

# KEY TO SEDGE (CAREX) SPECIES IN HAMPSHIRE

## DISTINGUISHING SEDGES FROM SIMILAR BROWN AND GREEN FLOWERED PLANTS

### Sedges and Rushes

All the Rush family (*Juncaceae*) have bisexual flowers, with a conventional surrounding floral structure made up of 6 petal-like **tepals**. In the Sedge family (*Cyperaceae*) the surrounding floral structure is absent, or reduced to a tuft of bristles. Instead, each flower sits at the base of a bract-like **glume**.

Rush family seeds are borne in a capsule containing many seeds (true Rushes, *Juncus*) or three seeds (Wood-rushes, *Luzula*). Sedge family seeds are borne singly, either as an exposed nut or (in *Carex*) encased in a flask-like structure usually called the **utricle**.

Many members of the Sedge family have triangular stems. Only one Rush family member in Britain (Saltmarsh Rush, *Juncus gerardii*) has triangular stems.

These characters should be enough to distinguish flowering and fruiting rushes from the rush-like members of the sedge family such as Club-rushes (*Scirpus* and other genera).

### Sedges and Grasses

Members of the Sedge family frequently have triangular stems that are most often solid, or with a small central cavity which is not easily squashed. The Grass family (*Poaceae*) never has triangular stems, and they are almost always hollow between the **nodes** (the points where the leaf sheaths attach to the stem).

Most Sedges have a length of stem under the inflorescence conspicuously free of nodes, whereas most Grasses have nodes more or less evenly spaced up the stem.

The sheaths of Sedges are not anatomically split, although they may rupture on the side opposite the leaf with age. Most (but not all) Grass leaf sheaths are split, although they may overlap.

At the point where the leaf sheath detaches from the stem and becomes a leaf blade there may be a **ligule**. In Grasses, this can be absent, or a ring of hairs, or a membrane that stands up free from the junction of sheath and blade. In Sedges that have a leaf blade, the ligule is fused to the bottom of the blade for much of its length.

*Cyperaceae* flowers have a single bract-like **glume** under each flower. Often there is an extra bract at the base of each spike of flowers. Grasses have a pair of glumes at the base of each spikelet; a glume below each flower (the **lemma**), and usually another glume above each flower (the **palea**). All grasses that lack a palea have hollow stems.

## **True Sedges (*Carex*) and Other Members of the Sedge Family (*Cyperaceae*)**

All members of *Carex* have male and female flowers separate (**unisexual**), and the **ovary** (which makes a nut) is enclosed in the flask-shaped **utricle**. In southern Britain, all other *Cyperaceae* have bisexual flowers with an unenclosed ovary.

## **RECOGNITION FEATURES OF TRUE SEDGES (*CAREX*)**

### **Rhizomes and General Growth Habit**

Although you may rarely look directly at the rhizomes of a sedge, the pattern of growth from the rhizome often gives the plant a distinctive appearance.

The less common mode of rhizome growth is where the rhizome continues to grow on in a more or less straight line, throwing up aerial shoots every so often (**monopodial** growth). This gives rise to well-separated shoots, sometimes visibly in a line.

The much commoner mode of growth is **sympodial**. Here the rhizome grows to a point where it throws up both aerial shoots and one or more rhizome branches, which therefore typically do not grow on in a line. (There are a few species that are confusing in this respect, but none occur in southern Britain.)

In the most extreme cases of sympodial growth the rhizome branches are short, convoluted and mostly in an upward direction. The plant then forms a distinct and sometimes large tussock.

In less extreme cases, the rhizome branches are short and radiate out from a point, giving the plant a distinctly tufted appearance.

Finally, there are those Sedges where at least some of the rhizome branches are longer and far-creeping. The plants still appear more or less tufted, but make an open sward or network usually among other vegetation.

### **Leaf Sheaths and Ligules**

The lower part of a *Carex* leaf forms a closed tube around the stem called the **sheath**. Sheath colour (especially of lower sheaths) is often a useful character, but beware of mineral staining in aquatic or mire species. Upper parts of sheaths may be **hyaline** (membranous, translucent and more or less colourless).

The inner face of the sheath (i.e. that opposite the leaf blade) may show wrinkling, hairiness or dotting that are characteristic of the species.

At the very top, on the leaf blade side, the sheath forms a **ligule** which is partly attached to the blade. The overall length of the ligule is often characteristic and is measured from its highest point on the blade to a line joining the points where the ligule becomes the sheath at the two sides. The ligule may be pointed, rounded or truncate and this is diagnostic. In some cases the length of the free portion is helpful.

On the other side of the sheath, away from the blade, the top may be concave, **truncate** (cut off square), convex, or (in a group of 5 related species) form a little

tongue sometimes called an **antiligule** – in which case the shape of the tongue may be characteristic. It is best to look at sheaths quite well up the stem (and not too elderly) to see this feature, and examine a number of stems.

Sheaths may split and break up at maturity, sometimes leaving fibrous remains. These can form characteristic patterns such as a ladder-like structure in a few species.

## Leaf Blades

Sedge leaf blades are mostly flat in general construction with a distinct midrib, but may be folded or inrolled to various degrees. Leaves may be **keeled** (with a prominent midrib below) and/or **channelled** (with a 'gutter' over the midrib above). A few species have bristle-like leaves that are round or triangular in cross-section. In several species, the midrib characteristically terminates before the end of the leaf, and the leaf tip becomes solid and triangular in cross-section.

Leaf colour varies between species, and the colour of dying leaf-tips is useful for a few species when they are past fruiting. Leaf texture (softness or stiffness) is important in some cases. Roughness is mostly confined to the edges of the leaves, or more rarely on the undersides.

Hairiness is a useful characteristic, although hairs are often confined to the area at the base of the leaf blade or top of the sheath, and may be lost in wet conditions or on old plants.

## Stems

The flowering stems of most *Carex* species are triangular, but this can vary from almost imperceptible rounded angles to sharp or even winged angles, characteristic of the species. The roughness or smoothness of the stem, its stoutness, and the way in which it is held, can also be helpful.

## Inflorescence

There are four patterns of inflorescence (with some variations) in *Carex*, and they are one of the most important features used for classifying the genus and recognizing flowering and fruiting specimens. Only the first three of these patterns occur in southern Britain.

- A. A simple spike, where all the flowers are inserted directly on the main stem. There are only two such sedges in southern Britain. However you must take care to distinguish others that have several spikes tightly packed together – these usually have a more 'lumpy' or even 'knobbly' appearance. Bending the spike will reveal that the flowers are borne on side branches in these species.
- B. Several spikes, all similar in appearance. The arrangement of male and female flowers in these spikes varies greatly between different species, and to a lesser extent within a species.

- ◆ Spikes that are wholly male, or male at the top only, in the upper part of the inflorescence, and wholly female at the bottom of the inflorescence;
- ◆ Spikes that are wholly female, or female at the top only, in the upper part of the inflorescence, and wholly female below;
- ◆ Spikes that are entirely female in the upper part of the inflorescence, male at the top of the spike in the middle, and wholly female at the bottom of the inflorescence.

However all female flowers in this group have two stigmas (see below). Some upper spikes may not have bracts beneath, and in some species bracts may resemble glumes or bristles that are hard to distinguish.

- C. Several spikes. The terminal spike, and sometimes other spikes at the top, are male. The lower spikes are clearly different in appearance and are either wholly female, or sometimes with a few male flowers at the top of the uppermost. Depending on species, the female flowers can have two or three stigmas. All except the topmost spike have a bract beneath that can vary in size or appearance from top to bottom of the spike and is often characteristic of the species.
- D. Several spikes. A group rather like B., with the topmost spike in the inflorescence female at the top and male at the bottom, and lower spikes all female. However all have female flowers with three stigmas. They are all northern or montane plants and do not occur in Hampshire.

## Flowers

Male flowers in *Carex* species consist of three stamens arising from a base **receptacle**, and are partly hidden by a single **glume** like a short bract. The anthers fall after flowering, but the white filaments remain to mark out the male flower position.

The glume size, shape and the extent of the midrib are important, but beware of glumes with broken or tattered ends. Glume colour is characteristic in many species, although in a few species it may vary widely. The presence and disposition of membranous, colourless and translucent (**hyaline**) bands on the glume is another useful character.

The female flower comprises a single ovary enclosed in a flask-like structure called a **utricle** (or sometimes **perigynium**), with a small opening at the top. A single style arises from the top of the ovary, and protrudes through the hole where it divides into two or three stigmas; the number of stigmas is diagnostic for a species.

By the time a sedge is fruiting, the stigmas may have dropped or become so matted that counting is impossible. However the shape of the ripe nut inside the utricle is characteristic; species with three stigmas have nuts that are triangular in cross-section, those with two stigmas have nuts with two convex faces, one usually more swollen than the other. Be sure to look at the nut shape, not the utricle shape.

The size, shape and colour of the utricle are all useful recognition features, as is hairiness. Sometimes the ribbing and other surface features are helpful; these are most easily studied on ripe but fresh material.

The utricle may be prolonged into a narrow **beak** around the aperture, and the presence or absence, length and shape of the beak (especially the degree of notching at the top) are often diagnostic.

Finally, the female glumes may be markedly different from the male (particularly in Group C), or differences may be subtle or non-existent (particularly in Group B). In any case, the same range of diagnostic characters applies.

