



# Caring about *Carex*

Presented to  
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Ohio River Islands NWI

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by

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Who cares about Carex?

# Cyperaceae

monocots with linear leaves,  
parallel veins, and closed sheath



3 - ranked

trigonous

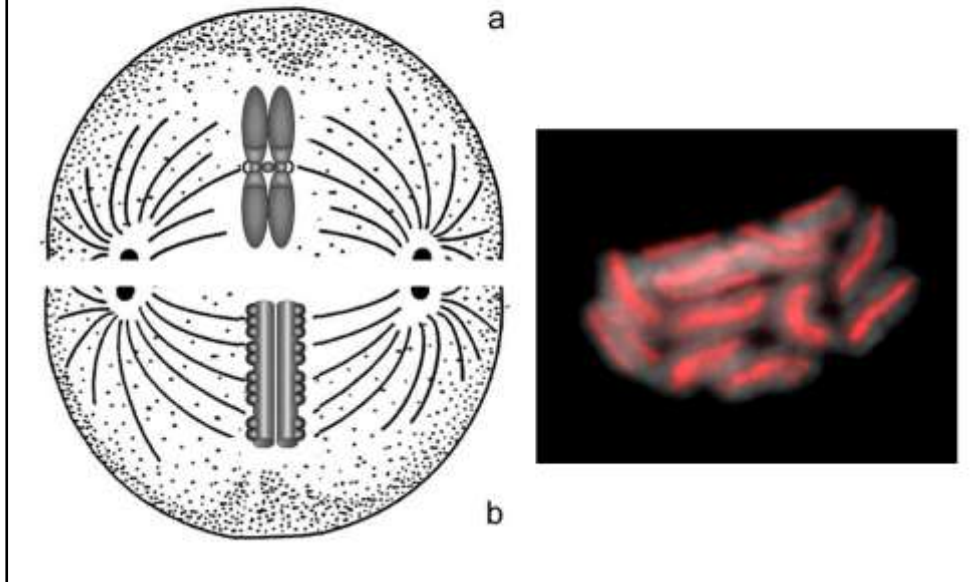


3 - merous



Sometimes referred to as graminoids, due to resemblance to grasses (Poaceae), but more closely related to rushes (Juncaceae). Waltz time.

# Holocentric Chromosomes



Diffuse centromeres, post-reductional meiosis, pollen in tetrads with 3 failing. Agamaploidy responsible for wide range in chromosome numbers. Polyploidy rare or absent.

## Cyperaceae in West Virginia

Genus		# taxa
<i>Bolboschoenus</i>	Bulrush	1
<i>Bulbostylis</i>	Hairsedge	1
<i>Carex</i>	Sedge	135
<i>Cyperus</i>	Flatsedge	14
<i>Dulichium</i>	Threeway Sedge	1
<i>Eleocharis</i>	Spikerush	12
<i>Fimbristylis</i>	Fimbry	2
<i>Rhynchospora</i>	Beaksedge	4
<i>Schoenoplectus</i>	Clubrush	5
<i>Scirpus</i>	Bulrush	11
<i>Scleria</i>	Nutrush	3
<i>Trichophorum</i>	Bulrush	1

12 genera in WV. Note: *Bolboschoenus* new, *Cymophyllus* lumped in *Carex*. *Eleocharis* or *Scirpus* would be a more reasonable 2 hour workshop.



A new Genus for WV! *Bolboschoenus fluviatilis* discovered by Patty Faulkner in 2013, Harlan Run, Berkeley County.



A big sedge.



Cymophyllus is now Carex (again). And so is Kobresia, but there are none in WV, only 3 in North America. Making Carex Monophyletic. 2015. Bruhl et al.

