Field Guide to Carex of New England

Lisa A. Standley
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About the Author:
Lisa A. Standley is an environmental consultant. She obtained a B.S., and M.S. from Cornell University and Ph.D. from the University of Washington. She has published several articles on the systematics of Carex, particularly Section Phacocystis, and was the author of several section treatments in the Flora of North America.

Cover Illustrations:
Pictured are Carex pensylvanica and Carex intumescens.
Acknowledgements

This book is dedicated to Robert Reed, who first urged me to write a user-friendly guide to Carex; to the memory of Melinda F. Denton, my mentor and inspiration; and to Tony Reznicek, for always sharing his expertise. I would like to thank all of the people who helped with this book in so many ways, particularly Karen Searcy and Robert Bertin for their careful editing; Paul Somers, Bruce Sorrie, Alice Schori, Pam Weatherbee, and others who helped search for sedges; Arthur Gilman, Melissa Dow Cullina, and Patricia Swain, who carefully read early drafts of the book; and to Emily Wood, Karen Searcy, and Ray Angelo, who provided access to the herbaria at Harvard University, the University of Massachusetts, and the New England Botanical Club.
INTRODUCTION

I wrote this book to share my enthusiasm for the beauty and complexity of the genus Carex, and to help other botanists appreciate and identify its species. I began this enterprise at the urging of my friend Bob Reed, who wanted an illustrated guide that amateurs could easily use. The book provides easy-to-use keys, descriptions and illustrations of the 188 species of Carex in New England, and is intended to allow botanists to identify species in the field without recourse to microscopic characters or difficult technical keys.

Carex is a member of the Cyperaceae, the sedges, a world-wide family of wind-pollinated, grass-leaved monocots. The sedges are probably most closely related to the rushes (Juncaceae): both families share unique characters of pollen development, chemistry, and chromosome structure. Carex is one of the largest genera of the Cyperaceae, with approximately 2000 recognized species, and is predominantly a northern hemisphere group, although species occur in some southern hemisphere temperate and mountain regions. Carex has a unique flowering structure of unisexual (separate male and female) flowers with the female flowers enclosed in a bottle-like structure called a perigynium. Its closest relatives are the small northern genus Kobresia and the southern hemisphere genus Uncinia, both of which have perigynium-like structures.

Species of Carex occur in all New England habitats, from coastal sand dunes and salt marshes to the highest alpine summits, and are generally good habitat indicators since species tend to have fairly narrow ecological ranges and high habitat specificity. While carices tend to be dominants in most New England wetland communities, only 42 percent of our species occur in wetlands. Many of these are common and widely distributed, although some are highly specialized and infrequent. More species occur in upland habitats (forests, meadows, and open disturbed sites) than in wetlands, but the upland species are rarely community dominants and may be very patchy in their distribution.

Most of the Carex species in New England are native to our region, with only eight adventive species: six introduced from Europe or Asia (Carex caryophyllea, C. hirta, C. kobomugi, C. ovalis, C. panicea, and C. spicata) and two from the midwest (C. oklahomensis and C. praegracilis). Most of these introductions persist in small scattered populations and have not become weedy, except for Carex praegracilis, a salt-tolerant species that has become established along highways.

In 2004, a total of 96 species (51 percent of the total Carex flora of New England) were listed on the state Endangered Species lists, as endangered, threatened, special concern, or historic. With the exception of a few globally rare species, the majority of New England species of conservation interest are more common in other parts of their range and are associated with specialized habitats in New England – alpine summits, calcareous wetlands, Atlantic white cedar swamps, rich deciduous woods, or prairie remnants.

“Flora Conservanda,” the New England Plant Conservation Program’s list of New England plants in need of conservation, lists 53 species of Carex that are of regional conservation concern. Seven species are globally rare (C. garberi, C. lupuliformis, C. mitchelliana, C. oronensis, C. polymorpha, C. schweinitzii, and C. wiegandii). None of these, however, are on the Federal Endangered Species list. The regionally rare species include taxa with a wide range of geographic affinities – northern boreal species that reach their southern limits in northern Maine or on the high peaks of the White Mountains, southern coastal plain species that reach their northern limits in Rhode Island or southern Massachusetts, and north-central prairie and rich deciduous woods species that reach their eastern limits in New England. Six species were listed by Flora Conservanda as historic in New England – C. atherodes, C. nigromarginata, C. pratensis, C. rariflora, C. willdenowii, and C. woodii. Two of these (C. atherodes and C. willdenowii) have recently been rediscovered. This book includes all of the potentially historic species except C. woodii, which was likely never actually found in New England.

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All of the New England species of *Carex* are herbaceous perennials with underground perennial stems (rhizomes) that may grow mostly vertically (producing clusters of shoots) or horizontally (producing single shoots). These above-ground shoots are annual and bear the leaves and flowers. The growth of these perennial rhizomes is termed “vegetative reproduction” and it is how plants persist in one place for years or decades. The great diversity within the genus is related to its sexual reproductive structures, the flowers. The great evolutionary radiation of the genus is primarily manifested in these reproductive parts which are the basis by which species are distinguished and identified.

*Carex* species are generally wind-pollinated, producing seed when pollen is transferred from the anthers of one plant to the stigmas of another by wind. All of the carices that have been studied require pollination in order to set seed, and none have been shown to be apomictic or reproduce asexually. Pollen transfer between plants is promoted either by the structure of the inflorescence (male and female flowers are on separate spikes) or by a difference in the timing of male and female functions (anthers release pollen after, or before, female stigmas are receptive). A few observations have been made of insect visitation, particularly by syrphid (bee) flies, but this is thought to be a secondary and less important means of reproduction. Some species may be self-pollinating, with the male and female flowers close together and either receptive at the same time or enclosed in large bracts that inhibit wind transfer of pollen.

A few species of *Carex* are dioecious, with separate male and female individuals. This unusual condition appears to have evolved independently in several groups. In New England, dioecious species include *Carex gynocrates*, *Carex scirpoidea*, and *C. sterilis*. The introduced sand dune species, *Carex kobomugi*, has separate male and female flowering shoots on the same plant, but does not have genetically distinct sexes.  

Seed dispersal in *Carex* is relatively unspecialized. Achenes are dispersed enclosed in the perigynia, some of which appear to be adapted for wind dispersal (flat, light, wing-like perigynia) or water dispersal (large, inflated perigynia). A few species have unique adaptations for ant dispersal (myrmecochory). In these taxa, the entire perigynium or the base of the perigynium is colored or white and full of a soft tissue that is eaten by ants, after the ants have transported the entire perigynium and achene to the ant nest. Ant-dispersed species include *Carex aurea*, *C. digitalis*, *C. pedunculata*, *C. tonsa*, and *C. umbellata* and probably also other members of Sections *Acrocystis* and *Laxiflorae*. The ant-bodies at the base of perigynia shrivel when dried and generally are not visible in herbarium specimens. The distribution of these taxa reflects their seed dispersal: *C. digitalis* is frequently found growing on rotten logs that are inhabited by ants, and *C. umbellata* and *C. pensylvanica* are often seen growing densely around the edges of ant hills in open sandy habitats.

Hybridization among species of *Carex* has been a topic of considerable interest and has often been invoked as a possible cause of the large number of species in the genus. Fernald listed more than 40 hybrids. Recent studies and documentation have supported some of these, and show that several hybrids have become stabilized and should be treated as distinct species. Hybridization generally occurs among closely related species (in the same section) and where disturbance creates new sites for seed germination and brings potential parent species into proximity. For example, hybrids are common among the maritime taxa of Section *Phacocystis* in Quebec and the maritime provinces, and has resulted in the origin of at least two widespread stabilized hybrid species (*Carex recta* and *C. salina*).

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TAXONOMY AND NOMENCLATURE

The species of Carex in North America are grouped into two major subgenera, Vignea and Carex. Vignea includes those species whose female flowers have 2 stigmas and flat lenticular achenes, and are arranged in short, sessile, bisexual spikelets. There are two major groups within Vignea, the species in which the male flowers are at the tip of each spikelet and the species in which the male flowers are at the base of each spikelet. Subgenus Carex includes those species with 3 stigmas and triangular achenes (although one group has 2 stigmas and lenticular achenes) arranged in elongate unisexual spikelets.

The most recent taxonomic treatment of the genus recognizes 480 species in North America (FNA), grouped into 60 sections with 45 sections represented in New England. Treatments of Carex in northeastern US and adjacent Canada (FNA, Gray’s Manual, Gleason & Cronquist) have shown that nearly half of the total species diversity of North America occurs in our region, although the authors differ slightly in the number of species recognized.

In the formal taxonomic system, species of Carex are grouped into sections based on similarities in inflorescence, perigynium, achene, and scale characters. Many sections are represented by only a single species in North America, while other sections are larger and easily recognizable as “natural” groups, particularly Acrocoeyis (formerly called Montanoea), Laxiflorae and Ovales. While the beginner can easily recognize these large sections, the species within them may not be easily distinguishable. This book does not attempt to provide a key to these sections nor are species descriptions organized by section. The focus of this book is ease of identification of species and it is therefore organized “artificially” and is not a taxonomic treatment. Species are grouped by physical similarities that may not reflect their actual evolutionary relationships. The advanced student of Carex is encouraged to work with other treatments, such as FNA, to learn the taxonomic organization of the genus, which is summarized in the chapter Taxonomic Relationships. Synonyms (scientific names that are no longer used for species) are provided only where those names have been in recent use or to reduce confusion where the nomenclature has been recently revised.

Carex still presents many taxonomic and evolutionary questions that invite scientific inquiry. The recent Flora of North America (FNA) provides the most up-to-date and comprehensive treatment, but questions of species definitions and relationships persist in many groups that have not been thoroughly studied using modern systematics techniques.

A Note on Names

This book uses scientific names for all species because they are accurate, easy to learn, and because true common names don’t exist for most species. Most amateur botanists, and many professionals, use common (colloquial or vernacular) names for plant species. These names have arisen out of common usage, typically for plants that are abundant in the landscape. Plants of different regions may have different regional common names, reflecting the unique history of the human settlement, and have different names in different languages. Common names are particularly useful where the group of organisms is relatively small, and common names are simple and memorable. Sedges do not comfortably fit this model. Because species are difficult to distinguish and lack agricultural importance, non-botanists have not recognized different species or given them common names. There are no colloquial names for sedge species with the exception of a few common and distinctive species like Carex stricta (tussock sedge). In recent years, common names for Carex species have been invented, often using english translations of their common names. I do not use these names here because I find them cumbersome, confusing, and no easier to learn than the scientific names themselves. Carex platyphylla is easier to learn than “broad-leaved woodland


sedge”; Carex laxiflora easier than “loose-flowered woodland-sedge”; Carex nigra is no more difficult to learn than “black sedge”. I urge you not to be afraid of scientific names!

IDENTIFYING SPECIES

Identifying Carex species often seems daunting because of the many specialized terms used to describe structures on the plants. Unfortunately, these terms are necessary, because Carex has structures that are not found in other plant groups. In this section, through definitions and illustrations, I will try to de-mystify the arcane language of Carex so that you can use this book more effectively. The illustration on page 6 shows some of the terms defined below. The Glossary (page 165) provides additional definitions for terms used in the species descriptions.

Fundamentally, plants of Carex consist of perennial underground stems (rhizomes) which produce annual above-ground stems. These aerial stems may have just leaves (vegetative shoots), or they may have leaves and flowers (flowering shoots). Individual flowers are tiny and unisexual (male or female, never both), and are produced in clusters called spikes or spikelets. Each spikelet is located above a small leaf (bract). Collectively, all of the spikelets on a stem are called the inflorescence. We will only be concerned with the structure of the female flowers since the male flowers are all alike - three stamens borne above a scale. Each female flower is a single naked ovary that is contained in a bottle-shaped structure called a perigynium. Each perigynium is located above a small, papery leaf called a scale. The ovary, still inside the perigynium, matures into a small, hard single-seeded nutlike fruit called an achene.

Rhizomes are perennial underground stems, the parts of the plant that live from year to year. Like all monocot stems, rhizomes have nodes (the point along the stem where leaves, buds, and aerial stems are produced) and internodes (the elongate segment between 2 nodes). A small, tough leaf called a scale is produced at each node. Carex rhizomes have several distinct growth patterns that determine the above-ground structure of the plants. Some species have only very short rhizomes that grow vertically, producing a dense clump of vegetative and flowering stems (caespitose plants). Other species have only elongate rhizomes that grow horizontally, producing single flowering or vegetative stems (rhizomatous plants). Still others are intermediate with both elongate and vertical rhizomes, and produce scattered small clumps of stems. In this book, I will only note the growth forms that are really distinctive for identification, the very caespitose or very rhizomatous forms.

Leaves have two distinct parts - the sheath, which is the lower tubular portion of the leaf that encloses the stem, and the blade, which is the (usually) flat part of the leaf above the sheath. Because the stems of the vegetative shoots are generally very short, sheaths are usually only visible on the flowering shoots. Sheaths provide many useful characters for identification. The lower sheaths on the flowering shoot are generally colored, tough or thick in texture, and lack blades. Upper sheaths have several distinct regions: The sheath back, which is continuous with the blade, is generally green and leaflike in texture. The sheath front, which ends at the apex of the tubular sheath, is generally thin and translucent. The top of the sheath front is called the apex. Variations include color, spots, corrugations, prickles, hairs, and the shape of the sheath mouth (concave, convex, prolonged upward). Leaves of Carex have a ligule at the base of the blade, on the upper side. The ligule is an inconspicuous flap of tissue that extends outward from the blade, and is variable in its shape. Blades vary in color (dark green, yellowish green, grayish green), width, texture (soft or firm), cross-sectional shape (flat, V-shaped, W-shaped, incurved), and surface texture (smooth, scabrous, hairy).

Inflorescences have three basic structures. The inflorescence may consist of a single spikelet; spikelets may be very close together and almost indistinguishable, forming a head; or single spikelets may occur at intervals along the stem. Spikelets may be sessile or stalked, erect or drooping. The distance between spikelets (close together or widely separated) may be important in identification. Generally, plants with lenticular achenes have short sessile spikelets, while plants with triangular achenes have more elongate, cylindrical, often stalked, spikes.

Bracts, being modified leaves, have a sheath and a blade. The blade may be broad and leaflike, narrow and bristle-like, or reduced and similar to the scales that subtend the perigynia. In some species, the sheath is...
very short and appears to be absent. The length of the bract relative to the lowest spikelet or the entire inflorescence may be important in identification.

**Spikes or spikelets** are the smallest clusters of flowers on the plant, and provide many useful characters for identifying species. About half of the species of *Carex* have small, sessile, round or ovate spikelets that are all alike. In this group, each spikelet contains both male and female flowers (spikelets are unisexual). The male flowers may occur at the tip or at the base of each spikelet. After the brief flowering period, the male flowers are present only as empty scales and are difficult to identify. Since it is very difficult to tell whether the male flowers are at the tip or base of a spikelet except when the plant is in flower, I do not use it for identification in this book, but use other, more obvious, spikelet characters. The remaining species have spikes that are generally cylindric or elongate, stalked, and that generally contain only male or female flowers. Typically, the lower spikelets are all female and the upper spikelets are (usually) all male. In some groups, the upper spikelet is partially female.

**Scales** associated with the perigynia are sometimes useful as identification characters. The length and width of the scale relative to the perigynium is important, as is the scale color and the shape of the apex (round, acute, cuspidate, acuminate). These small papery structures have a central nerve or midvein that may be extended beyond the body of the scale to form a bristle or **awn**.

**Perigynia** (plural - the singular is **perigynium**) are the most important diagnostic structures. They exhibit tremendous variation in shape, color, texture, and size. Perigynia function, we think, both in protecting the developing achene from predators and in seed dispersal. Each perigynium consists of a **base** where it attaches to the stem and a **body** which encloses the achene. The style and stigmas protrude through an opening at the apex which may be prolonged into a cylindrical **beak** that encloses the style. Perigynia may have **nerves**, ranging from 2 to many (although some species appear to have none). The side of the perigynium closest to the stem is the front (also called ventral or abaxial side), while the side away from the stem is the back (dorsal or adaxial side).

There are 2 major types of perigynia in *Carex*. Generally, species with round or triangular perigynia (and elongate unisexual spikes) have 3 stigmas and triangular achenes, while plants with flattened perigynia have 2 stigmas and lenticular achenes (and short sessile bisexual spikes). A few species have 2 stigmas and lenticular achenes, but have elongate unisexual spikes. Because it is very difficult to determine the number of stigmas directly unless plants are in flower, a stage at which plants cannot be identified since identification requires mature perigynia and achenes. The keys in this book use achene shape and perigynium cross-sectional shape rather than the number of stigmas.

The adaptive significance of most of the many variations in perigynium structure is still not known, but they are very useful in distinguishing the species. Remember that you need mature (ripe) perigynia to identify most species of *Carex*! Here are some of the variations:

**Base**
- sessile or stipitate (stalked)
- tapering or rounded
- empty or swollen and filled with spongy tissue

**Body**
- in cross-section: rounded and inflated, triangular, biconvex, flat; or planoconvex
- in 3-dimensional view: obovoid, ellipsoid, ovoid, subulate
- smooth, rough, hairy, scabrous or papillose
- thin or thick (firm or leathery)
Introduction

- with or without nerves

**Beak**
- long, short, or lacking
- the mouth (orifice, opening) may be entire, oblique, or toothed
- straight or bent
- edges smooth or serrate

**Achene**
- triangular (plants with 3 stigmas) or flattened and lenticular (plants with 2 stigmas)
- sessile or stipitate (stalked)
- dull or shiny
- irregular in shape (indented, knobbed)
- the style may be fragile and withered by the time the achene is mature, or it may be bony and persistent even when the achene is mature.

**HOW TO USE THIS BOOK**

This book uses artificial groups of species and diagnostic characters presented in a matrix format for ease of identification. The *Guide to the Groups* identifies the 21 artificial groups of species that I have developed to help you identify and learn to recognize the species of *Carex* in New England. This is a simple matrix key. To use it, first select the best description in column 1, then the best description within that category in column 2, then the best description within that category in column 3.

Once you have selected a Group using the *Guide to the Groups*, turn to the *Diagnostic Matrix* for that group. The matrix highlights key characters (*Look For*) which easily distinguish each species. *Diagnostic Features* are given for each species, and generally include a brief description of the scales, perigynia, leaf width, and habitat. Traditional dichotomous keys to the groups, and to species within each group, are also provided for readers who prefer to use keys.

Once you have selected a species using either the matrix or key, turn to the *Species Description*. This provides detailed information on distinctive features; characteristics of the leaves, sheaths, inflorescence, bracts, scales, perigynia, and achenes; a discussion of characteristic habitats; distribution within New England; and notes that may be useful in distinguishing similar or closely related species or that highlight interesting information. The illustration of the perigynia and other distinctive features should also be consulted to confirm identification. The description also provides the name of the Section to which each species is assigned (see *Taxonomic Relationships*, page 169, for a discussion of each section).

Achieving proficiency in identifying *Carex* requires time in the field, familiarity with these keys, and repetition. Collecting specimens for a personal herbarium, or taking photographs to create a digital herbarium, will help you confirm your identifications. With repetition, you can easily learn to recognize the common species and key out unknown plants. As you master field identification, be aware of the wonderful beauty and diversity that has evolved within *Carex*.

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Representative Carex structures. Inflorescences: (1) separate, cylindrical unisexual spikes. (2) separate, sessile spikes all alike and male at the base. (3) dense head of small sessile spikes. (4) separate cylindrical spikes, the upper one male at the base only. (5) unisexual, cylindrical drooping spikes. (6) small, separate sessile spikes, the spikes all alike and male at the apex. Plant: (7a) inflorescence, (7b) flowering stem, (7c) vegetative stem, (7d) scale-leaves, (7e) rhizome. Sheath: (8a) back, (8b) front, (8c) ligule, (9) ladder-fibrillose sheath front. Scales: (10a) scale body, (10b) awn, (11) acute apex. Perigynia (12a) body, (12b) beak, (13a) achene inside perigynium, (13b) style, (13c) stigmas, (15a) back of a plano-convex perigynium, (15b) front of a plano-convex perigynium, (16) flat perigynium, (17) beakless perigynium. Achene: (14) achene with continuous persistent style.
Key to the Groups

GUIDE TO THE GROUPS

<table>
<thead>
<tr>
<th>Inflorescence</th>
<th>Spikes</th>
<th>Perigynia/Other Features</th>
<th>Group</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single spike</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spikes all alike, short and sessile – perigynia planoconvex or flat</td>
<td>Dense head with many (&gt;10) crowded spikes (occasionally the lowest spikes separate)</td>
<td>Perigynia planoconvex, ascending or spreading</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2-10 separate spikes</td>
<td>Perigynia planoconvex, ascending</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>2-10 separate spikes</td>
<td>Perigynia planoconvex, spreading</td>
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<td>40</td>
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<tr>
<td></td>
<td>2-10 spikes, separate or in a short dense head</td>
<td>Perigynia flat, winged, shorter than the scales</td>
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<td>49</td>
</tr>
<tr>
<td></td>
<td>2-10 spikes, separate or in a short dense head</td>
<td>Perigynia flat, winged, longer and wider than the scales, 2 mm wide or narrower (rarely to 2.5 mm)</td>
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<td>55</td>
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<tr>
<td></td>
<td>2-10 spikes, separate or in a short dense head</td>
<td>Perigynia flat, winged, longer and wider than the scales, more than 2 mm wide</td>
<td>7</td>
<td>64</td>
</tr>
<tr>
<td>All spikes alike, all female, cylindrical or elongate, terminal spike with empty scales at base</td>
<td>Drooping</td>
<td>Perigynia round or triangular, rarely biconvex</td>
<td>8</td>
<td>70</td>
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<tr>
<td></td>
<td>Erect</td>
<td>Perigynia round or triangular, rarely biconvex</td>
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<td>76</td>
</tr>
<tr>
<td>Lower spikes female, cylindrical, terminal spike male (all empty scales)</td>
<td>Spikes hidden at base of plant</td>
<td>Perigynia subulate (narrow, tapering from base to apex)</td>
<td>10</td>
<td>83</td>
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<tr>
<td></td>
<td>Drooping or erect</td>
<td>Perigynia beakless or minutely beaked, biconvex</td>
<td>11</td>
<td>87</td>
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<td></td>
<td>Drooping</td>
<td>Perigynia beaked and round or trigonous</td>
<td>12</td>
<td>90</td>
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<td>Drooping</td>
<td>Perigynia biconvex</td>
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<td></td>
<td>Erect</td>
<td>Perigynia biconvex</td>
<td>14</td>
<td>104</td>
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<tr>
<td></td>
<td>Erect</td>
<td>Perigynia hairy, to 4-5 mm long; beak short (generally 1 mm or less, entire); scales colored</td>
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<td>112</td>
</tr>
<tr>
<td></td>
<td>Erect</td>
<td>Perigynia triangular, flat-sided; leaves very wide (2 cm or more), pleated</td>
<td>16</td>
<td>122</td>
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<tr>
<td></td>
<td>Erect</td>
<td>Perigynia beakless, nerved</td>
<td>17</td>
<td>125</td>
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<td></td>
<td>Erect</td>
<td>Perigynia short-beaked (2 mm or less)</td>
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<td>132</td>
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<td></td>
<td>Erect</td>
<td>Perigynia hairy or scabrous, with distinct (&gt;1mm) gen. bidentate beaks, to 12 mm long</td>
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<td>146</td>
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<tr>
<td></td>
<td>Erect</td>
<td>Perigynia large (5-15 mm) beaked, nerved</td>
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<td>157</td>
</tr>
<tr>
<td>Lower spikes female, globose, terminal spike male (all empty scales)</td>
<td>Globose, perigynia on lower half reflexed</td>
<td>Perigynia beaked, nerved</td>
<td>20</td>
<td>153</td>
</tr>
</tbody>
</table>
### Key to the Groups

1. Spike single.................................................................................................................... Group 1 (p. 11)

1. Spikes more than one

2. Several small spikes, all alike and sessile, achenes lenticular (perigynia flat or planoconvex)

3. Spikes forming a dense head or elongate spike-like inflorescence, often branched, with > 10 spikes, individual spikes generally not distinct except at base of the inflorescence; perigynia planoconvex............................................................................................................ Group 2 (p. 18)

3. Spikes few (<10), distinct or clustered, inflorescence simple (one spike per node)

4. Perigynia thick, flat on one side (planoconvex), not wing-margined

5. Perigynia ascending ................................................................. Group 3 (p. 34)

5. Perigynia spreading .................................................................................. Group 4 (p. 40)

4. Perigynia thin, flattened, wing-margined

6. Scales as long as or longer than the perigynia ...................................... Group 5 (p. 49)

6. Scales shorter and narrower than the perigynia

7. Perigynia 2 mm wide or less (rarely 2.5 mm)................................. Group 6 (p. 55)

7. Perigynia more than 2 mm wide ............................................... Group 7 (p. 64)

2. Spikes cylindric or globose, generally peduncled, generally with male and female flowers on separate spikes or all spikes appearing female (the terminal spike with some empty scales at base), achenes lenticular or trigonous (perigynia biconvex, trigonous or round).

8. Leaves 2 cm wide or more ......................................................... Group 16 (p. 122)

8. Leaves less than 2 cm wide

9. All spikes predominantly female, cylindrical, male flowers present only at the base of the terminal spike

10. Spikes drooping ........................................................................ Group 8 (p. 70)

10. Spikes erect .................................................................................. Group 9 (p. 76)

9. Male and female flowers on separate spikes, the terminal spike(s) all or mostly male

11. Flowering stems very short, hidden at the base of the plant ............ Group 10 (p. 83)

11. Flowering stems elongate, not hidden

12. Perigynia narrowly subulate .............................................................. Group 11 (p. 87)

12. Perigynia not subulate

13. All spikes drooping

14. Perigynia beakless or minutely beaked (<0.5 m), generally biconvex ......................................................................................... Group 12 (p. 90)

14. Perigynia beaked, the beak > 0.5 mm, round or trigonous......................................................................................... Group 13 (p. 98)

13. Spikes erect (at most the lowest drooping)

15. Perigynia biconvex ........................................................................ Group 14 (p. 104)

15. Perigynia round or trigonous (rarely triangular) in cross-section
Key to the Groups

16. Perigynia hairy or scabrous
   17. Beak short (1 mm or less except in No. 132), entire; perigynia small, 2-4.5 mm; plants
       generally < 50 cm ................................................................. Group 15 (p. 112)
   17. Beak 1-4 mm long, gen. bidentate; perigynia 2.5-12 mm long; plants tall,
       generally > 50 cm ................................................................. Group 19 (p. 146)

16. Perigynia glabrous
   18. Perigynia beakless or short-beaked (≤ 1 mm)
       19. Perigynia beakless, nerved.................................................. Group 17 (p. 125)
       19. Perigynia short-beaked (generally <1 mm)......................... Group 18 (p. 132)
   18. Perigynia distinctly beaked (1 mm or more), bidentate, nerved
       20. Spikes globose ................................................................. Group 20 (p. 153)
       20. Spikes cylindric................................................................. Group 21 (p. 157)
### Group 1 - Plants with a single spike

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Leaf W (mm)</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia large, inflated, obconic; beaks long, slender; conspicuous empty scales at base of spike</td>
<td>acuminate or awned; spreading or reflexed 6.0-7.0 mm long</td>
<td>3-6</td>
<td>wetlands</td>
<td>1. <em>C. squarrosa</em></td>
</tr>
<tr>
<td>Perigynia few, slender, subulate, reflexed</td>
<td>falling early</td>
<td>1-2</td>
<td>bogs</td>
<td>2. <em>C. pauciflora</em></td>
</tr>
<tr>
<td>Spike elongate, unisexual; perigynia hairy</td>
<td>red-brown ciliate margins; erect 2.5-3.0 mm long</td>
<td>1-2</td>
<td>alpine, esp. on serpentine</td>
<td>3. <em>C. scirpoidea</em></td>
</tr>
<tr>
<td>Perigynia dark brown, glossy; beaks cylindric, smooth</td>
<td>pale; spreading 3.0-5.0 mm long thick-walled</td>
<td>1</td>
<td>bogs, esp. with <em>Thuja</em></td>
<td>4. <em>C. gynocrates</em></td>
</tr>
<tr>
<td>Perigynia dark brown; beaks flat, serrate; spike with empty scales at the base</td>
<td>chestnut; reflexed 2.5-4.5 mm long planoconvex</td>
<td>1-1.5</td>
<td>bogs</td>
<td>5. <em>C. exilis</em></td>
</tr>
<tr>
<td>Scales longer than perigynia, white-margined</td>
<td>bract-like; erect 4.0-6.0 mm long green beak flat, serrate</td>
<td>1.5-4</td>
<td>woods</td>
<td>6. <em>C. wilddenowii</em></td>
</tr>
<tr>
<td>Lowest scale longer than perigynium, green</td>
<td>spathe-like, erect 4.5-6.0 mm long</td>
<td>3-6</td>
<td>woods</td>
<td>7. <em>C. backii</em></td>
</tr>
<tr>
<td>Perigynia beakless, narrowly ellipsoid, nerved when dry</td>
<td>translucent; erect 2.5-4.5 mm long</td>
<td>0.7-1.2</td>
<td>wetlands, bogs, seepage swamps</td>
<td>8. <em>C. leptalea</em></td>
</tr>
<tr>
<td>Perigynia planoconvex; beaks very short, translucent</td>
<td>brown with broad hyaline margins; erect 2.0-3.5 mm long ovoid upper half brown</td>
<td>0.5</td>
<td>alpine</td>
<td>9. <em>C. capitata</em></td>
</tr>
</tbody>
</table>
1. **Carex squarrosa** Linnaeus  

**SECTION SQUARROSAE**

**DISTINCTIVE FEATURES:** A rare, medium-sized sedge of wet habitats. The single large, cylindrical spike is male at the base (empty scales), with many crowded, inflated, long-beaked perigynia. **FIGURE 1.**

- **Leaves** 3-6 mm wide, longer than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, often tawny and brown-spotted, the apex deeply concave.
- **Inflorescence** a single oblong or globose spike 1.5-3.5 x 1.0-2.2 cm, male at the base (empty scales), the perigynia crowded and spreading.
- **Bract** leaflike, longer than the spike, not sheathing at base.
- **Scales** narrower and shorter than the perigynia, tawny with a green center, the apex acuminate or awned.
- **Perigynia** 6.0-7.0 x 3.0 mm, rounded in cross-section, inflated, the body obovoid, green, several-nerved; apex truncate; base rounded; beak abrupt, 2.0-3.0 mm long, spreading at a right angle, the tip bidentate.
- **Achenes** trigonous; style persistent, contorted; stigmas 3.

**HABITAT:** Saturated or seasonally saturated, acid soils; wet meadows, stream banks or forested wetlands. CT.

**NOTES:** Similar to *C. typhina*, but distinguished by the generally single spike, the acuminate or awned scales, the contorted style, and the perigynia with spreading beaks. Achenes in this species are narrowly
ovoid, whereas *C. typhina* has obovoid achenes. Conservation Concern: CT (Special Concern). A single record for Massachusetts, apparently planted.

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**Figure 1.** 1. *Carex squarrosa*; 2. *Carex pauciflora*; 3. *Carex scirpoidea*; 4. *Carex gynocrates*; 5. *Carex exilis.*

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**2. *Carex pauciflora* Lightfoot**

**SECTION LEUCOGLOCHIN**

**DISTINCTIVE FEATURES:** A small, slender rhizomatous sedge of sphagnum bogs, with a single spike and subulate, reflexed perigynia. **FIGURE 1.**

- **Leaves** 1-2 mm wide, involute, shorter than or equaling the flowering stem.
- **Lower sheaths** brown; upper sheath fronts hyaline, shallowly concave at apex.
- **Inflorescence** a single spike to 1 cm long, male at the apex (empty scales), the few (1-6) perigynia strongly reflexed.
- **Bract** absent.
- **Scales** shorter and wider than the perigynia, pale brown, the apex acute, early deciduous (falling before the perigynia).
- **Perigynia** 6.0-8.0 x 1.0-1.5 mm, round or unequally biconvex in cross-section, tawny-brown, indistinctly nerved; apex tapering; base rounded, spongy, sessile, subulate; beak indistinct, short, entire, hyaline.
- **Achene** trigonous; style persistent; stigmas 3.

**HABITAT:** Sphagnum bogs. CT, MA, ME, NH, VT.

**NOTES:** Conservation Concern: CT (Special Concern), MA (Endangered).
3.  *Carex scirpoidea* Michaux  

**SECTION SCIRPINAE**

**DISTINCTIVE FEATURES:** A short sedge of dry alpine habitats, with a single unisexual spike, hairy perigynia and diagnostic red-brown scales and sheaths. Plants are dioecious – all stems on a plant bear either female or male spikes. **FIGURE 1.**

- **Leaves** 1-2 mm wide, shorter than stems.
- **Lower sheaths** red-brown, ladder-fibrillose, lacking blades; upper sheath fronts pubescent, tawny, the apex shallowly concave.
- **Inflorescence** a single elongate, erect unisexual spike, 1-3 cm long.
- **Bract** absent.
- **Female scales** shorter and narrower than the perigynia, red-brown, densely short-pubescent, margins ciliate.
- **Perigynia** 2.5-3.0 x 1.3-1.5 mm, flattened/biconvex, obovoid, tawny-brown, densely short-pubescent, lacking nerves; apex rounded; base obtuse; beak short, entire, ciliate, brown.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Dry soils in open alpine or subalpine habitats, on calcareous or serpentine substrates. ME, NH, VT.

**NOTES:** An uncommon species, generally of alpine habitats on open ledges (Mt. Washington, Mt. Katahdin) or unusual substrates (Mt. Equinox). This species may co-occur with *C. bigelowii*, which has several spikes and glabrous perigynia. *C. scirpoidea* is one of the few *Carex* species with separate male and female plants (dioecious). New England plants are var. *scirpoidea*. Conservation Concern: ME (Threatened), NH (Threatened).

4.  *Carex gynocrates* Wormskjöld ex Drejer  

**SECTION PHYSOGLOCHIN**

**DISTINCTIVE FEATURES:** A rare, slender sedge of bogs (particularly *Thuja* swamps), with a single bisexual spike and distinctive dark brown thick-walled perigynia. **FIGURE 1.**

- **Leaves** less than 1.0 mm wide, involute, shorter than stems.
- **Lowest sheaths** brown; upper sheath fronts hyaline, tawny, the apex loose, truncate.
- **Inflorescence** 1.0-1.5 cm long, a single spike, either unisexual or male at the apex (empty scales), with 5-10 widely spreading perigynia.
- **Bract** absent.
- **Scales** only slightly shorter and wider than the perigynia, pale brown, acute.
- **Perigynia** 3.0-5.0 x 1.5-2.0 mm, planoconvex, ovate, dark glossy brown, thick-walled, nerved; apex subacute; base rounded, sessile; beak 0.3-0.5 mm, cylindric, smooth or scabrous, hyaline at apex.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Sphagnum bogs, particularly dominated by *Thuja*. ME.

**NOTES:** A rare species known from few locations in New England. Conservation Concern: ME (SC).

**SYNONYM:** *Carex dioica* Linnaeus var. *gynocrates* (Wormskjöld) Ostenfeld.

5.  *Carex exilis* Dewey  

**SECTION STELLULATAE**

**DISTINCTIVE FEATURES:** An uncommon small slender sedge of peatlands. The single spike has an elongate tapering base of empty (male) scales below the reflexed perigynia. **FIGURE 1.**

- **Leaves** 1.0-1.5 mm wide, light green, shorter than the stems, involute and stiff.
**Lower sheaths** brown; upper sheath fronts hyaline, the apex concave.

**Inflorescence** with a single spike 6-12 mm wide, either unisexual or female at the apex, male below, the perigynia spreading or reflexed.

**Bract** absent.

**Scales** shorter and narrower than the perigynia, chestnut-brown with a green center and hyaline margins, acute.

**Perigynia** 2.6-4.7 x 1.3-2.3 mm, planoconvex, ovate, chestnut or dark brown at maturity, with 7-15 distinct nerves on each face; apex tapering; base spongy-thickened, rounded; beak 0.5-1.7 mm, flat, serrate, bidentate.

**Achenes** lenticular; stigmas 2.

**HABITAT:** Peat bogs or peaty conifer swamps. MA, ME, NH, RI, VT.

**NOTES:** A very distinctive sedge with a single spike, female at the tip, with typically reflexed perigynia. Conservation Concern: CT (Endangered), NH (Threatened), RI (Rare).

6. *Carex willdenowii* Schkuhr ex Willdenow

**SECTION PHYLLOSTACHAE**

**DISTINCTIVE FEATURES:** A small rare sedge of dry forests, with a short bisexual spike at the end of a long capillary stem or peduncle arising from the base of the plant. The large bract-like scales are have broad white hyaline margins, and are longer than the large, beaked perigynia. [FIGURE 2.]

**Leaves** 1.5-4.0 mm wide, longer than the stems, light green.

**Lower sheaths** cinnamon-brown; upper sheath fronts hyaline, veined to apex, red-dotted at the concave apex, short-prolonged as a collar around the stem.

**Inflorescence** a single spike 1-3 cm long, with several conspicuous male flowers at the apex and 3-10 perigynia at the base, rarely with 1-2 female lateral spikelets.

**Bract** apparently absent, the lowest scale bract-like.

**Scales** narrower and longer than at least the lowest perigynia, white-hyaline with a green center, acute or acuminate.

**Perigynia** 4.0-6.0 x 1.5 mm, rounded in cross-section, narrowly ovoid, pale green, the 2 marginal nerves conspicuous, otherwise nerveless; apex tapering; base plump and spongy when fresh, contracted and appearing stipitate in dried material; beak 2.0-3.0 mm long, flattened and slightly triangular in cross-section, scabrous, tip entire, hyaline, brown.

**Achenes** rounded-trigonous; stigmas 3.

**HABITAT:** Dry woods, generally in acid soils. CT, MA, VT.

**NOTES:** Similar to *C. backii*, but distinguished by the shorter, narrow scales, narrower lighter green leaves, and the flattened, triangular beak. This species is also similar to *C. jamesii* (not known east of New York), which has few-flowered spikes and perigynia rounded at the apex. Conservation Concern: CT (Endangered), MA (Historic).

7. *Carex backii* Boott

**SECTION PHYLLOSTACHAE**

**DISTINCTIVE FEATURES:** A small rare sedge of dry forests, with a short bisexual spike at the end of a long capillary stem or peduncle arising from the base of the plant. The conspicuous leaflike scales envelope the spike. [FIGURE 2.]

**Leaves** 3.0-6.0 mm wide, longer than the stems, dark green.

**Lower sheaths** brown; upper sheath fronts hyaline, veined, tawny, the apex concave.
**Inflorescence** a single spike to 1.5 cm long, with a few inconspicuous male flowers at the apex and 2-5 perigynia at the base; the stem winged and dilated immediately below the spike, rarely with 1-2 lateral female spikes.

**Bract** apparently absent.

**Scales** leaflike, green, 3.0-6.0 mm wide, the largest 3.0-7.0 cm long, enclosing the spike.

**Perigynia** 4.5-6.0 x 2.5 mm, rounded in cross-section, ellipsoid, green (brown when mature), several faint nerves on each face; apex tapering; base plump and spongy when fresh, contracted and appearing stipitate in dried material; beak 2.0-3.0 mm long, cylindric, the tip entire, hyaline.

**Achenes** orbicular, contracted at the base; stigmas 3.

**HABITAT:** Dry woods, on ledges or in rocky or sandy soils. MA, ME, NH, VT.

**NOTES:** Similar to *C. willdenowii*, but distinguished by the broader, dark green leaves and the broad leaflike scales. Conservation Concern: CT (Endangered), MA (Endangered).

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**8. Carex leptalea** Wahlenberg

**SECTION LEPTOCEPHALAE**

**DISTINCTIVE FEATURES:** A common slender, caespitose sedge of bogs and seeps, with a single narrow spike and elongate, beakless perigynia. **FIGURE 2.**

- **Leaves** 0.7-1.2 mm wide, shorter than the stems.
- **Lowest sheaths** brown, upper sheath fronts hyaline, nerved, tawny, loose and prolonged at the apex.
- **Inflorescence** a single elongate (1.5-15 mm) bisexual spike, male at the apex (empty scales), with up to 10 erect perigynia.
- **Bract** absent.
- **Scales** shorter and narrower than the perigynia, hyaline with brown margins, acute or short-awned.
- **Perigynia** 2.5-4.5 x 1.0-1.5 mm, trigonous, lance-ellipsoid or oblanceolate, green, finely nerved with 2 prominent marginal nerves; apex subacute, thickened, notched; base rounded, spongy, stipitate; beak absent.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Saturated soils; bogs, wet meadows, seepage swamps. THROUGHOUT.

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**9. Carex capitata** Linnaeus

**SECTION CAPITULIGERAE**

**DISTINCTIVE FEATURES:** A small, slender alpine species with a single bixexual spike. **FIGURE 2.**

- **Leaves** 0.5 mm wide, involute, shorter than the stems.
- **Lower sheaths** purple-red, lacking blades; upper sheath fronts hyaline, truncate at the apex.
- **Inflorescence** a single ovoid spike, 5.0-15.0 mm long, male at the apex (empty scales), with 6-25 perigynia.
- **Bract** absent.
- **Scales** shorter and narrower than the perigynia, brown, with broad hyaline margins, obtuse.
- **Perigynia** 2.0-3.5 x 1.5-2.4 mm, planoconvex, ovate or elliptic, upper half brown, lacking nerves, apex subacute, base rounded; beak less than 0.1 mm long, entire, brown, hyaline at the apex.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Acidic rocky or gravelly soil; alpine. NH.

**NOTES:** Conservation Concern: NH (Threatened). One locality known.
Figure 2. 6. Carex willdenowii; 7. Carex backii; 8. Carex leptalea; 9. Carex capitata.
Group 2 - Plants with many small spikes (generally more than 15, sometimes 10 or fewer) forming a dense head or spike, the individual upper spikes difficult to distinguish, lower spikes sometimes separate, often branched. Perigynia planoconvex, never flat. Achenes lenticular or trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Scales</th>
<th>Perigynia</th>
<th>Leaf W (mm)</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heads large, spiny, 4-6 cm; perigynia very large, long and slender; leaves thick, stiff</td>
<td>awned</td>
<td>8.0-10.0 mm long thick-walled, nerved</td>
<td>4-8</td>
<td>sand dunes, coastal disturbed sites</td>
<td>10. <em>C. kobomugi</em></td>
</tr>
<tr>
<td>Leave blue-green; scales concealing the beakless perigynia</td>
<td>obtuse</td>
<td>2.8-3.5 mm long yellow-green</td>
<td>0.5-2.0</td>
<td>bogs</td>
<td>11. <em>C. tenuiflora</em></td>
</tr>
<tr>
<td>Leaves blue-green; scales shorter than the beaked perigynia</td>
<td>cuspidate</td>
<td>2.2-3.5 mm long green, nerved; beak serrate</td>
<td>1.5-3</td>
<td>wetlands</td>
<td>12. <em>C. arctica</em></td>
</tr>
<tr>
<td>Perigynia dark brown; stems decumbent and rooting at the nodes</td>
<td>acute</td>
<td>2.5-3.5 mm long strongly nerved; beak short, hyaline</td>
<td>1-2</td>
<td>bogs</td>
<td>13. <em>C. chordorrhiza</em></td>
</tr>
<tr>
<td>Perigynia dull dark brown; upper sheaths copper-brown</td>
<td>cuspidate</td>
<td>2.5-3.0 mm long thick-walled, dull, ovate</td>
<td>2-3</td>
<td>wetlands</td>
<td>14. <em>C. prairea</em></td>
</tr>
<tr>
<td>Perigynia glossy dark brown; sheaths red-dotted</td>
<td>cuspidate</td>
<td>2.4-3.0 mm long thick-walled, dull, ovate</td>
<td>1.0-2.5</td>
<td>wetlands</td>
<td>15. <em>C. diandra</em></td>
</tr>
<tr>
<td>Sheaths corrugated; stems soft and winged; perigynia golden brown</td>
<td>acute</td>
<td>4.5-6.0 mm long glossy, nerved, distended at base</td>
<td>7-15</td>
<td>wetlands</td>
<td>16. <em>C. stipata</em></td>
</tr>
<tr>
<td>Scales on rhizome and lower stem black; stems single, not caespitose; perigynia dark brown</td>
<td>acuminulate</td>
<td>2.8-3.9 mm long no nerves on the front</td>
<td>1.5-3.0</td>
<td>highway shoulders and medians</td>
<td>17. <em>C. praegracilis</em></td>
</tr>
<tr>
<td>Lower sheaths dark brown or purple-brown; scales orange-brown or purple-brown; perigynia shining</td>
<td>acute</td>
<td>4.0-5.5 mm long yellow-green, shining</td>
<td>2-3</td>
<td>fields roadsides</td>
<td>42. <em>C. spicata</em> (in Group 3 but may key here)</td>
</tr>
</tbody>
</table>

Continued on next page ➔
<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia shining, olive-green or brown, wing-margined; lowest bract conspicuous, dilated at base</td>
<td>acute&lt;br&gt;4.0-5.0 mm long wing-margined&lt;br&gt;2-4&lt;br&gt;sandy shores, barrens</td>
<td>47. C. adusta (in Group 5 but may key here)</td>
</tr>
<tr>
<td>Sheaths corrugated, white-mottled; perigynia yellow-green; lower spikes often separate and distinct</td>
<td>acute or cuspidate&lt;br&gt;3.2-4.5 mm broadly ovate&lt;br&gt;5-10&lt;br&gt;forested uplands</td>
<td>18. C. sparganioides</td>
</tr>
<tr>
<td>Sheaths corrugated, white-mottled; perigynia yellow-green; lower spikes not separate or distinct</td>
<td>obtuse or acute&lt;br&gt;3.2-4.5 mm broadly ovate&lt;br&gt;5-8&lt;br&gt;calcareous woods</td>
<td>19. C. cephaloidea</td>
</tr>
<tr>
<td>Sheaths corrugated, tight; perigynia golden-brown; flowering stem longer than the leaves; head 2-7 cm long, compact</td>
<td>awned&lt;br&gt;2.2-3.0 mm golden, ovate, short-beaked&lt;br&gt;3.5&lt;br&gt;open wetlands or dry meadows</td>
<td>20. C. annectens</td>
</tr>
<tr>
<td>Sheaths corrugated; perigynia green or pale brown; flowering stem shorter than the leaves; head 5-15 cm long, interrupted</td>
<td>awned&lt;br&gt;2.0-2.8 mm green or pale brown, ovate, short-beaked&lt;br&gt;3.5&lt;br&gt;open wetlands, roadside ditches</td>
<td>21. C. vulpinoidea</td>
</tr>
<tr>
<td>Sheaths red-dotted, somewhat corrugated; head to 4 cm long</td>
<td>acuminate copper-brown&lt;br&gt;2.5-5.0 mm elliptic, nerved on back&lt;br&gt;5-7&lt;br&gt;calcareous wetlands</td>
<td>22. C. alopecoidea</td>
</tr>
<tr>
<td>Sheath apex thickened, yellow; head to 6 cm long</td>
<td>acuminate pale&lt;br&gt;6.0 mm pale brown triangular, nerved on both sides&lt;br&gt;5-6&lt;br&gt;wetlands</td>
<td>23. C. laevivaginata</td>
</tr>
<tr>
<td>Rhizomatous (stems single); head slender, with a leaflike short bract; fewer than 15 spikelets</td>
<td>acuminate or awned&lt;br&gt;4.5-6.2 mm narrowly elliptic, nerved on both sides&lt;br&gt;1.5-3&lt;br&gt;dry woods or clearings</td>
<td>24. C. siccata</td>
</tr>
</tbody>
</table>

Continued on next page ➔
<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal spike conspicuously male at the base (empty scales); perigynia broadly ovate; sheath apex thick</td>
<td>Scales: obtuse Perigynia: 2.5-4.0 mm brown when ripe, nerved on the front; beak serrate Leaf W (mm): 2-5 Habitat: bogs, rarely shrub swamps or shores Species: 25. <em>C. wiegandii</em></td>
</tr>
<tr>
<td>Growing in dense clumps; head small (2-4 cm); perigynia nerved on one face</td>
<td>Scales: awned Perigynia: 2.7-4.2 mm golden brown, broadly ovate, nerved on back Leaf W (mm): 2-4 Habitat: open dry sandy soil Species: 26. <em>C. muehlenbergii</em></td>
</tr>
<tr>
<td>Growing in dense clumps; head small; perigynia not distinctly nerved; 10 or fewer spikelets</td>
<td>Scales: awned, longer than the perigynia Perigynia: 3.0-4.1 mm, yellow-green, broadly ovate Leaf W (mm): 2-5 Habitat: dry woods Species: 27. <em>C. mesochorea</em></td>
</tr>
<tr>
<td>Growing in dense clumps; head small (1-2 cm); perigynia not distinctly nerved</td>
<td>Scales: acute or awned, shorter than the perigynia Perigynia: 2.5-3.2 mm yellow-green, ovate Leaf W (mm): 2-5 Habitat: forested uplands, clearings, lawns, meadows Species: 28. <em>C. cephalophora</em></td>
</tr>
</tbody>
</table>
Key To Group 2

1. Head large (2-3 cm wide) and spiny; perigynia brown, 8-10 mm long; leaves thick and stiff; achenes trigonous........................................................................................................ 10. C. kobomugi

1. Not this combination of characters; achenes lenticular

2. Leaves blue-green

3. Scales obtuse, longer and wider than the beakless perigynia.......................... 11. C. tenuiflora

3. Scales cuspidate, shorter than the beaked perigynia........................................ 12. C. arcta

2. Leaves green

4. Perigynia dark brown or golden when mature

5. Stems decumbent, rooting at the nodes ...................................................... 13. C. chordorrhiza

5. Stems erect, not rooting

6. Plants in dense tussocks

7. Sheaths coppery brown; perigynia dull brown ........................................ 14. C. prairea

7. Sheaths red-dotted; perigynia glossy brown .......................................... 15. C. diandra

6. Plants not in dense tussocks

8. Sheaths corrugated; stems soft, winged; perigynia 4.5-6.0 mm .......... 16. C. stipata

8. Sheaths smooth; stems firm; perigynia 3.0-4.0 mm long; scales at the base of the stem black ................................................................. 17. C. praegracilis

4. Perigynia green or straw-colored (rarely golden when mature)

9. Sheaths corrugated

10. Sheaths loose, white-mottled; scales acute or cuspidate

11. Lower spikes separate; scales cuspidate ......................................... 18. C. sparganioides

11. Lower spikes not separate; scales acute or obtuse ........................ 19. C. cephaloidea

10. Sheaths tight, not mottled; scales with long serrate awns

12. Flowering stem longer than the leaves; perigynia golden;

head short, compact, generally less than 5 cm.............................. 20. C. annectens

12. Flowering stem shorter than the leaves; perigynia green or pale brown;

head elongate, generally more than 5 cm..................................... 21. C. vulpinoidea

9. Sheaths smooth or slightly corrugated

13. Leaves > 5 mm wide

14. Sheaths red-dotted, pale ............................................................. 22. C. alopecoidea

14. Sheaths not dotted, the apex thickened, yellow ......................... 23. C. laevivaginata

13. Leaves < 5 mm wide

15. Stems single; perigynia 4.5-6.2 mm long, nerved on both sides....... 24. C. siccata
15. Stems in dense clumps; perigynia < 4 mm long, nerved on one side
   16. Terminal spike conspicuously tapering to base .......... 25. C. wiegandii
   16. All spikes alike, not tapering to base
      17. Perigynia nerved, golden, broadly ovate ............ 26. C. muehlenbergii
      17. Perigynia indistinctly nerved, green, narrowly ovate
         18. Scales longer than perigynia......................... 27. C. mesochorea
         18. Scales shorter than perigynia...................... 28. C. cephalophora

10. Carex kobomugi Owhi

DISTINCTIVE FEATURES: This introduced rhizomatous sand-dune species has stiff, yellow-green leaves and an inflorescence consisting of a single large ovoid head of long, leathery, brown perigynia. Individual spikes are not distinguishable. FIGURE 3.

Old leaf sheaths persistent as fibers around the base of the shoot, often buried in the sand.
Leaves thick, stiff, to 25 cm long, 4.0-6.0 mm wide, yellow-green with a shiny upper surface.
Female inflorescence a single dense ovoid unisexual head 4-6 x 2-3 cm.
Bracts scale-like, up to 3.5 cm long, 4.0-6.0 mm wide, yellow-green with a narrow brown margin and prominent serrate midrib.
Scales as wide as the perigynia, prominently nerved, mucronate.
Perigynia 8.0-10.0 mm long, planoconvex, lanceolate, dark brown or yellow-brown when mature, thick and leathery, many-nerved; base rounded, stipitate; beak long, bifid, with smooth, slightly toothed margins and a prominent dorsal suture.
Achenes trigonous; stigmas 3.

HABITAT: Sand dunes or disturbed sandy areas. MA, RI.

NOTES: Native to Japan. This interesting and distinctive plant is paradioecious - each flowering stem is either male or female, but both are produced as branches of the same rhizome and part of the same plant. C. kobomugi's only relative is C. macrocephala Willd., which occurs along the Pacific Coast from Oregon northward. C. macrocephala has glossy dark brown perigynia with winged lacerate margins. These species are anomalous in subgenus Vignea (planoco n vex perigynia with a dorsal suture) because they have three stigmas and trigonous achenes. Sporadically introduced for erosion control and stabilization of sand dunes, it is considered an invasive species that can form large dense patches and crowd out native species, leading to increased dune erosion.

11. Carex tenuiflora Wahlenberg

DISTINCTIVE FEATURES: A rare slender medium-sized sedge of sphagnum bogs, with blue-green leaves and a short contracted head of small sessile spikes, the yellow-brown perigynia ovate, leathery, and hidden by the large scales. FIGURE 3.

Leaves 0.5-2.0 mm wide, shorter than the stems, gray- or blue-green.
Lower sheaths brown; upper sheath fronts hyaline, short-prolonged at the apex.
Inflorescence a small head of tightly packed sessile bisexual spikes, 6.0-13.0 mm long, with 2-4 spikes, each 4.0-9.0 mm long, with 3-15 perigynia, male at the base (empty scales).
Bracts inconspicuous, bristle-like.
Scales as long and as wide as the perigynia and concealing them, hyaline with a green midrib, obtuse.
**Perigynia** 2.8-3.5 x 1.5-1.75 mm, planoconvex, body ovate, straw-colored, leathery and thick-walled, faintly nerved; apex tapering; base round, spongy, short-stipitate; beakless or with a minute (0.2 mm) beak, the tip notched.

**Achenes**: lenticular; stigmas 2.

**HABITAT**: Sphagnum bogs and pond margins, acid soils. MA, ME, VT.

**NOTES**: May grow with *C. trisperma* and *C. disperma*, and reported to hybridize with *C. trisperma*. Conservation Concern: ME (Special Concern).

