, pistillate or staminate, the lower 5–20 mm. long, 3–4 mm. wide, forming a head 2–6 cm. long; *lower bracts* prolonged, the upper scale-like; *scales* thin, rather obtuse to acuminate, straw-colored or brownish with three-nerved, green center and white-hyaline margins; *perigynia* 6–15 to a spike, 4.5–5 mm. long, 1–1.3 mm. wide, erect-appressed, plano-convex, thin, membranaceous, pale-green, few-nerved, sharp-margined to the middle, serrulate above, the lower third corky, substipitate, the beak 1.5–2 mm. long, serrulate, bidentate, the dorsal suture reddish-brown margined; *achenes* lenticular, 2 × 0.75 mm., tightly enveloped, yellowish-brown, stipitate, apiculate, jointed with the deciduous style.

Plate 15. CAREX BROMOIDES
9. § OVALES

Subsection I. Festivae

16. Carex volcanica F. J. Herm. (126.1)

Carex volcanica F. J. Herm., Brittonia 23 (2) : 144. 1971.

Cespitose, but having stout, short-creeping rootstocks; culms 12–70 cm. high, strict, obtusely triquetrous, striate, 2–3.5 mm. thick at the base, exceeding the leaves, aphyllopodic; leaves with well-developed blades 3–6 to a culm, aggregated toward the base, the blades flat, 8–20 cm. long, 2–4 mm. wide, roughened toward the acuminate apex, the sheaths tight, white-hyaline ventrally, the ligule wider than long; spikes 4–12, gynaecandrous, oblong-ovoid, 6–9 mm. long, 3–6 mm. wide, sessile, with numerous, appressed perigynia forming a head 1–2 cm. long, 7–15 mm. wide; bracts shorter than the inflorescence; scales ovate-lanceolate, short-acuminate, brown with more or less hyaline margins, not concealing the perigynia; perigynia thin-plano-convex, narrowly lanceolate, 3–4.75 mm. long, 1.1–1.5 mm. wide, chartaceous, brown or blackish-brown, three- seven-nerved on both faces, very narrowly winged, contracted to the sessile, spongy base, narrowed above into a narrow, serrulate beak 1–1.5 mm. long, terete at the dark-brown apex; achenes lenticular, oblong-ovoid, 1.5×1 mm., sessile; anthers short-persistent, apiculate, 1.3–1.75 mm. long.

Frequent to fairly common on slopes of volcanic mountains, from 10,000 to 13,000 ft., in Mexico (Michoacan, Mexico, Distrito Federal, Puebla, and Veracruz), and from the Department of Huehuetenango (11,000 ft.), Guatemala.
Plate 16. CAREX VOLCANICA
17. Carex bonplandii Kunth (134)


Rootstocks long-creeping, slender; culms arising one to several together, sharply triangular, 0.5–6 dm. high, exceeding the leaves; leaves 2–8 to a culm, clustered at the base, rather thick, flat or channeled, 1–3.5 mm. wide; spikes 3–12, distinct but more or less aggregated into a head 1–3 cm. long, 0.5–2 cm. thick, the individual spikes with 5–20 closely appressed perigynia with erect-appressed beaks; lower bract brownish with hyaline margins, dilated at the base, cuspidate, short (0.5–1 cm.) to long and equaling or even exceeding the head; scales ovate, light- to dark-chestnut-brown with lighter midrib and narrow, hyaline margins, as wide as, but shorter than, the perigynia; perigynia plano-convex, or sometimes concave ventrally, thick, coriaceous, narrowly ovate or lanceolate, 3–4 mm. long, 1–1.25 mm. wide, light-green becoming brownish, very narrowly margined almost to the base, serrulate above the middle, lightly several-nerved dorsally, few-nerved toward the base ventrally, tapering into a serrulate, at length bidentulate, beak half the length of the body or more, the tip terete, smooth, chestnut-brown, hyaline at the orifice, the dorsal suture conspicuous to the top of the achene; achenes lenticular, oblong-ovoid, 1.5–1.75×0.75–1 mm., short-stipitate, yellowish-brown; anthers deciduous, apiculate, 1.5 mm. long.

Montane meadows and creek banks; Oaxaca (Sierra de San Filipe, 10,000 ft.), Guatemala (Department of Huehuetenango); fairly common in Costa Rica. Arizona (Gila County) to southern Mexico, Guatemala, Costa Rica, and Peru.
Plate 17. CAREX BONPLANDII
18. Carex purdiei Boott (135)

_Carex purdiei_ Boott, Ill. Carex 26, Pl. 67. 1858.

Cespitose from creeping, stout, woody, blackish, fibrillose root-stocks; _culms_ 2.3–8 dm. high, stiff, roughened beneath the head, aphyllopodic, clothed with the old leaves at the light-brownish base; _leaves_ with well-developed blades 3–5 to a fertile culm, on the lower third, their blades 1–2 dm. long, 1.5–3.5 mm. wide, rather stiff, flat or canaliculate, the sheaths tight, thin and white-hyaline ventrally, prolonged at the mouth, truncate; _sterile shoots_ conspicuous; _spikes_ 6–12, gynaecandrous or pistillate, 5–7 mm. long, 4–5 mm. wide, forming a head 2–4.5 cm. long; _lower bracts_ setaceous; _scales_ acutish, thin, light-chestnut-brown-tinged with a green, three-nerved center and hyaline margins; _perigynia_ 6–20 to a spike, appressed-ascending, ovate, 3.5 mm. long, 1.5 mm. wide, plano-convex, rather thick, subcoriaceous, greenish or yellowish-green, finely nervet dorsally, sharp-edged, serrulate above the middle, spongy at the stipitate base, the serrulate beak much shorter (1 mm. long) than the body, obliquely cut dorsally, bidentate, reddish-brown-tinged, the dorsal suture conspicuous; _achenes_ lenticular, 1.7×1 mm., yellowish or in age dark-colored, stipitate, apiculate, jointed with the deciduous style.

Fairly common in wet habitats in the mountains of Costa Rica at 6,000 to 10,000 ft. A collection from Iztaccíhuatl, State of Mexico, may be this species but it is too immature for certainty. Also in Colombia.
Plate 18. CAREX PURDIEI
19. Carex subbracteata Mack. var. toluensis F. J. Herm. (143a)


Cespitose from short, blackish, fibrillose rootstocks; *culms* 3–10 dm. high, stiff, obtusely triangular, smooth, light-brownish at the base; *leaves* with well-developed blades, 3–5 to a fertile culm, on the lower third, the blades 0.8–2.5 dm. long, 2.25–3.75 mm. wide, flat, stiff, the sheaths tight, hyaline ventrally, thin and prolonged at the mouth; *spikes* 4–10, gynaecandrous, 6–10 mm. long, 4–6 mm. wide, forming a head 14–22 mm. long; *lower bracts* dilated at the base, brown with hyaline margins; *scales* more or less obtuse, reddish-brown with pale center and white-hyaline margins; *stamineate flowers* few; *perigynia* 10–20 to a spike, 4.25–4.5 mm. long, 2.25 mm. wide, appressed-ascending, plano-convex, thick, coriaceous, dull-greenish to yellowish-brown, nerveless, serrulate above, spongy at the substipitate base, abruptly narrowed into an incurved, serrulate, bidentulate beak about 1 mm. long, hyaline at the apex; *achenes* lenticular, 2×1.5 mm., thick, substipitate, apiculate, jointed with the deciduous style.

Known from a single collection; steep hillside (west-facing slope covered with *Pinus-Abies* woods and tussock grasses), 9,186 ft., 17 mi. S.W. of Toluca on road to Temaxcaltepec, State of Mexico, July 9, 1964, *G. Mick & K. Roe 236* (MICH). Typical *C. subbracteata* is found in the Coast Ranges of California.
Plate 19. CAREX SUBBRACTEATA VAR. TOLUCENSIS
Subsection II. *Festucaceae*

20. *Carex diehlii* M. E. Jones ex F. J. Herm. (166.1)


Cespitose from stout, brown rootstocks; *culms* 3.4–5 dm. high, stiff, almost twice the length of the leaves, coarsely striate, obtusely triangular and smooth below, somewhat acutely angled and more or less scabridulous below the heads; *leaves* with well-developed blades 3–5 to a fertile culm, chiefly on the lower third, the blades conspicuously canaliculate, erect, 4–15 cm. long, 1.5–4 mm. wide, the long-attenuate, scabridulous apex more or less trigonous, the sheaths tight, ventrally white-hyaline, thin, generally ruptured and sometimes brown-stained in age, concave at the mouth, becoming strongly fibrillose with age, the ligule slightly wider than long; *spikes* 5–7, gynaecandrous, sessile, aggregated into an ovoid to broadly oblong head 15–20 mm. long, 10–14 mm. wide, the perigynia 9–20, ascending to erect-appressed; *bracts* prolonged-squamiform, long attenuate, the lowermost sometimes almost leaf-like and somewhat exceeding to twice the length of the head; *scales* oblong-lanceolate, acute to acuminate, chestnut-brown, narrowly hyaline-margined, prominently one-nerved, carinate and hyaline along the midrib, 4 mm. long, not concealing the perigynia; *perigynia* plano-convex, narrowly ovate-lanceolate, 4 mm. long, 1.6–1.9 mm. wide, coriaceous, stramineous, nerveless ventrally or faintly five- seven-nerved toward the base, dorsally five- nine-nerved or ribbed, very slightly distended over the achene, narrowly wing-margined, narrowed to the rounded, sessile or minutely substipitate spongy base, the body serrulate on the margins above, tapering into a dark, flat, shallowly bidentate beak 1–1.5 mm. long; *achenes* lenticular, oblong, 1.7×1 mm., glossy, gray flecked with dark-red.

Known only from two collections, both from Chihuahua: meadow valley, 7,000 ft., Sierra Madre Mountains, *M. E. Jones*, Sept. 17, 1903, and Majalca, *Harde Le Sueur 1130*, June 24, 1936.
Plate 20. CAREX DIEHLII


Cespitose from short-prolonged, woody rootstocks; *culms* 3–10 dm. high, sharply triangular, exceeding the leaves; *leaves* 3–6 to a culm, on the lower one-third, 1.5–4 mm. wide, the sheaths tight, conspicuously white-hyaline ventrally; *spikes* 3–10, gynaeandrous, usually more or less clavate at the base, generally separated in a moniliform inflorescence but occasionally aggregated into a short head, the 8–20 perigynia with spreading-ascending beaks; *scales* ovate, acuminate, yellowish-brown with green center and narrow hyaline margins, reaching to the middle or tip of the perigynium-beak; *perigynia* plano-convex or slightly concavo-convex, broadly ovate to suborbicular, 3.5–5.5 mm. long, 2.5–3.5 mm. wide, usually broadest near the middle, firm, coriaceous, green to greenish-white, strongly wing-marginated to the rounded or subtruncate base, finely serrulate to below the middle, strongly several- to many-nerved dorsally, nerveless or faintly few-nerved ventrally, more or less abruptly narrowed into a flat, finely serrulate, strongly bidentate beak less than one-third the length of the body; *achenes* lenticular, orbicular, 1.75–2×1.5–1.75 mm., yellowish-brown, substipitate.

In our area known from a single collection: La Vengoma, 3,200 ft., vicinity of San José, Sierra de San Carlos, Tamaulipas, H. H. Bartlett 10088, July 5, 1930. It is a species of plains and both dry and moist openings in the mountains. Quebec to British Columbia, southward to Tennessee, Texas, Arizona, northern Mexico, Idaho, and Oregon.
Plate 21. CAREX BREVIOR
22. Carex peucophila Holm (168)


Rootstocks long, slender, brownish, fibrillose; culms 5–40 cm. long, 1.5–3 mm. wide at the dull-brownish base, erect or arcuate, obtusely triangular, roughened below the head; leaves with well-developed blades 2–4 to a fertile culm, on the lower fourth, their blades 3–15 cm. long, 1.25–2.5 mm. wide, flat or channeled, thin, firm, dull-green, obscurely septate-nodulose, the margins revolute, roughened towards the attenuate apex, the sheaths rounded dorsally, tight and white-hyaline ventrally, truncate at the mouth, the ligule wider than long; spikes 3–6, gynaecandrous, 5.5–9 mm. long, 4.5–6 mm. wide, aggregated into a head 1–2 cm. long, 7–15 mm. wide; lowest bract often prolonged, the upper reduced; scales obtuse, rounded on the back, chestnut-brown with three-nerved green center and white-hyaline apex and upper margins; staminate flowers few; perigynia 7–22 to a spike, 4–4.5 mm. long, 1.75–2.25 mm. wide, appressed-ascending, plano-convex, thickish, firm, subcoriaceous, dull-green or brownish, nerveless ventrally and nearly so to finely nerved dorsally, wing-margined, serrulate above, substipitate, the beak about 1 mm. long, serrulate and flat nearly to the apex (but sometimes terete for up to 0.5 mm. below the white-hyaline orifice), obliquely cut, entire or bidentulate, dull-reddish-brown-tipped; achenes lenticular, 2×1.5 mm., yellowish, substipitate, subapiculate, jointed with the style.

A polymorphic species very common in the mountains, at 8,000 to 15,000 ft., from Baja California and Durango to Guatemala (Sierra de los Cuchumatanes), especially on the volcanic peaks in the State of Mexico and Hidalgo.
Plate 22. CAREX PEUCOPHILA
23. Carex egglestonii Mack. var. festivelliformis F. J. Herm. (171a)


Cespitose from short, woody, blackish, fibrillose rootstocks; culms 2–5 dm. high, roughened on the angles below the head, light-brown at the base, clothed with old leaves; leaves with well-developed blades 3–6 to a fertile culm, on the lower third, their blades 0.8–2 dm. long, 2–4 mm. wide, flat, thickish, the sheaths white-hyaline ventrally, the ligule about as long as wide; spikes 2–6, gynaecandrous, 8–10×4–7 mm., aggregated in a ovoid or oblong-ovoid head or a short moniliform spike 12–20 mm. long; lowest bract 10–40 mm. long, the upper scale-like; scales acutish to acuminate, chestnut-brown with lighter midvein and the margins sometimes hyaline; staminate flowers few; perigynia numerous, 4.75–6 (rarely 7.5) mm. long, 1.5–2.25 mm. wide, exceeding the scales, appressed-ascending, flattened concavo-convex, thin, membranaceous, brownish, nerveless, serrulate, the winged margins sometimes slightly crenulate, the beak 1.5–2 mm. long, flat, serrulate, obliquely cut dorsally, bidentate, the orifice brown, sometimes hyaline-margined; achenes lenticular, 2–2.25×1.25 mm., substipitate, apiculate, jointed with the deciduous style.

Occasional to locally rather common in mountain meadows and open pine forests, at 9,000 to 12,000 ft., from Chihuahua to the Distrito Federal, Mexico.
Plate 23. CAREX EGGLESTONII VAR. FESTIVELLIFORMIS
Subsection III. Alatae

24. Carex longii Mack. (182)


Densely cespitose from short, blackish, fibrillose rootstocks; culms 3–8 dm. high, roughened on the angles below the head, light-brownish-tinged and clothed with old leaves at the base; leaves with well-developed blades 2–4 to a fertile culm, on the lower half, their blades 1–2.5 dm. long, 1.75–4 mm. wide, flat, rather thick, roughened on the margins and toward the apex, the sheaths tight, green-striate ventrally nearly to the mouth, prolonged at the mouth and continuous with the ligule; spikes 3–10, gynae- candrous, 6–12 mm. long, 4–6 mm. wide, silvery-green or brown- ish, aggregated in a head 2–4 cm. × 5–12 mm.; bracts short, setaceous; scales obtuse to somewhat acute, silvery-hyaline with green, three-nerved center; perigynia numerous, 3–4.5 mm. long, 1.8–2.2 mm. wide, appressed-ascending, flat-plano-convex, broadly obovate, the body widest near the top, membranaceous, distended over the achene, silvery- or light-brownish-green, slenderly nerved on both faces, wing-margined nearly to the base, serrulate, the beak 0.5 mm. long, flat, serrulate, obliquely cut dorsally, bidentulate; achenes lenticular, 1.5×0.75 mm., yellowish-brown, substipitate, apiculate, jointed with the deciduous style.

Fairly common in moist to wet habitats in the mountains from 4,000 to 9,500 ft., from San Luis Potosí to Costa Rica. Massachu- setts to Florida and Costa Rica, westward to Michigan, Indiana, Texas and Mexico.
Plate 24. CAREX LONGII
Subsection IV. Tribuloideae

25. Carex tribuloides Wahl. (186)


Cespitose from short, blackish fibrillose rootstocks; *culms* 6–9 dm. high, the sides concave, roughened on the angles below the head, clothed at the base with old leaves; *leaves* with well-developed blades 4–10 to a fertile culm, on the lower half, their blades 1.5–4 dm. long, 2.25–7 mm. wide, flat, stiff, roughened especially on the revolute margins and toward the apex, the sheaths loose, green-striate ventrally, slightly thickened, concave, white-hyaline and often dark-banded at the mouth, short-prolonged, the ligule longer than wide; *spikes* 5–15, gynaecandrous, 6–12 × 4–8 mm., straw-colored or greenish, in a head 2.5–5 cm. long, 0.8–2 cm. wide; *lowest bract* often setaceous, the upper scale-like; *scales* acute or acuminate, light-yellowish-brown with white-hyaline margins and green, three-nerved center; *staminate flowers* inconspicuous; *perigynia* numerous, lanceolate, 3–5 mm. long, 1–1.5 mm. wide, erect-ascending, flat-plano-convex, membranaceous, distended over the achene, greenish or straw-colored, nerved on both faces, strongly margined with pellucid wings, serrulate above, short-stipitate, the beak 1–1.2 mm. long, flat, serrulate, obliquely cut dorsally, bidentate, the orifice white-hyaline margined; *achenes* lenticular, 1.5×0.5–0.75 mm., stipitate, apiculate, jointed with the decidual style.

Known in our area from a single collection: near Jalapa, 4,000 ft., Vera Cruz, Mexico, C. G. Pringle 7802, Apr. 27, 1899 (GH; USA). A species of swamps and wet meadows, ranging from Quebec to Minnesota, southward to Florida, Louisiana, and Mexico.
Plate 25. CAREX TRIBULOIDES
Subsection V. *Foeneae*

26. *Carex xerantica* Bailey (191)


Cespitose from short-creeping, fibrillose rootstocks; *culms* 3–6 dm. high, stiff, erect, much exceeding the leaves; *leaves* 2 or 3 to a culm, flat, rather stiff, 2–3 mm. wide; *spikes* 3–6, gynaecandrous, approximate but distinct, forming a usually elongate inflorescence 2–5 cm. long, the perigynia closely appressed; *scales* ovate, thin, light reddish-brown with green center and white-hyaline margins, about the size of the perigynia and nearly concealing them until overripe; *perigynia* flat, except where distended by the achene, ovate, 4–6 mm. long, 2–2.5 mm. wide, usually broadest below the middle, greenish, straw-colored or pale-brown, broadly winged to the base, serrulate to below the middle, lightly nerved dorsally, nerveless or nearly so ventrally, tapering into a broad, flat, serrulate, bidentate beak 1–1.3 mm. long, reddish-brown at the tip; *achenes* lenticular, quadrate-suborbicular, 2.5×1.5–1.75 mm.; *anthers* early deciduous.