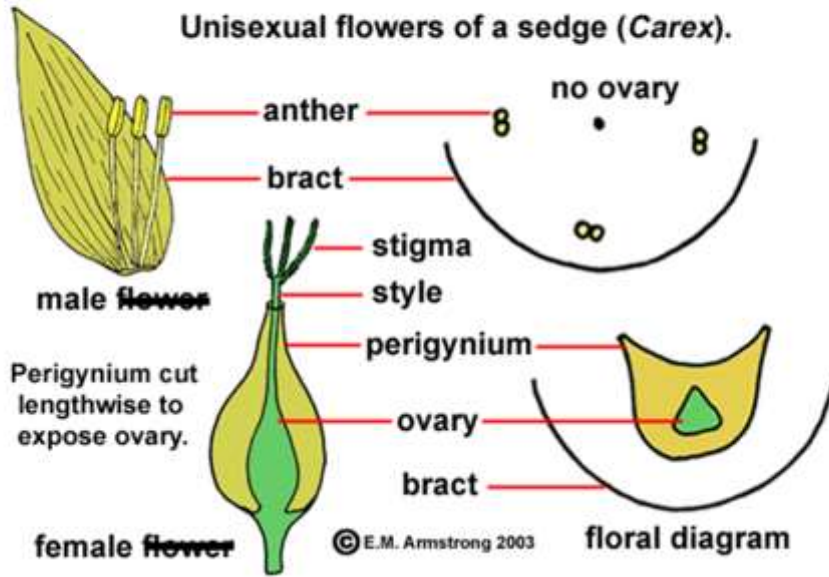
# The BIGGEST Genus in WV!

What is the biggest genus on earth? Who knows? Over 2,000 species worldwide. But Astragalus has 3,000+ . About 135 Carex in WV.