12. **Carex arcta** Boott

**SECTION GLAREOSAE**

**DISTINCTIVE FEATURES**: A rare slender medium-sized sedge of open wetlands with a stiff contracted inflorescence of small sessile spikes. **FIGURE 3**.

- **Leaves** 2-4 mm wide, longer than the stems, blue-green.
- **Lower sheaths** brown; upper sheath fronts hyaline, red-brown dotted, concave at the summit.
- **Inflorescence** a head of tightly packed sessile spikes 1.5-3.0 cm long, with 5-15 spikes, the lower ones slightly separated and distinct, 5-10 mm long, with 10-20 perigynia; spikes with male flowers (empty scales) at the base.
- **Bracts** bristle-like.
- **Scales** shorter than and as wide as the perigynia, hyaline with a green midrib, becoming pale brown, cuspidate.
- **Perigynia** 2.2-3.5 x 1.1-1.5 mm, planoconvex, ovate, green or straw, strongly nerved on the back, few-nerved on the front; apex tapering; base round, spongy, short-stipitate; beak prominent, 0.6-1.2 mm, serrate, bidentate, the tip often red-brown.
- **Achenes** lenticular; stigmas 2.

**HABITAT**: Forested and shrub wetlands, wet meadows, shores, generally in open wet habitats. MA, ME, NH, VT.

**NOTES**: Conservation Concern: VT (Endangered).

13. **Carex chordorrhiza** Ehrhart ex Linnaeus f.

**SECTION CHORDORRHIZAE**

**DISTINCTIVE FEATURES**: A rare sedge of northern peatlands, with erect stems arising from old, fallen stems. **FIGURE 3**.

- **Leaves** 1-2 mm wide, longer than the stem.
- **Lowest sheaths** bladeless, pale brown; upper sheath fronts green, nerv ed, hyaline only in a small triangle at the top of the sheath, the hyaline portion prolonged, forming a collar around the stem.
- **Inflorescence** 1.0-1.5 cm long, a dense head of 3-8 short, sessile, bisexual spikes, the spikes male at the apex (empty scales).
- **Bracts** absent.
- **Scales** as wide as and longer than the perigynia, pale brown with hyaline margins, acute.
- **Perigynia** 2.5-3.5 x 1.8-2.2 mm, planoconvex, ovate or elliptic, brown, strongly many-nerved; apex rounded; base rounded, substipitate; beak 0.3-0.5 mm long, entire, hyaline at apex.
- **Achenes** lenticular; stigmas 2.

**HABITAT**: Sphagnum bogs. MA, ME, NH, VT.
NOTES: The growth form of this species is very distinctive, as are the brown, strongly nerved perigynia. Conservation Concern: MA (Endangered), NH (SI), VT (Endangered).

14. Carex prairea Dewey

SECTION HELEOGLOCHIN

DISTINCTIVE FEATURES: A medium-sized tussock sedge of calcareous or neutral wetlands, the sheaths coppery at the mouth. The dense compound inflorescence of small, dark brown, planoconvex perigynia is also diagnostic. **FIGURE 3.**

- **Leaves** 2-3 mm wide, shorter than the stems.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, tawny, red-dotted, conspicuously copper-brown at the apex, the apex concave, prolonged as a short collar around the stem.
- **Inflorescence** 3-8 x 1-2 cm, compound, the numerous small sessile spikes male at the apex (empty scales), individual spikes distinguishable only with difficulty.
- **Bracts** bristle-like, not conspicuous.
- **Scales** as long and as wide as the perigynia, with prominent broad hyaline margins, acute, cuspidate.
- **Perigynia** 2.5-3.0 x 0.7-1.2 mm, planoconvex, ovate, dark brown, dull, firm and thick-walled, 2 prominent nerves on the back, the marginal nerves conspicuous; apex tapering; base rounded, stipitate; beak abrupt, 0.8-1.5 mm long, bidentate, the margins serrate, pale, red at the apex.
- **Achenes** lenticular; stigmas 2.

HABITAT: Saturated soils, generally in calcareous or neutral soils and open habitats; wet meadows, banks, bogs, swamps. CT, MA, ME, VT.

NOTES: Similar to *C. diandra*, but distinguished by the wider leaves, the coppery sheath apex, and the dull-brown perigynia. The perigynia in *C. prairea* are generally narrower and taper to the beak, and lack a conspicuous white flap formed by the dorsal suture. Conservation Concern: CT (Special Concern), ME (Threatened).

15. Carex diandra Schrank

SECTION HELEOGLOCHIN

DISTINCTIVE FEATURES: A slender, medium-sized tussock sedge of calcareous wetlands with red-dotted upper sheaths and a dense compound inflorescence of small sessile spikes and plump, shiny dark brown, abruptly-beaked perigynia. **FIGURE 3.**

- **Leaves** 1.0-2.5 mm wide, shorter than the stems.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, pale brown with raised red dots, the apex concave, prolonged as a collar around the stem.
- **Inflorescence** 2.0-5.0 cm x 1.0 cm, compound, the numerous small sessile spikes male at the apex (empty scales), individual spikes distinguishable only with difficulty.
- **Bracts** bristle-like, not conspicuous.
- **Scales** as long and as wide as the perigynia, with prominent broad hyaline margins, acute, cuspidate.
- **Perigynia** 2.4-3.0 x 1.0-1.2 mm, planoconvex, the front slightly rounded, ovate, dark brown, glossy, firm and thick-walled, 2 prominent nerves on the back, the marginal nerves not conspicuous; apex rounded; base rounded, stipitate; beak abrupt, 0.6-1.5 mm long, bidentate, margins serrate, pale, the dorsal suture forming a conspicuous white-hyaline flap.
- **Achenes** lenticular; stigmas 2.

HABITAT: Saturated soils, generally in open habitats with calcareous or neutral soils; bogs, wet meadows, and banks. THROUGHOUT.
NOTES: Similar to *C. prairea*, but distinguished by the plump, shiny dark brown perigynia and pale red-dotted sheaths. Conservation Concern: NH (Endangered).

16. **Carex stipata** Muhlenberg ex Willdenow

**SECTION VULPINAE**

**DISTINCTIVE FEATURES:** One of New England's most common and conspicuous species. The tall (to 1 meter) stems are 3-angled, winged, soft and easily crushed. The sheath fronts are corrugated, white and fragile. The inflorescence is a large, dense head that appears spiny due to the long beaks on the perigynia. 

**FIGURE 3.**

- **Flowering stems** strongly triangular, soft, easily flattened, margins winged, to 7 mm wide.
- **Leaves** to 15 mm wide.
- **Sheath fronts** pale, fragile, strongly corrugated.
- **Inflorescence** a dense ovoid panicle, 5-15 cm long, the perigynia strongly divergent when mature, all spikelets alike, individual spikelets male at the apex (empty scales), the lower nodes branched, the lowest internode generally visible.
- **Bract** single, bristle-like.
- **Scales** shorter than the perigynia, pale brown, midrib green, acute or apiculate.
- **Perigynia** 4.5-6.0 x 2.0 mm, planoconvex, the body elongate-triangular, glossy, brown when mature, 7-15 red nerves on each face; apex tapering; base filled with spongy tissue, appearing distended or swollen when dry, cordate, stipitate; beak margins serrate, the apex with 2 short teeth.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Wet meadows, marshes, swamps. Common in a range of open habitats with seasonally saturated or flooded soils. **THROUGHOUT.**

**NOTES:** Related to *Carex laevivaginata* and *C. alopecoidea* in our area. Easily distinguished by its large, red-nerved perigynia that are conspicuously swollen at the base, and by the fragile, corrugated sheaths. Although the corrugated sheaths are similar to *C. vulpinoidea*, the soft stems, single bract, relatively short inflorescence, and elongate brown perigynia distinguish *C. stipata*. New England plants are var. *stipata*. A related species of the midwest, *C. oklahomensis* Mackenzie, was recently discovered in a disturbed roadside in Cumberland County, Maine. *Carex oklahomensis* resembles *C. stipata* but lacks the corrugated sheaths.

17. **Carex praegracilis** W. Boott

**SECTION DIVISAE**

**DISTINCTIVE FEATURES:** A medium-sized sedge of highway shoulders and medians. The dense cylindrical inflorescence of dark brown perigynia and the blackish scales on the rhizome and lower stems are distinctive. **FIGURE 3.**

- **Leaves** 1.5-3.0 mm wide, as long as the stem.
- **Lowest sheaths** bladeless, brown or black; upper sheath fronts green with a narrow hyaline central strip.
- **Inflorescence** 2-5 cm long, a dense head of 6-20 short, sessile, bisexual spikes, the spikes male at the apex (occasional individuals may be entirely male or female).
- **Bracts** absent.
- **Scales** longer and wider than the perigynia and concealing them, brown with hyaline margins, acuminate.
- **Perigynia** 2.8-3.9 x 1.3-1.5 mm, planoconvex, lance-ovate, dark brown-black, faintly nerved on the back, no nerves on the front; apex tapering; base rounded, stipitate; beak serrate-marginated, bidentate.
- **Achenes** lenticular; stigmas 2.
**Group 2**

**HABITAT:** Roadsides, especially highway medians and shoulders. ME, VT.

**NOTES:** A western species of wet meadows and alkaline soils, *C. praegracilis* has spread eastward along highways where road salting has changed soil salinity. It is most similar to *C. prairea* and *C. diandra*, but can be easily distinguished by the single stems, rather than dense tussocks, and by the dark basal sheaths.

18. *Carex sparganioides* Muhlenberg ex Willdenow  
**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A robust forest sedge with corrugated sheaths and an elongate head of sessile spikes, the perigynia reflexed. **FIGURE 5.**

- **Leaves** 5-10 mm wide, shorter than the stems.
  - **Lower sheaths** brown; upper sheath fronts hyaline, loose, corrugated, the apex fragile, concave, the backs green, white-mottled or striped.
  - **Inflorescence** 3-10 cm x 10-12 mm with 6-12 short sessile spikes, the upper spikes aggregated into a head, lower spikes separate, each spike inconspicuously male at the apex (empty scales), the perigynia spreading or reflexed.
  - **Bracts** bristle-like.
  - **Scales** shorter and narrower than the perigynia, hyaline with a green center, obtuse or cuspidate.
  - **Perigynia** 3.2-4.5 x 1.5-2.5 mm, broadly ovate, planoconvex, yellow-green at maturity, not nerved, apex tapering; base spongy-thickened, rounded; beak serrate, the tip bidentate with stiff teeth.
  - **Achenes** lenticular; stigmas 2.

**HABITAT:** Deciduous woods, particularly on neutral or calcareous soils. **THROUGHOUT.**

**NOTES:** Similar to *C. cephaloidea*, but distinguished by the separate lower spikes and cuspidate scales. Conservation Concern: ME (Endangered), NH (Endangered), RI (Rare).

19. *Carex cephaloidea* (Dewey) Dewey  
**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A robust forest sedge with corrugated sheaths and a somewhat elongate head of sessile spikes, the perigynia reflexed. **FIGURE 5.**

- **Leaves** 5-8 mm wide, shorter than the stems.
  - **Lower sheaths** brown; upper sheath fronts hyaline, loose, corrugated, the apex fragile, concave, the backs green, white-mottled or striped.
  - **Inflorescence** 1.5-4 cm x 8-10 mm with 6-12 short sessile spikes, the spikes aggregated into a head or the lower spikes separated by less than 1 cm, each spike inconspicuously male at the apex (empty scales), the perigynia spreading or reflexed.
  - **Bracts** bristle-like.
  - **Scales** shorter (1/2 length of the perigynium) and narrower than the perigynia, hyaline with a green center, obtuse or acute.
  - **Perigynia** 3.2-4.5 x 1.5-2.5 mm, broadly ovate, planoconvex, yellow-green at maturity, not nerved or weakly 4-7 nerved on the front; apex tapering; base spongy-thickened, rounded; beak serrate, the tip bidentate with stiff teeth.
  - **Achenes** lenticular; stigmas 2.

**HABITAT:** Mesic deciduous woods, particularly on neutral or calcareous soils. CT, MA, ME, NH, VT.

**NOTES:** Very similar to *C. sparganioides* (and sometimes recognized as a variety of that species). *C. cephaloidea* is distinguished by the dense heads, with the lower spikes rarely separate and with acute, rather than cuspidate, scales.

**SECTION MULTIFLORAE**

**DISTINCTIVE FEATURES:** A common sedge of wet or dry meadows, with a short narrow inflorescence with bristle-like bracts, the mature inflorescence golden-brown. Leaves are shorter than the stems.

**FIGURE 4.**

- **Leaves** 3-5 mm wide, shorter than the flowering stems.
- **Sheath fronts** corrugated, hyaline with faint dots, the apex hyaline, entire, convex.
- **Inflorescence** a spike-like panicle, often interrupted, 2-5 (7) x 1.5 cm, the lower branches separate, spikelets with male flowers at the apex.
- **Bracts** bristle-like.
- **Scales** shorter and narrower than the perigynia, pale, awned, the awn as long as the perigynium.
- **Perigynia** 2.2-3.0 x 1.5-2.0 mm, planoconvex, broadly ovate to elliptic, golden-brown at maturity, nerves lacking or 1-5 on each face, abruptly contracted to the beak; base rounded; beak 1/3 the length of the perigynium, serrate, bidentate, darker in color than the body.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open meadows, often on sandy or calcareous substrates, seasonally saturated or dry. THROUGHOUT.

**NOTES:** Similar to and often confused with *Carex vulpinoidea*, but easily distinguished by the leaves shorter than the flowering stems, the short inflorescences, the golden-brown perigynia, and the preference for drier soils. *C. annectens* rarely forms dense tussocks.

**SYNONYMS:** *Carex xanthocarpa* E.P. Bicknell; *Carex brachyglossa* Mackenzie.

21 *Carex vulpinoidea* Michaux

**SECTION MULTIFLORAE**

**DISTINCTIVE FEATURES:** A common tussock sedge of wet meadows and roadside ditches, with elongate narrow inflorescences with many short slender bracts. Leaves are longer than the stems.

**FIGURE 4.**

- **Leaves** to 5 mm wide, longer than the flowering stems.
- **Upper sheath** fronts corrugated, hyaline with faint red-brown dots, the apex hyaline, entire, convex.
- **Inflorescence** a dense, spike-like panicle of numerous identical spikes, 5-15 x 1.5 cm, individual spikelets male at the apex (empty scales).
- **Bracts** several, bristle-like.
- **Scales** shorter and narrower than the perigynia, awned, the awn as long as the perigynium.
- **Perigynia** 2.0-2.8 x 1.3-1.8 mm, planoconvex, the body broadly ovate or elliptic, pallid-brown when mature, nerves none or up to 5 on each face; apex abruptly contracted; base round, filled with spongy tissue; beak 1/3-1/2 length of the perigynium, serrate, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open habitats with saturated or seasonally inundated soils; wet meadows, marshes, roadside ditches. THROUGHOUT.

**NOTES:** A common, weedy species often in disturbed wet soils. Perigynium shapes are variable, depending on the development of spongy tissue inside the perigynium. Similar to *C. annectens*, but distinguished from it by the flowering stems longer than the leaves, generally longer inflorescences, pallid-brown perigynia, dense tussocks and preference for wetter habitats.
22. *Carex alopecoidea* Tuckerman

**SECTION VULPINAE**

**DISTINCTIVE FEATURES:** A rare robust riverbank sedge, resembling a smaller *C. stipata*; perigynia rounded at the base. **FIGURE 4.**

- **Leaves** to 7 mm wide.
- **Upper sheath** fronts red-dotted, indistinctly veined, generally not corrugated, colorless and fragile, concave at the apex.
- **Inflorescence** cylindrical, to 4 cm long, the lower branches separate and distinct; individual spikelets male at the apex (empty scales), difficult to distinguish except at flowering.
- **Bract** generally one, bristle-like.
- **Scales** ovate, copper-brown with green midrib, shorter than the perigynia, acuminate or apiculate.
- **Perigynia** 2.5-5.0 x 1.5-2.0 mm, planoconvex, elliptic, nerved only on the back with 3-5 indistinct veins; apex tapering; base filled with spongy tissue, not distended when dry, rounded and short-stipitate; beak slender, 1.2-2.0 mm (almost half of the perigynium length), serrate, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Seasonally saturated habitats, typically wet meadows and streambanks, in calcareous or circumneutral soils. CT, MA, ME, VT.

**NOTES:** Similar in size and overall appearance to *C. laevivaginata*, distinguished by the perigynia slightly smaller, elliptic, with a shorter beak, and by the fragile, dotted, upper sheaths. Conservation Concern: CT (Threatened), ME (Presumed Extirpated), MA (Threatened).

23. *Carex laevivaginata* (Kükenthal) Mackenzie

**SECTION VULPINAE**

**DISTINCTIVE FEATURES:** A robust uncommon wetland sedge, with a bristly cylindric inflorescence and smooth sheaths with a distinct, thickened yellow summit. **FIGURE 4.**

- **Leaves** to 6 mm wide.
- **Upper sheath** fronts hyaline, not corrugated, the apex U-shaped (concave), thickened, yellow or pale brown.
- **Inflorescence** cylindrical, to 6 cm long, the lower branches separate and distinct; individual spikelets male at the apex (empty scales), difficult to distinguish except at flowering.
- **Bract** generally one, bristle-like, shorter than the inflorescence.
- **Scales** ovate, pale brown with green midrib, shorter than the perigynia, acuminate or apiculate.
- **Perigynia** to 6.0 x 2.0 mm, planoconvex, the body triangular, green and becoming pale brown, 7-10 brown nerves on each side; apex tapering; base filled with spongy tissue, somewhat distended when dry, stipitate; beak slender, elongate, 1/2 to 1/3 length of the perigynium, serrate, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Occurs in a wide range of habitats with seasonally saturated or flooded soils. CT, MA, RI.

**NOTES:** Similar in size and overall appearance to *C. stipata*, distinguished by the perigynia slightly smaller, not becoming glossy brown, the firm stems, and by the smooth sheaths that are thickened at the summit. Conservation Concern: listed in ME (Special Concern) but without a valid record.

24. *Carex siccata* Dewey

**SECTION AMMeglOCHIN**

**DISTINCTIVE FEATURES:** A short species of dry open habitats or open woods, with an inflorescence of several short, pale cylindrical bisexual spikes. The stems are single (rhizomatous). **FIGURE 3.**

- **Leaves** 1.5-3.0 mm wide, shorter than the stems.
Lower sheaths brown; upper sheath fronts hyaline, pale, concave and slightly thickened at the apex.

Inflorescence 1.5-3.5 cm long, with 4-12 short cylindrical sessile bisexual spikes, the spikes generally male at the apex (empty scales) (occasional individuals may have the lower, or all, spikes female) and the perigynia ascending.

Bract narrow, shorter than the inflorescence.

Scales as wide as the perigynia, shorter than the tip of the beak, brown, margins hyaline, acuminate or short-awned.

Perigynia 4.5-6.2 x 1.5-2.0 mm, planoconvex, elliptic or lance-ovate, tawny-brown, nerved on both faces; apex tapering; base rounded; beak serrate, bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Dry, generally sandy, soils in open habitats or open woods. THROUGHOUT.

NOTES: An uncommon species of dry fields and disturbed roadsides or railroad embankments. Conservation Concern: VT (Endangered), ME (Threatened).

25. Carex wiegandii Mackenzie

DISTINCTIVE FEATURES: A rare slender sedge of acid wetlands, with a short dense head, the terminal spike conspicuously male at the base (empty scales), the perigynia broadly ovate or deltate with short serrate beaks. Sheaths thickened at the apex. FIGURE 7.

Leaves 2-5 mm wide, light green, shorter than the stems.
Lower sheaths brown; upper sheath fronts hyaline, the apex concave, strongly thickened.

Inflorescence 1-3 cm long with 4-6 crowded short sessile spikes, each spike male at the base (empty scales), most conspicuous on the terminal spike, the perigynia spreading or reflexed.

Scales shorter and narrower than the perigynia, brown with a green center and hyaline margins, obtuse.

Perigynia 2.5-4.0 x 1.5-2.0 mm, planoconvex, broadly ovate, brown at maturity, distinctly nerved on at least the back; apex tapering; base spongy-thickened, rounded; beak 0.5-1.0 mm, serrate, bidentate with blunt teeth.

Achenes lenticular; stigmas 2.

HABITAT: Sphagnum bogs, shrub swamps, occasionally shores. MA, ME, NH, VT.


26. Carex muehlenbergii Schkuhr ex Willdenow

SECTION PHAESTOGLOCHIN

DISTINCTIVE FEATURES: A robust tussock sedge of open dry habitats with a small head of sessile spikes and yellow-green or golden perigynia. FIGURE 5.

Leaves 2-4 mm wide, light green, much shorter than the stems.

Lower sheaths brown; upper sheath fronts hyaline, the apex yellow-brown, thick, concave.

Inflorescence 2-4 cm x 10 mm with 3-10 short sessile spikes aggregated into a head, rarely the lower spike separate, each spike inconspicuously male at the apex (empty scales), the perigynia spreading or reflexed.

Bract bristle-like, inconspicuous.

Scales only slightly shorter and narrower than the perigynia, hyaline with a green center, awned.

Perigynia 2.7-4.2 x 1.8-2.5 mm, planoconvex, broadly ovate or orbicular, yellow-green or golden, many-nerved on the back, generally (but not always) nerved on the front, the nerves thick; apex rounded; base scarcely spongy-thickened, rounded, firm; beak short (to 1.0 mm), serrate, bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Dry sandy soils, open habitats. THROUGHOUT.

NOTES: Similar to C. cephalophora, but easily distinguished by the larger firm perigynia, more elongate inflorescence, and bristle-like bracts. Two varieties occur in our range. C. muehlenbergii var. muehlenbergii has scales more than 2.5 mm long and nerved perigynia 3-4.2 mm long. C. muehlenbergii var. enervis Boott has scales shorter than 2.5 mm, and perigynia that are 2.7-3.1 mm long and lack nerves. Conservation Concern: ME (Threatened), VT (Threatened).

27. Carex mesochorea Mackenzie

SECTION PHAESTOGLOCHIN

DISTINCTIVE FEATURES: A rare medium-sized tussock sedge of open dry habitats, with a small dense head of sessile spikes. FIGURE 5.

Leaves 2.5-4.0 mm wide, light green, longer than the stems.

Lower sheaths brown; upper sheath fronts hyaline, tight, the apex sometimes yellow-brown, thick, concave.

Inflorescence 1-2 cm x 9-14 mm with 3-8 short sessile spikes aggregated into a dense head, each spike inconspicuously male at the apex (empty scales), the perigynia spreading or reflexed.

Bracts bristle-like, with several conspicuous bracts per head.
Group 2

**Scales** narrower and longer than the perigynia, hyaline with a green center, cuspidate or short-awned.

**Perigynia** 3.0-4.1 x 2.0-2.6 mm, planoconvex, ovate, yellow-green, not nerved or with a few nerves on the front; apex tapering; base scarcely spongy-thickened, round-tapering; beak serrate, bidentate with teeth 0.2-0.3 mm long.

**Achenes** lenticular; stigmas 2.

**HABITAT:** Dry roadsides, railroad ballast, other disturbed sites. CT, MA.

**NOTES:** Similar to *C. cephalophora*, but distinguished by the faint nerves on the perigynia, stems shorter than the leaves, awned scales, and shorter teeth on the perignium beak. Distinguished from *C. muehlenbergii* by the scales longer than the pale green perigynia. Conservation Concern: MA (Endangered).

28. **Carex cephalophora** Muhlenberg

**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A common medium-sized sedge with a small dense head of sessile spikes.

**FIGURE 5.**

**Leaves** 2-5 mm wide, light green, longer than the stems.

**Lower sheaths** brown; upper sheath fronts hyaline, the apex sometimes yellow-brown, thick, concave.

**Inflorescence** 1-2 cm x 5-9 mm with 3-8 short sessile spikes aggregated into a dense head, each spike inconspicuously male at the apex (empty scales), the perigynia spreading or reflexed.

**Bracts** bristle-like, with several conspicuous bracts per head.

**Scales** shorter (1/2 the length) and narrower than the perigynia, hyaline with a green center, short-awned.

**Perigynia** 2.5-3.2 x 1.5-1.8 mm, planoconvex, ovate, yellow-green, not distinctly nerved; apex tapering; base scarcely spongy-thickened, round-tapering; beak serrate, bidentate, teeth 0.3 mm or longer.

**Achenes** lenticular; stigmas 2.

**HABITAT:** Dry woods, pastures, lawns, clearings, rocky slopes. THROUGHOUT.

**NOTES:** Similar to *C. muehlenbergii*, but easily distinguished by the short, dense, bristly head, and the narrower thin-walled and nerveless perigynia. *C. mesochorea* has slender nerves on the perigynia, stems longer than the leaves, and scales that are as long as the perigynia. *C. cephalophora* generally has wider leaves and shorter stems than these species.
Group 3

Group 3 - Plants with several (generally 10 or fewer) separate, short sessile spikes - the spikes all alike. Perigynia ascending, planoconvex, the body elliptic, the base spongy-thickened and contracted when dry. Scales generally white-hyaline with a green center. Achenes lenticular.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Perigynia Description</th>
<th>Leaf W (mm)</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia long (&gt; 4 mm), narrowly elliptic with long beaks; bracts shorter than the spikes; scales pale brown</td>
<td>6-15 per spike 4.0-5.5 mm long nerved, body tapering to the beak</td>
<td>1-2.5</td>
<td>wetlands</td>
<td>29. <em>C. bromoides</em></td>
</tr>
<tr>
<td>Perigynia long (&gt; 4 mm), narrowly elliptic with long beaks; bracts longer than the spikes; scales white</td>
<td>3-15 per spike 4.0-5.5 mm long not nerved, rounded at apex</td>
<td>2-3</td>
<td>woods</td>
<td>30. <em>C. deweyana</em></td>
</tr>
<tr>
<td>Perigynia long (&gt; 4 mm), narrowly elliptic; scales acuminate or awned; plants rhizomatous</td>
<td>4.5-6.2 mm long nerved on both sides</td>
<td>1.5-3</td>
<td>dry woods or clearings</td>
<td>24. <em>C. siccata</em></td>
</tr>
<tr>
<td>Leaves and perigynia blue-green; perigynia very short-beaked or nearly beakless, 10-30 per spike</td>
<td>1.8-3.0 mm long silver-green</td>
<td>2-4</td>
<td>wetlands, esp. bogs</td>
<td>31. <em>C. canescens</em></td>
</tr>
<tr>
<td>Leaves green; perigynia very short-beaked or nearly beakless, 5-10 per spike</td>
<td>2.0-2.5 mm long yellow-brown or green</td>
<td>1-2.5</td>
<td>wetlands</td>
<td>32. <em>C. brunnescens</em></td>
</tr>
<tr>
<td>Perigynia plump, nearly beakless; 2-3 spikes per stem; bract slender, longer than inflorescence</td>
<td>1-5 per spike 2.5-3.8 mm long brown-green when mature, finely nerved</td>
<td>1-2</td>
<td>wetlands</td>
<td>33. <em>C. trisperma</em></td>
</tr>
<tr>
<td>Perigynia plump, nearly beakless; 2-4 spikes per stem; no obvious bract</td>
<td>1-3 per spike 2.0-3.0 mm long brown when mature, strongly nerved (appearing corrugated)</td>
<td>1-1.5</td>
<td>bogs</td>
<td>34. <em>C. disperma</em></td>
</tr>
<tr>
<td>Perigynia with a short distinct serrate beak</td>
<td>2-5 per spike 2.0-3.4 mm long not nerved, margins serrate</td>
<td>1-1.5</td>
<td>woods</td>
<td>35. <em>C. appalachica</em></td>
</tr>
</tbody>
</table>
Key To Group 3

1. Perigynia > 4 mm long, the body narrowly elliptic with a long (0.8-2.0 mm) beak
   2. Plants rhizomatous; scales acuminate or awned ............................................................... 24. C. siccata
   2. Plants caespitose
      3. Bracts shorter than the spikes; perigynia nerved, tapering to the beak............. 29. C. bromoides
      3. Bracts longer than the spikes; perigynia not nerved, rounded at the apex.......... 30. C. deweyana

1. Perigynia < 4 mm long, beakless or with a short (< 1.0 mm) beak
   4. Perigynia beakless or very short-beaked
      5. Leaves blue-green; 10-30 perigynia per spike ...................................................... 31. C. canescens
      5. Leaves green; 10 or fewer perigynia per spike
         6. Perigynia 5-10 per spike ............................................................................ 32. C. brunnescens
         6. Fewer than 5 perigynia per spike
            7. Spikes 2-3; bract slender; perigynia green, finely nerved ....................... 33. C. trisperma
            7. Spikes 3-4; bract lacking; perigynia brown, strongly nerved .................. 34. C. disperma
      3. Perigynium with a flat serrate bidentate beak ......................................................... 35. C. appalachica

29. Carex bromoides Schkuhr ex Willdenow

SECTION DEWEYANAE

DISTINCTIVE FEATURES: A slender medium-sized wetland sedge. The inflorescence has a few short, sessile, linear spikes, with the terminal spike male at base. Perigynia are elongate, narrow, and planoconvex. FIGURE 3.

Leaves 1-2.5 mm wide, shorter than the stems.

Lower sheaths pale brown; upper sheath fronts hyaline, white, the apex concave and thickened, prolonged as a short collar around the stem.

Inflorescence 2-6 cm long, with 3-7 erect sessile linear-oblong spikes, the uppermost male at the base (empty scales).

Lowest spike 0.5-2.0 cm x 2.0-3.0 mm, the perigynia not spreading, 6-15 per spike. Plants occasionally unisexual, all spikes either male or female.

Bracts bristle-like, shorter than the spikes, not conspicuous.

Scales shorter than and as wide as the perigynia, pale brown, acute.

Perigynia 4.0-5.5 x 0.7-1.2 mm, planoconvex, elliptical, green or pale brown, strongly few-nerved on both sides or only the back; apex tapering; base spongy-thickened when fresh, contracted when dried; beak elongate, 0.8-1.2 mm, flattened, strongly serrate-margined, bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Saturated soils, generally in forested habitats; wet woods, swamps, bogs. THROUGHOUT.

NOTES: C. bromoides is distinguished from C. deweyana by its preference for wetlands and the narrower perigynia that are strongly nerved on at least one face. The thickened and prolonged sheath apex often
causes the base of the leaf blade to flare and appear similar to the "collar" of grasses. Our plants are subspecies *bromoides*.

**Figure 6.** 31. *Carex canescens*; 32. *Carex brunnescens*; 33. *Carex trisperma*; 34. *Carex disperma*; 35. *Carex appalachica*; 36. *Carex mackenzii*. Key: p-fr = perigynium front; p-b = perigynium back.

**30. Carex deweyana** Schweinitz  

**SECTION DEWEYANAE**

**DISTINCTIVE FEATURES:** A slender medium-sized sedge of dry forests, with few short sessile spikes, the upper one male at base. The scales and perigynia are silver-green, elongate, and narrow. **FIGURE 3.**

- **Leaves** 2-3 mm wide, shorter than the stems, pale green.
- **Lower sheaths** pale brown; upper sheath fronts hyaline, white, the apex thickened, concave, prolonged into a short collar around the stem.
- **Inflorescence** 2-5 cm long with 3-4 (7) erect sessile ovoid spikes, the uppermost male at base.
- **Lowest spike** 1.0-1.5 cm x 5-7 mm, with 3-15 perigynia per spike.
- **Bract** bristle-like, longer than the lowest spike.
- **Scales** shorter than and as wide as the perigynia, white-hyaline, acute or cuspidate.
- **Perigynia** 4.0-5.5 x 1.5-2.0 mm, planoconvex, narrowly ovate, green, lacking nerves or faintly nerved on the back; apex rounded; base spongy-thickened and rounded when fresh, becoming contracted when dry; beak elongate, 1.0-2.0 mm long, flattened, serrate, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Dry or only seasonally saturated soils, forests; rich wooded talus slopes. THROUGHOUT.
NOTES: Distinguished from *C. bromoides* by the dry habitat; the wider leaves, spikes and perigynia; conspicuous lower bract; white scales; and the lack of nerves on the perigynium. Our plants are var. *deweyana*.

31. **Carex canescens** Linnaeus

**SECTION GLAREOSAE**

**DISTINCTIVE FEATURES:** A common medium-sized sedge of acid wetlands and peatlands with a stiff inflorescence of small separate sessile spikes, the scales and leaves gray- or blue-green. **FIGURE 6.**

- **Leaves** 2-4 mm wide, shorter than the stems, grey-green or blue-green.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged at the summit, the apex slightly thickened.
- **Inflorescence** 2-15 cm long, with 4-8 separate, sessile bisexual spikes, male at the base (empty scales) (generally only visible on the uppermost spike).
- **Spikes** 3-12 mm long, with 10-30 perigynia.
- **Lowest bract** slender, slightly longer than the spike.
- **Scales** shorter than and as wide as the perigynia, hyaline with a green midrib, acute or cuspidate.
- **Perigynia** 1.8-3.0 x 1.3-1.8 mm, planoconvex, broadly elliptic or ovate, pale silver-green, firm, conspicuously granular, few-nerved on both sides (most visible at base); apex rounded; base round, spongy, short-stipitate; beak very short, to 0.2 mm, serratate, oblique and hyaline at the tip, sometimes red-brown.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Acid forested wetlands, bogs, pond shores. THROUGHOUT.

**NOTES:** Superficially resembles *C. brunnescens*, but has more perigynia in each (larger) spikelet, broader blue-green leaves, and silvery perigynia and scales. Two subspecies occur in our region. *C. canescens* subsp. *disjuncta* (Fernald) Toivonen is more common, and has an inflorescence 6-15 cm long with the lowest spikes separated by more than 2 cm. Subspecies *canescens* has shorter inflorescences (2-7 cm) and the lower spikes are separated by less than 2.5 cm.

32. **Carex brunnescens** (Persoon) Poiret

**SECTION GLAREOSAE**

**DISTINCTIVE FEATURES:** A common slender sedge occurring in a wide range of wetland or upland habitats, with a slender stiff inflorescence of small separate sessile spikes. **FIGURE 6.**

- **Leaves** 1.0-2.5 mm wide, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged at the summit, the apex slightly thickened, often dotted at the summit.
- **Inflorescence** 2-7 cm long, with 3-10 separate, sessile bisexual spikes, male at the base (empty scales) (generally visible on the uppermost spike), often with a distinct zig-zag appearance.
- **Spikes** 3-7 mm long, with 5-10 perigynia.
- **Lowest bract** slender, slightly longer than the spike.
- **Scales** shorter than and as wide as the perigynia, hyaline with a green midrib, becoming brown at maturity, acute or cuspidate.
- **Perigynia** 2.0-2.5 x 1.0-1.5 mm, planoconvex, elliptic or ovate, pale green, yellow-brown at maturity, few-nerved on both sides (most visible at base); apex rounded; base round, spongy, short-stipitate; beak to 0.5 mm, serratate, minutely bidentate and hyaline at the tip, often red-brown.
- **Achenes** lenticular; stigmas 2.
**Group 3**

**HABITAT:** Wide range of habitats with acid soils, including forested wetlands, "turfy" mountain summits, and rocky upland slopes. THROUGHOUT.

**NOTES:** Superficially resembles *C. canescens*, but has fewer perigynia in each smaller spikelet, and the narrower leaves, perigynia and scales appear green or pale brown rather than silvery. Small plants of *C. brunnescens* may be superficially similar to *C. disperma* but can be separated by the larger number of perigynia per spike, and by the serrate beaks. Two poorly distinguished and intergrading subspecies are recognized in New England: *C. brunnescens* subsp. *brunnescens* has erect stems and leaves 1.5-2.5 mm wide, while subsp. *sphaerostachya* (Tuckerman) Kalela has arching stems, leaves 1-1.5 mm wide, and the terminal spike more conspicuously narrowed at the base.

33. **Carex trisperma** Dewey

**SECTION GLAREOSAE**

**DISTINCTIVE FEATURES:** A common small, slender sedge of acid boggy coniferous wetlands with a slender flexuous inflorescence of 2-3 small separate sessile spikes and a conspicuous slender bract. **FIGURE 6.**

- **Leaves** (0.5) 1-2 mm wide, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged at the summit and slightly thickened.
- **Inflorescence** to 4 cm long, with 2-3 separate, sessile bisexual spikes, male at the base (empty scales) (generally visible on the uppermost spike).
- **Spikes** 4-6 mm long, with 1-5 perigynia.
- **Lowest bract** slender, 3-10 cm long.
- **Scales** shorter than and as wide as the perigynia, hyaline with a green midrib, acute or cuspidate.
- **Perigynia** 2.5-3.8 x 1.5-2.0 mm, planoconvex, elliptic or ovate, pale green when young, brown when mature, finely many-nerved on both sides; apex tapering; base round, spongy, short-stipitate; beak to 0.4 mm, oblique and hyaline at the tip.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Acid forested wetlands and bogs, generally in *Sphagnum*. THROUGHOUT.

**NOTES:** Superficially resembles *C. disperma*, but typically has larger spikelets with more perigynia, generally only 2 spikes, a conspicuous bract and flexuous inflorescence. Some authors have recognized *C. trisperma* var. *billingsii* O.W. Knight as a segregate taxon of the coastal plain, distinguished by its very narrow leaves (to 0.5 mm).

34. **Carex disperma** Dewey

**SECTION DISPERMAE**

**DISTINCTIVE FEATURES:** A common small, slender sedge of acid boggy coniferous wetlands with a slender inflorescence of 2-3 small separate sessile spikes. The mature perigynia are brown, nearly beakless, and very conspicuously nerved. **FIGURE 6.**

- **Leaves** 1-1.5 mm wide, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged.
- **Inflorescence** to 2.5 cm long, with 2-4 separate, sessile bisexual spikes, male at the apex (empty scales).
- **Spikes** 2-4 mm long, with 1-3 (rarely 6) perigynia.
- **Bracts** scale-like, inconspicuous.
- **Scales** shorter and narrower than the perigynia, hyaline with a green midrib, acute or cuspidate.
**Perigynia** 2.0-3.0 x 1.5 mm, biconvex, the body ellipsoid or ovoid, brown when mature, strongly nerved and appearing corrugated on both sides; apex round; base round, spongy, short-stipitate; beak minute, 0.25 mm, oblique and hyaline at the tip.

**Achenes** lenticular, often exposed by the split perigynium; stigmas 2.

**HABITAT:** Acid coniferous wetlands, generally in *Sphagnum*. CT, MA, ME, NH, VT.

**NOTES:** Resembles *C. trisperma*, but spikelets are smaller, with fewer strongly nerved perigynia, and with short inconspicuous bracts.

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**35. Carex appalachica** J.M. Webber and P.W. Ball  
**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A common very slender sedge of dry deciduous woods, with several small sessile spikes and ascending (rarely spreading or reflexed) perigynia with serrate beaks. **FIGURE 6.**

- **Leaves** 1.0-1.5 mm wide, equalling the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex concave, slightly thickened.
- **Inflorescence** 2-8 cm x 2.5-6.5 mm with 3-6 separate short sessile spikes, each spike with 2-5 perigynia, inconspicuously male at the apex (empty scales), the perigynia ascending or spreading, less commonly reflexed.
- **Bracts** bristle-like.
- **Scales** shorter than and as wide as the perigynia, hyaline with a green center, obtuse or acute.
- **Perigynia** 2.0-3.4 x 1.0-1.3 mm, planoconvex, elliptic, green, not nerved; apex tapering; base spongy-thickened, rounded; beak flat, serrate, the tip bidentate.
- **Achenes** lenticular, in the lower half of the perigynium; stigmas 2, dark red-brown, short, thick, twisted.

**HABITAT:** Dry deciduous woods and edges. THROUGHOUT.

**NOTES:** Very similar to *C. rosea* but recognizable by the narrower leaves and the shorter generally ascending perigynia.
**Group 4**

**Group 4 - Plants with several separate, short sessile spikes - the spikes all alike.** Perigynia spreading, planoconvex, the body elliptic or ovate, the base spongy-thickened and contracted when dry. Scales generally white-hyaline with a green center. Achenes lenticular.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Terminal Spike</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves and perigynia blue-green; scales red-brown</td>
<td>empty scales at base</td>
<td>10-30 per spike 2.5-3.3 mm long 1.6-2.0 mm wide broadly ovate, leathery, granular</td>
<td>salt marshes</td>
<td>36. <em>C. mackenzii</em></td>
</tr>
<tr>
<td>Sheaths corrugated, white-mottled; leaves 5-10 mm wide</td>
<td>empty scales at tip</td>
<td>3.0-4.0 mm broadly ovate</td>
<td>forested uplands</td>
<td>18. <em>C. sparganioides</em></td>
</tr>
<tr>
<td>All spikes on a plant either male (empty scales) or female</td>
<td>all female (no empty scales at base or all male (all empty scales)</td>
<td>3-15 per spike 2.0-4.0 mm long 1.2-2.2 mm wide narrowly ovate, brown nerved on back</td>
<td>calcareous wetlands</td>
<td>37. <em>C. sterilis</em></td>
</tr>
<tr>
<td>Perigynia broadly ovate or triangular, short-beaked</td>
<td>empty scales at base</td>
<td>5-10 per spike 2.0-4.0 mm long 1.5-3 mm wide nerved on back; beak with short stiff teeth</td>
<td>wetlands, bogs</td>
<td>38. <em>C. atlantica</em></td>
</tr>
<tr>
<td>Perigynia ovate; beak with soft teeth; stems smooth</td>
<td>empty scales at base</td>
<td>5-10 per spike 2.0-3.0 mm long 1.0-2.0 mm wide nerved on both sides; beak with short soft teeth</td>
<td>wetlands</td>
<td>39. <em>C. interior</em></td>
</tr>
<tr>
<td>Perigynia broadly ovate; spikelets densely clustered in a spike-like head</td>
<td>empty scales at base</td>
<td>2.5-4 mm long 1.5-2.0 mm wide nerved on the front brown when mature</td>
<td>Bogs, rarely shrub swamps or shores</td>
<td>25. <em>C. wiegandii</em></td>
</tr>
<tr>
<td>Perigynia narrowly ovate with relatively long (1.0-2.0 mm) serrate beaks</td>
<td>empty scales at base</td>
<td>5-25 per spike 3.0-5.0 mm long 0.8-2.0 mm wide brown when mature, nerved on back</td>
<td>wetlands</td>
<td>40. <em>C. echinata</em></td>
</tr>
</tbody>
</table>

**Note:** If the terminal spike is male at the base (empty scales), there will be an obvious tapering base of empty (male) scales. If the terminal spike is male at the apex (empty scales), there will be perigynia at the base of the spike. The empty scales at the tip of the terminal spike may not be visible in mature material, but empty scales at the base of the terminal spike are always visible.
### Group 4 (continued)

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia narrowly elliptic with smooth beaks; beak tip entire, not bidentate</td>
<td>Terminal Spike: empty scales at base; Perigynia: 5-20 per spike; 2.0-3.0 mm long; 1.0-2.0 mm wide; nerved on both sides</td>
<td>wetlands</td>
<td>41. <em>C. seorsa</em></td>
</tr>
<tr>
<td>Scales brown or purple; perigynia shining, yellow-green; spikes often aggregated into a short head</td>
<td>Terminal Spike: empty scales at tip; Perigynia: 5-10 per spike; 4.0-5.5 mm long; 2.3-2.5 mm wide</td>
<td>woods and clearings</td>
<td>42. <em>C. spicata</em></td>
</tr>
<tr>
<td>Perigynia with smooth beaks; leaves 1-1.5 mm wide</td>
<td>Terminal Spike: empty scales at tip; Perigynia: 5-8 per spike; 2.6-3.0 mm long; 1.5-1.8 mm wide</td>
<td>woods</td>
<td>43. <em>C. retroflexa</em></td>
</tr>
<tr>
<td>Perigynia with serrate beaks; stigmas slender, straight; leaves 1-1.5 mm wide</td>
<td>Terminal Spike: empty scales at tip; Perigynia: 4-7 per spike; 2.6-3.8 mm long; 1.1-1.5 mm wide; achene in center of perigynium</td>
<td>woods</td>
<td>44. <em>C. radiata</em></td>
</tr>
<tr>
<td>Perigynia with serrate beaks; stigmas short, thick, curling; leaves 1.5-3 mm wide</td>
<td>Terminal Spike: empty scales at tip; Perigynia: 7-14 per spike; 2.6-4.0 mm long; 1.5-1.8 mm wide; achene near base of perigynium</td>
<td>woods</td>
<td>45. <em>C. rosea</em></td>
</tr>
<tr>
<td>Perigynia with short serrate beaks; stigmas short, thick, curling; perigynia often ascending, not spreading-reflexed; leaves 1.0-1.5 mm wide</td>
<td>Terminal Spike: empty scales at tip; Perigynia: 2-5 per spike; 2.0-3.4 mm long; 1.1-1.3 mm wide; achene near base of perigynium</td>
<td>woods</td>
<td>35. <em>C. appalachica</em></td>
</tr>
</tbody>
</table>
Key To Group 4

1. Leaves blue-green; salt marshes ................................................................. 36. *Carex mackenziei*

1. Leaves green; freshwater wetlands and uplands
   2. Leaves 5-10 mm wide; lower sheaths loose, white-mottled, corrugated .......... 18. *Carex sparganioides*
   2. Leaves less than 5 mm wide; sheaths tight, smooth
      3. All spikes on a stem either male (empty scales) or female (with perigynia) .......... 37. *Carex sterilis*
      3. Spikes all with both perigynia and empty scales (most visible on terminal spike)
         4. Empty scales at base of terminal spike
            5. Perigynia broadly ovate, 1.5-3.0 mm wide
               6. Spikelets separate, distinct ........................................... 38. *Carex atlantica*
               6. Spikelets in a dense compact head .................................. 25. *Carex wiegandii*
            5. Perigynia narrowly ovate, 0.8-2.0 mm wide
               6. Beak of perigynium long (1.0 – 2.0 mm) ....................... 40. *Carex echinata*
               6. Beak of perigynium short (< 1 mm)
                  7. Beak serrate; perigynium ovate ........................................ 39. *Carex interior*
                  7. Beak smooth; perigynium narrowly elliptic or ovate ............... 41. *Carex seorsa*
            4. Terminal spike without conspicuous empty scales at base
               8. Scales brown or purple; perigynia shining yellow-green ............ 42. *Carex spicata*
               8. Scales hyaline, perigynia green
                  9. Beak smooth ................................................................. 43. *Carex retroflexa*
                  9. Beak serrate
                     10. Stigmas straight, slender; perigynia 1.5 mm wide or less;
                        achene in center of perigynium ....................................... 44. *Carex radiata*
                     10. Stigmas short, curling; achene near base of perigynium
                        11. Perigynia 1.5-1.8 mm wide, spreading-reflexed .................. 45. *Carex rosea*
                        11. Perigynia 1.0-1.3 mm wide, gen. ascending .................... 35. *Carex appalachica*

36. **Carex mackenziei** V.1. Kreczetowicz

**SECTION GLAREOSAE**

**DISTINCTIVE FEATURES:** A rare slender medium-sized sedge of salt marshes with a stiff inflorescence of small separate sessile spikes; scales and leaves silvery. **FIGURE 6.**

- **Leaves** 1-3 mm wide, shorter than the stems, grey-green or blue-green.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged at the summit and slightly thicker than the sheath.
- **Inflorescence** 1.5-5.5 cm long, with 3-6 separate, sessile bisexual spikes, male at the base (empty scales) (generally visible on the uppermost spike).
Spikes 5-12 mm long, with 10-30 perigynia.

Lowest bract slender, slightly longer than the spike.

Scales as long and wide as the perigynia, red-brown, obtuse or acute.

Perigynia 2.5-3.3 x 1.6-2.0 mm, planoconvex, the body broadly elliptic or ovate, pale silvery green, firm, conspicuously granular, few-nerved on both sides (most visible at base); apex tapering; base round, spongy, short-stipitate; beak very short, to 0.2 mm, serrate, oblique and hyaline at the tip, often red-brown.

Achenes lenticular; stigmas 2.

HABITAT: Salt or brackish marshes. ME.

NOTES: Superficially resembles *C. canescens*, but is distinguished by the red-brown scales that conceal the perigynia.

37. *Carex sterilis* Willdenow

DISTINCTIVE FEATURES: An uncommon small slender sedge of calcareous fens, with several short unisexual spikes (all spikes either female or male, with empty scales), the perigynia planoconvex, spreading or reflexed. 

Leaves 0.5-2.5 mm wide, stiff, shorter than the stems, flat or involute.

Lower sheaths brown; upper sheath fronts hyaline, the apex concave.

Inflorescence 1-4 cm long with 3-8 short unisexual spikes (generally all spikes on a stem either male or female) or the lower spikes female, the terminal spike male.

Terminal spike (if female) 4.5-7.2 mm wide, the perigynia spreading or reflexed.

Scales shorter and narrower than the perigynia, brown with a green center and hyaline margins, acute.

Perigynia 2.0-4.0 x 1.2-2.2 (gen. 1.5) mm, planoconvex, narrowly ovate, chestnut or dark brown at maturity, distinctly 7-15-nerved on at least the back, apex tapering, base spongy-thickened, rounded; beak 0.7-1.7 mm, serrate, bidentate with soft short teeth.

Achenes lenticular; stigmas 2.

HABITAT: Calcareous fens, marl meadows, *Larix* or *Thuja* swamps. CT, MA, ME.

NOTES: A very distinctive sedge, resembling *C. interior* but with all spikes generally the same sex. Abberant specimens from northern Maine with very narrow perigynia have sometimes been recognized as *C. elachycarpa* Fernald. Conservation Concern: CT (Special Concern), MA (Threatened), ME (Threatened), RI (Historic).

38. *Carex atlantica* L.H. Bailey

DISTINCTIVE FEATURES: A common slender sedge of acid wetlands, with several short spikes, the terminal conspicuously male at the base (empty scales), the perigynia planoconvex, spreading or reflexed, broadly ovate or triangular with short stiffly toothed beaks. 

Leaves 0.5-4.0 mm wide, light green, shorter than the stems.

Lower sheaths brown; upper sheath fronts hyaline, often red-dotted, the apex concave, thickened.

Inflorescence 1.5-5.5 cm long with 2-8 short sessile spikes, each spike male at the base (empty scales), most conspicuous on the terminal spike.

Terminal spike 5-24 mm long, 6-11 mm wide, the perigynia spreading or reflexed.

Scales shorter and narrower than the perigynia, hyaline with a green center, acute or obtuse.
44

**Group 4**

**Perigynia** 2.0-4.0 x 1.5-3 mm, planoconvex, broadly ovate or triangular, brown at maturity, distinctly nerved on at least the back; apex tapering; base spongy-thickened, rounded; beak 0.5-1.3 mm, serrate, bidentate with stiff teeth.

**Achenes** lenticular; stigmas 2.

**HABITAT:** Wide range of acid wetlands, including bogs, shrub swamps and forested wetlands. THROUGHOUT.

**NOTES:** A common and variable species, distinguished from *C. interior* and *C. echinata* by the short-beaked broad perigynia, scabrous stems, sheaths apically thickened, and green scales. Two taxa occur in our region: *C. atlantica* subspecies *atlantica* and subspecies *capillacea* (L.H. Bailey) Reznicek. *C. atlantica* subsp. *capillacea* is distinguished by the very slender leaves (0.5-1.5 mm wide), shorter inflorescence and shorter perigynia (2-3 mm).

**SYNONYMS:** *C. howei* Mackenzie; *C. incomperta* E.P. Bicknell.

39. **Carex interior** L.H. Bailey

**SECTION STELLULATAE**

**DISTINCTIVE FEATURES:** A common slender sedge of open wetlands, with several short spikes, the terminal conspicuously male at the base (empty scales); the perigynia planoconvex, spreading or reflexed, ovate with short inconspicuous beaks. **FIGURE 7.**

- **Leaves** 1.0-2.5 mm wide, light green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, often red-dotted, the apex concave, not thickened.
- **Inflorescence** 1-4 cm long with 2-5 short sessile spikes, each spike male at the base (empty scales), most conspicuous on the terminal spike.
- **Terminal spike** 5-20 mm long, 4-6 mm wide, the perigynia spreading or reflexed.
- **Scales** shorter and narrower than the perigynia, brown with a green center and hyaline margins, obtuse.

**Perigynia** 2.0-3.0 x 1.0-2.0 mm, planoconvex, ovate, brown at maturity, distinctly nerved on at least the back; apex tapering; base spongy-thickened, rounded; beak short, 0.5-1.0 mm, serrate, bidentate with very short inconspicuous teeth.

**Achenes** lenticular; stigmas 2.

**HABITAT:** A wide range of calcareous or neutral wetlands. THROUGHOUT.

**NOTES:** A fairly common and uniform species, distinguished from *C. atlantica* and *C. echinata* by the short-beaked narrow perigynia, smooth stems, sheaths not apically thickened, and blunt short scales.

40. **Carex echinata** Murray

**SECTION STELLULATAE**

**DISTINCTIVE FEATURES:** A common slender sedge of open acid wetlands, with several short spikes, the terminal conspicuously male at the base (empty scales); the perigynia planoconvex, spreading or reflexed, the body narrowly ovate with a conspicuous long serrate beak. **FIGURE 7.**

- **Leaves** 1.0-3.5 mm wide, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, often red-dotted, the apex concave, not thickened.
- **Inflorescence** 1-8 cm long with 3-8 short sessile spikes, each spike male at the base (empty scales), most conspicuous on the terminal spike.
- **Terminal spike** 5-25 mm long, 5-9 mm wide, the perigynia spreading or reflexed.
- **Scales** shorter and narrower than the perigynia, pale brown with a green center and hyaline margins, acute or obtuse.
Perigynia 3.0-5.0 × 0.8-2.0 mm, planoconvex, narrowly ovate, brown at maturity, distinctly nerved on at least the back (often on both sides); apex tapering; base spongy-thickened, rounded; beak long, 1.0-2.0 mm, sparsely serrate, bidentate with distinct sharp stiff teeth.

Achenes lenticular; stigmas 2.

HABITAT: A wide range of wetlands with acidic substrates, including sphagnum bogs, sandy shores, and openings in coniferous wetlands. THROUGHOUT.

NOTES: Our plants are subsp. *echinata*. Plants from northern Maine with extremely narrow perigynia have been called *C. josselynii* (Fernald) Mackenzie, but are not a distinct taxon. *C. echinata* is most similar to *C. interior* and *C. atlantica*, but is distinguished from these by its narrow ovate perigynia that taper to a long beak. Conservation Concern: ME (Threatened).

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### 41. *Carex seorsa* Howe

**SECTION STELLULATAE**

**DISTINCTIVE FEATURES:** An uncommon slender sedge of forested wetlands with several short spikes, the terminal conspicuously male at the base (empty scales), the perigynia planoconvex, spreading or reflexed, with elliptic bodies and smooth short beaks. **FIGURE 7.**

Leaves 2-4 mm wide, shorter than the stems, not stiff.