Known in our area from two collections from Durango, Mexico: open grassland in pine-oak woodland, gentle west-facing slope of broad arroyo, tributary to Rio Presidio, 7,800 to 8,200 ft., ca. 5 mi. north of railroad at Coyotes, J. H. Maysilles 8283, Aug. 8, 1955 (MICH), and, open pine-oak woods 5½ mi. east of El Salto, ca. 55 mi. southwest of Durango, U. L. Waterfall & C. S. Wallis 13592, Aug. 12, 1957 (US). Manitoba to Alberta, southward to central Mexico.
Plate 26. CAREX XERANTICA
Subsection VI. Athrostachyae

27. Carex athrostachya Olney (195)


Cespitose from very short-prolonged, fibrillose rootstocks; culms 0.5–6 dm. high, slender, more or less equaling the leaves; leaves 2–4 to a culm, usually clustered on the lower third, the blades flat, 1.5–5 mm. wide, firm, yellowish-green; spikes 4–20, gynaecandrous, aggregated into a head 1–2 cm. long, 7–20 mm. wide, or the lowest somewhat separate, the perigynia appressed-ascending; bracts usually strongly developed (at least one to three of the lower), 1–6 cm. long, and exceeding the head, spreading or ascending, the upper bracts scalelike; scales oblong-ovate, acute or short-cuspidate, brownish to reddish-brown with green center and white-hyaline margins, somewhat shorter than the perigynia; perigynia lanceolate-ovate, 3–5 mm. long, 1.25–1.75 mm. wide, flat except where distended by the achene, membranaceous, lightly several-nerved on both faces or nerveless ventrally, light-green to straw-colored or brownish, wing-margined nearly to the base, the upper half strongly ciliate-serrulate, tapering into a shallowly bidentate beak, its tip little flattened or serrulate; achenes lenticular, oblong-oval, 1.25–1.5 × 0.75–1 mm.

Known in our area from a single collection: on stream banks in narrow, semi-moist gorge, 11,000 ft., Paraje Province, Popoca-tepetl, State of Mexico, E. K. Balls 4204, April 13, 1948 (US). Alaska southward to North Dakota, California, Arizona, and Mexico.
10. § FILIFOLIAE

28. Carex arsenii Kükenth. (203)


Densely cespitose from short, black, fibrillose rootstocks; culms 2.5–6 dm. high, rough below the head, yellowish-brown-tinged at the base; leaves 2–4 to a fertile culm, bunched at the base of the culms, their blades 1–2.5 dm. long, 1.5–2 mm. wide, flat or canaliculate, rather thick, attenuate, the sheaths tight, hyaline ventrally, yellowish-brown-tinged, short-prolonged and truncate at the mouth, the ligule short, dark-margined; spike solitary, androgynous, 2.5–4 cm. long, 2.5–3.5 mm. wide, bractless; scales obtuse, the lowest awned, light-reddish-brown with lighter midvein and white-hyaline margins; perigynia 15–30, concealed by the scales, 2.5–3 mm. long, 1 mm. wide, appressed, flattened-trigonous, membranaceous, slightly inflated, green, yellowish-brown-tinged, sparsely short-hispid, especially on the angles above, two-keeled, the beak 0.5 mm. long, hyaline; achenes lenticular or trigonous, 2 × 0.75 mm., brown or dull-green, apiculate, jointed with the short, deciduous style.

Occasional in Michoacan at 5,000 to 6,000 ft.; also known from Jalisco and the State of Mexico.
Plate 28. CAREX ARSENII
29. **Carex longissima** M. E. Jones (203.1)


Densely cespitose; **culms** 2–5 dm. high, very slender; **leaves** 2–5 to a fertile culm, about equaling the culms and aggregated at their base, the blades filiform, mostly 0.5 mm. wide, canaliculate or flat, attenuate; **spike** solitary, densely flowered, androgynous, the lower third pistillate, 4.5–6 cm. long, 2 mm. wide, usually flexuous, bractless; **scales** obtuse, about 4 mm. long, chestnut-brown, the pistillate aristate, concealing the perigynia; **perigynia** numerous, oblong, 3 mm. long, 1–1.25 mm. wide, closely appressed, flattened-trigonal, membranaceous, nerveless, sparsely short-hispid above, pale-yellowish-brown, sessile, abruptly contracted into a tubular, short-hispid beak 1 mm. long, obliquely cut at the apex; **achenes** trigonal, 2 × 0.75 mm., straw-colored, subsessile, apiculate.

Known only from the type collection: in clefts or rocks along trail, about the lower edge of the Middle Temperate life zone, Laguna Mountains, Baja California, *M. E. Jones 27594*, Sept. 22, 1930 (POM).
Plate 29. CAREX LONGISSIMA
30. *Carex oreocharis* Holm (204)


Densely cespitose from short, stout rootstocks; *culms* stiff, rather stout and slenderly sulcate, 1–3.5 dm. high, exceeding the leaves; *leaves* 2 or 3 to a culm, clustered near the base, thickish, 1.5–2 mm. wide, flattened-canaliculate toward the base, deeply channeled toward the attenuate apex, the sheaths very thin, the ligule wider than long; *spike* solitary, androgynous, 2–4 cm. long, the staminate part very conspicuous, 1–2 cm. long, many-flowered, the staminate scales oblong-lanceolate, obtuse, pale straw-colored, the pistillate part 4–6.5 mm. wide with 3–10 erect-appressed perigynia, the pistillate scales broadly orbicular, wider than and partly enveloping the much longer perigynia, the lower often empty, the lowermost usually conspicuously awned and bractlike; *perigynia* oblong-ovoid, 4–4.5 mm. long, 2 mm. wide, yellowish-green, sub-stipitate, obscurely two-ribbed, otherwise nerveless, short-pubescent above, contracted into a cylindric, hyaline-tipped beak about 1 mm. long; *achenes* trigonous, 3 × 1.75 mm., yellowish.

Plate 30. CAREX OREOCHARIS
31. Carex physorhyncha Liebm. (215)


Loosely cespitose and stoloniferous; stolons slender, brownish, scaly, up to 8 cm. long; culms 25–35 cm. high, slender, roughened above, phyllopodic, reddish and fibrillose at the base, clothed with old leaves; sterile shoots aphyllopic; leaves with well-developed blades 4–8 to a fertile culm, on the lower fourth, the blades 1–2 dm. long, 1.75–2.75 mm. wide, the upper reduced, flat or canaliculate, roughened toward the attenuate apex and on the revolute margins, the sheaths concave at the mouth; terminal spike staminate, 5–8 × 2 mm.; lateral spikes 3–4, pistillate, 4–7 mm. long, 3–5 mm. wide, with 6–12 appressed-erect perigynia; lowest bracts scale-like, sheathless, the upper reduced; scales nearly equaling the perigynia, acute or the pistillate cuspidate, with three-nerved, green center and hyaline margins; perigynia obtusely trigonous, 2.5–3 mm. long, 0.8–1 mm. wide, membranaceous, puberulent, two-ridged, spongy at the stipitate base, the beak 0.75 mm. long, bidentate, hyaline, whitish-tipped; achenes trigonous with convex sides, 1.5 × 1 mm., minutely pitted, truncate and minutely apiculate at the apex, jointed with the deciduous style.

Known in Mexico from two Hidalgo collections: wet woodlands near Trinidad Iron Works, 5,700 ft., C. G. Pringle 8965, Apr. 30, 1904 (ENCB; FH; GH; US) and, open pine woods near Tejocotal, 6,600 ft., between Acarochitlan and Puebla border on Huachi-nango road, H. E. Moore 2836, May 13, 1947 (GH). Southern Virginia to Arkansas, Oklahoma, and Hidalgo.
Plate 31. CAREX PHYSORHYNCHA
32. *Carex turbinata* Liebm. (218)


Loosely cespitose from short, rather thick, woody root-stocks, sending forth ascending or rather short-creeping horizontal stolons; *culms* slender, 2.5–5 dm. high, phyllopodic, rough above, fibrillose at the brownish-tinged base; *leaves* with well-developed blades 5–8 to a fertile culm, clustered near the base, their blades 1–3 dm. long, 2–3.5 mm. wide, canaliculate, firm, thickish, with revolute margins, the sheaths whitish ventrally, ligule wider than long; *terminal spike* staminate, 1–2 cm. long, 2.25–2.5 mm. wide; *lateral spikes* 2–3, pistillate, with 5–15 perigynia, 5–12 mm. long, 4–6 mm. wide; *lowest bract* sheathless, 1–2 mm. wide, slightly colored at the base, the upper reduced; *scales* obtuse to cuspidate, reddish-brown with green, three-nerved center and hyaline margins; *perigynia* suborbicular, 3.5 mm. long, 1.5–1.75 mm. wide, ascending, membranaceous, puberulent, two-keeled and many-nerved, spongy at the stipitate base, the beak broad-conic, 0.5 mm. long, two-edged, hyaline or colored at the apex; *achenes* trigonous with convex sides and prominent blunt angles, 1.75 × 1.6 mm., dull-yellowish-brown, puncticulate, sub-stipitate, truncate and bent-aponicate, jointed with the short style.

Occasional in Chihuahua and Durango to fairly common in central Mexico, in the mountains at 2,000 to 10,000 ft.
Plate 32. CAREX TURBINATA
33. *Carex leucodonta* Holm (219)


Loosely cespitose from coarse, woody rootstocks; *culms* slender, 2–4 dm. high, clothed at the base with the dried leaves of the preceding year, much exceeding the leaves; *leaves* 5–8 to a culm, clustered near the base, 2–3.5 mm. wide, rather thick and firm, dull-green, channeled above, the margins revolute, the sheaths whitish ventrally, the ligule much wider than long; *staminate spike* solitary, linear, short-peduncled, 1–3 cm. long; *pistillate spikes* 2 or 3, the upper approximate, the lower more or less strongly separate, sessile, or very short-peduncled, orbicular to short-oblong, 5–10 mm. long, 4–6 mm. wide, with 4–10 perigynia; *lowest bracts* leaflike, from slightly exceeding to shorter than the culms; *upper bracts* reduced; *scales* ovate-lanceolate, acuminate or short-awned, sharply keeled, narrower but somewhat longer than the perigynia, whitish-hyaline with green center; *perigynia* obovoid, 3.5 mm. long, 2 mm. wide, nearly globose, dull green to straw-colored, very short-pubescent, two-keeled and many-ribbed, stipitate, abruptly contracted into a short, erect, cylindric, very shallowly bidentate beak 0.5 mm. long; *achenes* suborbicular, trigonous, with prominent blunt angles, 2 \(\times\) 1.8 mm.

Frequent on mountain slopes at 5,000 to 8,000 ft., usually in open pine-oak forests, from Sonora and Chihuahua, southward to Nuevo Leon and Jalisco. Southern Arizona and northern Mexico.
Plate 33. CAREX LEUCODONTA
34. Carex geophila Mack. (231)


Densely cespitose from much branched rootstocks; *culms* 3–10 cm. high, conspicuously fibrillose at the base, slender but stiff, very rough on the angles, much shorter than, and mostly hidden among the bases of, the leaves; *leaves* 5–10 to a culm, channeled above, much roughened, 1.5–2.5 mm. wide, the sheaths little, if at all, filamentose ventrally, the ligule somewhat wider than long; *terminal spike* staminate, slender 5–15 mm. long, 1.5–2 mm. wide, rather strongly peduncled; *pistillate spikes* 2–5, mostly 5–15-flowered, the upper one or two usually approximate, the others widely separate and basal; *bract* of upper spike (sometimes lacking) scalelike, somewhat sheathing, shorter than the inflorescence; *scales* ovate, acute to cuspidate, reddish-brown (except those of the basal spikes) with green center and hyaline margins, about the size of the perigynia but not concealing them; *perigynia* suborbicular, 3.25–4 mm. long, 1.75 mm. wide, two-keeled, otherwise nerveless or nerved at the base, conspicuously stipitate (the stipe 0.5–0.75 mm. long), abruptly contracted into a conic, serrulate, bidentate beak 0.5–0.75 mm. long; *achenes* trigonous with convex sides and prominent angles, stipitate, 2.25 × 1.75 mm.

Occasional on dry slopes, at 10,000 to 13,000 ft.; State of Mexico, Puebla, Veracruz, Mexico, and Sierra de los Cuchumatanes, Guatemala. Colorado to New Mexico, Arizona, central Mexico, and Guatemala.
12. § TRIQUETRAE

35. Carex triquetra Boott (252)


Cespitose; *culms* 3–6 dm. high, stiff, smooth or roughened above, phyllopodic, cinnamon-brown-tinged at the base; *leaves* with well-developed blades 3–6 to a fertile culm, on the lower half, their blades 1–2 dm. long, 2.5–6 mm. wide, rigid, flat with revolute margins, vesicular-roughened, the sheaths tight, cinnamon-brown-tinged and red-dotted ventrally, concave at the mouth, the ligule wider than long; *terminal spike* staminate, 1–3 cm. long, 2–4 mm. wide; *lateral spikes* usually 3 with 5–30 perigynia, pistillate or androgynous, the lower remote, peduncled, 1–4.5 cm. long, 4–7 mm. wide; *bracts* short, the lower long-sheathing; *scales* obtuse to acute, or the pistillate cuspidate, copper-red with green or greenish three-ribbed center and hyaline margins; *perigynia* sharply trigonous, 4–4.5 mm. long, 2.5–2.8 mm. wide, ascending, membranaceous, grayish-green, pubescent, obscurely nerved, the beak minute, 0.3 mm. long, bidentate; *achenes* trigonous with concave sides, 3.5 × 2.5 mm., closely enveloped, puncticulate, jointed with the short, thickish style.

Known in Mexico from a single collection: near Encenda, Baja California, M. E. Jones 3744, Apr. 10, 1882 (MICH; US). Southern California and northern Baja California.
Plate 35. CAREX TRIQUETRA
36. **Carex planostachys** Kunze (258)

*Carex planostachys* Kunze, Suppl. Riedgr. 138, Pl. 35. 1844.

Cespitose from short, stout, branching rootstocks; *culms* from very short to 2 dm. high, phyllopodic, rough on the angles, brownish at the base; *leaves* clustered above the base, their blades from very short to 3 dm. long, 1–2.5 mm. wide, flat above, channeled at the base, stiff, rough, papillate, attenuate, the sheaths tight, truncate, becoming filamentose, the ligule very short; *terminal spike* staminate, sessile or short peduncled, 8–12 mm. long, 1.5–3 mm. wide; *lateral spikes* pistillate, 1–2 contiguous with the staminate spike and with several basal ones on slender scabrous peduncles, the non-basal spikes erect, contiguous or somewhat separated, sessile or peduncled, short-oblong, or linear-oblong, 5–10 mm. long, 3–4 mm. wide, with 6–12 perigynia; *lowest bract* of upper spikes setaceous, attenuate, strongly sheathing, the upper reduced; *scales* obtusish or acute or the pistillate cuspidate, greenish-white with several-nerved center; *perigynia* trigonous, 3.5 mm. long, 1.75 mm. wide, ascending, membranaceous, hispidulous, finely ribbed, substipitate at the spongy base, the beak very short (0.5 mm.), straight or bent, with obliquely cut orifice; *achenes* sharply trigonous with concave sides, closely enveloped, substipitate, minutely apiculate, jointed with the short, thickish style.

Fairly common (sometimes locally abundant) in dry, rocky soil, at 3,000 to 8,000 ft., chiefly in eastern Mexico from Chihuahua to Guatemala. Texas to Guatemala.
Plate 36. CAREX PLANOSTACHYS
37. *Carex schiedeana* Kunze (261)

*Carex schiedeana* Kunze, Suppl. Riedgr. 119, Pl. 30. 1842.

Cespitose from thick, matted rootstocks; *culms* 1.4–5 dm. high, phyllopodic, roughened above, brownish-black and fibrillose at the base, the old leaves conspicuous; *leaves* with well-developed blades 6–10 to a fertile culm, clustered near the base, the blades 1–2 dm. long, 1.5–3 mm. wide, flat or channeled at the base, little if at all revolute, stiff, thick, papillate above, light-green, the sheaths tight, the ligule short; *spikes* 4–7, androgynous, 5–10 mm. long, 4–6 mm. wide, with 5–10 perigynia, in a head 1.25–3 cm. long; *cladophyllum* conspicuous, perigynium-like; *bracts* leaf-like, much exceeding the inflorescence, sheathless; *scales* obtuse to cuspidate, white with three-nerved, green center and white-hyaline margins, often brownish-tinged; *perigynia* ovoid, trigonous, 3–3.5 mm. long, 1.75 mm. wide, appressed-ascending, membranaceous, green, white-hispid-hirsute, many-ribbed (the lateral ribs most prominent), substipitate, the beak 0.5 mm. long, obliquely cut and bidentate, the orifice white; *achenes* trigonous with concave sides, 2.5 × 1.5 mm., granular, closely enveloped, apiculate, jointed with the short style which is thickened at the base.

Locally plentiful on open or chaparral-covered slopes, 2,000 to 10,000 ft., in Coahuila and San Luis Potosí; occasional in Nuevo Leon, Tamaulipas, Jalisco, and Puebla.
Plate 37. CAREX SCHIEDEANA
37a. Carex schiedeana var. perstricta (Mack.) F. J. Herm., comb. nov. (260)


Differing from the typical variety in having the leaves seldom over 1.5 mm. wide, vesicular-roughened above rather than papillate, glaucous-green, their margins revolute, narrower spikes (2.5–3.5 mm. wide), and oblong-ovoid perigynia only 1–1.25 mm. wide, and usually not over 2.5 mm. long, tending to be white-scabrous rather than hispid. Intermediates occur with such frequency, however, that varietal status seems to be more realistic than specific.

Locally plentiful on nearly barren slopes and limestone ridges, 5,000 to 8,000 ft., in San Luis Potosí; infrequent in Coahuila, Tamaulipas, Jalisco, and Hidalgo.
Plate 37a. CAREX SCHIEDEANA VAR. PERSTRICTA
37b. Carex schiedeana var. stellata (Mack.). F. J. Herm., comb. nov. (262)

*Carex stellata* Mack., N. Amer. Fl. 18 (4) : 226. 1935.

Differing from typical *C. schiedeana* in having the leaves only 3–6 to a fertile culm, their margins usually revolute, and the perigynia white-stellate as well as short-hispid, the beak merely emarginate, as a rule, rather than bidentate. Mackenzie reports the culms to be stellate-puberulent, a condition that must be infrequent. As with var. *perstricta*, transitional forms are sufficiently common to make specific status impractical.

Appears to be most prevalent in Hidalgo (on mountain slopes at 3,000 to 8,000 ft.), as var. *perstricta* is in San Luis Potosí and var. *schiedeana* in Coahuila. It has been collected also in Coahuila, Nuevo Leon, San Luis Potosí, Jalisco, Puebla, and Oaxaca.
Plate 37b. CAREX SCHIEDEANA VAR. STELLATA
14. § SCABRELLAE

38. Carex scabrella Wahl. (263)


Cespitose from short, stout rootstocks; *culms* phyllopodic, mostly filiform, becoming decumbent, brown and fibrillose at the base; *leaves* with well-developed blades 5–10 to a fertile culm, clustered near the base, their blades 20–35 mm. long, 0.5–1.5 mm. wide, flat with revolute margins, often channeled above, thin, roughened toward the long-attenuate apex, the sheaths tight, the ligule very short; *spikes* 3–4 to a panicle, androgynous, with 3–6 perigynia; *panicles* about 5, spike-like, 6–12 mm. long, 5–7 mm. wide, the upper sessile, the middle ones on slender, roughish peduncles, the lowest on long basal peduncles; *rachis* hispid; *cladoprophylllum* perigynium-like; *bracts* leaf-like, exceeding the inflorescence, from little to strongly sheathing; *scales* acutish to awned, scabrous, reddish-brown with several-nerved, lighter center and hyaline margins; *staminate flowers* inconspicuous; *perigynia* ovoid, trigonous, 3–4 mm. long, 1.5 mm. wide, ascending, subcoriaceous, puncticulate, straw-colored, hispid, conspicuously many-ribbed, the beak 1 mm. long, curved or straight, bidentate; *achenes* trigonous with concave sides and blunt angles, closely enveloped, granular, straight- or bent-apiculate, jointed with the short style.