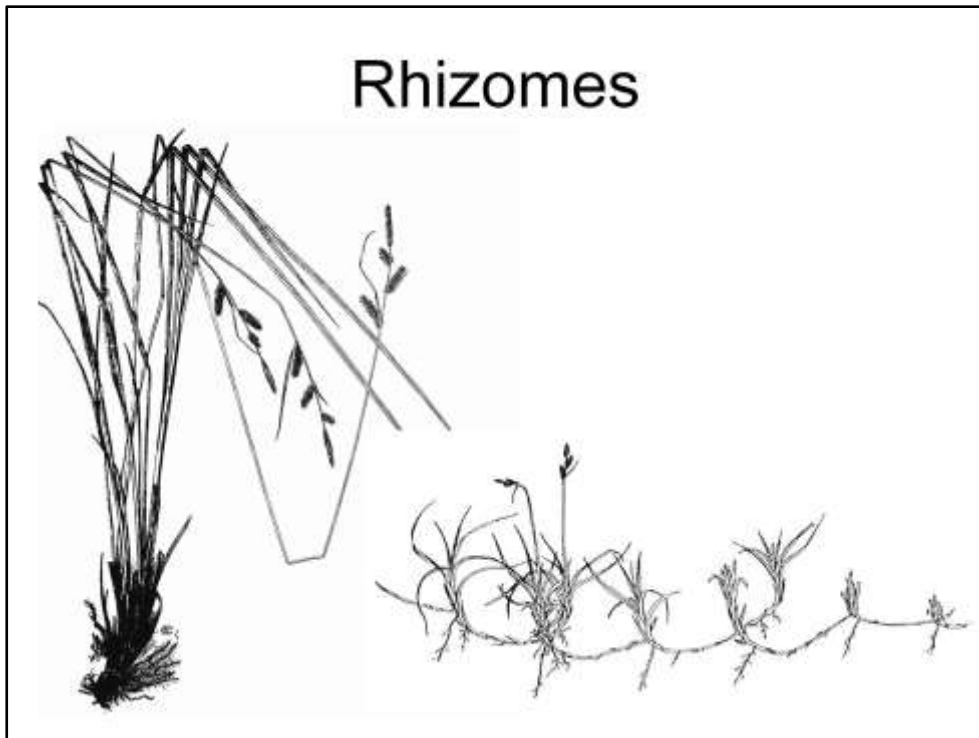


# Carex

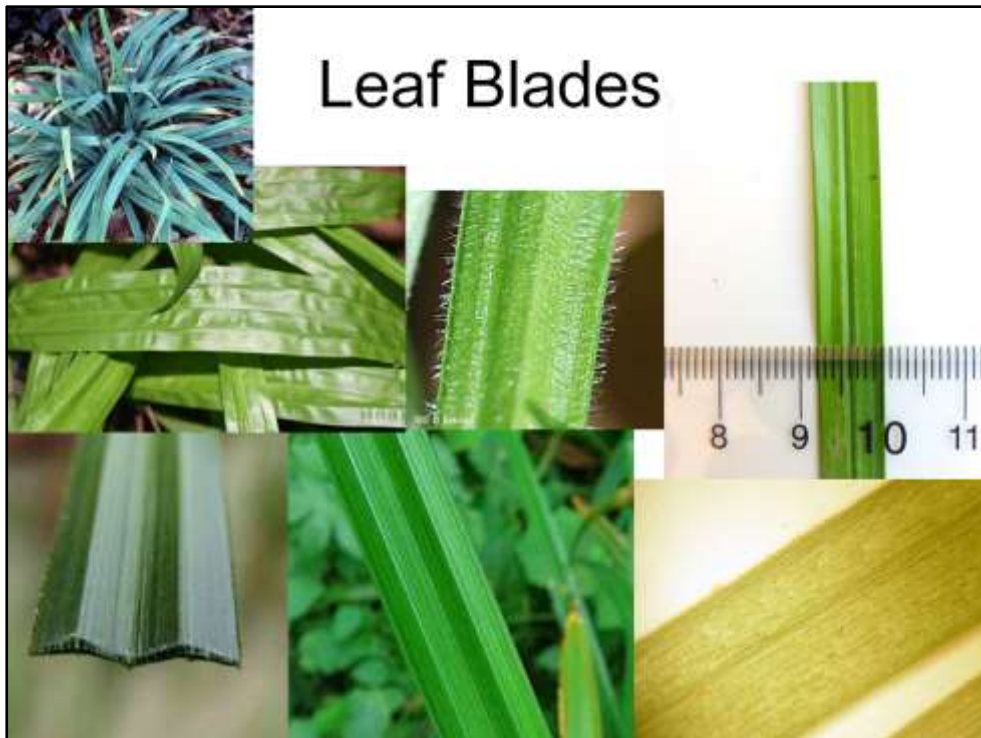
Unisexual flowers of a sedge (*Carex*).



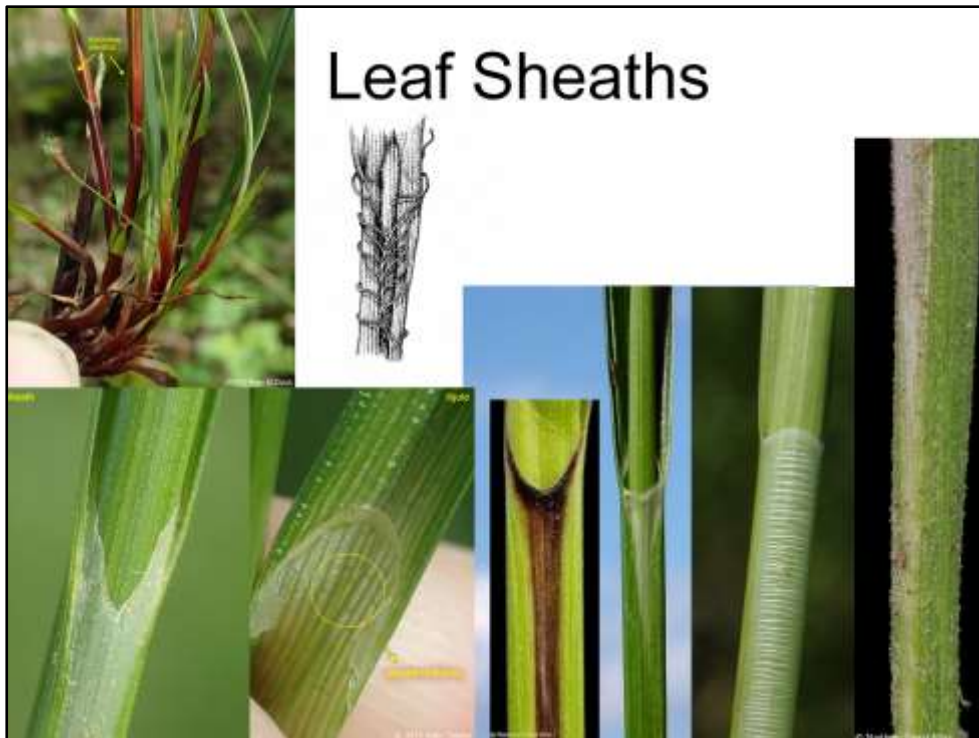
Flowers are unisexual (except *C. kobomugi* and former *Kobresia*) and highly reduced. Spikelet (not flower) consists of bract, perigynium (female only), and pistil or stamens.



All Carex are perennial. Caespitose (clumping, with short rhizome) or spreading rhizomatous.



M or V shaped in cross section, hairy, glabrous, shiny or dull, glaucous, narrow or wide.