## KEY TO HAMPSHIRE SEDGE GENERA (CYPERACEAE)

- 1a Stems conspicuously hollow; leaf edges and midribs with vicious cutting teeth ..... **Cladium (Saw Sedge)**
- 1b Stems not more than pithy in centre; leaves not viciously cutting ..... 2
- 2a Flowering parts involving bristles which elongate and exceed glumes at fruiting time, making a cottony head ..... **Eriophorum (Cottongrasses)**
- 2b Flowering parts with no bristles, or inconspicuous bristles remaining shorter than glumes ..... 3
- 3a Flowers all unisexual, male and female in different spikes, different parts of the same spike or occasionally on different plants; ovary enclosed in a membranous utricle ..... **Carex (Sedges)**
- 3b Flowers all bisexual; ovary not enclosed in a utricle ..... 4
- 4a Inflorescence of 1 terminal spikelet; lowest bract not leaf-like or stem-like, shorter than spikelet ..... 5
- 4b Inflorescence of 1 or more spikelets; if 1, then lowest bract leaf-like or stem-like and exceeding inflorescence ..... 7
- 5a Most or all leaf-sheaths on stem with short leaf blade; usually trailing in water .... **Eleogiton (Floating Club-rush)**
- 5b Most or all leaf sheaths on stem without blades ..... 6
- 6a Uppermost leaf sheath on stem with short blade ..... **Trichophorum (Deergrass)**
- 6b Uppermost leaf sheath on stem (and most or all below) without a blade ..... **Eleocharis (Spike-rushes)**
- 7a Inflorescence with two or more flat leaf blades close together at base ..... 8
- 7b Inflorescence with basal bracts stem-like or leaf-like; if leaf-like then single or well spaced out ..... 10
- 8a Spikelets flattened, with glumes in two ranks either side of stem ..... **Cyperus (Galingales)**
- 8b Spikelets more or less round in cross-section, with glumes arranged spirally ..... 9
- 9a Inflorescence dense; spikelets greater than 8mm ..... **Bolboschoenus (Sea Club-rush)**
- 9b Inflorescence diffuse; spikelets less than 5mm ..... **Scirpus (Wood Club-rush)**
- 10a Inflorescence a flattened compact terminal head, with spikelets all on two opposite sides of main stem ..... **Blysmus (Flat-sedge)**
- 10b Inflorescence of various forms, but if a compact terminal head then spikelets not arranged only on two opposite sides of stem ..... 11
- 11a Spikelets flattened, with glumes on two opposite sides of stem ..... **Schoenus (Black Bog-rush)**
- 11b Spikelets rounded in cross-section, with glumes arranged spirally ..... 12
- 12a Inflorescence obviously terminal, with a leaf-like main bract; stems with well-developed leaf blades ..... **Rhynchospora (Beak-sedges)**
- 12b Inflorescence usually appearing lateral, with the main bract rather stem-like and continuing the stem above the inflorescence; stems with no or very few reduced leaf blades ..... 13
- 13a Stems very slender (less than 1mm wide); whole plant rarely more than 20cm ..... **Isolepis (Club-rushes)**
- 13b Stems much stouter; whole plant rarely less than 50cm ..... **Schoenoplectus (Bulrushes)**

## KEY TO FLOWERING / FRUITING HAMPSHIRE SEDGES (CAREX)

In the tables that follow this key, particularly useful characters are picked out in **bold**. They should not be taken in isolation, but read with the rest of the description. They sometimes serve to distinguish a species from some but not all other plants in the same table.

Numbers against species names in the table headings refer to the species number in the BSBI Handbook *British Sedges*, Edition 1, 1968, which has very full line illustrations.

- 1a** All flowers borne in a single spike, with flowers attached directly to the main stem; stigmas 2, or only male flowers in the spike; stems rounded in cross-section or with 6 very weak angles..... **Table 1**
- 1b** Flowers borne in several spikes, but sometimes crowded and appearing as a single spike; all spikes similar in appearance on the one stem; stigmas 2; stems various..... **2**
- 1c** Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers; stigmas 2 or 3 (if only female spikes apparent, then stigmas 3) ..... **5**
- 2a** Plants with far-creeping rhizomes showing well spaced out shoots, not forming tufts or tussocks ..... **Table 2**
- 2b** Plants with short rhizomes, forming tufts or tussocks..... **3**
- 3a** Topmost spike or spikes of each inflorescence with some male flowers at summit and female flowers below, or all female; lower spikes variable..... **4**
- 3b** Topmost spike of each inflorescence female at the summit and male at the base; lower spikes similar or wholly female..... **Table 5**
- 4a** Spikes dark or biscuity brown; female glumes with broad silvery margins; leaf tips triangular in cross section ..... **Table 3**
- 4b** Spikes green or yellowish; female glumes without broad silvery margins; leaf tips flat ..... **Table 4**
- 5a** Utricles hairy or downy at least towards the top; stigmas 3 ..... **6**
- 5b** Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak; stigmas 2 or 3 ..... **7**

- 6a** Utricles with a forked beak more than 0.5mm long; male spikes 2-3 .... **Table 6**
- 6b** Utricles unbeaked or with a very short beak not exceeding 0.5mm; male spikes 1 ..... **Table 7**
- 7a** Stigmas 2; nut within fruit with two convex faces; glumes usually dark purple-brown to black although with green markings ..... **Table 8**
- 7b** Stigmas 3; nut within fruit **trigonous** (with three faces and three angles) ..... **8**
- 8a** Utricle with beak absent, or very short (0.5mm or less) and truncate at tip ..... **9**
- 8b** Utricle with distinct beak, forked, split or notched at tip ..... **10**
- 9a** Utricles ovoid or obovoid, with blunt, rounded tip, with or without a very short truncate beak ..... **Table 9**
- 9b** Utricles tapered at both ends, with a short truncate beak ..... **Table 10**
- 10a** Top of at least some leaf sheaths with projecting flap (**antiligule**) on opposite side from leaf blade on at least some sheaths ..... **Table 11**
- 10b** Top of sheath concave, truncate or with a very narrow projecting frill on opposite side from leaf blade ..... **11**
- 11a** Female spikes all, or almost all, exceeding 20mm in length, narrowly elliptic to cylindrical ..... **Table 12**
- 11b** Female spikes globose, ovoid or broadly elliptical, not exceeding 20mm in length ..... **Table 13**

**TABLE 1: All flowers borne in a single spike, with flowers attached directly to the main stem; stigmas 2, or only male flowers in the spike**

	<i>Carex dioica</i> (Dioecious Sedge) [50]	<i>Carex pulicaris</i> (Flea Sedge) [49]
<b>General Habit</b>	Rhizomes shortly creeping, giving rise to small <b>loosely tufted</b> shoots 5-30cm tall	Rhizomes shortly creeping, giving rise to tufted to <b>densely tufted</b> shoots 10-30cm tall
<b>Leaf Sheaths and Ligules</b>	Older sheaths pale orange-brown; sheath truncate at top but readily splitting. Ligule 0.5mm, rounded, tubular	Older sheaths brown but soon fibrous or decaying; sheath truncate at top. Ligule not more than 0.5mm, rounded.
<b>Leaf Blades</b>	5-20cm x 0.3-1mm, <b>3-veined</b> , dark green, rigid, channelled and <b>inrolled</b> , tip rounded	5-25cm x 0.5-1mm, <b>approximately 9-veined</b> , dark green, rigid, keeled, <b>not inrolled</b> , with blunt tip
<b>Stems</b>	Rounded, smooth	Slender, rigid, rounded or with 6 very weak angles
<b>Inflorescence</b>	<b>Male and female spikes on separate shoots (dioecious)</b> ; male spikes 8-20mm, cigar-shaped, very occasionally with a few female flowers at base; female spikes 5-20mm, ovoid and <b>tightly packed at fruiting</b> . Bracts 0 or inconspicuous	<b>Spike 10-25mm, with male flowers at the top, closely appressed to stem, and 5-10 rather widely spaced female flowers at the bottom.</b>
<b>Flowers</b>	Male glumes 3-4mm long, ovate-oblong, red-brown with pale margin. Female glumes 2.5-3.5mm long, purple-brown with pale margin, a pale midrib and a darker nerve; both with acute or obtuse tips, but lowest female flower often with enlarged glume with a prolonged fine point. Utricles 2.5-3.5mm, ovoid, spreading or deflexed when ripe, pale reddish- or purplish-brown with darker ribs, with a notched, very finely toothed beak 0.5-0.75mm	Male glumes 4.5-5mm long, oblong-elliptic, purple-brown with pale margin. Female glumes 3.5-4mm, usually falling before the fruit ripen, broadly lanceolate, reddish- or purplish-brown, with a keeled midrib; both with acute or obtuse tips. Utricle 2.5-3.5mm, patent or deflexed when ripe, broadly ovoid-ellipsoid, shiny dark purplish-brown.
<b>Hampshire Habitat and Distribution</b>	A very rare constituent of calcareous fen on deep, relatively unflushed peat. Now known in only two sites, both in North Hampshire.	Calcareous fens and moist peaty meadows; wet heaths with a reasonably high base status; marlpits; mires flushed by moderately basic springs, and a characteristic member of the New Forest 'step mires' where water issues from the Headon Beds. Widespread and frequent in the New Forest; very scattered elsewhere in South Hampshire, localized and infrequent in North Hampshire, where it reaches its greatest frequency in the spring-fed fens and bogs of the NE.