Plate 38. CAREX SCABRELLA
15. § INDICAЕ

39. Carex humboldtiana Steud. (264)


Cespitose from short, thick, woody rootstocks; culms phyllo-
podic, 6–10 dm. high, obtusely trigonous, brownish-tinged at the
fibrilllose base; leaves with well-developed blades 7–15 to a fertile
culm, their blades 1–4 dm. long, 2.5–6 mm. wide, stiff, coriaceous,
flat with revolute margins, scabrous above, attenuate, the sheaths
tight, concave, reddish-brown-tinged, pubescent and slightly pro-
longed at the mouth, the ligule short; spikes 8–15 to a panicle,
androgynous, with 2–5 perigynia, 5–10 mm. long; panicles 6–10,
2.5–5 cm. long, 1.5–2 cm. wide, the lower solitary on a slender,
scabrous peduncle, the upper in pairs, the rachis hispid; bracts
awned, 2–5 mm. long; cladoprophyllum conspicuous, perigynium-
like; scales awned to obtuse, chestnut- or reddish-brown with
lighter center and hyaline margins, striate, the midvein promi-
inent, the lower empty; perigynia narrowly obovoid, trigonous, 4–5
mm. long, 1.25–1.5 mm. wide, ascending, membranaceous, bright-
green, brownish-tinged, lustrous, puncticate, conspicuously two-
nerved, spongy at the stipitate base, the beak 1–1.5 mm. long,
obliquely cut and bidentate, roughened, often bent, the orifice
hyaline; achenes trigonous with concave sides and blunt angles,
closely enveloped, brownish-black, granular, stipitate, apiculate,
jointed with the short, thick style.

Frequent on dry, wooded mountain slopes, at 3,000 to 8,000 ft.
in Oaxaca; occasional in Guatemala, and single collections seen
from Puebla, Honduras, Nicaragua, Costa Rica, and Panama.
Southern Mexico to Brazil.
Plate 39. CAREX HUMBOLDTIANA
40. Carex standleyana Steyerm. (264.1)


Cespitose; *culms* stout, up to 1 m. high, smooth; *leaves* with well-developed blades numerous, glabrous or scaberulous above, up to 50 cm. or more long, 4–8 mm. wide, their blades linear, equaling or exceeding the culms, attenuate, the midvein prominent, the sheaths strongly imbricate; *inflorescence* loosely paniculate, long-peduncled, up to 20 cm. long, the peduncles slender, elongate, densely scabrous to hirtellous, secondary panicles numerous, usually many-branched, pedunculate, the spikes sessile or very shortly pedicelled; *bracts* foliaceous, narrow, exceeding their spikes, long-sheathing at the base; *spikes* loosely flowered, androgynous, 5–7 mm. long and wide, staminate flowers 1–2, the pistillate usually 5–8, somewhat divaricate; *scales* broadly ovate, subacute, glabrous or obscurely puberulent above, green or brownish, the margins hyaline, the apex conspicuously aristate; *perigynia* ovoid, obtusely trigonous, 3.5–5 mm. long, coriaceous, many-nerved, scaberulous especially above, subtipitate, abruptly contracted into a straight or curved bidentate, beak 1.5 mm. or more long, which is scaberulous on the margins; *achenes* elliptic-oblong, trigonous, 3–3.25 × 1 mm., yellowish, subtipitate, apiculate.

Locally abundant on the upper forested slopes of Cerro de Uyuca, 3,000 to 6,000 ft., Department Morazan, Honduras, and known from a single collection in Guatemala (Agucate, Department Jalapa).
Plate 40. CAREX STANDLEYANA
41. Carex polystachya Sw. in Wahl. (265)

C. hartwegii Boott in Benth., Pl. Hartw. 96. 1842.

Cespitose from short, woody rootstocks; culms phyllopodic, 2.5–6 dm. high, obtusely trigonous, brownish- or reddish-tinged at the fibrillose base; leaves with well-developed blades 6–15 to a fertile culm, mostly clustered toward the base, their blades 2–6 dm. long, 2–7 mm. wide, flat or channeled at the base, the margins revolute, thick, stiff, rough, strongly nervsed, attenuate, the sheaths tight, slightly hyaline ventrally, concave and ciliate at the mouth, the ligule very short; spikes numerous in panicles, androgynous, 5–9 mm. long, 3–4 mm. wide, with 7–15 perigynia; panicles 5–10, decompound, 2–6 cm. long, 1–2 cm. wide, the upper in pairs, the lower solitary on long, rough peduncles; rachis hispid; bracts leaf-like, long-sheathing, exceeding the inflorescence; cladoprophyllyum conspicuous, periginium-like; scales acuminate to awned, strigate, light reddish-brown or straw-colored, with green midrib often reddish-tinged; perigynia trigonous, narrowly ovoid, 3–3.5 mm. long, 0.9–1.25 mm. wide, ascending-spreading, membranaceous, puncitculate, finely named and two-keeled, spongy at the stipitate base, the beak straight or curved, 0.75–1 mm. long, greenish, somewhat roughened, obliquely cut and bidentate, hyaline-tipped; achenes trigonous with concave sides and blunt angles, closely enveloped, brownish-black, granular, stipitate, bent-apiculate, jointed with the rather slender style.

Common in dry woodlands in the mountains. The most plentiful Carex in Middle America. Widespread from Nayarit, Zacatecas, and San Luis Potosi to Peru, and in the West Indies; apparently most abundant in Chiapas, Guatemala, Honduras, and Costa Rica.

41a. Carex polystachya var. bartletii (O’Neill) Standl. & Steyerm. (265a)

Carex polystachya var. bartletii (O’Neill) Standl. & Steyerm., Ceiba 4: 68. 1953.

Differing from typical C. polystachya in having hispidulous perigynia and generally long-awned (up to 10 mm.) scales.

Dry, rocky mountain slopes, 4,000 to 8,000 ft. British Honduras, Guatemala, Honduras, Costa Rica, and Panama.
Plate 41. CAREX POLYSTACHYNA
42. Carex aztecica Mack. (266)

Carex aztecica Mack., N. Amer. Fl. 18(4) : 229. 1935.

Cespitose from short, thick, woody rootstocks; culms phyllopodic, 5–8 dm. high, obtusely triangular, reddish-brown-tinged at the fibrillose base; leaves with well-developed blades 7–15 to a fertile culm, their blades 1.5–3 dm. long, 2.5–5 mm. wide, thick, flat with revolute margins, scabrous above, attenuate, the sheaths tight, the ligule short; spikes 6–12 to a panicle, androgynous, with 5–12 perigynia, 4–7 mm. long, 3.5–6 mm. wide; panicles 6–10, 15–45 mm. long, 10–20 mm. wide, the lowest on a slender, scabrous peduncle about 8 cm. long, the upper in pairs; rachis hispid; bracts sheathing, those of the spikes scale-like, occasionally 3–15 mm. long; cladoprophyllum conspicuous, perigynium-like; scales obtuse to acute or the lower awned, dark-reddish-brown, striate, with hyaline margins and conspicuous midvein, the lower empty; staminate flowers few; perigynia narrowly obovoid, trigonous, 3–3.5 mm. long, 1.25 mm. wide, ascending, green, puncticulate, dark-reddish-brown-tinged, few-nerved, the lateral nerves conspicuous, spongy at the substipitate base, the beak less than 1 mm. long, obliquely cleft and shallowly bidentate, reddish-brown-tinged, the orifice hyaline; achenes trigonous with concave sides and blunt angles, 1.5–2 × 1 mm., granular, closely enveloped, short-apiculate, jointed with the short, thickish style.

Infrequent on wooded mountain slopes, 3,000 to 10,000 ft.; Michoacán, State of Mexico, Morelos, Guerrero, Oaxaca, Chiapas, and Guatemala (Department Chimaltenango).
Plate 42. CAREX AZTECICA
43. **Carex hultenii** Asplund (266.1)


Rootstock short, thick and woody; *culms* stout, 9 dm. high, triquetrous, with concave, striate faces, the angles moderately sharp, surrounded at the base by dried leaves, their sheaths non-fibrillose; *basal leaves* about equaling the culms, about 15 cm. wide, long-attenuate at the apex, chartaceous-coriaceous, lightly plicate along the nerves, scaberulous; *cauline leaves* 2, similar to the basal, long-sheathing, equaling or somewhat exceeding the culm; *inflorescence* decompound, 45 cm. long, interrupted at the base; *lower bracts* similar to the leaves, the lowest 5 exceeding the culm, the upper reduced; *secondary panicles* ovate-pyramidal, single at the lowest node and apex, otherwise paired at the nodes, the uppermost congested and not easily distinguishable; *peduncles* stiffly erect, subappressed to the culm, the lowest 9 cm. long, the upper reduced, the uppermost panicles sessile; *rachises* ciliate-scabrous on the angles, those of the ultimate branches also hispidulous on the face; *spikes* numerous, androgynous, 4–7 mm. long, sessile, spreading, the staminate portion shorter or sometimes about equaling the pistillate; *bracts* ovate-orbicular to orbicular, chestnut-streaked or dotted, hispidulous, 1.5–2 mm. long, the midvein prolonged into an excurrent ciliate-hispid awn up to 9 mm. long; *cladoprophyllum* perigynium-like, hispidulous or glabrescent; *scales* spreading to divaricate, ovate, cymbiform, subobtuse or somewhat acutish, long-mucronate (the mucro 0.5–0.75 mm. long), many-nerved, densely chestnut-striate or punctate, the lower especially hispidulous on the midvein, the upper often glabrescent; *perigynia* broadly ovoid or subglobose, more or less oblique, turgid, straw-colored, lustrous, the body 2–2.5 mm. long, 1.5–2 mm. wide, with a few very short, aculeiform hairs on the margins toward the apex, otherwise glabrous, the marginal nerves prominent above, somewhat impressed below, otherwise very faintly nerved or the nerves obsolete, almost estipitate at the gibbous base, abruptly beaked, the beak compressed, more or less oblique, about 1 mm. long, narrowly margined, minutely spinulose-serrate, bidentate, oblique at the orifice, the teeth 0.3 mm. long on the adaxial face; *achenes* trigonous, 1.75–2 × 1 mm., the sides shallowly concave or nearly flat, crowned with the thickened base of the scarcely deciduous style.

Known only from the type collection: at the Great Falls of the river Necaxa, in the Huachinango region, 3,000 ft., Puebla, Mexico, *H. Fröderström & E. Hultén* 757, Feb. 10, 1932 (S).
Plate 43. CAREX HULTENII
44. Carex madrensis Bailey (267)

C. polystachya var. madrensis (Bailey) Kükenth. in Engler, Pflanzenr. 4 (20) : 267. 1909.

Cespitose from woody, matted rootstocks; culms obtusely triquetrous, phyllopodic, 2.5–6 dm. high, brownish-tinged at the fibrillose base; leaves with well-developed blades 5–10 to a fertile culm, their blades 1–2.5 dm. long, 2.5–4 mm. wide, stiff, coriaceous, flat with revolute margins, roughened toward the attenuate apex, the sheaths tight, brownish-tinged ventrally, truncate and pubescent at the mouth, the ligule short; spikes 3–6 to a panicle, androgynous, with 5–15 perigynia, 7–15 mm. long, 4–6 mm. wide, the bracts awn-pointed; panicles 1–3, 1.5–3 cm. long, 7–15 mm. wide, the lower on slender, scabrous peduncles, the bracts sheathing, the rachis hispid; cladoprophyllum conspicuous, perigynium-like; scales obtuse to acute or the lower cuspidate, chestnut-brown with greenish center and hyaline margins, striate, the midvein prominent; staminate flowers inconspicuous; perigynia ovoid, trigonous, 4 mm. long, 1.5–2 mm. wide, appressed, membranaceous, green to olive-green, puncticulate, spongy at the stipitate base, the beak 1 mm. long, bidentulate; achenes trigonous with concave sides and blunt angles, closely enveloped, apiculate, jointed with the short, thickish style.

Infrequent on dry wooded or rocky mountain slopes, 4,000 to 6,500 ft.; Jalisco, Michoacan, Hidalgo, Morelos, and Guerrero (reported also from Durango), Mexico.
Plate 44. CAREX MADRENSIS
45. *Carex hassei* Bailey (271)

*Carex hassei* Bailey, Bot Gaz. 21: 5. 1896.

Loosely cespitose from long, very slender rootstocks; *culms* slender, erect, phyllopodic, 0.5–7 dm. high, exceeding the leaves, light-brownish-tinged at the base; *leaves* 5–7 to a culm, clustered near the base, 2–4 mm. wide, flat above, channeled near the base, the ligule about as wide as long; *terminal spike* staminate or gynaecandrous, short-peduncled, 6–20 mm. long, the staminate part 2–3 mm. wide; *pistillate spikes* 3–5, approximate or the lower separate and sometimes nearly basal, the upper short-peduncled or sessile, the lower long-peduncled, the spikes linear-oblong, 7–25 mm. long, 3.5–4.5 mm. wide, with 10–30 appressed-ascending perigynia, lower bracts leaflet-like, much exceeding the inflorescence, the upper smaller; *scales* ovate-suborbicular, obtuse to acuminate, appressed, usually somewhat shorter and narrower than the perigynia, reddish-brown with broad, lighter, threenerved center and whitish-hyaline margins and apex; *perigynia* elliptic-obovoid, flattened-suborbicular, 2.5–3 mm. long, 1.5 mm. wide, rather obscurely ribbed, minutely granular, whitish puberulent, not fleshy nor translucent, rounded and beakless or nearly so at the apex, the orifice entire; *achenes* lenticular, 1.5 × 1.25 mm., brownish.

Known south of the U. S. border from a single collection: moist, sandy soil at edge of meadow, La Grulla, Sierra San Pedro Martin, 7000 ft., Baja California, Mexico, *I. L. Wiggins 9803*, May 8, 1941 (GH; MICH; US). Mackenzie and Yukon, southward to Colorado, Utah, Arizona, and Baja California.
Plate 45. CAREX HASSEI
Densely cespitose from very short rootstocks; culms 1.5–4 dm. high, lateral, phyllopodic, narrowly winged, white-striolate, flattened on drying, brownish at the base; sterile shoots long; leaves with well-developed blades 1–3 to a fertile culm, their blades 7–30 cm. long, 4–7 mm. wide, the sheaths long, enlarged upward, minutely serrate, thin ventrally, the ligule longer than wide; terminal spike staminate, 1–2.5 cm. long, 1.25–3 mm. wide; lateral spikes 1–4, pistillate, with 5–18 perigynia, 7–45 mm. long, 3–4 mm. wide, the lower long-peduncled; bracts sheathing, the lower leaf-like, the sheaths serrulate, prolonged; scales broadly ovate to oblong-ovate, mostly abruptly acute or truncate and rough-awned or cuspidate, white-hyaline with three-nerved, green center; perigynia obovoid, obtusely trigonous 3.5–4.25 mm. long, 1.2–1.5 mm. wide, appressed-ascending, membranaceous, light-green, punctulate, finely nervèd, spongy at the stipitate base, gradually narrowed into an oblique beak 0.5 mm. long, the orifice white-hyaline, entire; achenes trigonous with concave sides and blunt angles, 1.75 × 1.5 mm., closely enveloped, yellowish-brown, granular, substipitate, apiculate, jointed with the short, often bent style.

In our area known only from steep, moist slopes, 6,000 to 7,500 ft., Municipio of Teneja, Chiapas, Mexico. Massachusetts westward to Michigan and southward to Florida and southern Mexico.
Plate 46. CAREX LAXIFLORA VAR. SERRULATA
18. § GRANULARES

47. Carex atractodes F. J. Herm. (303.1)


More or less cespitose from moderately stout, dark-brown, creeping rootstocks; culms 1.5–4 dm. high, phyllopodic, slender, flexuous, little exceeding the leaves, bluntly triquetrous, smooth or minutely scabridulous between the veins; leaves 2–4 to a fertile culm, mostly on the lower third of the culm, the blades flat, erect, 5–25 cm. long, 2–6 mm. wide, linear, scaberulous toward the apex, the sheaths loose, hyaline and early ruptured ventrally, the ligule prolonged, acuminate, many times longer than wide; staminate spike linear, erect, subsessile and often concealed between the two uppermost pistillate spikes or short-peduncled (peduncle up to 3 mm. long), 6–12 mm. long, 1.2–2 mm. wide, the scales oblong, bluntly acute to minutely cuspidate, 3.5 mm. long, appressed-ascending, pale-reddish-brown with a broad light-green, more or less carinate midrib, usually scabridulous toward the apex; pistillate spikes 3 or 4, erect, the lowermost widely separate on a long-exserted, capillary peduncle, the upper short-peduncled or sessile, linear-oblong, 5–14 mm. long, 3–5 mm. wide, closely 10–25-flowered, the perigynia ascending; bracts large and leaflike, generally exceeding the inflorescence, the blade of the lowermost 4–12 cm. long, the sheaths long (to 24 mm.) somewhat prolonged at the mouth and the ligule conspicuous; scales elliptic-lanceolate, acuminate, 2 mm. long and about half the length of the perigynia, thin, hyaline and tinged with reddish-brown except for the stout, green, carinate midrib; perigynia fusiform, 3–3.3 mm. long, 1.5 mm. wide, sessile, prominently many-nerved, coriaceous, closely investing the achene, dark-green, shading to chestnut-brown at the base, resinous-puncticate, tapering into a short, straight, entire beak; achenes trigonous, broadly obovoid, 1.8 × 1.1 mm., brown, granular, tapering to the short-stipitate base, abruptly rounded at the apex, conspicuously straight-apiculate, jointed with the short, slender style.

Apparently restricted to Mexico; grassy slopes, pastures, and roadside ditches from 5,000 to 12,000 ft., Federal District (one collection) and Chiapas (four collections).
Plate 47. CAREX ATRACTODES
48. Carex quichensis F. J. Herm. (308.2)


Densely cespitose from slender, pale-brown rootstocks; *culms* 1.8–4 dm. high, erect, over-topped by the leaves, smooth, bluntly triquetrous; *sterile shoots* conspicuously developed; leaves 3–5 to a fertile culm, the blades flat, linear, erect, 9–20 cm. long, 3.5–6 mm. wide, scaberulous on the margins toward the apex, the lower sheaths loose, hyaline and soon breaking ventrally, the ligule not conspicuously prolonged, blunt, as long or twice as long as wide; *terminal spike* stamineate, linear, erect, 14–25 mm. long, 1.5–2 mm. wide, borne on a peduncle 3–5 mm. long, the scales elliptic oblong, 4 mm. long, appressed, hyaline, tinged with reddish-brown, the broad dark-green, often somewhat carinate, midrib smooth and extended as a mucro; *lateral spikes* 3 or 4, erect, pistillate or often androgynous, the lowermost widely separate on a capillary peduncle, the upper short-peduncled, linear, 20–30 mm. long, 3.5–5 mm. wide at maturity, 15–30-flowered, the perigynia appressed-ascending; *bracts* leaf-like, overtopping the inflorescence, the blade of the lowermost 15–20 cm. long, the sheaths, except the uppermost, very long (to 45 mm.), prolonged at the mouth and with a prominent ligule; *scales* broadly elliptic-lanceolate, acuminate, 3 mm. long, nearly equaling the perigynia, thin and hyaline, the margins streaked with dark-red, the midrib stout, green, generally more or less carinate, extending to or prolonged slightly beyond the tip; *perigynia* broadly ellipsoid to narrowly obovoid, 3.2 mm. long, 1.3–1.5 mm. wide, sessile, conspicuously many-nerved, subcoriaceous, little inflated, olive-green, tapering at the base, abruptly contracted above into a short (0.35 mm.), stout, straight, subentire beak conspicuously thickened at the mouth; *achenes* trigonous, narrowly obovoid, 2 × 1 mm., stramineous, granular, tapering to the stipitate base, rounded at the apex, bent-apiculate and jointed with the slender style.

Known only from the type collection: edge of brook above Nebaj, El Quiché, 7,000 ft., Guatemala, *A. J. Sharp 45144*, Feb. 7, 1945 (NA; TENN).
19. § LONGICAULES

49. Carex anisostachys Liebm. (317)

1850, not Wimm., 1850. 
C. olivacea Liebm., Danske Vid. Selsk. Skr. V. 2: 267. 1850, not 
Boott, 1846. 
C. liebmannii Walp., Ann. 3: 705. 1852. (Based on C. chlorocarpos 
Liebm.). 
C. monticola Böck., Bot. Jahrb. 1: 364. 1881. (Based on C. olivacea 
olivacea Liebm.). Not C. androgyna Ballis, 1792. 
C. oaxacana Bailey, Bot. Gaz. 25: 271. 1898. (Based on C. olivacea 
Liebm.). 