Lower sheaths brown; upper sheath fronts hyaline, the apex deeply concave.

Inflorescence 2-7 cm long with 4-8 short sessile spikes, each spike male at the base (empty scales), most conspicuous on the terminal spike.

Terminal spike 5-15 mm long, 4.5-6 mm wide, the perigynia spreading or reflexed.

Scales shorter and narrower than the perigynia, with a green center and hyaline margins, acute.
**Perigynia** 2.0-3.0 x 1.0-2.0 mm, planoconvex, elliptic, brown-green at maturity, distinctly nerved on both faces; apex tapering; base spongy-thickened, rounded; beak short, 0.2-0.6 mm, margins smooth, tip entire or with minute teeth.

Achenes lenticular; stigmas 2.

**HABITAT:** Deciduous forested wetlands. CT, MA, NH, RI.

**NOTES:** Immature specimens resemble *C. brunnescens*, but are distinguished by the smooth beaks of the perigynia. Distinguished from other members of Section *Stellulatae* (*C. interior, C. atlantica*) by the perigynia which have elliptic (not ovate) bodies and smooth beaks. Conservation Concern: NH (Endangered).

42. **Carex spicata** Hudson

**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A naturalized species of disturbed open sites, with sessile spikes, spreading shining perigynia and acuminate or awned colored scales. **FIGURE 8**

- **Leaves** 2-3 mm wide, shorter than the stems.
- **Lower sheaths** dark brown or red-purple; upper sheath fronts hyaline, the apex concave or short-prolonged.
- **Inflorescence** 1.5-4.0 cm x 10 mm with 4-9 short sessile spikes, the upper spikes somewhat aggregated into a head, each spike inconspicuously male at the apex (empty scales), the perigynia spreading or reflexed.
- **Bracts** scale-like, the lowest prolonged into a bristle.
- **Scales** shorter and as wide as the perigynia, orange-brown or purple-brown, acuminate or awned.
- **Perigynia** 4.0-5.5 x 2.5 mm, planoconvex, ovate, shining and yellow-green, nerved on the back; apex tapering; base corky-thickened, rounded; beak relatively long (more than 1 mm), serrate, bidentate.

Achenes lenticular; stigmas 2.

**HABITAT:** Fields, roadsides, other open disturbed habitats. CT, MA, ME, NH, RI.

**NOTES:** Easily recognized by the colored scales and shining perigynia. Naturalized from Europe.

**SYNONYM:** *C. contigua* Hoppe.

43. **Carex retroflexa** Muhlenberg ex Willdenow

**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A common slender small sedge of dry deciduous woods, with several small sessile star-like spikes. **FIGURE 8**

- **Leaves** 1-3 mm wide, equalling or shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex concave, not thickened.
- **Inflorescence** 1-4 cm x 5 mm with 4-9 short sessile spikes, the perigynia spreading and reflexed, spikes male at the apex (empty scales).
- **Bracts** bristle-like.
- **Scales** shorter and narrower than the perigynia, hyaline with a green center, acute or cuspidate.
- **Perigynia** 2.6-3.0 x 1.5-1.8 mm, planoconvex, ovate or elliptic, green, not nerved; apex tapering; base spongy-thickened, round; beak smooth, bidentate.

Achenes lenticular; stigmas 2.

**HABITAT:** Dry deciduous rocky woods and slopes. CT, MA, NH, RI.
NOTES: Very similar to *C. appalachica* and *C. radiata* and difficult to distinguish. *C. retroflexa* has more ovate perigynia that lack a distinct raised margin and have a smooth beak. A mature specimen and good magnification are essential for identification. Conservation Concern: NH (Threatened).

44. **Carex radiata** (Wahlenberg) Small

**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A common slender sedge of dry deciduous woods, with several small sessile star-like spikes. The perigynia have slender stigmas and serrate beaks. **FIGURE 8.**

- **Leaves** 1.0-1.5 mm wide, light green, equalling the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex concave, slightly thickened.
- **Inflorescence** 3-7 cm x 5-8 mm with 3-6 short sessile spikes, each spike with 4-7 spreading or reflexed perigynia, spikes male at the base (empty scales).
- **Bracts** bristle-like.
- **Scales** shorter and as wide as the perigynia, hyaline with a green center, obtuse or acute.
- **Perigynia** 2.6-3.8 x 1.0-1.5 mm, planoconvex, elliptic, green, not nerved; apex tapering; base spongy-thickened, tapering; beak serrate, bidentate.
- **Achenes** lenticular, in the center of the perigynia, the spongy base 1.2 mm high or more; stigmas 2, brown, long, thin, not twisted.

**HABITAT:** Mesic deciduous woods and edges. THROUGHOUT.

**NOTES:** Very similar to *C. appalachica* and *C. retroflexa* and difficult to distinguish. Smaller individuals resemble *C. appalachica* (No. 35, Group 3), but can be recognized by the reflexed perigynia, thin straight stigmas and the position of the mature achenes. Mature specimens are essential for identification. *C. rosea* as described in many older floras (Gray’s Manual and others) is this taxon.

45. **Carex rosea** Schkuhr ex Willdenow

**SECTION PHAESTOGLOCHIN**

**DISTINCTIVE FEATURES:** A common slender medium-sized sedge of dry deciduous woods, with several small sessile star-like spikes. The widely reflexed perigynia have serrate beaks and distinctive thick curled stigmas. **FIGURE 8.**

- **Leaves** 1.5-3.0 mm wide, equalling the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex concave, slightly thickened.
- **Inflorescence** 2.5-7.0 cm x 5-8 mm with 4-8 short sessile spikes, each spike with 7-14 spreading or reflexed perigynia, male at the apex (empty scales).
- **Bracts** bristle-like.
- **Scales** shorter and as wide as the perigynia, hyaline with a green center, obtuse or acute.
- **Perigynia** 2.6-4.0 x 1.5-1.8 mm, planoconvex, elliptic, green, not nerved; apex tapering; base spongy-thickened, rounded; beak serrate, the tip bidentate.
- **Achenes** lenticular, at the base of the perigynium, the spongy base less than than 1.2 mm; stigmas 2, dark reddish-brown, short, thick, twisted.

**HABITAT:** Mesic or dry deciduous woods and edges. THROUGHOUT.

**NOTES:** Very similar to *C. appalachica* and *C. retroflexa* and difficult to distinguish. *C. rosea* is the largest, most robust, species in this complex and generally recognizable by the wider leaves, longer perigynia, and short thick contorted stigmas. Small individuals resemble *C. radiata*, but can be distinguished most easily by the position of the achene and the amount of spongy tissue at the base. The nomenclature of this group has also been highly confused. *C. rosea* as currently described was formerly called *C. convoluta* Mackenzie. *C. rosea* as described in many older floras (Gray's Manual and others) is *C. radiata* as treated here.
Perigynia of *C. rosea* resemble *C. appalachica*, which has very slender leaves (less than 1.5 mm wide) and more slender often ascending perigynia.

**Figure 8.** 42. *Carex spicata*; 43. *Carex retroflexa*; 44. *Carex radiata*; 45. *Carex rosea*. Key: p-fr = perigynium front; p-b = perigynium back.
Group 5 - Plants with several short sessile spikes - the spikes all alike. Perigynia flat with thin winged margins; scales as long as or longer than the perigynia, generally hiding the beak. Achenes lenticular.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Scale Color</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves firm, silvery, involute; sheaths conspicuously prolonged</td>
<td>silvery, hyaline</td>
<td>3.5-5.2 mm long; 2.0-2.5 mm wide</td>
<td>sand dunes, coastal roadsides</td>
<td>46. <em>C. silicea</em></td>
</tr>
<tr>
<td>Bract conspicuous, dilated at base; inflorescence dense, erect</td>
<td>light red-brown, acute or acuminate</td>
<td>4.0-5.0 mm long; 2.5 mm wide</td>
<td>open sandy soils, dry or seasonally wet</td>
<td>47. <em>C. adusta</em></td>
</tr>
<tr>
<td>Perigynia dull brown; inflorescence open, lax</td>
<td>dull brown or coppery, tip blunt</td>
<td>4.5-5.0 mm long; 2.0-2.5 mm wide brown</td>
<td>open dry habitats</td>
<td>48. <em>C. foenea</em></td>
</tr>
<tr>
<td>Scales red-brown; perigynium bead cylindric, smooth; inflorescence erect, dense</td>
<td>red or dark brown</td>
<td>3.5-5.0 mm long; 1.8-2.1 mm wide</td>
<td>open dry habitats</td>
<td>49. <em>C. ovalis</em></td>
</tr>
<tr>
<td>Scales glossy chestnut brown; beak flat, serrate; inflorescence erect, dense</td>
<td>glossy red-brown</td>
<td>4.0-4.5 mm long; 1.5-2.0 mm wide</td>
<td>open dry habitats, found only in the Penobscot River watershed</td>
<td>50. <em>C. oronensis</em></td>
</tr>
<tr>
<td>Beak hyaline, not bidentate; inflorescence open, lax</td>
<td>pale or red-brown</td>
<td>4.5-6.5 mm long; 1.5-2.0 mm wide</td>
<td>open dry habitats; roadsides</td>
<td>51. <em>C. praticola</em></td>
</tr>
<tr>
<td>Inflorescence open, lax; perigynia conspicuously nerved on both faces</td>
<td>silvery brown</td>
<td>3.0-4.5 mm long; 1.5-2.0 mm wide elliptic</td>
<td>open dry habitats, roadsides, rocky slopes</td>
<td>52. <em>C. argyrantha</em></td>
</tr>
</tbody>
</table>
Key To Group 5

1. Leaves firm, gray-green; perigynia broadly obovate, nerved on both sides ...................... 46. *Carex silicea*

1. Leaves not firm and gray-green; perigynia narrowly ovate or elliptic

2. Perigynia dark or olive-green

3. Bract conspicuous; inflorescence dense and erect; perigynia shining, 2.5 mm wide; scales acute or acuminate ................................................................. 47. *Carex adusta*

3. Bract inconspicuous; inflorescence open and lax; perigynia dull, less than 2.5 mm wide; scales blunt ........................................................................................................ 48. *Carex foenea*

2. Perigynia green or pale brown

4. Scales red-brown or chestnut-brown, inflorescence erect and dense

5. Beak cylindrical, smooth; perigynia nerved on the back ........................................ 49. *Carex ovalis*

5. Beak flat, serrate; perigynia nerved on both sides ................................................. 50. *Carex oronensis*

4. Scales pale, inflorescence open and lax

6. Perigynia 4.5-6.5 mm long, nerved on the back; beak cylindric, tip hyaline, not bidentate ........................................................................................................ 51. *Carex praticola*

6. Perigynia 3.0-4.5 mm long, conspicuously nerved on both sides; beak tip flat, bidentate, firm .................................................................................................................. 52. *Carex argyrantha*

46. *Carex silicea* Olney

SECTION OVALES

DISTINCTIVE FEATURES: A medium-sized sedge of sand dunes and coastal sandy soils, with stiff silvery involute leaves and a nodding inflorescence of separate silvery spikes that are pointed at the tip.

FIGURE 9.

Leaves 2.5-4.5 mm wide, firm, silvery green or gray-green, often involute, shorter than the stems.

Lower sheaths brown; upper sheath fronts green, hyaline only at the prolonged apex.

Inflorescence nodding, 4-8 cm long, with 2-10 sessile spikes; spikes male at the long clavate base, 5-20 mm long.

Bracts inconspicuous.

Scales the same length (or only slightly shorter than) and narrower than the perigynia, hyaline, acute.

Perigynia 3.5-5.2 x 2.0-2.5 mm, the body broadly obovate, winged to base, flat, silvery green or brown when mature, firm, nerved on both faces; base rounded; beak very short (1/4 of body length), bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Coastal sand dunes and sandy soils. CT, MA, ME, NH, RI.

NOTES: Similar to *Carex hormathodes*, but distinguished by the firm, involute gray-green or silvery green leaves and the long scales. Conservation Concern: ME (Special Concern).
47.  *Carex adusta* Boott  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A rare, medium-sized sedge of dry habitats with a dense erect inflorescence subtended by a conspicuous short bract. The olive-green or brown perigynia are concealed by the light red-brown scales, and are somewhat planoconvex rather than strongly flattened.  **FIGURE 9.**

- **Leaves** 2-4 mm wide, green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts green, hyaline only at the yellow-brown, conspicuously prolonged apex.
- **Inflorescence** a dense erect head, 2-3 cm long, with 4-15 sessile spikes; spikes 6-12 mm long, male at the rounded base.
- **Bracts** conspicuous, stiff, dilated at base.
- **Scales** as long and as wide as the perigynia (concealing the beaks), light red-brown with narrow hyaline margins, acute or acuminate.
- **Perigynia** 4.0-5.0 x 2.5 mm, the body ovate, not conspicuously flattened, olive-green or brown when mature, firm and shining, indistinctly nerved on both faces or on the back only; apex abruptly contracted; base rounded; beak bidentate, the apex yellow-brown.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open dry habitats on acid soils, burned areas, barrens, occasionally seasonally wet sandy shores.  ME.

**NOTES:** An unusual member of Section *Ovales*, with firm, shining perigynia that are not conspicuously thin-margined.  Conservation Concern: ME (Endangered).

48.  *Carex foenea* Willdenow  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A medium-sized sedge of dry habitats with a nodding inflorescence of separate, bronze spikes. The dull brown scales conceal the ovoid perigynia, which are distinctively dark brown at the base.  **FIGURE 9.**

- **Leaves** 2-4 mm wide, green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts green and white-mottled on the front, hyaline ventrally, the apex prolonged, concave, yellow-brown.
- **Inflorescence** open, lax, 3-7 cm long, with 4-10 separate sessile spikes; spikes 7-25 mm long, male at the abruptly contracted and clavate base.
- **Bracts** inconspicuous or absent.
- **Scales** as long and as wide as the perigynia (concealing the beak), coppery with narrow hyaline margins, blunt.
- **Perigynia** 4.0-5.0 x 2.0-2.5 mm, the body ovate, wing-margined, dull brown and dark brown at the base, thick and hard, nerved on the back or indistinctly on the front; base rounded; beak bidentate, short, the apex red-brown.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open dry habitats; clearings, woods, roadsides.  THROUGHOUT.

**NOTES:** Conservation Concern: CT (Special Concern), VT (Endangered).

**SYNONYM:** *Carex aenea* Fernald.
49.  *Carex ovalis* Goodenough  

SECTION OVALES

DISTINCTIVE FEATURES: A rare, naturalized medium-sized sedge of dry habitats with an erect crowded head of spikes and red-brown scales that conceal the narrow perigynia. **FIGURE 9.**

- **Leaves** 2-4 mm wide, green, shorter than the stems.
- **Lower sheaths** dark brown; upper sheath fronts hyaline, the apex short-prolonged, truncate.
- **Inflorescence** a dense erect head, 2-4 cm long, with 4-7 sessile spikes; spikes 7-15 mm long, male at the tapering base.
- **Bracts** inconspicuous or absent.
- **Scales** as long as the perigynia (concealing the beak) and almost as wide as the body, dark red-brown with broad hyaline margins, acute or acuminate.
- **Perigynia** 3.5-5.0 x 1.8-2.1 mm, the body ovate, flat, distended over the achene, narrowly wing-margined, yellow-brown, nerved on the back (occasionally 3 short nerves on the front), abruptly contracted at the apex; base rounded; beak cylindric, smooth, bidentate, the apex red-brown.
- **Achenes** lenticular; stigmas 2.

HABITAT: Open habitats; meadows, pastures, clearings, roadsides. ME, NH.

NOTES: An uncommon introduced European sedge. The large red-brown scales concealing the perigynia and the slender cylindric beak of the perigynium are distinctive. This species often has numerous vegetative stems. It is distinguished from *C. oronensis* by the the smooth cylindric beak. Treated (incorrectly) as *C. leporina* L. in some floras.

50.  *Carex oronensis* Fernald  

SECTION OVALES

DISTINCTIVE FEATURES: A globally rare (found only in the Penobscot River watershed in Maine), medium-sized sedge of dry habitats with an erect crowded head of spikes and chestnut-brown scales that conceal the very narrow elliptic perigynia. **FIGURE 9.**

- **Leaves** 3-5 mm wide, green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged, concave.
- **Inflorescence** a dense erect head, 2-3 cm long, with 3-9 sessile spikes; spikes 5-10 mm long, male at the abruptly contracted and clavate base.
- **Bracts** inconspicuous or absent.
- **Scales** as long as the perigynia (concealing the beak) and almost as wide as the body, glossy chestnut-brown with narrow hyaline margins, acute.
- **Perigynia** 4.0-4.5 x 1.5-2.0 mm, the body narrowly elliptic or very narrowly ovate, flat in cross-section, distended over the achene, wing-margined on the upper 1/2, light brown with the upper margins conspicuously green, nerved on both faces; base tapering; beak flat, bidentate, the apex red-brown.
- **Achenes** lenticular; stigmas 2.

HABITAT: Open dry habitats; meadows, clearings, roadsides. ME.

NOTES: *C. praticola* has similar size perigynia but has light red-brown scales, nerves only on the back of the perigynium, and an entire beak. *Carex scoparia*, also with narrow elongate perigynia, has short pale scales that do not conceal the perigynia. The flat, serrate beak distinguishes *C. oronensis* from *C. ovalis*. Conservation Concern: ME (Endangered).
51.  *Carex praticola* Rydberg  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A rare, slender sedge of dry habitats with a flexuous inflorescence and pale red-brown scales that conceal the narrow perigynia. The slender, cylindric, hyaline-tipped (not bidentate) beak is distinctive. **FIGURE 9.**

- **Leaves** 2-4 mm wide, light green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex prolonged, concave.
- **Inflorescence** open, lax, 1.5-5 cm long, with 3-7 sessile spikes; spikes 6-16 mm long, male at the abruptly contracted and clavate base.
- **Bracts** inconspicuous or absent.
- **Scales** as long as the perigynia (concealing the beak) and almost as wide as the body, red- or pale brown with prominent wide hyaline margins, acute.
- **Perigynia** 4.5-6.5 x 1.5-2.0 mm, the body narrowly elliptic, flat, distended over the achene, wing-margined, light green or light brown, nerved on the back or with a few inconspicuous nerves on the front, long-tapering at the apex; base tapering; beak cylindric, long, the tip entire, hyaline.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Generally in open dry habitats; meadows, clearings. ME?

**NOTES:** This species resembles *C. foenea*, but the perigynia are more slender and pale. It may also be confused with *C. oronensis* which has similar perigynia but has darker chestnut-brown scales, nerves on both faces of the perigynium, and a bidentate beak. *Carex scoparia*, another species with narrow perigynia, has short scales that do not conceal the perigynia. Conservation Concern: ME (Presumed Extirpated).

52.  *Carex argyrantha* Tuckerman ex Dewey  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A common, medium-sized sedge of dry habitats with a nodding inflorescence of separate, silvery-green spikes. The pale scales conceal the beaks of the pale green, finely many-nerved perigynia. **FIGURE 9.**

- **Leaves** 2.0-4.5 mm wide, green, shorter than the stems.
- **Lower sheaths** brown; upper sheaths green and white-mottled on the back, hyaline on the front, the apex prolonged, concave, with pale brown dots.
- **Inflorescence** open, lax, 2-6 cm long, with 4-15 separate sessile spikes; spikes 6-10 mm long, male at the abruptly contracted and clavate base.
- **Bracts** inconspicuous or absent.
- **Scales** as long as the perigynia (concealing the beak) and narrower than the body, silvery, acute.
- **Perigynia** 3.0-4.5 x 1.5-2.0 mm, the body elliptic, flat, distended over the achene, narrowly wing-margined, silvery-green or white-brown, distinctly nerved on both faces; base tapering; beak bidentate, short.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open dry woods, rocky outcrops, roadsides. THROUGHOUT.

**NOTES:** A common and distinctive species, somewhat resembling *C. foenea* but distinguished by the silvery green perigynia that are prominently nerved on both faces when dry.
Group 6 - Plants with several short sessile spikes - the spikes all alike. Perigynia flat with thin winged margins; scales shorter than the perigynia; perigynia 2.0 mm wide or narrower (rarely as wide as 2.5 mm), the body ovate or elliptic, generally nerved on both faces. Achenes lenticular.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflorescence erect, dense; scales red-brown</td>
<td>2-4</td>
<td>3.5-5.0 mm long ovate nerved on both sides</td>
<td>upland forests or fields</td>
<td>53. <em>C. tincta</em></td>
</tr>
<tr>
<td>Inflorescence lax; spikes distinct and contracted at base; scales coppery, acute</td>
<td>2-5</td>
<td>2.5-4.0 mm long body orbicular</td>
<td>open wetlands</td>
<td>59. <em>C. festucacea</em></td>
</tr>
<tr>
<td>Perigynia very narrow (1.2 mm or less); scales often acuminate or awned</td>
<td>1.5-3</td>
<td>3.5-4.0 mm long lance-ovate, shining nerved on both sides brown</td>
<td>open dry habitats</td>
<td>54. <em>C. crawfordii</em></td>
</tr>
<tr>
<td>Perigynia lance-ovate, wider than 1 mm; spikes tapering to apex</td>
<td>1.5-3</td>
<td>4.0-6.5 mm long lance-ovate, shining</td>
<td>open wetlands or open dry habitats</td>
<td>55. <em>C. scoparia</em></td>
</tr>
<tr>
<td>Perigynia lance-ovate, wider than 1 mm; inflorescence erect, spikes rounded at apex; scales obtuse</td>
<td>3-7</td>
<td>3.0-5.0 mm long lance-ovate dull</td>
<td>open wetlands</td>
<td>56. <em>C. tribuloides</em></td>
</tr>
<tr>
<td>Inflorescence lax, the spikes distinct; leaves narrow; sheaths tight</td>
<td>1.5-3</td>
<td>3.0-4.5 mm long body ovate or suborbicular</td>
<td>forests, clearings, roadides</td>
<td>57. <em>C. tenera</em></td>
</tr>
<tr>
<td>Inflorescence lax, the spikes distinct; leaves broad; sheaths loose, winged</td>
<td>3-7</td>
<td>3.5-5.0 mm long body ovate</td>
<td>forests</td>
<td>58. <em>C. projecta</em></td>
</tr>
<tr>
<td>Inflorescence erect, dense; spikes globose; tips of perigynia spreading; scales blunt, notched at tip</td>
<td>3-7</td>
<td>3.0-4.0 mm long narrowly ovate</td>
<td>forested wetlands</td>
<td>60. <em>C. cristatella</em></td>
</tr>
<tr>
<td>Inflorescence erect, dense; perigynia faintly nerved only on the back</td>
<td>2-5</td>
<td>3.0-3.5 mm long elliptic, the beak short</td>
<td>open wetlands</td>
<td>61. <em>C. bebbii</em></td>
</tr>
</tbody>
</table>

Continued on next page ➔
Group 6

Group 6 (continued)

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflorescence erect; scales pale brown</td>
<td>3-7</td>
<td>3.0-4.5 mm long</td>
<td>forests</td>
<td>62. C. normalis</td>
</tr>
<tr>
<td>Scale cuspidate or acute, the midrib reaching or</td>
<td>2-4</td>
<td>3.5-4.5 mm body obovate, thin and</td>
<td>acid wetlands</td>
<td>63. C. albolutescens</td>
</tr>
<tr>
<td>surpassing the apex; style bent at base; scales</td>
<td></td>
<td>distended over the achene, short-beaked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hyaline, silvery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scales blunt or acute, the midrib not reaching the</td>
<td>2-4</td>
<td>3.0-4.5 mm body obovate, distended over the</td>
<td>open dry habitats</td>
<td>64. C. longii</td>
</tr>
<tr>
<td>apex; style straight</td>
<td></td>
<td>achene, short-beaked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key to Group 6

1. Scales red-brown
   2. Inflorescence dense, erect; perigynam body narrowly ovate ............................................ 53. C. tincta
   2. Inflorescence lax, open; perigynium body orbicular .................................................. 59. C. festucacea

1. Scales pale brown or hyaline
   3. Perigynia lance-ovate, tapering to the beak
      4. Perigynia very narrow (1.0-1.2 mm), brown; scales acuminate or awned ........ 54. C. crawfordii
      4. Perigynia pale, more than 1.2 mm wide; scales acuminate or blunt
      5. Leaves 1.5-3 mm wide; perigynia shining; scales acuminate ....................... 55. C. scoparia
      5. Leaves 3-7 mm wide; perigynia dull; scales blunt ........................................ 56. C. tribuloides

3. Perigynia with elliptic or obovate body, not tapering to the beak
   6. Inflorescence lax, open, the spikes distinct
      7. Leaves 1.5-3 mm wide; sheaths tight ................................................................. 57. C. tenera
      7. Leaves 3-7 mm wide; sheaths loose, angles winged ........................................... 58. C. projecta
   6. Inflorescence erect, the spikes crowded
      8. Perigynia firm, not obviously distended; the beak long (1/3-1/2 length of the perigynium)
       9. Beak tips spreading, spikes globose: scales hyaline, blunt and
          notched at tip ........................................................................................................... 60. C. cristatella
       9. Beak tips appressed, spikes rounded at apex, scales acute or acuminate
       10. Perigynia narrowly elliptic; leaves 2-5 mm ..................................................... 61. C. bebbii
       10. Perigynia broadly ovate; leaves 3-7 mm ......................................................... 62. C. normalis
   8. Perigynia thin, distended over achene; the beak short (1/4-1/3 length of the perigynium)
53. **Carex tincta** (Fernald) Fernald

**SECTION OVALES**

**DISTINCTIVE FEATURES:** An uncommon slender sedge, with several short, sessile spikelets in a dense thick head; narrow ovate perigynia; and conspicuous red-brown scales. Stems arching. **FIGURE 10.**

- **Flowering stems** slender, arching, vegetative stems few.
- **Leaves** 2-4 mm wide, light green, shorter than the stems.
- **Lower sheaths** dark brown; upper sheath fronts green, tight, hyaline only at the apex, the apex corrugated, not prolonged, brown-tinged.
- **Inflorescence** an erect dense thick head, 2-4 cm long, with 5-10 ovoid sessile spikes; spikes 6-10 mm long, male at the tapering base, apex round, the perigynium beaks spreading.
- **Bracts** absent or inconspicuous.
- **Scales** shorter and narrower than the perigynia, red-brown, acute.
- **Perigynia** 3.5-5.0 x 1.8-2.0 mm, the body broadly ovate, flat, distended over the achene, wing-margined, light brown, firm and thick-walled, nerved on both faces; base rounded; beak serrate, approximately 1/3-1/2 the length of the perigynium, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Forested uplands or fields. MA, ME, NH, VT.

**NOTES:** Similar to *C. ovalis* and *C. oronensis* but with the scales shorter and narrower than the perigynia. Distinguished from other species in Group 6 by the dark red-brown scales.

54. **Carex crawfordii** Fernald

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A slender sedge of open dry habitats, with several short, sessile spikes and very slender (to 1.2 mm wide) perigynia. Plants have few vegetative stems – nearly all stems bear inflorescences. **FIGURE 10.**

- **Flowering stems** erect or drooping, vegetative stems few.
- **Leaves** 1.5-3.0 mm wide, light green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts green, tight, with a median white hyaline strip, the apex concave, prolonged.
- **Inflorescence** dense, erect, 1-3 cm long, with 3-12 ellipsoid sessile spikes in a compact head, the lower only slightly separated; spikes 3-10 mm long, male at the tapering, not contracted, base, the apex tapering.
- **Bracts** bristle-like, conspicuous.
- **Scales** equalling the perigynia in width and as long as the body, light brown, acuminate or awned.
- **Perigynia** 3.5-4.0 x 0.8-1.2 mm, lance-ovate, the body narrowly ovate, flat, wing-margined (the wing not extending to the tip) and distended over the achene, green or light brown at maturity, nerved on both faces, shining; base rounded; beak serrate, approximately 1/3 the length of the perigynium, bidentate.
- **Achenes** lenticular; stigmas 2.
**HABITAT:** Open habitats, generally with dry or seasonally dry soils; road edges, meadows. CT, MA, ME, NH, VT.

**NOTES:** Resembles *C. scoparia*, but has a more condensed inflorescence, darker brown and very narrow perigynia, and conspicuous lower bracts.

55. *Carex scoparia* Schkuhr ex Willdenow

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A very common slender sedge of open wetlands or meadows, with several short, sessile spikelets that taper both to the base and apex; slender (to 2 mm wide) flat, lance-ovate perigynia. **FIGURE 10.**

- **Flowering stems** erect or arching, vegetative stems few.
- **Leaves** 1.5-3.0 mm wide, light green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts green, tight, with a median white hyaline strip, the apex concave, prolonged.
- **Inflorescence** erect, 1-5 cm long, with 3-12 ellipsoid sessile spikes in a compact head, the lower only slightly separated; spikes 6-16 mm long, male at the tapering base, the apex tapering.
- **Bracts** inconspicuous or absent.
- **Scales** equalling the perigynia in width and as long as the body, light brown, acuminate.
- **Perigynia** 4.0-6.5 x 1.5-2.0 mm, lance-ovate, wing-margined and somewhat distended over the achene, green or light brown at maturity, nerved on both faces, shining; base rounded or tapering; beak serrate, approximately 1/3 the length of the perigynium, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open habitats with seasonally saturated soils; marshes, shores, wet meadows, dry meadows, roadides. THROUGHOUT.

**NOTES:** One of our most common carices. Perigynia are very similar to *C. tribuloides*, but *C. scoparia* is distinguished by narrower leaves, spikes that taper to the base and apex, tight sheaths and acuminate scales. *Carex crawfordii* is similar but has very narrow (less than 1.2 mm) darker perigynia and conspicuous bracts. Two taxa occur in New England. *Carex scoparia* var. *scoparia* has pale scales and perigynia, with the perigynia 4.2-6.5 mm long. *C. scoparia* var. *tessellata* Fernald & Wiegand, an uncommon variety of northern coastal Maine, has dark scales and perigynia that are 4.0-5 mm long and dark at the apex.

56. *Carex tribuloides* Wahlenberg

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A common tall, stiff sedge of open wetlands, with several short, sessile spikelets and slender (to 2 mm wide) flat, lance-ovate perigynia conspicuously winged above the middle of the body. **FIGURE 10.**

- **Flowering stems** stiffly erect, vegetative stems numerous.
- **Leaves** 3-7 mm wide, light green, equalling or longer than the stems.
- **Lower sheaths** brown; upper sheaths green, loose, hyaline only at summit; the apex concave, prolonged, brown.
- **Inflorescence** dense, erect, 2.5-6.0 cm long, with 6-15 ovoid sessile spikes in a linear head, the lower separated; spikes 6-12 mm long, male at the tapering, not contracted, base, the apex rounded.
- **Bracts** bristle-like, the lower conspicuous.
- **Scales** shorter and narrower than the perigynia, light brown with hyaline margins and apex, blunt.
- **Perigynia** 3.0-5.0 x 1.0-1.5 mm, lance-ovate, flat, wing-margined and somewhat distended over the achene, green or light brown at maturity, nerved on both faces; base rounded; beak serrate, approximately 1/3 the length of the perigynia, the tip bidentate and dark.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open habitats with saturated soils; marshes, shores, wet meadows. THROUGHOUT.

**NOTES:** Distinguished from *C. scoparia* by the wider leaves, blunt rounded spikes, loose green sheaths and the blunt hyaline-tipped scales. Our plants are var. *tribuloides*. 
57. *Carex tenera* Dewey  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A common slender sedge of forested or open habitats, with narrow leaves, several short, sessile spikelets in a lax, nodding inflorescence, and short, narrow, ovate, flat perigynia.  

**FIGURE 10.**

- **Flowering stems** erect or arching, vegetative stems few.  
- **Leaves** 1.5-3.0 mm wide, light green, shorter than the stems.  
- **Lower sheaths** brown; upper sheath fronts green, tight, a narrow white hyaline central stripe extending down the sheath and white hyaline triangle at the apex, the apex concave, prolonged, occasionally colored.  
- **Inflorescence** open, lax, 3-5 cm long, with 4-8 ovoid sessile spikes, spikes 6-10 mm long, male at the tapering, somewhat abruptly contracted, base, the apex round; perigynia beaks spreading,  
  - **Bracts** absent or inconspicuous.  
  - **Scales** shorter and narrower than the perigynia, light brown, obtuse or acute.  
  - **Perigynia** 3.0-4.5 x 1.5-1.8 mm, the body ovate or suborbicular, often asymmetric, wing-margined, light brown, firm, nerved on both faces, contracted at the apex; base rounded; beak serrate, approximately 1/2 the length of the perigynium, bidentate.  
  - **Achenes** lenticular; stigmas 2.  

**HABITAT:** Forested wetlands or clearings, roadsides, generally in wooded or shaded habitats. THROUGHOUT.  

**NOTES:** Resembles *C. projecta*, but *C. tenera* has tight sheaths, more slender leaves and suborbicular perigynia contracted at the apex. Plants in New England are var. *tenera*.  

58. *Carex projecta* Mackenzie  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A common sedge of forested wetlands and clearings, with several short, sessile spikelets in a lax, somewhat nodding inflorescence and small, ovate, flat perigynia that are thick-walled.  

**FIGURE 10.**

- **Flowering stems** erect or arching, vegetative stems few.  
- **Leaves** 3-7 mm wide, light green, shorter than the stems.  
- **Lower sheaths** brown; upper sheaths green, white-mottled on the back, loose, the angles winged, a short white hyaline triangle at the apex, the apex concave, prolonged.  
- **Inflorescence** open, lax, 3-5 cm long, with 8-12 ovoid sessile spikes; spikes 4-8 mm long, male at the tapering, the apex round, perigynia beaks spreading.  
  - **Bracts** absent or inconspicuous.  
  - **Scales** shorter and narrower than the perigynia, light brown, obtuse or acute and hyaline at the apex.  
  - **Perigynia** 3.5-5.0 x 1.7-2.0 mm, the body ovate, inconspicuously wing-margined, light brown, firm, nerved on both faces; base rounded; beak serrate, approximately 1/3 to 1/2 the length of the perigynium, bidentate and spreading.  
  - **Achenes** lenticular; stigmas 2.  

**HABITAT:** Forested wetlands or clearings, marshes. THROUGHOUT.  

**NOTES:** Perigynia resemble *C. tribuloides*, but *C. projecta* has a more lax inflorescence and perigynia that are shorter and broader and dull (opaque) brown. This is a variable species generally distinguished by the loose winged sheaths and the open nodding inflorescence.
59. **Carex festucacea** Schkuhr ex Willdenow

**SECTION OVALES**

**DISTINCTIVE FEATURES:** An uncommon medium-sized sedge with an open nodding inflorescence and dark spikes that are conspicuously contracted (clavate) at base. **FIGURE 10.**

- **Leaves** 2-5 mm wide, shorter than the stems.
- **Lower sheaths** dark brown; upper sheaths tight, the fronts green, the median hyaline strip conspicuous, wider at the prolonged apex.
- **Inflorescence** open, lax, 3-6 cm long, with 4-10 separate spikes; spikes 6-16 mm long, male at the conspicuously contracted and clavate base, the apex round.
- **Bracts** inconspicuous.
- **Scales** shorter and narrower than the perigynia, copper-brown, acute.
- **Perigynia** 2.5-4.0 x 1.7-2.5 mm, the body orbicular, winged to base, green or yellow-brown, nervet on both faces, generally with 3 or fewer nerves on the front, abruptly contracted at the apex, base rounded; beak relatively short (1/3-1/2 of perigynium length), narrow, bidentate, spreading.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Open wetland habitats; swales, marshes, wet meadows. CT, MA.

**NOTES:** *C. festucacea* is often confused with *C. longii* and *C. albolutescens*. This species can easily be recognized by the rounded spikes with distinct clavate bases in a nodding inflorescence, the slender spreading beaks of the few-nerved orbicular perigynia, and the copper-brown scales.

60. **Carex cristatella** Britton

**SECTION OVALES**

**DISTINCTIVE FEATURES:** An uncommon stiff sedge of forested wetlands, with several short, globose spikelets in a dense thick head, very short scales, and narrow ovate flat perigynia with spreading, recurved beaks. **FIGURE 10.**

- **Flowering stems** stiffly erect.
- **Leaves** 3-7 mm wide, light green, shorter than the stems, on lower 1/4 of the flowering stem.
- **Lower sheaths** brown; upper sheath fronts green, loose, the angles slightly winged, hyaline and slightly corrugated at the apex, the apex prolonged but very short, concave, brown.
- **Inflorescence** an erect dense thick head, 2-4 cm long, with 6-15 subglobose sessile spikes; spikes 4-8 mm long, male at the tapering or rounded base, the apex round, perigynium beaks recurved or spreading.
- **Bracts** bristle-like, inconspicuous.
- **Scales** much shorter and narrower than the perigynia, pale brown, hyaline and often notched and blunt.
- **Perigynia** 3.0-4.0 x 1.3-2.0 mm, the body narrowly ovate, narrowly wing-margined (the wing not extending to the base), firm, green or light brown, conspicuously nerved on the back and faintly nerved on the front, contracted at the apex; base rounded; beak spreading, serrate, approximately 1/2-1/3 the length of the perigynium, bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Generally in forested wetland habitats. CT, MA, NH, VT.

**NOTES:** The recurved beak tips and rosette-like spikes are key characters. Conservation concern: NH (S2).
61. **Carex bebbii** (L.H. Bailey) Fernald

**SECTION OVALES**

DISTINCTIVE FEATURES: A common slender stiff sedge of open wet habitats, with several short, sessile spikes in a dense thick head and small narrowly elliptic perigynia. **FIGURE 10.**

Flowering stems stiffly erect.

Leaves 2-5 mm wide, light green, shorter than the stems.

Lower sheaths brown; upper sheath fronts green, tight, hyaline at the apex and in a narrow central band, the apex prolonged, concave.

Inflorescence an erect dense thick head, 1.5-2.5 cm long, with 4-12 subglobose sessile spikes; spikes 4-9 mm long, male at the tapering or rounded base, apex round.

Bracts bristle-like, conspicuous.

Scales as long and as wide as the perigynia body, pale brown, acute or acuminate.

Perigynia 3.0-3.5 x 1.5-2.0 mm, the body elliptic, narrowly wing-margined, green or light brown, faintly nervet on the back and the front either faintly nervet or lacking nerves, contracted at the apex; base rounded; beak serrate, short, approximately 1/3 the length of the perigynium, bidentate, dark.

Achenes lenticular; stigmas 2.

HABITAT: Generally in open wetlands; shores, meadows, ditches, clearings with neutral or calcareous soils. CT, MA, ME, NH, VT.

NOTES: Distinguished by the very short, dense inflorescence and the stiffly erect stems. The dense erect inflorescence resembles *C. tribuloides*, but the more broadly elliptic perigynia distinguish *C. bebbii*. Conservation Concern: NH (Threatened).

62. **Carex normalis** Mackenzie

**SECTION OVALES**

DISTINCTIVE FEATURES: A common slender stiff sedge, with several short, sessile spikelets in a dense thick head and narrow ovate flat perigynia. Generally with many conspicuous vegetative stems. **FIGURE 10.**

Flowering stems stiffly erect, vegetative stems numerous, conspicuous.

Leaves 3-7 mm wide, light green, shorter than the stems, on lower 1/4 of the flowering stem.

Lower sheaths dark brown; upper sheaths green, white-mottled on the back, tight, hyaline only at the apex, the apex conspicuously prolonged, convex.

Inflorescence erect or open, 3-5 cm long, with 4-10 subglobose sessile spikes; spikes 6-9 mm long, male at the tapering or rounded base, apex round, perigynium beaks spreading.

Bracts absent or inconspicuous.

Scales as long and as wide as the body of the perigynia, pale brown, acute or obtuse.

Perigynia 3.0-4.5 x 1.5-2.3 mm, the body broadly ovate, scarcely wing-margined, green or light brown, firm and thick-walled, nerved on both faces; base rounded; beak serrate, approximately 1/3 the length of the perigynium, bidentate and dark.

Achenes lenticular, stigmas 2.

HABITAT: Generally in forested habitats, dry or only seasonally wet soils. THROUGHOUT.

NOTES: Distinguished from *C. bebbii* by the wider leaves and larger, ovate perigynia.
63. *Carex albolutescens* Schweinitz  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A medium-sized sedge of acid wetlands. The spikes are round at the apex, with broadly obovate perigynia. **FIGURE 10.**

- **Leaves** 2-4 mm wide, shorter than the stems.
- **Lower sheaths** brown; upper sheaths tight, the fronts green, hyaline at the prolonged, yellow-brown apex.
- **Inflorescence** erect, open, 2-4 cm long, with 3-10 separate spikes; spikes 6-10 mm long, male at the round-truncate base, the apex round.
- **Bracts** inconspicuous.
- **Scales** shorter and narrower than the perigynia, silvery-hyaline, the green midvein reaching the acute or cuspidate apex.
- **Perigynia** 3.5-4.5 x 1.6-2.5 mm, the body broadly obovate, winged to base, flat and distended by the achene, green or yellow-brown, conspicuously nerved on both faces, abruptly contracted at the apex; base rounded; beak short (1/3 of body length), narrow, bidentate, spreading.
- **Achenes** lenticular; the style bent at base; stigmas 2.

**HABITAT:** Open wetland habitats in acid soils and peats. CT, MA, RI.

**NOTES:** This species can be recognized by the rounded spikes in an erect inflorescence and, in more detail, the hyaline or silvery acute or cuspidate scales, flat obovate nerved perigynia with short spreading beaks, and the bent style-base of the achene.

64. *Carex longii* Mackenzie  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A medium-sized sedge of dry, often disturbed soils. The silvery green spikes are acute at the apex, with broadly obovate pale perigynia. **FIGURE 10.**

- **Leaves** 2-4 mm wide, shorter than the stems.
- **Lower sheaths** brown; upper sheaths loose, the fronts green, hyaline at the prolonged apex.
- **Inflorescence** erect, open, 2-4 cm long, with 4-8 separate spikes; spikes 6-12 mm long, male at the round-truncate base, the apex acute.
- **Bracts** inconspicuous.
- **Scales** shorter and narrower than the perigynia, silvery-hyaline, the green midvein not reaching the blunt apex.
- **Perigynia** 3.0-4.5 x 1.6-2.5 mm, the body broadly obovate, winged to base, flat and distended by the achene, silvery green or brown, conspicuously nerved on both faces, generally contracted at the apex; base rounded; beak short (1/4-1/3 of body length), bidentate, appressed.
- **Achenes** lenticular; the style straight; stigmas 2.

**HABITAT:** Open habitats, dry or seasonally saturated, often disturbed. CT, MA, ME, RI, VT.

**NOTES:** *C. albolutescens*, as treated by some previous authors, is actually *C. longii*. *Carex longii* can be recognized by the pointed, silvery spikes in an erect inflorescence and, in more detail, by the blunt hyaline-tipped scales, obovate nerved perigynia and straight style of the achene.
**Group 7**

**Group 7 - Plants with several short sessile spikes - the spikes all alike. Scales shorter than the perigynia. Perigynia flat with thin winged margins, 2.5 mm wide or wider (rarely as narrow as 2.0 mm), the body more-or-less orbicular, generally nerved on both faces. Achenes lenticular. Note: Plants from Group 6 with wide perigynia may key here.**

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves stiff, generally silvery-green; inflorescence nodding; scales awned</td>
<td>4.2-5.5 mm long ovate, beak short</td>
<td>coastal, salt marshes</td>
<td>65. <em>C. hormathodes</em></td>
</tr>
<tr>
<td></td>
<td>Inflorescence erect; scales awned; sheath apex prolonged, thick, yellow-brown</td>
<td>4.5-5.0 mm long, broadly obovate, silvery green, nerved on the back only</td>
<td>66. <em>C. alata</em></td>
</tr>
<tr>
<td></td>
<td>Inflorescence lax; scales red-brown; sheath apex thin; scales awned</td>
<td>3.5-5.5 mm long elliptic, nerved on both faces</td>
<td>67. <em>C. straminea</em></td>
</tr>
<tr>
<td></td>
<td>Inflorescence lax, spikes distinctly clavate at base; perigynia narrow (2-2.5 mm); scales brown</td>
<td>2.5-3.5 mm long orbicular</td>
<td>59. <em>C. festucacea</em></td>
</tr>
<tr>
<td></td>
<td>Perigynia translucent, very large, 3.0-4.8 mm wide</td>
<td>5.5-7.0 mm long orbicular, thin and distended</td>
<td>68. <em>C. bicknellii</em></td>
</tr>
<tr>
<td></td>
<td>Perigynia thick and opaque, not distended, nerv ed on both sides; scales very short, not reaching base of beak</td>
<td>3.6-4.5 mm long ovate, short-beaked; achenes 1.3-1.7 mm long, 0.9-1.3 mm wide</td>
<td>69. <em>C. molesta</em></td>
</tr>
<tr>
<td></td>
<td>Perigynia thick and opaque, not distended, nerved on back only; scale tip reaching the middle of the beak</td>
<td>3.5-4.5 mm long ovate, short-beaked; achenes 1.5-2.2 mm long, 1.3-1.8 mm wide</td>
<td>70. <em>C. brevior</em></td>
</tr>
<tr>
<td></td>
<td>Perigynia broadly obovate, the beak very short; sheath front green</td>
<td>3.0-4.2 mm long body obovate, nerved only on the back</td>
<td>71. <em>C. cumulata</em></td>
</tr>
<tr>
<td></td>
<td>Perigynia prominently nerved on both faces; scales cuspidate, the midrib reaching or surpassing the apex.</td>
<td>3.5-4.5 mm long obovate, thin and distended over the achene, short-beaked</td>
<td>63. <em>C. albolutescens</em></td>
</tr>
<tr>
<td></td>
<td>Scales acute, the midrib not reaching the apex; perigynia obovate, thin; spikes acute at apex</td>
<td>3.0-4.5 mm long obovate, distended over the achene, short-beaked</td>
<td>64. <em>C. longii</em></td>
</tr>
<tr>
<td></td>
<td>Perigynia translucent, 2.5-3.5 mm wide; spikes rounded at base</td>
<td>3.5-5.0 mm long orbicular, thin and distended over the achene</td>
<td>72. <em>C. merrit-fernalii</em></td>
</tr>
</tbody>
</table>
Key To Group 7 (including species of Group 6 with wide perigynia)

1. Leaves stiff, often silvery; inflorescence nodding; salt marshes ......................... 65. *Carex hormathodes*

2. Scales awned
   3. Inflorescence erect; sheath apex thick, yellow-brown, prolonged .................. 66. *C. alata*
   3. Inflorescence lax: sheath apex thin, not prolonged ........................................ 67. *C. straminea*

2. Scales not awned
   4. Perigynia very large, 5.5-7.0 mm long and 3.0-4.8 mm wide; translucent........ 68. *C. bicknellii*
   4. Perigynia 2.5-5.0 mm long, less than 3.5 mm wide
      5. Perigynia thick, firm, narrowly winged, not distended over achene
         6. Sheath fronts with a white stripe
            7. Scale very short, not reaching base of beak; perigynia fronts with few fine nerves;
               achenes 1.3-1.7 mm long, 0.9-1.3 mm wide ........................................ 69. *C. molestia*
            7. Scales longer, reaching middle of the beak; perigynia fronts without nerves;
               achenes 1.5-2.2 mm long, 1.3-1.8 mm wide ........................................ 70. *C. brevior*
      6. Sheath fronts green except at the apex ................................................ 71. *C. cumulata*

5. Perigynia thin, often shining, broadly winged and distended over the achene
   8. Body of perigynium obovate; scales hyaline or silvery
      9. Midrib of scale reaching apex or scale apex cuspidate;
         spikes rounded at tip ................................................................. 63. *C. alboluteescens*
      9. Midrib of scale not reaching the apex; spikes acute at tip ..................... 64. *C. longii*
   8. Body of perigynium orbicular
      10. Perigynia 2.5-3.5 mm wide; spikes rounded at base ........ 72. *C. merritt-fernaldii*
      10. Perigynia 1.7-2.5 mm wide; spikes clavate at base ........................... 59. *C. festucacea*

65. *Carex hormathodes* Fernald

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A medium-sized sedge of salt marshes, with a nodding inflorescence of separate spikes. The more-or-less red-brown awned scales and broad orbicular perigynia are distinctive.  **FIGURE 11.**

- **Leaves** 1.5-2.5 mm wide, light green or gray-green, shorter than the stems.
- **Lower sheaths** brown; upper sheath fronts green, hyaline only at the short-prolonged apex.
- **Inflorescence** open, lax, 3-6 cm long, with 4-8 spikes; spikes 7-15 mm long, male at the tapering base.
- **Bracts** inconspicuous.
- **Scales** shorter and narrower than the perigynia, light red-brown with narrow hyaline margins, acuminate or awned.
Perigynia 4.2-5.5 x 2.3-3.0 mm, the body broadly ovate or elliptical, winged to base, flat and distended by the achene, yellow-brown or reddish-brown when mature, nerved on both faces, tapering to the apex; base rounded; beak long, bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Salt marshes and brackish marshes. CT, MA, ME, NH, RI.

NOTES: A very distinctive and habitat-specific sedge. Recent treatments consider *C. hormathodes* to be a single distinct taxon, although some previous authors recognized two varieties, var. *hormathodes* and var. *invisa*, the latter with shorter perigynia and narrower spikes. It can be distinguished from *C. silicea* by the awned scales that are shorter than the perigynia.

66. *Carex alata* Torrey  

SECTION OVALES

DISTINCTIVE FEATURES: A medium-sized sedge of open wetlands, with a short erect head of silvery spikes, the perigynia broadly obovate or orbicular, with awned scales. Not illustrated.

Leaves 2-4 mm wide, dark green, shorter than the stems.

Lower sheaths brown, upper sheath fronts green, hyaline only at the prolonged, yellow-brown and somewhat thickened apex.

Inflorescence stiffly erect, 2-4 cm long, with 5-8 closely aggregated spikes; spikes 8-16 mm long, male at the rounded base, apex tapering.

Bracts inconspicuous.

Scales shorter and narrower than the perigynia, hyaline, short-acuminate or awned.

Perigynia 4.5-5.0 x 2.5-4.0 mm, the body broadly obovate, winged to base, flat and distended by the achene, nerved on the back and only faintly on the front, abruptly contracted at the apex; base rounded; beak relatively long (1/2 of body length), bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Wet meadows and clearings, generally on neutral or calcareous soils. CT, MA, NH, RI.

NOTES: Similar to *C. straminea*, but distinguished by the stiff, erect, crowded inflorescence and by the perigynia, which have wider obovate bodies and shorter beaks. Conservation concern: RI (Rare); CT (Endangered).

67. *Carex straminea* Willdenow  

SECTION OVALES

DISTINCTIVE FEATURES: A medium-sized sedge of open wetlands, with a nodding inflorescence of separate spikes with narrow, contracted bases. The awned scales and broadly elliptic perigynia are distinctive. FIGURE 11.

Leaves 1.5-2.5 mm wide, light green, shorter than the stems.

Lower sheaths dark brown; upper sheath fronts green, hyaline only at the short-prolonged apex.

Inflorescence open, lax, 3-6 cm long, with 4-8 globose spikes; spikes 6-12 mm long, male at the contracted clavate base.

Bracts inconspicuous.

Scales shorter and narrower than the perigynia, light brown with narrow hyaline margins, acuminate or awned.

Perigynia 3.5-5.5 x 2.3-3.0 mm, the body broadly elliptic, winged, flat and distended by the achene, yellow-brown when mature, nerved on both faces (more nerves on the back), abruptly contracted at the apex; base rounded; beak long (half of body length), bidentate, pale or red-brown.

Achenes lenticular; stigmas 2.
HABITAT: Open wetland habitats; wet meadows, clearings, shores. CT, MA, RI.

NOTES: Similar to C. hormathodes, but C. straminea has thin green leaves, paler scales, narrower perigynia and grows in freshwater wetlands. May be confused with C. alata, but differs in the nodding inflorescence and contracted, clavate spike bases.

68.  

Carex bicknellii Britton  

SECTION OVALES

DISTINCTIVE FEATURES: A medium-sized rare sedge of open sandy uplands or prairies, with a short erect head and unmistakeable very large, translucent, orbicular perigynia.  

FIGURE 11.

Leaves 2.5-4.5 mm wide, yellow-green, shorter than the stems.

Lower sheaths brown; upper sheaths green, with a prominent hyaline strip broader at the prolonged apex.

Inflorescence stiffly erect, 2-6 cm long, with 3-7 closely aggregated spikes; spikes 8-16 mm long, male at the long-clavate base.

Bracts inconspicuous.

Scales shorter and narrower than the perigynia, light brown with hyaline margins, acute or obtuse.

Perigynia 5.5-7.0 x 3.0-4.5 mm, the body orbicular, winged to base, flat and distended by the achene, light brown, membranous and translucent, strongly nervet on both faces, abruptly contracted at the apex, base rounded; beak short (1/4-1/3 of body length), bidentate.

Achenes lenticular; stigmas 2.

HABITAT: Dry open sandy soil or dry grassy uplands, prairies. CT, MA, ME, RI.

NOTES: A very distinctive sedge, with large, orbicular, very thin perigynia. The status and abundance of this species in New England is uncertain. Conservation concern: ME (Presumed Extirpated).

69.  

Carex molesta Mackenzie ex Bright  

SECTION OVALES

DISTINCTIVE FEATURES: An uncommon medium-sized sedge of dry open habitats, with short round spikes and firm dull brown perigynia that are few-nerved on both faces.  

FIGURE 11.

Leaves 2.0-3.5 mm wide, shorter than the stems, generally clustered on the lower 1/4 of the stem.

Lower sheaths dark brown; upper sheath fronts green, with a prominent hyaline strip broader at the prolonged apex, the apex often copper-brown and slightly thickened.

Inflorescence erect, 2-3 cm long, with 4-8 aggregated or separate spikes; spikes 6-9 mm long, male at the truncate base.

Bracts inconspicuous.

Scales shorter and narrower than the perigynia, not reaching the beak, light brown, acute.

Perigynia 3.6-4.5 x 2.5-3.0 mm, the body broadly ovate, winged to base, dull brown, thick and opaque, nervet on the back and indistinctly on the front, abruptly contracted at the apex; base rounded; beak short (1/4-1/3 of body length), bidentate.

Achenes lenticular, 1.3-1.7 x 0.9-1.3 mm; stigmas 2.

HABITAT: Open habitats, dry or seasonally saturated; edges of woods. CT, MA, NH, VT.