**TABLE 2: Flowers borne in several spikes, but sometimes crowded and appearing as a single spike; all spikes similar in appearance on the one stem; stigmas 2; stems various. Plants with far-creeping rhizomes showing well spaced out shoots, not forming tufts or tussocks.**

	<i>Carex divisa</i> (Divided Sedge) [58]	<i>Carex disticha</i> (Brown Sedge) [56]	<i>Carex arenaria</i> (Sand Sedge) [57]
<b>General Habit</b>	Shoots <b>more or less densely clustered</b> from a creeping branched rhizome, but not tufted; up to 80cm tall	Shoots <b>singly or in pairs</b> from a far-creeping rhizome; up to 100cm tall	Shoots <b>singly and often in easily traceable straight lines</b> from a far-creeping rhizome; up to 90cm tall <b>but usually much less (under 30cm)</b>
<b>Leaf Sheaths and Ligules</b>	Lower sheaths brown; those of sterile shoots forming a false stem; inner face hyaline, apex slightly concave or straight. <b>Ligule 2-3mm</b> , obtuse, more or less tubular	Lower sheaths brown, forming false stems in sterile shoots; inner face <b>green</b> , becoming hyaline only around <b>strongly concave apex</b> . Ligule 3-7mm, obtuse, tubular	Lower sheaths pale or grey-brown, forming false stems in sterile shoots; inner face hyaline, becoming brown and membranous, apex straight. Ligule 3-5mm, obtuse, tubular.
<b>Leaf Blades</b>	15-60cm x 1.5-3mm, stiff; flat or more often channelled or loosely inrolled, overwintering; tip slender but more or less flat; mid- to grey-green	15-60cm x 2-4mm, flat with keeled midrib, gradually tapering to a flat tip, rough on veins beneath and at tip; mid-green	15-60cm x 1.5-3.5mm, rigid, thick, more or less flat but in driest situations channelled, <b>often recurved</b> , gradually <b>tapering to a fine trigonous point</b> ; rough; <b>dark green and shiny</b> , persistent when dead and then often dark brown
<b>Stems</b>	Wiry, trigonous with rather blunt angles but rough at top	<b>Sharply trigonous</b> , rough	Rather bluntly trigonous ( <b>but often with projecting ribs at the angles</b> ), wiry, rough at top, <b>often markedly curved</b> , noticeably variable in thickness
<b>Inflorescence</b>	<b>1-3cm</b> , composed of 3-8 spikes, all contiguous or the lowest slightly separated, unstalked; <b>bracts leaf-like or bristle-like, the lowest usually exceeding the length of the whole inflorescence. Upper spikes male at top, female below; lower spikes all female</b>	<b>2-7cm</b> , composed of 4-9 or more spikes, all contiguous and unstalked, forming a broadly lanceolate to ellipsoid head; <b>bracts glumaceous or the lowest somewhat leaf-like</b> , exceeding the spike but not usually the inflorescence. <b>Uppermost spike female (note: this may be overtopped by adjacent spikes); middle spikes male; lower spikes all female, or female with male flowers at base</b>	Up to 8cm, composed of 5-15 dense unstalked spikes forming a somewhat pyramidal or broadly ovoid-elliptic head; bracts <b>glumaceous, lowest with setaceous points</b> exceeding the spike but not the inflorescence. <b>Terminal spike male; middle spikes male at top, female below; lower spikes wholly female</b>
<b>Flowers</b>	Male glumes 3.5-4.5mm long, lanceolate-elliptic, pale russet; apex acute, midrib reaching but not prolonging the tip. Female glumes 3.5-4.5mm, lanceolate-elliptic, <b>purplish-brown</b> , with pale midrib and broad hyaline margins; <b>apex prolonged into a bristle</b> . Utricles 3.5-4mm, ovoid or broadly ellipsoid, pale brown, faintly nerved, <b>unwinged</b> ; beak 0.5-0.75mm, parallel-sided, bifid	Male glumes 4-5mm, lanceolate, pale russet with hyaline margins; apex acute. Female glumes 3.5-4.5mm, ovate-lanceolate, pale russet with hyaline margins; apex acute but not prolonged. Utricles 4-5mm, ovoid, with many ribs, red-brown, <b>narrowly winged with serrate wings</b> ; beak 1mm, rough, bifid	<b>Male glumes 5-7mm</b> , lanceolate-elliptic, pale russet with hyaline margins; apex acute, midrib prominent at tip but not projecting. <b>Female glumes 5-6mm</b> , ovate, pale russet, with pale greenish midrib and hyaline margins; apex acute or very shortly prolonged. Utricles ovate, with many ribs, <b>broadly winged and serrate in the upper half</b> ; beak 1-1.5mm, winged to near tip, bifid

	<b><i>Carex divisa</i> (Divided Sedge) [58]</b>	<b><i>Carex disticha</i> (Brown Sedge) [56]</b>	<b><i>Carex arenaria</i> (Sand Sedge) [57]</b>
<b>Hampshire Habitat and Distribution</b>	Frequent near the sea in South Hampshire in brackish pasture, grassy upper salt marshes and old sea-banks.	In fen meadows over base-high peat and alluvium and in grazed marshes on basic alluvial soil. Frequent in Hampshire where the habitat survives, but particularly in the main river valleys.	Quite common on coastal sand. Inland it is found on the sandy heaths on either side of the lower Avon (SW Hants) and on sandy heaths of Woolmer Forest (E Hants). In the rest of the New Forest it is occasionally found on roadsides, where it is likely to be introduced.

*Carex curta* may key out to this table as it is very loosely tufted and tufts may not be easily apparent in semi-submerged situations. It can be readily distinguished from any of the above by its mire habitat; by its hyaline male and female glumes with green midribs, giving the whole inflorescence a silvery cast; and by its very acutely angled stems with concave faces. For other characters see Table 5.

**TABLE 3: Flowers borne in several spikes, but sometimes crowded and appearing as a single spike; all spikes similar in appearance on the one stem; stigmas 2; stems various. Plants with short rhizomes, forming tufts or tussocks. Topmost spike or spikes of each inflorescence with some male flowers at summit and female flowers below; lower spikes variable. Spikes dark or biscuity brown; female glumes with broad silvery margins; leaf tips triangular in cross section**

	<i>Carex paniculata</i> (Greater Tussock-sedge) [51]	<i>Carex diandra</i> (Lesser Tussock-sedge) [53]
<b>General Habit</b>	Rhizomes very short, <b>forming dense tussocks up to 1.5m high and 1m across</b> , bearing shoots up to 150cm long	Rhizomes shortly creeping, <b>shoots clustered to form a loose tussock</b> , and up to 60cm long
<b>Leaf Sheaths and Ligules</b>	Lowermost sheaths dark brown, shiny; those of sterile shoots forming a false stem; inner face hyaline with brown concave apex. Ligule 2-5mm, rounded	Lower sheaths grey-brown or dark brown; inner face hyaline with straight or slightly concave apex. Ligule 1-2mm, obtuse
<b>Leaf Blades</b>	20-120cm x <b>4-7mm</b> , stiff; channelled or inrolled, overwintering; tapering abruptly to a short trigonous tip; dark green, shiny beneath	20-40cm x <b>1-2mm</b> , flat or slightly keeled, sometimes overwintering; tapering gradually to a fine more or less trigonous point; grey-green
<b>Stems</b>	Rough, trigonous, spreading	Slender, more or less sharply trigonous, rough on angles
<b>Inflorescence</b>	5-15cm, compact, with many, <b>mostly branched stalked spikes</b> ; bracts setaceous or glumaceous with a broad hyaline margin and a midrib extending beyond the apex. Individual spikelets 5-8mm, male above, female below, or with the lowermost all female.	1-5cm in a compact head of 6-20 <b>simple, unstalked spikes</b> ; bracts glumaceous or occasionally lowest setaceous. Spikes 5-8mm, male above, female below
<b>Flowers</b>	Male glumes 3-4mm, ovate-lanceolate, orange-brown, hyaline, with broad pale midrib; apex acute. Female glumes 3-mm, ovate-triangular, <b>orange-brown</b> with wide hyaline margin; apex acute or shortly prolonged into a point. Utricles 3-4mm, ovoid but conspicuously swollen at base, green to blackish-brown, ribbed; <b>beak</b> 1-1.5mm, <b>with a conspicuous serrate wing</b> , deeply split at tip on side facing stem	Male glumes 3-4mm, lanceolate-elliptic, pale-brown to hyaline, apex more or less acute. Female glumes 3mm, broadly ovate, <b>pale purple-brown</b> with a short green midrib (not reaching the tip) and a broad hyaline margin; apex acute or with a short stiff point. Utricles 3-4mm, <b>very broadly ovoid or subglobular</b> ; <b>beak</b> 1.5-2mm, rather broad, more or less straight-sided, bifid, serrate but <b>not conspicuously winged</b>
<b>Hampshire Habitat and Distribution</b>	Common in fen, carr and swampy woodlands and particularly common along the main river valleys. Tolerates alkaline to moderately acid conditions	Very rare in wet fens in the chalk valleys, now known only in three sites all in North Hampshire

*Carex vulpina* (True Fox-sedge) is known elsewhere in Southern England but not in Hampshire. It has leaves **5-12mm wide** and a stout trigonous stem, and in general appearance is more like *C. otrubae* (see Table 4). However the stem is prominently **winged** and the inflorescence is a striking reddish-brown.

*Carex appropinquata* (Fibrous Tussock-sedge) is known elsewhere in Southern England but not in Hampshire. It is distinguished from *C. paniculata* by its narrower leaves (**1-2mm**), **strongly nerved** utricle and **narrowly winged** utricle beak. It is distinguished from *C. diandra* by its stouter stems and narrowly ovoid fruit.



**TABLE 4: Flowers borne in several spikes, but sometimes crowded and appearing as a single spike; all spikes similar in appearance on the one stem; stigmas 2; stems various. Plants with short rhizomes, forming tufts or tussocks. Topmost spike or spikes of each inflorescence with some male flowers at summit and female flowers below, or all female; lower spikes variable. Spikes green or yellowish; female glumes without broad silvery margins; leaf tips flat**