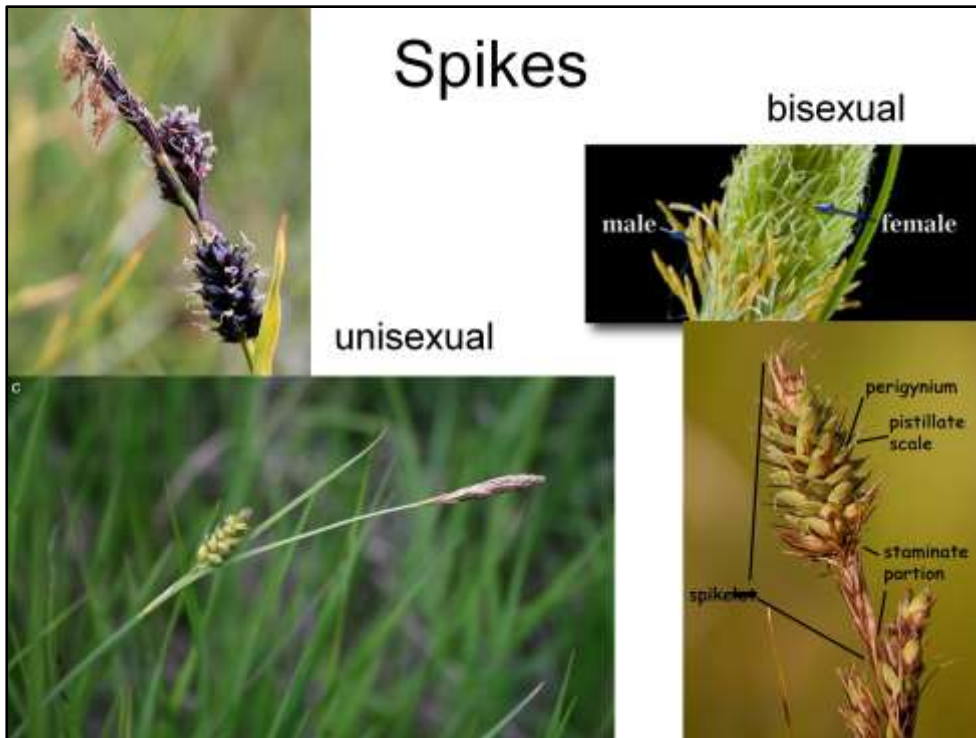


Bladeless sheaths (aphyllopodic), closed sheaths, fragile or hardened, cross corrugate, hairy, dotted, septate nodulose, ladder fibrillose

## Inflorescence Bracts



Leaflike bracts of the inflorescence, sheathing or sheathless, short or long. Inflorescence is composed of spikes, lateral and terminal. Sometimes only one (e.g. *Carex typhina*).



Lateral, terminal, unisexual, bisexual.