NOTES: Resembles C. brevior, but distinguished by the shorter scales, small achenes, and finely-nerved front face of the perigynia. Conservation concern: CT (Special Concern).
70. *Carex brevior* (Dewey) Mackenzie ex Lunell

**SECTION OVALES**

DISTINCTIVE FEATURES: A common medium-sized sedge of dry open habitats, with short round spikes and firm dull brown perigynia nerved on only one face. **FIGURE 11.**

- **Leaves**: 2-3 mm wide, shorter than the stems, generally clustered on the lower 1/4 of the stem.
- **Lower sheaths**: brown; upper sheath fronts green, smooth, with a prominent hyaline strip broader at the prolonged apex.
- **Inflorescence**: erect, 2-3 cm long, with 3-6 aggregated or separate spikes; spikes 7-15 mm long, male at the generally short-clavate base.
- **Bracts**: inconspicuous.
- **Scales**: shorter and narrower than the perigynia, reaching the middle of the beak, light brown, acute.
- **Perigynia**: 3.5-4.5 x 2.5-3.3 mm, the body broadly ovate or orbicular, winged to base, dull brown, thick and opaque, obscurely nerved on the back, no nerves on the front, abruptly contracted at the apex; base rounded; beak relatively short (1/4-1/3 of body length), strongly bidentate.
- **Achenes**: lenticular, 1.5-2.2 mm x 1.2-1.8 mm; stigmas 2.

**HABITAT:** Dry open habitats on neutral or calcareous sandy soils. **THROUGHOUT.**

**NOTES:** Resembles *C. molesta*, but distinguished by the longer scales, nerves on only one face of the perigynium, and by the wider, larger achenes. These species are often difficult to distinguish with certainty. Perigynia are similar in size to *C. merritt-fernaldii*, but are firm and opaque.

71. *Carex cumulata* (L.H. Bailey) Mackenzie

**SECTION OVALES**

DISTINCTIVE FEATURES: An uncommon medium-sized sedge of dry sandy soils with spikes aggregated into a dense head. The broad, obovate, nearly beakless perigynia are nerved only on the back. **FIGURE 11.**

- **Flowering stems**: stiff, vegetative stems few, short.
- **Leaves**: 3-6 mm wide, shorter than the stems, firm.
- **Lower sheaths**: brown; upper sheaths loose, the fronts green, hyaline only at the distinctly prolonged apex.
- **Inflorescence**: erect, 2-4 cm long, with 5-9 aggregated spikes; spikes 6-10 mm long, male at the rounded base, the apex blunt.
- **Bracts**: inconspicuous.
- **Scales**: shorter and narrower than the perigynia, pale brown, acute or slightly acuminate.
- **Perigynia**: 3.0-4.2 x 2.5-3.2 mm, the body broadly obovate, winged to base, green or yellow-brown, conspicuously nerved only on the back, abruptly contracted at the apex; base rounded; beak very short (1/4 of body length), triangular, bidentate, spreading.
- **Achenes**: lenticular, 2.7 x 2.2 mm; stigmas 2, style base often bent.

**HABITAT:** Open dry habitats with sandy or gravelly soils, occasionally reported from bogs and saturated sandy substrates. **THROUGHOUT.**

**NOTES:** Can be confused with *C. albolutescens*, but distinguished by the nerves only on one side of the perigynia, the more crowded inflorescence, and the broader leaves. *C. merritt-fernaldii* is similar, but has a prominent hyaline white strip on the sheath front and slightly larger, more obovate, perigynia. *C. cumulata* generally occurs in dry open habitats, whereas *C. albolutescens* prefers wetlands. Conservation concern: CT (Threatened), NH (Threatened), RI (Rare).

72.  **Carex merritt-ferndalii** Mackenzie  

**SECTION OVALES**

**DISTINCTIVE FEATURES:** A medium-sized sedge of open sandy uplands or prairies, with a short erect dense inflorescence and large orbicular perigynia. **FIGURE 11.**

- **Leaves** 3.0-4.5 mm wide, yellow-green, shorter than the stems.
- **Lower sheaths** brown; upper sheaths green, minutely papillose, with a prominent hyaline strip broader at the thin prolonged apex.
- **Inflorescence** stiffly erect (rarely lax), 1.5-5.0 cm long, with 4-10 aggregated or separate spikes; spikes 7-15 mm long, male at the rounded or short-clavate base.
- **Bracts** inconspicuous.
- **Scales** shorter and narrower than the perigynia, light brown with hyaline margins, acute or short-awned.
- **Perigynia** 3.5-5.0 x 2.5-3.5 mm, the body orbicular, winged to base, yellow-green to light brown, generally nerved on both faces (sometimes very faintly on the front), abruptly contracted at the apex; base rounded; beak short (1/4-1/3 of body length), bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Dry open sandy or gravelly soil or dry grassy woods. CT, MA, ME, NH, VT.

**NOTES:** A very distinctive sedge, similar to *C. bicknellii* but with smaller, less translucent perigynia. The perigynia are larger than those of *C. cumulata*, with a longer beak, and are nervèd on both faces.
Group 8 - Plants with cylindrical, drooping spikes; all spikes female, the uppermost spike entirely female or with some male flowers (empty scales) at the base. Achenes trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scales black; perigynia papillose, brown on the upper half; scales purple-brown</td>
<td>2-5</td>
<td>2.5-4.0 mm long ellipsoid, biconvex, short-beaked</td>
<td>alpine seeps and streams</td>
<td>73. <em>C. atratiformis</em></td>
</tr>
<tr>
<td>Perigynia beakless; bract shorter than the inflorescence</td>
<td>3-8</td>
<td>2.5-3.5 mm long green, nerved, apex rounded</td>
<td>forests, meadows</td>
<td>74. <em>C. gracillima</em></td>
</tr>
<tr>
<td>Perigynia beakless; leaves and sheaths hairy; bract longer than the inflorescence</td>
<td>1.5-2.5</td>
<td>2.5-3.5 mm long green, faintly nerved, apex rounded</td>
<td>rocky forested slopes</td>
<td>75. <em>C. aestivalis</em></td>
</tr>
<tr>
<td>Perigynia trigonous, apex twisted</td>
<td>2.5-4</td>
<td>3.0-4.0 mm long green, ellipsoid, beak short, entire</td>
<td>seeps</td>
<td>76. <em>C. prasina</em></td>
</tr>
<tr>
<td>Perigynia light green, strongly fusiform (tapering to both ends)</td>
<td>2.5-4.5</td>
<td>4.6-6.5 mm long body ellipsoid, nerveless, tapering to slender beak; achenes stipitate</td>
<td>woods, clearings, wet meadows</td>
<td>77. <em>C. arctata</em></td>
</tr>
<tr>
<td>Perigynia dark green, rounded at the base, stipitate</td>
<td>2.5-3.5</td>
<td>3.0-5.0 mm long body ellipsoid, contracted to the beak</td>
<td>forests, clearings</td>
<td>78. <em>C. davisii</em></td>
</tr>
<tr>
<td>Leaves and sheaths hairy; scales awned; bract longer than inflorescence; perigynia brown or brown-dotted</td>
<td>3-8</td>
<td>4.5-6.0 mm long 2.0-2.5 mm wide body ovoid, firm, few-nerved, beaked</td>
<td>calcareous woods</td>
<td>79. <em>C. formosa</em></td>
</tr>
<tr>
<td>Leaves and sheaths hairy; scales cuspidate or obtuse; bract shorter than inflorescence; perigynia brown-dotted</td>
<td>3-6</td>
<td>3.5-5.0 mm long 1.8-2.0 mm wide body ovoid, few-nerved, beaked</td>
<td>calcareous wetlands, open woods, roadsides</td>
<td></td>
</tr>
</tbody>
</table>
KEY TO GROUP 8

1. Scales purple-brown; perigynia biconvex or flattened, brown on the upper half ............ 73. Carex atratiformis

1. Scales pale; perigynia rounded or trigonous in cross-section

2. Perigynia beakless

   3. Bracts shorter than the inflorescence; leaves glabrous, 3-8 mm wide .................. 74. C. gracillima

   3. Bracts longer than the inflorescence; leaves hairy, 1.5-2.5 mm wide .................. 75. C. aestivalis

2. Perigynia beaked

   4. Scales acute, not awned; leaves and sheaths glabrous

      5. Perigynia fusiform, tapering to both ends; achenes stipitate ........................... 76. C. debilis

      5. Perigynia rounded and stipitate at base, contracted at the apex;
         achenes sessile ................................................................................................ 77. C. arctata

   4. Scales cuspidate or awned

      6. Leaves and sheaths smooth; perigynia pale green ........................................ 95. C. prasina

      6. Leaves and sheaths hairy; perigynia dark

         7. Bract longer than inflorescence; perigynia 4.5-6 mm long; scales awned ... 78. C. davisii

         7. Bract shorter than inflorescence; perigynia 3.5-5.0 mm long; scales obtuse
            or cuspidate ............................................................................................... 79. C. formosa

73. Carex atratiformis Britton

SECTION RACEMOSAE

DISTINCTIVE FEATURES: A medium-sized alpine sedge with unisexual spikes drooping on slender peduncles, all spikes appearing female. Scales dark and longer than the papillose brown perigynia.

FIGURE 12.

Leaves 2-5 mm wide, shorter than the stems.

Lower sheaths red-brown; upper sheath fronts hyaline, the apex concave.

Inflorescence 2-10 cm long with 3-6 unisexual spikes, the lowest drooping on a slender peduncle at least as long as the spike; the upper spike appearing female, male only at base (a few empty scales present at maturity).

Female spikes 1.0-2.5 cm x 4-6 mm.

Bract shorter than the inflorescence, sheathless with dark auricles at base.

Scales slightly narrower or as wide as and equaling or longer than the perigynia, dark purple-brown, acute or cuspidate.

Perigynia 2.5-4.0 x 1.5-2.0 mm, ellipsoid, biconvex, one face distended by the achene, brown or purple-brown on at least the upper half, papillose, the 2 marginal nerves sometimes conspicuous, otherwise nerveless; base rounded, substipitate; beak minute (0.3 mm), bidentate.

Achenes trigonous; stigmas 3.

HABITAT: Alpine streambanks and wet meadows, seeps; calcareous substrates. ME, NH, VT.

NOTES: Conservation concern: ME (Special Concern), NH (S1), VT (Threatened).
74. *Carex gracillima* Schweinitz

**SECTION HYMENOCHLAENAE**

**DISTINCTIVE FEATURES:** A common medium-sized slender woodland or meadow sedge, the terminal spike male at base, lateral spikes slender and nodding, perigynia rounded at the apex and beakless.

**FIGURE 12.**

- **Leaves** 3-8 mm wide, shorter than the stems.
- **Lower sheaths** purple-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, red-dotted, somewhat hispid, the apex concave or truncate.
- **Inflorescence** to 30 cm long, with 4-5 erect or drooping spikes, the upper 1 male at base.
- **Female (lateral) spikes** 1-5 cm x 2-3 mm, peduncled, acuminate at base.
- **Bracts** leaflike, shorter than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, hyaline (tawny when mature) with a green center, obtuse.
- **Perigynia** 2.5-3.5 x 1.5 mm, narrowly ellipsoid, obtusely trigonous in cross-section, green, smooth, strongly several-nerved, rounded at apex; base round, sessile; beakless.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Moist or dry soils, openings in woods, shores, roadside or trail edges, clearings. THROUGHOUT.

**NOTES:** Resembles *Carex aestivalis*, but distinguished by the larger size, more glabrous leaves, and nerved perigynia. Although this species has a superficial resemblance to *C. debilis* and *C. arctata*, it is taller with broader leaves and can easily be recognized by the beakless perigynia. Occasional local hybrids of *C. gracillima* and *C. aestivalis* have been recognized as *C. x aestivaliformis*.

75. *Carex aestivalis* M.A. Curtis ex A. Gray

**SECTION HYMENOCHLAENAE**

**DISTINCTIVE FEATURES:** An uncommon medium-sized very slender woodland sedge with hairy leaves and sheaths, the terminal spike male at base, lateral spikes slender and nodding, perigynia rounded at the apex and beakless. **FIGURE 12.**

- **Leaves** 1.5-2.5 mm wide, shorter than the stems, pubescent.
- **Lower sheaths** purple-brown; upper sheath fronts hyaline, yellow-brown, red-dotted, the apex deeply concave.
- **Inflorescence** to 30 cm long, 1/3-1/2 length of stem, with 3-4 erect or arching spikes, the upper 1 male at base.
- **Female (lateral) spikes** 2-4 cm x 2-3 mm, peduncled, acuminate at base.
- **Bracts** leaflike, longer than the inflorescence, sheathing.
- **Scales** shorter and narrower than the perigynia, white with a green center, obtuse or cuspidate.
- **Perigynia** 2.5-3.5 x 1.2 mm, narrowly ellipsoid (nearly fusiform), trigonous in cross-section, green, smooth, the 2 marginal nerves prominent, 3-5 nerves on each face, rounded at the apex; base tapering, spongy, sub-stipitate; beakless.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Dry rocky forested slopes. CT, MA, NH, VT.

**NOTES:** Resembles *Carex gracillima*, but distinguished by the smaller size, hairy leaves, and only faintly nerved perigynia that taper to the apex. Conservation concern: CT (Special Concern), NH (S1).
76. *Carex debilis* Michaux  

**SECTION HYMENOCHLAENAE**

**DISTINCTIVE FEATURES:** A common medium-sized slender woodland sedge, the terminal spike male at the base (empty scales), lateral female spikes slender and nodding, perigynia narrowly ellipsoid, tapering to both ends. **FIGURE 12.**

- **Leaves** 2.5-4.5 mm wide, green, shorter than or equaling the stems.
- **Lower sheaths** red or purple-brown, inconspicuously ladder-fibrillose, slightly pubescent; upper sheath fronts hyaline, yellow-brown, the apex concave.
- **Inflorescence** to 30 cm long, 1/3-1/2 length of stem, with 3-5 erect or drooping spikes, the uppermost male with a few terminal perigynia.
- **Female (lateral) spikes** 2.5-6 cm x 3-4 mm, peduncled, loosely flowered, acuminate at base.
- **Bracts** leaflike, shorter than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, white with a green center, acute or cuspidate.
- **Perigynia** 4.5-6.5 x 1.5-2.0 mm, narrowly ellipsoid, obtusely trigonous in cross-section, yellow-green, smooth, only the 2 marginal nerves visible, tapering to the apex; base tapering, sessile; beak short (to 0.75 mm), slender, oblique and minutely bidentate.
- **Achenes** trigonous, stipitate; stigmas 3.

**HABITAT:** Dry or moist soils in deciduous woods, meadows, clearings. THROUGHOUT.

**NOTES:** Resembles *Carex arctata*, but distinguished by the sessile, scarcely nervèd perigynia that taper to the apex and base, and by the stipitate achenes. Two varieties are recognized in New England. *C. debilis* var. *rudgei* L.H. Bailey is more common, and has perigynia 5-6.2 mm long with cuspidate scales. *C. debilis* var. *debilis* is a more southern taxon that scarcely extends into our range, and has longer (5.5-6.5 mm) perigynia and acute scales.

77. *Carex arctata* Boott  

**SECTION HYMENOCHLAENAE**

**DISTINCTIVE FEATURES:** A common medium-sized slender woodland sedge, the terminal spike male at base, lateral female spikes slender and nodding. Perigynia are narrowly ellipsoid, contracted to the beak, with a rounded, stipitate base. **FIGURE 12.**

- **Leaves** 2.5-3.5 mm wide, shorter than the stems; basal overwintering leaves 6-10 mm wide, dark green.
- **Lower sheaths** red or purple, inconspicuously ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, red-dotted, scabrous, the apex concave.
- **Inflorescence** to 30 cm long, 1/3-1/2 length of stem, with 4-6 erect or drooping spikes, the uppermost male at base.
- **Female (lateral) spikes** 2.5-8.0 cm x 3-4 mm, peduncled, acuminate at base.
- **Bracts** leaflike, shorter than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, white with a green center, awned or cuspidate.
- **Perigynia** 3.0-5.0 x 1.5 mm, the body narrowly ellipsoid, trigonous in cross-section, green, smooth, strongly few-nerved; base rounded, stipitate; beak short (to 0.75 mm), slender, bidentate.
- **Achenes** trigonous, sessile; stigmas 3.

73
HABITAT: Dry or moist deciduous woods. THROUGHOUT.

NOTES: Resembles Carex debilis, but distinguished by the stipitate, more strongly nerved perigynia that are rounded at the base, and by the sessile achenes. The purple-red, scabrous lower sheaths and the broader, dark green overwintering leaves are distinctive.

78. Carex davisii Schweinitz & Torrey

SECTION HYMENOCLOGAENAE

DISTINCTIVE FEATURES: An uncommon medium-sized slender woodland sedge with awned pale scales that contrast with the dark perigynia. The terminal spike is male at the base (empty scales), lateral female spikes are nodding, and the leaves and lower sheaths are pubescent. FIGURE 12.

- Leaves 3-8 mm wide, pubescent at least on the lower surface, shorter than the stems.
- Lower sheaths purple, inconspicuously ladder-fibrillose, pubescent; upper sheath fronts hyaline, the apex concave.
- Inflorescence to 5 cm long, with 3-4 erect or drooping spikes, the uppermost male at base.
- Female (lateral) spikes 2-4 cm x 3-6 mm, short-peduncled, loosely flowered.
- Bracts leaflike, longer than the inflorescence, short-sheathing.

- Scales shorter and narrower than the perigynia, white with a green center, the midrib prolonged as an awn that is longer than the perigynium.
- Perigynia 4.5-6.0 x 2.0-2.5 mm, narrowly ovoid, obtusely trigonous in cross-section, green to yellow-brown with red-brown dots (brown at maturity), smooth, strongly few-nerved, rounded at the apex; base rounded, short-stipitate; beak short (to 0.7 mm), slender, the tip oblique or slightly bidentate.

- Achenes trigonous; stigmas 3.

HABITAT: Alluvial woods in calcareous soils. CT, MA, VT.

NOTES: Resembles Carex formosa, but distinguished by the awned scales and the lack of empty scales at the base of lower spikes. The dark perigynia contrast with the lighter scales. Conservation concern: MA (Endangered).

79. Carex formosa Dewey

SECTION HYMENOCLOGAENAE

DISTINCTIVE FEATURES: An uncommon medium-sized sedge, the terminal spike male at base. The lateral spikes are nodding, often with empty scales at the base. The leaves and lower sheaths are pubescent. FIGURE 12.

- Leaves 3-6 mm wide, pubescent at least on the lower surface, shorter than the stems.
- Lower sheaths purple, inconspicuously ladder-fibrillose, pubescent; upper sheath fronts hyaline, red-dotted, hairy on the back, the apex concave.
- Inflorescence with 4-5 erect or drooping spikes, the upper 1 male at base.
- Female (lateral) spikes 1-3 cm x 4-5 mm, drooping on long peduncles, with a few empty scales at base.
- Bracts leaflike, equalling the inflorescence, short-sheathing.

- Scales much shorter than the perigynia, white with a green center, obtuse or cuspidate.
- Perigynia 3.5-5.0 x 1.8-2.0 mm, the body ovoid, obtusely trigonous in cross-section, green with red-brown dots, becoming brown when mature, smooth, strongly few-nerved, rounded at the apex; base tapering-rounded, substipitate; beak short (to 0.7 mm), slender, the white tip entire or slightly bidentate.

- Achenes trigonous; stigmas 3.

HABITAT: Moist soils in open woods, roadsides, or meadows in calcareous soils. CT, MA, VT.
NOTES: Resembles Carex davisii, but distinguished by the lighter perigynia, short obtuse or cuspidate scales and the empty scales at the base of the lower spikes. Conservation concern: CT (Special Concern), MA (Threatened).

Figure 12. 73. Carex atratiformis; 74. Carex gracillima; 75. Carex aestivalis; 76. Carex debilis (including achene); 77. Carex arctata; 78. Carex davisii; 79. Carex formosa.
Group 9 - Plants with cylindrical erect spikes, all spikes female, the uppermost spike with some male flowers (empty scales) at the base. Achenes trigonous or lenticular

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynium with long bidentate beak and inflated, obovoid body</td>
<td>Leaf W (mm) 4-10</td>
<td>6.0-8.0 mm long</td>
<td>80. C. typhina</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>obovoid, nerved;</td>
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<tr>
<td></td>
<td></td>
<td>bead 2.5-3.5 mm long</td>
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<td></td>
<td></td>
<td>calcareous wetlands</td>
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<tr>
<td>Leaves +blue-green; scales purple-brown, awned or acuminate; perigynia white</td>
<td>Leaf W (mm) 2-4</td>
<td>2.7-4.3 mm long</td>
<td>81. C. buxbaumii</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>biconvex, dull, faintly nerved, papillose; bead minute, to 0.2 mm</td>
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<tr>
<td></td>
<td></td>
<td>calcareous wetlands</td>
<td></td>
</tr>
<tr>
<td>Scales brown, obtuse; perigynia white when mature, papillose</td>
<td>Leaf W (mm) 2-4</td>
<td>2.5-3.0 mm long</td>
<td>82. C. garberi</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>biconvex, beakless</td>
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<tr>
<td></td>
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<td>calcareous wetlands</td>
<td></td>
</tr>
<tr>
<td>Perigynia golden and fleshy</td>
<td>Leaf W (mm) 2-4</td>
<td>2.0-3.0 mm long</td>
<td>136. C. aurea</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>strongly papillose, beakless</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>calcareous wetlands</td>
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<tr>
<td>Scales purple-brown, acute; spikes short, to 15 mm long, clustered</td>
<td>Leaf W (mm) 1.5-3</td>
<td>2.5-3.5 mm long</td>
<td>83. C. media</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>beak minute, often purple-black</td>
<td></td>
</tr>
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<td></td>
<td>calpine seeps and streambanks</td>
<td></td>
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<tr>
<td>Scales pale brown or purple-black, obtuse; perigynia nerved, stipitate, biconvex</td>
<td>Leaf W (mm) 1.5-3</td>
<td>1.7-3.2 mm long</td>
<td>111. C. lenticularis</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>ovate 3-7 nerves on each face; bead short, entire</td>
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<td></td>
<td></td>
<td>river or lake shores; alpine or lower</td>
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<tr>
<td>Leaves and sheaths hairy; perigynia smooth; scales acute or cuspidate</td>
<td>Leaf W (mm) 1.5-4</td>
<td>2.0-2.5 mm long</td>
<td>84. C. hirsutella</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>obovoid, smooth, beakless</td>
<td></td>
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<tr>
<td></td>
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<td>dry wooded slopes</td>
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</tr>
<tr>
<td>Leaves hairy; scales red-brown, acuminate or awned; perigynia scabrous</td>
<td>Leaf W (mm) 2.5-6</td>
<td>2.5-3.5 mm long</td>
<td>85. C. bushii</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>obovoid, olive green or brown, beakless</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>dry sandy meadows</td>
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<tr>
<td>Leaves, sheaths and perigynia hairy; terminal spike more than 2 cm long; leaves firm, dark green</td>
<td>Leaf W (mm) 2-5</td>
<td>2.0-2.7 mm long</td>
<td>86. C. virescens</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>ellipsoid or obovoid, beakless</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>dry rocky slopes</td>
<td></td>
</tr>
<tr>
<td>Leaves, sheaths and perigynia hairy; terminal spike less than 2 cm long; leaves soft, light green</td>
<td>Leaf W (mm) 1.5-3</td>
<td>2.0-2.5 mm long</td>
<td>87. C. swanii</td>
</tr>
<tr>
<td></td>
<td>Perigynia</td>
<td>obovoid, beakless</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>forests, clearings, meadows</td>
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</tr>
</tbody>
</table>
Key To Group 9

1. Perigynia 6-8 mm long with long bidentate beak and inflated, obovoid body ....................... 80. *Carex typhina*

1. Perigynia less than 5 mm long, beakless or very short-beaked

2. Perigynia papillose, white or golden when mature; scales dark

3. Leaves blue-green; bract shorter than the inflorescence; scales acuminate or awned .......................................................... 81. *Carex buxbaumii*

3. Leaves green; bract longer than the inflorescence; scales obtuse

4. Perigynia white when mature ........................................................................ 82. *Carex garberi*

4. Perigynia golden and fleshy when mature ..................................................... 136. *Carex aurea*

2. Perigynia green, not papillose; scales various

5. Leaves glabrous, perigynia biconvex

6. Perigynia ellipsoid or obovoid with 2 marginal nerves, often purple-brown;

   lower spikes 1.5 cm long or less ........................................................................ 83. *Carex media*

6. Perigynia ovate with nerves on both faces, green; lower spikes

   more than 1.5 cm long .................................................................................. 111. *Carex lenticularis*

5. Leaves and sheaths hairy

7. Perigynia glabrous .......................................................................................... 84. *Carex hirsutella*

7. Perigynia scabrous or hairy

8. Perigynia scabrous; scales acuminate or awned ............................................. 85. *Carex bushii*

8. Perigynia hairy; scales acute or obtuse

9. Terminal spike more than 2 cm long; flowering stems upright, longer than

   the firm dark green leaves ........................................................................ 86. *Carex virescens*

9. Terminal spike less than 2 cm long; flowering stems arching, shorter than the

   soft light green leaves ............................................................................. 87. *Carex swanii*

80. *Carex typhina* Michaux

SECTION SQUARROSACE

DISTINCTIVE FEATURES: A rare, medium-sized sedge of calcareous wetlands. The large, cylindrical terminal spike is male at the base (empty scales), with many crowded, inflated, long-beaked perigynia.

FIGURE 13.

Leaves 4-10 mm wide, longer than the stems.

Lower sheaths brown; upper sheath fronts hyaline, often tawny, the apex shallowly concave.

Inflorescence of 3 (rarely 1-6) erect, peduncled thick-cylindric spikes, the uppermost spike male at the base (empty scales), the lower spikes female.

Spikes 2-4.5 x 1-2 cm, the perigynia crowded and spreading.

Bracts leaflike, longer than the inflorescence, not sheathing.
Scales narrower and shorter than the perigynia, tawny with a green center, acute or obtuse.

**Perigynia** 6.0-8.0 x 3.0 mm, obovoid, rounded in cross-section, inflated, green, several-nerved, truncate at the apex; base rounded; beak abrupt, 2.5-3.5 mm long, bidentate.

**Achenes** trigonous, obovoid; the style persistent, straight; stigmas 3.

**HABITAT**: Saturated or seasonally saturated, calcareous soils; alluvial forests or wet meadows. CT, MA, ME, VT.

**NOTES**: Similar to *C. squarrosa*, but distinguished by having several spikes, scales without awns, and obovoid achenes with straight, persistent styles. Conservation concern: CT (Special Concern), MA (Threatened), ME (Special Concern).

### 81. *Carex buxbaumii* Wahlenberg

**SECTION RACEMOSAE**

**DISTINCTIVE FEATURES**: A slender sedge of neutral or calcareous wetlands, with erect spikes, all appearing female but the terminal spike with some empty scales at base. Scales long, purple-brown. Perigynia dull, white. **FIGURE 13**.

- **Leaves** 2-4 mm wide, blue-green, shorter than the stems.
- **Lower sheaths** red-brown, conspicuously ladder-fibrillose; upper sheath fronts hyaline, tawny, red-dotted, the apex concave and dark.
- **Inflorescence** 3.5-9 cm long, with 2-5 erect spikes, the lower ones entirely female, the uppermost male only at the base (appearing female, a few empty scales at the base at maturity).
- **Spikes** 5-20 x 6-10 mm, sessile or short-peduncled.
- **Bracts** shorter than the inflorescence, sheathless with dark auricles at base.
- **Scales** narrower and longer than the perigynia, dark purple-brown, acuminate or awned.
- **Perigynia** 2.7-4.3 x 1.5-2.0 mm, ellipsoid, biconvex, one face distended by the achene, pale white-green, dull or papillose, the 2 marginal nerves conspicuous, with 6-8 indistinct nerves on each face, rounded at the apex; base rounded, substipitate; beak minute, to 0.2 mm, bidentate, purple-brown.
- **Achenes** trigonous; stigmas 3.

**HABITAT**: Saturated soils in open places, generally neutral or calcareous substrates; bogs, marshes, fens, wet meadows. **THROUGHOUT**.

**NOTES**: May be confused with *C. bushii*, which has similar long dark scales but which has pubescent green perigynia and grows in dry uplands. Conservation concern: CT (Endangered), NH (Endangered), RI (Rare), VT (Endangered).

### 82. *Carex garberi* Fernald

**SECTION BICOLORAES**

**DISTINCTIVE FEATURES**: A short, slender sedge of calcareous wet shores and ledges, with whitish papillose perigynia. **FIGURE 13**.

- **Leaves** 2-4 mm wide, longer than the stems, light green.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex shallowly concave.
- **Inflorescence** of 4-5 erect unisexual spikes, the upper generally male at the base (empty scales).
- **Spikes** 7-25 x 3.5-4.5 mm, peduncled, the lowest on long basal peduncles, loosely flowered.
- **Bracts** leaflike, longer than the inflorescence, short-sheathing.
- **Scales** narrower and shorter than the perigynia, brown, obtuse.
**Carex aurea** R. Brown ex Richardson

**SECTION RACEMOSAE**

**DISTINCTIVE FEATURES:** A small rare sedge of wet alpine habitats, with black scales and a cluster of small spikes, all appearing to be female (the terminal spike has a few male flowers at the base).

**FIGURE 13.**

- **Leaves** 1.5-3.0 mm wide, shorter than the stems.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, the apex truncate.
- **Inflorescence** 2 cm long, with 2-4 short-cylindric erect spikes, the lower ones entirely female, up to 1 cm long, the uppermost male only at the base (appearing female, a few empty scales at the base at maturity).
- **Spikes** 6-14 mm long.
- **Bracts** longer than the inflorescence, sheathless with dark auricles at base.
- **Scales** as long and as wide as the perigynia, dark purple-brown or black with a narrow pale midrib and margins, acute.
- **Perigynia** 2.5-3.5 x 1.0-1.3 mm, narrowly ellipsoid or obovoid, biconvex or trigonous, one face distended by the achene, yellow-green, often purple-black on the upper half, minutely papillose, the 2 marginal nerves conspicuous, rounded at the apex; base rounded, substipitate; beak minute, bidentate, brown or purple-brown.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Wet ledges, seeps, streambanks, generally at high elevations. ME.

**NOTES:** Similar to *C. atratiformis*, which has more elongate, drooping spikes. *C. media* also resembles *C. bigelowii*, which has an entirely male terminal spike and lenticular achenes. Conservation concern: ME (Endangered - as *C. norvegica* Retzius).

**Carex hirsutella** Mackenzie

**SECTION POROCYSTIS**

**DISTINCTIVE FEATURES:** An uncommon medium-sized species with the spikes short, erect and apparently all female (the terminal one male at the base (empty scales), glabrous perigynia, and hairy leaves and sheaths. **FIGURE 13.**

- **Leaves** 1.5-4 mm wide, shorter than the stems, hairy.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, hairy, the apex concave and red-brown dotted.
- **Inflorescence** 2-3 cm long, with 2-5 erect cylindrical spikes, the upper 1 male at the base (empty scales).
- **Spikes** 6-20 x 5-7 mm, short-peduncled.
- **Bracts** leaflike, longer than the inflorescence, sheathless.
- **Scales** shorter than the perigynia, hyaline with a green center, acute or cuspidate.
Group 9

Perigynia 2.0-2.5 x 1.5 mm, ellipsoid or obovoid, flattened-trigonal in cross-section, faintly several-nerved, rounded at the apex; base tapering, sessile; beakless.

Achenes trigonous; stigmas 3.

HABITAT: Seasonally saturated soils, open habitats, especially in areas of calcareous soils. CT, MA, ME, VT.

NOTES: Somewhat resembling Carex swanii, this species can be distinguished by its glabrous perigynia. It also superficially resembles C. pallescens, which has glossy distinctly nerved perigynia.

85. Carex bushii Mackenzie

DISTINCTIVE FEATURES: An uncommon medium-sized species of open habitats, with the short, cylindric spikes erect and apparently all female (the terminal one male at the base (empty scales)), scales distinctively longer than the perigynia, and the leaves and sheaths short-hairy. FIGURE 13.

Leaves 2.5-6 mm wide, equalling the stems, hairy.
Lower sheaths red-brown; upper sheath fronts hyaline, hairy, the apex shallowly concave, red-brown dotted.
Inflorescence 2-3 cm long, with 2-3 erect short-cylindrical spikes, the upper 1 male at the base (empty scales).
Spikelets 5-20 x 5-8 mm, short-peduncled.
Bracts leaflike, as long as the inflorescence, sheathless.
Scales longer and narrower than the perigynia, red-brown tinged, acuminate or awned.
Perigynia 2.5-3.5 x 1.5-2.0 mm, obovoid, round in cross-section, olive-green to brown, scabrous, several-nerved, rounded or somewhat tapering to the apex, base tapering, sessile; beakless.

Achenes trigonous; stigmas 3.

HABITAT: Sandy open meadows or woods, in calcareous soil. CT, MA, RI.

NOTES: The short spikes, terminal spike with only a few empty scales at the base, and the long red-brown scales are similar to Carex buxbaumii. C. bushii can be distinguished by the olive-green, scabrous perigynia and hairy leaves and sheaths. It is distinguished from C. hirsutella by the long dark scales and scabrous perigynia. Conservation concern: CT (Special Concern), MA (Endangered), ME (Presumed Extirpated).

86. Carex virescens Muhlenberg ex Willdenow

DISTINCTIVE FEATURES: An uncommon medium-sized species of dry habitats with relatively slender erect spikes that all appear female (the terminal one with empty (male) scales at the base), pubescent perigynia, and hairy leaves and sheaths. FIGURE 13.

Leaves 2-5 mm wide, shorter than the stems, firm and dark green, hairy, especially on the margins.
Lower sheaths purple-brown, ladder-fibrillose; upper sheath fronts brown or hyaline, hairy, the apex deeply concave.
Inflorescence 3.5-6 cm long, with 2-5 erect cylindrical spikes, the upper at least 2 cm long.
Spikes 2.0-4.0 cm x 2.5-4 mm, short-peduncled.
Bracts leaflike, longer than the inflorescence, sheathless.
Scales shorter than the perigynia, hyaline with a green center, acute to cuspidate.
Perigynia 2.0-2.7 x 1.5 mm, ellipsoid or obovoid, flattened-trigonal in cross-section, sessile, pubescent, several-nerved; apex tapering; base tapering; beakless.
Achenes trigonous; stigmas 3.

HABITAT: Dry rocky woods and slopes. CT, MA, ME, NH, RI.

NOTES: Very similar to Carex swanii, but a more robust species that can be distinguished by its erect flowering stems, stiffer leaves, and longer spikes that are often loosely flowered at the base.

87. Carex swanii (Fernald) Mackenzie

SECTION POROCYSTIS

DISTINCTIVE FEATURES: A very common medium-sized woodland species with erect short cylindrical spikes that appear all female (the terminal one male at the base), pubescent perigynia, and hairy leaves and sheaths. The stems are lax and arching. FIGURE 13.

- Leaves 1.5-3 mm wide, longer than the stems, sparsely pubescent.
- Lower sheaths red-brown, ladder-fibrilllose; upper sheath fronts hyaline, red-dotted, pubescent, the apex deeply concave.
- Inflorescence 2-6 cm long, with 2-5 erect short-cylindrical spikes, the upper less than 2 cm long.
- Spikes 5-20 x 2.5-5 mm, short-peduncled, densely flowered.
- Bracts leaflike, longer than the inflorescence, sheathless.
- Scales shorter than the perigynia, hyaline with a green center, acute to cuspidate.
- Perigynia 2.0-2.5 x 1.5 mm, obovoid, trigonous, pubescent, several-nerved; apex tapering; base tapering, sessile; beakless.
- Achenes trigonous; stigmas 3.

HABITAT: Dry woods, open thickets, fields, trail edges, meadows. THROUGHOUT.

NOTES: C. swanii is common and can be distinguished from Carex virescens by its lax flowering stems, shorter spikes, and perigynia that are more rounded at the apex.
Figure 13. 80. Carex typhina; 81. Carex buxbaumii; 82. Carex garberi; 83. Carex media; 84. Carex hirsutella; 85. Carex bushii; 86. Carex virescens; 87. Carex swanii.
**Group 10** - Plants with separate male and female spikes; flowering stems very short, hidden by the leaves, some spikes basal; perigynia round or obscurely triangular in cross-section. *Achene trigonous*. Key includes some species with short flowering stems but lacking basal spikes.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf width</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves dark green, often stiff; some spikes basal; scales as long as the perigynia, margins red-brown</td>
<td>1.5-3 mm</td>
<td>3.5-4.5 mm long body globose when dry; beak 1.9-2.5 mm long, flat, bidentate</td>
<td>dry sandy open areas</td>
<td>88. <em>C. tonsa</em></td>
</tr>
<tr>
<td>Leaves thin, light green; some spikes basal; scales as long as the perigynia, margins red-brown</td>
<td>1.5-3 mm</td>
<td>2.5-3 mm long body globose when dry; beak 0.5-1 mm long, flat, bidentate</td>
<td>dry sandy or rocky areas</td>
<td>89. <em>C. umbellata</em></td>
</tr>
<tr>
<td>Leaves blue-green; scales white-hyaline; all spikes near top of stem.</td>
<td>4-9 mm</td>
<td>2.5-3.5 mm long obovoid, finely-nerved; beak less than 0.5 mm, bent, entire</td>
<td>rich woods</td>
<td>148. <em>C. abscondita</em></td>
</tr>
<tr>
<td>Scales red-brown, shorter than the perigynia; some spikes basal</td>
<td>1-3 mm</td>
<td>2.5-3.2 mm long body ellipsoid, puberulent; beak 0.4-0.8 mm long, bidentate</td>
<td>open woods</td>
<td>125. <em>C. deflexa</em></td>
</tr>
<tr>
<td>Scales red-brown or with red-brown margins; all spikes near top of stem; flowering stems 6-38 cm long</td>
<td>2-4.5 mm</td>
<td>2.8-3.5 mm long body ellipsoid, puberulent beak to 1.0 mm long, bidentate</td>
<td>open woods</td>
<td>126. <em>C. nigromarginata</em></td>
</tr>
<tr>
<td>Scales pale, sometimes with red-brown margins; all spikes near top of stem; flowering stems less than 10 cm long</td>
<td>0.7-2.2 mm</td>
<td>2.7-3.9 mm long body ellipsoid, puberulent often red-dotted; beak 0.6-1.0 mm long, bidentate</td>
<td>open dry woods</td>
<td>126a. <em>C. reznicekii</em></td>
</tr>
</tbody>
</table>
Key To Group 10 and other species with short flowering stems

1. Leaves blue-green, 4-9 mm wide; beak entire, < 0.5 mm; scales hyaline .......................148. *C. abscondita*

1. Leaves green, 1-4 mm wide; beak bidentate; scales pale or red-brown

2. Some spikes basal

3. Perigynia 3.5-4.5 mm long; scales equaling perigynia................................................. 88. *C. tonsa*

3. Perigynia less than 3.5 mm long; scales as long as or shorter than the perigynia

4. Scales as long as the perigynia, pale or red-margined; beak 0.5-1 mm............. 89. *C. umbellata*

4. Scales shorter than the perigynia, red-brown; beak cylindrical..........................125. *C. deflexa*

2. All spikes borne near top of the stem; scales shorter than the perigynia

5. Perigynia red-dotted; scales pale, red-margined; stems < 10 cm ....................... 126a. *C. reznicekii*

5. Perigynia green; scales often red-brown; stems > 10 cm ......................126. *C. nigromarginata*

88. *Carex tonsa* (Fernald) E.P. Bicknell

SECTION ACROCYSTIS

DISTINCTIVE FEATURES: A common small (< 15 cm) densely caespitose sedge of dry open areas, the flowering stems very short, hidden by the (generally) rigid leaves. Perigynia with long (1.9-2.5 mm) flat beaks. FIGURE 14.

Leaves 1.5-3.0 mm wide, stiff or soft, longer than the stems.

Lowest sheaths red-brown, ladder-fibrillose.

Inflorescence to 1.2 cm long with short-cylindric erect sessile unisexual spikes.

Female spikes 6-10 x 4.5-6 mm, some borne at the base of the stem on short basal peduncles.

Lowest bract scale-like, inconspicuous.

Scales longer than and as wide as the perigynia, red-brown margined or rarely pale, acute or acuminate.

Perigynia 3.5-4.5 x 1.3-1.5 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, light green or yellow-brown when mature, sparsely puberulent or glabrous, the 2 marginal nerves prominent, rounded at the apex; base very conspicuously white-spongy when fresh, contracted and stipitate when dry, to 0.8 mm; beak long, 1.9-2.5 mm, shallowly bidentate, flat, the margins prominent, ciliate-serrulate.

Achenes trigonous; stigmas 3.

HABITAT: Dry, acid sandy soils in open habitats or dry open woods. THROUGHOUT.

NOTES: *C. tonsa* has been treated by various authors as conspecific with *C. umbellata*. It can be distinguished by the thick, rigid leaves (in var. *tonsia*) and by the longer beak on the perigynium. The perigynia of both *C. tonsa* and *C. umbellata* are adapted to dispersal by ants. The white spongy tissue at the base of the perigynium is used as a food source, and dispersal is facilitated by the spikes close to the ground. Two taxa occur in New England. *C. tonsa* var. *tonsia* has entirely glabrous perigynia and firm, rigid dark green leaves. *C. tonsa* var. *rugosperma* (Mackenzie) Crins has sparsely pubescent perigynia and thin, lighter green leaves. These have previously been considered separate species.
89.  *Carex umbellata* Schkuhr ex Willdenow

**SECTION ACROCYSTIS**

**DISTINCTIVE FEATURES:** A common small (< 15 cm) densely caespitose sedge of dry open areas, the flowering stems very short, hidden by the leaves. **FIGURE 14.**

- **Leaves** 1.5-3.0 mm wide, longer than the stems, soft, light green.
- **Lowest sheaths** red-brown, ladder-fibrillose.
- **Inflorescence** to 1.5 cm long with short-cylindric or globose erect sessile unisexual spikes.
- **Female spikes** 4-10 x 3.5 mm, some borne at the base of the stem on short basal peduncles.
- **Lowest bract** scale-like, inconspicuous.
- **Scales** longer than and as wide as the perigynia, red-purple margined or rarely pale, acute or acuminate.
- **Perigynia** 2.5-3.0 x 1.3-1.5 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, apex rounded, light green or yellow-brown when mature, sparsely short-hairy, the 2 marginal nerves prominent, rounded at the apex; base very conspicuously white-spongy when fresh, contracted and stipitate when dry, to 1.0 mm; beak short, 0.5-1.0 mm, shallowly bidentate, flat, the margins prominent, ciliate-serrulate.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Dry, acid sandy soils in open habitats or dry open woods. THROUGHOUT.

**NOTES:** The *C. umbellata* complex is difficult and confusing. Some authors recognize this and *C. abdita* Bicknell as separate species, based on the shorter scales and beak of the latter. This distinction does not seem to hold up. *C. umbellata* is distinguished from *C. tonsa* by the short beak and softer leaves. Conservation concern: NH (Endangered).
Figure 14. 88. Carex tonsa; 89. Carex umbellata; 90. Carex lacustris; 91. Carex collinsii (beak close-up); 92. Carex folliculata; 93. Carex michauxiana (achene).
Group 11 - Plants with separate cylindrical erect or drooping male and female spikes; bracts leaflike; perigynia lanceolate or subulate, very narrowly ovate and tapering to an indistinctly-beaked apex. Achenes trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia brown, firm; flowering stems much shorter than the long, stiff erect leaves</td>
<td>8-15</td>
<td>4.5-7.5 mm long</td>
<td>wetlands</td>
<td>90. C. lacustris</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.0-2.5 mm wide;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beak bidentate with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>short blunt teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perigynia very long, slender, reflexed; beak with reflexed bony teeth</td>
<td>1-5</td>
<td>15 mm long</td>
<td>Atlantic</td>
<td>91. C. collinsii</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2 mm wide</td>
<td>white cedar</td>
<td></td>
</tr>
<tr>
<td>Perigynia spreading; lowest spike drooping on long peduncle; overwintering leaves dark green</td>
<td>6-16</td>
<td>10-15 mm long</td>
<td>forested</td>
<td>92. C. folliculata</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.0-3.3 mm wide;</td>
<td>wetlands</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beak cylindrical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perigynia spreading; all spikes erect; leaves yellow-green</td>
<td>1.5-4</td>
<td>8-14 mm long</td>
<td>fens, calcareous</td>
<td>93. C. michauxiana</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5-2.0 mm wide;</td>
<td>wetlands</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beak flat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key To Group 11

1. Perigynia brown, firm, 4.5-7.5 mm long, the apex bidentate with short blunt teeth ........... 90. C. lacustris
1. Perigynia green, thin, 8-15 mm long, the apex otherwise

2. Perigynia reflexed, 1.2 mm wide; apex with bony reflexed teeth ...................................... 91. C. collinsii

2. Perigynia spreading, 1.5-3.3 mm wide; apex bidentate with firm, erect teeth

3. Lowest spike drooping on long stalk; perigynia 2.0-3.3 mm wide ................................... 92. C. folliculata

3. Lowest spike erect; perigynia 1.5-2.0 mm wide .................................................. 93. C. michauxiana
90. *Carex lacustris* Willdenow  

**SECTION PALUDOSAE**

**DISTINCTIVE FEATURES:** A common, very large, rhizomatous sedge of wet habitats, with stout erect spikes, ovoid, nerved perigynia with short blunt teeth, and awned scales. **FIGURE 14.**

- **Leaves** 8-15 mm wide, much longer than the flowering stems, often blue-green.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, nerved, pale brown, the apex concave.
- **Inflorescence** to 40 cm long, with 4-8 erect unisexual spikes, the upper 2-4 male.
- **Female spikes** 3.0-15.0 x 1.0-1.5 cm, sessile.
- **Bracts** leaflike, longer than the inflorescence, sheathless.
- **Scales** shorter and narrower than the perigynia, brown, short-awned.
- **Perigynia** 4.5-7.5 x 1.5-2.5 mm, lance-ovoid, round in cross-section, olive-green or brown, firm, strongly many-nerved; base rounded, sessile; beak short (0.5-1 mm), indistinct, with short, blunt triangular teeth.

**Achenes** trigonous; stigmas 3.

**HABITAT:** Seasonally saturated soils or shallow water, in wet meadows, marshes, lake shores or swamps. **THROUGHOUT.**

**NOTES:** Gleason (1952) recognized 2 varieties within this species: his *C. lacustris* var. *laxiflora* is now recognized as a distinct species, *C. hyalinolepis* Steudel, which does not occur in New England.

91. *Carex collinsii* Nuttall  

**SECTION COLLINSIAE**

**DISTINCTIVE FEATURES:** A very rare medium-sized sedge of coastal Atlantic white cedar swamps. The elongate subulate perigynia are reflexed at maturity, and have hard reflexed teeth at the tip. **FIGURE 14.**

- **Leaves** to 5 mm wide.
- **Lower sheaths** brown; upper sheath fronts hyaline.
- **Inflorescence** of one sessile terminal male spike and 2-5 erect peduncled female spikes; perigynia reflexed.
- **Bracts** shorter than the inflorescence, 3-5 mm wide, with a distinct sheath to 2.5 cm long.
- **Scales** short, to 2.5 mm long, hyaline with a green midrib, acuminate or mucronate.
- **Perigynia** to 15.0 x 1.2 mm, narrowly subulate, round in cross-section, green, with 15-20 raised nerves; beak oblique with two reflexed hard colorless teeth (1 mm long).

**Achenes** triangular in cross-section; the style rigid and persistent; stigmas 3.

**HABITAT:** Growing in *Sphagnum*, generally in Atlantic white cedar (*Chamaecyparis thyoides*) swamps. **CT, RI.**

**NOTES:** This species is distinguished from all other carices with subulate perigynia by the reflexed perigynia with rigid reflexed teeth *C. pauciflora*, which also has reflexed teeth, has a single bisexual spike and lacks a bract. Conservation concern: CT (Special Concern), RI (Historic).

92. *Carex folliculata* Linnaeus  

**SECTION ROSTRALES**

**DISTINCTIVE FEATURES:** A common, robust, wide-leaved sedge of swamps and bogs with short, peduncled spikes of large, subulate perigynia. Similar to *C. michauxiana*, but with much wider and darker leaves and drooping lower spikes. **FIGURE 14.**
Leaves 6-16 mm wide (generally more than 1 cm), shorter than the stems, dark green in shaded habitats, or yellow-green in open sites, often with dark green overwintering leaves.

Lower sheaths light brown; upper sheath fronts hyaline, the apex loose, convex or truncate.

Inflorescence 15-30 cm long, with 1 short inconspicuous male spike and 2-5 erect or divergent peduncled female spikes. The lowest female spike may droop on a long peduncle.

Lowest spike 1.5-3.0 x 2.0-3.5 cm, perigynia spreading.

Bracts leaflike, 4-8 mm wide, longer than the inflorescence, long-sheathing at base, the sheath apex convex, prolonged.

Scales narrower and as long or longer than the perigynia, hyaline with a green center, awned, the awn margins serrate.

Perigynia 10.0-15.0 x 2.0-3.5 mm, subulate, rounded in cross-section, green or yellow-green, many-nerved; base plump and spongy when fresh, contracted and substipitate in dried material; beak 5-7 mm long, somewhat serrate, bidentate.

Achenes trigonous; stigmas 3.

HABITAT: Saturated or seasonally saturated, acid soils; forested swamps or bogs. THROUGHOUT.

NOTES: Similar to Carex michauxiana, but distinguished by the wider leaves, the prolonged apex of the bract sheath, and awned scale. The wide, dark green leaves are often persistent in the winter and can be easily recognized.

93. Carex michauxiana Boeckeler

SECTION ROSTRALES

DISTINCTIVE FEATURES: A slender medium sedge of fens and bogs with short, peduncled spikes of divergent, slender subulate perigynia. Similar to Carex folliculata, but with much narrower leaves and generally erect spikes. FIGURE 14.

Leaves 1.5-4.0 mm wide, shorter than the stems, yellow-green.

Lower sheaths light brown; upper sheath fronts hyaline, the apex concave.

Inflorescence 6-10 cm long, with 1 short inconspicuous male spike and 2-4 peduncled female spikes.

Lowest spike 1.5-2.5 x 2.0-2.5 cm, perigynia spreading.

Bracts leaflike, 1-3 mm wide, longer than the inflorescence, long-sheathing at base, the sheath apex concave.

Scales narrower and shorter than the perigynia, hyaline with a green center, acute or acuminate.

Perigynia 8.0-14.0 x 1.5-2.0 mm, subulate, rounded in cross-section, yellow-green, many-nerved; base plump and spongy when fresh, contracted and substipitate in dried material; beak 4.0-6.0 mm long, somewhat flattened and serrate, bidentate.

Achenes trigonous; stigmas 3.

HABITAT: Saturated, peaty soils: wet meadows, fens, bogs. MA, ME, NH, VT.

NOTES: Similar to Carex folliculata, but distinguished by the narrower yellow-green leaves, the concave apex of the bract sheath, and acute scales. This species may also be confused with Carex collinsii, which has reflexed perigynia, a bract shorter than the inflorescence, and rigid, reflexed teeth at the apex of the beak. Conservation concern: MA (Endangered).
Group 12 - Plants with separate male and female spikes, spikes cylindrical and drooping; perigynia beakless or minutely beaked, biconvex or trigonous. Achenes trigonous or lenticular.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spikes sessile or the lowest short-peduncled; scales dark purple-brown</td>
<td>3-5</td>
<td>2.3-4.7 mm long ovate, tapering to the apex, upper portion flat, twisted</td>
<td>rocky river and stream banks</td>
<td>94. <em>C. torta</em></td>
</tr>
<tr>
<td>Spikes sessile or the lowest short-peduncled; scales pale</td>
<td>2.5-4</td>
<td>3.0-4.0 mm long trigonous, upper portion twisted</td>
<td>wetlands</td>
<td>95. <em>C. prasina</em></td>
</tr>
<tr>
<td>Leaves blue-green, involute; scales dark, equal or longer than perigynia</td>
<td>1-2</td>
<td>2.5-4.2 mm long ovoid, biconvex, gray-green, indistinctly nerved</td>
<td>bogs, fens</td>
<td>96. <em>C. limosa</em></td>
</tr>
<tr>
<td>Leaves blue-green, flat; perigynia dark brown, longer than the scales</td>
<td>2-6</td>
<td>2.4-3.7 mm long ovoid, trigonous, tapering</td>
<td>coastal pine barrens swamps</td>
<td>97. <em>C. barrattii</em></td>
</tr>
<tr>
<td>Bracts shorter than the inflorescence; scales dark, longer and wider than the perigynia</td>
<td>1.5-2.5</td>
<td>2.8-3.9 mm long ovoid, biconvex, gray-green</td>
<td>bogs, fens</td>
<td>98. <em>C. rariflora</em></td>
</tr>
<tr>
<td>Bract longer than the inflorescence; scales dark, longer and narrower than the perigynia</td>
<td>2-3</td>
<td>2.5-3.5 mm long ovoid, biconvex, gray-green</td>
<td>bogs, fens</td>
<td>99. <em>C. magellanica</em></td>
</tr>
<tr>
<td>Perigynia firm, papillose; female spikes 1-1.5 cm wide</td>
<td>4-8</td>
<td>2.4-4.0 mm long ellipsoid, biconvex, stipitate</td>
<td>salt marshes</td>
<td>100. <em>C. paleacea</em></td>
</tr>
<tr>
<td>Scales long-awned perigynia papillose; achenes lenticular, not constricted</td>
<td>4-8</td>
<td>1.9-4.2 mm long Ellipsoid, biconvex, not inflated, faintly 3-nerved on each face</td>
<td>coastal plain wetlands</td>
<td>101. <em>C. mitchelliana</em></td>
</tr>
<tr>
<td>Scales long-awned; achenes indented or constricted; sheaths smooth</td>
<td>5-10</td>
<td>1.8-3.7 mm long obovoid, biconvex, somewhat inflated, rounded at the apex</td>
<td>wetlands</td>
<td>102. <em>C. crinita</em></td>
</tr>
<tr>
<td>Scales long-awned; achenes indented; sheaths scabrous</td>
<td>5-10</td>
<td>1.9-4.2 mm long ellipsoid, biconvex, tapering to the beak</td>
<td>wetlands</td>
<td>103. <em>C. gynandra</em></td>
</tr>
</tbody>
</table>
### Key To Group 12

1. Female spikes sessile, at most short-peduncled
   - 2. Scales purple-brown or black; perigynia and achenes biconvex ........................................... 94. *Carex torta*
   - 2. Scales pale; perigynia and achenes trigonous................................................................. 95. *Carex prasina*

1. Female spikes long-peduncled
   - 2. Bracts shorter than the inflorescence
     - 3. Perigynia biconvex, gray-green
       - 4. Leaves 1-2 mm wide; scales equaling the perigynia................................................. 96. *Carex limosa*
       - 4. Leaves 1.5-2.5 mm wide; scales wider and longer than the perigynia ............. 98. *Carex rariflora*
     - 3. Perigynia trigonous, dark brown and glossy ................................................. 97. *Carex barrattii*
   - 2. Bracts longer than the inflorescence
     - 5. Scales longer than the perigynia, dark, acute to acuminate, awn (if present) shorter than the body; perigynia ovoid, gray-green................................................................. 99. *Carex magellanica*
     - 5. Scales pale or brown, awned, the awn longer than the body of the scale; perigynia green or yellow-green
       - 6. Perigynia firm; salt marshes................................................................. 100. *Carex paleacea*
       - 6. Perigynia thin-walled, freshwater wetlands
         - 7. Perigynia papillose, faintly nerved on each face; achenes not indented or constricted ................................................................. 101. *Carex mitchelliana*
         - 7. Perigynia smooth, not nerved; achenes indented or constricted
           - 8. Sheaths glabrous; scales awned from a retuse tip; perigynia obovoid, the apex rounded or truncate ............................................. 102. *Carex crinita*
           - 8. Sheaths scabrous; scales awned from an acute tip; perigynia ellipsoid, the apex tapering or acute............................................. 103. *Carex gynandra*

### 94. *Carex torta* Boott

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** A dark-green tussock sedge of rocky river banks, with slender dark nodding spikes. **FIGURE 15.**

- **Leaves** 3-5 mm wide, dark green, longer than the flowering stems.
- **Lower sheaths** purple-brown, upper sheath fronts hyaline, white or pale brown, the apex truncate.
- **Inflorescence** with 4-6 slender erect or drooping unisexual spikes, the upper 1-2 male.
- **Lowest spike** 2.5-9.0 x 0.4-0.5 cm, drooping, loosely flowered on the lower half, subsessile.
- **Bracts** leaflike, equalling or shorter than the inflorescence, sheathless.
- **Scales** shorter and narrower than the perigynia, purple-black or brown, obtuse.
- **Perigynia** 2.3-4.7 x 1.1-1.8 mm, flat, ovate, thin and papery, green, tapering to the flat, twisted apex; base rounded, short-stipitate; beak short, oblique, pale.
Achenes lenticular; stigmas 2.