	<i>Carex otrubae</i> (False Fox-sedge) [54]	<i>Carex spicata</i> (Spiked Sedge) [63]	<i>Carex divulsa ssp. divulsa</i> (Grey Sedge) [58]	<i>Carex divulsa ssp. leersii</i> (Leers' Sedge)	<i>Carex muricata ssp. lamprocarpa</i> (Prickly Sedge)
<b>General Habit</b>	Forming dense tufts; shoots 30-100cm long	Forming dense tufts; shoots 10-85cm long	Forming more or less dense tufts; shoots 25-90cm long	Forming more or less dense tufts; shoots 25-90cm long	Forming dense tufts; shoots 10-75(-85)cm long
<b>Leaf Sheaths and Ligules</b>	White with green veins, becoming brown and decaying; inner face hyaline, unwrinkled; apex straight. Ligule 5-10mm, somewhat longer than wide, more or less acute, forming a tube at top of sheath	Lower sheaths often tinged purplish-red; sheath apex straight or concave. Ligule 4-8mm, <b>markedly longer than wide</b> , acute, with rather spongy white loose tissue	Lower sheaths pale brown, ribbed; sheath apex straight or slightly concave. Ligule up to 2mm, rounded to obtuse, about as wide as long	Lower sheaths pale brown, ribbed; sheath apex straight or slightly concave. Ligule up to 2mm, rounded to obtuse, typically <b>wider than long</b>	Lower sheaths greyish or pale brown; inner face of sheath hyaline; sheath apex straight or shallowly concave. Ligule 1-2mm, rounded to obtuse, about as wide as long or a little wider
<b>Leaf Blades</b>	10-60cm x <b>4-10mm</b> , more or less erect, keeled, rapidly tapering to a flat sharp point, rough at margins; sometimes forming small 'ears' at junction with sheath	10-45cm x 2-4mm, mid-green, keeled, gradually tapering to a flat tip	10-75cm x 2-3mm, mid-green, flat or channelled, flexible, often somewhat arched, gradually narrowed to a slender flat tip	10-75cm x 3-4mm, often yellowish- to mid-green, flat or channelled, usually upright, gradually narrowed to a slender flat tip	7-45cm x 2-4mm, mid-green, somewhat keeled, tapering to a flat tip, reddish or bronzed when dying
<b>Stems</b>	<b>Stout (more than 2mm wide)</b> ; smooth below, rough above; faces more or less flat; angles slightly winged	Rather stout but rarely exceeding 2mm in width towards apex; faces more or less flat or slightly convex, angles barely acute and unwinged.	<b>Slender (usually less than 1mm wide towards apex)</b> , rough with upward pointing teeth; faces flat, <b>ridged</b> ; angles rounded and unwinged	Robust (usually 1-2mm wide towards apex), rough with upward pointing teeth; faces flat, <b>ridged</b> ; angles rounded and unwinged	Often stout but not exceeding 2mm in width towards top; faces flat; angles acute, unwinged

	<i>Carex otrubae</i> (False Fox-sedge) [54]	<i>Carex spicata</i> (Spiked Sedge) [63]	<i>Carex divulsa</i> ssp. <i>divulsa</i> (Grey Sedge) [58]	<i>Carex divulsa</i> ssp. <i>leersii</i> (Leers' Sedge)	<i>Carex muricata</i> ssp. <i>lamprocarpa</i> (Prickly Sedge)
<b>Inflorescence</b>	An elongated panicle, <b>dense and stout when in fruit</b> . Lower bracts bristle-like with a leaf-like base, about as long as total inflorescence; upper glumaceous. Spikes numerous, 8-14mm, themselves often branched; mostly male above, female below	1-4cm in length, compact but usually with the lowest slightly separated from the rest. Lower bracts glumaceous with a bristle-like point. Spikes 3-8, unstalked, 5-10mm; male above, female below.	3-10(-20)cm in length, upper spikes contiguous, <b>lowest 3-4 spikes separated from each other by more than their own length</b> . Lower bracts bristle-like, upper glumaceous. Spikes 4-8, 3-8mm, <b>upper all female</b> , lower male above, female below.	3-10(-20)cm in length, upper spikes contiguous, <b>lowest 1-2 spikes separated from each other by roughly their own length</b> . Lower bracts bristle-like, upper glumaceous. Spikes 4-8, 3-8mm <b>upper all female</b> , lower male above, female below.	1-4cm in length, upper spikes contiguous, lower slightly separated, sometimes with an interruption in the middle. Bracts glumaceous with a bristle-like point; lowest exceeding its spike but not the inflorescence. Spikes 3-8, male above, female below, or lowermost spike all female.
<b>Flowers</b>	Male glumes 3.5-4mm, oblanceolate-elliptic, pale orange-brown with green midrib; apex acute. Female glumes 4-5mm, ovate, pale reddish or orange-brown, with green midrib prolonged into a needle-like point at tip. Utricles 5-6mm, ovate, <b>ribbed</b> , green becoming brown when ripe; beak 1-1.5mm, rough at tip, bifid but not split at back.	Male glumes 3-4mm, lanceolate, acute at apex. Female glumes 4-4.5mm, tawny brown with a green midrib, lanceolate, prolonged to a short fine point at tip. Utricles 4-5.5mm, greenish, yellowish or bronzed, <b>with a thick corky base</b> , tapering more or less evenly to a rough somewhat bifid beak 1-2mm long; spreading when ripe to give the spike a 'spiky' appearance	Male glumes 3.5-5mm, lanceolate, acute at apex, more or less hyaline or brownish. Female glumes 3-4.5mm, yellowish or pale brown, somewhat hyaline, acute at tip. Utricles <b>3-4.5mm</b> , narrowly ovoid to ovoid, tapered at both ends, beak 1mm long, rough, bifid; <b>upright or spreading at a narrow angle from stem when ripe</b>	Male glumes 3.5-5mm, lanceolate, acute at apex, more or less hyaline or brownish. Female glumes 3-4.5mm, ovate-elliptical, yellowish or pale brown, somewhat hyaline, acute at tip. Utricles <b>4.5-5.5mm</b> , ovoid to broadly ovoid, tapered at both ends, beak 1mm long, rough, bifid; <b>spreading at a wide angle from stem when ripe</b>	Male glumes 3-4mm, lanceolate-elliptic, acute at apex, brown or somewhat hyaline with a green midrib; may be partially hidden at fruiting time. Female glumes 3-4.5mm, ovate, acute or with a short fine point at apex; pale brown with green midrib. Utricles <b>2.6-3.5mm</b> , ribbed at base, broadly rounded but <b>not corky at base</b> ; beak 0.7-1.3mm, finely toothed; spreading at an angle when ripe.
<b>Hampshire Habitat and Distribution</b>	On heavy soils usually in damp places; rough grassland, ditch sides; common near the coast, widespread on suitable soils in the south and north of the county, absent from the central chalk	Widespread in rough grassland, verges, ditches and waste places on a variety of soils.	Widespread and often common, may be increasing; hedgebanks, wood margins, roadsides and rough grassy places; on all soils, and appears to be tolerant of high nitrogen levels	Locally frequent in the centre of the county, mostly on chalk and other basic soils; hedgebanks, verges, dry grassland and scrub	On acid sandy or gravelly soils, particularly in the Avon valley, Southampton Water area, Woolmer Forest and the northern tertiary, but largely absent from the central chalk belt. In dry grassland and a variety of rough grassy habitats

There are many intermediate forms between the two subspecies of *Carex divulsa*, which will prove difficult to name. Typical *Carex divulsa* subsp. *leersii* is most often found on grassland or scrub margins on chalk.

**TABLE 5: Flowers borne in several spikes, but sometimes crowded and appearing as a single spike; all spikes similar in appearance on the one stem; stigmas 2; stems various. Plants with short rhizomes, forming tufts or tussocks. Topmost spike of each inflorescence female at the summit and male at the base; lower spikes similar or wholly female**

	<i>Carex ovalis</i> (Oval Sedge) [69]	<i>Carex curta</i> (White Sedge) [67]	<i>Carex remota</i> (Remote Sedge) [66]	<i>Carex echinata</i> (Star Sedge) [65]	<i>Carex elongata</i> (Gingerbread Sedge) [64]
<b>General Habit</b>	Shoots densely tufted <b>and often more or less prostrate</b> , 10-90cm long	Rhizomes shortly creeping; shoots <b>loosely tufted</b> , 10-50cm long	Shoots densely tufted or even forming miniature tussocks, 30-75cm tall, spreading	Shoots densely tufted, 10-40cm long	Shoots densely tufted, 30-80cm long
<b>Leaf Sheaths and Ligules</b>	Lower sheaths pink- or grey-brown, persistent, inner face narrow and hyaline, more or less straight at apex. Ligule c. 1mm, obtuse, making a tube round the stem and with almost no attached portion	Lower sheaths pinky-brown but thin and soon decaying; inner face of sheath hyaline, more or less straight at apex. Ligule 2-3mm, acute, tubular.	Sheaths pale yellow-brown, persistent; inner face of sheath narrow, hyaline, concave at apex. Ligule 1-2mm, rounded or obtuse	Sheaths white usually with green veins becoming pale brown and decaying rapidly; inner sheath face hyaline-green, apex more or less straight. Ligule 1mm, rounded, forming a tube at top of sheath.	Lower sheaths pale or pinky-brown, shiny, persistent; inner face of sheaths hyaline, apex concave. <b>Ligule 4-8mm, strongly acute, with very narrow free margin</b>
<b>Leaf Blades</b>	5-50cm x 1-3mm, mid to dark green, flat, thin, somewhat soft, more or less flat with rough margins, gradually tapering to a fine trigonous tip	15-55cm x 2-3mm, pale green, soft, thin, flat or slightly keeled, tapering gradually to a fine, rough, flat tip	25-60cm x 1.5-2mm, mid-green, wintergreen, shallowly channelled, gradually tapered to a long slender drooping tip	5-30cm x 1-2.5mm, mid- to yellow-green, thick, keeled or (when older) flat, gradually tapered to a trigonous, rough tip	25-90cm x 2-5mm, mid-green, red-brown and persistent when dead, thin, flat or slightly keeled, rough on underside, gradually tapering to a very fine flat tip
<b>Stems</b>	Rough at top, trigonous with acute angles, stiff, usually curved and sometimes sinuous	Slender, rough at top, trigonous, faces concave, angles sharply acute	Slender, with three faces or <b>often at top with two curved faces and two rough angles</b>	Slender, trigonous with three rounded faces and rounded angles (becoming overall almost rounded at top)	Rough with upward-pointing teeth, trigonous, with more or less flat faces and acute angles
<b>Inflorescence</b>	<b>A compact ovoid head of 1-2.5cm</b> ; bracts glumaceous or lowermost bristle-like; lowest bract often absent or shorter than head but next lowest roughly as long as head. Spikes 2-9, contiguous or overlapping, 5-15mm, unstalked; upper female at top, male below; lower all female	A compact to rather open head of 3-5cm; bracts glumaceous or lowermost partially bristle-like, shorter than individual spike. Spikes 4-8, contiguous or somewhat separated, 5-8mm, female at top, male at base; <b>overall of a whitish cast turning yellowish with maturity</b>	<b>10-20cm comprising 1/4 - 1/3 length of stem; lower bracts leaf-like and exceeding the length of the inflorescence</b> , upper glumaceous. Spikes 4-9; upper more or less contiguous, 3-10mm, female at top, male below; <b>lower widely separated</b> , all female.	A rather open head of 1-3cm; bracts glumaceous or occasionally bristle-like, shorter than or equalling the head. Spikes 2-5, separated, 3-6mm, unstalked (but uppermost may appear stalked when male flowers drop), uppermost spike female at top, male below; others all female	3-7cm, rather lax; lower bracts bristle-like and more or less equalling spike, upper glumaceous. Spikes 5-18, more or less contiguous or slightly separated, 5-15mm, <b>beginning erect but spreading widely in fruit</b> , upper female at top and male at base, lower entirely female.

