

Diversity and Floristics of Monocots

. . . rushes, sedges, grasses . . .

Graminoids: Grasses, sedges, rushes

	<i>Juncaceae</i> (Rushes)	<i>Cyperaceae</i> (Sedges)	<i>Poaceae</i> (Grasses)
Leaves	Generally inrolled or round in cross-section; hollow or with cross-partitions (you can feel these with your fingernail)	3-ranked (in 3 rows): Flat, W-shaped in cross-section, or apparently lacking (e.g. in <i>Eleocharis</i> , <i>Schoenoplectus</i>)	2-ranked (in 2 rows), sometimes appearing leafless
Sheaths	Margins overlapping	Margins fused	Margins overlapping or (less often) fused
Ligules	None	A flap of tissue at the junction of the sheath and blade, partly fused to the blade	A flap of tissue at the junction of the sheath and blade, not at all fused to the blade
Floral scales	No scales beneath flowers. 6-merous perianth (looks a little like a lily flower)	1 below each flower	2 surrounding each flower (palea and lemma)
Flowers	Usually bisexual Three(six)-merous	Bisexual or unisexual	Bisexual
Fruits	Capsule filled with 3 to many seeds	Achene (a hard nutlet)	Grain

Juncaceae - rush family

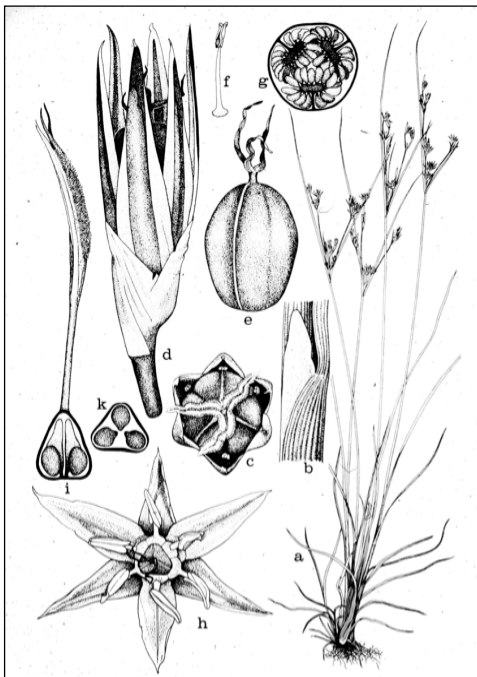
A family largely of two genera - *Juncus* (rush) and *Luzula* (wood rush); often tussock forming. Leaves are usually 3-ranked (like sedge family), but stems mainly round or inrolled. No ligule at junction of blade and sheath. Inflorescence congested, often terminal or appearing lateral.



Juncus - rush



Juncaceae - rush family

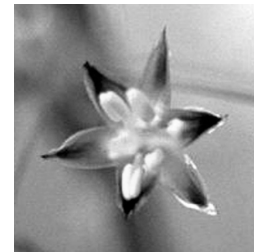


Flowers mainly bisexual. Although reduced and wind pollinated, 6 brownish or reddish-green tepals surround 6 stamens and superior 3-carpellate ovary.



Juncus greenii - Green's rush

Fruit is a many-seeded capsule.



Luzula acuminata
Wood rush

Juncaceae - rush family



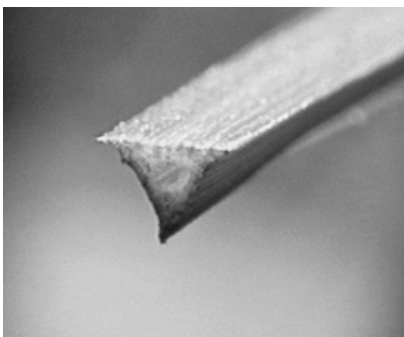
Luzula acuminata - Wood rush



Luzula multiflora - Common wood rush

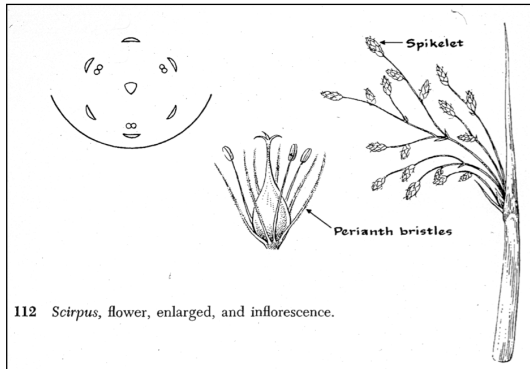
Cyperaceae - sedge family

A graminoid family of about 100 genera and 4,500 species primarily of moist habitats. *Carex* with 2,000 species is one of the largest of all angiosperm genera. Most species have triangular stems in cross section - "sedges have edges" - and thus leaves are 3-ranked.