Cespitose from stout, matted, often short-creeping, woody root- 
stocks; culms aphyllopodic, 1.5–9 dm. high, slightly hairy, reddish- 
tinged at the base, the basal sheaths becoming filamentose; leaves 
with well-developed blades 5–10 to a fertile culm, their blades 5–15 
cm. long, 1–3 mm. wide, stiff, flat with revolute margins, glabrate 
or minutely pubescent, rough at the attenuate apex, the sheaths 
tight, scabrous, reddish-brown-spotted ventrally, concave and pro-
longed at the mouth, the ligule short; spikes 3–5, the terminal 
androgynous, staminate, or pistillate in the center, the lateral 
pistillate, with 10–25 perigynia, 7–15 mm. long, 3 mm. wide, in a 
head 3–6 cm. long; lower bract sheathless or nearly so, 2–4 cm. 
long, shorter than to much exceeding the inflorescence, the others 
shorter or absent; pistillate scales rather obtuse to acuminate, 
greenish-hyaline, with three-nerved green center, reddish-brown- 
tinged; perigynia oval-obovoid, trigonous, somewhat flattened, 
2.5–4 mm. long, 1.25 mm. wide, ascending, membranaceous, green, 
puncticulate, slenderly few-nerved, substipitate, abruptly con-
tracted into a short-cylindric, whitish-tipped, obliquely cut, 
emarginate or shallowly bidentate beak 0.5 mm. long; achenes 
sharply trigonous, oblong-ovoid with concave sides, 1.5 × 2.5 mm. 
long, brownish, puncticulate, apiculate, jointed with the short 
style.

Frequent on wooded mountains and slopes, 3,000 to 12,000 ft.; 
Hidalgo, State of Mexico, Federal District, Oaxaca, Chiapas, and 
and Guatemala.
Plate 49. CAREX ANISOSTACHYS
50. Carex guatemalensis F. J. Herm. (317.1)

Carex guatemalensis F. J. Herm., Brittonia 23 (2) : 145. 1971.

Cespitose from short- to long-creeping, woody rootstocks; culms phyllopodic, 10–35 cm. high, much exceeding the leaves, more or less pilose and ciliate on the angles above; leaves with well-developed blades 5–8 to a fertile culm, clustered toward the base, their blades flat, 4–11 cm. long, 1.5–3 mm. wide, long-attenuate and scabrous-ciliate at the apex, the sheaths densely pilose ventrally, the ligule wider than long; spikes 2–5, contiguous, sessile or very short-peduncled, the terminal usually gynaecandrous, 5–12 mm. long, 3–6 mm. wide, the lateral pistillate, 4–9 mm. long, 2.5–3 mm. wide, densely flowered, with 5–12 perigynia, erect-ascending; bracts sheathless, leaf-like, linear-subulate, much exceeding the inflorescence, pilose at the base; scales ovate-lanceolate, acute or acuminate, reddish-brown with hyaline margins, sometimes more or less pilose dorsally, three-fourths the length of the perigynia; perigynia elliptic-lanceolate, trigonous, 3–3.5 mm. long, 1–1.25 mm. wide, not inflated, membranaceous, pale-green becoming pale-brown, often irregularly red-punctate, glabrous or with the margins and beak sparsely pilose, several-nerved, the marginal ribs prominent, sessile, rather abruptly contracted to the substipitate base, gradually narrowed into a straight, often ciliate beak 1–1.25 mm. long; achenes trigonous, obovoid, 2 × 0.75 mm., straw-colored, granular, abruptly contracted into a substipitate base.

Locally frequent on dry, rocky, grassy slopes, meadows, and rocky limestone outcrops, 9,000 to 12,000 ft., Departments of Huehuetenango and Queyaltanango, Guatemala.
Plate 50. CAREX GUATEMALENSIS
51. Carex longicaulis Böck. (318)


Loosely cespite and short-stoloniferous, from long, stout, matted rootstocks; culms phyllopodic, 2.5–6 dm. high, stiff, sparingly pubescent, brownish-tinged at the base, the old leaves conspicuous; leaves with well-developed blades 6–12 to a fertile culm, clustered near the base, their blades 5–20 cm. long, 2.5–3.5 mm. wide, flat with revolute margins, light-green, ciliate and sparingly pilose below, papillose, roughened toward the attenuate apex, the sheaths sparingly pilose dorsally, slightly yellowish-brown-tinged ventrally, the ligule much wider than long; terminal spike staminate, androgynous or pistillate in the middle, 12–18 mm. long, 2–3 mm. wide; lateral spikes 2–5, pistillate, with 10–25 perigynia, 6–18 mm. long, 4–6 mm. wide; lowest bract leaf-like short-sheathing, exceeding the inflorescence, the upper reduced; scales acute to acuminate or cuspidate, white- or whitish-hyaline, with threenerved green, straw-colored, or brownish center; perigynia trigonous, obovoid 4 mm. long, 2 mm. wide, ascending, membranaceous, light-green, puncticate, obscurely nerved, tapering at the base, rather abruptly beaked, the beak 0.5–1 mm long, flattened-subconic, obliquely cleft, bidentulate; achenes obovoid, trigonous with concave sides, 2.5 × 1.75 mm., closely enveloped, substipitate, apiculate, jointed with the short style.

Frequent to locally common on dry, open slopes, and open woods, 6,000 to 11,000 ft., Jalisco, Hidalgo, State of Mexico, Federal District, Tlaxcala, and Oaxaca.
Plate 51. CAREX LONGICAULIS
52. *Carex coulteri* Boott (319)

*C. longicaulis* var. *coulteri* (Boott) Kükenth. in Engler, Pflanzenr. 4(20) : 580. 1909.

Loosely cespitose from stout, matted, somewhat elongate root-stocks; *culms* phyllopodic, 6–8 dm. high, slender, short-pubescent, brownish-tinged at the base, the old leaves conspicuous; *leaves* with well-developed blades 5–10 to a fertile culm, clustered on the lower half, their blades 2–3 dm. long, 2–3 mm. wide, stiff, flat with revolute margins, densely villous beneath, sparsely pilose above, attenuate, the sheaths villous dorsally, yellowish-brown ventrally, concave at the mouth, the ligule short; *terminal spike* staminate, short-peduncled to subsessile, 15–25 mm. long, 2–3 mm. wide; *lateral spikes* about 4, the 2 upper approximate, the others more or less separate, pistillate, with 10–25 perigynia, 8–15 mm. long, 4–6 mm. wide; *lower bracts* leaf-like, the upper reduced; *scales* acute to mucronate, sparsely pilose, hyaline with three-nerved, greenish or yellowish center; *perigynia* obovoid, sharply trigonous, 3.5 mm. long, 1.75 mm. wide, ascending, membranaceous, light-green, short-pilose, three-nerved on each face, the beak flattened-subconic, 0.75 mm. long, bidentate, the teeth hyaline; *achenes* trigonous with concave sides, 2.25 × 1.5 mm., closely enveloped, apiculate, jointed with the short style.

Frequent in open woods and on scrubby mountain slopes, 7,000 to 9,000 ft., in central Mexico; Hidalgo, State of Mexico, Federal District, and Veracruz.
Plate 52. CAREX COULTERI
20. § VIRIDIFLORAE

53. Carex viridiflora Mack. (322)

C. viridis Schlecht. & Cham., Linnaea 6: 30. 1831, not Honck, 1792.

Densely cespitose from very short rootstocks; culms phyllopodic, 2–6 dm. high, triquetrous with concave sides, roughened above, reddish-tinged at the base, the sterile shoots long; leaves with well-developed blades 6–9 to a fertile culm, widely separate, their blades 1–2.5 dm. long, 2–3 mm. wide, channeled above, keeled below, the margins revolute, thin, sparsely hirsute, rough above, attenuate, the sheaths hispidulous, reddish-dotted or -blotched ventrally, the ligule longer than wide; spikes 5–8, with 15–40 perigynia, androgynous or the terminal staminate also below, 3–8 cm. long, 2.5 mm. wide, the staminate part 3–8 mm. long, the lower separate and nodding; lowest bract long-sheathing, the upper reduced; scales acute to cuspidate, thin, hyaline, keeled, yellowish-brown-tinged with green midrib; perigynia ellipsoid, obtusely trigonous, 3.5 mm. long, 0.9 mm. wide, appressed-ascending, membranaceous, green, two-ribbed, stipitate, the beak 0.6–0.8 mm. long, flattened, sparsely ciliate-serrulate, obliquely cut, bidentate or bidentulate, the apex hyaline; achenes trigonous with concave sides, 2 × 0.8 mm., closely enveloped, yellowish, substipitate, apiculate, jointed with the style.

Rare. Moist, grassy mountain slopes in southern Mexico; Oaxaca, and Veracruz.
Plate 53. CAREX VIRIDIFLORA
54. Carex pertenuis Bailey (323)


Loosely cespitose from long, slender, stoloniferous rootstocks; culms mostly central and phyllopodic, 2.5–8 dm. high, slender, weak, bluntly triquetrous, reddish-tinged at the base; sterile shoots long; leaves with well-developed blades 5–8 to a fertile culm, on the lower half, the basal clustered, their blades 1–3 dm. long, 2–4 mm. wide, flat, channeled at the base, keeled below, thin, with revolute margins, deep-green, roughened toward the attenuate apex, the sheaths reddish-brown-tinged ventrally, the ligule as long as wide; spikes 3–7, androgynous, with 10–30 perigynia, 2.5–5 cm. long, 3 mm. wide, the staminate part 6–12 mm. long; lower bract long-sheathing, the upper reduced; scales obtuse to cuspidate or the pistillate rough-awned, reddish-brown with lighter midrib and minutely hyaline margins; perigynia obtusely flattened-trigonoous, 3.25 mm. long, 1 mm. wide, appressed-ascending, membranaceous, dull-green, reddish-spotted, puncticulate, two-ribbed and finely nervet, stipitate, tapering at the apex, scarcely or very minutely beaked, the orifice entire; achenes trigonous with concave sides, 2 × 0.8 mm., closely enveloped, blackish, substipitate, apiculate, jointed with the style.

Rare. Mountain slopes in southern Mexico (Veracruz); known also in Guatemala from a single collection: cloud forest 4 mi. east of San Mateo Ixtatan on road to Barillas, 8,500 ft., Cuchumatanes, D. E. Breedlove 8742, Feb. 1965 (DS).
Plate 54. CAREX PERTENUIS
55. *Carex perlonga* Fern. (324)


Cespitose from short, stout rootstocks; *culms* partly central and phyllopoetic, partly lateral and aphylopoetic, 5–9 dm. high, rather stout and reddish-tinged at the base, the lower sheaths breaking and becoming somewhat filamentose; *leaves* with well-developed blades 5–10 to a fertile culm, their blades 15–35 cm. long, 3.5–5.5 mm. wide, flat with revolute margins, thin, roughened toward the attenuate apex, the sheaths hispidulous, yellowish-brown-tinged and red-spotted ventrally, concave and red-tinged at the mouth, the ligule longer than wide; *spikes* 6–12, androgynous, with 30–80 perigynia, 8–12 cm. long, 3–4.5 mm. wide, the staminate part 15–30 mm. long; *lower bract* leaf-like, long-sheathing, the sheaths red-tinged at the mouth, the upper reduced; *scales* acute to awned, keeled, thin, dull-reddish-brown with dull-hyaline margins and one- three-nerved, green center; *perigynia* ellipsoid, obtusely trigonous, membranaceous, green, puncticulate, two-ribbed and finely nerved, stipitate, the beak 1.5 mm. long, obliquely cut, bidentate, hyaline at the orifice; *achenes* trigonous, 2.5 × 0.75 mm., closely enveloped, yellowish, substipitate, apiculate, jointed with the straight, slender style.

Plate 55. CAREX PERLONGA
56. Carex mackenziana Weatherb. (324.1)


Cespitose from short rootstocks; *culms* 6–10 dm. high, stout toward the base, more slender above, smooth, much exceeding the leaves; *leaves* with well-developed blades several to a fertile culm, clustered toward the base, glabrous, their blades 10–30 cm. long, 5–6 mm. wide, flat, long-acuminate, many-striate when dried, the margin and primary nerves scaberulous, the sheaths loose, chestnut-brown-tinged, a single reduced leaf, 9–15 cm. long, 3–4 mm. wide at midculm; *spikes* 3–5, with 30–50 perigynia, androgy nous (except for the uppermost which are staminate or bearing a few irregularly placed pistillate flowers), linear-cylindric, 3–5 cm. long, 4–6 mm. wide, the lower widely separate, single, pendant, the upper approximate, sometimes paired, ascending, the very slender peduncles up to 4 cm. long; *lowest bract* with a sheath 4–5 cm. long, almost closed at the herbaceous mouth, the blade narrowly linear, up to 8 cm. long, the upper similar but reduced, all blade-bearing; *scales* acute, somewhat obtuse or short-mucronate, about equaling the perigynia, straw-colored or white-hyaline, the midvein green, three-nerved; *perigynia* ellipsoid or somewhat obovoid, trigonous, 3.5–4 mm. long, about 1.75 mm. wide, conspicuously two-nerved, the sides nerveless or lightly-few-nerv ed, obscurely puncticulate, sparsely strigose-puberulent or glabresent with ciliolate angles, rather abruptly contracted into the at length bidentate beak 0.5–0.75 mm. long; *achenes* obovoid, trigonous with concave sides, 2.5 × 1.5 mm., yellowish, smooth, rounded at the base, broadly apiculate; *stigmas* brown, slender, elongate.

Plate 56. CAREX MACKENZIANA
57. Carex venosivaginata Standl. & Steyerm. (324.2)


Loosely cespitose from short rootstocks; *culms* 2.5–6 dm. high, thick below the middle but slender at the red-tinged base, erect, triquetrous, smooth, the lower sheaths breaking and becoming very slightly filamentose; *leaves* with well-developed blades 5–10 to a fertile culm, septate-nodulose, the lower clustered at the base, their blades erect, 1–1.5 dm. long, 2.5–4.5 mm. wide, firm-membranaceous to subcoriaceous, flat with slightly revolute, scabrous margins, the sheaths glabrous; *spikes* 4–6, mostly androgynous, widely separate, paired or single, elongate-linear, 1.5–4 cm. long, 3.5–4 mm. wide, closely flowered above, loosely so at the base, the upper fourth or fifth staminate; *lower bract* leaf-like, long-sheathing, shorter than the inflorescence, the upper much reduced; *scales* broadly ovate to suborbicular-ovate, 2.6–3 mm. long, about 2 mm. wide, membranaceous, subcucullate, carinate, abruptly acuminate; *perigynia* narrowly oblong-ellipsoid, obtusely trigonous, 2.6–3.1 mm. long, 0.8–1.1 mm. wide, glabrous, puncticulate, conspicuously three- to four-nerved on each face, tapering to the somewhat rounded, sub stipitate base and into the smooth, short, obliquely cut, at length bidentulate beak, 0.8–1 mm. long; *achenes* elliptic-oblong, trigonous, 2 × 1 mm., rufous-brown, filling four-fifths of the perigynium-body, apiculate, jointed with the slender style.

Known only from the Sierra de los Cuchumatanes, 7,500 to 11,000 ft., Dept. of Huehuetenango, western Guatemala: in cloud forest, Cerro Huitz, between Mimanhuiz and Yulhuiz, *J. A. Steyermark* 48554, July 14, 1942 (type; F), and on high bluffs in upper reaches of barranco, above San Juan Ixcoy, *J. A. Steyermark* 50062, Aug. 4, 1942 (F).
Plate 57. CAREX VENOSIVAGINATA
58. *Carex huehuetica* Standl. & Steyerm. (324.3)


Densely cespitose from short, stout rootstocks; *culms* slender, erect, 6 dm. high or more, obtusely triquetrous, smooth, reddish-brown below the nodes; *leaves* with well-developed blades numerous, their blades 12–27 cm. long, 5–15 mm. wide, narrowly attenuate, prominently nerved, inconspicuously septate, flat, the margins smooth, the sheaths broad and loose, dark-reddish-brown; *spikes* few to many, on very long, slender peduncles, apparently pendulous, the terminal staminate, the lateral pistillate or in part androgy nous, linear, mostly 3–4.5 cm. long, loosely and rather remotely flowered; *bracts* short, filiform, erect, long-sheathing, the sheaths up to 1 cm. long, reddish-brown; *scales* oblong-oval, about 2.5 mm. long, pale-brownish or brownish-green, abruptly contracted at the apex and terminated by an awn up to 5 mm. long; *perigynia* lanceolate-fusiform, compressed-trigonous, 3.5 mm. long, 1 mm. wide, greenish, glabrous, conspicuously several-nerved, gradually narrowed into a very short, emarginate beak.

Known only from the type (over-ripe) collection: along stream of Canana, Sierra de los Cuchumatanes, about 8,200 ft., J. A. Steyermark 49055, July 18, 1942 (F).
Plate 58. CAREX HUEHUETICA
59. Carex steyermarkii Standl. (324.4)


Apparently cespitose; culms erect, rather stout, 5–10 dm. high, smooth, striate; leaves numerous, large and wide, clustered toward the base, their blades up to 40 cm. long, 16–24 mm. wide, flat rather thick, almost glossy above, paler beneath, the midrib conspicuous, the margins smooth, subulate-acuminate, dilated and sheathing, deep-brownish-red at the base, the sheath extremely thin and fragile ventrally, early disintegrating; spikes numerous, androgynous, forming a rather large, loose inflorescence, on long, slender, pendulous peduncles, elongate-linear, up to 6 cm. long, loosely flowered, the lowermost flowers often remote; scales lanceolate-oblong, acute, inconspicuously mucronate or blunt, pale-dirty-brown or pale-greenish-brown; perigynia obtusely trigonous, lanceolate-fusiform, 3.5–4.5 mm. long, 1–1.25 mm. wide, pale-dirty-brown, glossy, conspicuously nerved, smooth, gradually narrowed into a short, thick, erect, emarginate, beak; achenes trigonous, 2.5 × 1.25 mm., brown, apiculate.

Known from two collections: Cerro Huitz, between Barillas and Mimanhuitz, Sierra de los Cuchumatanes, 5,000 to 8,500 ft., Dept. of Huehuetenango, Guatemala, J. A. Steyermark 48542, July 14, 1942 (type F), and slope with Quercus and Abies in Colonia Ach’lum 8,600 ft., Mun. de Tenajapa, Chiapas, Mexico, A. S. Ton 888, Apr. 26, 1966 (US; DS).
Plate 59. CAREX STEYERMARKII
60. *Carex caxinensis* F. J. Herm. (324.5)

*Carex caxinensis* F. J. Herm., *Brittonia* 23(2) : 146. 1971.

Cespitose from apparently short-creeping rootstocks; *culms* phyllopodic, bluntly triquetrous, up to 6 dm. high, much exceeding the leaves, the lower sheaths red-tinged; *leaves* 2–3 on the fertile culms with 2–5 at their base, their blades linear, attenuate, 15–30 cm. long, 3–4 mm. wide, flat or with the margins slightly recurved, strongly coriaceous, with scabrous-serrulate margins and smooth, reddish sheaths; *spikes* 5–7, androgynous, on long, filiform, cernuous peduncles, the lower remote and few-flowered, the upper contiguous and dense-flowered, linear-cylindric, 2.5–4.5 cm. long, 4–6 mm. wide, with 20–50 ascending perigynia; *lowest bract* leafy, shorter than the inflorescence, long-sheathing, the sheath red ventrally; *scales* elliptic-ovate or ovate-lanceolate, appressed, acuminate or short-awned, wider than the perigynia and for the most part concealing them, more or less keeled, membranaceous, red with a conspicuous straw-colored midrib; *perigynia* fusiform, 3–4 mm. long, 1–1.5 mm. wide, obtusely trigonous, glabrous, pale-green or purplish-red especially toward the base, two-ribbed and strongly about 10-nerved, abruptly contracted at the base into a stipe 0.5–0.75 mm. long, contracted above into a short, thick, praemorse beak with a minutely serrulate orifice; *achenes* obovoid, trigonous, 2 × 1 mm., substipitate, not constricted in the middle.