	<i>Carex ovalis</i> (Oval Sedge) [69]	<i>Carex curta</i> (White Sedge) [67]	<i>Carex remota</i> (Remote Sedge) [66]	<i>Carex echinata</i> (Star Sedge) [65]	<i>Carex elongata</i> (Gingerbread Sedge) [64]
<b>Flowers</b>	Male glumes 4-5mm, broadly lanceolate, acute, pale orange-brown with keeled midrib and broad hyaline margin. Female glumes 3-4.5mm, lanceolate-elliptic, acute, dark reddish-brown, with paler midrib and broad hyaline margin. Utricles 4-5mm, ellipsoid-ovoid, light brown; beak c. 1mm, shallowly bifid; <b>beak and upper part of utricle with a narrow-medium rough wing</b>	Male glumes 2-2.5mm, ovate or broadly elliptic, obtuse at tip, hyaline with green midrib. Female glumes c. 2mm, ovate-oblong, acute or projected into a very short fine tip, hyaline with green midrib. Utricles 2-3mm, ovoid-ellipsoid, pale or bluish green becoming yellow, with yellowish ribs; beak 0.5-0.75mm, minutely rough and minutely notched, unwinged	Male glumes 2-5-3mm, ovate-elliptic, acute, pale brown and somewhat hyaline with green midrib. Female glumes 2.5mm, lanceolate to ovate, acute, pale brown and somewhat hyaline with green midrib. Utricles 2-5-3.5mm, ovoid-ellipsoid, green; beak 0.5mm, broad, deeply split	Male glumes 2-5-3mm, broadly lanceolate, obtuse at tip, pale brown with broad hyaline margin. Female glumes 2-2.5mm, broadly ovate and enfolding lower part of utricle, acute, pale reddish brown with green midrib and broad hyaline margin. Utricles 3-4mm, ovoid, green becoming yellowish-brown, faintly ribbed with c. 10 ribs on outer face; beak c. 1mm, broad, with a serrated edge, bifid; <b>utricle diverging widely at fruit giving the spike a distinct prickly appearance</b>	Male glumes 2-5-3mm, ovate-oblong, apex rounded to obtuse, pale reddish-brown with a green midrib just projecting from the apex. Female glumes c. 2mm, ovate-elliptic, apex acute to obtuse, reddish-brown with a green midrib. Utricles 3.5-4mm, lanceolate-ellipsoid, sometimes curved, green becoming brown, <b>distinctly ribbed with c. 8 ribs on each face</b> ; beak 0.5-0.75mm, minutely serrated, <b>unforked and cut off square</b>
<b>Hampshire Habitat and Distribution</b>	Common to very common on acid soils; rare in central chalk belt and there on superficial deposits. Grassy heathland, acidic grassland and woodland glades and rides	A local plant of the Avon valley, New Forest fringes (mainly the N and W of the Forest), Woolmer Forest area and the acid soils of the NE. In wet bogs, acid swamp and carr with little lateral water movement	Widespread and abundant over most of the county, local and uncommon on the central chalk belt. In shade on organic or sandy soils which are waterlogged for at least part of the year; in wet woodland, carr, flushes and stream banks	Very common on the New Forest, Woolmer Forest areas, and heathy soils of the NE. Scattered on heathy tertiary soils elsewhere. A plant particularly characteristic of the transition from wet heath to mire; more occasionally in acid carr and marshes and waterlogged acid meadows	A rare plant of the Moors River system in SW Hants; probably extinct in N Hants. In very wet acid carr, ditches and river margins

**TABLE 6: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Stigmas 3. Utricles hairy or downy at least towards the top. Utricles with a forked beak more than 0.5mm long; male spikes 2-3**

	<i>Carex hirta</i> (Hairy Sedge) [27]	<i>Carex lasiocarpa</i> (Slender Sedge) [28]
<b>General Habit</b>	Rhizomes far-creeping; shoots loosely to moderately tufted, 15-70cm tall	Rhizomes far creeping; shoots loosely tufted, slender, 45-120cm tall
<b>Leaf Sheaths and Ligules</b>	<b>Sheaths hairy; inner faces hyaline, often densely hairy, without transverse wrinkles</b> , straight or shallowly V-shaped at apex. Ligule 1-2mm, obtuse, <b>fringed with hairs on free edge</b>	<b>Sheaths not hairy, dark purple-brown to red-brown, inner face membranous and purple- to pale red-brown, with obvious transverse wrinkles, straight and dark purplish at apex</b> . Ligule 2-3mm, obtuse
<b>Leaf Blades</b>	10-50cm x 2-5mm, mid green, <b>more or less hairy on both surfaces</b> , flat or keeled, gradually tapering to a fine point	30-100cm x 1-2mm, grey-green, stiff, unkeeled but <b>usually inrolled, long drawn out into a fine, whippy, needle-like point</b>
<b>Stems</b>	With 3 rounded faces and blunt angles	Rough at the top, with 3 more or less flat faces, grooved, angles rounded
<b>Inflorescence</b>	<b>Up to ¾ length of stem</b> ; lower bracts leafy, <b>longer than spike but not exceeding inflorescence</b> , upper bracts bristle-like. Male spikes 2-3, 10-25mm long, contiguous or lowest separated by its own length. Female spikes 2-3, contiguous to widely spaced, 10-45mm, cylindrical, erect, <b>stalks up to twice as long as spike (but partly hidden within sheath)</b> .	<b>1/8 – 1/6 length of stem</b> ; bracts leaf-like, very slender, <b>lower usually exceeding inflorescence</b> . Male spikes 1-3, 20-70mm long, contiguous or shortly separated. Female spikes 1-3, 15-30mm, cylindric-oblong, contiguous or more or less distant, erect, <b>very short-stalked</b> .
<b>Flowers</b>	Male glumes 4-5mm, obovate-oblong, apex with a short stiff point, somewhat hairy, reddish brown with pale midrib or pale and hyaline throughout. <b>Female glumes 6-8mm</b> , ovate-oblong <b>with the midrib projecting as a prominent green minutely hairy spike</b> , green-hyaline. Utricle 5-7mm, ovoid, ribbed, green, hairy; <b>beak 2mm</b> , rough, hairy, deeply bifid	Male glumes 4-6mm, lanceolate, acute, purple-brown with green or pale midrib. <b>Female glumes 3.5-4.5mm</b> , oblong-lanceolate, <b>acute or with a short projection</b> , chestnut brown with pale midrib. Utricles 3.5-4.5mm, ovoid, downy, grey-green; <b>beak 0.5-1mm</b> , conspicuously bifid.
<b>Hampshire Habitat and Distribution</b>	Widespread and often abundant in fairly dry to damp grassland (usually with some retained moisture), fens and marshes, grassy waysides; absent from dry chalk or very acid heaths and mires.	Confined to a few bogs in the Avon Water catchment of the southern New Forest; central, wet, base-rich valley bogs and reed-swamp



**TABLE 7: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Stigmas 3. Utricles hairy or downy at least towards the top. Utricles unbeaked or with a very short beak not exceeding 0.5mm; male spikes 1**

	<i>Carex humilis</i> (Dwarf Sedge) [33]	<i>Carex montana</i> (Soft-leaved Sedge) [32]	<i>Carex pilulifera</i> (Pill Sedge) [29]	<i>Carex caryophyllea</i> (Spring Sedge) [30]
<b>General Habit</b>	Rhizomes shortly creeping, much branched; <b>shoots 2-10cm</b> .	Rhizomes creeping and much branched, with tufts of shoots at the apex making patches or rough circles; shoots 10-40cm	Rhizomes short; shoots densely tufted and often lying close to the ground, 10-30cm.	Rhizomes shortly creeping, giving rise to small lax scattered tufts; shoots 2-30cm
<b>Leaf Sheaths and Ligules</b>	Sheaths initially white with green veins, becoming red- or orange-brown, persistent, eventually becoming fibrous; inner face hyaline, concave at apex. Ligule 0.5-1mm, rounded.	Lower sheaths <b>dark-red brown to vivid wine-red</b> ; ribbed, becoming fibrous with age; inner sheath face hyaline, soon decaying, concave at apex. Ligule 1mm, obtuse	Lower sheaths pale red-brown, becoming fibrous with age; inner sheath face hyaline, apex straight. Ligule 0.5-1mm, rounded.	Sheaths green at first becoming brown and fibrous; inner sheath face hyaline, decaying rapidly, apex straight. <b>Ligule 1-2mm</b> , obtuse, <b>with a very narrow free margin</b>
<b>Leaf Blades</b>	2-20cm x 1-1.5mm, dark-green becoming purplish-brown on decay, overwintering, rough, stiff, arched, flat when young, becoming channelled on maturity, tapering from base to a fine trigonous tip.	10-35cm x 1.5-2mm, light to mid green, flat, <b>soft, not overwintering</b> , sometimes sparsely hairy on top at first; tapering to a slender flat point.	5-20cm x 1.5-2mm, yellow- or mid-green, pink-brown on decay, overwintering, rough above, more or less flat, with minute bumps on upper surface, rather abruptly tapered to a short trigonous point.	2-20cm x 1.5-2.5mm, mid or dark green, shiny, more or less flat or slightly channelled, often curved downwards, rough on upper surface, sometimes overwintering, tapering rather abruptly to a short trigonous point.
<b>Stems</b>	Slender, often arched, solid, more or less rounded, hidden amongst the leaves.	Very slender, rough at top, rather flaccid and often curved, with 3 or sometimes up to 6 angles. (Flowering stems often hard to find)	Wiry, rough above, often curved or arched, with three flat or slightly convex faces and three sharp angles.	Leafy below, trigonous with flat faces and sharp acute angles.
<b>Inflorescence</b>	Up to ¾ length of stem; bracts glumaceous, hyaline or pale brown, enclosing female spike. Male spike 1, 10-15mm. <b>Female spikes 2-4, very narrow, separated, 4-10mm</b> , with 2-4 flowers, <b>almost hidden in the bracts</b> .	1-2cm at top of stem; bracts glumaceous or lowest bristle-like with a glumaceous base. Male spike 1, 10-20mm. Female spikes 1-4, 6-10mm, ovoid, clustered directly below male spike, few-flowered, more or less erect, unstalked.	2-4cm at top of stem; bracts leaf-like or upper bristle-like. Male spike 1, 8-15mm. Female spikes 2-4, 5-8mm, ovoid or almost globular, more or less clustered under male spike (the lowest often a little separate), erect, unstalked.	2-4cm at top of stem, compact; lower bracts leaf-like or glumaceous, <b>at least the lowest bract sheathing</b> , upper glumaceous. Male spike 1, 10-15mm, often rounded at apex. Female spikes 1-3, clustered at base of male spike, 5-12mm, ovoid, erect, unstalked or with stalks hidden in sheaths

