**Polygonaceae**: large size range (small to large)

- Hard acute apex
- Pericarp hard and smooth, very minute roundish cells
- Truncate base with continuous stalk
- Thin pericarp often cracks revealing embryo which runs whole length. Internal seed resilient

Good starting place: Martin + Barkley 1946

**Sedges** good starting place: Berggren 1969 Atlas of Seeds Part 2

**Cyperaceae**: small to large, large diverse family

- Scirpus / Carex
- Eleocharis
- Juncus
- Cattail-like ridges
- Fabastrum / Babiporus
- Little hat / stub
- Cyperus
- Long, thin, usually small
- Thick pericarp, internal seed ephymal, basal plug-like embryo
- Often silicified pericarp

"Rusts" **Juncaceae**: very small

- Blunt cylindrical / conical tip
- Grid-like surface pattern & ridges
- Bluish / broken flat base or with stalk
- Round cross-section
- Basal embryo only
Traditional subfamily groups:

**SCIRPOIDEAE / CYPEROIDEAE**
- *Cyperus, Eriophorum, Scirpus* (incl. Isolepis), *Bulboschoenus, Eleocharis, Fimbrystylis, Bulbostylis*
- Many flowered spikelets, always bisexual

**RHYNCHOSPOROIDEAE**
- *Rhynchospora, Scirpodendron, Cladium, Scleria, Schleria & Mapania*
- One or two-flowered racemes in small heads
- [includes oddly shaped & extra hard nutlets]
- [*Mapania* is now separated from the rest in a separate subfamily based on genetics]

**CARICOIDEAE**
- *Carex, Uncinia, Kobresia, Cymophyllus*
- Flowers usually unisexual, naked in many flowered spikes

Cyperaceae within the Poales order {from the Angiosperm Phylogeny website}
Basic sedge flowers & fruit (from Le Maout & Decaisne *System of Botany*, English translation by Hooker & Hooker 1873)

all *Scirpus* (old synonyms include *Blysmus & Malacochoete*)
Scirpoideae & Caricoideae gestalt morphology