Known only from a single collection: on Caxin bluff, summit of Sierra de los Cuchumatanes, 12,000 ft., Dept. of Huehuetenango, Guatemala, *J. A. Steyermark 50175*, Aug. 6, 1942 (distributed as *C. tojquianensis* Standl. & Steyerm.) (F — holotype).
Plate 60. CAREX CAXINENSIS
21. § SYLVATICAE

61. Carex conspecta Mack. (346)


Cespitose from short, stout, rootstocks; *culms* phyllopodic, 6–12 dm. high, 4–6 mm. wide at the dull-reddish-brown-tinged base, nodding, the lower sheaths filamentose; *leaves* with well-developed blades 5–8 to a fertile culm, clustered on the lower fourth, their blades 2–4 dm. long, 3–6 mm. wide, channeled above, flat below, thick, many-nerved, roughened toward the attenuate apex, the margins revolute, the sheaths roughened dorsally between the nerves, thin-hyaline and cinnamon-brown-dotted ventrally, the ligule longer than wide; *terminal spike* staminate, 4 cm. long, 3.5 mm. wide; *lateral spikes* 6, the upper two staminate, the lower four androgynous, 2–3 cm. long, 5 mm. wide, with 20–50 perigynia, dropping on slender peduncles; *lowest bract* leaf-like, long-sheathing, the upper reduced; *scales* ovate, wider but somewhat shorter than the perigynia, reddish-brown with lighter midvein and whitish-hyaline, erose margins, emarginate, mucronate; *perigynia* compressed-trigonous, 2.25 mm. long, 1 mm. wide, ascending or spreading, membranaceous, straw-colored, red-dotted, puncticate, two-ribbed and finely many-nerved, substipitate, rather abruptly contracted into a bidentate beak 0.5 mm. long; *achenes* trigonous with concave sides. 1.5 × 0.8 mm., closely enveloped, brownish, subapiculate, jointed with the style.

Plate 61. CAREX CONSPECTA
22. § LONGIROSTRES

62. *Carex tunimanensis* Standl. & Steyerm. (349.1)


Cespitose from stout, tough, very strongly fibrillose, creeping rootstocks; *culms* 0.9–5 dm. high, phyllopodic, erect, moderately slender, bluntly triquetrous, smooth, exceeding the leaves, not red-tined at the base; *leaves* 4–6 to a fertile culm, mostly clustered at the base of the culms, weakly septate-nodulous toward the base, their blades flat, erect, 5–40 cm. long, 2.5–5.5 mm. wide, very long-attenuate, glabrous, the margins and midrib beneath serrulate above the middle, the sheaths short, hyaline ventrally becoming brown toward the minutely ciliate mouth, conspicuously striate at the base, the ligule wider than long, inverted (concave rather than convex); *spikes* 4–15, the lower generally solitary, the upper in clusters of 3–4, the terminal 1–4 androgynous with few pistillate flowers or staminate, erect, short-peduncled to subsessile, the lateral pistillate, oblong, 1.5–6 cm. long, 4–8 mm. wide, tapering at apex and base, drooping on long (4–9 cm.), filiform peduncles, rather densely flowered, the perigynia 50–75, ascending; *bracts* long-sheathing, foliaceous, the blades linear, attenuate, shorter than the inflorescence, the upper half scabrous on the margins and midrib beneath, the upper bracts reduced; *pistillate scales* ovate-lanceolate, acute to short-cuspidate, pale-brown with broad, hyaline margins, somewhat keeled, wider than and nearly as long as the perigynia; *perigynia* fusiform, flattened-trigonous, 4.5–5.5 mm. long, 1–1.5 mm. wide, not inflated, glabrous, pale-green, ventrally nerveless but with prominent marginal ribs, lightly three-five-nerved dorsally, gradually tapering into a smooth, terete, hyaline beak one-third to one-half the length of the body, 1–1.5 mm. long, brownish at the base, especially dorsally, the white-hyaline orifice obliquely cut and bidentulate; *achenes* flattened-trigonous, broadly ellipsoid, 2 × 1.25 mm., stramineous, tapering to the stipitate base, apiculate, jointed with the style.

Evidently rare and local. Known from three collections: steep slope with *Quercus* and *Magnolia* at the Paaaje Matsab, 9,000 ft. Municipio of Tenejapa, Chiapas, Mexico, A. S. Ton 941, May 12, 1966 (DS; MICH); alpine areas in vicinity of Tunina, Sierra de los Cuchumatanes, 11,000 to 11,500 ft., Huehuetenango, Guatemala, J. A. Steyermark 48283, July 6, 1952 (F) and, long rivulet, alpine meadows just northwest of Chancol, Huehuetenánango, Guatemala, J. A. Steyermark 48251, July 6, 1952 (F).
Plate 62. CAREX TUNIMANENSIS
63. Carex distentiformis F. J. Herm. (359.1)

Carex distentiformis F. J. Herm., Brittonia 23(2) : 146. 1971.

Rhizome short, thick, woody; culms phyllopodic, 8–10 dm. high, bluntly triquetrous, exceeding the leaves; leaves with well-developed blades 7–13 to a fertile culm, clustered (except for 2–4 on the culm) at the base, long-sheathing, their blades coriaceous, flat, becoming strongly revolute when dry, 4–5.5 mm. wide, long-attenuate and scaberulous at the apex, the sheaths thin-membranaceous ventrally, the ligule wider than long; inflorescence nearly paniculate, 5.5–10 cm. long, except for the widely separate lowermost spike (often compound); spikes 4–7, cylindric, 0.6–5 cm. long, 6–8 mm. wide, densely-flowered, the terminal staminate (rarely perfect), the lateral pistillate (sometimes staminate at the apex), ascending, sessile or more or less pedunculate; bracts leaf-like, much exceeding the inflorescence, long-sheathing; scales persistent, ovate-lanceolate, acute or abruptly acuminate, 3–3.5 mm. long, slightly shorter than the perigynia, wide-spreading at maturity of perigynia, red-streaked, three-nerved, the midnerve excurrent as a short, ciliate-hispidulous awn; perigynia horizontally spreading, unequally ovoid, plano-convex or gibbous, turgid, reddish-brown, spotted with dark-red, many-nerved, 3.25–4 mm. long, 1.3–1.8 mm. wide, contracted into a bidentate beak 1 mm. long; achenes trigonous, elliptic-ovoid, 2–2.5 × 1.25–1.5 mm., punc
tate, brownish.

Known only from two collections from the Municipio of Amatenango del Valle, Chiapas, Mexico: slope with Quercus along creek near center of Amatenango, alt. 5,900 ft., D. E. Breedlove 12152, Aug. 23, 1965 (DS; F; IPN; USFS), and, large, moist pasture at Amatenango del Valle, 5,800 ft., D. E. Breedlove 14589, July 27, 1966 (type, US: isotype, DS).
Plate 63. CAREX DISTENTIFORMIS
24. § VIRESCENTES

64. Carex boliviensis Van Juerck & Müll.-Arg. (375)

Carex boliviensis Van Juerck & Müll.-Arg. in Van Juerck, Obs. Myc. 32. 1870.

Cespitose from elongate, woody rootstocks; culms phyllopodic, 5–45 cm. high, sharply triquetrous, rough on the angles, very slender and becoming decumbent, brownish and fibrillose at the base, the old leaves conspicuous; leaves with well-developed blades 5–10 cm. long, 1.5–3 mm. wide, stiff, flat or channeled, glaucous-green, pubescent at the base, especially on the margins, the apex slender with revolute margins, the sheaths yellowish-brown-tinged and reddish-brown-spotted, truncate at the mouth, the ligule very short; spikes 2–3, the terminal gynaecandrous, 8–16 mm. long, 4–5 mm. wide, the lateral pistillate, shorter, with 10–25 perigynia; bracts sheathless, the lowest scale-like, long-awned, shorter than the inflorescence, an empty, leaf-like bract sometimes 1 cm. or less below the spikes; scales obtuse to acutish or mucronate, reddish-brown with hyaline margins and lighter three-nerved center; perigynia elliptic-ovoid, flattened-trigonal, 3 mm. long, 1.75 mm. wide, erect-ascending, subcoriaceous, light olive-green, puncticate, granular, strongly ribbed dorsally, lightly nervèd ventrally, beakless, the apex minutely emarginate; achenes trigonal with concave sides, 2 × 1.25 mm., yellowish-brown, granular, stipitate, apiculate, jointed with the short, rather thick style.

Occasional on grassy slopes and in alpine meadows at 8,000 to 13,000 ft.; seen from Durango, Puebla, and Guerrero, Mexico. Mexico to Argentina.
Plate 64. CAREX BOLIVIENSIS
65. *Carex complanata* Torr. & Hook. (376)


Cespitose; *culms* 2–6 dm. high, aphyllopodic, triquetrous with concave sides, slender, stiff and erect, red at the base; *leaves* with well-developed blades 4–6 to a culm, clustered toward the base, the blades 1–3 dm. long, 1.5–3 mm. wide, rather thick and stiff, flat but the margins revolute, glabrate, attenuate, the sheaths long, tight, sparingly hairy, concave and short-pilose at the mouth, the ligule wider than long; *spikes* 2–5, the terminal gynaecandrous, the lateral pistillate, 15–30-flowered, 6–15 mm. long, 5–7 mm. wide; *lowest bract* leaf-like, much exceeding the inflorescence, not sheathing; *pistillate scales* obtuse to acuminate or awned, straw-colored and reddish-brown-tinged with green center and hyaline margins; *perigynia* flattened-trigonous, 2–2.5 mm. long, 1.2–1.6 mm. wide, appressed or ascending, submembranaceous, granular-roughened and asperulous, olive-green, nerved dorsally and on the margins, beakless, the orifice emarginate; *achenes* trigonous with concave sides and prominent rounded angles, 1.75 × 1.25 mm., stipitate, bent-apiculate, jointed with the rather short and thick style.

In our area known only from Chiapas, Mexico, where it is occasional on oak-pine slopes at 5,000 to 9,500 ft.
Plate 65. CAREX COMPLANATA
25. § FECUNDAE

66. Carex tuberculata Liebm. (389)


Cespitose from long, stout rootstocks; culms stout, stiff, 6–9 dm. high, phyllopodic, triquetrous with concave sides, rather rough above, cinnamon-brown-tinged at the base; leaves on the lower third of the culm, the blades 2.5–5 dm. long, 4–8 mm. wide, channelled above, keeled below, with revolute margins and prominent midrib, coriaceous, sparingly septate-nodulose, glaucous-green, roughened toward the attenuate apex, the sheaths thin ventrally and yellowish-brown-tinged and red-dotted, concave at the mouth, sparingly filamentose, the ligule nearly as long as wide; spikes 7–16, androgynous, 3–6 cm. long, 4–5 mm. wide, in pairs or threes on slender, drooping, roughened peduncles, 25–75-flowered; lowest bract leaf-like, the upper reduced; pistillate scales obtuse to acutish or cuspidate, reddish-brown with white-hyaline margins and paler center; perigynia obtusely trigonous, 2–2.5 mm. long, 1.5 mm. wide, spreading-ascending, inflated, membranaceous, pale-green, dotted with red, resinous glands, two-keeled, the beak 0.5 mm. long, bidentate with hyaline orifice; achenes 1.5–2 × 1.25–1.5 mm., trigonous with prominent angles and the sides convex above, constricted in the middle, granular, resinous, bent-short-apiculate, jointed with the style.

Rare; known only from two collections from Mexico: Chinantla, 7,000 ft., Puebla, Liebman 563 (CP), and Montes de San Rafael, State of Mexico, E. Lyonnet 724, Oct. 1930 (GH).

156

(*Carex ehrenbergiana* Böck., *Linnaea* 4: 175. 1877.  
*C. tuberculata* var. *ehrenbergiana* (Böck.) Kükenth. in Engler,  
Pflanzenreich 4(20) : 408. 1909.)

Differs from *Carex tuberculata* in having the lower sheaths usually red-tinged instead of cinnamon-brown, the upper spikes staminate or nearly so instead of androgynous, the perigynia more broadly obovoid and only obscurely resinous, the beak only shallowly bidentate, the achenes broader (obovoid rather than oblong-obovoid), and spikes up to 10, instead of only 6, cm. long. These distinctions are not always correlated, and none of them is constant.

Infrequent along banks of streams and in damp woods in the mountains at 9,500 to 11,500 ft.; State of Mexico, Federal District, and Hidalgo.
Plate 66a. CAREX TUBERCULATA VAR. EHRENBERGIANA
67. Carex psilocarpa Steud. (391)

*C. consors* C. B. Clarke, Kew Bull. Add. Ser. 8: 76. 1908.

Rootstocks stout, horizontal; *culms* 5–9 dm. high, stout, stiff, triquetrous with concave sides, phyllopodic, Burgundy-red at the base; *leaves* with well-developed blades 8–15 to a fertile culm, the blades 3–6 dm. long, 6–10 mm. wide, keeled below with revolute margins and prominent midrib, coriaceous, sparingly septate-nodulose, glaucous, roughened toward the attenuate apex, the sheaths thin, yellowish-brown-tinged and red-dotted ventrally, concave at the mouth, the ligule nearly as long as wide; *spikes* 8–12, androgy nous, 25–75-flowered, 2–12 cm. long, 4–6 mm. wide, flexuous or drooping on slender, rough peduncles in pairs; *lower bracts* leaf-like, red-tinged at the base, the upper reduced; *pistillate scales* obtuse to acute or cuspidate, reddish-brown with hyaline margins and lighter three-nerved center; *perigynia* obtusely trigonous, inflated, 3.5–4 mm. long, 1.5 mm. wide, ascending or spreading, membranaceous, greenish-straw-colored, reddish-dotted, two-keeled and finely nerv ed, substipitate, the beak 0.5 mm. long, minutely notched and ciliate at the apex, dark-tinged; *achenes* trigonous with rounded angles and sides convex above, 2 × 1.25 mm., constricted in the middle, brownish-black, bent-apatulate, jointed with the curving style.

Occasional in damp woods, swamps or on stream banks in the mountains at 5,000 to 11,000 ft.; Mexico (Veracruz, Hidalgo, State of Mexico, Federal District, and Oaxaca), Honduras and Salvador.

The illustration for this species by Creutzburg in Mackenzie's North American Cariceae was drawn by error from a specimen of *C. tuberculata* var. *ehrenbergiana* (*C. G. Pringle 4139*).
Plate 67. CAREX PSILOCARPA
68. *Carex ballsii* Nelmes (391.1)

*Carex ballsii* Nelmes, Kew Bull. 134. 1940.

Cespitose from stout rootstocks; *culms* stout, erect, about 12 dm. high, triquetrous with concave sides, scabrous above, surrounded at the base with leafless sheaths; *leaves* near the base, equaling the culms, 7–10 mm. wide, stiff, coriaceous, keeled, glaucous-green, the margins revolute and scabrous-serrulate, as is the midrib beneath, the sheaths thin-membranaceous, reddish-brown, at length fibrillose; *spikes* about 20, paired except for the upper 2 or 3, androgynous (staminate portion short), cylindrical, generally 3.5–8 cm. long, 5–8 mm. wide, densely flowered, often pendant, the lower subapproximate, equally long-peduncled, sometimes short-branched at the base, the upper approximate, unequally peduncled, the peduncles scabridulous; *lower bracts* foliaceous, exceeding the inflorescence, very short-sheathing, the upper smaller or scale-like; *pistillate scales* ovate-elliptic, dark-chestnut, weakly keeled, the apex usually muticous, the lowermost rarely awned, the midrib generally not reaching the apex; *perigynia* from slightly shorter than the scales (possibly due to the immaturity of the holotype) to slightly exceeding them, 3.5 mm. long, sub-inflated-trigonous above, compressed-trigonous below, oblong-elliptic, glabrous, minutely papillose or granular above, especially at the base of the beak, membranaceous, slightly oblique, at length somewhat spreading, nerveless, strongly stipitate, rather abruptly contracted into a short, very shallowly bidentulate beak obliquely cut at the orifice; *achene* oblong or oblong-obovoid, constricted in the middle, oblique.

Known only from the type collection: Loma-Grande, 9,700 ft., Mt. Orizaba, Veracruz, Mexico, *Balls & Gourlay B4371*, Apr. 27, 1938 (K).
Plate 68. CAREX BALLSII
69. **Carex chordalis** Liebm. (392)


Cespitose; *culms* stout, stiff, erect, 6–12 dm. high, sharply triquetrous with concave sides, roughened above, phyllopodic, cinnamon-brown-tinged at the base; *leaves* with well-developed blades 6–10 to a fertile culm, near the base, the blades 3–6 dm. long, 5–10 mm. wide, keeled and channeled below, flat above with revolute margins, coriaceous, sparingly septate-nodulose, glaucous-green, roughened toward the attenuate apex, the sheaths thin, yellowish-brown-tinged and red-dotted ventrally, the ligule longer than wide; *spikes* 15–25, androgynous, 50–200-flowered, 5–15 cm. long, 5–7 mm. wide, the lower in twos, threes or fours, erect or drooping on long, slender, rough peduncles, the inflorescence 2–4 dm. long; *lower bracts* leaf-like, the upper reduced; *pistillate scales* rough-awned, dark-reddish-tinged with hyaline margins and three-nerved, green center; *perigynia* lanceolate, compressed-trigonous, 3–5 mm. long, 1 mm. wide, spreading-ascending, oblique, excurved, membranaceous, two-keeled, slenderly nerved, light- or yellowish-green, round-tapering at the base, subtipitate, tapering into a smooth, hyaline-tipped, bidentate beak 1 mm. long, the teeth hispidulous within; *achenes* oblong-ellipsoid, trigonous with the sides convex above, closely enveloped, yellowish-brown, subtipitate, apiculate, jointed with the flexuous style.

Frequent to locally common on wooded mountain slopes and in moist ravines, at 3,500 to 10,000 ft., from central Mexico (Jalisco, Hidalgo, State of Mexico, Federal District, Veracruz, Guerrero, Oaxaca, and Chiapas) to Guatemala and Costa Rica. Also in Colombia.
Plate 69. CAREX CHORDALIS
70. **Carex chiapensis** F. J. Herm. (392.1)


Perennial; *culms* 8–9 dm. high, phyllopodic, acutely triangular; much exceeding the leaves; *leaves* 11–14 to a fertile culm, mostly distichously clustered at the base of the culms, the sheaths short, glabrous (1–3 cm. long) and early ruptured, the ligule wider than long, the blades flat, stiff, dull-green, 2–3.5 dm. long, 5–7.5 mm. wide, scabridulous on the upper surface; *cauline leaves* 2–3; *inflorescence* 15–20 cm. long, except for one or two widely disjunct spikes in the lowermost bracts; *spikes* 7–9, androgynous (the apical one-eighth to one-half staminate), linear-cylindric, flexuous, ascending or drooping, 5–8 cm. long, 4–7 mm. wide, with 30–110 ascending-spreading perigynia, on unequal, long (0.5–7 cm.), capillary, more or less scabrous peduncles; *bracts* leaf-like, about equaling the inflorescence (the lowermost with a blade 25–30 cm. long), the sheaths prolonged (up to 8 cm.); scales oblong-lanceolate, obtuse (rarely acuminate) at the hyaline apex, 3.5–6 mm. long, little shorter than the perigynia, dull-purplish-red, the center reddish-brown; *perigynia* fusiform, trigonous, rather sharp-edged, not inflated, 4.5–6 mm. long, 1–1.25 mm. wide, straight or slightly excurved, membranaceous to subcoriaceous, glabrous, olive-green below shading to purplish-red above, slenderly nervèd, tapering at the base, gradually tapering into a smooth, hyaline-tipped, obliquely cut and weakly bidentulate beak, 1.25–2 mm. long (one-half the length of the body or more); *achenes* trigonous, narrowly elliptic-ovoid, 2.75 × 1 mm., pale-brown, minutely papillose.