**HABITAT:** Rocky or gravelly banks of rivers or streams, occasionally in seeps near streams. CT, MA, ME, NH, VT.

**NOTES:** Common in western and northern New England, flowering very early in spring.

95. *Carex prasina* Wahlenberg  
**SECTION HYMENOCHLAENAE**

**DISTINCTIVE FEATURES:** A medium-sized slender sedge with pale, flexuous drooping spikes, common in seeps along streams.  
**FIGURE 15.**

- **Leaves** 2.5-4 mm wide, shorter than the stems.
- **Lower sheaths** brown, ladder-fibrillose; upper sheath fronts hyaline, conspicuously prolonged at the deeply concave apex.
- **Inflorescence** to 15 cm long, with 3-6 flexuous, drooping, narrowly cylindrical spikes, the upper 1 male.
- **Female spikes** 2-6 cm x 3-3.5 mm, sparsely flowered on the lower half.
- **Bracts** leaflike, equaling or longer than the inflorescence, short-sheathing.
- **Scales** shorter and narrower than the perigynia, white with a green center, cuspidate.
- **Perigynia** 3.0-4.0 x 1.5 mm, the body ellipsoid, trigonous, 2 angles sharp, green, smooth, the two marginal nerves prominent, tapering to the apex; base rounded, short-stipitate; beak short, often twisted, cylindrical, the tip white-hyaline, entire.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Saturated soil, along streams through deciduous forest or seeps in openings in forest. THROUGHOUT.

**NOTES:** Resembles *Carex torta* and has similar flexuous spikes, but can be easily distinguished by the pale cuspidate scales and trigonous perigynia and achenes. The terminal male spike may occasionally have a few perigynia. These two species generally occupy different habitats, with *C. prasina* in seeps and *C. torta* on riverbanks.

96. *Carex limosa* Linnaeus  
**SECTION LIMOSAE**

**DISTINCTIVE FEATURES:** A slender blue-green sedge of sphagnum bogs, with few drooping spikes, the perigynia concealed by dark acuminate scales. Plants very conspicuously rhizomatous, the stems arching and rooting at the nodes.  
**FIGURE 15.**

- **Leaves** involute, 1.0 -2.5 mm wide, shorter than the stems, blue-green.
- **Lower sheaths** red-brown or brown; upper sheath fronts hyaline, red-dotted, concave at the apex.
- **Inflorescence** 4-8 cm, with 1-4 unisexual spikes drooping on slender peduncles, the peduncles longer than the spikes; the uppermost spike male.
- **Female spikes** 2.5-4.2 x 2.5-3 mm.
- **Bracts** narrow, shorter than the inflorescence, sheathless with brown auricles at base.
- **Scales** equaling or longer than the perigynia, brown or pale red-brown, cuspidate or acuminate.
- **Perigynia** 2.5-4.2 x 2.7 mm, biconvex, obovoid, white, dull, the 2 marginal nerves conspicuous, with 4-7 indistinct nerves on each face, acute or somewhat rounded at the apex; base rounded, substipitate; beak abrupt, minute, entire.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Sphagnum bogs or fens. CT, MA, ME, NH, VT.
NOTES: Similar to *C. rariflora* and *C. magellanica*, but distinguished by the narrow, involute blue-green leaves, the short bract, and the minute but distinct beak of the perigynium. *C. limosa* tends to be conspicuously rhizomatous, the stems single and widely separated. Although most manuals describe the perigynia as papillose, the papillae are barely visible with a hand lens. Conservation concern: CT (Endangered).

97.  **Carex barrattii** Schweinitz & Torrey  
**SECTION LIMOSAE**

**DISTINCTIVE FEATURES:** A rare species of coastal plain wetlands, with distinctive blue-green leaves, dark, almost black, female scales and tapering dark perigynia. **FIGURE 15.**

- **Leaves** 2-6 mm wide, blue-green, the margins revolute.
- **Lower sheaths** brown, ladder-fibrillose; upper sheath fronts hyaline, white or pale brown, often with red dots.
- **Inflorescence** with 3-6 erect unisexual spikes, the upper spike male.
- **Female spikes** 2-4 cm x 4-6 mm, spreading or drooping on a short peduncle.
- **Bracts** leaflike, shorter than the inflorescence, short-sheathing.
- **Scales** shorter and narrower than the perigynia, dark purple-brown, acute.
- **Perigynia** 2.4-3.7 x 1.3-1.9 mm, ovoid, trigonous, brown or black on the upper half, with 2 prominent marginal nerves, otherwise obscurely few-nerved, tapering to the apex; base rounded, sessile; beak minute, 0.2-0.5 mm, entire.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Saturated soils, swamps in coastal pine barrens. CT.

**NOTES:** Conservation concern: CT (Endangered).

98.  **Carex rariflora** (Wahlenberg) Smith  
**SECTION LIMOSAE**

**DISTINCTIVE FEATURES:** A small alpine sedge with few unisexual spikes drooping on slender peduncles, the spikes short and broad with dark scales hiding the perigynia. **FIGURE 15.**

- **Leaves** 1.5-2.5 mm wide, gray-green, shorter than the stems.
- **Lower sheaths** brown or red-brown; upper sheath fronts hyaline, tawny, red-dotted, the apex prolonged and obliquely truncate.
- **Inflorescence** with 2-3 unisexual spikes drooping on short peduncles, the upper spike male.
- **Female spikes** 6-15 x 3.5-5 mm, drooping on a peduncle approximately the same length as the spike.
- **Bracts** shorter than the inflorescence, sheathless with dark auricles at base.
- **Scales** wider and longer than the perigynia, dark purple-brown, cuspidate.
- **Perigynia** 2.8-3.9 x 1.7-2.0 mm, ovoid or ellipsoid, biconvex, one face distended by the achene, blue-green or white, dull, the 2 marginal nerves conspicuous, with few indistinct nerves on each face; base rounded and substipitate; beak minute, entire.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Sphagnum bogs and shores, high elevations. ME (possibly historic).

**NOTES:** Similar to *C. limosa*, but distinguished by the smaller size, the peduncles of the female spikes equalling the spike length, and the nearly beakless more trigonous perigynia that are hidden by the scales. Conservation concern: ME (Presumed Extirpated).
99. **Carex magellanica** Lamark  

**SECTION LIMOSAE**

**DISTINCTIVE FEATURES:** A medium-sized slender sedge of sphagnum bogs and fens, with unisexual spikes drooping on slender peduncles. **FIGURE 15.**

- **Leaves** 2-3 mm wide, green, shorter than the stems.
- **Lower sheaths** brown or red-brown; upper sheath fronts hyaline, red-dotted, the apex prolonged and concave.
- **Inflorescence** 4-6 cm long with 3-4 unisexual spikes drooping on slender peduncles, the upper spike male.
- **Female spikes** 8-20 x 4-8 mm.
- **Bracts** leaflike, generally longer than the inflorescence, sheathless with dark auricles at base.
- **Scales** narrower and longer than the perigynia, dark purple-brown, acuminate or short-awned, the awn less than 3.0 mm.
- **Perigynia** 2.5-3.5 x 1.8-2.3 mm, broadly ellipsoid, biconvex or trigonous, one face distended by the achene, grey-green or white, brown when mature, dull, the 2 marginal nerves conspicuous, with few indistinct nerves on each face, rounded at the apex; base rounded and stipitate; beak minute, entire.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Sphagnum bogs and fens, calcareous seeps. CT, MA, ME, NH, VT.

**NOTES:** New England plants are *C. magellanica* var. *irrigua* (Wahlenberg) Hiitonen. Very similar to *C. limosa*, but distinguished by the wider flatter green leaves, the scales narrower than the perigynia, and the bract longer than the inflorescence. The perigynia of *C. magellanica* lack a distinct beak and are broadly ellipsoid rather than ovoid. Conservation concern: CT (Endangered, as *C. paupercula* Michaux).

100. **Carex paleacea** Schreber ex Wahlenberg  

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** A robust rhizomatous sedge of northern salt marshes and seashores. The inconspicuous flowering stems have thick drooping spikes and scales with long awns. **FIGURE 15.**

- **Leaves** 4-8 mm wide, yellow-green, longer than the flowering stems.
- **Lower sheaths** brown or red-brown; upper sheath fronts hyaline, the apex concave.
- **Inflorescence** of 3-10 drooping unisexual spikes, the upper 1-3 male.
- **Female spikes** 2.2-6.5 x 1-1.5 cm, peduncled.
- **Lowest bract** leaflike, longer than the inflorescence, sheathless.
- **Scales** brown, awned, the scabrous awns longer than the perigynia.
- **Perigynia** 2.4-4.0 x 1.3-1.9 mm, ellipsoid, biconvex, yellow-green or brown, firm, short-papillose, indistinctly nerved; base stipitate; beak short, entire.
- **Achenes** lenticular, glossy, strongly constricted on one margin; stigmas 2.

**HABITAT:** Saline, brackish or intertidal marshes and shores, generally upgradient of *Spartina alterniflora*. MA, ME, NH.

**NOTES:** The only large *Carex* found in our salt marshes, *C. paleacea* is most closely related to the Pacific coast *C. lyngbyei* Hornemann. *C. paleacea* hybridizes with several other members of Sect. *Phacocystis* where these grow along the coast. *C. vacillans* and *C. recta* are stabilized hybrids of *C. paleacea* with *C. nigra* and *C. aquatilis*, respectively.
101.  *Carex mitchelliana* M.A. Curtis  

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** An uncommon large tussock sedge of coastal plain wetlands. The distinctive spikes are elongate, pendant and appear bristly due to the conspicuous awns. Perigynia are papillose and faintly nerved. **FIGURE 15.**

- **Leaves** to 8 mm wide.
- **Lower sheaths** red-brown, scabrous, the upper sheath fronts red or coppery brown, becoming ladder-fibrillose.
- **Inflorescence** of 3-6 drooping unisexual spikes, the upper 1-2 male.
- **Female spikes** 3.1-8 x 0.4-0.8 cm, acute or acuminate at base, peduncled.
- **Lowest bract** leaflike, 3.7-11 mm wide, longer than the inflorescence, sheathless.
- **Scales** pale or copper-brown, the body short, truncate, awned; the awn scabrous, longer than the perigynium.
- **Perigynia** 1.9-4.2 x 1.1-2.3 mm, ovoid or ellipsoidal, biconvex, slightly inflated, indistinctly 3-nerved on each face, papillose; base tapering and short-stipitate; beak short, entire.
- **Achenes** lenticular, glossy, not constricted; stigmas 2.

**HABITAT:** Open or forested habitats in saturated or inundated soils; wet meadows, marshes, bogs, swamps, shores. MA, RI.

**NOTES:** Very similar to *C. gynandra*, but distinguished by the papillose nerved perigynia and the unconstricted achenes. The least-common species in the *C. crinita* complex, *C. mitchelliana* is poorly known, with few known populations, and appears to be limited to the coastal plain. Conservation concern: MA (Threatened).

102.  *Carex crinita* Lamarck  

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** A common large wetland tussock sedge with smooth sheaths. The distinctive spikes are elongate, pendant and appear bristly due to the conspicuous awns. **FIGURE 15.**

- **Leaves** to 10.5 mm wide.
- **Lower sheaths** red-brown, smooth; the upper sheath fronts red or coppery brown, indistinctly ladder-fibrillose.
- **Inflorescence** of 3-8 drooping unisexual spikes, the upper 1-3 male.
- **Female spikes** 3.5-11.5 x 0.4-0.7 cm, peduncled.
- **Bracts** leaflike, 3.7-11.0 mm wide, longer than the inflorescence, sheathless.
- **Scales** pale brown, the body short, truncate or notched at the apex, awned; the awn scabrous, longer than the perigynium.
- **Perigynia** 1.8-3.7 x 1.2-2.5 mm, obovoid, rounded at the apex, biconvex, somewhat inflated, not nerved, indistinctly papillose; base tapering and short-stipitate; beak short, abrupt, entire.
- **Achenes** lenticular, glossy, generally strongly constricted on one or both margins; stigmas 2.

**HABITAT:** Open or forested habitats in saturated or inundated soils; wet meadows, marshes, bogs, swamps, shores, and roadside ditches. THROUGHOUT.

**NOTES:** Often confused with the similar *C. gynandra*, but easily distinguished by the smooth sheaths, inflated obovoid perigynia, and notched scales. *C. crinita* is more common along the coast and in southern New England. A segregate taxon, *C. crinita var. brevicrinus* Fernald, can be distinguished by the more strongly obovoid perigynia and achenes that lack a constriction.
103.  *Carex gynandra* Schweinitz  

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** A common large wetland tussock sedge with scabrous sheaths. The distinctive spikes are elongate, pendant and appear bristly due to the conspicuous awns.  

- **Leaves** to 10.5 mm wide.  
- **Lower sheaths** red-brown, scabrous; the upper sheath fronts red or coppery brown, indistinctly ladder-fibrilllose.  
- **Inflorescence** of 3-8 drooping unisexual spikes, the upper 1-3 male.  
- **Female spikes** 2.4-10.4 x 0.3-0.9 cm, peduncled.  
- **Bracts** leaflike, 3.7-11 mm wide, longer than the inflorescence, sheathless.  
- **Scales** pale or copper-brown, the body short, acute, awned; the awn scabrous, longer than the perigynium.  
- **Perigynia** 1.9-4.2 x 1.1-2.3 mm, ellipsoid, biconvex, slightly inflated, not nerved, inconspicuously papillose, tapering to the apex; base tapering and short-stipitate; beak short, entire.  
- **Achenes** lenticular, glossy, strongly constricted on one or both margins; stigmas 2.

**HABITAT:** Open or forested habitats in saturated or inundated soils; wet meadows, marshes, bogs, swamps, shores, and roadside ditches. THROUGHOUT.

**NOTES:** Often confused with the similar *C. crinita*, but easily distinguished by the scabrous sheaths, ellipsoid perigynia, and acute scales. *C. gynandra* is more common in the mountains and in northern New England. The two species occasionally hybridize where they grow together.
Figure 15. 94. Carex torta; 95. Carex prasina; 96. Carex limosa; 97. Carex barrattii; 98. Carex rariflora; 99. Carex magellanica; 100. Carex paleacea (with achene); 101. Carex michelliana (with achene); 102. Carex crinita; 103. Carex gynandra.
Group 13 - Plants with separate male and female spikes, spikes cylindric and drooping; perigynia round or trigonous, distinctly beaked (beak > 0.5 mm), the tip entire or bidentate. Achenes trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheaths and leaves hairy; scales chestnut-brown</td>
<td>2.5-6.0</td>
<td>3.5-5.0 mm long ovoid, 2-nerved;</td>
<td>calcareous seeps, meadows</td>
<td>104. <em>C. castanea</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beak short, oblique</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale wider than perigynium, wrapping around the base</td>
<td>1-3</td>
<td>2.4-3.5 mm long ellipsoid, biconvex,</td>
<td>alpine, or calcareous seeps at lower</td>
<td>105. <em>C. capillaris</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>olive-brown; beak entire</td>
<td>elevations</td>
<td></td>
</tr>
<tr>
<td>Perigynia shining, 2-nerved, abruptly contracted to a long slender beak</td>
<td>2.5-5.0</td>
<td>4.0-7.0 mm long body globose, shining</td>
<td>rich woods, forested floodplains</td>
<td>106. <em>C. sprengelii</em></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Spikes sessile; perigynia 7-9 nerved</td>
<td>2-4</td>
<td>5.0-7.0 mm long ovoid, inflated,</td>
<td>calcareous wetlands, stream banks</td>
<td>107. <em>C. schweinitzii</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yellow-green; beak bidentate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pendant “bottle-brush” spikes with many crowded perigynia;</td>
<td>6-16</td>
<td>5.0-7.0 mm long reflexed</td>
<td>wetlands</td>
<td>108. <em>C. comosa</em></td>
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<tr>
<td>Pendant “bottle-brush” spikes with many crowded perigynia;</td>
<td>4-10</td>
<td>3.5-5.5 mm long reflexed</td>
<td>wetlands</td>
<td>109. <em>C. pseudocyperus</em></td>
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<td></td>
</tr>
<tr>
<td>Pendant “bottle-brush” spikes with many crowded perigynia;</td>
<td>2-10</td>
<td>5.0-7.0 mm long spreading or ascending</td>
<td>wetlands</td>
<td>110. <em>C. hystericina</em></td>
</tr>
</tbody>
</table>
### Key To Group 13

1. Sheaths and leaves hairy; beak tip oblique; scales chestnut-brown

1. Sheaths and leaves glabrous; beak various; scales pale

2. Leaves narrow (1-3 mm); scales wider than perigynia and wrapping around their base; perigynium biconvex, olive-brown with an entire beak

2. Leaves wide (2-16 mm); scales narrower than perigynia; perigynium beak bidentate

3. Perigynia not nerved (except for 2 marginal nerves), shining, abruptly contracted to a long slender beak

3. Perigynia nerved, dull, tapering at apex

4. Perigynia 7-9 nerved; upper spikes sessile; spikes loosely flowered

4. Perigynia 12-20-nerved; upper spikes on slender peduncles; spikes densely flowered

5. Perigynia with stiff curved teeth

5. Perigynia with stiff straight teeth

6. Perigynia 3.5-5.5 mm, reflexed; spikes 0.8-1.2 cm wide

6. Perigynia 5.0-7.0 mm, ascending; spikes 1.2-1.7 cm wide

| 104. | Carex castanea | SECTION HYMENOCHLAENAE |

**DISTINCTIVE FEATURES:** An uncommon slender sedge with short, chestnut-brown spikes drooping on elongate peduncles. **FIGURE 16.**

- **Leaves** 2.5-6 mm wide, soft-hairy (especially on the margins), shorter than the stems.
- **Lower sheaths** purple-brown, densely and conspicuously hairy; upper sheath fronts hyaline, pale brown, red-dotted, hairy, the apex concave.
- **Inflorescence** to 10 cm long, with 3-4 short unisexual spikes drooping on slender peduncles, the upper 1 male, the upper female spikes sessile.
- **Female spikes** 0.8-2.5 cm x 4-5 (-8) mm, peduncled, truncate at base, loosely flowered.
- **Bracts** leaflike, shorter than the inflorescence, short-sheathing.
- **Scales** shorter and as wide as the perigynia, chestnut-brown, acute and cuspidate or awned.
- **Perigynia** 3.5-5.5 x 1.3 mm, the body narrowly ovoid, obtusely triangular, green, red-dotted, smooth, few-nerved, the two marginal nerves prominent; base rounded, short-stipitate; beak slender, with a chestnut brown stripe, the tip oblique, shallowly bidentate.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Saturated calcareous or neutral soil; along margins of woods, seeps, shores, bog edges. CT, MA, ME, NH, VT.

**NOTES:** Resembles Carex capillaris with its short drooping spikes, but is considerably larger and with hairy leaves and sheaths. Occasional hybrids with C. arctata are recognized as Carex castanea var. x knieskernii. Conservation concern: CT, MA, NH (Endangered).
105. Carex capillaris Linnaeus

SECTION CHLOROSTACHYAE

DISTINCTIVE FEATURES: A rare small, slender sedge of wet alpine or calcareous habitats, with short slender female spikes drooping on long peduncles. FIGURE 16.

Leaves 1-3 mm wide, shorter than the stems.

Lowest sheaths brown; upper sheath fronts hyaline, tawny, the apex concave.

Inflorescence 2-14 cm long, with 2-5 short unisexual spikes, the upper 1 male (rarely female at the apex) and very short, the lower 2-4 female, drooping on slender penduncles.

Female spikes 9-15 x 3 mm, on slender, drooping peduncles, with 5-25 perigynia.

Bracts leaflike, shorter than the inflorescence, sheathing at base.

Scales shorter but wider than the perigynia, wrapping around their base, pale brown with broad white-hyaline margins, obtuse.

Perigynia 2.4-3.5 x 0.8-1.2 mm, ellipsoid, olive-brown; base rounded, subtipitate; beak 0.3-0.6 mm long, scabrous, apex white-hyaline.

Achenes trigonous; the style-base in fresh material enlarged; stigmas 3.

HABITAT: Saturated alpine or calcareous soils; streambanks, wet meadows, seeps. ME, NH, VT.

NOTES: Seymour (1982) recognized two varieties in our range: var. capillaris with narrower leaves (to 2.0 mm), short female spikes (to 10 mm), and short perigynia (to 3 mm), occurring only in the Alpine Gardens on Mt. Washington, and var. major Blytt, with broader leaves, longer spikes and perigynia, occurring in bogs in northern Maine. Recent treatments find no consistent distinctions and consequently do not recognize these infraspecific taxa. Conservation concern: ME, NH, VT (Threatened).

106. Carex sprengelii Dewey ex Sprengel

SECTION HYMENOCHLAENAE

DISTINCTIVE FEATURES: A medium-sized forest sedge, growing in large clumps, the spikes drooping on flexuous peduncles. Perigynia are shining with very long beaks, often bent at the base. FIGURE 16.

Leaves 2.5-5.0 mm wide, shorter than the stems.

Lower sheaths brown, decaying to form persistent long fibers; upper sheath fronts hyaline, white or pale brown, the apex concave or truncate.

Inflorescence 10-15 cm long, with 3-6 elongate unisexual spikes, the upper 1-2 male.

Female spikes 1.5-3.5 cm x 8-10 mm wide, spreading or drooping on long slender peduncles.

Bract leaflike, subequal to the inflorescence, short-sheathing.

Scales longer than the perigynium body, pale, acuminate or cuspidate.

Perigynia 4.0-7.0 x 2.0-2.5 mm, globose, pale brown when mature, shining, with 2 marginal nerves, rounded at the apex; base abruptly rounded, subsessile; beak abrupt, slender, 1.7-4.0 mm long, bent at base, the tip hyaline, minutely bidentate.

Achenes trigonous; style-base generally bent and style persistent; stigmas 3.

HABITAT: Rich soils in woods, river terraces, floodplain forest. CT, MA, ME, NH, VT.

NOTES: The shining, long-beaked perigynia are very distinctive.

107. Carex schweinitzii Dewey ex Schweinitz

SECTION VESICARIAE

DISTINCTIVE FEATURES: A rare sedge of calcareous stream banks, with elongate arching spikes, awned scales, and nerved, beaked perigynia. FIGURE 16.
Leaves 2-4 mm wide, longer than the flowering stems.

**Lower sheaths** brown; upper sheath fronts hyaline, the apex truncate.

**Inflorescence** to 20 cm long, with 4-5 spreading or arching cylindric spikes, the upper 1 male.

**Female spikes** 2.5-9.0 cm x 8-15 mm, sessile (the lowest sometimes long-peduncled), perigynia crowded, spreading.

**Bracts** leaflike, longer than the inflorescence, sheathing.

**Scales** shorter and narrower than the perigynia, with long scabrous awns.

**Perigynia** 5.0-7.0 x 1.5-2.0 mm, ovoid, inflated, yellow-green, smooth and shining, strongly 7-9 nervet; base round, short-stipitate; beak slender, 1.5-2 mm long, smooth, bidentate.

**Achenes** trigonous; the style persistent, bent; stigmas 3.

**HABITAT:** Wet soils along brooks in forests, generally in neutral to calcareous soils. CT, MA, VT.

**NOTES:** An uncommon and very localized species, distinguished by the arching more-or-less sessile spikes and awned scales. Conservation concern: CT (Endangered), MA (Endangered), RI (Historic).

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108. *Carex comosa* Boott

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** An unmistakeable common large wetland tussock sedge, with drooping spikes of many tightly-packed reflexed perigynia, the perigynia with prominent stiff curved teeth. Commonly called "bottlebrush sedge". **FIGURE 16.**

Leaves 6-16 mm wide, longer than the stems.

**Lower sheaths** brown; upper sheath fronts hyaline, the apex concave.

**Inflorescence** to 15 cm long, with 4-7 drooping cylindrical spikes, the upper 1 male.

**Female spikes** 2.5-7.5 x 1.2-1.7 cm, peduncled, truncate at base, the many crowded perigynia reflexed.

**Bracts** leaflike, longer than the inflorescence, short-sheathing.

**Scales** shorter and narrower than the perigynia, with long scabrous awn.

**Perigynia** 5.0-7.0 x 1.5 mm, narrowly ellipsoid, obtusely triangular, green, smooth, strongly many-nerved (12-20); base rounded, short-stipitate; beak short (1.2-2 mm), cylindrical, bidentate with long (1.5-2.5 mm) stiff outwardly curving teeth.

**Achenes** trigonous; style persistent; stigmas 3.

**HABITAT:** Shallow water in open habitats; marshes, lake shores, openings in swamps. THROUGHOUT.

**NOTES:** Very similar to *Carex pseudocyperus*, but distinguished by the larger size, long curving teeth on the perigynium and by the longer perigynia and wider (12-17 mm) spikes. The terminal spike sometimes has a few perigynia at the apex.

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109. *Carex pseudocyperus* Linnaeus

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** A large wetland tussock sedge with drooping spikes of many tightly-packed reflexed perigynia, the perigynia with short stiff straight teeth. **FIGURE 16.**

Leaves 4-10 mm wide, longer than the stems.

**Lower sheaths** brown; upper sheath fronts hyaline, the apex concave.

**Inflorescence** to 15 cm long, with 4-7 drooping cylindrical spikes, the upper 1 male.

**Female spikes** 2.5-7.5 x 0.8-1.2 cm, peduncled, truncate at base, the many crowded perigynia reflexed.

**Bracts** leaflike, longer than the inflorescence, short-sheathing.
Group 13

**Scales** shorter and narrower than the perigynia, pale red-brown, with long, scabrous awns.

**Perigynia** 3.5-5.5 x 1.5 mm, narrowly ellipsoid, obtusely triangular, green, smooth, strongly many-nerved (12-20); base rounded, short-stipitate; beak short (1 mm), cylindrical, bidentate with short (1 mm) stiffly erect teeth.

**Achenes** trigonous; style persistent; stigmas 3.

**HABITAT:** Shallow water, in marshes, lake shores and bogs. CT, MA, ME, NH, VT.

**NOTES:** Very similar to *Carex comosa*, but smaller and more slender. Distinguished by the short erect teeth on the perigynium, the shorter perigynia and the narrower (8 to 12 mm) spikes. Conservation concern: CT (Endangered).

**110. Carex hystericina** Muhlenberg ex Willdenow

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** A large wetland tussock sedge, with drooping spikes of many tightly-packed nerved perigynia, the perigynia with short stiff straight teeth. **FIGURE 16.**

- **Leaves** 2-10 mm wide, longer than the stems.
- **Lower sheaths** red-purple, ladder-fibrillose; upper sheath fronts hyaline, the apex concave.
- **Inflorescence** to 15 cm long, with 2-5 drooping cylindrical spikes, the upper 1 male.
- **Female spikes** 1-6 x 1.0-1.5 cm, peduncled, truncate at base, the densely packed perigynia spreading or ascending.
- **Bracts** leaflike, longer than the inflorescence, short-sheathing.
- **Scales** shorter and narrower than the perigynia, pale red-brown, with long, scabrous awns, the scale body often notched or truncate at the apex.
- **Perigynia** 5.0-7.0 x 1.5-2.0 mm, broadly ellipsoid, green, smooth, many-nerved (12-20); base rounded, short-stipitate; beak cylindrical, 2.0 mm long, bidentate with short (0.5 mm) stiff erect teeth.
- **Achenes** trigonous; style persistent; stigmas 3.

**HABITAT:** Open wet habitats in calcareous soils; marshes, lake shores, wet meadows. CT, MA, ME, NH, VT.

**NOTES:** Distinguished from the related *C. comosa* by the spreading or ascending (not reflected) perigynia and the wider perigynium body as well as by the red-purple lower sheaths. *C. hystericina* is larger than *C. pseudocyperus*, with longer, wider perigynia.
### Group 14

**Plants with separate male and female spikes, spikes erect; bracts not sheathing; perigynia glabrous, short-beaked (<0.5 mm) biconvex or flattened. Achenes lenticular.**

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants clumped; scales pale (except in alpine habitats); terminal spike often with perigynia</td>
<td>1.5-3</td>
<td>1.7-3.2 mm long ovate, nerved, green, the lower half white, stipitate</td>
<td>river or lake shores</td>
<td>111. <em>C. lenticularis</em></td>
</tr>
<tr>
<td>Plants forming dense tussocks; scales longer than the perigynia, acuminate; perigynia inflated</td>
<td>3-4</td>
<td>1.5-2.6 mm long obovoid, apex rounded, inflated, olive-green</td>
<td>wet meadows</td>
<td>112. <em>C. haydenii</em></td>
</tr>
<tr>
<td>Plants generally forming dense tussocks; scales short; lower sheaths scabrous, ladder-fibrillose</td>
<td>3-5</td>
<td>1.7-3.4 mm long ovate, tapering to the almost beakless apex; indistinctly nerved</td>
<td>wetlands</td>
<td>113. <em>C. stricta</em></td>
</tr>
<tr>
<td>Scales purple-brown with white margins; perigynia glossy, yellow-brown</td>
<td>2-4</td>
<td>3.0-4.0 mm long obovate</td>
<td>alpine</td>
<td>114. <em>C. saxatilis</em></td>
</tr>
<tr>
<td>Scales black; perigynia nerved, the upper half often black; leaves often blue-green</td>
<td>2-5</td>
<td>2.0-3.7 mm long elliptic, nerved, papilllose, stipitate</td>
<td>coastal wet meadows and swales</td>
<td>115. <em>C. nigra</em></td>
</tr>
<tr>
<td>Scales purple-brown; perigynia not nerved; bract shorter than inflorescence</td>
<td>2-4</td>
<td>1.8-3.5 mm long elliptic; beak and upper half of perigynium purple-brown</td>
<td>alpine</td>
<td>116. <em>C. bigelowii</em></td>
</tr>
<tr>
<td>Tall robust plants; lowest spike may droop; scales awned; achenes glossy, indented</td>
<td>3-5</td>
<td>1.9-3.1 mm long elliptic, firm and faintly nerved</td>
<td>coastal wetlands</td>
<td>117. <em>C. recta</em></td>
</tr>
<tr>
<td>Tall robust plants; lowest spike may droop; scales awned; achenes dull, indented</td>
<td>3-5</td>
<td>2.5-3.3 mm long elliptic, faintly nerved</td>
<td>coastal wetlands</td>
<td>118. <em>C. vacillans</em></td>
</tr>
<tr>
<td>Tall robust plants; spikes all erect; scales acute; achenes glossy; sheath apex concave; leaves often blue-green</td>
<td>5-10</td>
<td>2.6-3.2 mm long obovate, not nerved often with faint brown spots, apex rounded</td>
<td>marshes</td>
<td>119. <em>C. aquatilis</em></td>
</tr>
</tbody>
</table>

Continued on next page ➔
**Group 14**

### Diagnostic Features

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall robust plants; perigynia elliptic; achenes dull; sheath apex distinctly convex and prolonged</td>
<td>3.5-5</td>
<td>1.7-3.2 mm long elliptic few indistinct nerves apex tapering</td>
<td>river shores</td>
<td>120. <em>C. emoryi</em></td>
</tr>
</tbody>
</table>

---

**Key To Group 14**

1. Densely caespitose, forming tussocks  
   2. Plants short (less than 3 dm); lower sheaths brown or green, smooth,  
      not ladder-fibrillose ................................................................. 111. *C. lenticularis*

2. Plants 3-10 dm tall; lower sheaths red-brown or purple-brown, scabrous, ladder-fibrillose
   3. Perigynia obovate, inflated, the apex rounded; scales acuminate, longer  
      than the perigynia ........................................................................... 112. *C. haydenii*

3. Perigynia ovate, flat, the apex tapering; scales acute, shorter than the perigynia..... 113. *C. stricta*

1. Rhizomatous, plants not forming tussocks, stems single or in small clumps
   4. Scales purple-brown or black; plants generally short or medium height (< 5 dm)
      5. Perigynia glossy yellow-brown, obovate .................................... 114. *C. saxatilis*

5. Perigynia not glossy, elliptic or ovate
   6. Perigynia nerved, papillose, often black on the upper half; coastal .......... 115. *C. nigra*

6. Perigynia not nerved, smooth, beak or upper part of the perigynium  
   often dark; alpine ............................................................................... 116. *C. bigelowii*

4. Scales brown, pale or with red-brown margins; plants tall; bracts equaling or longer than inflorescence
   7. Scales awned; achenes indented on one or both margins; lowest spike sometimes drooping
      8. Achenes glossy ................................................................................ 117. *C. recta*

8. Achenes dull ..................................................................................... 118. *C. vacillans*

7. Scales not awned; achene margins not indented; all spikes erect
   9. Lower sheaths ladder-fibrillose; perigynia tapering to the apex .......... 113. *C. stricta*

9. Lower sheaths not ladder-fibrillose
   10. Perigynia not nerved, obovate, apex rounded; achene glossy;  
       sheath apex concave, not prolonged ............................................ 119. *C. aquatilis*

10. Perigynia faintly nerved, ovate or elliptic; achene dull;  
    sheath apex prolonged, convex ...................................................... 120. *C. emoryi*
111. *Carex lenticularis* Michaux

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** A slender, light-green tussock plant of river and lake shores. Spikes erect, the terminal spike often male at base, the bracts longer than the inflorescence. **FIGURE 17.**

- **Leaves** 1.5-3 mm wide, to 75 cm long (longer than stems), yellow-green.
- **Lower sheaths** brown; upper sheath fronts white, apex prolonged, fragile.
- **Inflorescence** of 4-8 erect unisexual spikes, the terminal 1 male or male only at base.
- **Lowest spike** 1.2-6.0 x 0.2-0.4 cm, acute or acuminate, short-peduncled.
- **Bract** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, pale- to purple-brown, obtuse.
- **Perigynia** 1.7-3.2 x 1.0-1.6 mm, ovate or elliptic, flattened-biconvex, stipitate, green, the lower half white, fragile, 3-7 nerves on each face; base slightly swollen; beak short (< 0.5 mm), entire, green or pale brown.
- **Achenes** lenticular, dull; stigmas 2.

**HABITAT:** Shores of lakes, ponds or rivers. Often grows on exposed or scoured shorelines, submerged at high water. MA, ME, NH, VT.

**NOTES:** A fairly common shoreline species in northern New England, less common southward. Plants are variable in height, perigynium dimensions, and scale color. Plants of alpine ponds in the White and Green Mountains tend to have darker pigmentation. Note that the distinctive nerves and swollen, stipitate base of the perigynia may not be evident in fresh material but appear when dry. New England plants are var. *lenticularis*. Conservation concern: MA (Threatened).

112. *Carex haydenii* Dewey

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** An uncommon narrow-leaved tussock sedge of wet meadows. Spikes are elongate and erect with small, rounded perigynia and long pointed scales. **FIGURE 17.**

- **Leaves** 3-4 mm wide, dark green.
- **Lower sheaths** red-brown, glabrous; upper sheath fronts hyaline, red-brown dotted, the apex concave.
- **Inflorescence** of 4-5 erect unisexual spikes, the upper 2 male.
- **Female spikes** 1-5.0 x 0.4-0.5 cm, base acute, subsessile.
- **Bract** leaflike, shorter than the inflorescence, auriculate at base.
- **Scales** longer and narrower than the perigynia, dark red-brown, acuminate.
- **Perigynia** 1.5-2.6 x 1.2-2.0 mm, ellipsoid or obovoid, biconvex, somewhat inflated, olive-green with red-brown dots, rounded at the apex; base rounded; beak short (< 0.5 mm), minutely bidentate.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Seasonally saturated or seasonally inundated wet meadows, prairies, or riverbanks. MA, ME, NH, VT.

**NOTES:** Often confused with the more common *C. stricta*, with which it occasionally grows. *C. haydenii* is vegetatively identical to *C. stricta*, but can be distinguished by more densely-flowered spikes with short, inflated, apically rounded perigynia, long acuminate scales, and by the smooth lower sheaths. This species appears to be declining in abundance in New England as a result of the loss of wet pastures and hayfields.
113. **Carex stricta** Lamarck

**SECTION PHACOCYSTIS**

**DISTINCTIVE FEATURES:** One of our most common wetland sedges, known as “tussock sedge” for its typical growth form of large tussocks of narrow leaves. The distinctive scabrous red-brown sheaths are ladder-fibrillose. The inflorescence has few (2-3) short erect spikes. Perigynia are small, flattened, and taper to the apex. **FIGURE 17.**

- **Leaves** 3-5 mm wide, dark green (blue-green when emerging in spring).
- **Lower sheaths** red-brown, scabrous, ladder-fibrillose; upper sheath fronts scabrous, hyaline, tawny or red brown, ladder-fibrillose, the apex often thickened, purple, concave.
- **Inflorescence** of 4-6 elongate, erect unisexual spikes, the upper 2-3 male.
- **Female spikes** 1.5-10.8 x 0.3-0.5 cm, base acute or acuminate, subsessile, generally with male flowers (empty scales) at the tip.
- **Bracts** leaflike, generally shorter than the inflorescence, auriculate at base.
- **Scales** shorter and narrower than the perigynia, pale to red-brown, acute.
- **Perigynia** 1.7-3.4 x 0.8-1.8 mm, ovate, flattened, often sparsely red-dotted, few-nerved, acute at the apex; base rounded; beak short (< 0.5 mm), entire, pale.
- **Achenes** lenticular; stigmas 2.

**HABITAT:** Saturated to inundated soils; marshes, bogs, wet meadows, swamps, shores, ditches. THROUGHOUT.

**NOTES:** A very common and highly variable species. Bract lengths vary from much shorter to somewhat longer than the inflorescence, and habit varies from densely caespitose to almost rhizomatous. Habit appears to be somewhat correlated with hydrology, with the more rhizomatous forms found in drier sites. Plants with longer bracts, smoother sheaths, and a more rhizomatous habit have been recognized as *C. strictior* Dewey; however, this and the typical *C. stricta* appear to be ends of a continuum of variation. More study of this complex is needed. *C. stricta* has also been confused with *C. haydenii*, *C. aquatilis*, *C. emoryi*, and non-flowering plants may be misidentified as *C. vestita* or *C. lasiocarpa* which also have ladder-fibrillose sheaths. The achenes of *C. stricta* often do not mature, and perigynia are occasionally attacked by gall-forming insects which cause the perigynia to become enlarged and glossy.

114. **Carex saxatilis** Linnaeus

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** A medium-sized sedge of high elevations, with shining yellow-brown perigynia and purple-black scales. **FIGURE 17.**

- **Leaves** 2-4 mm wide, longer than the stems, yellow-green.
- **Lower sheaths** purple-brown; upper sheath fronts hyaline, pale brown, the apex prolonged.
- **Inflorescence** to 4 cm long, with 2-3 erect spikes, the upper 1 male.
- **Female spikes** 8-25 mm x 6-9 mm, sessile (the lowest sometimes peduncled), perigynia ascending.
- **Bracts** leaflike, generally same length as the inflorescence, not sheathing, dark at the base.
- **Scales** shorter and narrower than the perigynia, purple-black with white hyaline margins, obtuse or acute.
- **Perigynia** 3.0-4.0 x 2.0 mm, obovate, biconvex, yellow-brown and often dark brown on the upper half, smooth, shining, indistinctly nerved, rounded at the apex; base round, substipitate; beak 0.5 mm long, smooth, minutely bidentate.
- **Achenes** lenticular; style persistent, bent; stigmas 2.

**HABITAT:** Wet sandy or gravelly shores, in alpine habitats. ME.
NOTES: Although variable, recent treatments have concluded that no infraspecific taxa can be recognized in *C. saxatilis*. Sterile hybrids with *C. vesicaria* have been named *C. x mainensis*, and have a more pronounced bidentate beak than *C. saxatilis*. Conservation concern: ME (Endangered).

115. *Carex nigra* (Linnaeus) Reichard  
SECTION PHACOCYSTIS

DISTINCTIVE FEATURES: A common, blue-green medium sedge of wet meadows and swales along the northern New England coast, with erect spikes, black scales, and the nervet perigynia that become purple-black when mature. **FIGURE 17.**

- **Leaves** 2-5 mm wide, generally blue-green.
- **Lower sheaths** brown; upper sheath fronts hyaline, white or pale brown, the apex truncate or concave.
- **Inflorescence** of 3-5 short, erect unisexual spikes, the upper 1-2 male.
- **Female spikes** 1.2-4.2 x 0.3-0.5 cm, truncate, subsessile.
- **Bracts** leaflike, equalling the inflorescence, sheathless, with purple-brown auricles at base.
- **Scales** shorter and narrower than the perigynia, purple-black, the apex obtuse.
- **Perigynia** 2.0-3.7 x 1.1-2.1 mm, elliptic, flattened-biconvex, tawny-brown, purple-brown blotched on upper 1/2, firm, papilllose, 3-9 nerves on each face, rounded at the apex; base slightly swollen, short-stipitate; beak short (< 0.5 mm), entire, purple-brown.
- **Achenes** lenticular, stigmas 2.

HABITAT: Saturated soils in open habitats near coast (rarely inland); wet dune swales, wet meadows, pastures, bogs, roadside ditches. THROUGHOUT (although records from CT, RI and VT are questionable).

NOTES: Plants are variable in height and in leaf width and color, but are easily recognized by the purple-black scales and perigynia. Plants with narrower, longer leaves often have a more caespitose habit and have been called var. *strictiformis* (L.H. Bailey) Fernald. *C. nigra* hybridizes with *C. aquatilis*, *C. paleacea*, and possibly *C. stricta*. Although this species is common in Maine and further north, it appears to have declined in Massachusetts due to the loss of open wet-pasture habitat.

116. *Carex bigelowii* Torrey ex Schweinitz  
SECTION PHACOCYSTIS

DISTINCTIVE FEATURES: A short rhizomatous species of open alpine summits, with narrow erect spikes and black scales. **FIGURE 17.**

- **Leaves** 2-4 mm wide.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, white or pale brown, the apex concave.
- **Inflorescence** of 3-5 short, erect unisexual spikes, the upper 1-2 male.
- **Female spikes** 0.7-3.0 x 0.3-0.4 cm, base acute or acuminate, subsessile.
- **Bracts** leaflike, shorter than the inflorescence, sheathless, with purple-brown auricles at base.
- **Scales** shorter and narrower than the perigynia, brown or purple-black, obtuse or acute.
- **Perigynia** 1.8-3.5 x 1.1-2.0 mm, elliptic, biconvex, tawny-brown and purple-brown blotched on the upper 1/2, not nerved; base rounded; beak short (< 0.5 mm), entire, pale or purple-brown.
- **Achenes** lenticular; stigmas 2.

HABITAT: Open alpine summits. ME, NH, VT.

NOTES: Abundant on summits of the higher peaks in Maine, New Hampshire and Vermont where it forms extensive turfs, as at Mt. Washington's “Bigelow Lawn”. New England plants are var. *bigelowii*.
117. **Carex recta** Boott  

**SECTION PHACOCYSTIS**  

**DISTINCTIVE FEATURES:** An uncommon large sedge of northern coastal shores and brackish marshes, with erect spikes, awned scales, and glossy constricted achenes.  

- Leaves 2.5-5.0 mm wide.  
- **Lower sheaths** red-brown.  
- **Inflorescence** of 4-8 erect unisexual spikes, the upper 1-3 male.  
- **Female spikes** 3-5.5 x 0.2-0.6 cm, erect or somewhat drooping, the base acuminate.  
- **Bracts** leaflike, 3-5 mm wide, longer than the inflorescence, sheathless.  
- **Scales** brown or red-brown, awned, the awns longer than the perigynia.  
- **Perigynia** 1.9-3.1 x 1.2-2.0 mm, elliptic, biconvex, firm, pale brown, short-papillose, inconspicuously nerved; base stipitate; beak short (<0.5 mm), cylindric or slightly conical, entire.  
- **Achenes** lenticular, glossy, strongly constricted on at least one edge; stigmas 2.  

**Habitat:** saline or brackish shores or marshes. MA, ME, NH.  

**Notes:** An infrequent stabilized hybrid of *C. paleacea x C. aquatilis*. It resembles *C. aquatilis* in the erect, narrow spikes, but has the awned scales, firm perigynia, and constricted achenes of *C. paleacea*. Conservation concern: ME (Threatened).

118. **Carex vacillans** Drejer  

**SECTION PHACOCYSTIS**  

**DISTINCTIVE FEATURES:** An uncommon sedge of northern coastal shores and brackish marshes, with erect spikes, dark awned scales, and dull constricted achenes.  

- Leaves 2.8-4 mm wide.  
- **Lowest sheaths** brown.  
- **Inflorescence** of 4-8 erect unisexual spikes, the upper 1-3 male.  
- **Female spikes** 2.8-5 x 0.5-0.7 cm, erect or somewhat drooping, the base acuminate.  
- **Bracts** leaflike, 3-5 mm wide, equal to or longer than the inflorescence, sheathless.  
- **Scales** dark purple-brown with a pale central stripe, acute or short-awned.  
- **Perigynia** 2.5-3.3 x 1.5-2.2 mm, elliptic to obovate, biconvex, pale brown, firm, papillose, inconspicuously 2-5 nerved on each face; base stipitate; beak short (0.2-0.3 mm), cylindric or slightly conical, entire.  
- **Achenes** lenticular, dull, strongly constricted on at least one face; stigmas 2.  

**Habitat:** saline or brackish shores or marshes. MA, ME.  

**Notes:** An infrequent stabilized hybrid of *C. paleacea x C. nigra*. It resembles *C. nigra* in the erect, narrow spikes and dark scales, but has the awned scales, firm perigynia, and constricted achenes of *C. paleacea*. Conservation concern: ME (Special Concern).

119. **Carex aquatilis** Wahlenberg  

**SECTION PHACOCYSTIS**  

**DISTINCTIVE FEATURES:** A tall rhizomatous sedge of marshes, with concave sheath mouths and long erect spikes of small, obovate flattened perigynia.  

- Leaves 5-10 mm wide, blue-green (at least when young).  
- **Lower sheaths** red-brown, smooth; upper sheath fronts hyaline, white or pale brown, the apex concave.
Inflorescence of 5-9 elongate, erect unisexual spikes, the upper 1-3 male.

Female spikes 4-6 x 0.4-0.7 cm, base acute or acuminate, subsessile.

Bracts leaflike, longer than the inflorescence, auriculate or short-sheathing.

Scales shorter and narrower than the perigynia, pale with red-brown margins (or, in var. *aquatilis*, dark brown), the apex acute or obtuse.

Perigynia 2.6-3.2 x 1.5-2.2 mm, obovate, flattened, pale brown, occasionally darker or spotted on the upper half, not nerved; apex rounded; base obtuse, with short stipe; beak short (<0.5 mm), entire, conical and somewhat thick.

Achenes lenticular, glossy, dark brown; stigmas 2.

HABITAT: Inundated marshes and lake shores, particularly in areas of neutral to calcareous soils. Western CT, western MA, ME, VT.

NOTES: Easily confused with *C. emoryi* based on overall morphology, but distinguished by the bracts longer than the inflorescence, the obovate perigynia that lack nerves, glossy achenes, and the sheath mouths concave and not prolonged. Plants throughout New England are generally var. *substricta* Kükenthal. However, *C. aquatilis* var. *aquatilis* occurs in northern Maine and Vermont, and is distinguished by having fewer female spikes, darker scales, and narrower (1.2-2.3 mm) more elliptical perigynia. Rhizomatous forms of *C. stricta* also resemble *C. aquatilis*, but are distinguished by the scabrous, ladder-fibrillose sheaths of *C. stricta*, and by the nerved, ovate perigynia. *C. aquatilis* is superficially similar to the introduced *C. acutiformis* Ehrhart (one historic population recorded from MA). *C. acutiformis* has larger (3.0-4.5 mm) distinctly nerved perigynia and trigonous achenes. Conservation concern: CT (Special Concern).

SYNONYM: *C. aquatilis* var. *altior* (Rydberg) Fernald.

120. *Carex emoryi* Dewey

SECTION PHACOCYSTIS

DISTINCTIVE FEATURES: A rare tall rhizomatous sedge of river shores, with prolonged convex sheath mouths and erect spikes of small indistinctly nerved perigynia. FIGURE 17.

Leaves 3.5-5 mm wide.

Lower sheaths red-brown, smooth; upper sheath fronts hyaline, white or pale brown, the apex convex and slightly prolonged, the ligule straight (not inverted V-shaped).

Inflorescence of 5-7 elongate, erect unisexual spikes, the upper 1-3 male.

Female spikes 2.5-10 x 0.3-0.5 cm, base acute or acuminate, subsessile.

Bracts leaflike, subequal to the inflorescence, auriculate or short-sheathing.

Scales shorter and narrower than the perigynia, pale brown with a green midrib, acute.

Perigynia 1.7-3.2 x 1.0-2.1 mm, elliptic, biconvex, green or tawny-brown, 3-5 indistinct nerves on each face; apex rounded; base obtuse, substipitate; beak short (<0.5 mm), entire.

Achenes lenticular, dull; stigmas 2.

HABITAT: Rivershores. CT, MA.

NOTES: Easily confused with *C. aquatilis* based on overall morphology, but distinguished by the bracts subequal to the inflorescence, the nerved perigynia, and the distinctive convex sheath apex. Also potentially confused with *C. stricta*, but *C. emoryi* has stems single (not growing in tussocks), sheaths smooth and not ladder-fibrillose, and perigynia not ovate. Conservation concern: not listed in any New England state, but known only from the lower reach of the Connecticut River (possibly historic in CT) and one recent collection from Northampton MA.
Figure 17. 111. Carex lenticularis; 112. Carex haydenii; 113. Carex stricta; 114. Carex saxatilis; 115. Carex nigra; 116. Carex bigelowii; 117. Carex recta (with achene); 118. Carex vacillans; 119. Carex aquatilis; 120. Carex emoryi.
Group 15 - Plants with separate male and female spikes, plants gen. < 50 cm tall. Scales and sheaths colored. Perigynia hairy, small (< 4.5 mm), short-beaked (to 2 mm), rounded or triangular, generally spongy at base when fresh (contracted when dry). Achenes trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Scales</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants tall, 0.3-0.8 dm; stems single, not clumped</td>
<td>purple-brown, acute or awned</td>
<td>3.0-4.0 mm long flat sides; beak 1.0 mm, purple, hyaline, entire; no spongy tissue at base</td>
<td>dry open woods and fields</td>
<td>121. <em>C. vestita</em></td>
</tr>
<tr>
<td>Bracts bladeless red sheaths; scales awned</td>
<td>red-brown, awned</td>
<td>3.5-5.0 mm long obovoid</td>
<td>rich deciduous woods</td>
<td>122. <em>C. pedunculata</em></td>
</tr>
<tr>
<td>Bracts bladeless red sheaths; scales acute</td>
<td>purple-brown, acute, margins hyaline</td>
<td>2.5-3.5 mm long obovoid</td>
<td>dry open woods or meadows</td>
<td>123. <em>C. richardsonii</em></td>
</tr>
<tr>
<td>Perigynium with conical purple beak and bulbous-based purple hairs</td>
<td>purple-brown, awns short</td>
<td>2.5-2.8 mm long obovoid, upper part purple</td>
<td>fields</td>
<td>124. <em>C. caryophyllea</em></td>
</tr>
<tr>
<td>Bracts longer than the inflorescence; lowest spike often on long basal peduncle</td>
<td>red-brown</td>
<td>2.5-3.2 mm long body ellipsoid beak 0.4-0.8 mm long</td>
<td>woods</td>
<td>125. <em>C. deflexa</em></td>
</tr>
<tr>
<td>Leaves 2.5-4.5 mm wide; flowering stems &gt; 10 cm long</td>
<td>red-brown or margins red</td>
<td>2.8-3.5 mm long body ellipsoid beak 1.0 mm long</td>
<td>dry woods</td>
<td>126. <em>C. nigromarginata</em></td>
</tr>
<tr>
<td>Leaves 1.2-2.2 mm wide; flowering stems &lt; 10 cm long</td>
<td>pale, margins red-brown</td>
<td>2.7-3.9 mm long body ellipsoid beak 0.6-1.0 mm long</td>
<td>open dry woods</td>
<td>126A. <em>C. reznicekii</em></td>
</tr>
<tr>
<td>Scales pale, short; bract longer than lowest spike; female spikes not overlapping the male spike</td>
<td>pale (rarely dark)</td>
<td>2.2-2.7 mm long body ellipsoid beak to 0.7 mm long</td>
<td>woods</td>
<td>127. <em>C. novae-angliae</em></td>
</tr>
<tr>
<td>Bract very short, scale-like; stems arching, male spike overlapped by the female spikes</td>
<td>pale</td>
<td>2.8-3.3 mm long body ellipsoid beak 0.5-1 mm long</td>
<td>dry woods, rocky slopes, meadows</td>
<td>128. <em>C. albicans</em></td>
</tr>
</tbody>
</table>

Note: body shape is above the contracted base and best seen in older or dried material – the white spongy base is inflated when fresh and all perigynia appear ellipsoid.