	<i>Carex humilis</i> (Dwarf Sedge) [33]	<i>Carex montana</i> (Soft-leaved Sedge) [32]	<i>Carex pilulifera</i> (Pill Sedge) [29]	<i>Carex caryophyllea</i> (Spring Sedge) [30]
<b>Flowers</b>	<b>Male glumes 5-7mm</b> , elliptic-ob lanceolate, obtuse or subacute, red- or purple-brown <b>with very broad hyaline margins</b> and pale midrib. Female glumes 2-3mm, obovate to broadly elliptic, obtuse and sometimes with a short stiff point, clasping the utricle, red-brown with hyaline margins. Utricle 2.5mm, pear-shaped (with 'stalk' end at base), shortly hairy, with no or very short beak	Male glumes 4-5mm, oblanceolate or broadly elliptic, acute or with a slight point, red-brown with pale midrib. Female glumes 3-5mm, broadly ovate or obovate, apex obtuse or even slightly indented with a short stiff point, reddish-black with pale midrib and hyaline margin. Utricles 3.5-4mm, pear-shaped (with 'stalk' end at base) and tapered to a fat stalk, densely hairy; beak extremely short and very shallowly notched	<b>Male glumes 3.5-4mm</b> , oblanceolate-elliptic, acute, brown or chestnut, hyaline towards margin, with pale midrib. Female glumes 3-3.5mm, broadly ovate, acute or prolonged into a fine point at apex, red-brown, hyaline towards margin. Utricles 2-3.5mm, obovoid-ellipsoid, more or less downy, green; beak 0.3-0.5mm, notched	Male glumes 4-5mm, oblanceolate-elliptic, acute or with a short point, red-brown, <b>hyaline towards base with darker midrib</b> . Female glumes 2-2.5mm, broadly ovate with more or less obtuse, sometimes tattered apex slightly exceeded by green midrib, red-brown. Utricle 2-3mm, obovoid-ellipsoid, <b>with two ribs at the sides</b> , downy, green; beak 0.2mm, notched.
<b>Hampshire Habitat and Distribution</b>	Very localised but sometimes abundant, confined to the area between the county boundary W of Martin Down and the downs behind Breamore; short turf on the chalk	Confined to the New Forest where it is widespread and fairly frequent. Grassy humid heaths, grassy areas within woodland, and old marlpits	Common on the New Forest and neighbouring areas, Woolmer Forest and the N tertiaryes. Scattered elsewhere and very rare on the central chalk belt. Dry heathland and acid grassland, heathy rides in woods	Widespread and locally frequent, especially on the New Forest and western chalk. Short chalk downland turf, grassy heaths and pastures on sand and clay, occasionally in woodland grassland, not tolerating very acid conditions.

*Carex flacca* (Table 9) may key out here but on close examination its fruits will be seen to be covered with small bumps (**papillae**), not with hairs

*Carex filiformis* occurs elsewhere in southern Britain but has never been recorded in Hampshire. It has ovate or almost globular female spikes with almost round 2-3mm female glumes and small (2-3mm) downy utricles.

**TABLE 8: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak. Stigmas 2; nut within fruit with two convex faces; glumes usually dark purple-brown to black although with green markings**

	<i>Carex elata</i> (Tufted Sedge) [44]	<i>Carex nigra</i> (Common Sedge) [43]	<i>Carex acuta</i> (Slender Tufted-sedge) [42]
<b>General Habit</b>	Rhizomes short, erect; <b>shoots</b> densely tufted, <b>forming tussocks up to 40cm</b> ; shoots 25-100cm	Rhizomes usually far-creeping; shoots tufted, 7-70cm tall	Rhizomes far-creeping; shoots tufted, 30-120cm tall
<b>Leaf Sheaths and Ligules</b>	<b>Basal sheaths mostly with no leaf blade</b> , light brown, shining, <b>keeled</b> . <b>Sheaths</b> becoming yellow-brown, persistent, inner face hyaline, <b>splitting to a ladder-like net of fibres</b> , concave at apex. <b>Ligules 5-10mm, acute</b> , somewhat tubular	Basal sheaths mostly provided with leaf blades, not keeled. Lower sheaths brown, black, occasionally red, somewhat fibrous; inner face of sheath hyaline, not splitting ladder-like, straight at apex but often splitting there. <b>Ligules 1-3mm, rounded</b> .	Basal sheaths mostly provided with leaf blades, brown or red-brown, not keeled. Sheaths persistent, with conspicuous cellular cross-walls, inner face hyaline, later persisting as a brown membranous strip, apex straight or concave. <b>Ligules 4-6mm, obtuse but cut off at top</b>
<b>Leaf Blades</b>	40-100cm x 3-6mm, bluish-green, rough, thin, pleated, gradually tapered to a flat tip; <b>shorter than inflorescence</b>	7-90cm x 1.5-3mm, bluish-green, thin, <b>more or less flat or very shallowly pleated</b> , gradually tapered to a fine point, <b>usually roughly equalling inflorescence</b>	30-140cm x 3-7mm, bluish-green, thin, pleated, rough on edges, gradually narrowed to a fine <b>pendulous tip, equalling or exceeding the inflorescence</b>
<b>Stems</b>	Comparatively robust, tough, trigonous with three flat or slightly concave faces and three sharp angles	<b>Comparatively slender (1-1.5mm)</b> , rough above, three-sided with blunt to somewhat sharp angles	Comparatively robust (2-3mm), rough and sharply three-angled above, <b>almost rounded at base</b>
<b>Inflorescence</b>	C. 1/7 length of stem; <b>bracts</b> leaf-like to bristle-like, not sheathing, <b>less than half length of inflorescence</b> . Male spikes 1-3, 15-50mm, lowermost occasionally female at base. Female spikes 2-3, contiguous or slightly overlapping, 15-40mm, cylindrical, erect, unstalked or very shortly stalked, often male at top, utricles not aligned lengthways	1/6 – 1/4 length of stem; <b>bracts</b> leaf-like, <b>more or less equalling inflorescence</b> . Male spikes 1, sometimes with a small spike of mixed sex at its foot, 5-30mm. Female spikes 1-4, more or less contiguous (lower often separated, upper often overlapping), 7-50mm x 3-5mm, cylindric, erect, unstalked or lowest with short stalk; uppermost spike may be male at top; <b>utricles clearly aligned lengthways</b>	1/6 – 1/4 length of stem; <b>bracts</b> leaf-like, <b>lowest exceeding inflorescence</b> . Male spikes 1-3(-4, but lowest often female at base), 20-60mm. Female spikes 2-5, contiguous or somewhat overlapping, 30-100mm x 5-8mm, cylindric, erect or lowest drooping, upper unstalked, lower short-stalked, utricles not aligned lengthways

	<b><i>Carex elata</i> (Tufted Sedge) [44]</b>	<b><i>Carex nigra</i> (Common Sedge) [43]</b>	<b><i>Carex acuta</i> (Slender Tufted-sedge) [42]</b>
<b>Flowers</b>	Male glumes 5mm, oblanceolate, obtuse, dark purplish-brown with paler midrib, margin hyaline. Female glumes 3-4mm, ovate-elliptic, obtuse or broadly acute, dark purplish-brown, margins hyaline. Utricles 3-4mm, broadly ovoid-ellipsoid, <b>markedly ribbed</b> , green; beak 0.2mm, tip cut off straight	Male glumes 3-5mm, obovate-oblong; obtuse or broadly acute at apex, purplish or rarely brown with a pale midrib. Female glumes 2.5-3.5mm, lanceolate-oblong, obtuse (sometimes rounded) or acute, purplish black with or without a pale midrib and narrow hyaline margin. Utricles 2.5-3.5mm, ovoid-ellipsoid, faintly ribbed, green; beak almost non-existent, cut off square	Male glumes 4.5-5.5mm, elliptic- to obovate-oblong, obtuse or broadly acute, purplish with a pale midrib, sometimes black at top. Female glumes 2.5-4mm, oblong-obovate, obtuse or with a folded-in tip, purplish black with a pale reddish midrib stopping some way short of the tip. Utricles 2-3.5mm, ellipsoid-obovoid to almost globular, faintly ribbed, green; beak almost non-existent, cut off square.
<b>Hampshire Habitat and Distribution</b>	Rare, confined to the Sowley / Pylewell area E of Lymington and to the Itchen valley either side of Winchester. Edges of streams, ditches and ponds, most typically in old water-meadows	Common in SW and NE of county, scattered elsewhere. Marshes, fens, wet meadows, flushed wet heaths and bog margins	Fairly frequent in the lower Avon valley, rare and scattered elsewhere. Streambanks, drains and wet meadows

*Carex nigra* is an extremely variable plant found in a range of environmental conditions, and careful attention should be paid to the characters that separate it most clearly from the two other species.