Known only from the type collection: steep slopes on S.E. side of Zontehuitz near summit, 9,400 ft., municipio of San Cristóbal las Casas ("Chamula"), Chiapas, Mexico, July 30, 1964, *D. E. Breedlove* 6714 (US; DS; F; Instituto Nacional de Investigaciones Forestales, México, D.F.).
Plate 70. CAREX CHIAPENSIS
71. Carex cortesii Liebm. (393)


Cespitose from short, stout rootstocks; culms 6–12 dm. high, stout, triquetrous with concave sides, phyllopodic, dull-reddish-brown-tinged at the base, the basal sheaths filamentose; leaves with well-developed blades 7–15 to a fertile culm, the blades 3–6 dm. long, 3–6 mm. wide, stiff, flat above with revolute margins, keeled and channeled toward the base, sparingly septate-nodulose, coriaceous, glaucous-green, roughened toward the attenuate apex, the sheaths thin-hyaline and yellowish-brown-tinged and reddotted ventrally, the ligule longer than wide; spikes 15–25, androgynous, 2.5–7 cm. long, 4–6 mm. wide, 30–100-flowered, drooping on long, slender, rough peduncles, the lower in pairs, forming an inflorescence 1–2 dm. long; lower bracts leaf-like, the upper reduced; scales rough-awned or cuspidate, dark-red with hyaline margins and three-nerved, greenish center; perigynia oblancoolate, compressed-trigonal, oblique, excurved, membranaceous, two-ribbed, light- or yellowish-green, red-dotted, substipitate, tapering into a smooth, hyaline-tipped, bidentate beak 1 mm. long, the short, erect teeth hispidulous within; achenes trigonal with the sides convex above, 2 × 0.75 mm., yellowish-brown, substipitate, jointed with the flexuous style.

Occasional to frequent on wooded mountains, especially along banks of streams at 4,000 to 12,200 ft., from central and southern Mexico (Jalisco, Hidalgo, State of Mexico, Puebla, Oaxaca, and Chiapas) to Guatemala and Costa Rica.
Plate 71. CAREX CORTESII
72. *Carex tojquianensis* Standl. & Steyerm. (393.1)

*Carex tojquianensis* Standl. & Steyerm., *Ceiba* 4: 64. 1953.

Loosely cespitose and substoloniferous, the stolons stout with dark-blackish-brown or reddish-black scales; *culms* 2.5–5.5 dm. high, 2–3 mm. thick below the middle, erect, triquetrous, glabrous, exceeding the leaves, the lower and basal sheaths not filamentose; *leaves* with well-developed blades 7–10 to a fertile culm, coriaceous, stiff, strongly keeled beneath and channeled above, somewhat revolute, 1–2.5 dm. long, 2.5–4 mm. wide, glabrous, long-attenuate, the sheaths dark-blackish-brown or reddish-brown at the base, striate; *spikes* 3–4, androgynous, usually single, spreading or drooping on unequal, elongated, slender, smooth peduncles mostly longer than the spikes, the spikes linear-oblong, 2–3.5 cm. long, 4–6 mm. wide, closely and densely flowered, the upper one-fourth or one-fifth staminate, the inflorescence 5–12 cm. long; *bracts* leaf-like short-sheathing (the sheath averaging 3 mm. long), 7–11 cm. long, 1–1.5 mm. wide; *scales* oblong-lanceolate, obtuse to subacute, dark-brownish-red with prominently nerved pale-green center and very narrow hyaline margins, about the same width or slightly narrower than and about equaling the length or slightly exceeding the perigynia, 3–3.25 (–5) mm. long, 1.25–1.5 mm. wide; *perigynia* elliptic-oblong or elliptic-lanceolate, compressed-trigonous, not inflated, 3–3.5 mm. long, 1.25–1.5 mm. wide, appressed-ascending, stramineous or greenish-buff throughout or the lower half reddish-brown-dotted, two-keeled, several-nerved on one or more sides at maturity (sometimes toward the base only), otherwise nerveless, narrowed at the substipitate base, glabrous or minutely hispidulous on the margins above, tapering into the oblique, subentire beak, 0.3–0.6 mm. long; *achenes* elliptic-oblong, trigonous, 2.25–2.5 × 1.25 mm., nearly filling the perigium-body, apiculate, jointed with the slender style.

Known only from the summit of Sierra de los Cuchumatanes, 12,140 ft., between Tojquia and Caxin bluff, Dept. of Huehuetenango, Guatemala, *M. Roe* 648, July 30, 1965 (F). (*Steyermark 50175, cited as this species in the original description, is *C. caxinensis* F. J. Herm., of Section Viridiflorae).*

170
Plate 72. CAREX TOJQUIANENSIS
73. *Carex melanosperma* Liebm. (394)


Cespitose from short, stout rootstocks; *culms* 6–12 dm. high, stout, phyllopodic, triquetrous with concave sides, reddish-brown-tinged at the base, the lower sheaths filamentose; *leaves* with well-developed blades 7–15 to a fertile culm, 3–6 dm. long, 4–8 mm. wide, flat above, keeled and channeled toward the base, stiff, coriaceous, sparingly septate-nodulose, glaucous-green, roughened toward the attenuate apex, the margins revolute, the sheaths thin-hyaline and yellowish-brown-tinged and red-dotted ventrally, the ligule longer than wide; *spikes* 15–25, androgynous, 2.5–7 cm. long, 4–6 mm. wide, 30–100-flowered, drooping on slender, rough peduncles, the lower in twos, threes or fours, the inflorescence 1–2 dm. long; *lower bracts* leaf-like, the upper reduced; *scales* rough-awned or cuspidate, reddish-brown with hyaline margins and three-nerved, greenish center; *perigynia* trigonous, elliptic-ovoid, somewhat flattened, oblique, excurved, membranaceous, dull- or yellowish-green, red-dotted, two-ribbed, strongly nerved, the bidentate beak 0.5 mm. long, hyaline-tipped; *achenes* trigonous with the sides convex above, 1.75 × 1 mm., closely enveloped, reddish-black, lustrous, puncticulate, substipitate, short-apiculate, jointed with the slender style.

Rare or infrequent along brooks and edges of wet forests, at 8,000 to 10,000 ft., in Puebla and Morelos, Mexico, and the Sierra Madre Mts., Dept. of Sololá, Guatemala.
Plate 73. CAREX MELANOSPERMA
74. Carex donnell-smithii Bailey (395)


Cespitose; culms 3–10 dm. high, stout, triquetrous with concave sides, roughened above, phyllopodic, dark-red-tinged at the base, the lower sheaths filamentose; leaves with well-developed blades 7–15 to a fertile culm, the blades 3–6 dm. long, 3–10 mm. wide, flat with revolute margins, keeled and channeled toward the base, stiff, coriaceous, glaucous-green, roughened toward the attenuate apex, the sheaths thin, hyaline and red-dotted ventrally, the ligule longer than wide; spikes numerous, androgynous, 3–12 cm. long, 3.5–5 mm. wide, 20–50-flowered, in a compound inflorescence 2–6 dm. long, the lower branches in twos, threes or fours, drooping on rough, filiform peduncles; lower bracts leaf-like, the upper reduced; scales dark-reddish-black with hyaline upper margins and apex and one- three-nerved lighter center, the awn short (or absent), smooth or weakly hispid; perigynia lanceolate, compressed-trigonous, 3.5–4.5 mm. long, oblique, often bent in the middle, membranaceous, dull-green and often reddish-black-tinged, puncticulate, two-ribbed, smooth to faintly nerved, short-stipitate, the beak 1–1.5 mm. long, weakly recurved or merely oblique, roughish, reddish-black-tinged, strongly bidentate, not, or only very shallowly, obliquely cut, the teeth rather stiff, scabrous within; achenes 2–2.5 × 1–1.25 mm., trigonous with the sides convex above, not constricted in the middle, closely enveloped, dark-reddish-black, lustrous, substipitate, apiculate, jointed with the flexuous style.

Rare in central Mexico (Michoacan), frequent to common in Chiapas, Guatemala, Honduras, and Costa Rica on mountain slopes at 5,500 to 13,000 ft.
Plate 74. CAREX DONNELL-SMITHII
75. Carex jamesonii Boott (395.1)


Cespitose; culms stout, 6–12 dm. high, triquetrous, the sides concave, the sharp angles scabrous, leafy below; leaves equaling the culms, the blades 6–10 mm. wide, flat with revolute margins, prominently two-nerved, keeled, glaucous, coriaceous, the sheaths thin-membranaceous, cinnamon-colored or brownish-red and filamentose at the base, the lowermost leafless and keeled; spikes numerous (20–30), androgy nous, the upper one-fourth to one-third staminate, cylindrical, densely flowered, 3–5 cm. long, simple or the lower ones few-branched and pendulous, the upper subsessile, approximate, the intermediate 2–4 times branched, unequally long-peduncled, the lowermost generally separate, single and very long-peduncled, the peduncles scabrous; lowest bract short-sheathing, equaling the inflorescence, the intermediate foliaceous, sheathless, the upper setaceous; scales lanceolate, almost equaling the perigynia, brown or dark-red with narrow hyaline margins and three-nerved, straw-colored center, tipped with a long, strongly hispid awn; perigynia compressed-trigonous, 2.8–3(4) mm. long, lanceolate or oval, at length somewhat spreading or excurved, membranaceous, olivaceous, glabrous or somewhat scabrous toward the apex, lustrous, at length dark-red-tinged, conspicuously several-nerved, stipitate, rather abruptly tapering into the dark-reddish, usually rather shallowly bidentate beak, which is obliquely cut dorsally and usually abruptly excurved almost at a right angle; achenes trigonous, oblong, 1.25–2 × 0.75–1 mm., constricted in the middle.

Common to very common on steep, moist, often densely wooded slopes at 3,300 to 12,000 ft., in Chiapas, Guatemala, Honduras, Costa Rica, and Panama. Also in northern South America.

The constricted achenes and other characteristics separating this species from C. donnell-smithii were overlooked by Mackenzie, who supposed C. jamesonii to be restricted to South America; consequently many of the collections referred by him to C. donnell-smithii are actually C. jamesonii.
Plate 75. CAREX JAMESONII
76. *Carex lemanniana* Boott (396)

*Carex lemanniana* Boott, Trans. Linn. Soc. 20: 121. 1846.
*C. lemanniana* var. *simplex* Kükenth. in Engler, Pflanzenreich 4(20) : 405. 1909.

Cespitose and stoloniferous from stout, woody rootstocks, the stolons ascending; *culms* 2.5–6 dm. high, stiff, triquetrous with concave sides, roughened above, phyllopodic, dull-brownish at the base; *leaves* with well-developed blades 7–15 to a fertile culm, the blades 1–4 dm. long, 2.5–8 mm. wide, channeled above, keeled below, with revolute margins, coriaceous, roughened toward the attenuate apex, the sheaths thin, yellowish-brown-tinged and reddotted ventrally, concave at the mouth, the ligule wider than long; *spikes* 4–20, androgy nous, 20–40-flowered, 2–8 cm. long, 3.5–5 mm. wide, the lower often compound, drooping on slender peduncles, forming an inflorescence 1–2.5 dm. long; *lower bracts* leaf-like, the upper reduced; *scales* rough-awned to cuspidate, dark-reddish-black with hyaline upper margins and apex and one-three-nerved lighter center; *perigynia* oblong-ovate, plano-convex 2.5 mm. long, 1 mm. wide, ascending, membranaceous, straw-colored and reddish-streaked or -streaked, puncticulate, striate ventrally, nerved dorsally, two-ribbed, hispid-serrulate above, stipitate, the beak 0.5 mm. long, bidentate, reddish-tinged above, the orifice hyaline, the teeth scabrous within; *achenes* 1.75 × 0.85 mm., lenticular, closely enveloped, brown, dull, short-spicate, jointed with the short style; *stigmas* 2.

Common in montane meadows (where it often forms dense tussocks) at 8,000 to 13,000 ft., in Costa Rica and Panama. Also in Colombia and Ecuador.
Plate 76. CAREX LEMANNIANA
26. § ATRATAE

77. Carex bella Bailey (429)

*Carex bella* Bailey, Bot. Gaz. 17: 152. 1892.

Cespitose from short-creeping, fibrillose rootstocks; *culms* very slender, 5–9 dm. high, much exceeding the leaves, phyllopodic, cinnamon-brown and more or less strongly red-tinged at the base, the dried leaves of the previous year conspicuous; *leaves* usually 8–12 to a culm, scattered on the lower half, erect, flat, 3–6 mm. wide, long-attenuate, the sheaths ventrally dull-reddish-brown-tinged or dotted, the ligule as wide as long; *spikes* 3 or 4, the lower more or less drooping on slender, roughish peduncles 1.5–4 cm. long, the upper spikes erect, short-peduncled or subsessile, the uppermost contiguous, the others more or less strongly separate, gynaecandrous, the terminal spike half staminate, the lateral with only a few staminate flowers, linear to oblong-linear, 12–25 mm. long, 4–5.5 mm. wide, closely 15–30-flowered, the perigynia appressed, the terminal spike slightly wider; *lowest bract* short (2.5 mm. long), leaflike, sheathing, exceeding the head; *upper bracts* much reduced; *pistillate scales* ovate, obtuse to acute, dark-reddish-brown with lighter midrib usually conspicuous to the tip and shining white-hyaline margins, nearly as wide as, but shorter than, the mature perigynia; *perigynia* strongly flattened but swollen by the ripening achene, broadly oval to oblong-oval, 3–4 mm. long, 1.75–2 mm. wide, nerveless (except for the two marginal ribs) or lightly two- to three-nerved, whitish-green, little or not at all red-tinged, membranaceous, smooth, puncticulate, rounded at the base, substipitate, rounded at the apex and abruptly beaked, the beak 0.3 mm. long, apiculate, shallowly bidentate; *achenes* ovoid or oblong-ovoid, 2–2.25 × 1.75 mm., trigonous, yellowish-brown, granular, substipitate, strongly apiculate.

Known in our area from a single collection from Mexico: moist meadow openings in pine forest near peak of Cerro Potosí, 11,900 ft., Municipio de Galeana, Nuevo Leon, R. A. Schneider 960, July 27, 1938 (F; GH; MICH). South Dakota and Colorado to Utah, southward to New Mexico, Arizona, and Nuevo Leon.
Plate 77. CAREX BELLA
27. § ACUTAE

78. Carex emoryi Dewey (464)

C. virginiana var. elongata Böck., Linnaea 40: 432. 1876.
C. stricta var. elongata (Böck.) Gleason, Phytologia 4: 22. 1952.

Loosely cespitose, with long scaly, rather stout, horizontal rhizomes; culms 4–10 dm. high, erect, stout (about 6–8 mm. thick at the base), but slender above, exceeding the leaves, strongly aphyllopodic, reddish-tinged at the base; leaves 3 or 4 to a culm, somewhat nodulose, papillate, 3–5 mm. wide, flat with slightly revolute margins, long-attenuate, the lower sheaths strongly septate-nodulose, not becoming filamentose, the ligule much wider than long; terminal spikes staminate, strongly peduncled, linear, 2–4.5 cm. long, 4 mm. wide; lateral spikes 4–6, the upper one or two staminate, the lower pistillate or androgynous, erect, sessile or the lower short-peduncled, linear, 2–10 cm. long, 4–6 mm. wide, densely 50–200-flowered, the perigynia appressed-ascending; lowest bract leaflike, more or less equaling the culm, sheathless, the upper much reduced; scales lanceolate, from obtuse to acuminate, narrower than the perigynia (scarcely 1 mm wide) and from slightly shorter to much exceeding them, light-brown to reddish-brown with a broad lighter three-nerved center; perigynia unequally biconvex, 2.25–2.75 mm. long, 1.5–1.75 mm. wide, broadly ovate to obvate, light-green to straw-colored, punctulate and somewhat red-dotted, two-ribbed (the marginal), nerveless or nearly so ventrally, few-nerved dorsally, rounded at the nearly sessile base, abruptly apiculate-beaked (the beak 0.2 mm. long), the minutely emarginate or entire orifice whitish; achenes lenticular, oblong-quadrate, 1.5 × 1 mm., abruptly minutely apiculate.

Known in our area from a single collection from Mexico: Múzguiz, eastern Coahuila, E. G. March 1081, Dec. 5, 1936 (distributed as C. stricta Lam.) (F; GH). In swampy meadows or springy places, or on wet banks or in ditches, from New Jersey to Virginia, westward to central Colorado, Texas, New Mexico, and Coahuila.
Plate 78. CAREX EMORYI
Loosely cespitose, with stout, scaly, brownish, horizontal and ascending stolons; **culms** slender (4–5 mm. thick at the base), 4–6 dm. high, with concave sides, papillose, rough above, aphylopodic, reddish-brown-tinged at the base, the basal sheaths keeled, filamentose; **sterile shoots** long, less strongly aphylopodic; **leaves** with well-developed blades 3–5 to a fertile culm, on the lower third, the blades 1–3 dm. long, 2.5–3.5 mm. wide, stiff, rather thick, channeled above, obscurely septate-nodulose, light- or glaucous-green, rough on the revolute margins and toward the attenuate apex, the sheaths white-hyaline and often red-dotted ventrally, concave at the mouth, the ligule as long as wide; **terminal spike** staminate, 25–35 mm. long, 3–4.5 mm. wide; **lateral spikes** 2–3, pistillate, 30–100-flowered, 1.5–3 cm. long, 4–5 mm. wide; **bracts** sheathless, the lowest leaf-like, reddish-black-tinged and biauricate at the base, the upper reduced; **scales** obtuse, reddish-black with one- three-nerved lighter center and hyaline apex; **perigynia** obovate-orbicular, plano-convex, 2.5 mm. long, 1.75 mm. wide, membranaceous, yellowish-green or straw-colored, resinous, puncticulate, granular, two-ribbed, few-nerved, short-stipitate, the beak 0.5 mm. long, bidentulate, dark-tipped; **achenes** lenticular, 1.75 × 1.25 mm., closely enveloped, dark-brown, granular, minutely apiculate, jointed with the short style.

Occasional in swampy habitats at 7,000 to 13,000 ft., in Chihuahua, Michoacan, State of Mexico, and Guatemala.
Plate 79. CAREX ENDLICHII
Loosely cespitose from short-creeping rootstocks, the rhizomes stout, scaly; culms 4–9 dm. high, 4–5 mm. thick at the base, slender, exceeding the leaves, strongly reddish-tinged at the base, aphyllopodic; leaves 3 or 4 to a culm, somewhat aggregated on the lower fourth, flat with revolute margins papillate, 2–3 mm. wide, the sheaths hispidulous dorsally, the lower breaking and becoming filamentose, the ligule as wide as long; terminal spike staminate, linear, peduncled, 3–4 cm. long, 5 mm. wide; lateral spikes 4 or 5, the upper 1 or 2 small, staminate, the lower 2–4 pistillate or androgynous, more or less strongly separate, sessile or short-peduncled, erect, 2.5–4.5 cm. long, 5 mm. wide, densely 50–150-flowered, the perigynia appressed-ascending; lowest bract leaflike, exceeding the inflorescence, sheathless, the upper bracts reduced; scales lanceolate, acute or cuspidate, reddish-black with whitish midrib, narrower than the perigynia; perigynia unequally biconvex, obovate to suborbicular-obovate, 3 mm. long, 1.5–2 mm. wide, two-ribbed (the marginal) and finely 3–7-striate on both surfaces, brownish, puncticulate, granular-roughened, resinodotted, the margins sharp-nerved, often with a few stiff, deciduous cilia, rounded at the substipitate base, rounded and abruptly apiculate at the apex, the beak 0.2–0.5 mm. long, entire or slightly emarginate; achenes lenticular, obovate, 1.5 × 1.25 mm., brownish, substipitate, apiculate.