Continued on next page ➔
Group 15 (continued)

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scales ½ the length of the perigynia</td>
<td>purple-brown, margins wide, white-hyaline</td>
<td>body ellipsoid; beak 0.5-0.7 mm long</td>
<td>calcareous woods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scales pale or dark; leaves wide (2.5 mm); growing in distinct clumps</th>
<th>3.0-3.5 mm long</th>
<th>woods</th>
<th>130. <em>C. communis</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>purple-brown or pale</td>
<td>body globose; beak 0.5-1.0 mm long</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stems single, forming a turf, or in small clumps; scales dark; beak short (&lt;1.0 mm)</th>
<th>purple-brown</th>
<th>2.0-3.5 mm long</th>
<th>clearings, dry woods, fields</th>
<th>131. <em>C. pensylvanica</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>body globose; beak 0.5-0.7 mm long</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stems single; scales dark; beak long (&gt;1.0 mm)</th>
<th>purple-brown</th>
<th>3.0-4.5 mm long</th>
<th>dry rocky openings, fields</th>
<th>132. <em>C. lucorum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>body globose; beak 1.0-1.6 mm long</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** body shape is above the contracted base and best seen in older or dried material – the white spongy base is inflated when fresh and all perigynia appear ellipsoid.

*Carex pellita* (170) and *Carex lasiocarpa* (163) may also key to this group. These are tall plants with ovoid perigynia 3-5 mm long, with short (1 mm) bidentate beaks.

### Key To Group 15

1. Flowering stems tall (0.3-0.8 dm); stems single; perigynia with flat sides

   2. Bracts reduced to bladeless, red or purple-brown sheaths

      3. Scales awned; perigynia minutely hairy or smooth, 3.5-5.0 mm long .......... 122. *C. pedunculata*

      3. Scales acute; perigynia minutely hairy, 2.5-3.5 mm long ...................... 123. *C. richardsonii*

2. Leaflike bracts present

   4. Beak conical, purple; perigynia with stiff, purple, bulbous-based hairs .......... 124. *C. caryophyllea*

   4. Beak cylindrical, purple-tipped or green; hairs slender, translucent

   5. Flowering stem shorter than the leaves; bracts longer than inflorescence; male spike overlapped by cluster of female spikes (not on an elongate peduncle)

      6. Lowest spike on long basal peduncle; perigynia 2.5-3.2 mm long ..........125. *C. deflexa*

      6. All spikes borne at top of the stem; perigynia 2.8-3.5 mm long

      7. Leaves 1.2-2.2 mm wide; scales pale; stem < 10 cm............................ 126A. *C. reznicekii*

      7. Leaves 2.2-4.5 mm wide; scales red-brown; stem > 10 cm ..126. *C. nigromarginata*
5. Flowering stem longer than the leaves; bracts shorter than inflorescence; male spike overlapped or separate (on long peduncle)

8. Scales pale or red-margined

9. Widest leaves > 3 mm; perigynium body globose.......................... 130. *C. communis*

9. Widest leaves < 3.0 mm; perigynium body ellipsoid

10. Beak very short, less than 0.5 mm; female spikes not overlapping and concealing the male spike................................. 127. *C. novae-angliae*

10. Beak 0.5-0.1 mm long; male spike overlapped by female spikes

11. Scales equaling perigynia; perigynia 2.5-3.3 mm long;
stems arching............................................................... 128. *C. albicans*

11. Scales half of perigynium length; perigynia 3.2-4.2 mm long;
stems erect.................................................................129. *C. peckii*

8. Scales dark

12. Stems clumped (caespitose); leaves 2-5 mm wide...................... 130. *C. communis*

12. Stems single (rhizomatous); leaves 1-3 mm wide

13. Beak of perigynium 0.5-0.7 mm long............................. 131. *C. pensylvanica*

13. Beak of perigynium 1.0-1.6 mm long..................................... 132. *C. lucorum*

121.  *Carex vestita* Willdenow  

**SECTION PALUDOSAE**

**DISTINCTIVE FEATURES:** A common medium to large species of woodland or open habitats. The stems are single, with a short inflorescence of few short-cylindric female spikes, plump hairy perigynia with hyaline-tipped beaks, and purple-brown scales. **FIGURE 18.**

- **Leaves** 2-5 mm wide, shorter than the flowering stems.

- **Lower sheaths** red-purple, ladder-fibrillose; upper sheath fronts hyaline, pale brown with red dots, nerved, the apex concave.

- **Inflorescence** 3-10 cm long, with 2-4 erect unisexual spikes, the upper 1-2 male.

- **Female spikes** 6-30 x 5-8 mm.

- **Bracts** leaflike, shorter than the inflorescence, sheathless.

- **Scales** shorter and narrower than the perigynia, purple-brown, acute or awned.

- **Perigynia** 3.0-4.0 x 1.8-2 mm, ovoid, triangular in cross-section, sessile nerved, the two marginal nerves most prominent, densely short-hairy, tapering to the apex; base rounded; beak to 1.0 mm, purple-brown, entire and hyaline.

- **Achenes** trigonous; stigmas 3.

**HABITAT:** Sandy soils in open habitats, generally dry sites but occasionally at the edges of wet meadows or marshes; clearings, roadsides, meadows. CT, MA, ME, NH, RI.

**NOTES:** Conservation concern: ME (Endangered).
122. *Carex pedunculata* Muhlenberg ex Willdenow  

**SECTION CLANDESTINAE**

**DISTINCTIVE FEATURES:** A small, early-flowering woodland sedge with distinctive red lower sheaths, female spikes drooping on long basal peduncles, and with bracts reduced to long, colored bladeless sheaths.  

**FIGURE 18.**

- **Leaves** 2-3 mm wide, longer than the stems, firm, overwintering.
- **Lower sheaths** red; upper sheath fronts hyaline, the apex shallowly concave, red-brown.
- **Inflorescence** of 4-6 unisexual spikes, the upper 1 male, often a few perigynia at the base.
- **Female spikes** 6-15 x 3.5-4.0 mm, peduncled, the lowest on long basal peduncles.
- **Bracts** bladeless, long-sheathing, the sheaths often red at base.
- **Scales** wider and shorter than the perigynia, red-brown or green, truncate, ciliate, with a short awn as long as the perigynium.
- **Perigynia** 3.5-5.0 x 1.5 mm, obovoid, triangular in cross-section, green, nerveless, minutely pubescent or glabrous when mature, the lower half filled with spongy tissue when fresh, contracted and somewhat stipitate when dry; beak minute, entire, bent.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Rich calcareous woods. THROUGHOUT.

**NOTES:** The bladeless sheaths of the inflorescence bracts and red lower sheaths are distinctive, as are the red-brown scales and minutely pubescent perigynia. This species is known to be dispersed by ants, and the swollen base of the perigynium is a food body harvested by ants. Conservation concern: RI (Rare).

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123. *Carex richardsonii* R. Brown  

**SECTION CLANDESTINAE**

**DISTINCTIVE FEATURES:** A rare early-flowering sedge of dry open habitats, the bracts on the decumbent flowering stems reduced to long, purple-brown bladeless sheaths.  

**FIGURE 18.**

- **Leaves** 1.5-2.5 mm wide, longer than the stems, firm, light green.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex shallowly concave, red-brown, bladeless sheaths present on upper portions of flowering stem.
- **Inflorescence** of 3-4 erect unisexual spikes, the upper 1 male.
- **Female spikes** 10-20 x 3-4 mm, short-peduncled.
- **Bracts** bladeless, long-sheathing, the sheaths purple-brown.
- **Scales** wider and longer than the perigynia, purple-brown with hyaline margins, acute.
- **Perigynia** 2.5-3.5 x 1.5 mm, obovoid, triangular in cross-section, green, nerveless, minutely pubescent, apex rounded; base short-stipitate; beak minute, the tip oblique.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Dry, rocky woods, sandy open ground, edges of woods, or grassy openings. VT (a single locality).

**NOTES:** A rare early spring sedge, resembling *C. pedunculata* but with an entirely staminate terminal spike, and without long-peduncled basal spikes. The dark, acute (not awned) scales also distinguish these two species. Conservation concern: VT (Endangered).

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124. *Carex caryophyllea* Latourrette  

**SECTION MITRATAE**

**DISTINCTIVE FEATURES:** A small introduced sedge of old fields and pastures with short, unisexual spikes and short rounded perigynia that are hairy and red-brown on the upper half.  

**FIGURE 18.**
Group 15

Leaves 3-4 mm wide.

Lower sheaths red-brown, smooth.

Inflorescence of 3-4 crowded short-peduncled, erect, unisexual spikes.

Female spikes to 1.5 x 0.5 cm, short-cylindric.

Bract bristle-like, shorter than the inflorescence.

Scales dark brown with green midrib, cuspidate or short-awned.

Perigynia 2.5 -2.8 x 1.5 mm, obovoid, yellow-brown, red-brown on the upper half, with distinctive purple-brown bulbous-based hairs, rounded at the apex; beak conical, short, to 0.2 mm, minutely bidentate, the tip purple-brown.

Achenes trigonous, dark brown, the apex forming a raised collar around the style base (mitrate); stigmas 3.

HABITAT: Dry grassy pastures, old fields, lawns, cemeteries, road edges. Flowering and fruiting in early spring. MA, ME.

NOTES: Similar in size and general appearance to Carex pensylvanica, but distinguished by the awned scales, perigynia with thick conical beaks and stiff purple-brown hairs, and the mitrate achenes. Does not appear to have spread or become invasive, but has persisted where originally established if land use has not changed substantially, especially in old cemeteries.

125. Carex deflexa Hornemann

SECTION ACROCYSTIS

DISTINCTIVE FEATURES: An uncommon small slender sedge of open woods, generally at higher elevations. Stems slender and flexuous, some very short and hidden by the leaf bases. FIGURE 18.

Leaves 1-3 mm wide, pale green, soft, often longer than the flowering stems.

Lower sheaths red-brown.

Inflorescence to 1 cm long, with 3-4 short-cylindric or globose erect sessile unisexual spikes, the lowest borne on a long slender peduncle from the base of the stem, the male spike overlapped by the female spikes.

Female spikes 2-6 x 3 mm, the upper closely clustered, sessile.

Lowest bract leaflike, longer than the inflorescence.

Scales shorter than and as wide as the perigynia, red-brown with hyaline margins, acute or cuspidate.

Perigynia 2.5-3.2 x 1.0-1.3 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, light green, the 2 marginal nerves prominent, strongly puberulent, rounded at the apex; base spongy, contracted and stipitate when dry, to 1 mm; beak short, 0.4-0.8 mm, bidentate, the margins prominent, ciliate-serrulate.

Achenes trigonous, glossy dark brown, visible through the translucent perigynium; stigmas 3.

HABITAT: Open woods or edges, generally at higher elevations. CT, MA, ME, NH, VT.

NOTES: Plants with primarily basal female spikes are similar to the Carex umbellata complex (Group 10) but easily distinguished by the slender, nodding stems, the prominent bract, and the short female scales. New England plants are var. deflexa. Conservation concern: MA (listed as Historic, but one recent record).

126. Carex nigromarginata Schweinitz

SECTION ACROCYSTIS

DISTINCTIVE FEATURES: An uncommon small sedge of dry woods on acid soils, with red-brown sheaths, long scabrous leaves, and a short inflorescence. Forms large mats. FIGURE 18.
Leaves 2.2-4.5 mm wide, longer than the flowering stems, scabrous, with persistent overwintering blades.

Lower sheaths red-brown, ladder-fibrillose; upper sheath fronts scabrous, veined, red-tinged, truncate at the apex.

Inflorescence to 4 cm long, with 1-4 short-cylindric erect sessile unisexual spikes, all borne at the top of the stem, the male spike overlapped by the female spikes.

Female spikes 4-7 x 3-5 mm, the lowest separate, sessile.

Bracts leaflike, shorter than the inflorescence.

Scales as long or longer and as wide as the perigynia, pale with red-brown margins or uniformly dark red-brown, acute or short-cuspidate.

Perigynia 2.8-3.5 x 1.3 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, light green, softly short-pubescent, the 2 marginal nerves prominent, rounded at the apex; base spongy, contracted and stipitate when dry, to 0.8 mm; beak 1.0 mm, cylindrical, shallowly bidentate, the tip brown.

Achenes trigonous, stigmas 3.

HABITAT: Dry, acid, soils in open habitats or dry open woods. CT, MA (?), RI.

NOTES: An uncommon southern sedge, barely extending to our range. Similar in coloring and size to C. pensylvanica, but distinguished by its caespitose habit and ellipsoid (not globose) perigynia. Distinguished from C. communis by the relatively firm, scabrous leaves and short staminate spike. Resembles the recently-named C. reznicekii but C. nigromarginata has scales that are uniformly colored purplish brown or black from the midrib to the margin, longer flowering stems, spikes that are less crowded, and broader leaves. Conservation concern: CT (Special Concern).

126A. Carex reznicekii D. Werier

SECTION ACROCYSTIS

DISTINCTIVE FEATURES: A newly-described small sedge of dry woods on acid soils, with red-brown sheaths, long scabrous leaves, and a short inflorescence. Not illustrated.

Leaves 0.7-2.2 mm wide, much longer than the flowering stems.

Lower sheaths red-brown, ladder-fibrillose.

Inflorescence to 4 cm long, with 3-5 short-cylindric or globose erect sessile unisexual spikes, all borne at the top of the stem, the male spike overlapped by the female spikes.

Female spikes 3.4-7.2 mm long, the lowest separate, sessile.

Bracts leaflike, shorter than or slightly exceeding the inflorescence.

Scales as long and as wide as the perigynia, pale, sometimes with red-brown margins, acute or cuspidate.

Perigynia 2.7-3.9 x 0.9-1.3 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, light green, occasionally red-dotted, short-pubescent, the 2 marginal nerves prominent; apex tapering; base spongy, contracted and stipitate when dry, 0.5-1.0 mm; beak 0.6-1.0 mm, cylindrical, shallowly bidentate, the tip brown.

Achenes trigonous; stigmas 3.

HABITAT: Dry, acid, soils in open habitats or dry open woods. CT, MA (?), RI.

NOTES: A recently-named species, C. reznicekii resembles C. nigromarginata but is shorter (the flowering stems 10 cm or less) with pale scales and narrower leaves.
127.  *Carex novae-angliae* Schweinitz  

**SECTION ACROCYSTIS**  

**DISTINCTIVE FEATURES:** An uncommon small, slender sedge of dry rocky woods and summits, with red-brown lower sheaths, short, separate female spikes, and pale scales. **FIGURE 18.**  

- **Leaves** 1.0-1.5 mm wide, longer than the flowering stems.  
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheaths smooth, truncate at the apex.  
- **Inflorescence** 1.5-6.0 cm long, with 2-4 short-cylindric or globose erect sessile unisexual spikes, the male spike stalked and not overlapped.  
- **Female spikes** 3-6 x 3 mm, separate and not overlapping, short-peduncled.  
- **Lowest bract** leaflike, shorter than the inflorescence.  
- **Scales** shorter than and as wide as the perigynia, pale red-brown, acute or short-cuspidate.  
- **Perigynia** 2.2-2.7 x 0.8-1.0 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, light green, minutely pubescent, the 2 marginal nerves prominent; apex rounded; base spongy, contracted and stipitate when dry, to 0.8 mm; beak short, to 0.7 mm, cylindrical, shallowly bidentate.  
- **Achenes** trigonous; stigmas 3.  

**HABITAT:** Dry rocky woods, slopes, or summits. CT, MA, ME, NH, VT.  

**NOTES:** Plants are somewhat similar to *C. albicans*, but are not as tufted and have separate, not overlapping, spikes. *C. novae-angliae* can also be distinguished by the shorter (0.3-0.5 mm) beak. Conservation concern: CT (Special Concern).  

128.  *Carex albicans* Willdenow ex Sprengel  

**SECTION ACROCYSTIS**  

**DISTINCTIVE FEATURES:** A common small slender tufted (caespitose) sedge of dry woods, fields and summits, with short, overlapping spikes borne on arching stems. **FIGURE 18.**  

- **Leaves** 1.0-2.5 mm wide, longer than the weak, arching stems.  
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts smooth, truncate at the apex.  
- **Inflorescence** 1.0-3.5 cm long, with 3-4 short-cylindric or globose erect sessile unisexual spikes, the male spike generally overlapped by the female spikes.  
- **Female spikes** 2-6 x 2-3 mm, closely overlapping, rarely the lowest separate.  
- **Bracts** leaflike, the lowest bract shorter than the spike.  
- **Scales** as long as or longer than the perigynia, hyaline or pale red-brown, acute or short-cuspidate.  
- **Perigynia** 2.5-3.3 x 1.0-1.2 mm, the body ellipsoid (longer than wide) when dry, obscurely triangular in cross-section, light green, minutely pubescent, the 2 marginal nerves prominent; apex rounded; base white and spongy when fresh, contracted and stipitate when dry, to 0.5 mm; beak 0.5-1.0 mm, cylindrical, shallowly bidentate.  
- **Achenes** trigonous; stigmas 3.  

**HABITAT:** Open woods, dry rocky slopes, dry fields. THROUGHOUT.  

**NOTES:** Two intergrading varieties occur in New England. *C. albicans* var. *albicans* has a longer male spike (more than 8 mm) and longer teeth (0.2-0.3 mm) on the beak. *C. albicans* var. *emmonsii* (Dewey) Rettig has shorter male spikes (4 mm or less) and shorter teeth (0.1-0.3 mm) on the beak. Characteristics of the male scales have also been used to separate these taxa but this does not seem to hold up in our region, and the two taxa cannot be distinguished easily or reliably. Although similar in size and appearance to *C. novae-angliae*, the *C. albicans* complex is distinguished by the caespitose habit, the closely aggregated overlapping spikes, arching stems, and more densely tufted habitat. Conservation concern: RI (Rare).  

**SYNONYMS:** *C. artitecta* Mackenzie, *C. emmonsii* Dewey.
129.  *Carex peckii* Howe

**SECTION ACROCYSTIS**

**DISTINCTIVE FEATURES:** An uncommon small slender sedge of dry calcareous woods and dry rocky slopes, with narrow leaves, red-purple lower sheaths and short sessile female spikes with very short obtuse dark scales.  **FIGURE 18.**

- **Leaves** 1-3 mm wide, shorter than the stems, pale green.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, veined, truncate at the apex.
- **Inflorescence** 0.8-2.0 cm long, with 3-4 short-cylindric erect sessile unisexual spikes, the male spike overlapped by the female spikes.
- **Female spikes** 4-8 x 4 mm, closely clustered and overlapping.
- **Bracts** inconspicuous, shorter than the inflorescence.
- **Scales** ½ the length of and as wide as the perigynia, red-brown with wide hyaline margins, obtuse, sometimes short-mucronate.
- **Perigynia** 3.2-4.2 x 1.2-1.3 mm, the body ellipsoid (longer than wide), obscurely triangular in cross-section, light green, strongly puberulent, the 2 marginal nerves prominent; apex rounded; base spongy-thickened, contracted and stipitate when dry, to 0.5 mm; beak short, 0.5-0.7 mm, bidentate, hyaline at the tip, cylindrical.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Open woods and rocky slopes on limestone and calcareous substrates. MA, ME, NH, VT.

**NOTES:** *Carex deflexa* is somewhat similar in its short broad scales, but the scales are acute or cuspidate and the perigynia are < 3.2 mm long.  Occasional plants have the lower spike somewhat separate and with a more conspicuous bract.  Conservation concern: MA (Historic).

130.  *Carex communis* L.H. Bailey

**SECTION ACROCYSTIS**

**DISTINCTIVE FEATURES:** A common sedge of upland forests with narrow leaves, red-purple lower sheaths, short sessile female spikes, and male spikes to 2 cm long.  **FIGURE 18.**

- **Leaves** 2-5 mm wide, shorter than the stems, overwintering leaves present.
- **Lower sheaths** red-purple; upper sheath fronts hyaline, often red-tinged, ladder-fibrillose, concave at the apex.
- **Inflorescence** 2-4 cm long, with 3-4 short-cylindric erect sessile unisexual spikes.
- **Female spikes** 4-8 x 3-5 mm, separate, the lowest short-peduncled.
- **Lowest bract** conspicuous, approximately equal to the inflorescence, with short, rounded, scarious auricles.
- **Scales** as long and as wide as the perigynia, pale or purple-brown, acute or acuminate.
- **Perigynia** 3.0-3.5 x 1.2-2.5 mm, the body globose (when dry), obscurely triangular in cross-section, light green, puberulent, the 2 marginal nerves prominent; apex rounded; base spongy, contracted and stipitate when dry, to 0.8 mm; beak short, 0.5-1 mm, cylindrical, bidentate.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Deciduous woods, rocky slopes, occasionally clearings.  Acid or neutral soils.  **THROUGHOUT.**

**NOTES:** *Carex communis* is distinguished from *C. pensylvanica* and *C. lucorum* by the broader leaves, caespitose growth form, generally pale scales, and the short scarious auricles at the base of the bract.  It is distinguished from other members of this group by the wide leaves, the long staminate spike and separate female spikes.  New England plants are var. *communis.*
131.  *Carex pensylvanica* Lamarck  

**SECTION ACROCYSTIS**

**DISTINCTIVE FEATURES:** A very common small sedge of dry upland forests and fields, with narrow leaves, red-brown lower sheaths and short sessile female spikes with dark scales. One of the earliest species to flower in the spring. **FIGURE 18.**

- **Leaves** 1-3 mm wide, shorter than the flowering stems, yellow-green.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, often red-tinged, concave at the apex.
- **Inflorescence** 2-4 cm long, with 3-4 short-cylindric erect sessile unisexual spikes.
- **Female spikes** 3-10 x 3-5 mm, separate, the lowest sessile or short-peduncled.
- **Bracts** inconspicuous, shorter than the inflorescence, with triangular red-brown auricles.
- **Scales** as long and as wide as the perigynia, concealing the body, red-brown, acute or acuminate.
- **Perigynia** 2.0-3.5 x 1.5 mm, the body globose, obscurely triangular in cross-section, light green, puberulent, the 2 marginal nerves prominent; apex rounded; base spongy, contracted and stipitate when dry, to 0.8 mm; beak short, 0.5-0.7 mm, cylindrical, bidentate, purple at the tip.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Open dry deciduous woods, rocky slopes, fields and clearings. Acid poor soils. **THROUGHOUT.**

**NOTES:** Very similar to *C. lucorum*: distinguished by the shorter beaks, the shallowly concave sheath mouth, and the smooth upper stem. Distinguished from *C. communis* by the narrow leaves, long rhizomes, generally dark scales, and triangular auricles. Perigynia are often infected by a smut fungus and appear swollen and black.

132.  *Carex lucorum* Willdenow ex Link  

**SECTION ACROCYSTIS**

**DISTINCTIVE FEATURES:** A common small sedge of dry upland forests and fields, with narrow leaves, red-brown lower sheaths and short sessile female spikes with dark scales. **FIGURE 18.**

- **Leaves** 1-3 mm wide, shorter than the stems, yellow-green.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, often red-tinged, deeply concave at the apex.
- **Inflorescence** 2-5 cm long, with 3-4 short-cylindric erect sessile unisexual spikes.
- **Female spikes** 4-12 x 4-6 mm, separate, the lowest sessile or short-peduncled.
- **Bracts** inconspicuous, shorter than the inflorescence, with triangular red-brown auricles.
- **Scales** as long and as wide as the perigynia, concealing the body, red-brown, acute or acuminate.
- **Perigynia** 3.0-4.5 x 1.5-1.7 mm, the body globose when dry, obscurely triangular in cross-section, light green, puberulent, the 2 marginal nerves prominent; apex rounded; base spongy, contracted and stipitate when dry, to 0.8 mm; beak long, 1.0-1.6 mm, cylindrical, bidentate, purple-brown at the tip.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Open dry deciduous woods, rocky slopes, fields and clearings. Acid poor soils. **THROUGHOUT.**

**NOTES:** Very similar to *C. pensylvanica* (and therefore often overlooked) but distinguished by the longer beak on the perigynia, the deeply concave sheath mouth, and the rough upper stem. The leaves tend to be darker green and more glossy than those of *C. pensylvanica*. Sometimes considered conspecific with *C. pensylvanica*, as var. *distans* Peck. New England plants are var. *lucorum.*
**Group 16 - Plants with very wide, pleated, 3-nerved leaves (widest leaves 2-3 cm). Achenes trigonous.**

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves pleated, dark green; flowering stem leafless; bracts reduced to bladeless purple sheaths</td>
<td>Perigynia 4.0-5.0 mm long ellipsoid, triangular, sides flat, finely nerved</td>
<td>rich woods</td>
<td>133. <em>C. plantaginea</em></td>
</tr>
<tr>
<td>Leaves blue-green; bracts leaf-like (to 1.5 cm wide); scales truncate, ½ length of the perigynia</td>
<td>Perigynia 3.0-4.0 mm long obovoid, trigonous, 2 marginal nerves prominent</td>
<td>rich woods</td>
<td>134. <em>C. albursina</em></td>
</tr>
<tr>
<td>Leaves blue-green; bracts leaf-like (to 1 cm wide); scales acuminate or cuspidate</td>
<td>Perigynia 2.5-3.5 mm long triangular, the sides flat, finely nerved</td>
<td>dry woods and slopes</td>
<td>135. <em>C. platyphylla</em></td>
</tr>
</tbody>
</table>

**Key To Group 16**

1. Leaves dark green; bracts reduced to bladeless purple sheaths ................................. 133. *C. plantaginea*

1. Leaves blue-green; bracts leaflike, green
   2. Scales truncate; perigynia rounded-trigonous .......................................................... 134. *C. albursina*
   2. Scales cuspidate; perigynia flat-sided ................................................................... 135. *C. platyphylla*
DISTINCTIVE FEATURES: A common and highly distinctive early sedge of rich deciduous woods. The very broad dark green leaves form a flat basal rosette. The flowering stem is leafless and the bracts are reduced to leafless purple-brown sheaths. **FIGURE 19.**

- **Leaves** 20-30 mm wide, dark green, smooth, plicate and prominently 3-veined, overwintering.
- **Lower sheaths** red or purple-brown.
- **Inflorescence** with 3-5 short-cylindric, erect, sessile unisexual spikes, the terminal 1 male.
- **Female spikes** 1.5-2.5 cm x 4-5 mm, widely separate.
- **Bracts** bladeless sheaths, red or purple-brown.
- **Scales** narrower than the perigynia, red-brown with a green midrib, acuminate.
- **Perigynia** 4.0-5.0 x 1.8 mm, ellipsoid, triangular in cross-section, green, the 2 marginal nerves prominent and with many fine nerves on each flat face; base tapering and substipitate when dry; beak 1.0 mm, cylindrical, somewhat curved, the apex entire and hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Rich deciduous woods. CT, MA, ME, NH, VT.

**NOTES:** A highly distinctive and beautiful species, easily recognized by either vegetative or reproductive characteristics. Flowers very early in spring, when the yellow anthers contrast showily with the purple stems and sheaths.
134. *Carex albursina* E. Sheldon  

**SECTION LAXIFLORAE**

**DISTINCTIVE FEATURES:** An uncommon highly distinctive small sedge of calcareous deciduous woods with very broad blue-green leaves and broad short truncate scales. *FIGURE 19.*

- **Leaves** 12-30 mm wide, pale or blue-green, overwintering, erect and longer than the stems.
- **Lower sheaths** brown.
- **Inflorescence** with 4-5 short-cylindric erect unisexual spikes, the male spike 1, short, overlapped by the female spikes.
- **Female spikes** 6-35 x 3-4 mm, separate.
- **Bracts** leaflike, to 15 mm wide, longer than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, truncate.
- **Perigynia** 3.0-4.0 x 2.0 mm, obovoid, rounded and obscurely triangular in cross-section, yellow-green, the 2 marginal nerves prominent and with many fine nerves on each face; base spongy, contracted, stipitate; beak very short (less than 0.5 mm), cylindrical, bent, the apex entire and hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Rich deciduous woods in calcareous soils. CT, MA, NH, VT.

**NOTES:** A highly distinctive species, easily recognized by the very broad erect leaves and bracts and the leaves longer than the stems. Superficially similar to *C. platyphylla*, but distinguished by the broader and longer bracts, erect leaves, the male spike overlapped by the female spikes, and the short truncate scales. Narrow-leaved individuals of *C. albursina* are easily distinguished by the truncate scale and the male spike overlapped.

135. *Carex platyphylla* J. Carey  

**SECTION CARYANAE**

**DISTINCTIVE FEATURES:** A common and highly distinctive early sedge of rich deciduous woods. The very broad blue-green leaves form a flat basal rosette. *FIGURE 19.*

- **Leaves** 10-30 mm wide, pale blue-green, smooth, prominently 3-veined, overwintering.
- **Lower sheaths** brown.
- **Inflorescence** with short-cylindric erect unisexual spikes; male spike 1, to 2 cm long, not overlapped by female spikes.
- **Female spikes** 1.0-2.5 cm x 4-5 mm, widely separate and sparsely flowered.
- **Bracts** leaflike, 5-10 mm wide, shorter than or equaling the inflorescence.
- **Scales** shorter and narrower than the perigynia, acuminate or cuspidate.
- **Perigynia** 2.5-3.5 x 1.8 mm, ellipsoid, flat-sided and triangular in cross-section, green, the 2 marginal nerves prominent and with many fine nerves on each flat face; base tapering and substipitate in dried material, plump and pale when fresh; beak 0.5 mm, cylindrical, somewhat curved, the apex entire and hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Dry slopes in deciduous woods. THROUGHOUT.

**NOTES:** Easily recognized by vegetative or reproductive characteristics. Sometimes confused with *C. albursina*, which has rounded-trigonous perigynia, the male spike overlapped by the female spikes, truncate scales, and wide bracts (to 1.5 cm) that are longer than the inflorescence. Occasional individuals with narrower leaves may key in Group 17.
**Group 17 - Plants with separate male and female spikes, the spikes more-or-less elongate and peduncled. Bracts leaflike and sheathing. Perigynia nerved, round or triangular in cross-section, beakless. Achenes trigonous or lenticular.**

<table>
<thead>
<tr>
<th>Look For</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia fleshy, golden</td>
<td>2.0-3.0 mm long obovate</td>
<td>calcareous seeps, wet meadows</td>
<td>136. <em>C. aurea</em></td>
</tr>
<tr>
<td>Perigynia white; scales purple-brown, acute; leaves blue-green</td>
<td>2.2-4.5 mm long ellipsoid</td>
<td>calcareous wetlands</td>
<td>137. <em>C. livida</em></td>
</tr>
<tr>
<td>Sheaths hairy; perigynia shining; female spikes short, crowded</td>
<td>2.5-3.0 mm long ellipsoid, rounded at the tip, nerved</td>
<td>meadows</td>
<td>138. <em>C. pallescens</em></td>
</tr>
<tr>
<td>Leaves dark green, 2-4 mm wide; perigynium sides flat</td>
<td>2.5-3.0 mm long obovoid, dark green, nerved triangular with flat sides</td>
<td>forested uplands</td>
<td>139. <em>C. digitalis</em></td>
</tr>
<tr>
<td>Basal sheaths red-brown; female spikes densely-flowered; scales divergent, red-flecked; leaves 4-8 mm wide</td>
<td>4.5-5.1 mm long 2.0-2.6 mm wide distinctly many-nerved, round in cross-section</td>
<td>calcareous woods</td>
<td>140. <em>C. grisea</em></td>
</tr>
<tr>
<td>Leaves blue-green, 3-15 mm wide; male spike overlapped by females; female spikes densely flowered; scales awned, divergent</td>
<td>3.2-4.0 mm long 1.5-1.8 mm wide body ellipsoid, tapering at the apex, nerved</td>
<td>woods and seeps</td>
<td>141. <em>C. glaucodea</em></td>
</tr>
<tr>
<td>Leaves 4-7 mm wide; perigynia shining, distinctly nerved, yellow-green; scales divergent, equaling or longer than the perigynia, the awn 1.1-6.0 mm long</td>
<td>4.2-5.0 mm long 1.8-2.0 mm wide body ellipsoid or obovoid, tapering at the apex</td>
<td>woods</td>
<td>142. <em>C. amphibola</em></td>
</tr>
<tr>
<td>Leaves 2-4 mm wide, yellow-green; scales short-awned, divergent; lowest spike on long basal peduncle</td>
<td>2.5-3.8 mm long body ellipsoid, tapering to the apex, shining</td>
<td>meadows</td>
<td>143. <em>C. conoidea</em></td>
</tr>
</tbody>
</table>
Key to Group 17

1. Perigynia golden, fleshy .......................................................................................................... 136. *Carex* *aurea*

1. Perigynia green or white, not fleshy

2. Perigynia white; scales acute, purple-brown .................................................................... 137. *C. livida*

2. Perigynia green; scales acute or awned, pale

3. Perigynia triangular, sides flat.................................................................................... 139. *C. digitalis*

3. Perigynia trigonous or round

4. Perigynia shining; scales acute to cuspidate, shorter than perigynia  .......... 138. *C. pallescens*

4. Perigynia shining or dull; scales equaling or longer than perigynia, awned, divergent

5. Leaves blue-green ................................................................................ 141. *C. glaucodea*

5. Leaves green; perigynia shining

6. Basal sheaths red-brown ..................................................................... 140. *C. grisea*

6. Basal sheaths brown

7. Perigynia 4.2-5.0 mm long ................................................... 142. *C. amphibola*

7. Perigynia 2.5-3.8 mm long ...................................................... 143. *C. conoidea*

136.  *Carex aurea* Nuttall  

SECTION BICOLORES

DISTINCTIVE FEATURES: A small, slender sedge of seeps, with plump, fleshy golden-yellow perigynia. **FIGURE 20.**

- **Leaves** 2-4 mm wide, longer than the stems, light green.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex shallowly concave.
- **Inflorescence** of 4-5 erect unisexual spikes, the upper entirely male or with a few perigynia.
- **Female spikes** 5-20 x 3-5 mm, peduncled, the lowest on long basal peduncles, loosely flowered.
- **Bracts** leaflike, longer than the inflorescence, short-sheathing.
- **Scales** narrower and shorter than the mature perigynia (equalling the immature green perigynia), margins brown, obtuse or cuspidate.
- **Perigynia** 2.0-3.0 x 1.5 mm, obovoid, rounded or biconvex in cross-section, conspicuously papillose, whitisht-green when immature, becoming fleshy, translucent and golden-yellow when mature (drying brown), several-nerved; apex rounded; base rounded; beakless.
- **Achenes** lenticular; stigmas 2.

HABITAT: Saturated, calcareous soils in open habitats; wet meadows, stream banks, seeps, shores. THROUGHOUT.

NOTES: *C. aurea* is distinguished by the orange, fleshy mature perigynia, the generally cuspidate scales, and the terminal spike generally mostly staminate. The perigynia are unique and appear to be an adaptation for ant dispersal. The prophyll (a small tubular bract at the base of the peduncle of the female spike) also becomes fleshy and expanded. Conservation concern: NH (Threatened).
137. Carex livida (Wahlenberg) Willdenow

SECTION PANICEAE

DISTINCTIVE FEATURES: A rare, slender, gray-green sedge with short erect spikes and short purple or brown scales. FIGURE 20.

- Leaves 1-3 mm wide, shorter than or equalling the stems, strongly blue-green or gray-green.
- Lower sheaths brown; upper sheath fronts hyaline, the apex concave.
- Inflorescence 10-15 cm long, with 2-4 erect unisexual spikes, the uppermost male or occasionally female at the apex.
- Female spikes 10-20 x 5 mm, subsessile.
- Bracts leaflike, shorter than the inflorescence, sheathing.
- Scales shorter than and as wide as the perigynia, purple-brown, acute, not awned.
- Perigynia 2.2-4.5 x 1.5-2 mm, ellipsoid, rounded-triangular in cross-section, the 2 marginal nerves prominent, white, tapering to the apex; base tapering, sessile; beak minute or lacking, entire.
- Achenes trigonous; stigmas 3.

HABITAT: Calcareous fens and bogs. MA, ME, NH, VT.

NOTES: The only other sedges in New England with white perigynia are C. buxbaumii, which has long awned scales and biconvex perigynia, and C. garberi, which has obovate beakless perigynia and a female terminal spike. Conservation concern: MA (Endangered), ME (Special Concern), NH (S1), VT (Threatened).

138. Carex pallescens Linnaeus

SECTION POROCYSTIS

DISTINCTIVE FEATURES: A common medium-sized species of open habitats, trail edges, and wet meadows. The glossy beakless nerved perigynia in short crowded erect spikes are unmistakeable. FIGURE 20.

- Leaves 2-4 mm wide, equal to or longer than the flowering stems, rarely hairy.
- Lower sheaths brown; upper sheath fronts hyaline, pubescent with short hairs, the apex concave.
- Inflorescence 3-4 cm long, with 3-4 crowded erect cylindrical spikes, the uppermost male.
- Female spikes 5-20 x 5-7 mm, short-peduncled, with crowded perigynia.
- Bracts leaflike, longer than the inflorescence, sheathing.
- Scales shorter than the perigynia, ascending, hyaline with a green center, acute to cuspidate.
- Perigynia 2.5-3.0 x 1.5 mm, ellipsoid, orbicular in cross-section, shining, several-nerved, rounded at the apex; base round, sessile; beakless.
- Achenes trigonous; stigmas 3.

HABITAT: Occurs in a wide range of habitats, generally open fields, meadows, clearings, trail edges. THROUGHOUT.

NOTES: The shiny, glabrous beakless perigynia (often described as resembling miniature watermelons) and entirely male terminal spike distinguish this species from the related C. hirsutella.

139. Carex digitalis Willdenow

SECTION CAREYANAE

DISTINCTIVE FEATURES: A common slender sedge of deciduous woods. Perigynia are nerved with flat sides, and nearly beakless. FIGURE 20.

- Leaves 2-4 mm wide, dark green, longer than the flowering stems.
**Carex grisea** Wahlenberg

**SECTION GRISAEAE**

**DISTINCTIVE FEATURES:** A medium-sized forest species with broad green leaves, erect unisexual spikes, and obovoid, generally beakless, nerved perigynia. **FIGURE 20.**

- **Leaves** 4.2-8.2 mm wide, light green, shorter than the flowering stems.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, fragile and loose, sometimes red-dotted, the apex prolonged, convex.
- **Inflorescence** with 3-6 erect unisexual spikes, the male single, sessile, sometimes overlapped by the female spikes.
- **Female spikes** 5-31 x 6.5-11 mm, densely flowered, peduncled.
- **Bracts** leaflike, longer than the inflorescence, loosely sheathing.
- **Scales** shorter and narrower than the perigynia, divergent, hyaline with a green center and red-brown streaks, short-awned.
- **Perigynia** 4.5-5.1 x 2.0-2.6 mm, obovoid (rarely ellipsoid), orbicular in cross-section, yellow-green, shining, finely many-nerved, the nerves impressed, rounded at the apex; base round, sessile; beakless or with a short beak to 0.2 mm.
- **Achenes** trigonous, obovoid, sessile, more than 1.7 mm long; stigmas 3.

**HABITAT:** Calcareous or circumneutral floodplain forests, often on sandy soil. CT, MA, ME, NH, VT.

**NOTES:** Similar to *C. amphibola*, but distinguished by the colored sheaths, narrower leaves, the male spike overlapped by the female spikes, the larger obovoid perigynia, and the achenes, which are more than 1.7 mm long and lack a distinct stipe. Conservation concern: ME (Special Concern).
Lower sheaths brown; upper sheath fronts hyaline, often red-dotted, the apex prolonged, convex.

Inflorescence 10-15 cm long, with 4-5 erect unisexual spikes; the male spike single, overlapped by the female spikes.

Female spikes 10-40 x 5 mm, peduncled, densely flowered, the lowest often basal.

Bracts leaflike, longer than the inflorescence, sheathing.

Scales shorter than the perigynia, divergent, white-hyaline with a green center, obtuse or short-awned (< 1.5 mm).

Perigynia 3.2-4.0 x 1.5-1.8 mm, ellipsoid, suborbicular in cross-section, yellow-green, finely many-nerved, the nerves impressed; base round, sessile; beakless.

Achenes trigonous; stigmas 3.

HABITAT: Seasonally saturated soils, open or forested habitats. CT, MA, NH, VT.

NOTES: Similar to *C. amphibola*, but distinguished by the broader, more gray-green leaves and smaller perigynia. Conservation concern: MA, NH (Endangered).

### 142. *Carex amphibola* Steudel

**SECTION GRISEAE**

DISTINCTIVE FEATURES: A common medium-sized forest species with broad yellow-green leaves, erect unisexual spikes, and beakless nerved perigynia. **FIGURE 20.**

Leaves 4-7 mm wide, light green, shorter than the flowering stems.

Lower sheaths brown; upper sheath fronts hyaline, fragile and loose, sometimes red-dotted, the apex prolonged, convex.

Inflorescence to 25 cm long, with 4-6 erect unisexual spikes, the male single, sessile, sometimes overlapped by the female spikes.

Female spikes 7-25 x 4-7 mm, few-flowered, peduncled, rarely with the lowest spike basal.

Bracts leaflike, longer than the inflorescence, sheathing.

Scales shorter and narrower than the perigynia, divergent, hyaline with a green center, the awn 1.1-6.0 mm long.

Perigynia 4.2-5.0 x 1.8-2.0 mm, ellipsoid or rarely obovoid, suborbicular in cross-section, yellow-green, shining, finely many-nerved, the nerves impressed; base round, sessile; beakless.

Achenes trigonous, stipitate; stigmas 3.

HABITAT: Dry deciduous woods. CT, MA.

NOTES: Similar to *C. conoidea*, but distinguished by the wider leaves, larger perigynia and the male spike that is overlapped by the female spikes. Conservation concern: CT (Special Concern).

### 143. *Carex conoidea* Willdenow

**SECTION GRISEAE**

DISTINCTIVE FEATURES: A common medium-sized species of wet meadows, with erect unisexual spikes, perigynia with many impressed nerves, and divergent awned scales. **FIGURE 20.**

Leaves 2-4 mm wide, shorter than the flowering stems, yellow-green.

Lower sheaths brown; upper sheath fronts hyaline, tawny, the apex short-prolonged, truncate.

Inflorescence 3-8 cm long, with 3-5 erect unisexual spikes, the uppermost male, long-peduncled (to 3 cm).

Female spikes 10-15 x 4-5 mm, peduncled, the lowest often basal and drooping on an elongate peduncle.
**Bracts** leaflike, longer than the inflorescence, sheathing.

**Scales** shorter than the perigynia, strongly divergent, white-hyaline with a green center, short-awned.

**Perigynia** 2.5-3.8 x 1.5-1.7 mm, ellipsoid, suborbicular in cross-section, yellow-green, shining, finely many-nerved, the nerves impressed; base round, truncate, sessile, filled with spongy white tissue when fresh; beakless.

**Achenes** trigonous; stigmas 3.

**HABITAT:** Seasonally saturated soils in open habitats: wet meadows. THROUGHOUT.

**NOTES:** Similar to *C. amphibola* but distinguished by its narrower leaves, smaller perigynia, and the separate (not overlapped) male spike. *C. conoidea* generally prefers open moist habitats, while *C. amphibola* is more frequent in forests.
Group 18 - Plants with separate male and female spikes, the spikes cylindrical and peduncled. Bracts leaflike and sheathing. Perigynia round or triangular in cross-section, the beak short (less than 2.0 mm). Achenes trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Scales</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves involute, narrow; female spikes on elongate peduncles; bracts reduced to bladeless sheaths</td>
<td>pale, obtuse</td>
<td>1.5-2 mm long ovobovoid, glossy, olive-brown or green</td>
<td>dry calcareous woods</td>
<td>144. <em>C. eburnea</em></td>
</tr>
<tr>
<td>Leaves involute, narrow (2 mm); perigynia large, shining</td>
<td>pale, acute</td>
<td>4.0-7.0 mm long ovoid, inflated, shining, strongly nerved</td>
<td>acid peatlands</td>
<td>145. <em>C. oligosperma</em></td>
</tr>
</tbody>
</table>

**Red-brown or purple-brown lower sheaths** and/or scales red-brown or purple brown

<table>
<thead>
<tr>
<th>Look For</th>
<th>Scales</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves blue-green; beak cylindric, to 1 mm long, tip oblique, purple-brown</td>
<td>acute</td>
<td>3.5-5.0 mm long ovobovoid, olive-green or brown, 2-nerved</td>
<td>calcareous wetlands</td>
<td>149. <em>C. vaginata</em></td>
</tr>
<tr>
<td>Leaves blue-green; perigynia 2-nerved, the beak minute, purple-brown</td>
<td>acute</td>
<td>3-5 mm long ellipsoid, yellow-green, often purple-brown, 2-nerved; beak less than 0.5 mm, tip purple-brown</td>
<td>meadows</td>
<td>150. <em>C. panicosa</em></td>
</tr>
<tr>
<td>Beak minute, bent; perigynia crowded, overlapping</td>
<td>acute or cuspidate</td>
<td>2.8-3.0 mm long ovobid, obscurely nerved, rounded at apex; beak bent, 0.2-0.8 mm long</td>
<td>rich deciduous woods</td>
<td>151. <em>C. gracilescens</em></td>
</tr>
<tr>
<td>Leaves firm; perigynia loosely overlapping, not crowded</td>
<td>acute or cuspidate</td>
<td>2.5-3.5 mm long ovobovoid, obscurely triangular; beak bent, 0.1-0.3 mm long</td>
<td>woods</td>
<td>152. <em>C. ormostachya</em></td>
</tr>
<tr>
<td>Leaves gray-green; upper sheath fronts red; female spikes crowded, densely flowered</td>
<td>obtuse or short-awned</td>
<td>2.3-5.0 mm long ovobovoid, green, few-nerved</td>
<td>calcareous woods</td>
<td>153. <em>C. meadii</em></td>
</tr>
<tr>
<td>Leaves gray-green; basal sheaths purple-brown, upper sheath fronts red; females spikes loosely flowered</td>
<td>obtuse or short-awned</td>
<td>2.5-4 mm long ovobovoid, dark green, few-nerved</td>
<td>calcareous meadows, fens</td>
<td>154. <em>C. tetanica</em></td>
</tr>
<tr>
<td>Female spike single, distant from the 1-2 male spikes; lower sheaths ladder-fibrillose</td>
<td>acute or awned</td>
<td>4.0-6.0 mm long ovoid, nerved, sometimes short-hairy or scabrous; beak bidentate</td>
<td>coastal plain fens</td>
<td>168. <em>C. striata</em></td>
</tr>
</tbody>
</table>

Continued on next page ➔
### Group 18 (continued)

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basal sheaths red-brown; perigynia tapering to both ends; awn longer than the body of the scale</td>
<td>pale, awned, divergent&lt;br&gt;3.5-4.7 mm long obovoid, many-nerved, appearing corrugated when dry</td>
<td>155. <em>C. oligocarpa</em></td>
</tr>
<tr>
<td><strong>Lower sheaths brown, not red</strong></td>
<td><strong>Scales hyaline, pale brown or flecked</strong></td>
<td></td>
</tr>
<tr>
<td>Perigynia inflated, very crowded, more than 40 per spike</td>
<td>divergent, acute or short-awned&lt;br&gt;2.5-4 mm long obovoid, olive-green, nerved</td>
<td>156. <em>C. granularis</em></td>
</tr>
<tr>
<td>Perigynia obovoid, crowded, scabrous, beaks long, curved</td>
<td>ciliate, awned&lt;br&gt;3.2-4.4 mm long dark green, scabrous, nerved; beak 1.5-1.8 mm long, curved, oblique</td>
<td>167. <em>C. scabrata</em></td>
</tr>
<tr>
<td>Sheaths and bract hispid, perigynia dull</td>
<td>awned&lt;br&gt;4.5-6.0 mm long obovoid, tapering to the tip</td>
<td>146. <em>C. hitchcockiana</em></td>
</tr>
<tr>
<td>Leaves blue-green, to 3 cm wide</td>
<td>acute or cuspidate&lt;br&gt;2.5-3.5 mm long triangular with flat sides</td>
<td>135. <em>C. platyphylla</em></td>
</tr>
<tr>
<td>Leaves blue-green or green, 5-12 mm wide; lowest female spike drooping on slender stalk</td>
<td>acute or cuspidate&lt;br&gt;3.0-4.0 mm long triangular with flat sides</td>
<td>147. <em>C. laxiculmis</em></td>
</tr>
<tr>
<td>Leaves dark green, 2-4 mm wide</td>
<td>pale, acute or cuspidate&lt;br&gt;2.5-3.0 mm long obovoid, dark green, nerved, triangular with flat sides</td>
<td>139. <em>C. digitalis</em></td>
</tr>
<tr>
<td>Flowering stems much shorter than leaves; leaves blue-green, 4-9 mm wide</td>
<td>pale, blunt, cuspidate&lt;br&gt;2.5-2.5 mm long obovoid, many-nerved</td>
<td>148. <em>C. abscondita</em></td>
</tr>
<tr>
<td>Leaves blue-green, 7-12 mm wide; perigynia ascending; beak long and straight</td>
<td>acute or cuspidate&lt;br&gt;2-3.4 mm long ellipsoid or obovoid; beak straight or slightly curved, 0.6-1.7 mm long</td>
<td>157. <em>C. striatulata</em></td>
</tr>
<tr>
<td>Leaves 12-14 mm wide; beak long, curved; female spikes loosely flowered, perigynia spreading</td>
<td>acute or cuspidate&lt;br&gt;3.5-5.5 mm long ellipsoid or obovoid; beak curved, 0.5-1.7 mm long</td>
<td>158. <em>C. styloflexa</em></td>
</tr>
</tbody>
</table>

Continued on next page ➔
### Diagnostic Features

<table>
<thead>
<tr>
<th>Look For</th>
<th>Scales</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female spikes densely flowered; leaves 1-4 mm wide, firm, blue-green;</td>
<td>acute</td>
<td>3.0-3.5 mm long, ovoid or ellipsoid, red-dotted,</td>
<td>calcareous</td>
<td>159. <em>C. crawei</em></td>
</tr>
<tr>
<td>male spike stalked, not overlapped</td>
<td></td>
<td>nerved</td>
<td>wetlands</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acute or</td>
<td>3.0-4.0 mm long ellipsoid or obovoid, finely</td>
<td>woods</td>
<td>160. <em>C. bland</em></td>
</tr>
<tr>
<td></td>
<td>cuspidate</td>
<td>many-nerved; beak short, bent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female spikes densely flowered; leaves 4-10 mm wide; male spike short,</td>
<td></td>
<td>3.0-4.5 mm long ellipsoid or obovoid, finely</td>
<td>woods</td>
<td>161. <em>C. laxiflora</em></td>
</tr>
<tr>
<td>overlapped by female spikes</td>
<td></td>
<td>many-nerved; beak straight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaves blue-green or green; perigynia not overlapping; male spike</td>
<td>acute or</td>
<td>3.0-4.5 mm long ellipsoid or obovoid, many-nerved;</td>
<td>woods</td>
<td>162. <em>C. lept</em></td>
</tr>
<tr>
<td>stalked, not overlapped by female spikes</td>
<td>cuspidate</td>
<td>beak straight</td>
<td></td>
<td><em>onervia</em></td>
</tr>
<tr>
<td>Female spikes loosely flowered; male spike overlapped by female spikes</td>
<td>acute or</td>
<td>3.5-4.5 mm long ellipsoid or obovoid,</td>
<td>woods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cuspidate</td>
<td>obscurely triangular, 2-nerved; beak straight</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key To Group 18

1. Leaves involute, 0.5-2 mm wide
   2. Perigynia 1.5-2.0 mm long; female spikes on long peduncles, overtopping the male spike ... 144. *C. eburnea*
   3. Leaves, sheaths and bracts with short hairs or hispid .......................... 146. *C. hitchcockiana*
   4. Perigynia triangular in cross-section, with flat, nerved sides
      5. Leaves very wide (2 cm), blue-green .................................................. 135. *C. platyphylla*
      6. Leaves 4-12 mm wide, blue-green ...................................................... 147. *C. laxiculmis*
      1. Leaves not involute, 2 mm wide or wider
      2. Perigynia 4.0-7.0 mm long; female spikes on short peduncles .................... 145. *C. oligosperma*
      3. Leaves, sheaths and bracts with short hairs or hispid
      4. Perigynia trigonous or round
      5. Leaves less than 15 mm wide
      6. Leaves 2-4 mm wide, dark green ...................................................... 139. *C. digitalis*
      4. Perigynia trigonous or round
      7. Stems much shorter than the leaves; perigynia obovoid .......................... 148. *C. abscondita*
      7. Stems as long or longer than the leaves

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134
8. Scales dark purple-brown or red-brown; perigynia 2-nerved
9. Leaves blue-green, basal sheaths brown
   10. Perigynia olive-green, obovoid; beak 1 mm .........................149. *C. vaginata*
   10. Perigynia yellow-green, ellipsoid; beak minute (<0.5 mm), purple .... 150. *C. panicea*
9. Leaves green, basal sheaths red-brown or purple-brown; perigynia 2-many nerved
   11. Perigynia indistinctly several-nerved, rounded at the apex to a short, bent beak
      12. Perigynia crowded; beak 0.2-0.8 mm ..............................151. *C. gracilescens*
      12. Perigynia not densely overlapping; beak 0.1-0.3 mm............ 152. *C. ormostachya*
9. Leaves green, basal sheaths red-brown or purple-brown; perigynia 2-many nerved
   11. Perigynia with two distinct marginal nerves, sides few-nerved
      13. Perigynia densely packed, divergent ..................................153. *C. meadii*
      13. Perigynia ascending, not densely crowded ....................... 154. *C. tetanica*
8. Scales pale or merely red-flecked
   14. Lower sheaths red-brown; perigynia tapering to both ends .......... 155. *C. oligocarpa*
   14. Lower sheaths brown; perigynia rounded or tapering
      15. Perigynia many, typically more than 40 on the lowest spike, inflated,
          obovoid, densely packed .................................................156. *C. granularis*
      15. Perigynia otherwise
         16. Perigynia with straight or curved beak to 1.7 mm long
            17. Perigynia spreading, 2.0-3.4 mm long .........................157. *C. striatula*
            17. Perigynia ascending, 3.5-5.0 mm long ...................... 158. *C. styloflexa*
         16. Beak 1 mm long or less, straight or curved
            18. Perigynia overlapping, the female spike densely flowered
               19. Perigynia red-dotted; female spikes not overlapping the male
                   spike .................................................................159. *C. crawei*
               19. Perigynia not dotted; female spikes overlapping ............ 160. *C. blanda*
            18. Perigynia not tightly overlapping, female spikes loosely flowered
               20. Perigynia several nerved; female spikes not overlapping the
                   male spike ................................................................161. *C. laxiflora*
               20. Perigynia 2-nerved; upper female spikes overlapping the male
                   spike .........................................................................162. *C. leptonervia*

144.  *Carex eburnea* Boott

**SECTION ALBAE**

**DISTINCTIVE FEATURES:** A small, densely tufted sedge with hair-like capillary leaves. The inflorescence of short female spikes on elongate, erect peduncles resembles species of *Luzula*.  

