Introduction to Sedge Identification

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Institute of Technology, Tralee, Co. Kerry, Ireland

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Plan for this Webinar

TODAY:

Brief Introduction-
What is a sedge? What types of sedges are there? How many species? What do I need?

Brief outline of key and guides

Sedge parts, floristic features, vegetative features for sedge identification

Tips for ID and some example species you can identify in the field
What is a sedge?
A graminoid (grass-like plant)
Flowers have one glume (scale) at base of flower
Two broad groups of sedges:

1. True sedges (*Carex* spp.)
   Separate male and female flowers
   Seed **enclosed in utricle**

2. Other sedges (variety of genera):
   Flowers with both male and female within the same flower
   Seed **not** enclosed within a utricle
Grass, sedge or rush?.......Look at flowers (hand lens)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Sedges (Cyperaceae)</th>
<th>Rushes (Juncaceae)</th>
<th>Grasses (Poaceae)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stem</strong></td>
<td>Often triangular in section</td>
<td>Almost always rounded in section</td>
<td>Never triangular in section</td>
</tr>
<tr>
<td></td>
<td>Almost always solid</td>
<td>Solid or if hollow may be sectioned internally</td>
<td>Almost always hollow between nodes</td>
</tr>
<tr>
<td></td>
<td><strong>Sedges have edges</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ligule</strong></td>
<td>Ligule often fused to leaf along most of its length</td>
<td>Often have none</td>
<td>Ligule (hairs or membranous) attached at base and free along its length</td>
</tr>
<tr>
<td><strong>Flowers</strong></td>
<td>Single glume-like scale at base of each flower</td>
<td>Six flower segments surrounding each flower</td>
<td>Two scales, the lemma and palea surrounding each floret</td>
</tr>
<tr>
<td></td>
<td>Glume</td>
<td>Segment</td>
<td>Pair of outer glumes at base of each spikelet</td>
</tr>
<tr>
<td></td>
<td>Flower <strong>(utricle)</strong> OR nut</td>
<td>Flower <strong>(capsule)</strong></td>
<td>Glume</td>
</tr>
<tr>
<td><strong>Fruits</strong></td>
<td>Single lens shaped or three angled achene per flower</td>
<td>Fruit capsule bearing numerous seeds</td>
<td>Single grain-like seed per flower</td>
</tr>
</tbody>
</table>
How many Irish Species?

There thought to be **77** species

<table>
<thead>
<tr>
<th>SEDGES</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Carex</td>
<td>50</td>
</tr>
<tr>
<td>Eriophorum</td>
<td>4</td>
</tr>
<tr>
<td>Trichophorum</td>
<td>2</td>
</tr>
<tr>
<td>Eleocharis</td>
<td>6</td>
</tr>
<tr>
<td>Isolepis</td>
<td>3</td>
</tr>
<tr>
<td>Cladium</td>
<td>1</td>
</tr>
<tr>
<td>Schoenus</td>
<td>1</td>
</tr>
<tr>
<td>Rhynchospora</td>
<td>2</td>
</tr>
<tr>
<td>Blysmus</td>
<td>1</td>
</tr>
<tr>
<td>Schoenoplectus</td>
<td>3</td>
</tr>
<tr>
<td>Cyperus</td>
<td>2</td>
</tr>
<tr>
<td>Bolboschenus</td>
<td>1</td>
</tr>
<tr>
<td>Scirpus</td>
<td>1</td>
</tr>
</tbody>
</table>

**Sedges: 13 Genera**
What types of sedges are there?

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</tr>
</thead>
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<tr>
<td>Carex</td>
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<td>4</td>
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<tr>
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<td>Eleocharis</td>
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<td>2</td>
</tr>
<tr>
<td>Bolboschenus</td>
<td>1</td>
</tr>
<tr>
<td>Scirpus</td>
<td>1</td>
</tr>
</tbody>
</table>

True sedges

We will concentrate on these today
### Sedges other than Carex (27 species)