**TABLE 9: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak. Stigmas 3; nut within fruit trigonous (with three faces and three angles). Utricles ovoid or obovoid, with blunt, rounded tip, with or without a very short truncate beak**

	<i>Carex pallescens</i> (Pale Sedge) [19]	<i>Carex limosa</i> (Bog-sedge) [23]	<i>Carex flacca</i> (Glaucous Sedge) [26]	<i>Carex panicea</i> (Carnation Sedge) [21]
<b>General Habit</b>	Rhizomes very short; shoots tufted, 20-60cm.	Rhizomes far creeping; <b>shoots</b> loosely and sparsely tufted, <b>starting decumbent and often ascending at an angle, 10-40cm</b>	Rhizomes far-creeping; shoots loosely tufted, 10-60cm	Rhizomes shortly creeping; shoots tufted, 10-60cm
<b>Leaf Sheaths and Ligules</b>	Sheaths brown, hairy, persistent; inner sheath face hyaline, hairy, apex concave. <b>Ligule c. 5mm, acute to obtuse</b>	Lower sheaths red-flushed becoming brown; inner sheath face hyaline, persistent, apex concave. Ligule 3-4mm, obtuse	Lower sheaths wine red or (when older) dark brown, persistent; inner sheath face hyaline or brownish, apex straight or concave, often marked darker brown. Ligule 2-3mm, rounded, forming a very short tube at the sheath junction	Sheaths white or pale pinky-brown, ribbed, persistent and becoming fibrous on decay; inner sheath face hyaline, decaying fast, straight at apex. Ligule 1.5-2mm, obtuse
<b>Leaf Blades</b>	15-50cm x 2-5mm, mid-green, grey-brown on dying, soft, <b>somewhat downy-hairy beneath</b> , flat or slightly keeled or loosely pleated, gradually tapering to a fine point	15-40cm x 1-1.5mm, <b>pale bluish-green on both sides</b> , rich brown on decay, rough, thin, strongly keeled, gradually tapered to a fine rough point	10-50cm x 1.5-4mm, <b>dull green above, blue-green below</b> , persisting as rich dark-brown litter, rough, rigid, arched, flat or in a 'V' shape, gradually tapering to a fine point	10-60cm x 1.5-5mm, <b>bluish-green on both sides</b> , pale straw colour when dead, rough at top, more or less flat, <b>tapering to a trigonous point.</b>
<b>Stems</b>	Trigonous, sides flat, <b>angles sharp</b> , rough towards top	Slender rigid, ridged, trigonous with rather convex faces and rounded angles	Rigid, very weakly angled and tending to rounded	Often curving above, ridged, weakly angled and tending to rounded

	<i>Carex pallescens</i> (Pale Sedge) [19]	<i>Carex limosa</i> (Bog-sedge) [23]	<i>Carex flacca</i> (Glaucous Sedge) [26]	<i>Carex panicea</i> (Carnation Sedge) [21]
<b>Inflorescence</b>	Up to 1/4 length of stem but usually much shorter; lower bracts leaf-like, exceeding the inflorescence, <b>characteristically crimped at base</b> ; upper bracts bristle-like. Male spike 1, 8-12mm, sometimes hidden among female spikes. Female spikes 2-3, clustered below male spike or lowest separate, ovoid to more or less globular, more or less erect or lower nodding, on smooth stalks, lowest often longer than spike.	C. 1/6 length of stem; bracts leaf-like, lowest about as long as its spike (including stalk) and barely sheathing. Male spikes 1, 10-25mm x 1-2.5mm. Female spikes 1-3, 7-20mm, ovoid, on slender smooth stalks up to twice the length of the spike, nodding in fruit.	1/5 – 1/3 length of stem; bracts leaf-like, lowest with a short sheath and slightly exceeding inflorescence. <b>Male spikes 1-3</b> , 10-35mm. Female spikes 1-5, 15-55mm, contiguous, cylindrical; upper erect, barely stalked, sometimes male at top; lower nodding on slender rough stalks as long as spike	1/6 – ¼ length of stem; bracts leaf-like, 1-2 times length of spike, at least lower with conspicuous sheath. Male spikes 1, 10-20mm x 3-4mm. Female spikes 1-3, 10-15mm, somewhat separated, with few lax flowers, on stalks up to twice as long as spike and partly hidden in sheath
<b>Flowers</b>	Male glumes 3-4mm, ovate-oblong with short fine point, pale brown, often with darker midrib. Female glumes 3-4mm, ovate with a conspicuous projecting point, pale brown or hyaline with a broad midrib. Utricles 4mm, ovoid-oblong, mid-green, shiny, faintly ribbed; <b>beak completely absent</b>	Male glumes 3-4mm, broadly lanceolate, acute and with a short projection, dark red-brown sometimes with a green midrib. Female glumes 3.5-4.5mm, ovate, acute and with a stout projection, brown or reddish-purple usually with a green midrib. Utricles 3-3.5mm, obovoid to broadly ellipsoid, blue-green, <b>strongly ribbed</b> , beak 0.5mm, cut off straight	Male glumes 3-4mm, oblanceolate, rounded or broadly acute, purple-brown with pale midrib and narrow hyaline margin. Female glumes 2-3mm, oblong-ovate, obtuse and with a more or less short projection, purple-black with a bloom, with a wide paler midrib and narrow hyaline margin. Utricles 2-3mm, broadly ellipsoid to obovoid, <b>usually conspicuously swollen on side away from stem</b> , yellow-green eventually turning deep purple-black, <b>covered with minute bumps</b> ; beak 0.2mm, cut off more or less straight	Male glumes 3-4.5mm, ovate-oblong to elliptic, more or less obtuse, purple-brown with pale midrib and hyaline margin. Female glumes 3-4mm, broadly ovate, acute, purple-brown with pale midrib and hyaline margins and 'shoulders'. Utricles 3-4mm, <b>swollen on side nearer stem so that fruit project out</b> , broadly obovoid, weakly ribbed or unribbed, olive green or purple-tinged; beak less than 0.5mm, cut off straight
<b>Hampshire Habitat and Distribution</b>	Scattered across the whole county; commonest in the New Forest area and the NE, rarest on the central chalk belt. Clearings and rides in damp woodlands and in unimproved grasslands on acid to neutral soils	Rare and confined to the New Forest. In standing water and very wet hollows in the central zone of valley bogs, usually with Reed	Common throughout most of the county. In damp and dry grassland of all kinds with a reasonably high base status	Very common in New Forest, Weald fringes and Thames / Kennet basin; frequent elsewhere in S Hants; rare in central chalk except in river valleys. Flushed areas of fairly short vegetation in bogs, fens, wet meadows, with high base content

**TABLE 10: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak. Stigmas 3; nut within fruit trigonous (with three faces and three angles). Utricles tapered at both ends, with a short truncate beak**

	<i>Carex strigosa</i> (Thin-spiked Wood-sedge) [18]	<i>Carex pendula</i> (Drooping Sedge) [17]
<b>General Habit</b>	Rhizomes short; <b>shoots tufted, 35-70cm</b>	Rhizomes short; <b>shoots in tufts, often large, 60-180cm.</b>
<b>Leaf Sheaths and Ligules</b>	Sheaths thin, brown, sometimes reddish, persistent; inner sheath face hyaline, concave at top. <b>Ligule 5-8mm</b> , acute, <b>slightly projecting beyond leaf margin at junction with sheath, often conspicuously assymetrical</b>	Sheaths red-brown, persistent; <b>inner face hyaline only at apex</b> , which is concave. <b>Ligule 30-60mm</b> , acute, <b>not overlapping at sheath margin, symmetrical</b>
<b>Leaf Blades</b>	15-40cm x <b>6-10mm</b> , mid-green, pinkish- or greyish-brown on dying, thin, more or less arched, flat or weakly pleated, with two veins either side of the midrib, abruptly tapered to a sharp point	20-100cm x <b>15-20mm</b> , yellow-green above, mid-green below, mid-green or a little bluish below, fairly thick and rigid except at tips, keeled and correspondingly V-channelled above, rough with upwardly directed serrations especially on edges and midrib towards leaf tip, gradually tapering and finally abruptly tapering to a fine blunt point
<b>Stems</b>	Often spreading or more or less decumbent, smooth, very weakly angled or almost round	Trigonous, faces slightly convex, angles barely acute
<b>Inflorescence</b>	1/2 – 3/4 length of stem; bracts leaf-like, sheathing, longer than individual spike but not exceeding inflorescence. <b>Male spike 1, 30-40mm</b> , narrow (1-2.5mm). <b>Female spikes 3-6, 25-80mm</b> , spaced out and the lowest often widely separated from the others, <b>narrow and lax-flowered</b> , uppermost very shortly stalked and the lower progressively longer-stalked <b>on smooth stalks</b> half-enclosed in the sheaths	C. 1/3 length of stem; bracts leaf-like, equalling or a little shorter than the inflorescence. <b>Male spike 1, 60-100mm. Female spikes 4-5</b> , contiguous or with the lowest separated, <b>70-160mm</b> , cylindrical, at first erect but <b>becoming pendulous, on rough stalks</b> up to half as long as the spike, partly hidden in the sheaths
<b>Flowers</b>	<b>Male glumes 4.5 – 5.5mm</b> , narrowly obovate, with projecting point, brown with green midrib. Female glumes 2.5mm, shorter than the utricle, ovate or ovate-lanceolate, acute, pale green becoming brown with a broad midrib. Utricles 3-4mm, narrowly oblong to ellipsoid, sometimes curved, green; beak 0.3mm, narrow, cut off straight	<b>Male glumes 6-8mm</b> , lanceolate, with short point, brownish hyaline. Female glumes 2-2.5mm, ovate, acute or with short point, reddish-brown with pale midrib. Utricles 3-3.5mm, broadly ellipsoid or ovoid, bluish-green becoming brown; beak 0.3mm, cut off square
<b>Hampshire Habitat and Distribution</b>	Widespread in S Hants but very rare in the New Forest area; also widespread in the Wealden edge and N Hampshire (Thames basin). Wet flushes and springs and wet rides in ancient woodland on comparatively base-rich soil. Can withstand a great deal of trampling and compaction	Common in S Hants but scattered in the New Forest area; also common in the Wealden edge and some parts of N Hampshire (Thames basin). Scattered elsewhere and largely absent from much of the central chalk belt. Damp woodland, especially on spring lines and runnels on heavy clay soils