**FIGURE 19.**

Leaves to 0.5 mm wide, involute, shorter than the stems.  
Lower sheaths brown; upper sheath fronts hyaline, pale brown, loose and truncate at the apex.
**Carex oligosperma** Michaux

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** An uncommon large rhizomatous slender sedge of peatlands with very narrow involute leaves and short, few-flowered female spikes. The large perigynia are inflated and nerved, with very short (<0.5 mm) beaks. **FIGURE 20.**

- **Leaves** 1-2 mm wide, light green, involute.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex truncate.
- **Inflorescence** 6-15 cm long, with 2-4 erect spikes, the uppermost male.
- **Female spikes** 1-2 cm x 7-9 mm, sessile, distinctly separate, the perigynia ascending or spreading.
- **Bracts** leaflike, as long as the inflorescence, not sheathing.
- **Scales** shorter than the perigynia, brown, acute or cuspidate.
- **Perigynia** 4.0-7.0 x 2.5-3.0 mm, ovoid, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, short-stipitate; beak short, 0.5 mm long, often brown, smooth, the apex bidentate.
- **Achenes** trigonous; the style persistent, bent; stigmas 3.

**HABITAT:** Saturated peats, in fens, bogs, shallow water, and acid bog woods. CT, ME, NH, VT.

**NOTES:** An uncommon species. Vegetative stems and leaves resemble *C. lasiocarpa* but the inflated shining perigynia distinguish *C. oligosperma*. Conservation concern: CT (Special Concern), MA (Endangered).

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146. **Carex hitchcockiana** Dewey

**SECTION GRISEAE**

**DISTINCTIVE FEATURES:** A rare sedge of rich calcareous woods, with hispid or hairy sheaths. **FIGURE 20.**

- **Leaves** 3-7 mm wide, longer than the flowering stems.
- **Lower sheaths** cinnamon-brown; upper sheath fronts hispidulous or hairy, the apex prolonged, convex, brown; the ligule ciliate or absent.
- **Inflorescence** 5-15 cm long, with 4-5 erect unisexual spikes, the upper 1 male.
- **Female spikes** 10-24 x 5 mm, peduncled.
Braacts leaflike, longer than the inflorescence, rough with short stiff hairs, sheathing.

Scales shorter than the perigynia, divergent, hyaline with a green center, short-awned.

Perigynia 4.5-6.0 x 2.5 mm, obovoid, obtusely triangular in cross-section, yellow-green, finely many-nerved, the nerves impressed; apex tapering; base tapering, filled with spongy tissue; beak short, to 1 mm, straight or slightly bent, the tip entire or minutely bidentate, hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Rich deciduous woods, in areas of calcareous soils. CT, MA, VT.

NOTES: Similar to Carex oligocarpa, but distinguished by the wider leaves, hispid cinnamon-brown sheaths, yellow-green perigynia, and hispidulous braacts. Conservation concern: CT, MA (Special Concern).

147. Carex laxiculmis Schweinitz

DISTINCTIVE FEATURES: A common broad-leaved sedge of rich deciduous woods, with flat-sided nerved perigynia and blue-green leaves when young. FIGURE 20.

Leaves 4-12 mm wide, light green or blue-green, longer than the flowering stems, lax and spreading.

Lower sheaths brown; upper sheath fronts hyaline, cinnamon-brown tinged, red-dotted, the apex loose, deeply concave.

Inflorescence with 3-5 short-cylindric erect unisexual spikes; the male spike 1, short, not overlapped by the female spikes.

Female spikes 0.5-2 cm x 4-5 mm, separate, peduncled, the lowest spike on a slender flexuous basal peduncle, a few male flowers present at the base of the female spike and visible as empty scales when mature.

Bracts leaflike, shorter than the inflorescence, long-sheathing.

Scales shorter and narrower than the perigynia, white-hyaline with a green center, acute or cuspidate.

Perigynia 3.0-4.0 x 1.8-2.3 mm, ellipsoid, triangular in cross-section with flat sides, the 2 marginal nerves prominent and with many fine nerves on each face; base tapering, substipitate; beak short, 0.5 mm, the tip entire and hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Deciduous woods, in clay or neutral to calcareous soils. THROUGHOUT.

NOTES: Similar to Carex laxiflora and other taxa in this group, but distinguished by the blue-green leaves, basal spikes on drooping peduncles, empty scales at the base of the female spikes, flat-sided perigynia with a straight beak, and the stalked male spike. Our plants are var. laxiculmis. Conservation concern: ME (Endangered).

148. Carex abscondita Mackenzie

DISTINCTIVE FEATURES: A rare small broad-leaved sedge of deciduous woods, the flowering stems much shorter than and hidden by the leaves. FIGURE 20.

Leaves 4-9 mm wide, light green or blue-green, much longer than the flowering stems.

Lower sheaths brown; upper sheaths hyaline.

Inflorescence with 2-5 short-cylindric erect unisexual spikes; male spike 1, short, overlapped by the female spikes.

Female spikes 0.5-2 cm x 2.5-3.5 mm, separate, peduncled, the lowest spike on a slender flexuous basal peduncle.

Bracts leaflike, much longer than the inflorescence, long-sheathing.
Scales shorter and narrower than the perigynia, white-hyaline with a green center, obtuse or cuspidate.

Perigynia 2.5-3.5 x 1.5 mm, obovoid, obscurely triangular in cross-section, yellow-green, the 2 marginal nerves prominent and with many fine nerves on each face; base tapering, substipitate; beak short, less than 0.5 mm, straight or bent, the tip entire and hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Deciduous woods. CT, MA, RI.

NOTES: Similar to *C. laxiculmis*, but distinguished by the very short stems and very short-beaked, trigonous (not flat-sided) perigynia that are distinctly veined even when fresh.

149. **Carex vaginata** Tausch

**SECTION PANICEAE**

DISTINCTIVE FEATURES: A rare sedge of forested calcareous wetlands. The few-nerved perigynia are plump with short cylindrical beaks. The leaflike bracts are shorter than the female spikes.

**FIGURE 21.**

Leaves 1.5-5 mm wide, shorter than the stems, blue-green when young, soft.

Lower sheaths brown; upper sheath fronts hyaline, the apex concave.

Inflorescence 10-25 cm long, with 2-4 erect unisexual spikes, the upper 1-3 male and distinctly separate from the female spikes.

Female spikes 8-20 x 3-5 mm, peduncled, the lowest often drooping

Bracts leaflike, shorter than the spikes, loosely sheathing.

Scales shorter than and as wide as the perigynia, purple-brown, acute.

Perigynia 3.5-5.0 x 1.5-2.0 mm, obovoid, round in cross-section, the 2 marginal nerves prominent, olive-green, brown at maturity, rounded at the apex; base rounded, sessile; beak short, cylindric, to 1 mm, the apex hyaline, slightly bidentate, purple or brown.

Achenes trigonous; stigmas 3.

HABITAT: Calcareous bogs or northern white cedar (*Thuja*) swamps. ME, NH, VT.

NOTES: A northern species, *C. vaginata* is most similar to *C. polymorpha*, although the ranges of these species do not overlap. *C. vaginata* can easily be distinguished from *C. polymorpha* by the very short (<1 mm) beaks, brown lower sheaths and the very short bracts. Conservation concern: ME (Special Concern), VT (Endangered).

150. **Carex panicea** Linnaeus

**SECTION PANICEAE**

DISTINCTIVE FEATURES: An uncommon introduced sedge with blue-green leaves, purple-brown female scales, and plump, minutely-beaked perigynia that are often purple-brown on the upper half.

**FIGURE 21.**

Leaves 2-5 mm wide, shorter than the flowering stems, blue-green.

Lower sheaths light brown; upper sheath fronts hyaline, the apex concave.

Inflorescence 10-15 cm long, with 2-4 erect unisexual spikes, the uppermost male.

Female spikes 10-30 x 5-7 mm, peduncled, the lowest often on a long slender peduncle from near the base of the stem.

Bracts leaflike, shorter than the inflorescence, sheathing.

Scales shorter than and as wide as the perigynia, purple-brown, acute.
Perigynia 3.0-5.0 x 1.75-2.5 mm, ellipsoid, round in cross-section, the 2 marginal nerves prominent, yellow-green and often purple-brown on the upper half, rounded at the apex; base rounded, sessile; beak minute, entire, purple-brown.

Achenes trigonous; stigmas 3.

HABITAT: Pasture, field, and meadows. CT, MA, ME, NH, RI.

NOTES: This is a relatively distinctive species of old fields and pastures, introduced from Europe.

151. Carex gracilescens Steudel

SECTION LAXIFLORAE

DISTINCTIVE FEATURES: An uncommon small sedge of deciduous woods, with purple-brown lower sheaths and stiff, firm leaves. FIGURE 21.

Leaves 3-8 mm wide, light green, firm, shorter than the flowering stems.

Lower sheaths purple-brown; upper sheath fronts hyaline, the apex loose, truncate.

Inflorescence with 3-5 short-cylindric erect unisexual spikes; uppermost spike male, short, not overlapped by the female spikes.

Female spikes 1-3 cm x 3-4 mm, separate, peduncled, the perigynia closely overlapping.

Bracts leaflike, shorter than the inflorescence, long-sheathing.

Scales shorter and narrower than the perigynia, ascending, hyaline or red-brown tinged with a green center, acute or cuspidate.

Perigynia 2.5-3.0 x 1.5-1.8 mm, obovoid, obscurely triangular in cross-section, brownish-green, the 2 marginal nerves prominent and with many fine nerves on each face; base spongy, contracted and stipitate when dry; beak short, 0.5-1 mm, strongly bent, the tip entire and hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Rich decidous woods. CT, MA, NH.

NOTES: The colored basal sheaths and the male spike elevated above the female spikes distinguish this species from C. blanda. C. ormostachya also has colored sheaths, but wider, softer leaves. Conservation concern: MA (Endangered), NH (S2).

152. Carex ormostachya Wiegand

SECTION LAXIFLORAE

DISTINCTIVE FEATURES: An uncommon, small, broad-leaved sedge of deciduous woods, with purple-brown lower sheaths. FIGURE 21.

Leaves 3.5-12 mm wide, light green, firm, longer than the flowering stems.

Lower sheaths purple-brown; upper sheath fronts hyaline, the apex loose, prolonged.

Inflorescence with 4-6 short-cylindric erect unisexual spikes; the male spike single, short, stalked and not overlapped by the female spikes.

Female spikes 1-4 cm x 3-4 mm, separate, loosely flowered.

Bracts leaflike, longer than the inflorescence, long-sheathing.

Scales shorter and narrower than the perigynia, hyaline or red-brown tinged with a green center, acute or cuspidate.

Perigynia 2.2-3.5 x 1.5-1.8 mm, obovoid, trigonous in cross-section, brownish-green, the 2 marginal nerves prominent and with many fine nerves on each face; base spongy, contracted and stipitate when dry; beak very short, bent, the tip entire and hyaline.

Achenes trigonous; stigmas 3.
HABITAT: Dry sandy or rocky soils, in rich deciduous woods or clearings. CT, MA, ME, NH, VT.

NOTES: The colored basal sheaths, colored scales and the male spike elevated above the female spikes distinguish this species from *C. blanda*, which has similar perigynia. *C. ormostachya* is similar to *C. gracilesens* but has more short-beaked perigynia and more loosely flowered spikes.

153. *Carex meadii* Dewey

DISTINCTIVE FEATURES: An uncommon slender sedge of calcareous soils, with dark scales, short densely-flowered spikes, and purple-brown lower sheaths. Leaves are often gray-green. FIGURE 21.

- **Leaves**: 2-5 mm wide, shorter than the stem, gray-green, the margins often involute.
- **Lower sheaths**: purple-brown; upper sheath fronts hyaline and faintly nerved, often red, the apex concave.
- **Inflorescence**: 5-10 cm long, with 2-4 erect unisexual spikes, the uppermost male.
- **Female spikes**: 10-40 x 3.5-5.0 mm, the perigynia tightly packed in rows, attenuate at base, peduncled.
- **Bracts**: leaflike, shorter than the inflorescence, sheathing.
- **Scales**: shorter and as wide as the perigynia, divergent, purple-brown or brown-margined (hyaline with age), obtuse or short-awned.
- **Perigynia**: 2.3-5.0 x 1.3-2.5 mm, obovoid, rounded-triangular in cross-section, the 2 marginal nerves prominent, the sides strongly few-nerved when dry, minutely papillose, yellow-green to brown; base tapering, sessile; beak minute, entire, sometimes bent, the tip hyaline or purple.
- **Achenes**: trigonous; stigmas 3.

HABITAT: Calcareous meadows, fens, bogs, and open woods. RI.

NOTES: There is some doubt as to whether this species actually occurs in New England. *C. meadii* may be distinguished from *C. tetanica* by the gray-green leaves, thicker female spikes with tightly packed perigynia, and perigynia with more distinctly curved beaks.

154. *Carex tetanica* Schkuhr

DISTINCTIVE FEATURES: An uncommon slender sedge of calcareous substrates, with dark scales, few-flowered female spikes, and purple-brown lower sheaths. FIGURE 21.

- **Leaves**: 2-4.5 mm wide, shorter than the flowering stems, dark green.
- **Lower sheaths**: brown or purple-brown; upper sheath fronts hyaline, often red, the apex concave.
- **Inflorescence**: 5-10 cm long, with 2-4 erect unisexual spikes, the uppermost male and separated from the female spikes by 5-10 cm.
- **Female spikes**: 10-40 x 3.5-5 mm, loosely flowering, the perigynia ascending; attenuate at base, peduncled.
- **Bracts**: leaflike, shorter than the inflorescence, sheathing.
- **Scales**: shorter than and as wide as the perigynia, purple-brown, acute or short-awned.
- **Perigynia**: 2.5-4.0 x 1.5-2.25 mm, obovoid, rounded-triangular in cross-section, dark green, the 2 marginal nerves prominent, the sides strongly few-nerved when dry; base tapering, sessile; beak minute, entire, the tip hyaline or purple.
- **Achenes**: trigonous; stigmas 3.

HABITAT: Calcareous meadows, fens, bogs and open woods. CT, MA.

NOTES: *C. tetanica* is difficult to distinguish from *C. meadii*, except by the more loosely-flowered female spikes. Conservation concern: MA (Special Concern).
155.  *Carex oligocarpa* Willdenow  

**SECTION GRISEAE**

**DISTINCTIVE FEATURES:** A rare sedge of rich calcareous woods, with many-nerved, straight-beaked perigynia and long-awned scales.  **FIGURE 21.**

- **Leaves** 2-4.5 mm wide (rarely to 8 mm), longer than the flowering stems.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, the apex prolonged, convex.
- **Inflorescence** with 3-5 erect unisexual spikes, the uppermost male.
- **Female spikes** 2-4, 5-20 x 5 mm, peduncled.
- **Bracts** leaflike, longer than the inflorescence, sheathing.
- **Scales** shorter than the perigynia, divergent, white-hyaline with a green center, awned, the awn longer than the body.
- **Perigynia** 3.5-4.0 x 2.0 mm, ellipsoid or obovoid, obtusely triangular in cross-section, finely many-nerved, the nerves impressed; apex tapering; base tapering, filled with spongy tissue; beak short, to 1 mm, straight, the tip entire, hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Rich deciduous woods. CT, VT (MA historic).

**NOTES:** Similar to *C. hitchcockiana*, but the sheaths of *C. hitchcockiana* are scabrous or hispidulous and brown, and the awn is shorter than the body of the scale. Conservation concern: CT (Special Concern), MA (Historic), VT (Endangered).

156.  *Carex granularis* Muhlenberg ex Willdenow  

**SECTION GRANULARES**

**DISTINCTIVE FEATURES:** A common medium-sized sedge of wet habitats and calcareous or neutral soils, with tightly packed, nerved, minutely-beaked olive-green perigynia. The nerves are visible even in very fresh material.  **FIGURE 21.**

- **Leaves** 4-10 mm wide, longer than the flowering stems, soft, light green; overwintering leaves firm, dark green.
- **Lower sheaths** brown; upper sheath fronts hyaline, pale brown, loose, the apex loose, prolonged, deeply concave.
- **Inflorescence** of 3-6 erect unisexual spikes, the male single, clustered with the upper female spikes.
- **Female spikes** 10-30 x 5-6 mm, the > 40 perigynia tightly packed, the lowest spikes on long peduncles.
- **Bracts** leaflike, much longer than the inflorescence, sheathing at base.
- **Scales** shorter and narrower than the perigynia, divergent, pale brown, acute or short-awned.
- **Perigynia** 2.5-4.0 x 2.0-2.5 mm, obovoid, inflated and round in cross-section, olive-green, nerved; base rounded, sessile; beak minute, straight or somewhat curved, the tip entire, hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Seasonally saturated soils, in wet meadows or woods, generally in calcareous or neutral soils. CT, MA, ME, NH, VT.

**NOTES:** Several authors recognize plants of this species with smaller, narrower perigynia (2-2.5 mm x 1.5 mm) and more awned scales as a distinct taxon known as *C. haleana* Olney or *C. granularis* var. *haleana*. However, this putative taxon has the same distribution as *C. granularis*, and cannot reliably be distinguished. Conservation concern: NH (Endangered).
157. *Carex striatula* Michaux  
**SECTION LAXIFLORAE**

**DISTINCTIVE FEATURES:** An uncommon, small, blue-green, broad-leaved sedge of deciduous woods.  
**FIGURE 21.**

- **Leaves** 7-12 mm wide, blue-green, firm, shorter than the flowering stems; overwintering leaves present.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex loose, truncate.
- **Inflorescence** with 3-4 short-cylindric erect unisexual spikes, the male spike short, not overlapped by the female spikes.
- **Female spikes** 1.5-5 cm x 5 mm, separate, peduncled, loosely flowered, the perigynia ascending.
- **Bracts** leaflike, shorter than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, white-hyaline with a green center, acute or cuspidate.
- **Perigynia** 1.9-3.4 x 2.0 mm, ellipsoid or obovoid, obscurely triangular in cross-section, yellow-green, the 2 marginal nerves prominent and with many fine nerves on each face; base spongy, contracted and stipitate when dry; beak 0.6-1.7 mm, straight or curved, the tip entire and hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Deciduous woods, alluvial soils. CT.

**NOTES:** The firm leaves and long-beaked perigynia distinguish this species from others in this group.

158. *Carex styloflexa* Buckley  
**SECTION LAXIFLORAE**

**DISTINCTIVE FEATURES:** An uncommon, small, broad-leaved sedge of deciduous woods. The nerved perigynia have a relatively long, curved beak.  
**FIGURE 21.**

- **Leaves** 12-14 mm wide, light green, longer than the flowering stems.
- **Lower sheaths** brown; upper sheath fronts hyaline, the apex loose, prolonged.
- **Inflorescence** with 2-5 short-cylindric erect unisexual spikes; male spike single, stalked and not overlapped by the female spikes.
- **Female spikes** 0.5-2 cm x 4-5 mm, separate, peduncled, loosely flowered, the perigynia spreading.
- **Bracts** leaflike, shorter than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, ascending, white-hyaline with a green center, acute or cuspidate.
- **Perigynia** 3.5-5.5 x 1.5-2.0 mm, ellipsoid or obovoid, obscurely triangular in cross-section, yellow-or brown-green, the 2 marginal nerves prominent and with many fine nerves on each face; base spongy, contracted and stipitate when dry; beak 0.5-1.7 mm, strongly curved, the tip entire and hyaline.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Sandy soils, often wet, in woods. CT.

**NOTES:** Similar to *C. laxiflora* and *C. striatula*, but distinguished by the bracts shorter than the inflorescence. The perigynia have longer, more curved beaks and stipitate base of the perigynium (when dry) is longer (to 1.7 mm) than in other species in this group.

159. *Carex crawei* Dewey  
**SECTION GRANULARES**

**DISTINCTIVE FEATURES:** A rare medium-sized sedge of calcareous wet habitats, with stiff blue-green leaves and nerved perigynia.  
**FIGURE 21.**

- **Leaves** 1-4 mm wide, shorter than the stems, firm, blue-green.
Lower sheaths brown; upper sheath fronts hyaline, the apex concave.

Inflorescence of 3-5 erect unisexual spikes, the male spike single.

Female spikes 10-15 x 5-6 mm, short-peduncled, the lowest spike basal and long-peduncled.

Bracts leaflike, sheathing at base, shorter than the inflorescence.

Scales shorter and narrower than the perigynia, divergent, pale brown with hyaline margins, acute.

Perigynia 3.0-3.5 x 1.3-2.0 mm, ovoid or ellipsoid, round in cross-section, light green, red-dotted, nervet, rounded at the apex; base rounded, sessile; beak minute, straight, the tip entire, hyaline.

Achenes trigonous; stigmas 3.

HABITAT: River banks, wet meadows, shores, wet ledges in calcareous areas. CT, ME.

NOTES: Conservation concern: known only from a few localities in New England; CT (Special Concern), ME (Endangered).

160. Carex blanda Dewey

SECTION LAXIFLORA

DISTINCTIVE FEATURES: A very common broad-leaved sedge of deciduous woods and open habitats, with short densely-flowered female spikes overlapping the short male spike.  

Leaves 4-10 mm wide, green, longer than the flowering stems; overwintering leaves dark green, firm.

Lower sheaths brown; upper sheath fronts hyaline, the apex loose, truncate.

Inflorescence with 3-5 short-cylindric erect unisexual spikes, the male single, short, overlapped by the clustered female spikes.

Female spikes 0.5-3 cm x 3.5-5 mm, densely flowered, the upper ones crowded, the lower separate, erect, peduncled.

Bracts leaflike, longer than the inflorescence, long-sheathing.

Scales shorter and narrower than the perigynia, ascending, hyaline with a green center, acute or cuspidate.

Perigynia 3.0-4.0 x 1.8 mm, ellipsoid or obovoid, round in cross-section, light green or brown-green at maturity, the 2 marginal nerves prominent and with many fine nerves on each face; apex rounded; base spongy, contracted and stipitate when dry; beak short, 0.5 mm or less, bent, the tip entire and hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Deciduous woods and clearings, trail edges, roadsides. THROUGHOUT.

NOTES: C. blanda, perhaps the most common member of this group, is almost weedy and can be found in disturbed habitats. It can be distinguished by the short, densely flowered, female spikes clustered at the base of the male spike, and by the perigynia with rounded apex and strongly bent, very short, beak. Dark green overwintering leaves are frequently present.

161. Carex laxiflora Lamarck

SECTION LAXIFLORA

DISTINCTIVE FEATURES: A common broad-leaved sedge of deciduous woods, the male spike stalked and separate from the female spikes.  

Leaves 5-12 mm wide, light green or blue-green, shorter than the stems; overwintering leaves dark green.

Lower sheaths brown; upper sheath fronts hyaline, the apex loose.

Inflorescence with 4-5 short-cylindric erect unisexual spikes; male spike 1, short, stalked and not overlapped by the female spikes.
Female spikes 1.5-4.5 cm x 2-3 mm, loosely flowered, separate, peduncled, erect.

Bracts leaflike, longer than the inflorescence, long-sheathing.

Scales shorter and narrower than the perigynia, white-hyaline with a green center, acute or cuspidate.

Perigynia 3.0-4.5 x 1.5 mm, ellipsoid or obovoid, obscurely trigonous in cross-section with convex sides, light green, the 2 marginal nerves prominent and with many fine nerves on each face; base spongy, contracted and stipitate when dry; beak short, 0.5 mm, straight, the tip entire and hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Deciduous woods. THROUGHOUT.

NOTES: *C. laxiflora* can be distinguished by the brown sheaths, thin leaves, loosely-flowered female spikes that do not overlap the male spike, and the relatively straight perigynium beak.

162. *Carex leptonervia* (Fernald) Fernald

SECTION LAXIFLORAE

DISTINCTIVE FEATURES: A common broad-leaved sedge of rich deciduous woods, the perigynia 2-nerved. FIGURE 21.

Leaves 4-10 mm wide, green, shorter than the flowering stems; overwintering leaves present.

Lower sheaths brown; upper sheath fronts hyaline, the apex loose, prolonged at the apex.

Inflorescence with 3-4 short-cylindric erect unisexual spikes, the male single, short, overlapped by the female spikes.

Female spikes 1-3 cm x 3-4 mm, loosely flowered, separate but with 1 or 2 close to the base of the male spike and overlapping.

Bracts leaflike, longer than the inflorescence, long-sheathing.

Scales shorter and narrower than the perigynia, ascending, hyaline with a green center, acute or cuspidate.

Perigynia 3.5-4.5 x 1.2-1.5 mm, ellipsoid or obovoid, obscurely triangular in cross-section, green, the 2 marginal nerves prominent, lacking nerves on the sides; base spongy, contracted and stipitate when dry; beak short, 0.5 mm, generally straight and not conspicuously bent, the tip entire and hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Deciduous woods and clearings. CT, MA, ME, NH, VT.

NOTES: Distinguished from *C. blanda* by the loosely flowered spikes and the relatively straight perigynium beak, and from *C. laxiflora* by the perigynia which lack nerves on the sides.
Group 19 - Plants tall (50-100 cm) with separate male and female spikes, spikes cylindrical and erect; perigynia hairy or scabrous, large (to 12 mm), beaks gen. bidentate. Achene trigonous.

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves very narrow, involute</td>
<td>1-2</td>
<td>3.0-4.5 mm long, yellow-green; beak purple-brown, short</td>
<td>wetlands, bogs and lake shores</td>
<td>163. <em>C. lasiocarpa</em></td>
</tr>
<tr>
<td>Leaves and sheaths hairy; bracts shorter than inflorescence; scales awned, hyaline</td>
<td>3-7</td>
<td>2.6-3.5 mm long, obovoid, brown; beak apex oblique and hyaline, not bidentate</td>
<td>upland forests, calcareous or neutral soils</td>
<td>164. <em>C. hirtifolia</em></td>
</tr>
<tr>
<td>Leaves hairy; scales awned, purple-brown; perigynia large, scabrous, with long divergent teeth</td>
<td>3-10</td>
<td>7.0-12.0 mm long; beak 2.0-4.0 mm long with slender divergent teeth</td>
<td>marshes, lakeshores</td>
<td>165. <em>C. atherodes</em></td>
</tr>
<tr>
<td>Leaves hairy; scales awned, purple-brown; perigynia densely hairy</td>
<td>3-6</td>
<td>5.0-9.0 mm long; beak to 2.5 mm long, with slender divergent teeth</td>
<td>uplands, disturbed areas</td>
<td>166. <em>C. hirta</em></td>
</tr>
<tr>
<td>Leaves and perigynia dark green; perigynia scabrous, few-nerved; beaks curved</td>
<td>4-14</td>
<td>3.2-4.4 mm long, body obovoid, abruptly contracted to the beak</td>
<td>forested wetlands, seeps, streambanks</td>
<td>167. <em>C. scabrata</em></td>
</tr>
<tr>
<td>One female spike; Perigynia scabrous or short-hairy</td>
<td>2-5</td>
<td>4.0-6.0 mm long, tapering to short (to 1 mm long) bidentate beak</td>
<td>coastal plain fens</td>
<td>168. <em>C. striata</em></td>
</tr>
<tr>
<td>Perigynia ovoid, sides flat; beak very short, hyaline</td>
<td>2-5</td>
<td>3.4 mm long, nervied, sides flat; beak to 1.0 mm long</td>
<td>sandy open soils or dry woods</td>
<td>121. <em>C. vestita</em></td>
</tr>
<tr>
<td>Sheath apex thick, purple-brown; sheath with distinctive purple central stripe</td>
<td>4-8</td>
<td>6.0-10.5 mm long, leathery, strongly nervied; beak with long (1.0-2.0 mm) straight teeth</td>
<td>calcareous wetlands</td>
<td>169. <em>C. trichocarpa</em></td>
</tr>
<tr>
<td>Perigynia dark green or brown with purple-brown beaks; scales awned</td>
<td>2-6</td>
<td>5.0-6.0 mm long, densely hairy, tapering to a short beak</td>
<td>sandy or gravely open soils</td>
<td>170. <em>C. houghtoniana</em></td>
</tr>
<tr>
<td>Perigynia yellow-brown; scales acute</td>
<td>2-5</td>
<td>2.5-5.2 mm long, tapering to a short purple-brown beak</td>
<td>wetlands</td>
<td>171. <em>C. pellita</em></td>
</tr>
</tbody>
</table>
### Key To Group 19

1. Leaves very narrow (1-2 mm), involute ................................................................. 163. *Carex lasiocarpa*  

1. Leaves broader (2-14 mm), flat or V-shaped  
   2. Leaves hairy  
      3. Scales hyaline; perigynia obovoid, trigonous; beak short (0.8-1.3 mm), tip oblique  
         and hyaline ........................................................................................................... 164. *C. hirtifolia*  
      3. Scales purple-brown; perigynia ovoid or ellipsoid; beak longer, bidentate and firm  
         4. Perigynia scabrous; beaks with teeth 1.5-3 mm long ................................. 165. *C. atherodes*  
         4. Perigynia densely hairy; beaks with teeth less than 1.5 mm long .......... 166. *C. hirta*  
   2. Leaves glabrous  
      5. Perigynia merely scabrous, not hairy  
         6. Beak 1.5-1.8 mm long, often bent, not distinctly bidentate......................... 167. *C. scabrata*  
         6. Beak to 1 mm long, straight, bidentate; female spike single..................... 168. *C. striata*  
      5. Perigynia hairy  
         7. Perigynia ovoid, flat-sided, the apex tapering to a short (1.0 mm)  
            entire beak ..................................................................................................... 121. *C. vestita*  
         7. Perigynia round or trigonous, with a bidentate beak  
            8. Perigynia large (6.0-10.0 mm); sheath apex thick, purple-brown, sheath with a  
               distinctive purple-brown central stripe .............................................. 169. *C. trichocarpa*  
            8. Perigynia smaller (2.5-6.0 mm); sheath apex not thick  
               9. Perigynia 5.0-6.0 mm long, 2.5-3.0 mm wide, dark green;  
                  scales awned ............................................................................. 170. *C. houghtoniana*  
               9. Perigynia 2.5-3.5 mm long, 1.8-2.0 mm wide, yellow-green;  
                  scales acute..................................................................................... 171. *C. pellita*

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**163. *Carex lasiocarpa* Ehrhart**  

**SECTION PALUDOSAE**

**DISTINCTIVE FEATURES:** A common, very slender medium to tall sedge of bog mats and lakeshores. The very narrow involute leaves and hairy, bidentate perigynia are highly distinctive. **FIGURE 22.**  

- **Leaves** up to 2 mm wide, strongly involute, shorter than the flowering stems.  
- **Lower sheaths** purple-brown, ladder-fibrillose; upper sheath fronts hyaline, nerved, becoming ladder-fibrillose, red-brown at the concave apex.  
- **Inflorescence** 10-20 cm long, with 3-4 erect, sessile unisexual spikes, the upper 1-2 male.  
- **Female spikes** 5-50 x 5-8 mm.  
- **Bracts** leaflike, longer than the inflorescence, sheathless.
Scales shorter and narrower than the perigynia, purple-brown, acute or awned.

Perigynia 3.0-4.5 x 1.7-2.0 mm, ovoid, round in cross-section, nerved, yellow-brown at maturity, densely short-hairy; base rounded, sessile; beak short (to 1 mm), bidentate, purple between the short, stiff teeth.

Achenes trigonous; stigmas 3.

HABITAT: Bog mats and shallow water along lake shores. THROUGHOUT.

NOTES: This common bog species is easily recognized by its narrow, stiff, involute leaves (much like Juncus) and hairy, short-beaked perigynia. It has often been considered conspecific with C. pellita, but is distinguished by the narrow leaf width, and grows in more inundated sites. New England plants are subspecies americana (Fernald) Hultén.

164. Carex hirtifolia Mackenzie

DISTINCTIVE FEATURES: A medium-sized woodland sedge with hairy leaves and sheaths, the hairy perigynia abruptly slender-beaked, the scales awned. FIGURE 22.

- Leaves 3-7 mm wide, shorter than the flowering stems, hairy, soft.
- Lower sheaths red-brown; upper sheath fronts hyaline, pale brown, the apex deeply concave.
- Inflorescence 3-5 cm long with 2-4 erect unisexual spikes, the upper 1 male.
- Female spikes 8-20 cm x 4-5 mm, subsessile.
- Bract leaflike, shorter than the inflorescence, sheathless.
- Scales shorter and narrower than the perigynia, obovate, hyaline, the green midvein extended as an awn, equalling the perigynium.
- Perigynia 2.6-3.5 x 1.5 mm, trigonous, obovoid, distended by the achene angles, tawny-brown, pubescent, the 2 marginal nerves generally visible, rounded at the apex; base tapering, short-stipitate; beak 0.8-1.3 mm long, slender, the apex oblique, hyaline.

Achenes trigonous; stigmas 3.

HABITAT: Forested habitats with neutral or calcareous soils. THROUGHOUT.

165. Carex atherodes Sprengel

DISTINCTIVE FEATURES: A rare large wetland sedge with distinctive hairy sheaths and leaves. Perigynia are scabrous with slender, bidentate beaks. FIGURE 22.

- Leaves 3-10 mm wide, shorter than the flowering stems, sparsely hairy.
- Lower sheaths red-brown, ladder-fibrillose; upper sheath fronts hyaline, hairy, concave at the apex.
- Inflorescence 12-69 cm long, with 4-8 widely-separated erect unisexual spikes, the upper 2-6 male.
- Female spikes 1.5-5.0 cm x 6-9 mm, short-peduncled.
- Bracts leaflike, equalling the inflorescence, sheathless.
- Scales shorter and narrower than the perigynia, red-purple, acute with a scabrous awn.
- Perigynia 7.0-12.0 x 1.8-3.8 mm, narrowly ovoid, round in cross-section, nerved, scabrous; base rounded, sessile; beak 2.1-4.0 mm, bidentate, the slender teeth 1.5-3.0 mm long, divergent.

Achenes trigonous; stigmas 3.

HABITAT: Marshes, lakeshores and wet meadows, often in permanently flooded wetlands. ME, NH, VT.

NOTES: Similar to C. trichocarpa but with hairy sheaths and leaves and scabrous perigynia with longer curved teeth. Conservation concern: ME (Endangered).
166. **Carex hirta** Linnaeus  

**SECTION CAREX**

**DISTINCTIVE FEATURES:** An uncommon introduced large upland sedge with distinctive hairy sheaths and leaves. Perigynia are hairy with slender bidentate beaks. **FIGURE 22.**

- Leaves 3-6 mm wide, shorter than the flowering stems, sparsely hairy.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, hairy, concave at the apex.
- **Inflorescence** 10-30 cm long, with 3-6 erect unisexual spikes, the upper 1-3 male.
- **Female spikes** 1.5-5.0 cm x 6-9 mm, peduncled.
- **Bracts** leaflike, equalling the inflorescence, sheathing.
- **Scales** shorter and narrower than the perigynia, red-purple, acute or awned.
- **Perigynia** 5.0-9.0 x 2.5 mm, narrowly ovoid, round in cross-section, nervled, densely short-hairy; base rounded, sessile; beak to 2.5 mm, bidentate, the slender divergent teeth to 1.5 mm long.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Disturbed, dry open sites. CT, MA, ME.

**NOTES:** Introduced from Europe. The only similar upland sedge is *C. hirtifolia*, which lacks the ladder-fibrillose sheaths, and has sheathless bracts and hyaline scales.

167. **Carex scabrata** Schweinitz  

**SECTION ANOMALAE**

**DISTINCTIVE FEATURES:** A common robust, dark green sedge of seeps and forested wetlands. Perigynia are scabrous and obovoid, with somewhat curved, abrupt, elongate beaks. **FIGURE 22.**

- Leaves 4-14 mm wide, longer than the flowering stems, dark green.
- **Lower sheaths** brown, old dried leaves often present; upper sheath fronts hyaline, white or pale brown, the apex deeply concave.
- **Inflorescence** 10-20 cm long with 3-10 erect unisexual spikes, the uppermost male.
- **Female spikes** 2-6 cm x 5-8 mm, with densely crowded perigynia.
- **Bract** leaflike, longer than the inflorescence, sheathless.
- **Scales** equalling perigynia, brown-marginated, the broad green midrib extended as a short awn, upper margins and awn ciliate.
- **Perigynia** 3.2-4.4 x 1.5-2.0 mm, obovoid, obtusely trigonous, green, scabrous-puberulent, strongly few-nerved; apex rounded and abruptly beaked; base obtuse, sub sessile; beak 1.5-1.8 mm long, curved, the apex oblique, hyaline and ciliate.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Saturated soils generally in forested habitats; seeps, swamps, streambanks. THROUGHOUT.

168. **Carex striata** Michaux  

**SECTION PALUDOSAE**

**DISTINCTIVE FEATURES:** A rare large rhizomatous sedge of coastal plain fens. The inflorescence generally consists of a single short-cylindric female spike and 1-3 male spikes. The dark, nerved, perigynia have very short (<1mm) bidentate beaks. **FIGURE 22.**

- Leaves 2-5 mm wide, longer than the flowering stems.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, pale brown, the apex concave.
- **Inflorescence** 15-25 cm long, with 2-4 erect, sessile unisexual spikes, the upper 1-3 male.
Female spikes generally single, 1.5-5 cm x 3-4.5 mm.
Bracts leaflike, longer than the inflorescence, sheathless.
Scales shorter and narrower than the perigynia, red-purple, acute or awned.

Perigynia 4.0-6.0 x 2.0-2.5 mm, ovoid, round in cross-section, abruptly beaked, strongly many-nerved, dark brown-green at maturity, glabrous or sparsely short-hairy, rounded at the apex; beak short (to 1 mm), bidentate with short (0.5 mm) teeth, purple between the teeth.

Achenes trigonous; stigmas 3.

HABITAT: Coastal plain fens and open swamps, pond margins, margins of cranberry bogs. MA, RI.

NOTES: Although New England plants have been called var. brevis (A.A. Reznicek and P.A. Catling), variation appears to be clinal and does not support the recognition of distinct infraspecific taxa. Conservation concern: MA (Endangered), NH (S1 but no verified records), RI (Rare).

SYNONYM: C. walteriana L.H. Bailey.
Scales shorter and narrower than the perigynia, red-brown, awned.

Perigynia 5.0-6.0 x 2.5-3.0 mm, ovoid, obscurely triangular in cross-section, dark green or purple-brown at maturity, densely short-hairy, nerved; base rounded, sessile; beak short (to 2.0 mm), bidentate, purple between the short, stiff teeth.

Achenes trigonous; stigmas 3.

HABITAT: Sandy or gravelly soils in open habitats, generally dry sites but occasionally at the edges of wet meadows or marshes; clearings, roadsides, meadows. ME, NH, VT.

171. Carex pellita Willdenow SECTION PALUDOSAE

DISTINCTIVE FEATURES: A common medium to tall sedge of open wetlands. The hairy, bidentate perigynia and inflorescence of short, separate spikes are the same as C. lasiocarpa. Not pictured.

Leaves 2-5 mm wide, flat, longer than the flowering stems.

Lower sheaths red-brown, ladder-fibrillose; upper sheath fronts hyaline, nerved, becoming ladder-fibrillose, red-brown at the concave apex.

Inflorescence 7-20 cm long, with 4-5 erect, sessile or short-peduncled unisexual spikes, the upper 1-2 male.

Female spikes 1.5-5.0 cm x 5-8 mm.

Bracts leaflike, equalling or slightly exceeding the inflorescence, sheathless.

Scales shorter and narrower than the perigynia, purple-brown, acute or acuminate.

Perigynia 2.5-5.2 x 1.75-2.0 mm, ovoid, round in cross-section, yellow-brown at maturity, densely short-hairy, nerved; base rounded, sessile; beak short (to 1.0 mm), bidentate, purple between the short, stiff teeth.

Achenes trigonous; stigmas 3.

HABITAT: Saturated soils and open habitats; shores, marshes, wet meadows. THROUGHOUT.

NOTES: This common species has often been considered conspecific with C. lasiocarpa, but is distinguished by the broader flat leaves. C. pellita occurs in less-inundated habitats than C. lasiocarpa, rarely in shallow water. Immature specimens of C. pellita may be confused with rhizomatous forms of C. stricta, since these occur in the same habitats and both have red-brown ladder-fibrillose lower sheaths. However, the bidentate hairy perigynia of C. pellita are easily seen even when immature. C. pellita was formerly incorrectly called C. lanuginosa Fernald. It is reported to occasionally hybridize with C. lacustris and C. trichocarpa.
Figure 22. 163. Carex lasiocarpa (with leaf cross-section); 164. Carex hirtifolia; 165. Carex atherodes; 166. Carex hirta; 167. Carex scabrata; 168. Carex striata; 169. Carex trichocarpa (with sheath apex); 170. Carex houghtoniana.
**Group 20 – Plants with separate male and female spikes, spikes globose or sub-globose; perigynia inflated, nerved, beaked, round in cross-section. Achenes trigonous.**

<table>
<thead>
<tr>
<th>Look For</th>
<th>Leaf W (mm)</th>
<th>Perigynia</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perigynia very large (to 2.0 cm), hispid; spikes with 15-20 perigynia</td>
<td>4-11</td>
<td>12-20 mm long 4.0-8.0 mm wide body ovoid, dull and hispid, tapering to the beak</td>
<td>floodplain wetlands</td>
<td>172. C. grayi</td>
</tr>
<tr>
<td>Perigynia very large (to 1.7 cm), glossy; spikes with 10 or fewer perigynia</td>
<td>4-8</td>
<td>10-17 mm long 2.5-6.5 mm wide body ovoid, glossy, tapering to the beak</td>
<td>forested wetlands</td>
<td>173. C. intumescens</td>
</tr>
<tr>
<td>Perigynia yellow-green; beak 1.2-1.7 mm long, smooth, reflexed; scales pale</td>
<td>2-3.5</td>
<td>3.5-4.5 mm long 1.5-2.0 mm wide body inflated, obovoid, abruptly contracted to the long, smooth beak</td>
<td>marshes, wet meadows, seeps</td>
<td>174. C. cryptolepis</td>
</tr>
<tr>
<td>Perigynia yellow-green, inflated; beak 1.4-2.5 mm long, scabrous, reflexed; scales red-brown</td>
<td>3-5</td>
<td>4.5-6.0 mm long 1.3-2.0 mm wide body inflated, obovoid or obovoid, abruptly contracted to the long, scabrous beak</td>
<td>calcareous wet meadows, seeps</td>
<td>175. C. flava</td>
</tr>
<tr>
<td>Perigynia gray-green or olive, rarely yellow-green, scarcely inflated; beak short (0.8-1.2 mm long), straight; scales red-brown</td>
<td>1-3</td>
<td>2.0-3.0 mm long 1.3-1.5 mm wide body scarcely inflated, ovoid, contracted to the short smooth beak</td>
<td>calcareous wetlands</td>
<td>176. C. viridula</td>
</tr>
</tbody>
</table>

**Key To Group 20**

1. Perigynia green, very large (1-2 cm)
   2. Spikes globose, the 15-20 perigynia radiating in all directions; perigynia dull, hispid....172. C. grayii
   2. Spikes subglobose, the 5-12 perigynia spreading, glossy..............................173. C. intumescens
1. Perigynia yellow-green or olive-green, smaller (less than 6 mm)
   3. Beak long (>1.0 mm), reflexed; perigynia yellow-green
      4. Beak smooth; scales pale.................................................................174. C. cryptolepis
      4. Beak scabrous; scales red-brown .......................................................175. C. flava
   3. Beak short (< 1.0 mm), straight; perigynia (yellow-) gray-green or olive-green .........176. C. viridula
172. *Carex grayi* J. Carey  

**SECTION LUPULINAE**

**DISTINCTIVE FEATURES:** An uncommon large sedge of calcareous forested wetlands or floodplains, with unmistakable large star-shaped globose spikes. **FIGURE 23.**

- **Leaves** 4-11 mm wide, longer than the flowering stems.
- **Lower sheaths** purple-brown; upper sheath fronts hyaline, loose, pale brown, the apex concave, somewhat thickened, brown.
- **Inflorescence** to 15 cm long, with 2-3 erect unisexual spikes, the upper 1 male.
- **Female spikes** 2.5-4.5 cm x 2.5-4.5 cm, the 15-20 perigynia radiating in all directions.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, pale brown, acute or awned.
- **Perigynia** 12.5-20.0 x 4.0-8.0 mm, ovoid, round in cross-section, strongly many-nerved, dull, smooth or hispid; apex long-tapering; base contracted, sessile; beak bidentate.
- **Achenes** trigonous; style persistent; stigmas 3.

**HABITAT:** Seasonally saturated neutral or calcareous clay soils, in swamps or floodplain forests. CT, MA, VT.

**NOTES:** *Carex intumescens*, a similar species with large perigynia and sub-globular spikes, may be distinguished by the glossy perigynia, more ovoid and fewer-flowered spikes, and smaller size and narrower leaves. Although individuals of *C. grayi* with hispid perigynia are sometimes segregated as a separate variety, the two forms are not separable geographically and do not merit formal recognition. Conservation concern: MA (Threatened).

173. *Carex intumescens* Rudge  

**SECTION LUPULINAE**

**DISTINCTIVE FEATURES:** A very common large sedge of forested wetlands, with distinctive, large, nerved perigynia and few sub-globose spikes. **FIGURE 23.**

- **Leaves** 4-8 mm wide, longer than the flowering stems, often overwintering.
- **Lower sheaths** purple-brown; upper sheath fronts hyaline, pale brown, the apex convex, short-prolonged.
- **Inflorescence** to 10 cm long, with 2-4 unisexual spikes, the upper 1 male.
- **Female spikes** 1.0-2.7 cm x 1.5-2.5 cm, with 5-12 spreading perigynia.
- **Bracts** leaflike, longer than the inflorescence, sheathless.
- **Scales** shorter and narrower than the perigynia, pale brown, acute or awned.
- **Perigynia** 10.0-17.0 x 2.5-6.5 mm, ovoid, round in cross-section, strongly many-nerved, satin-glossy; apex long-tapering; base rounded, sessile; beak short, indistinct, bidentate.
- **Achenes** trigonous; style persistent; stigmas 3.

**HABITAT:** Seasonally saturated soils, swamps or wet meadows. THROUGHOUT.

**NOTES:** One of our most common sedges of forested wetlands. *Carex grayi*, a similar species with large perigynia and globular spikes, may be distinguished by the distinctive star-shaped spikes, dull perigynia, and larger size and wider leaves. Although individuals of *C. intumescens* with narrower less inflated perigynia are sometimes segregated as a separate variety, the two forms are not separable geographically and do not merit formal recognition.
174. *Carex cryptolepis* Mackenzie  

**SECTION CERATOCYSTIS**

**DISTINCTIVE FEATURES:** A medium-sized slender sedge of open wetlands. The small globose female spikes have reflexed perigynia and long, divergent beaks. **FIGURE 23.**

- **Leaves** 2-3.5 mm wide, shorter than the flowering stems, light green or yellow-green.
- **Lower sheaths** light brown; upper sheath fronts hyaline,nerved, the apex concave, loose.
- **Inflorescence** to 6 cm long, with 3-5 erect spikes, the upper 1 male and stalked.
- **Female spikes** 1-2 cm x 7-10 mm, sessile (the lowest sometimes peduncled), perigynia strongly reflexed.
- **Bracts** leaflike, longer than the inflorescence, long-sheathing.
- **Scales** shorter and narrower than the perigynia, yellow-green with a green center, acute or acuminate.
- **Perigynia** 3.5-4.5 x 1.5-2.0 mm, the body ovoid, biconvex and inflated in cross-section, yellow-green, smooth, strongly several-nerved; apex abruptly contracted; base round, sessile; beak 1.2-1.7 mm long, slender, smooth, diverging at an angle to the body, the apex bidentate with white teeth.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Wet shores, meadows, bogs. THROUGHOUT.

**NOTES:** Resembles *C. flava*, which differs in having a serrate beak, copper-brown scales, and wider leaves. The two species occur in different habitats – *C. cryptolepis* on acidic soils, and *C. flava* on calcareous substrates.

175. *Carex flava* Linnaeus  

**SECTION CERATOCYSTIS**

**DISTINCTIVE FEATURES:** A common medium-sized slender sedge of open calcareous wetlands. The female spikes are short and globose, with reflexed perigynia, long, divergent beaks, and coppery red-brown scales. **FIGURE 23.**

- **Leaves** 3-5 mm wide, shorter than the flowering stems, yellow-green.
- **Lower sheaths** light brown; upper sheath fronts hyaline, nerded, the apex truncate, loose.
- **Inflorescence** to 6 cm long, with 3-6 erect spikes, the upper 1 male and sessile.
- **Female spikes** 0.7-2 cm x 8-10 mm, sessile (the lowest sometimes peduncled), perigynia strongly reflexed.
- **Bracts** leaflike, longer than the inflorescence, reflexed, sheathing.
- **Scales** shorter and narrower than the perigynia, red- or copper-brown with a green center, acute or cuspidate.
- **Perigynia** 4.5-6.0 x 1.3-2.0 mm, the body ovoid or obovoid, biconvex and inflated in cross-section, yellow-green, smooth, strongly several-nerved; apex abruptly contracted; base round, sessile; beak 1.4-2.5 mm long, slender, serrate-margined, diverging at an angle to the body, the apex bidentate, pale or red-brown.
- **Achenes** trigonous; stigmas 3.

**HABITAT:** Wet calcareous meadows and bogs. THROUGHOUT.

**NOTES:** Resembles *C. cryptolepis*, which differs in having smaller perigynia with smooth beaks and pale scales. Small individuals of *C. flava* may be confused with *C. viridula*, which has smooth straight beaks.
DISTINCTIVE FEATURES: A small slender sedge of open calcareous wetlands. The female spikes are short and sub-globose, with spreading (not reflexed) perigynia with straight slender beaks. **FIGURE 23.**

- **Leaves** 1-3 mm wide, shorter than the flowering stems, yellow-green.
- **Lower sheaths** light brown; upper sheath fronts hyaline, nerv ed, the apex concave, loose.
- **Inflorescence** to 4 cm long, with 3-6 erect spikes, the upper 1 male.
- **Female spikes** 5-10 mm x 4-7 mm, sessile (the lowest sometimes peduncled), perigynia spreading but not reflexed.
- **Bracts** leaflike, longer than the inflorescence, sheathing.
- **Scales** shorter and narrower than the perigynia, red-brown with a green center, acute or cuspidate.
- **Perigynia** 2.0-3.0 x 1.3-1.5 mm, the body obovoid, obtusely triangular in cross-section, yellow-green, gray-green or olive-green, smooth, strongly several-nerved; apex abruptly contracted; base tapering, sessile; beak 0.8-1.2 mm long, straight, the apex minutely bidentate, green or red-brown.
- **Achenes** trigonous; stigmas 3.

HABITAT: Wet calcareous shores, meadows and bogs. THROUGHOUT.

**Group 21 - Plants with separate male and female spikes, spikes cylindrical, erect; bracts leaflike; perigynia large (generally 5 mm or more), smooth, round in cross-section, beaked, gen. bidentate. Achenes trigonous.**

<table>
<thead>
<tr>
<th>Look For</th>
<th>Diagnostic Features</th>
<th>Habitat</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves involute, 1-2 mm wide; beak short (0.5 mm)</td>
<td>Perigynia: 4.0-7.0 mm long ovoid, inflated, glossy; beak bidentate, 0.5 mm long</td>
<td>acid peatlands</td>
<td>145. <em>C. oligosperma</em></td>
</tr>
<tr>
<td></td>
<td>Scales and beak purple-brown; female spikes often branching; perigynia with 2 marginal nerves</td>
<td>4-5.5 mm long body ellipsoid; beak tip oblique</td>
<td>open habitats, sandy soils</td>
</tr>
<tr>
<td>Perigynia very large (1.2-2 cm); achenes longer than wide, angles knobbed</td>
<td>12-20 mm long ovoid, glossy, many-nerved</td>
<td>wetlands, shallow water</td>
<td>178. <em>C. lupuliformis</em></td>
</tr>
<tr>
<td>Perigynia very large (1.2-2 cm); achenes as long as wide, achene angles thickened but not knobbed</td>
<td>10-20 mm long ovoid, glossy, many-nerved</td>
<td>wetlands, shores</td>
<td>179. <em>C. lupulina</em></td>
</tr>
<tr>
<td>Scales long-awned, pale; perigynium beak longer than the body</td>
<td>5.0-8.0 mm long body ellipsoid; beak to 2.0 mm long</td>
<td>calcareous wetlands</td>
<td>180. <em>C. baileyi</em></td>
</tr>
<tr>
<td>Scales long-awned, pale; perigynium beak equaling or shorter than the body</td>
<td>6.0-10 mm long body ellipsoid; beak to 3.0 mm long</td>
<td>wetlands</td>
<td>181. <em>C. lurida</em></td>
</tr>
<tr>
<td>Caespitose; perigynia large, inflated, few-nerved; achenes indented</td>
<td>7.0-10 mm long body ellipsoid; beak to 2.0 mm long, smooth</td>
<td>calcareous wetlands</td>
<td>182. <em>C. tuckermanii</em></td>
</tr>
<tr>
<td>Caespitose; perigynia large, inflated, few-nerved, achenes trigonous</td>
<td>4.0-8.0 mm long body ellipsoid; beak to 2.0 mm, smooth</td>
<td>marshes, wet meadows</td>
<td>182. <em>C. vesicaria</em></td>
</tr>
<tr>
<td>Female spikes elongate (to 15 cm), densely flowered; perigynia spreading; leaves flat or V-shaped, septate</td>
<td>4.0-8.0 mm long body ellipsoid; beak to 2.7 mm, smooth</td>
<td>marshes, wet meadows</td>
<td>184. <em>C. utriculata</em></td>
</tr>
<tr>
<td>Leaves U-shaped; female spikes elongate, densely flowered; perigynia spreading</td>
<td>3.6-5.8 mm long body ellipsoid; beak to 2.0 mm, smooth</td>
<td>marshes, wet meadows</td>
<td>185. <em>C. rostrata</em></td>
</tr>
<tr>
<td>Perigynia on the lower half of each spike reflexed</td>
<td>7.0-12 mm long body ellipsoid; beak to 2.0-3.5 mm, smooth</td>
<td>wetlands</td>
<td>186. <em>C. retrorsa</em></td>
</tr>
<tr>
<td>Perigynia inflated, spreading, beaks scabrous</td>
<td>6.0-10 mm long body ellipsoid; beak to 4.2 mm, scabrous</td>
<td>marshes, wet meadows</td>
<td>187. <em>C. bullata</em></td>
</tr>
</tbody>
</table>
Key To Group 21

1. Leaves involute, 1-2 mm wide; perigynium beak short, to 1.0 mm .................. 145. *C. oligosperma*

1. Leaves U- or V-shaped or flat, more than 2 mm wide
   2. Perigynia 2-nerved, beak tip oblique, purple-brown; scales purple-brown ....... 177. *C. polymorpha*
   2. Perigynia 8-20-nerved, beaks bidentate, pale; scales pale or brown
      3. Perigynia 10-20 mm long, many-nerved (10-20)
         4. Achenes longer than wide, angles knobbed ........................................178. *C. lupuliformis*
         4. Achenes as long as wide, angles thickened but not knobbed .............179. *C. lupulina*
   3. Perigynia 10 mm long or shorter, few-nerved (8-10)
      5. Scales long-awned
         6. Perigynium beak longer than the body.......................................... 180. *C. baileyi*
         6. Perigynium beak shorter than or equalling the body ...................... 181. *C. lurida*
      5. Scales acute, not awned
   7. Plants densely caespitose, in tussocks
      8. Perigynia 7.0-10 mm long, 4.0-7.0 mm wide; beak 2.0-4.0 mm long; achenes indented .......................................................... 182. *C. tuckermanii*
      8. Perigynia 4.0-8.0 mm long, 2.5-3.5 mm wide; beak to 2.0 mm; achenes not indented ..................................................... 183. *C. vesicaria*
   7. Plants rhizomatous, stems single or in small clumps
      9. Female spikes elongate, to 15 cm; beak to 2.0 mm long
         10. Leaves V-shaped or flat; perigynia 4.0-8.0 mm long .......... 184. *C. utriculata*
         10. Leaves U-shaped; perigynia 3.6-5.8 mm long .................. 185. *C. rostrata*
      9. Female spikes shorter (to 8 cm); beaks 2.0-3.5 mm long
         11. Lower perigynia reflexed........................................... 186. *C. retrorsa*
         11. Perigynia spreading .................................................. 187. *C. bullata*
177.  *Carex polymorpha* Muhlenberg  

**SECTION PANICEAE**  

**DISTINCTIVE FEATURES:** A rare sedge of open habitats and sandy soils, with purple-brown scales and perigynia with long, cylindric purple-tipped beaks. Female spikes often branched, or with male flowers (empty scales). **FIGURE 25.**  

- **Leaves** 3-6 mm wide, shorter than the flowering stems, blue-green when young.  
- **Lower sheaths** red, bladeless, ladder-fibrillose; upper sheath fronts hyaline, often red-tinged, becoming ladder-fibrillose with age, the apex concave, prolonged.  
- **Inflorescence** 10-25 cm long, with 2-4 erect unisexual spikes, the upper 1-3 male.  
- **Female spikes** 1.5-3.5 cm x 7-10 mm, peduncled, often male at the apex (empty scales), occasionally branched and proliferating.  
- **Bracts** leaflike, shorter than the inflorescence, sheathing.  
- **Scales** shorter than and as wide as the perigynia, purple-brown, acute.  
- **Perigynia** 4.0-5.5 x 2.5 mm, ellipsoid, round in cross-section, olive-green, the 2 marginal nerves prominent, often a few faint nerves on the sides; apex rounded; base rounded, sessile; beak to 2.2 mm, the apex hyaline, purple or brown, oblique.  
- **Achenes** trigonous; style deciduous; stigmas 3.  