<table>
<thead>
<tr>
<th>SEDGE GENERA</th>
<th>77 species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Carex</td>
<td>50</td>
</tr>
<tr>
<td>2 Eriophorum</td>
<td>4</td>
</tr>
<tr>
<td>3 Trichophorum</td>
<td>2</td>
</tr>
<tr>
<td>4 Eleocharis</td>
<td>6</td>
</tr>
<tr>
<td>5 Isolepis</td>
<td>3</td>
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<tr>
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<td>1</td>
</tr>
<tr>
<td>7 Schoenus</td>
<td>1</td>
</tr>
<tr>
<td>8 Rhynchospora</td>
<td>2</td>
</tr>
<tr>
<td>9 Blysmus</td>
<td>1</td>
</tr>
<tr>
<td>10 Scirpus</td>
<td>1</td>
</tr>
<tr>
<td>11 Bolboschenus</td>
<td>1</td>
</tr>
<tr>
<td>12 Cyperus</td>
<td>2</td>
</tr>
<tr>
<td>13 Schoenoplectus</td>
<td>3</td>
</tr>
</tbody>
</table>
What you will need:

1. **Hand lens:**
   x 10 magnification
   (handy to get one with X10 and x20 lenses)

2. **Transparent 6 inch ruler**
   Many keys will have rulers along page margins or at the back but
   handy to use a little ruler

3. **Key/ID guide:**
   A variety to choose from
Keys and guides

Second edition 1982

Pros:
Floristic & Vegetative keys (Carex)
Small and thin for fieldwork
Great diagrams
Detailed descriptions

Cons:
Only True sedges (Carex)
Outdated names

Third edition 2007

Pros:
Floristic keys to ALL sedges
More up to date names and classification
Great diagrams
Detailed descriptions

Cons:
Thick book for fieldwork
Floristic keys only
Keys and guides

Pros:
Floristic keys to ALL sedges
Diagrams to help throughout key
Coloured diagrams of sedge species

Cons:
Large book for fieldwork
Contains grasses sedges rushes ferns – less detail on species

Not so familiar with this one
Someone may like to comment
Nice photos
Select no. of species, not all
Keys and guides

Sedge and Rush guide is planned for Christmas 2020

National Biodiversity Data Centre:
For anyone a fan of NBDC’s grass guide (Irish species)

**Carex disticha** (Brown Sedge)

- **Flowering period:** May-June
- **Size:** Up to 75cm
- **Habitat:** Marshes, fens, ditches, lake-shores, wet grassland
- **Distribution:** Rare along the entire west coast but common and widespread elsewhere
- **Notes:** Stems >2mm wide. Leaves usually flat.

- Spikes brown, 2-7cm long
- Female glumes brown with brown midrib and pale margin
- Lowest bract shorter than inflorescence

Similar format to the Grass Guide.
Keys and guides

Anything free to start with??

A great beginners guide to all sedges found in Hampshire England

Covers a lot of the Irish ones and those found elsewhere in UK

www.hantsplants.org.uk
REMEMBER:

Features are **small, some tiny** – need a hand lens

To use a handlens correctly – check out Youtube video https://www.youtube.com/watch?v=lFz004Wi28E

Most features shown in photos or diagrams today are **magnified many times**

So think small – need to **get in really close** with sedge specimen
True sedge structure and terminology
*Carex* spp. – flowers unisex

- Male spike
- Female spike
- Upper bract
- Lower bract
- Bracts can be leaf-like, bristle-like, or scale/glume-like
- Inflorescence
- Leaf
- Sheath
- Ground level
- Rhizome

**Note:** Sometimes you will see male and female in the same spike but still separate flowers.
If Rhizomes very short

Carex remotata

Tussock

Carex remota

Tufted growth

Carex leporina
What features should I examine?

1. Inflorescence – determine if male and female flowers in single spike or separate spikes
   - If single – 3 species
   - If several separate spikes – if same in appearance – 15 species; If different in appearance – 32 species

   Female spikes – shape and distance from each other, presence & length of bracts

2. Utricles
   Shape, hairy/hairless, no. of stigma (ways to tell)

3. Glumes (female flowers)
   Colour, shape

4. Transverse section of stems
   Triangular, more rounded, acute angled

5. Leaves
   Colour, width, transverse section

6. Ligules
   Pointed, rounded, tubular

7. Sheaths
   Colour, shape at top opposite leaf junction

8. Rhizomes
   Plant looks tufted, tussocky or creeping
Carex – 50 species (Ireland)

C. dioica
C. pulicaris
C. pauciflora
C. arenaria
C. disticha
C. divisa
C. paniculata
C. appropinquata
C. otrubae
C. spicata
C. elongata
C. remotata
C. divulsa subsp. divulsa
C. canescens
C. muricata subsp. pairae
C. leporina
C. echinata
C. diandra

C. hirta
C. lasiocarpa
C. caryophyllea
C. pilulifera
C. distans
C. puncatata
C. binervis
C. hostiana
C. laevigata
C. extensa
C. demissa
C. oederi
C. lepidocarpa
C. depauperata
C. sylvatica
C. pseudocyperus
C. rostrata
C. vesicaria
C. acutiformis
C. riparia