# Bisexual Spikes

Androgynous

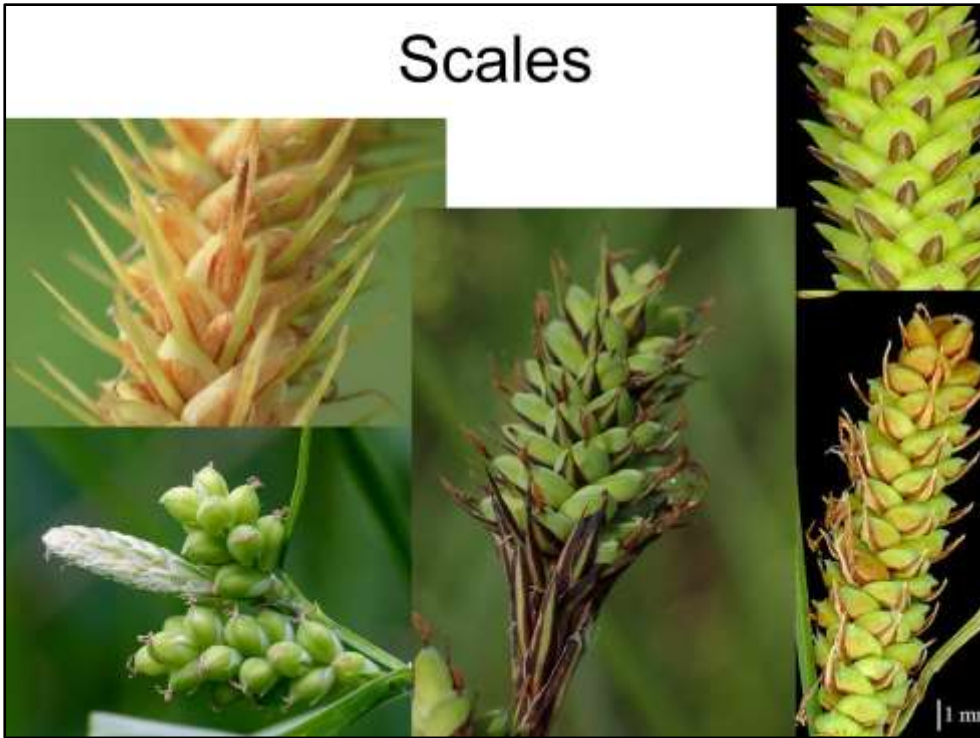


Gynocandrous



Androgynous = male on top, Gynocandrous = female on top. Later in season males look like empty scales.

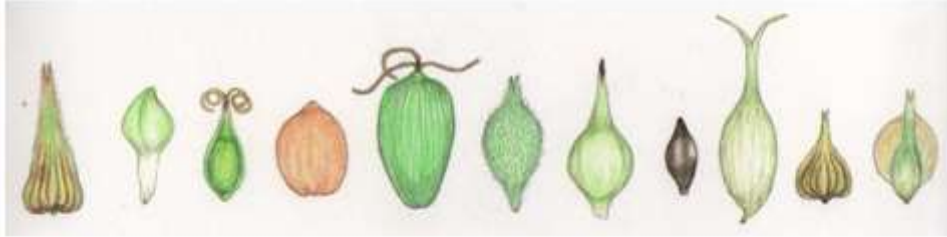
# Scales



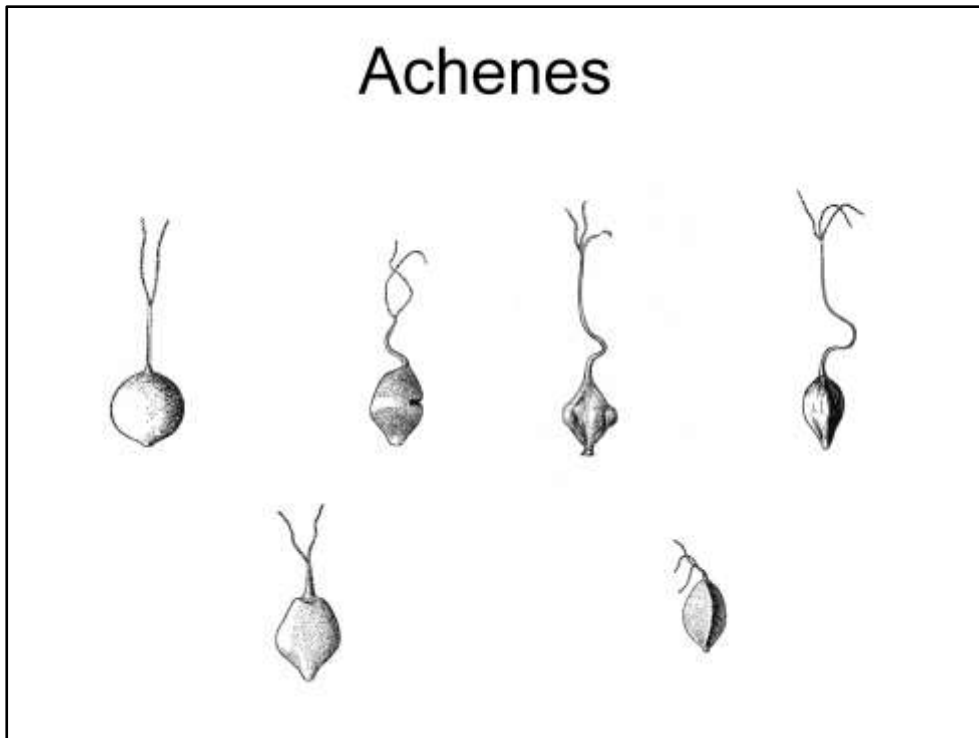
Length, awns, color, midrib.