**HABITAT:** Dry or seasonally moist soils, often in sand; open woods, roadsides. CT, MA, ME, NH, RI.  

**NOTES:** Conservation concern: rare throughout its range; CT (Endangered), MA, ME (Endangered), NH (Threatened), RI (Rare).  

178.  *Carex lupuliformis* Sartwell ex Dewey  

**SECTION LUPULINAE**  

**DISTINCTIVE FEATURES:** An uncommon, very large sedge often in shallow water, with distinctive very large nerved perigynia and cylindrical spikes. **FIGURE 24.**  

- **Leaves** 4-15 mm wide, longer than the flowering stems.  
- **Lower sheaths** brown; upper sheath fronts hyaline, pale brown, the apex convex, short-prolonged.  
- **Inflorescence** to 40 cm long, with 4-6 erect unisexual spikes, the upper 1-2 male.  
- **Female spikes** 3.0-8.0 cm x 2.0-3.5 cm, the perigynia spreading.  
- **Bracts** leaflike, longer than the inflorescence, sheathing.  
- **Scales** shorter and narrower than the perigynia, pale brown, acute or awned.  
- **Perigynia** 12.0-20.0 x 3.0-6.0 mm, ovoid, round in cross-section, strongly many-nerved, glossy; apex tapering; base rounded, sessile; beak slender, bidentate.  
- **Achenes** trigonous, wider than long, with distinct knobs on the angles; style persistent, contorted; stigmas 3.  

**HABITAT:** Shallow water in marshes or lakeshores, generally on calcareous substrates. CT, MA, VT.  

**NOTES:** Our largest *Carex*, but quite uncommon and restricted in distribution. This species and *C. lupulina* can only be distinguished at maturity, by the distinctive knobs on the angles of the achenes of *C. lupuliformis*. Perigynia resemble *C. grayi*, which has globose spikes. Conservation concern: CT (Special Concern), MA (Endangered).
179. **Carex lupulina** Willdenow  

**SECTION LUPULINAE**

**DISTINCTIVE FEATURES:** A common, very large wetland sedge with distinctive very large nerved perigynia and cylindrical spikes. **FIGURE 24.**

- **Leaves** 4-15 mm wide, longer than the flowering stems.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, fragile, pale brown, the apex convex, short-prolonged.
- **Inflorescence** to 40 cm long, with 3-5 erect unisexual spikes, the upper 1-2 male.
- **Female spikes** 1.5-6.5 cm x 1.3-3.0 cm, the perigynia spreading.
- **Braacts** leaflike, longer than the inflorescence, short-sheathing.
- **Scales** shorter and narrower than the perigynia, pale brown, acute or awned.
- **Perigynia** 10.0-20.0 x 3.0-6.0 mm, ovoid, inflated and round in cross-section, strongly many-nerved, glossy, tapering to the beak; base rounded, sessile; beak 5.0-8.0 mm long, slender, bidentate.
- **Achenes** trigonous in cross-section, as long as wide, the angles thickened; style persistent, contorted; stigmas 3.

**HABITAT:** Seasonally saturated soils, swamps, riverbanks, and wet meadows. THROUGHOUT.

**NOTES:** A common, fairly variable sedge. Immature individuals with 2 female spikes may be confused with *Carex grayi*, but can be distinguished by the sheathing bracts and smooth (not hispid) perigynia. This species may be confused with *C. lupuliformis* and can only be distinguished at maturity by the achene shape and the lack of distinctive knobs on the angles of the achenes.

180. **Carex baileyi** Britton  

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** An uncommon medium-sized sedge of open calcareous wetlands, with long-awned scales. **FIGURE 24.**

- **Leaves** 2-4 mm wide, longer than the stems, yellow-green.
- **Lower sheaths** red-brown, slightly ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex concave.
- **Inflorescence** to 10 cm long, with 2-3 spreading cylindric spikes, the upper 1 male.
- **Female spikes** 1-4 cm x 8-15 mm, sessile (the lowest short-peduncled), perigynia crowded, spreading.
- **Braacts** leaflike, longer than the inflorescence, short-sheathing.
- **Scales** shorter and narrower than the perigynia, the apex of both female and male scales with a long rough awn.
- **Perigynia** 5.0-6.5 x 2.0-3.0 mm, the body ovoid or globose, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, sessile; beak 2.5-4.0 mm long, smooth, bidentate.
- **Achenes** trigonous; the style persistent, bent; stigmas 3.

**HABITAT:** Open wet meadows and forested wetlands, generally in calcareous or neutral soils. MA, ME, NH, VT.

**NOTES:** Strongly resembles *C. lurida*, but can be distinguished by its smaller size and more slender spikes and leaves. In *C. baileyi*, the beak of the perigynium is longer than the body (beak is as long as or shorter than the body in *C. lurida*). More common in northern New England. Conservation concern: MA (Threatened), ME (Special Concern), NH (Threatened).
181. *Carex lurida* Wahlenberg  

**SECTION VESICARiae**

**DISTINCTIVE FEATURES:** A very common and variable medium-sized tussock sedge of open wet habitats, with distinctive bristly yellow spikes. **FIGURE 24.**

- **Leaves** 2-7 mm wide, longer than the flowering stems, yellow-green.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, yellow-brown, the apex concave.
- **Inflorescence** to 15 cm long, with 3-5 spreading spikes, the upper 1 male.
- **Female spikes** 1.0-7.5 cm x 1.4-2.0 cm, sessile (the lowest short-peduncled), spreading; the perigynia crowded, spreading.
- **Bracts** leaflike, longer than the inflorescence, short-sheathing.
- **Scales** shorter and narrower than the perigynia, both female and male scales with a long rough awn.
- **Perigynia** 6.0-10.0 x 2.5-3.5 mm, ovoid or globose, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, sessile; beak 2.5-6.0 mm long, smooth, the apex bidentate.
- **Achenes** trigonous; style persistent, bent; stigmas 3.

**HABITAT:** Wide range of open wet habitats; marshes, wet meadows, clearings, shores. THROUGHOUT.

**NOTES:** Very abundant and common throughout our range, often found as an early-successional species in disturbed wetlands. Reported to hybridize widely, which may be due to morphological variability. Distinguished from the very similar *C. baileyi* by *C. lurida*’s wider leaves and spikes, and by the beak as long as or shorter than the perigynium body.

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**Figure 24.** 178. *Carex lupuliformis*; 179. *Carex lupulina*; 180. *Carex baileyi*; 181. *Carex lurida*. 
182.  *Carex tuckermanii* Dewey

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** An uncommon large tussock sedge of wet soils with very large, inflated, short-beaked perigynia and indented achenes. **FIGURE 25.**

- **Leaves** 3-5 mm wide, longer than the flowering stems, deep green.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex deeply concave.
- **Inflorescence** to 30 cm long, with 4-7 erect or divergent cylindric spikes, the upper 2-4 male and distinctly separated from the female spikes.
- **Female spikes** 2-6 cm x 12-18 mm, the upper sessile (the lowest short-peduncled), perigynia ascending or spreading.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** much shorter and narrower than the perigynia, acute or cuspidate.
- **Perigynia** 7.0-10.0 x 4.0-7.0 mm, the body ovoid, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, short-stipitate; beak 2.0-4.0 mm long, smooth, bidentate.
- **Achenes** trigonous and indented on one margin; style persistent, bent; stigmas 3.

**HABITAT:** Wet soils or shallow water, generally neutral to calcareous soils. CT, MA, ME, NH, VT.

**NOTES:** Resembles *C. vesicaria*, but has distinctive, very large, inflated perigynia and indented achenes. Could be confused with *C. intumescens*, but *C. tuckermanii* has lighter, glossy, more inflated perigynia with fewer nerves. The indented achenes are very distinctive. Conservation concern: CT (Special Concern), MA (Endangered).

183.  *Carex vesicaria* Linnaeus

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** A common wetland tussock sedge with large, inflated, shining, short-beaked perigynia. **FIGURE 25.**

- **Leaves** 3-5 (8) mm wide, longer than the stems, yellow-green.
- **Lower sheaths** red-brown; upper sheath fronts hyaline, yellow-brown, the apex truncate or shallowly concave.
- **Inflorescence** to 20 cm long, with 3-7 erect cylindric spikes, the upper 2-4 male.
- **Female spikes** 2.5-7.5 cm x 5-15 mm, sessile (the lowest short-peduncled), perigynia ascending or spreading.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, brown, acute.
- **Perigynia** 4.0-8.0 x 3.0-3.5 mm, ovoid, inflated, suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved, tapering to the beak; base round, short-stipitate; beak to 2.0 mm long, smooth, bidentate.
- **Achenes** trigonous; style persistent, bent; stigmas 3.

**HABITAT:** Wet soils or shallow water, generally neutral to calcareous soils. THROUGHOUT.

**NOTES:** A common and variable species. Although as many as 5 varieties have been recognized in our region, there is no evidence that distinct infraspecific taxa exist. *C. vesicaria* can be distinguished from *C. utriculata*, with which it often occurs, by the caespitose habit, narrow leaves which lack septae, scabrous stems, and short female spikes.
184. *Carex utriculata* Boott

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** A common large sedge of wet soils and shallow water, with flat or V-shaped leaves and elongate erect yellow-brown female spikes. **FIGURE 25.**

- **Leaves** 4-10 mm wide, longer than the flowering stems, light green, smooth, strongly septate (with prominent horizontal thickenings), flat or V-shaped in cross-section.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex concave or truncate.
- **Inflorescence** to 30 cm long, with 4-9 erect cylindric spikes, the upper 2-4 male and distinctly separated from the female spikes.
- **Female spikes** 1-15 cm x 10-20 mm, sessile (the lowest short-peduncled), not clustered, perigynia ascending or spreading.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, brown, acute or acuminate.
- **Perigynia** 4.0-8.0 x 2.5-3.5 mm, ovoid, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, short-stipitate; beak 2.0-2.7 mm long, smooth, bidentate.
- **Achenes** trigonous; style persistent, bent; stigmas 3.

**HABITAT:** Wide range of open wet habitats and shallow water. **THROUGHOUT.**

**NOTES:** A common robust and variable species. Most similar to *C. rostrata*, which has U-shaped septate leaves. Somewhat resembling *C. vesicaria*, but distinguished by the rhizomatous habit, smooth stems, septate leaves, and longer yellow-green female spikes. Also potentially confused with *C. retrorsa*, but *C. utriculata* can be recognized by the distant male and female spikes and spreading perigynia. In non-flowering condition, *C. utriculata* may also be confused with *C. lacustris*, but the latter species usually has blue-green leaves. Fernald and Seymour recognized three varieties in our region, however, there is no evidence that supports recognition of these infraspecific taxa. May hybridize with *C. vesicaria* and other taxa (*C. schweinitzii*).

185. *Carex rostrata* Stokes

**SECTION VESICARIAE**

**DISTINCTIVE FEATURES:** An uncommon large northern sedge of wet soils and shallow water, with U-shaped septate leaves and elongate erect yellow-brown female spikes. **FIGURE 25.**

- **Leaves** 1.5-4 mm wide, longer than the flowering stems, light green, smooth, strongly septate (with prominent horizontal thickenings), U-shaped in cross-section.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex concave or truncate.
- **Inflorescence** to 30 cm long, with 3-7 erect cylindric spikes, the upper 2-4 male and distinctly separated from the female spikes.
- **Female spikes** 1-15 cm x 10-20 mm, sessile (the lowest short-peduncled), not clustered, perigynia ascending or spreading.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, brown, acute or acuminate.
- **Perigynia** 3.6-5.8 x 1.7-2.8 mm, ovoid, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, short-stipitate; beak 1.2-2.0 mm long, smooth, bidentate.
- **Achenes** trigonous; style persistent, bent; stigmas 3.
HABITAT: Open wet habitats and shallow water. ME, NH.

NOTES: An uncommon robust species, known only from a few localities in northern New England. The inflorescence and perigynia resemble *C. utriculata*, but the narrower U-shaped leaves and smaller perigynia distinguish *C. rostrata*. Conservation concern: ME (Special Concern).

186. *Carex retrorsa* Schweinitz

SECTION VESICARIAE

DISTINCTIVE FEATURES: An uncommon large sedge of wet soils and shallow water, with elongate crowded female spikes and reflexed lower perigynia. **FIGURE 25.**

- **Leaves** 4-10 mm wide, longer than the flowering stems, light green, strongly septate.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex concave or truncate, prolonged.
- **Inflorescence** to 15 cm long, with 4-12 erect cylindric spikes, the upper 1-4 male and overlapped by the female spikes.
- **Female spikes** 1.5-8 cm x 15-20 mm, sessile (the lowest short-peduncled), clustered, perigynia on the lower half of the spike reflexed.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, brown, acute or cuspidate.
- **Perigynia** 7.0-12.0 x 2.5-3.5 mm, ovoid, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, short-stipitate; beak 2.0-3.5 mm long, smooth, bidentate.
- **Achenes** trigonous; style persistent, bent; stigmas 3.

HABITAT: Wide range of forested wet habitats, including swamps, alluvial woods, and calcareous meadows. CT, MA, ME, NH, VT.

NOTES: An uncommon robust species. Somewhat resembling *C. utriculata*, but distinguished by the shorter clustered female and male spikes and the reflexed perigynia with beaks longer than 2 mm. May hybridize with *C. lurida*, the hybrids known as *C. x. hartii*.

187. *Carex bullata* Schkuhr ex Willdenow

SECTION VESICARIAE

DISTINCTIVE FEATURES: An uncommon large slender sedge of acid wet habitats. **FIGURE 25.**

- **Leaves** 2-5 mm wide, longer than the stems, light green, strongly septate.
- **Lower sheaths** red-brown, ladder-fibrillose; upper sheath fronts hyaline, yellow-brown, the apex deeply concave.
- **Inflorescence** to 15 cm long, with 2-5 erect cylindric spikes, the upper 1-3 male and distinctly separated from the female spikes.
- **Female spikes** 1.5 cm x 10-20 mm, sessile (the lowest short-peduncled), not clustered, perigynia ascending or spreading.
- **Bracts** leaflike, longer than the inflorescence, not sheathing.
- **Scales** shorter and narrower than the perigynia, brown, acute.
- **Perigynia** 6.0-10.0 x 2.5-3.0 mm, ovoid, inflated and suborbicular in cross-section, yellow-green, smooth and shining, strongly 8-10 nerved; base round, short-stipitate; beak 2.5-4.5 mm long, scabrous, bidentate.
- **Achenes** trigonous; style persistent, bent; stigmas 3.

HABITAT: Acid soils in open wet habitats; bogs, wet meadows. THROUGHOUT.
NOTES: An uncommon species primarily found near the coast. Resembles *C. utriculata*, but can be distinguished by the more slender leaves and spikes, and by the long (2.5-4.5 mm) scabrous beak of the perigynium. Reported to hybridize with *C. utriculata*, the hybrid known as *C. x olneyi*. Conservation concern: NH (Endangered).

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abaxial</td>
<td>Away from the stem; the lower surface of the leaf or perigynium; dorsal</td>
</tr>
<tr>
<td>Achene</td>
<td>One-seeded dry indehiscent fruit</td>
</tr>
<tr>
<td>Acuminate</td>
<td>Apex forming an angle less than 90 degrees, generally tapering to a point</td>
</tr>
<tr>
<td>Acute</td>
<td>Apex forming an angle between 45 and 90 degrees</td>
</tr>
<tr>
<td>Adaxial</td>
<td>Next to the stem; the upper surface of the leaf or perigynium; ventral</td>
</tr>
<tr>
<td>Alluvial</td>
<td>Deposited by river flows; typically fine-grained soils in floodplains</td>
</tr>
<tr>
<td>Ant-body</td>
<td>The spongy, swollen, nutritious base of a perigynium distributed by ants</td>
</tr>
<tr>
<td>Apical</td>
<td>Near the tip</td>
</tr>
<tr>
<td>Apiculate</td>
<td>Ending abruptly in a short point</td>
</tr>
<tr>
<td>Auriculate</td>
<td>Eared, typically the reduction of a bract sheath to two small ear-like lobes</td>
</tr>
<tr>
<td>Awn</td>
<td>Long, stiff projection from the tip of a scale or bract</td>
</tr>
<tr>
<td>Back</td>
<td>Away from the stem; the lower surface of the leaf or perigynium; dorsal</td>
</tr>
<tr>
<td>Basal</td>
<td>Originating near the base of the stem</td>
</tr>
<tr>
<td>Base</td>
<td>The lowest portion of a structure, particularly a perigynium or achene</td>
</tr>
<tr>
<td>Beak</td>
<td>The tubular structure at the apex of a perigynium that encloses the style</td>
</tr>
<tr>
<td>Beakless</td>
<td>The apex of the perigynium lacking a narrow distinct tubular beak</td>
</tr>
<tr>
<td>Biconvex</td>
<td>Convex on both sides</td>
</tr>
<tr>
<td>Bidentate</td>
<td>Having two stiff projections (teeth)</td>
</tr>
<tr>
<td>Bisexual</td>
<td>Having both male and female flowers</td>
</tr>
<tr>
<td>Blade</td>
<td>The flat, expanded portion of the leaf or bract</td>
</tr>
<tr>
<td>Body</td>
<td>The portion of the perigynium that encloses the achene</td>
</tr>
<tr>
<td>Bract</td>
<td>Modified, reduced leaf in the inflorescence</td>
</tr>
<tr>
<td>Caespitose</td>
<td>With short, much-branched rhizomes forming a dense clump of vegetative and flowering stems</td>
</tr>
<tr>
<td>Calcareous</td>
<td>Soil or rock with high levels of calcium and pH of 6 or greater</td>
</tr>
<tr>
<td>Ciliate</td>
<td>With stiff hairs on the margins</td>
</tr>
<tr>
<td>Clavate</td>
<td>Club-shaped – thickened upward from a very tapered base</td>
</tr>
<tr>
<td>Compound inflorescence</td>
<td>A panicle, the stem bearing short branches each with several spikelets</td>
</tr>
<tr>
<td>Coriaceous</td>
<td>Thick and leathery</td>
</tr>
<tr>
<td>Corrugated</td>
<td>Rridged</td>
</tr>
<tr>
<td>Cuspidate</td>
<td>Apex with a short, stiff point</td>
</tr>
<tr>
<td>Decumbent</td>
<td>Lying on the ground with the tips ascending</td>
</tr>
<tr>
<td>Dioecious</td>
<td>With separate male and female plants</td>
</tr>
<tr>
<td>Dorsal</td>
<td>Away from the stem; the lower surface of the leaf or perigynium; abaxial</td>
</tr>
<tr>
<td>Dorsal suture</td>
<td>A flap of tissue on the dorsal (back) of the beak of a perigynium, appearing to be formed by the overlap of the margins of the perigynium, typically in some groups in Subgenus Vignea</td>
</tr>
<tr>
<td>Drooping</td>
<td>Pendant, hanging downward</td>
</tr>
<tr>
<td>Ellipsoid</td>
<td>A 3-dimensional object widest at the midpoint</td>
</tr>
<tr>
<td>Elliptic</td>
<td>A 2-dimensional object widest at the midpoint</td>
</tr>
<tr>
<td>Erect</td>
<td>Upright</td>
</tr>
<tr>
<td>Filiform</td>
<td>Threadlike</td>
</tr>
<tr>
<td>Flowering shoot</td>
<td>A stem terminating in an inflorescence</td>
</tr>
<tr>
<td>Front</td>
<td>Next to the stem; the upper surface of the leaf or perigynium; ventral</td>
</tr>
<tr>
<td>Glabrous</td>
<td>Smooth</td>
</tr>
<tr>
<td>Glaucous</td>
<td>Covered with a waxy bloom, giving a blue-green color</td>
</tr>
<tr>
<td>Granular</td>
<td>A surface covered with small granules or projections</td>
</tr>
<tr>
<td>Hair</td>
<td>A straight, slender projection from the surface</td>
</tr>
<tr>
<td>Head</td>
<td>A crowded dense cluster of spikelets or flowers</td>
</tr>
</tbody>
</table>
Glossary

Hispid - surface covered with long stiff hairs
Hyaline - thin and translucent or transparent
Hybridization - cross-pollination of two species that results in a viable seed
Impressed nerves - nerves that appear to be sunk into the surface of a perigynium, rather than raised above the surface
Inflated - perigynium that very loosely encloses the achene, generally with a more-or-less spherical body
Inflorescence - collectively, all of the flowers on a stem
Involute - the margins rolled inward
Ladder-fibrillose - veins on a leaf sheath that forming a pinnate or ladder-like network that is persistent when the hyaline portion of the sheath disintegrates
Lance-ovate - narrowly ovate, more than 3 times as long as wide (also lance-ovoid for a 3-dimensional object)
Lenticular - biconvex and flattened, as a lentil
Ligule - an outgrowth from the top of the leaf sheath
Membranous - thin and semi-translucent
Midrib - the central nerve or supporting structure of a scale or leaf (= midvein)
Monocot - one of the monocotyledons, Class Monocotyledoneae; Class Liliatae; Class Liliopsida, depending on taxonomists; plants with a single cotyledon in the embryo, generally parallel leaf veins, flowers generally trimerous (parts in multiples of 3)
Myrmecochory - dispersal by ants
Nerves - veins of vascular tissue and supporting tissue that run through a leaf, bract, scale or perigynium
Obconic - a 3-dimensional object widest at the apex; inversely cone-shaped
Oblique - asymmetrical
Obovate - with the widest point above the middle of the structure
Obtuse - a blunt apex, with an angle greater than 90 degrees
Orifice - opening; the tip of the hollow beak through which the style and stigmas emerge
Ovate - a 2-dimensional object widest below the middle
Ovoid - a 3-dimensional structure widest below the middle
Papillose - covered with minute rounded projections
Peduncle - stalk of a spike or spikelet
Perigynium - bottle-like bract enclosing the female flower
Persistent style - a tough, bony style that is not fragile and does not wither as the achene develops
Pinnately veined - a sheath with secondary veins arising from a central midvein
Planoconvex - Flat on the adaxial (ventral) side, convex (rounded) on the abaxial (dorsal) side
Pleated - appearing folded or pleated along the main veins
Pollen - small, spherical structures that are produced in the anthers and contain the male gametes (sperm)
Prickle - a sharp-pointed outgrowth of the stem or leaf surface
Reflexed - diverging from the stem at an angle greater than 90 degrees
Retuse - apex rounded, with two lobes and a notch at the midrib
Rhizomatous - growing by more-or-less elongate rhizomes, the stems not densely clustered
Rhizome - a horizontal underground stem
Rugose - a surface covered with coarse reticulate lines; wrinkled
Scabrous - a harsh surface, covered with prickles or stiff short hairs
Scale - the small papery leaf-like structure subtending a male flower or a perigynium
Scale leaf - small leathery leaf, generally consisting only of a sheath, at the base of the stem or on the rhizome
Section - a group of (presumably) related species in Carex; the rank below subfamily
Septate - in leaves, refers to hard horizontal thickenings or cross-bars
**Serpentine** - a metamorphic magnesium silicate rock

**Serrate** - sharply toothed on the margin

**Sessile** - arising directly from the stem without a stalk or peduncle

**Sheath** - the tubular portion of the leaf or bract that surrounds the stem

**Sheath apex** - the top of the sheath, particularly the top of the hyaline portion opposite the blade

**Sheath back** - the portion of the sheath that is continuous with the blade and generally like the blade in texture

**Sheath front** - the portion of the sheath that is opposite the blade and generally hyaline

**Spathe** - an enlarged bract enclosing an inflorescence

**Spike** - unbranched elongate inflorescence or inflorescence segment with sessile flowers

**Spikelet** - a small spike; the smallest unit of the inflorescence

**Spreading** - diverging from the stem or axis at an angle 90 degrees or less

**Squarrose** - sharply curved downward and outward

**Stabilized hybrid** - a species, capable of producing viable seed, that originated through hybridization

**Stalked** - with a discernable stem; stipitate

**Stigma** - pollen-receptive portion of the pistil: in Carex, long and papillose and borne at the top of the style

**Stipitate** - having a stalk

**Style** - the slender elongate portion of the pistil between the ovary and the stigma

**Suborbicular** - a 3-dimensional object that is almost spherical

**Subulate** - very narrowly triangular

**Terminal spike** - the subunit of the inflorescence at the apex of the stem

**Toothed** - with short teeth (serrate) or prickles on the margin

**Truncate** - the apex cut straight across; ending abruptly

**Unisexual** - a spike, stem, or plant having flowers either all male or all female

**Vegetative shoot** - a stem that bears leaves only

**Ventral** - next to the stem; the upper surface of the leaf or perigynium; adaxial

**Wind-pollinated** - anemophily; pollen transferred between male flowers and female flowers by wind

**Winged** - with flattened thin margins
TAXONOMIC RELATIONSHIPS

Carex species have been grouped into sections (groups of similar, presumably related, species). Sections are grouped into subgenera. The relationships among species were, until recently, largely based on morphology. Important morphologic characters include the number of stigmas, organization of the inflorescence, and characteristics of the perigynia. More recent studies have evaluated both species boundaries and the relationships among species, based on genetic similarities. These studies are refining our understanding of the evolutionary diversity of Carex, although a satisfactory phylogeny of the genus has not yet been developed.

Although this book is intended to be a field guide rather than a taxonomic treatment, this chapter provides information on the sections of Carex that occur in New England and the species assigned to each section. They are grouped into three subgenera – subgenus Primocarex, subgenus Vignea, and subgenus Carex. Subgenus Primocarex contains several anomalous sections of single-spiked species which, recent genetic evidence suggests, may be more closely related to other genera. The other two subgenera are typically multi-spicate. In broad terms, subgenus Vignea contains the sections which have two stigmas and plano-convex or flat perigynia with a ventral suture. Subgenus Carex consists of the sections which have three stigmas and trigonous or terete perigynia lacking a ventral suture. Section Phacocystis, placed in this subgenus, has two stigmas and biconvex perigynia borne on elongate, unisexual spikes.

The largest section of Carex in New England is Section Ovales, with 27 species. Other large sections include Phacocystis (14), Vesicariae (14), Acrocystis (11), Phaestoglochin (10), Hymenochlanae (9), and Laxiflorae (8).

This chapter provides a brief description of each section and lists the New England species assigned to that section (based on the treatment in Flora North America). Sections are listed in alphabetical order, as there is no accepted linear phylogenetic organization.

SUBGENUS PRIMOCAREX

Section Capituligerae Kükenthal

Consists of one species, C. capitata.

Section Leptocephalae L.H. Bailey

Consists of one species, C. leptalea.

Section Phyllostachyae Tuckerman ex Kükenthal

A North American endemic group of approximately 10 species, typically in upland forested and open habitats. Inflorescence of a single spike, pistillate at the base and staminate at the apex. Bract absent. Pistillate scales large and bract-like. Perigynia lanceolate, stipitate, rounded-trigonous, veinless with two prominent marginal veins, glabrous, tapering to a short flattened beak, the orifice entire. Stigmas three. Achenes trigonous, the style deciduous.

C. backii
C. willdenowii

SUBGENUS VIGNEA

Section Ammoglochin Dumortier


C. siccata
Taxonomic Relationships

**Section Chordorrhizae (Heuffel) Meinshausen**
Consists of one species, *C. chordorrhiza*.

**Section Deweyanae (Tuckerman ex Mackenzie) Mackenzie**
A northern-hemisphere (North America, Eastern Asia) group of 8 species. Inflorescence a raceme of up to 10 sessile short spikes. Bracts bristle-like or leaf-like, sheathless. Spikes alike, staminate at the base. Perigynia planoconvex, ovate to narrowly lanceolate, base with spongy tissue, margins acute, beak entire or bidentate. Stigmas 2. Achenes lenticular.

* C. bromoides
* C. deweyana

**Section Dispermae Owhi**
Consists of one species, *C. disperma*.

**Section Divisae H. Christ ex Kükenthal**
A group of 14 species, found in North America, South America, Eurasia, South Africa and Australia. Inflorescence a raceme of 3-25 sessile short spikes, the spikes distinct or condensed. Bracts scale-like and sheathless. Spikes alike, staminate at the tip. Perigynia planoconvex or biconvex, veined, base with spongy tissue, margins blunt, beak slightly bidentate. Stigmas 2. Achenes lenticular.

* C. praegracilis

**Section Glareosae G. Don**
A group of 20-25 species, found in North America, South America, Eurasia, Australia and New Zealand, typically in bogs, wet coastal habitats, or stream banks. Inflorescence a raceme of up to 15 sessile short spikes, the spikes distinct. Bracts bristle-like or scale-like and sheathless. Spikes alike, staminate at the base. Perigynia planoconvex, veined, base with spongy tissue, margins blunt, beak very short, slightly bidentate. Stigmas 2. Achenes lenticular.

* C. arcta
* C. brunnescens
* C. canescens
* C. mackenzei
* C. tenuiflora
* C. trisperma

**Section Heleoglochin Dumortier**
A group of 12 species, found in North America, South America, Eurasia, northern Africa and Australia, typically in open wetlands. Inflorescence a condensed compound panicle with many sessile short spikes. Bracts bristle-like or scale-like and sheathless. Spikes alike, staminate at the tip. Perigynia planoconvex, thick-walled, veined, base with spongy tissue, margins blunt, beak bidentate. Stigmas 2. Achenes lenticular. Sheaths are typically red-dotted at the summit.

* C. diandra
* C. praerrea
Taxonomic Relationships

Section Macrocephalae Kükenthal

A group of 2 species, found in North America and eastern Asia, in sand dunes or sandy coastal beaches. Inflorescence a condensed compound panicle with many sessile short spikes, typically either staminate or pistillate, the unisexual flowering shoots borne on the same rhizomes. Bracts bristle-like or scale-like and sheathless. Spikes alike, unisexual. Perigynia planoconvex, thick-walled, base with spongy tissue, margins winged and serrate, beak bidentate. Stigmas 3. Achenes trigonous.

*C. kobomugi* (introduced)

Section Multiflorae (J. Carey) Kükenthal

A group of 7 species, found in North America and Mexico, typically in open wetlands. Inflorescence a condensed compound panicle with many sessile short spikes. Bracts bristle-like or scale-like and sheathless. Spikes alike, staminate at the tip. Perigynia planoconvex, veined, base with spongy tissue, margins acute, beak bidentate. Stigmas 2. Achenes lenticular.

*C. annectens*
*C. vulpinoidea*

Section Ovales Kunth

A group of approximately 85 species, found in North America, South America, and Eurasia, most diverse in North America. Inflorescence a raceme of 3-20 sessile short spikes, the spikes distinct. Bracts bristle-like or scale-like and sheathless. Spikes alike, staminate at the base. Perigynia flat or slightly planoconvex, veined, margins winged, beak bidentate. Stigmas 2. Achenes lenticular.

*C. adusta*
*C. alata*
*C. albolutescens*
*C. argyrantha*
*C. bebbii*
*C. bicknellii*
*C. brevior*
*C. crawfordii*
*C. cristatella*
*C. cumulata*
*C. festucacea*
*C. foenea*
*C. homathodes*
*C. longii*
*C. merritt-fernaldii*
*C. molesta*
*C. normalis*
*C. oronensis*
*C. ovalis* (introduced)
*C. praticola*
*C. projecta*
*C. scoparia*
*C. silicea*
*C. straminea*
*C. tenera*
*C. tincta*
*C. tribuloides*
Taxonomic Relationships

**Section Phaestoglochin Dumortier**


- C. appalachica
- C. cephaloidea
- C. cephalophora
- C. mesochorea
- C. muehlenbergii
- C. radiata
- C. retroflexa
- C. rosea
- C. sparganioides
- C. spicata (introduced)

**Section Physoglochin Dumortier**

A group of 4-6 species, found in North America and Eurasia, typically in arctic-alpine wetlands. Inflorescence a single spike, either unisexual or bisexual with perigynia at the base. Bracts absent. Perigynia reflexed, planoconvex, leathery, veined, base with spongy tissue, beak obscurely bidentate. Stigmas 2. Achenes lenticular.

- C. gynocrates

**Section Stellulatae Kunth**

A group of 15 species, found in North America, Mexico, Central and South America, Eurasia, Australia, New Zealand, and Hawaii, typically in bogs or fens. Inflorescence a raceme with 3-10 distinct sessile short spikes. Bracts bristle-like or scale-like and sheathless. Spikes alike, staminate at the base, with few (3-40) spreading perigynia. Perigynia spreading, planoconvex, veined, base distended with spongy tissue, margins acute, beak bidentate. Stigmas 2. Achenes lenticular.

- C. atlantica
- C. echinata
- C. exilis
- C. interior
- C. seorsa
- C. sterilis
- C. wiegandii

**Section Vulpinae (Heuffel) H. Christ**


- C. alopecoidea
- C. laevivaginata
- C. oklahomensis
- C. stipata
SUBGENUS CAREX

Section Acrocystis Dumortier
A group of approximately 35 species, North America and Eurasia, typically in upland forests and open habitats. Inflorescence a raceme of 2-6 erect cylindrical spikes. Bracts bristle-like or leaf-like, sheathless or very short-sheathing. Lateral spikes pistillate, few-flowered, pedunculate or short-sessile, erect; terminal spike staminate. Scales various. Perigynia rounded-trigonal, with two prominent marginal nerves, pubescent, base filled with spongy tissue that shrinks when dry, forming a stipe, beak short and minutely bidentate. Stigmas 3. Achenes trigonous.

C. albicans
C. communis
C. deflexa
C. lucorum
C. nigromarginata
C. novae-angliae
C. peckii
C. pensylvanica
C. reznicekii
C. tonsa
C. umbellata

Section Albae (Ascherson & Graebner) Kükenthal

C. eburnea

Section Anomalae J. Carey
A group of approximately 20 species, North America, eastern Asia, Australia. Sheaths pubescent, leaves often scabrous on the upper surface. Inflorescence a raceme of 4-8 erect cylindrical spikes. Bracts leaf-like, sheathless or very short-sheathing, pubescent. Lateral spikes pistillate, pedunculate, erect; terminal spike staminate. Scales various, usually acute. Perigynia obovate, rounded-trigonal, indistinctly nerved with two prominent marginal nerves, glabrous or scabrous, beak curved, the orifice hyaline. Stigmas 3. Achenes trigonous. Style deciduous.

C. scabrata

Section Bicolores (Tuckerman ex L.H. Bailey) Rouy
A group of 4 species, circumboreal, mainly in open wetlands. Inflorescence a raceme of 2-6 short erect cylindrical spikes. Bracts leaf-like, sheathless or short-sheathing. Lateral spikes pistillate, pedunculate, erect; terminal spike staminate or with the upper half pistillate. Perigynia biconvex to suborbicular, obscurely veined, glabrous and densely papillose, apex abruptly contracted to a minute beak or beakless, the orifice entire. Stigmas 2. Achenes lenticular. Style deciduous.

C. aurea
C. garberi
Taxonomic Relationships

Section Carex


C. atherodes
C. hirta (introduced)
C. trichocarpa

Section Careyanae Tuckerman ex Küsenthal


C. abscondita
C. digitalis
C. laxiculmis
C. plantaginea
C. platyphylla

Section Ceratocystis Dumortier


C. cryptolepis
C. flava
C. viridula

Section Chlorostachyae Tuckerman ex Meinshausen

A group of 8 species, North America and Eurasia. Inflorescence a raceme of 3-6 erect or nodding cylindrical spikes. Bracts leaf-like, long-sheathing. Lateral spikes pistillate, pedunculate, spreading or nodding; terminal spike staminate or pistillate on the upper half. Scales not awned. Perigynia trigonous to rounded-trigonous, narrowly ovate or lanceolate, veinless with 2 prominent marginal nerves, glabrous, beaked, the orifice entire. Stigmas 3. Achenes trigonous. Style deciduous.

C. capillaris

Section Clandestinae G. Don

A group of approximately 20 species, North America and Eurasia, typically in upland forests and open habitats. Inflorescence a raceme of 2-6 erect cylindrical spikes. Bracts bladeless, with long colored sheaths. Lateral spikes pistillate, few-flowered, pedunculate or short-sessile, erect; terminal spike staminate. Scales dark brown or black, cuspidate or awned. Perigynia rounded-
Taxonomic Relationships

trigonous, obovate, with two prominent marginal nerves, pubescent, base filled with spongy tissue that shrinks when dry, forming a stipe, beak short and entire. Stigmas 3. Achenes trigonous.

C. pedunculata
C. richardsonii

Section **Collinsiae (Mackenzie) Mackenzie**

Consists of a single species, *C. collinsii*

Section **Granulares O. Lang**

A group of 6 species, North America, Mexico and Central America. Inflorescence a raceme of 2-6 erect cylindrical spikes. Bracts leaf-like, long-sheathing. Lateral spikes pistillate, densely flowered (more than 20 perigynia) pedunculate, erect; terminal spike staminate. Scales awned. Perigynia round to rounded-trigonous, with faint red or yellow-brown dots, veined, glabrous, apex abruptly contracted to a minute beak or beakless, the orifice entire or minutely bidentate. Stigmas 3. Achenes trigonous. Style deciduous.

C. crawei
C. granularis

Section **Griseae (L.H. Bailey) Kükenthal**

A group of 21 species, North America and Mexico. Inflorescence a raceme of 3-6 erect cylindrical spikes. Bracts leaf-like, long-sheathing. Lateral spikes pistillate, pedunculate, erect or nodding; terminal spike staminate. Scales awned. Perigynia round to rounded-trigonous, finely veined with impressed nerves, glabrous or pubescent, apex abruptly contracted to a minute beak or beakless, the orifice entire. Stigmas 3. Achenes trigonous. Style deciduous.

C. amphibola
C. conoidea
C. glaucodea
C. grisea
C. hitchcockiana
C. oligocarpa

Section **Hirtifoliae Reznicek**

Consists of a single species, *C. hirtifolia*

Section **Hymenochlanae (Drejer) L.H. Bailey**

A group of approximately 50-60 species, North America, Mexico, Central America, Eurasia, Africa. Inflorescence a raceme of 3-7 erect or nodding cylindrical spikes. Bracts leaf-like, long-sheathing. Lateral spikes pistillate, pedunculate, erect or nodding; terminal spike staminate or pistillate on the upper half. Perigynia trigonous to rounded-trigonous, veined or veinless with 2 prominent marginal nerves, glabrous or pubescent, beak to 3mm, entire or bidentate. Stigmas 3. Achenes trigonous. Style deciduous.

C. aestivalis
C. arctata
C. castanea
C. davisii
C. debilis
C. formosa
C. gracillima
Taxonomic Relationships

*C. prasina*
*C. sprengellii*

**Section Laxiflorae (Kunth) Mackenzie**

A group of 16 species, North America, Mexico, Central America, primarily in upland forests. Inflorescence a raceme of 3-6 erect or nodding cylindrical spikes. Bracts leaf-like, long-sheathing. Lateral spikes pistillate, pedunculate, erect or nodding; terminal spike staminate. Scales short-awned. Perigynia trigonous to rounded-trigonal, obovate, veined or veinless with 2 prominent marginal nerves, glabrous, the base filled with spongy tissue that shrinks when dry, forming a stipe, beak to 3 mm, entire, straight or bent. Stigmas 3. Achenes trigonous. Style deciduous.

*C. albursina*
*C. blanda*
*C. gracilescens*
*C. laxiflora*
*C. leptonervia*
*C. ormostachya*
*C. striatula*
*C. styloflexa*

**Section Leucoglochin Dumortier**


*C. pauciflora*

**Section Limosae (Heuffel) Meinshausen**

A group of 6 species, North America, Eurasia, South America, typically in wetlands, especially bogs. Inflorescence a raceme of 2-5 erect or nodding short-cylindrical spikes. Bracts leaf-like, sheathless or very short-sheathing. Lateral spikes pistillate, pedunculate, erect or nodding; terminal spike staminate or with perigynia on the upper half. Scales various, dark brown. Perigynia rounded-trigonal, veined, papillose, glabrous, beakless or with a minute entire beak. Stigmas 3. Achenes trigonous. Style deciduous.

*C. barrattii*
*C. limosa*
*C. magellanica*
*C. rariflora*

**Section Lupulinae Tuckerman ex J. Carey**


*C. grayi*
*C. intumescens*
*C. lupuliformis*
*C. lupulina*
Section *Mitratae* Kükenthal

A group of approximately 20 species, Eurasia and Australia. Inflorescence a raceme of 2-4 cylindrical spikes. Bracts bristle-like, sheathless or very short-sheathing. Lateral spikes pistillate, pedunculate or short-sessile, erect; terminal spike staminate. Scales various. Perigynia rounded-trigonal, indistinctly veined, with two prominent marginal nerves, pubescent, beak short and minutely bidentate. Stigmas 3. Achenes trigonous, the apex prolonged to form a short collar around the enlarged persistent style-base.

*C. caryophyllea* (introduced)

Section *Paludosae* G. Don


*C. houghtoniana*
*C. lacustris*
*C. lasiocarpa*
*C. pellita*
*C. striata*
*C. vestita*

Section *Paniceae* G. Don

A group of 14 species, North America, Central and South America, Eurasia in a variety of habitats, mainly calcareous. Inflorescence a raceme of 2-5 erect cylindrical spikes. Bracts leaf-like, long-sheathing. Lateral spikes pistillate, pedunculate, erect; terminal spike staminate. Scales obtuse or short-awned, often colored. Perigynia obtusely trigonous to rounded-trigonal, veined with 2 prominent marginal nerves, glabrous and often densely papillose, beaked or beakless, the orifice entire or minutely bidentate. Stigmas 3. Achenes trigonous. Style deciduous.

*C. livida*
*C. meadii*
*C. panicea*
*C. polymorpha*
*C. tetanica*
*C. vaginata*

Section *Phacocystis* Dumortier

A group of approximately 90 species, occurring world-wide, typically in wetlands. Inflorescence a raceme of 2-10 cylindrical spikes. Bracts leaf-like or bristle-like, sheathless or very short-sheathing. Lateral spikes pistillate, pedunculate or short-sessile, erect or nodding; terminal spikes staminate or with some perigynia at the apex. Scales obtuse, acute or awned. Perigynia biconvex, veined or veinless, with two prominent marginal nerves, thin or thick-walled, glabrous, beak short and entire or minutely bidentate. Stigmas 2. Achenes lenticular. Style deciduous.

*C. aquatilis*
*C. bigelowii*
*C. crinita*
*C. emoryi*
Taxonomic Relationships

- *C. gynandra*
- *C. haydenii*
- *C. lenticularis*
- *C. mitchelliana*
- *C. nigra*
- *C. paleacea*
- *C. recta*
- *C. stricta*
- *C. torta*
- *C. vacillans*

**Section Porocystis Dumortier**
A group of approximately 10 species, North America, Eurasia, Central and South America, occurring in a range of habitats, typically in forested uplands. Inflorescence a raceme of 2-6 erect short-cylindrical spikes. Bracts leaf-like, sheathless or very short-sheathing. Lateral spikes pistillate, pedunculate, erect; terminal spike staminate or with perigynia on the upper half. Scales various, usually acute. Perigynia rounded-trigonous, obovate, usually indistinctly nerved and with two prominent marginal nerves, glabrous or pubescent, beakless, the orifice entire. Stigmas 3. Achenes trigonous. Style deciduous.

- *C. bushii*
- *C. hirsutella*
- *C. pallescens*
- *C. swanii*
- *C. virescens*

**Section Racemosae G. Don**
A group of approximately 60 species, North America and Eurasia, primarily arctic-alpine. Inflorescence a raceme of 2-10 erect or nodding short-cylindrical spikes. Bracts bristle-like, sheathless or very short-sheathing. Lateral spikes pistillate, pedunculate, erect; terminal spike staminate or with perigynia on the upper half. Scales brown or black. Perigynia rounded-trigonous, obovate, often dark brown or black on the upper half, nerveless or indistinctly nerved and with two prominent marginal nerves, glabrous beakless or with a short beak, the orifice entire or minutely bidentate. Stigmas 3. Achenes trigonous. Style deciduous.

- *C. atratiformis*
- *C. buxbaumii*
- *C. media*

**Section Rostrales Meinshausen**

- *C. folliculata*
- *C. michauxiana*

**Section Scirpinae (Tuckerman) Kükenthal**
A group of 3 species, North American and Eurasia, often in calcareous or serpentine soils. Inflorescence a single unisexual spike, individual plants either entirely male or female (dioecious). Bracts absent. Spikes cylindric, erect. Scales obtuse, ciliate. Perigynia biconvex, veinless with
2 prominent marginal nerves, pubescent, beak short and entire or minutely bidentate. Stigmas 3. Achenes trigonous.

*C. scirpoidea*

**Section Squarrosae J. Carey**

A group of 4 species, North America and South America, typically in wetlands or floodplains. Inflorescence a single spike or raceme of 2-9 erect cylindrical spikes. Bracts leaf-like or bristle-like, sheathless or very short-sheathing. Lateral spikes pistillate, densely-flowered with more than 50 perigynia, pedunculate, erect; terminal spike staminate. Scales various. Perigynia rounded, inflated, obconic, many-veined, glabrous, base filled with spongy tissue that shrinks when dry, forming a stipe, beak long (1.2-3.5 mm), bidentate. Stigmas 3. Achenes trigonous. Style persistent or deciduous.

*C. squarrosa*
*C. typhina*

**Section Vesicariae (Heuffel) J. Carey**


*C. baileyi*
*C. bullata*
*C. comosa*
*C. hystericina*
*C. lurida*
*C. oligosperma*
*C. pseudocyperus*
*C. retrorsa*
*C. rostrata*
*C. saxatilis*
*C. schweinitzii*
*C. tuckermanii*
*C. utriculata*
*C. vesicaria*
Each species is listed with its number, page (p. XX) and figure number. Synonyms are listed in italics.
<table>
<thead>
<tr>
<th>Species</th>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>kobomugi</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>lacustris</td>
<td>90</td>
<td>88</td>
</tr>
<tr>
<td>laeviginatea</td>
<td>23</td>
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</tr>
<tr>
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<td>171</td>
<td>151</td>
</tr>
<tr>
<td>lasiocarpa</td>
<td>163</td>
<td>147</td>
</tr>
<tr>
<td>laxiculmis</td>
<td>147</td>
<td>137</td>
</tr>
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<td>laxiflora</td>
<td>161</td>
<td>143</td>
</tr>
<tr>
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<td>111</td>
<td>106</td>
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<td>49</td>
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<td>162</td>
<td>144</td>
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<td>96</td>
<td>92</td>
</tr>
<tr>
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<td>137</td>
<td>127</td>
</tr>
<tr>
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<td>64</td>
<td>63</td>
</tr>
<tr>
<td>lucorum</td>
<td>132</td>
<td>120</td>
</tr>
<tr>
<td>lupuliformis</td>
<td>178</td>
<td>159</td>
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<tr>
<td>lupulina</td>
<td>179</td>
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</tr>
<tr>
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<td>181</td>
<td>161</td>
</tr>
<tr>
<td>mackenziei</td>
<td>36</td>
<td>42</td>
</tr>
<tr>
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<td>99</td>
<td>94</td>
</tr>
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<td>153</td>
<td>140</td>
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<td>83</td>
<td>79</td>
</tr>
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<td>72</td>
<td>69</td>
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<td>27</td>
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</tr>
<tr>
<td>michauxiana</td>
<td>93</td>
<td>89</td>
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<tr>
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<td>95</td>
</tr>
<tr>
<td>molesta</td>
<td>69</td>
<td>67</td>
</tr>
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<td>muelhembergii</td>
<td>26</td>
<td>31</td>
</tr>
<tr>
<td>nigra</td>
<td>115</td>
<td>108</td>
</tr>
<tr>
<td>nigromarginata</td>
<td>126</td>
<td>116</td>
</tr>
<tr>
<td>normalis</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>norvegica</td>
<td>83</td>
<td>79</td>
</tr>
<tr>
<td>novae-angliae</td>
<td>127</td>
<td>118</td>
</tr>
<tr>
<td>oklahomensis</td>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>oligocarpa</td>
<td>155</td>
<td>141</td>
</tr>
<tr>
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<td>136</td>
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<td>152</td>
<td>139</td>
</tr>
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<td>50</td>
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<td>129</td>
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<td>122</td>
<td>115</td>
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<tr>
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<td>171</td>
<td>151</td>
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<td>131</td>
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</tr>
<tr>
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<td>133</td>
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</tr>
<tr>
<td>platyphylla</td>
<td>135</td>
<td>124</td>
</tr>
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<td>177</td>
<td>159</td>
</tr>
<tr>
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<td>17</td>
<td>25</td>
</tr>
<tr>
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<td>14</td>
<td>24</td>
</tr>
<tr>
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<td>95</td>
<td>92</td>
</tr>
<tr>
<td>praticola</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td>projecta</td>
<td>58</td>
<td>60</td>
</tr>
<tr>
<td>pseudocyperus</td>
<td>109</td>
<td>101</td>
</tr>
<tr>
<td>radiata</td>
<td>44</td>
<td>47</td>
</tr>
<tr>
<td>rariflora</td>
<td>98</td>
<td>93</td>
</tr>
<tr>
<td>recta</td>
<td>117</td>
<td>109</td>
</tr>
<tr>
<td>retropedunculata</td>
<td>43</td>
<td>46</td>
</tr>
<tr>
<td>retrorsa</td>
<td>186</td>
<td>164</td>
</tr>
<tr>
<td>reznicekii</td>
<td>126A</td>
<td>117</td>
</tr>
<tr>
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<td>123</td>
<td>115</td>
</tr>
<tr>
<td>rosea</td>
<td>45</td>
<td>47</td>
</tr>
<tr>
<td>rostrata</td>
<td>185</td>
<td>163</td>
</tr>
<tr>
<td>rugosperma</td>
<td>88</td>
<td>84</td>
</tr>
<tr>
<td>saxatilis</td>
<td>114</td>
<td>107</td>
</tr>
<tr>
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<td>167</td>
<td>149</td>
</tr>
<tr>
<td>schweinitzii</td>
<td>107</td>
<td>100</td>
</tr>
<tr>
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<td>14</td>
</tr>
<tr>
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<td>55</td>
<td>59</td>
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<tr>
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<td>41</td>
<td>45</td>
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<tr>
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<td>24</td>
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<td>46</td>
<td>50</td>
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<td>18</td>
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<td>37</td>
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<td>16</td>
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<td>67</td>
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<tr>
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<td>168</td>
<td>149</td>
</tr>
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<td>157</td>
<td>142</td>
</tr>
<tr>
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<td>113</td>
<td>107</td>
</tr>
<tr>
<td>strictior</td>
<td>113</td>
<td>107</td>
</tr>
<tr>
<td>styloflexa</td>
<td>158</td>
<td>142</td>
</tr>
<tr>
<td>substricta</td>
<td>119</td>
<td>110</td>
</tr>
<tr>
<td>swanii</td>
<td>87</td>
<td>81</td>
</tr>
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<td>57</td>
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<td>22</td>
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<td>154</td>
<td>140</td>
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<td>53</td>
<td>57</td>
</tr>
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<td>88</td>
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</tr>
<tr>
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<td>94</td>
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</tr>
<tr>
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<td>56</td>
<td>59</td>
</tr>
<tr>
<td>trichocarpa</td>
<td>169</td>
<td>150</td>
</tr>
<tr>
<td>trisperma</td>
<td>33</td>
<td>38</td>
</tr>
<tr>
<td>tuckermannii</td>
<td>182</td>
<td>162</td>
</tr>
<tr>
<td>typhina</td>
<td>80</td>
<td>77</td>
</tr>
<tr>
<td>umbellata</td>
<td>89</td>
<td>85</td>
</tr>
<tr>
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<td>184</td>
<td>163</td>
</tr>
<tr>
<td>vacillans</td>
<td>118</td>
<td>109</td>
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<tr>
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<td>149</td>
<td>138</td>
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<td>183</td>
<td>162</td>
</tr>
<tr>
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<td>121</td>
<td>114</td>
</tr>
<tr>
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<td>86</td>
<td>80</td>
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<td>176</td>
<td>156</td>
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<td>21</td>
<td>28</td>
</tr>
<tr>
<td>walkeriana</td>
<td>168</td>
<td>150</td>
</tr>
</tbody>
</table>
Index

wiegandii ..................25 .......... p 30....... 7
wiltdenowii .................6 .......... p 15....... 2
xanthocarpa.................20......... p 27
x aestivaliformis ...........74......... p 72
x hartii .....................186....... p 164
x mainensis .............. 114....... p 108