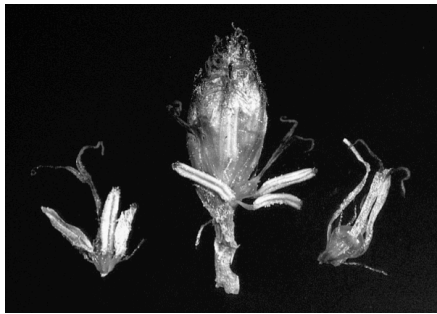


Cyperus rotundus
Cyperaceae©
G. D. Carr

Cyperaceae - sedge family



Scirpus and relatives (bulrushes) often have roundish stems. Florets are bisexual with 3 stamens, 3 fused carpels, 6 perianth bristles, and 1 subtending bract. Florets are generally whorled in the spikelet.



Scirpus validus (*Schoenoplectus tabernaemontani*)
Soft-stem bulrush

Cyperaceae - sedge family



Carex (sedge) is a large, complex, and difficult to key out genus.

Sedges have unisexual flowers with the male and female florets usually arranged in discrete portions of the spikelets.

Male florets

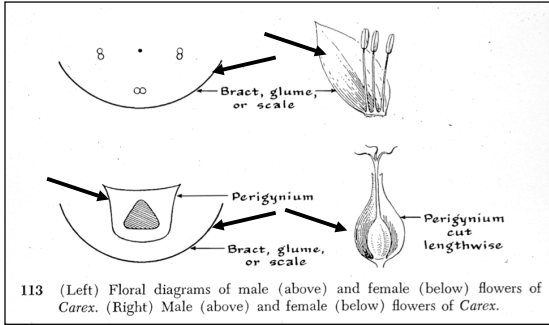
Female florets



Carex pennsylvanica
Pennsylvania sedge

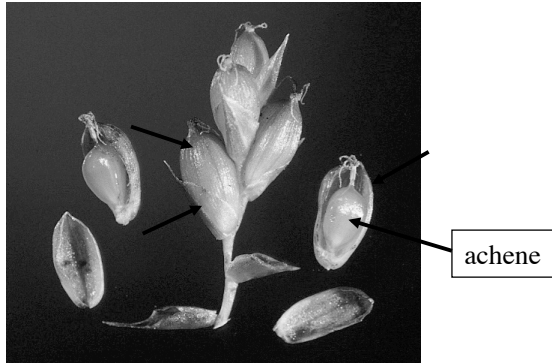
Carex buxbaumii
Buxbaum's sedge

Cyperaceae - sedge family



Both male and female florets are subtended by a **floret bract**.

Female florets are further enclosed by a sac-like bract called the **perigynium** - the achene forms within.



Carex blanda - Wood sedge



Carex intumescens - Bladder sedge

Cyperaceae - sedge family



Carex stricta
Tussock sedge



A common woodland species
Carex pensylvanica
Pennsylvania sedge

Cyperaceae - sedge family



Eriophorum angustifolium
cottongrass

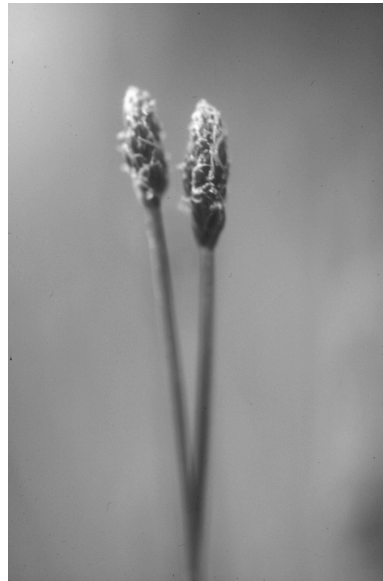
Other genera . . .



Cyperaceae - sedge family



Other genera . . .



Eleocharis ovata - spikerush

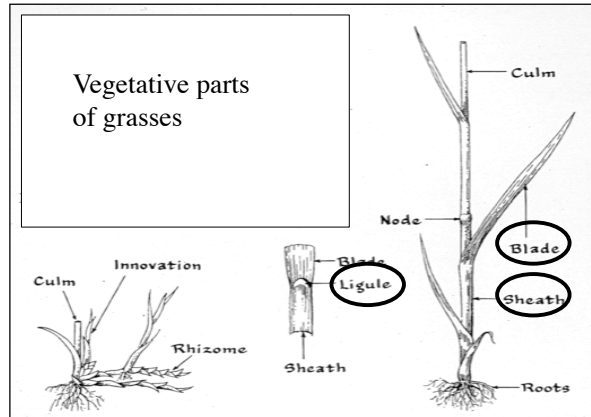
Poaceae - grass family



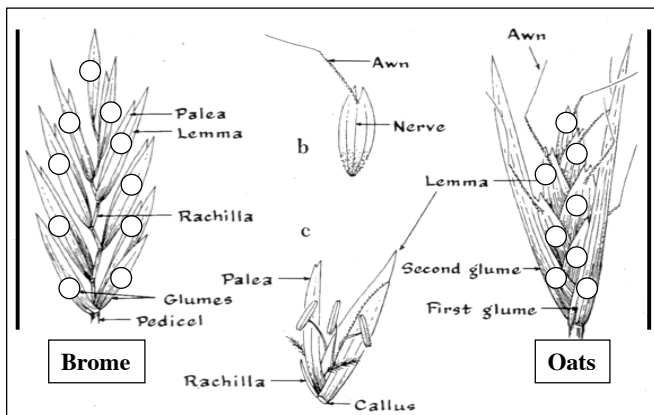
Lolium perenne - Rye-grass

The most important plant family - with about 650 genera and nearly 10,000 species - represents the ultimate in floret reduction and spikelet evolution for wind pollination.