In our area known from a single collection: La Grulla Creek Canyon, 1½ mi. below the flats, 6,700 ft., Sierra San Pedro Martin, Baja California, I. L. Wiggins 9061, Sept. 21, 1938 (US) (distributed as C. senta Boott). Washington to Baja California, eastward to Idaho and western Montana.
Plate 80. CAREX EURYCARPA
28. § HISPIDAE

81. Carex spissa Bailey (482)


Loosely cespite from very stout, elongate rootstocks; culms stiff, very tall and stout, 1–2 m. high, 2 cm. thick at the base, phyllophytic, dark-brownish at the base, much exceeding the leaves, very smooth on the angles; leaves 5–10 to a culm, clustered above the base, the blades not septate-nodulose, coriaceous, 7–15 mm. wide, flat above with revolute margins, strongly keeled, strongly serrulate on the margins, the sheaths deeply concave at the mouth, breaking and becoming conspicuously filamentose, the ligule longer than wide; staminate spikes 3 or 4, approximate, sessile or the upper short-peduncled, 4–10 cm. long, 5 mm. wide; anthers conspicuous, 4 mm. long; pistillate spikes 3–7, approximate or the lower one or two more or less separate, erect, sessile or very short-peduncled (the lowest occasionally longer-peduncled), linear-cylindric, 6–14 cm. long, 7–10 mm. wide, staminate at the apex, densely 150–300-flowered, the perigynia ascending to squarrose-spreading; bracts leaflike, the lowest little-sheathing, exceeding the inflorescence; scales lanceolate or ovate-lanceolate, three-veined, tapering or rather abruptly contracted into a rough, serrulate awn, exceeding but narrower than the perigynia, straw-colored or brownish with a broad green or light-colored center and hyaline margins; perigynia broadly obovoid, membranaceous, becoming inflated, obscurely trigonous, 3–4.5 mm. long, 1.5 mm. thick, straw-colored and more or less glaucous, red-striate-dotted, smooth, obscurely few-nerved, round-tapering at the sessile base, rounded and very abruptly short-beaked at the apex, the beak 0.5 mm. long, often bent, the orifice emarginate; achenes trigonous, elliptic-obovoid, 2–2.5 × 1 mm., dark-colored, substipitate, continuous with the slender, very abruptly bent style.

Infrequent to rare along streams from near sea level to 7,000 ft., in Baja California, including the Revillagigedo Islands, and Puebla, Mexico. Arizona (?), southern California, and Mexico.
Plate 81. CAREX SPISSA
81a. Carex spissa var. ultra (Bailey) Kükenth. (483)


Differs from the typical form in having the perigynia usually appressed-ascending, rather than squarrose-spreading, little or not at all inflated, and the style usually straight rather than abruptly bent.

Infrequent to rare in springy places in canyons, up to 9,500 ft., in Sonora, Coahuila, and Puebla, Mexico. Also in southern Arizona and New Mexico.
81b. *Carex spissa* var. *seatoniana* (Bailey) Kükenth. (484)


Differs from the typical form in having the usually appressed-ascending perigynia setose-scabrous toward the apex, not or little inflated, and the achenes narrowly oblong-obovoid. It differs from var. *ultra* in its acuminate, usually long-aristate, rather than acute to moderately short-awned scales, and in its usually abruptly bent style. Intermediates between all three varieties are more frequent than the typical extremes.

Infrequent in springy habitats at 5,200 to 7,300 ft., in central Mexico (Hidalgo, Puebla, Oaxaca).
Plate 81b. CAREX SPISSA VAR. SEATONIANA
82. *Carex pringlei* Bailey (485)


Loosely cespitose from long, stout rootstocks, sending forth stout, scaly, horizontal stolons; *culms* stiff, very stout, 1–2 m. high, nearly 2 cm. thick at the blackish base, 5–6 mm. wide above, phyllopedic, triquetrous with flat sides and smooth angles, much exceeding the leaves; *leaves* with well-developed blades 5–10 to a fertile culm, the blades 4–6 dm. long, 6–12 mm. wide, coriaceous, flat with revolute margins, carinate, glaucous, serrulate on the margins and midrib beneath, attenuate, the sheaths dark-tinged and concave at the mouth, filamentose, the ligule longer than wide; *terminal spike* staminate, 7–9 cm. × 6–7 mm. with a smaller one at the base; *lateral spikes* 5–7, pistillate or androgynous, 5–10 cm. × 8–12 mm., erect, sessile or short-peduncled, containing one to several hundred perigynia; *bracts* leaf-like, the lowest long-sheathing and brown to blackish at the base; *pistillate scales* rough-cuspidate or awned, ciliate, strongly nerved, green with brownish hyaline margins; *perigynia* elliptic-lanceolate, strongly flattened, 7–8 mm. long, 1.5–2 mm. wide, appressed, membranaceous, greenish-straw-colored and red-dotted, hispid, scabrous above, especially on the nerves, tapering at the apex, the beak little differentiated, 1 mm. long, the orifice white, emarginate; *achenes* 2.5 × 1 mm., trigonous, loosely enveloped, granular, long-stipitate, continuous with the long style.

Endemic to Mexico. Rare on stream banks, lake borders and in salt marshes in Coahuila and San Luis Potosí.
Plate 82. CAREX PRINGLEI
29. § PSEUDOCYPERAEA

83. Carex hystricina Muhl. (493)


Cespitose from short, stout rootstocks, with long, very slender, horizontal rhizomes; culms 1.5–10 dm. high, slender, exceeded by the bracts and often by the upper leaves, sharply triangular and often roughened above, the lateral reddish-tinged at the base, the basal sheaths breaking and becoming more or less filamentose; leaves 3–7 to a culm, septate-nodulose, not clustered, thin, flaccid, flat with slightly revolute margins, 2–10 mm. wide, the sheaths concave at the mouth, the ligule as wide as, or wider than, long; staminate spike solitary, slender-peduncled, usually with a conspicuous bract some distance below, linear, 1–5 cm. long, 2.5–4 mm. wide; pistillate spikes 1–4, approximate or strongly separate, the lower nodding on long, rough peduncles, the upper erect on short peduncles, the spikes oblong or oblong-cylindric, 1–6 cm. long, 10–15 mm. wide, densely flowered, the numerous perigynia spreading; bracts leaflike, the lowest from little to strongly sheathing, the upper somewhat reduced; scales with small obovate or obanceolate bodies, ciliate-serrulate above, light-reddish-brown with three-nerved green center excurrent as a long, rough awn, the bodies much narrower and several times shorter than the perigynia; perigynia narrowly ovoid, 5–7 mm. long, 1.5–2 mm. wide, suborbicular in cross-section, inflated, membranaceous, glabrous, shining, light-green or greenish-straw-colored at maturity, closely many-ribbed, rounded at the short-stipitate base, tapering into a smooth, deeply bidentate, slender beak about 2 mm. long, the slender teeth erect, rigid, 0.5 mm. long; achenes small, obovoid, 1.75 × 1 mm., trigonous, the blunt angles thickened, granular, brownish, subsessile, abruptly contracted above and continuous with the slender style.

Known only from Coahuila and Veracruz (at 4,000 ft. alt.), Mexico in our area, where it is rare in swamps and on streambanks. Quebec to Washington, southward to Virginia, Kentucky, Texas, Mexico, and California.
Plate 83. CAREX HYSTRICINA
84. *Carex thurberi* Dewey (494)


Cespitose from stout rootstocks; *culms* 6–12 dm. high, phyllopodic, erect, stout, shorter than the leaves and bracts, sharply triangular, reddish-tinged at the base, the lower sheaths breaking and becoming filamentose; *leaves* 5–10 to a culm, obscurely septate-nodulose, the blades flat with revolute margins, thin but rather stiff, 4–8 mm. wide, long-attenuate, very rough toward the apex, the sheaths sparsely hispidulous dorsally, concave and short-hispid at the mouth, the short ligule much wider than long; *terminal spike* staminate, erect, short-peduncled, linear, 4–8 cm. long, 3–5 mm. wide; *pistillate spikes* 3 or 4, approximate or more or less separate, drooping or the upper weakly erect on rough, slender peduncles mostly shorter (except the lowest) than the spikes, the spikes oblong-cylindric or cylindric, 3.5–7 cm. long, 8–10 mm. wide, densely 50–100-flowered, the perigynia ascending or spreading-ascending; *bracts* leaflike, sheathless or very nearly so, much exceeding the inflorescence; *scales* ovate, often emarginate, strongly rough-awned, the body large, ciliate-serrulate above, hyaline and slightly reddish-brown-tinged, the green center three-nerved, nearly as wide as but much shorter than the perigynia; *perigynia* elliptic-ovoid, 4–5 mm. long, 1.5 mm. wide, slightly inflated, suborbicular to obscurely triangular in cross-section, submembranaceous, puncticate, yellowish-green, finely several-ribbed, rounded at the short-stipitate base, tapering into a smooth, strongly bidentate beak 1.5 mm. long, the slender, stiff teeth slightly spreading, 0.5–0.75 mm. long; *achenes* oblong-obovoid, 1.75 × 0.75 mm., trigonous with blunt angles, substipitate, continuous with the slender, abruptly bent, persistent style.

Occasional in swamps and on seepy slopes in Mexico (Chihuahua, Jalisco, Veracruz and Chiapas) and Guatemala (Alta Vera Paz and Huehuetenango), at 4,000 to 9,000 ft. Arizona to Guatemala; Santo Domingo.
Plate 84. CAREX THURBERI
Cespitose from short, stout rootstocks; *culms* stout, 5–15 dm. high, winged-triquetrous, smooth or roughened above, phyllopodic, the old leaves persistent and conspicuous; *leaves* with well-developed blades 5–10 to a fertile culm, the blades 2–3 dm. × 6–16 mm., flat with revolute margins, firm, strongly septate-nodulose, pale- or yellowish-green, roughened toward the attenuate apex, the sheaths thin and hyaline ventrally, yellowish-tinged, concave at the mouth, the ligule longer than wide; *terminal spike* staminate, 3–7 cm. × 4–7 mm.; *lateral spikes* 3–6, pistillate, 15–75 × 12–17 mm., the lower nodding on slender, rough peduncles, very densely flowered, containing very numerous, reflexed perigynia in many rows; *lower bracts* leaflike, little sheathing, the upper reduced; *pistillate scales* rough-awned, ciliate-serrulate, reddish-brown with threennerved greenish- or straw-colored center; *perigynia* lanceolate, flattened-trigonous, 5–7 mm. long, 1.5 mm. wide, reflexed, coriaceous, light- or yellowish-green, glossy, puncticulate, strongly ribbed, obliquely stipitate, tapering into a smooth, very deeply bidentate beak 1.5–2 mm. long, the teeth stiff, recurved-spreading, 1.25–2 mm. long; *achenes* trigonous with blunt angles, 1.75 × 0.75 mm., brownish, granular, continuous with the persistent style.

Known in our area from a single collection: abundant on boggy margins of Lake Atexca, below Molango, 4,600 ft., Hidalgo, Mexico, *H. E. Moore 2936*, May 27, 1947 (GH).

Quebec to Minnesota, southward to Florida and Texas; locally in Mexico and on the Pacific Coast from San Francisco to Washington, eastward to Idaho.
Plate 85. CAREX COMOSA
36. **Carex polysticha** Böck. (497)


Densely cespitose from short, stout rootstocks; *culms* stout, 6–12 dm. high, triquetrous with flat or concave sides, rough above, phyllopodic, red-tinged at the base, the basal sheaths filamentose; *leaves* with well-developed blades 7–15 to a fertile culm, the blades 3–6 dm. long, 8–18 mm. wide, flat above with revolute margins, channeled toward the base, firm, strongly septate-nodulose, pale-green, roughened toward the apex, the sheaths thin and white-hyaline ventrally, concave at the mouth, the ligule longer than wide; *terminal spike* staminate, 2–3 cm. × 3–5 mm.; *lateral spikes* 3–6, pistillate, 50–150-flowered, 3–4 cm. × 8–12 mm., erect, spreading or drooping on short, rough peduncles; *bracts* sheathless or nearly so, the lower leaf-like; *pistillate scales* rough-awned, ciliate-serrulate, hyaline with three-nerved green center; *perigynia* ovate-lanceolate, flattened-trigonal, 4.5 mm. long, 2 mm. wide, ascending or spreading, coriaceous, olive- or brownish-green, puncticulate, strongly ribbed, short-stipitate, tapering into a smooth beak with body 1 mm. long, the slender teeth erect, stiff, 1 mm. long; *achenes* trigonal with blunt angles, closely enveloped, brownish, granular, continuous with the persistent, twisted style.

Common and locally abundant in Guatemala, and known from a single Mexican collection: *Pringle 8138*, from near Jalapa, Vera-cruz, Apr. 16, 1899 (F). Most collections were distributed as *C. thurberi*. Also known from the West Indies to Argentina.
Plate 86. CAREX POLYSTICHA
§ SQUARROSARAE

87. Carex frankii Kunth (507)


Cespitose, with short-ascending, tough stolons; culms 1–8 dm. high, stiff, stout, obtusely triquetrous, aphyllopodic, reddish-tinged at the base; sterile shoots elongate, leafy; leaves numerous, septate nodulose, the blades 2–6 dm. × 3–10 mm., flat, firm, rough above and on the margins, the sheaths tight, yellowish-brown-tinged ventrally, truncate at the mouth, the ligule variable; terminal spike staminate, sometimes gynaecandrous or abortive; lateral spikes 3–7, pistillate, 1–4 cm. × 8–12 mm., 40–120-flowered, stiff-peduncled, the rachis zigzag; bracts numerous, leaf-like; pistillate scales aristiform, green, three-nerved, setulose; perigynia 4–5 mm. long, 2–2.5 mm. wide, squarrose, inflated, the body strongly ob-conic, submembranceous, glabrous, olive-green, strongly ribbed, the conic beak 1.5–2.5 mm. long, bidentate, the teeth stiff, 0.5 mm. long; achenes trigonous with blunt angles, 1.5 × 1 mm., loosely enveloped, brownish-yellow, granular, substipitate, continuous with the persistent style.

Plate 87. CAREX FRANKII
31. § VESICARIAE

88. Carex lurida Wahl. (526)


Cespitose, from short, stout rootstocks; culms 1.5–10 dm. high, obtusely triquetrous, aphyllopodic, red-tinged at the base, the basal sheaths sparingly filamentose, the old leaves conspicuous; leaves with well-developed blades 3–6 to a fertile culm, the blades 1.5–4 dm. × 2–7 mm., flat with revolute margins, firm, septate-nodulose, the mid- and lateral-nerves prominent above, roughened toward the attenuate apex, especially on the margins, the sheaths loose, hyaline ventrally, yellowish-brown-tinged, concave to truncate at the mouth, the ligule longer than wide; terminal spike staminate; lateral spikes 1–4, pistillate, 1–7.5 cm. × 14–20 mm., 40–150-flowered, the lower sometimes drooping; bracts leaflike; scales rough-awned, yellowish-brown with hyaline margins and three-nerved lighter or green center; perigynia 6–9 mm. long, 2.5–3 mm. wide, spreading, the body ovoid or obovoid-globose, strongly inflated, membranaceous, yellowish-green or straw-colored, glossy, puncticulate, strongly about 10-nerved, rounded and nearly sessile at the base, tapering or contracted into the smooth or roughish, slender, beak from one-half to nearly as long as the body, usually very unequally bidentate or obliquely cut at the mouth, the teeth slender, stiff, erect or somewhat spreading, 0.5–1 mm. long; achenes trigonous with blunt angles and concave sides, oval-obovoid, 2–2.5 × 1.5 mm., densely granular, yellowish-brown, substipitate, loosely enveloped in the lower half of the perigynium-body, continuous with the persistent, twisted or very abruptly bent style.

Known in our area from only two collections, both from Mexico: swamps near Jalapa, 4,000 ft., Veracruz, C. G. Pringle 8160, July 17, 1899 (ENCB; F; GH; MICH; US); and, pine woods and sphagnum bogs ca. 3 mi. from Zacultipán on road to Tiantinguistengo, 7,000 ft., H. E. Moore 3329, July 4, 1947 (GH). Nova Scotia to Minnesota, southward to Florida, Texas, and Veracruz.
Plate 88. CAREX LURIDA
ADDENDA

After the completion of this manuscript, it was discovered that the Herbarium at the San Diego Natural History Museum contained specimens of the following six additional species from Mexico, all collected by Dr. Reid Moran in Baja California.

Carex alma Bailey (54)

This should come before Carex agrostoides Mack. (No. 8) in Section Multiflorae. It is distinguished from that species in having the perigynia broader, ovate or oblong-ovate, and sharp-margined only above, instead of to the rounded-truncate (rather than round-tapering) base, and blackish at maturity instead of straw-colored.

Its previously known range was southern California, eastward to southern Nevada and Arizona.


Carex subfusa W. Boott (139)

This species would key out to C. subbracteata var. toluensis F. J. Herm. (No. 19) in Section Ovales, from which it differs conspicuously in its smaller perigynia (3–4 mm. long, 1–1.5 mm. wide, instead of 4.25–4.5 mm. long, 2.25 mm. wide).

Known previously from Oregon to southern California, eastward to Arizona.

Carex globosa Boott (225)

A member of Section Montanae, this species would key out to Carex geophila Mack. (No. 34). It differs principally in having the perigynia finely many-ribbed on the outer face, as well as strongly two-keeled, and the perigynium-beak 0.75–1.25 mm. long, instead of 0.5–0.75 mm.

Previously known from the coastal counties of California, from San Diego County northward to Sonoma County, and from the Santa Barbara Islands.


Carex lanuginosa Michx. (384)

A species of Section Hirtae, a section not otherwise known from our area. It would key out to Section Virescentes from which it differs in its septate-nodulose leaves. The style is jointed with the achene in Section Hirtae, but in C. lanuginosa it is almost imperceptibly so.

A very wide-ranging species previously known from New Brunswick to British Columbia, southward to Tennessee, Arkansas, Texas, New Mexico, and southern California.


Carex senta Boott (461)

A member of Section Acutae, it keys out to C. eurycarpa Holm (No. 80), from which it differs in having the ligule longer than wide and the culms surrounded at the base by the dried leaves of the previous year.

Previously known from California and the mountains of Arizona.

Tussocks among rocks in stream, La Joya, in Valladares Creek, ca. 4,780 ft., Sierra San Pedro Mártir, R. Moran 17998, July 29, 1970.

Carex rostrata Stokes (520)

A member of Section Vesicariae, keying out to Carex lurida Wahl. (No. 88), from which it is at once distinguishable by the pistillate scales which lack the long, rough awns of that species.

One of the most widespread sedges, previously known from Greenland to Alaska, southward to Maryland, Indiana, South Dakota, New Mexico, and southern California, as well as Eurasia.

BIBLIOGRAPHY

HERMANN, F. J.


JOHNSTON, I. M.

KÜKENTHAL, G.

MACBRIDE, J. F.

MACKENZIE, K. K.


STANDLEY, P. C.
and STEYERMARK, J.


SVENSON, H. K.
GLOSSARY

Achene. A small, dry and hard, one-celled, one-seeded, indehiscent fruit.

Acicular. Needlelike.

Acuminate. Tapering to a gradual point.

Androgynous. Having the staminate flowers above the pistillate in the same spike.

Anther. The pollen-bearing part of the stamen.

Aphyllopodic. The lower leaves bladeless or nearly so.

Apiculate. Abruptly terminated in a small point.

Aristate. Awned; tipped with a bristle.

Attenuate. Slenderly tapering or prolonged; more gradual than acuminate.

Awn. A bristle-shaped appendage.

Beak. A firm, prolonged, slender tip.

Bi- Latin prefix signifying two.

Bidentate. Having two teeth.

Bidentulate. Minutely bidentate.

Caducous. Falling off very early.

Canaliculate. Longitudinally channeled.

Capitate. Shaped like a head; collected into a head or dense cluster.

Castaneous. Chestnut-colored; dark-brown.

Cespitose. Growing in tufts.

Chartaceous. Having the texture of writing paper.

Ciliate. Marginally fringed with hairs.

Circinate. Coiled from the tip downward.

Clavate. Club-shaped; gradually thickened upward.

Conduplicate. Folded together lengthwise.
Coriaceous. Leathery in texture.

Corrugated. Wrinkled or in folds.

Culm. The type of hollow or pithy slender stem found in grasses and sedges.

Cuneate. Wedge-shaped; triangular, with the narrow part at the point of attachment.

Cuspidate. Tipped with a cusp, or sharp and firm point.

Deciduous. Not persistent; falling off.

Decomposed. More than once compounded or divided.

Decurrent. Extending downward from the point of insertion.

Deflexed. Bent or turned abruptly downward.

Dioecious. Having staminate and pistillate flowers on different plants.

Divaricate. Widely divergent.

Dorsal. Pertaining to the back, or outer surface.

Elliptic. With the form of an ellipse, nearly oblong but widest in the center and with curving sides.

Emarginate. With a small notch at the apex.

Excurved. Curving outward or away from axis.

Fasciculate. In close bundles or clusters.