C. bigelowii
C. nigra
C. acuta
C. elata
C. aquatilis
C. pendula
C. strigosa
C. flacca
C. panicea
C. limosa
C. magellanica
C. pallescens
C. dioica  
C. pulicaris  
C. pauciflora  
C. arenaria  
C. disticha  
C. divisa  
C. paniculata  
C. appropinquata  
C. otrubae  
C. spicata  
C. elongata  
C. remota  
C. divulsa subsp. divulsa  
C. canescens  
C. muricata subsp. pairae  
C. leporina  
C. echinata  
C. diandra  

C. hirta  
C. lasiocarpa  
C. caryophyllea  
C. pilulifera  
C. distans  
C. punctata  
C. binervis  
C. hostiana  
C. laevigata  
C. extensa  
C. demissa  
C. oederi  
C. lepidocarpa  
C. depauperata  
C. sylvatica  
C. pseudocyperus  
C. rostrata  
C. vesicaria  
C. acutiformis  
C. riparia  

Few-Flowered sedge  
*Carex pauciflora*  
Very rare – found in NI  
Wet bogs
Several spikes but all similar in appearance – 15 species

- C. dioica
- C. pulicaris
- C. pauciflora
- C. arenaria
- C. disticha
- C. divisa
- C. paniculata
- C. appropinquata
- C. otrubae
- C. spicata
- C. elongata
- C. remota
- C. divulsa subsp. divulsa
- C. canescens
- C. muricata subsp. pairae
- C. leporina
- C. echinata
- C. diandra
- C. hirta
- C. lasiocarpa
- C. caryophyllea
- C. pilulifera
- C. distans
- C. punctata
- C. binervis
- C. hostiana
- C. laevigata
- C. extensa
- C. demissa
- C. oederi
- C. lepidocarpa
- C. depauperata
- C. sylvatica
- C. pseudocyperus
- C. rostrata
- C. vesicaria
- C. acutiformis
- C. riparia
- C. bigelowii
- C. nigra
- C. acuta
- C. bigelowii
- C. nigra
- C. acuta
On the coast look out for: Sand sedge (*Carex arenaria*)
Creeping rhizomes – plants pop up singly and in a line across sand

In shady places look out for: Grey sedge (*Carex divulsa* subsp. *divulsa*)
Tufted, Spikes well separated, glumes translucent papery appearance with green midrib.

Similar species:
Remote sedge *Carex remota*
Bracts leaf-like and long

In boggy peaty places look out for: Star sedge (*Carex echinata*)
Densely tufted, Spikes few-flowered narrowly separated, utricles arranged like stars.
Female glumes pale red-brown with green midrib and broad translucent margin
Several spikes with two different spikes types – male and female - 32 species

******Need a closer look at utricles and other features******

<table>
<thead>
<tr>
<th>Species 1</th>
<th>Species 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. dioica</td>
<td>C. hirta</td>
</tr>
<tr>
<td>C. pulicaris</td>
<td>C. bigelowii</td>
</tr>
<tr>
<td>C. pauciflora</td>
<td>C. lasiocarpa</td>
</tr>
<tr>
<td>C. arenaria</td>
<td>C. carvophyllea</td>
</tr>
<tr>
<td>C. disticha</td>
<td>C. pseuocyperus</td>
</tr>
<tr>
<td>C. divisa</td>
<td>C. rostrata</td>
</tr>
<tr>
<td>C. paniculata</td>
<td>C. vesicaria</td>
</tr>
<tr>
<td>C. appropinquata</td>
<td>C. acutiformis</td>
</tr>
<tr>
<td>C. otubae</td>
<td>C. riparia</td>
</tr>
<tr>
<td>C. spicata</td>
<td>C. bigelowii</td>
</tr>
<tr>
<td>C. elongata</td>
<td>C. nigra</td>
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<tr>
<td>C. remota</td>
<td>C. acuta</td>
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<tr>
<td>C. divulsa</td>
<td>C. elata</td>
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<tr>
<td>C. subsp. divulsa</td>
<td>C. aquatilis</td>
</tr>
<tr>
<td>C. canescens</td>
<td>C. pendula</td>
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<tr>
<td>C. muricata</td>
<td>C. strigosa</td>
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<tr>
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<td>C. panicea</td>
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<tr>
<td>C. hirta</td>
<td>C. pallescens</td>
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<td>C. lasiocarpa</td>
<td>C. ovata</td>
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<td>C. caryophyllea</td>
<td>C. ampuroides</td>
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<td>C. pilulifera</td>
<td>C. recurvata</td>
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<td>C. australis</td>
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<td>C. puncatata</td>
<td>C. austroviscosa</td>
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<td>C. binervis</td>
<td>C. cordifolia</td>
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<td>C. hostiana</td>
<td>C. crinita</td>
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<tr>
<td>C. laevigata</td>
<td>C. cunninghamii</td>
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<tr>
<td>C. extensa</td>
<td>C. diandra</td>
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<tr>
<td>C. demissa</td>
<td>C. hostiana</td>
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<td>C. pseuocyperus</td>
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<td>C. vesicaria</td>
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<td>C. acutiformis</td>
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<td>C. riparia</td>
</tr>
<tr>
<td>C. vesicaria</td>
<td>C. bigelowii</td>
</tr>
<tr>
<td>C. acutiformis</td>
<td>C. nigra</td>
</tr>
</tbody>
</table>