Herbs, often rhizomatous, with 2-ranked leaves on generally hollow stems. The leaves consisting of **sheath, ligule, and blade**.



Poaceae - grass family



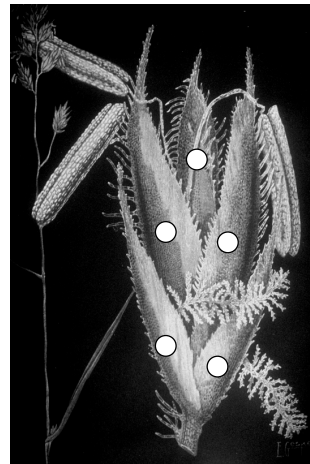
The main unit of the inflorescence is the **spikelet** which is composed of 2 **glumes** (spikelet bracts) and 1 or more **florets**

spikelet

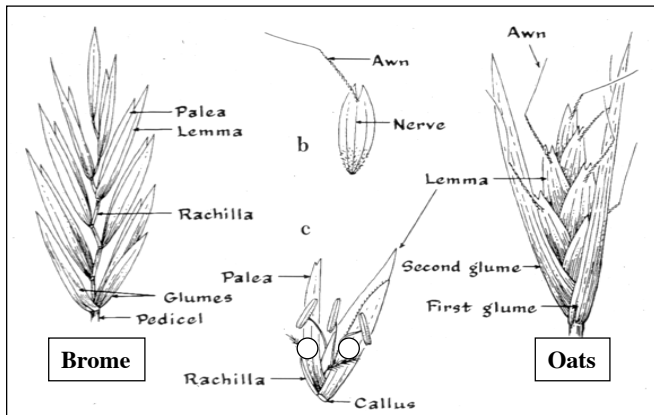
glumes

florets

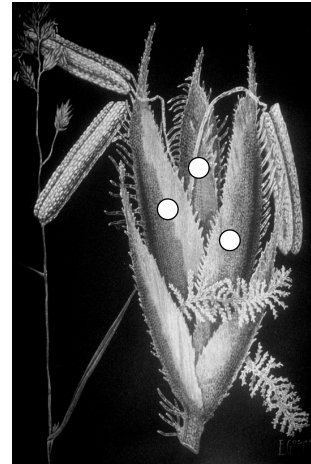
Dactylis glomerata
Orchard grass



Poaceae - grass family



Each **floret** is additionally surrounded by two floret bracts - the outer **lemma** and the inner **palea** (usually not seen until anthesis - when florets open)

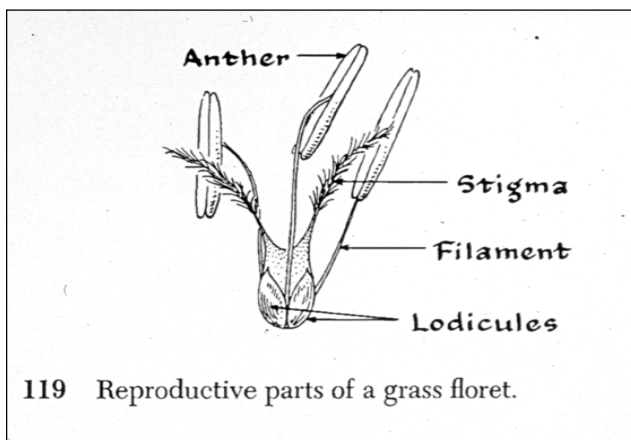


lemma

palea

Dactylis glomerata
Orchard grass

Poaceae - grass family



Although considerable variation occurs in florets (among species or within a spikelet), most of our species have the following floret structure:

- Perianth represented by 2 **lodicules**
- Stamens 3
- Superior gynoecium of 2 fused carpels
- One ovuled fruits called a **grain** or **caryopsis** = seed fused to ovary wall

Dactylis glomerata
Orchard grass



Poaceae - grass family



Poa annua - bluegrass

Subfamily Pooideae

(Spikelets with more than one grain forming floret;
Spikelets not compressed, or compressed in plane of
glumes and florets)



Dactylis glomerata - orchard grass

Poaceae - grass family



Subfamily Pooideae



Avena sativa - oats

Poaceae - grass family



Elymus hystrix
[*Hystrix patula*]
bottlebrush

Triticum aestivum - wheat

Subfamily Pooideae