Filamentose. Composed of, or breaking up into, threads.

Filiform. Threadlike.

Flaccid. Without rigidity; lax and weak.

Flexuous. Zigzag.

Glabrous. Not pubescent or hairy.

Glaucous. With a bluish or whitish, waxy covering.

Globose. Spherical or rounded.

Gynaecandrous. Having the pistillate flowers above the staminate in the same spike.

Hispidulous. Minutely hispid (bristly-hairy).

Hyaline. Colorless or translucent, transparent.

Indehiscent. Remaining persistently closed.

Indurated. Hardened.

Inflorescence. The flower-cluster of a plant.
**Involute.** With the edges rolled inward, i.e., toward the upper side.

**Laciniate.** Cut into narrow lobes or segments.

**Lanceolate.** Narrow and tapering to the apex, broadest toward the base.

**Lenticular.** Lens-shaped.

**Ligule.** The thin, collar-shaped appendage on the inside of the leaf-blade at the junction with the sheath.

**Linear.** Long and narrow, with parallel sides.

**Membranaceous.** Thin, soft and pliable, like a membrane,

**Moniliform.** Resembling a string of beads.

**Mucronate.** With a short, abrupt tip.

**Ob-.** Latin prefix signifying the reverse or contrariwise.

**Obovate.** Inversely ovate.

**Obtuse.** Blunt or rounded at the end.

**Orbicular.** Circular.

**Ovate.** Flat and having the outline of an egg, broadest toward the base.

**Ovoid.** A three-dimensional figure, ovate in outline.

**Papillose.** Bearing minute nipple-shaped projections.

**Perigynium.** The inflated, saclike organ surrounding the ovary or achene in *Carex*.

**Persistent.** Long-continuous and remaining attached.

**Phyllopydod.** Having the lower leaves with well-developed blades.

**Pistil.** The seed-bearing organ of a flower, consisting usually of ovary, style, and stigma.

**Pistillate.** Provided with pistils.

**Plano-convex.** Flat on one surface, rounded on the other.

**Plicate.** Plaited; folded as a fan.

**Puberulent.** Minutely pubescent.

**Pubescent.** Covered with hairs, especially short, soft, and down-like.

**Pulverulent.** Powdered; appearing as if covered with minute grains of dust.

**Punctate.** Dotted with depressions or with translucent glands.

**Rachilla.** A small axis of an inflorescence.
Revolute. Rolled back from the margins or apex.

Rhizome (or rootstock). A prostrate, more or less elongate stem, partly or completely beneath the surface of the ground and usually rooting at the nodes.

Rugose. Wrinkled. Rugulose: the diminutive.

Scabridulous. Slightly rough.

Scabrous. Rough to the touch.

Septate. Divided by partitions.

Serrate. With small, sharp teeth pointing forward.

Serrulate. Minutely serrate.

Sessile. Not stalked.

Setaceous. Bristle-shaped.

Setose. Beset with bristles.

Sheath. The tubular basal part of a leaf that encloses the stem.

Spike. A simple inflorescence with the flowers sessile or nearly so on a more or less elongated rachis.

Squarrose. Spreading rigidly at right angles or more.

Squamiform. Scalelike.

Staminate. Having stamens only (pistils lacking).

Stigma. The apical part of the pistil on which the pollen is deposited and germinates.

Stipitate. Having a stipe or stalk.

Stoloniferous. Producing trailing shoots above ground, often rooting at the nodes.

Striulate. Marked with fine longitudinal lines or streaks. Striolate: the diminutive.

Subulate. Awi-shaped; very narrow and tapering gradually from the base.

Sulcate. Longitudinally grooved or furrowed.

Terete. Circular in cross-section; cylindrical.

Trigonous. A three-dimensional figure, triangular in outline.

Truncate. Cut squarely across at the apex or base.

Ventral. Pertaining to the inner face of an organ, as opposed to dorsal.
INDEX

Accepted scientific names are in boldface italics; synonyms in plain italics. Common and sectional names are in Roman type.

<table>
<thead>
<tr>
<th>Carex</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>acrolepis</td>
<td>106</td>
</tr>
<tr>
<td>agrostoides</td>
<td>36</td>
</tr>
<tr>
<td>alma</td>
<td>208</td>
</tr>
<tr>
<td>androgyna</td>
<td>122</td>
</tr>
<tr>
<td>angustior</td>
<td>48</td>
</tr>
<tr>
<td>anisostachys</td>
<td>122</td>
</tr>
<tr>
<td>arsenii</td>
<td>76</td>
</tr>
<tr>
<td>atractodes</td>
<td>118</td>
</tr>
<tr>
<td>atrata var. discolor</td>
<td>180</td>
</tr>
<tr>
<td>athrostachya</td>
<td>74</td>
</tr>
<tr>
<td>aurea var. celsa</td>
<td>114</td>
</tr>
<tr>
<td>autumnalis</td>
<td>38</td>
</tr>
<tr>
<td>aztecica</td>
<td>108</td>
</tr>
<tr>
<td>ballsii</td>
<td>162</td>
</tr>
<tr>
<td>bartletti</td>
<td>106</td>
</tr>
<tr>
<td>bella</td>
<td>180</td>
</tr>
<tr>
<td>boliviensis</td>
<td>152</td>
</tr>
<tr>
<td>bonplandii</td>
<td>54</td>
</tr>
<tr>
<td>brevior</td>
<td>62</td>
</tr>
<tr>
<td>bromoides</td>
<td>50</td>
</tr>
<tr>
<td>capitata</td>
<td>22</td>
</tr>
<tr>
<td>caxinensis</td>
<td>144</td>
</tr>
<tr>
<td>chiapensis</td>
<td>166</td>
</tr>
<tr>
<td>chihuahuensis</td>
<td>42</td>
</tr>
<tr>
<td>chlorocarpos</td>
<td>122</td>
</tr>
<tr>
<td>chordalis</td>
<td>164</td>
</tr>
<tr>
<td>ciliaris</td>
<td>126</td>
</tr>
<tr>
<td>cladostachya</td>
<td>106</td>
</tr>
<tr>
<td>comosa</td>
<td>200</td>
</tr>
<tr>
<td>complanata</td>
<td>154</td>
</tr>
<tr>
<td>consors</td>
<td>160</td>
</tr>
<tr>
<td>conspecta</td>
<td>146</td>
</tr>
<tr>
<td>cortesii</td>
<td>168</td>
</tr>
<tr>
<td>coulteri</td>
<td>128</td>
</tr>
<tr>
<td>diehlii</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Page</th>
<th>Accepted scientific names are in boldface italics; synonyms in plain italics. Common and sectional names are in Roman type.</th>
</tr>
</thead>
<tbody>
<tr>
<td>106</td>
<td>Carex acrolepis</td>
</tr>
<tr>
<td>36</td>
<td>Carex agrostoides</td>
</tr>
<tr>
<td>208</td>
<td>Carex alma</td>
</tr>
<tr>
<td>122</td>
<td>Carex androgyna</td>
</tr>
<tr>
<td>48</td>
<td>Carex angustior</td>
</tr>
<tr>
<td>122</td>
<td>Carex anisostachys</td>
</tr>
<tr>
<td>76</td>
<td>Carex arsenii</td>
</tr>
<tr>
<td>118</td>
<td>Carex atractodes</td>
</tr>
<tr>
<td>180</td>
<td>Carex atrata var. discolor</td>
</tr>
<tr>
<td>74</td>
<td>Carex athrostachya</td>
</tr>
<tr>
<td>114</td>
<td>Carex aurea var. celsa</td>
</tr>
<tr>
<td>38</td>
<td>Carex autumnalis</td>
</tr>
<tr>
<td>108</td>
<td>Carex aztecica</td>
</tr>
<tr>
<td>162</td>
<td>Carex ballsii</td>
</tr>
<tr>
<td>106</td>
<td>Carex bartletti</td>
</tr>
<tr>
<td>180</td>
<td>Carex bella</td>
</tr>
<tr>
<td>152</td>
<td>Carex boliviensis</td>
</tr>
<tr>
<td>54</td>
<td>Carex bonplandii</td>
</tr>
<tr>
<td>62</td>
<td>Carex brevior</td>
</tr>
<tr>
<td>50</td>
<td>Carex bromoides</td>
</tr>
<tr>
<td>22</td>
<td>Carex capitata</td>
</tr>
<tr>
<td>144</td>
<td>Carex caxinensis</td>
</tr>
<tr>
<td>166</td>
<td>Carex chiapensis</td>
</tr>
<tr>
<td>42</td>
<td>Carex chihuahuensis</td>
</tr>
<tr>
<td>122</td>
<td>Carex chlorocarpos</td>
</tr>
<tr>
<td>164</td>
<td>Carex chordalis</td>
</tr>
<tr>
<td>126</td>
<td>Carex ciliaris</td>
</tr>
<tr>
<td>106</td>
<td>Carex cladostachya</td>
</tr>
<tr>
<td>200</td>
<td>Carex comosa</td>
</tr>
<tr>
<td>154</td>
<td>Carex complanata</td>
</tr>
<tr>
<td>160</td>
<td>Carex consors</td>
</tr>
<tr>
<td>146</td>
<td>Carex conspecta</td>
</tr>
<tr>
<td>168</td>
<td>Carex cortesii</td>
</tr>
<tr>
<td>128</td>
<td>Carex coulteri</td>
</tr>
<tr>
<td>60</td>
<td>Carex diehlii</td>
</tr>
<tr>
<td>150</td>
<td>Carex distentiformis</td>
</tr>
<tr>
<td>174</td>
<td>Carex donnell-smithii</td>
</tr>
<tr>
<td>66</td>
<td>Carex egglestonii var. festivelliformis</td>
</tr>
<tr>
<td>158</td>
<td>Carex ehrenbergiana</td>
</tr>
<tr>
<td>182</td>
<td>Carex emoryi</td>
</tr>
<tr>
<td>184</td>
<td>Carex endlichii</td>
</tr>
<tr>
<td>186</td>
<td>Carex eurycarpa</td>
</tr>
<tr>
<td>186</td>
<td>Carex eurycarpa var. oxyarpa</td>
</tr>
<tr>
<td>122</td>
<td>Carex felipensis</td>
</tr>
<tr>
<td>204</td>
<td>Carex frankii</td>
</tr>
<tr>
<td>108</td>
<td>Carex fusco tincta</td>
</tr>
<tr>
<td>152</td>
<td>Carex galbana</td>
</tr>
<tr>
<td>114</td>
<td>Carex garberi var. bifaria</td>
</tr>
<tr>
<td>88</td>
<td>Carex geophila</td>
</tr>
<tr>
<td>209</td>
<td>Carex globosa</td>
</tr>
<tr>
<td>124</td>
<td>Carex guatemalensis</td>
</tr>
<tr>
<td>106</td>
<td>Carex hartwegii</td>
</tr>
<tr>
<td>114</td>
<td>Carex hassei</td>
</tr>
<tr>
<td>140</td>
<td>Carex huethuetica</td>
</tr>
<tr>
<td>110</td>
<td>Carex hultenii</td>
</tr>
<tr>
<td>102</td>
<td>Carex humboldtiana</td>
</tr>
<tr>
<td>196</td>
<td>Carex hystric ina</td>
</tr>
<tr>
<td>44</td>
<td>Carex interior</td>
</tr>
<tr>
<td>30</td>
<td>Carex involucratella</td>
</tr>
<tr>
<td>176</td>
<td>Carex jamesonii</td>
</tr>
<tr>
<td>164</td>
<td>Carex jamesonii var. chordalis</td>
</tr>
<tr>
<td>164</td>
<td>Carex jamesonii var. gracilis</td>
</tr>
<tr>
<td>172</td>
<td>Carex jamesonii var. melanosperma</td>
</tr>
<tr>
<td>174</td>
<td>Carex jovis</td>
</tr>
<tr>
<td>64</td>
<td>Carex lagunensis</td>
</tr>
<tr>
<td>209</td>
<td>Carex lanuginosa</td>
</tr>
<tr>
<td>116</td>
<td>Carex laxiflora var. serrulata</td>
</tr>
<tr>
<td>178</td>
<td>Carex lemanniana</td>
</tr>
<tr>
<td>178</td>
<td>Carex lemanniana var. simplex</td>
</tr>
<tr>
<td>Species</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------</td>
<td>------</td>
</tr>
<tr>
<td>leucodonta</td>
<td>86</td>
</tr>
<tr>
<td>liebmannii</td>
<td>122</td>
</tr>
<tr>
<td>longicaulis</td>
<td>126</td>
</tr>
<tr>
<td>longicaulis var. coulteri</td>
<td>128</td>
</tr>
<tr>
<td>longii</td>
<td>68</td>
</tr>
<tr>
<td>longissima</td>
<td>78</td>
</tr>
<tr>
<td>lurida</td>
<td>206</td>
</tr>
<tr>
<td>mackenziana</td>
<td>136</td>
</tr>
<tr>
<td>macro sperma</td>
<td>102</td>
</tr>
<tr>
<td>maculata</td>
<td>160</td>
</tr>
<tr>
<td>madrensis</td>
<td>112</td>
</tr>
<tr>
<td>marcida</td>
<td>24</td>
</tr>
<tr>
<td>marianensis</td>
<td>38</td>
</tr>
<tr>
<td>melanospperm a</td>
<td>172</td>
</tr>
<tr>
<td>mexicana</td>
<td>106</td>
</tr>
<tr>
<td>monticola</td>
<td>122</td>
</tr>
<tr>
<td>oaxacana</td>
<td>122</td>
</tr>
<tr>
<td>occidentalis</td>
<td>32</td>
</tr>
<tr>
<td>oerstedii</td>
<td>106</td>
</tr>
<tr>
<td>olivacea</td>
<td>122</td>
</tr>
<tr>
<td>oreades</td>
<td>64</td>
</tr>
<tr>
<td>oreocharis</td>
<td>80</td>
</tr>
<tr>
<td>oxycarpa</td>
<td>186</td>
</tr>
<tr>
<td>percostata</td>
<td>40</td>
</tr>
<tr>
<td>perlonga</td>
<td>134</td>
</tr>
<tr>
<td>perstricta</td>
<td>96</td>
</tr>
<tr>
<td>pertenuis</td>
<td>132</td>
</tr>
<tr>
<td>peucophila</td>
<td>64</td>
</tr>
<tr>
<td>physorhyncha</td>
<td>82</td>
</tr>
<tr>
<td>pinetorum</td>
<td>64</td>
</tr>
<tr>
<td>pittierii</td>
<td>174</td>
</tr>
<tr>
<td>planostachys</td>
<td>92</td>
</tr>
<tr>
<td>polystachya</td>
<td>106</td>
</tr>
<tr>
<td>polystachya var. bartteii</td>
<td>106</td>
</tr>
<tr>
<td>polystachya var. madrensis</td>
<td>112</td>
</tr>
<tr>
<td>polysticha</td>
<td>202</td>
</tr>
<tr>
<td>potosina</td>
<td>26</td>
</tr>
<tr>
<td>praegracilis</td>
<td>24</td>
</tr>
<tr>
<td>pringlei</td>
<td>194</td>
</tr>
<tr>
<td>pseudo-cyperus var. polysticha</td>
<td>202</td>
</tr>
<tr>
<td>psilocarpa</td>
<td>160</td>
</tr>
<tr>
<td>purdiei</td>
<td>56</td>
</tr>
<tr>
<td>quichensis</td>
<td>120</td>
</tr>
<tr>
<td>ryynchophysa</td>
<td>82</td>
</tr>
<tr>
<td>ringens</td>
<td>86</td>
</tr>
<tr>
<td>rostrata</td>
<td>209</td>
</tr>
<tr>
<td>seacarella</td>
<td>100</td>
</tr>
<tr>
<td>schaffneri</td>
<td>26</td>
</tr>
<tr>
<td>schiedeana</td>
<td>94</td>
</tr>
<tr>
<td>schiedeana var. perstricta</td>
<td>96</td>
</tr>
<tr>
<td>schiedeana var. stellata</td>
<td>98</td>
</tr>
<tr>
<td>seatoniana</td>
<td>192</td>
</tr>
<tr>
<td>senda</td>
<td>209</td>
</tr>
<tr>
<td>spissa</td>
<td>188</td>
</tr>
<tr>
<td>spissa var. seatoniana</td>
<td>192</td>
</tr>
<tr>
<td>spissa var. ultra</td>
<td>190</td>
</tr>
<tr>
<td>standleyana</td>
<td>104</td>
</tr>
<tr>
<td>stella</td>
<td>98</td>
</tr>
<tr>
<td>stenolepis</td>
<td>204</td>
</tr>
<tr>
<td>steyermarkii</td>
<td>142</td>
</tr>
<tr>
<td>straminea var. australis</td>
<td>64</td>
</tr>
<tr>
<td>straminea var. brevior</td>
<td>62</td>
</tr>
<tr>
<td>stricta var. elongata</td>
<td>182</td>
</tr>
<tr>
<td>stricta var. emoryi</td>
<td>182</td>
</tr>
<tr>
<td>subbracteata var.</td>
<td>58</td>
</tr>
<tr>
<td>toluensis</td>
<td>208</td>
</tr>
<tr>
<td>subfusc a</td>
<td>198</td>
</tr>
<tr>
<td>thurberi</td>
<td>170</td>
</tr>
<tr>
<td>tojquianensis</td>
<td>46</td>
</tr>
<tr>
<td>townsendii</td>
<td>70</td>
</tr>
<tr>
<td>tribuloides</td>
<td>154</td>
</tr>
<tr>
<td>triceps</td>
<td>90</td>
</tr>
<tr>
<td>triquetra</td>
<td>156</td>
</tr>
<tr>
<td>tuberculata</td>
<td>156</td>
</tr>
<tr>
<td>tuberculata var.</td>
<td>158</td>
</tr>
<tr>
<td>ehrenbergiana</td>
<td>148</td>
</tr>
<tr>
<td>tunimanensis</td>
<td>84</td>
</tr>
<tr>
<td>turbinata</td>
<td>190</td>
</tr>
<tr>
<td>ultra</td>
<td>28</td>
</tr>
<tr>
<td>vallicola</td>
<td>138</td>
</tr>
<tr>
<td>vallicola var. hidalgensis</td>
<td>28</td>
</tr>
<tr>
<td>venosivaginata</td>
<td>182</td>
</tr>
<tr>
<td>viridiflora</td>
<td>130</td>
</tr>
<tr>
<td>viridis</td>
<td>130, 132</td>
</tr>
<tr>
<td>volcanica</td>
<td>52</td>
</tr>
<tr>
<td>xalapensis</td>
<td>34</td>
</tr>
<tr>
<td>xerantica</td>
<td>72</td>
</tr>
<tr>
<td>ACUTAE</td>
<td>182</td>
</tr>
<tr>
<td>ATRATAE</td>
<td>180</td>
</tr>
<tr>
<td>BICOLORES</td>
<td>114</td>
</tr>
<tr>
<td>BRACTEOSAE</td>
<td>28</td>
</tr>
<tr>
<td>Category</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------</td>
<td>------</td>
</tr>
<tr>
<td>CAPITATAE</td>
<td>22</td>
</tr>
<tr>
<td>DEWEYANAE</td>
<td>50</td>
</tr>
<tr>
<td>DIVISAE</td>
<td>24</td>
</tr>
<tr>
<td>EXTENSAE</td>
<td>150</td>
</tr>
<tr>
<td>FECUNDAE</td>
<td>156</td>
</tr>
<tr>
<td>FILIFOLIAE</td>
<td>76</td>
</tr>
<tr>
<td>GRANULARES</td>
<td>118</td>
</tr>
<tr>
<td>HISPIDAE</td>
<td>188</td>
</tr>
<tr>
<td>INDICAE</td>
<td>102</td>
</tr>
<tr>
<td>LAXIFLORAE</td>
<td>116</td>
</tr>
<tr>
<td>LONGICAULES</td>
<td>122</td>
</tr>
<tr>
<td>LONGIROSTRES</td>
<td>148</td>
</tr>
<tr>
<td>MONTANAE</td>
<td>82</td>
</tr>
<tr>
<td>MULTIFLORAE</td>
<td>36</td>
</tr>
</tbody>
</table>