Several spikes and of two dissimilar forms
**Hairy utricles (4 species)**

<table>
<thead>
<tr>
<th>obviously hairy utricles, leaves and sheaths (other species have to look more closely)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common</td>
</tr>
<tr>
<td>Damp grassland, disturbed Ground</td>
</tr>
</tbody>
</table>

**Hairy sedge (Carex hirta)**

<table>
<thead>
<tr>
<th>carex hirta</th>
</tr>
</thead>
<tbody>
<tr>
<td>carex lasiocarpa</td>
</tr>
<tr>
<td>carex caryophyllea</td>
</tr>
<tr>
<td>carex pilulifera</td>
</tr>
<tr>
<td>carex distans</td>
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<tr>
<td>carex puncatata</td>
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<tr>
<td>carex binervis</td>
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<td>carex riparia</td>
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</tbody>
</table>

| carex bigelowii |
| carex nigra |
| carex acuta |
| carex elata |
| carex aquatilis |
| carex pendula |
| carex strigosa |
| carex flacca |
| carex panicea |
| carex limosa |
| carex magellanica |
| carex pallescens |
Hairless utricles with beak (long or short) and forked tip

- C. bigelowii
- C. nigra
- C. acuta
- C. elata
- C. aquatilis
- C. pendula
- C. strigosa
- C. flacca
- C. panicea
- C. limosa
- C. magellanica
- C. pallescens

- C. hirta
- C. lasiocarpa
- C. caryophyllea
- C. pilulifera
- C. distans
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- C. rostrata
- C. vesicaria
- C. acutiformis
- C. riparia

- Forked tip
- Glume
- Beak
Hairless utricles with beak (long or short) and forked tip

Sheaths, at least the upper ones, with a tongue-like projection on the inner face

Green-ribbed sedge (Carex binervis)

Tongue – like projection on top of sheath
Groove often down stem
Lowest female spike drooping and further down stem

Common
Heaths, upland grassland
Utricle hairless beakless or if short beak, not forked or notched at tip:

Stigmas 2:
How to tell if not present - biconvex utricles that are oval, flat & cushion-like

Stigmas 3:
How to tell if not present – utricle rounded or trigonous, or flattened on one side only
Utricle hairless beakless or if short beak, not forked or notched at tip:

Stigmas 2:

Common sedge (*Carex nigra*)

Female glumes **blunt and rounded (often egg shaped)**, green midrib and thin pale margin
1-2 male spikes
Leaves **blue-green (glaucous) both sides** (check fresh specimen)

Common

Marshes, wet grassland, riversides
Utricle hairless beakless or if short beak, not forked or notched at tip:

**Stigmas 3:**

Carnation sedge (*Carex panicea*)

1-3 female spikes
1 male spike
Female glumes purplish-brown with pale midribs and margins
**Often lower utricle more swollen at base of spike**
Leaves **blue-green (glaucous) both** sides (check fresh specimen)

Common
Marshes, wet heath, grassland, blanket bog
To finish:

DO buy a hand lens (x10 magnification)
DO practise – it takes patience and effort to learn a new skill
DON’T lose heart if it doesn’t come naturally to you or you find it challenging
DO seek help and support – join a local naturalists group or better still BSBI
DO record your species and send in records to BSBI and/or Wildlife records centre
e.g. National Biodiversity Data Centre

Your records are important no matter how common the species is

BSBI - https://bsbi.org/
NBDC - https://www.biodiversityireland.ie/