# Perigynia



What makes Carex Carex. Bodies, beaks, stipes, spongy bases, serrations, veins, pubescence, ribs, color, teeth, wings



The fruit of a sedge. planoconvex, trigonous, indented, stipitate, cuneate, rounded, with shoulders, position in perigynia, bony or deciduous style, straight or contorted, bifid or trifid



33 Sections in WV. Sections are closely related species with similar morphological patterns. The key to *Carex* mastery.

## Top Ten WV *Carex* species

### Plots2-WV 2018

1. *Carex pensylvanica*
2. *Carex digitalis*
3. *Carex gynandra*
4. *Carex laxiflora*
5. *Carex scoparia*
6. *Carex folliculata*
7. *Carex stipata*
8. *Carex intumescens*
9. *Carex lurida*
10. *Carex blanda*

### CDS 2007

1. *Carex lurida*
2. *Carex vulpinoidea*
3. *Carex rosea*
4. *Carex pensylvanica*
5. *Carex laxiflora*
6. *Carex scoparia*
7. *Carex frankii*
8. *Carex hirsutella*
9. *Carex digitalis*
10. *Carex blanda*

Depends how you count. Plots = observation (+ some collections). CDS = collections only. What makes people collect?

## *Carex pensylvanica* - Pennsylvania sedge

- Section: *Acrocystis* (*C. communis*, *C. abicans*)
- red culm bases, strongly rhizomatous
- unisexual spikes, terminal male, lateral female
- hairy perigynia, trigonous styles





High elevation red oak, northern hardwoods forests



Dry limestone glades, shale barrens

## *Carex digitalis* - Slender Woodland Sedge

- Section: Careyanae (*C. plataginea*, *C. laxiculmis*)
- unisexual spikes, terminal male, lateral female
- glabrous perigynia with impressed nerves
- perigynia with concave faces, sharp angles
- trigonous achenes, trifid styles







Very common in dry to mesic deciduous, upland forest

## *Carex gynandra* - Nodding Sedge

- Section: Phacocystis (*C. crinita*, *C. stricta*)
- nodding unisexual and bisexual spikes, terminal male, lateral female or androgynous
- biconvex achenes, bifid styles
- scale with rough awn
- scabrous sheaths





Seeps

***Carex laxiflora* - Loose-Flower Sedge**

***Carex blanda* - Brown Sedge**

- Section: Laxiflorae (*C. albursina*, *C. leptoneuria*)
- Culm bases white to brown, not red
- unisexual spikes, terminal male, lateral female
- glabrous perigynia with raised nerves
- perigynia with convex faces, blunt angles
- trigonous achenes, trifid styles





Variety of dry-mesic to mesic upland deciduous forests. Mix-meso to oak.



Hawthorne forest with 10% cover by *Carex blanda*.

## *Carex scoparia* - Broom Sedge

- Section: Ovales (*C. tribuloides*, *C. argyrantha*)
- bisexual spikes, gynocandrous
- scales with acuminate apex
- perigynia flat to planoconvex, with marginal wings
- achenes biconvex, styles bifid





Wetlands natural and disturbed, here in a high elevation beaver influenced wetland in spruce zone.



## *Carex folliculata* - Northern Long Sedge

- Section: Rostrales
- broad leaves, cross section M-shaped
- proximal bract with sheath
- unisexual spikes, lateral female, terminal male
- veined, inflated, awl shaped perigynia





High elevation fens. Big Run bog.

## *Carex stipata* - Stalk-Grain Sedge

- Section: Vulpinae (*C. laevivaginata*, *C. conjuncta*)
- culms easily compressed
- sheath fronts rugose
- spikes unisexual female and bisexual androgynous
- perigynia distended at base
- Achenes biconvex, bifid styles





Wetlands natural and disturbed, here in an alder swamp.

## *Carex intumescens* - Greater Bladder Sedge

- Section: Lupulinae (*C. lupulina*, *C. grayi*)
- culms red at base
- sheaths septate-nodulose, blade cross section V-shaped
- spikes unisexual, lateral female, terminal male
- perigynia inflated, ascending
- Achenes trigonous, trifid persistent styles





Var. *intumescens* in lower elevation swamp (Meadow River)



Var. *fernaldii* in northern hardwoods and high elevation wetlands.

## *Carex lurida* - Sallow Sedge

- Section: Vesicariae (*C. baileyi*, *C. utriculata*)
- culms red at base
- spikes unisexual, lateral female, terminal male
- scales with scabrous awn
- achenes trigonous, trifid persistent styles



Lurid = yellow, vivid, shocking. "blurida"





Common in many wetlands, natural and disturbed, wet roadways, etc....