**TABLE 11: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak. Stigmas 3; nut within fruit trigonous (with three faces and three angles). Utricle with distinct beak, forked, split or notched at tip. Top of at least some leaf sheaths with projecting flap (antiligule) on opposite side from leaf blade on at least some sheaths**

	<i>Carex laevigata</i> (Smooth-stalked Sedge) [1]	<i>Carex binervis</i> (Green-ribbed Sedge) [5]	<i>Carex punctata</i> (Dotted Sedge) [3]	<i>Carex distans</i> (Distant Sedge) [2]	<i>Carex hostiana</i> (Tawny Sedge) [4]
<b>General Habit</b>	Rhizomes short; shoots forming dense tufts up to 30cm across, 30-120cm tall	Rhizomes shortly creeping; shoots forming either loose tufts (in heathy grasslands) or dense clumps (often in wetter conditions), 15-150cm	Rhizomes shortly creeping; shoots tufted, 15-100cm	Rhizomes short; shoots more or less densely tufted, 15-100cm	Rhizome shortly creeping; shoots scarcely tufted, 15-60mm
<b>Leaf Sheaths and Ligules</b>	Sheaths brown, persistent; inner face hyaline, convex or tongue-shaped at apex. <b>Ligule 7-15mm</b> , obtuse or somewhat acute	Sheaths dull, red-brown, persistent; inner face hyaline, apex tongue-shaped (mainly on stem leaves) or convex. Ligules 1.5mm, rounded	Sheaths orange- or pinky-brown, persistent; inner face hyaline, dark brown towards top and prolonged into a tongue with a concave margin. Ligules 3mm, obtuse, stem ligules tubular	Sheaths orange-brown when young, becoming dark to mid brown, eventually fibrous, persisting; inner face herbaceous, hyaline towards top with a brown margin, apex straight, convex, or (in upper leaves) protruding. Ligules 2-3mm, obtuse	Outer sheaths dark grey-brown becoming fibrous; inner sheaths pale; inner face of sheaths with a convex or tongue-shaped apex. Ligule 1mm, rounded
<b>Leaf Blades</b>	15-60cm x <b>5-10mm</b> , bright or yellowish green, brown and persisting when dead, smooth, shallowly keeled or pleated, shortly but evenly tapered at tip	7-30cm x 2-6mm, dark dull green, developing wine-red patches on dying, <b>dead leaf tips and leaf litter a distinctive pinky-orange brown</b> , rigid or arching, keeled or more or less flat, rapidly but evenly tapered at tip	10-50cm x 2-5mm, pale green, persisting as a grey-brown litter but probably not overwintering, variable in length but often as long as the inflorescence, flat or shallowly keeled, rapidly but evenly tapered to a fine tip	10-15cm x 2-6mm, grey-green, soon becoming brown, ash-grey and persistent after death, rigid, erect, flat, <b>tapering gradually and evenly to a fine point</b>	15-60cm x 2-5mm, light or yellowish green, grey-brown when dead and not usually overwintering, flat or shallowly keeled, <b>abruptly contracted to a parallel-sided, trigonous, veinless tip</b>
<b>Stems</b>	Stout, trigonous with slightly rounded faces and blunt angles	Scarcely trigonous, <b>often with one rounded side and one prominent furrow</b>	<b>Trigonous, with flat faces and acute angles</b>	<b>Barely trigonous to almost rounded, sometimes with a shallow groove</b>	Rough, more or less trigonous with convex faces and blunt angles

	<i>Carex laevigata</i> (Smooth-stalked Sedge) [1]	<i>Carex binervis</i> (Green-ribbed Sedge) [5]	<i>Carex punctata</i> (Dotted Sedge) [3]	<i>Carex distans</i> (Distant Sedge) [2]	<i>Carex hostiana</i> (Tawny Sedge) [4]
<b>Inflorescence</b>	1/4 - 2/3 length of stem; bracts leaf-like, exceeding individual spike but not inflorescence. Male spikes 1 or 2, 20-60mm. Female spikes 2-4, well separated, 20-50mm, ovoid-cylindric, more or less erect but lowest may be pendent, on stalks up to 80mm but largely hidden in sheaths	Up to 1/2 length of stem; bracts leaf-like below, 2-4 times length of spike, glumaceous above. Male spike 1, 20-45mm. Female spikes 2-4, well-separated, 15-45mm, cylindric, erect but lowest usually nodding, on half-ensheathed stalks, the lowest up to 100mm	C. 1/2 length of stem; bracts leaf-like, at least 1 exceeding inflorescence. Male spike 1, 10-30mm. Female spikes 2-4, upper more or less contiguous, lower well-separated, 5-25mm, ovoid-cylindric, on stalks largely contained within the sheaths	<b>Compact at flowering, then elongating in fruit to c. 2/3 of stem; bracts leaf-like, the lower mostly shorter than the gap to the next, the upper longer than this gap but not exceeding inflorescence.</b> Male spike 1 or occasionally 2, 15-30mm. <b>Female spikes</b> 2-3, upper slightly separated and lower widely separated at fruiting, 10-20mm, oblong-cylindric, <b>erect on stalks up to 40mm which are almost entirely concealed in the sheaths</b>	1/4 – 1/2 length of stem; bracts leaf-like, somewhat longer than the spike, not exceeding inflorescence, uppermost sometimes very short. Male spikes 1-2, 10-20mm. Female spikes 1-3, more or less separated, 8-20mm, ovoid-cylindric, erect, on stalks ensheathed for half their length
<b>Flowers</b>	Male glumes 5-6mm, oblong-oblancoate, obtuse and sometimes with a very short sturdy projecting bristle, pale orange-brown with hyaline margins and base. Female glumes 3-5mm, ovate or ovate-lanceolate, projecting at tip, brown with green midrib that may be rough at tip. Utricles 4-6mm, <b>green with fine reddish dots</b> ; ovoid or almost globular, somewhat swollen, <b>held at an angle of 45-75 degrees to stem</b> , ribbed, beak 1.5mm, beak 1.5mm, more or less smooth, deeply bifid	Male glumes 4-4.5mm, oblong-obovate, apex obtuse or rounded, thin, papery and often torn; purplish with paler midrib. Female glumes 3-4mm, ovate, obtuse with a short projecting point, dark purple-brown with a green or pale brown midrib. <b>Utricles</b> 3.5-4.5mm, green going purple-brown, broadly elliptic, <b>with two prominent ribs at sides</b> ; beak 1-1.5mm, rough, bifid	Male glumes 3-4mm, oblong-obovate, apex with a short point and often irregularly fringed, orange-brown. Female glumes 2.5-3.5mm, obovate, apex shortly projected or obtuse with a pine point, red-brown with green midrib and hyaline margin. Utricles 3-4mm, shiny, <b>whitish or pale green with minute red-brown dots</b> , obovoid-ellipsoid, more or less swollen, <b>held at an angle of 75-90 degrees to stem</b> , prominently ribbed especially when dry, with prominent ribs at sides; <b>beak</b> 0.75mm, <b>bifid with spreading tips</b>	Male glumes 3-4mm, obovate, broadly acute to obtuse, sometimes with short fine point, pale to purplish brown. Female glumes 2.5-3.5mm, ovate-oblong, apex acute to obtuse with fine point, brown with greenish midrib and hyaline margins. Utricles 3.5-4.5mm, ellipsoid, rounded at base, green or rarely dark brown, <b>held more or less appressed to stem</b> , distinctly nerved; tapered at apex to rough, bifid 0.75mm beak	Male glumes 2.5-3.5mm, broadly ovate, acute, dark brown with broad hyaline margin. <b>Female glumes</b> 2.5-3.5mm, broadly ovate, acute <b>but without projecting fine point</b> , dark brown <b>with broad often 'shouldered' hyaline margin</b> and pale or green midrib. Utricles 4-5mm, obovoid, narrow at base, yellow-green, <b>held at about 45 degrees to stem</b> , ribbed; beak 1mm or more, deeply bifid, finely toothed

	<i>Carex laevigata</i> (Smooth-stalked Sedge) [1]	<i>Carex binervis</i> (Green-ribbed Sedge) [5]	<i>Carex punctata</i> (Dotted Sedge) [3]	<i>Carex distans</i> (Distant Sedge) [2]	<i>Carex hostiana</i> (Tawny Sedge) [4]
Hampshire Habitat and Distribution	Widespread on the less calcareous soils in the S, E and N of the county; frequent particularly in a broad belt either side of Southampton Water. In damp flushes and flushed rides in old woodland and on old woodland sites, often in alder carr	Locally frequent in S of county (except SE), and in London Basin. Scarce in Wealden Edge and absent from chalk. Dry or damp heathland and woodland rides on acid soils	Rare along the coast; one site known inland in the New Forest. In damp depressions in brackish grassland over sand or shingle	Frequent near coast and in main river valleys. Grassy upper saltmarshes, brackish pastures, hollows behind beaches; also in calcareous unimproved meadows	Frequent in New Forest area; scattered in NE and main river valleys. Wet grass heaths, fringes of valley bogs, mires and old meadows, where flushed with base-rich water



**TABLE 12: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak. Stigmas 3; nut within fruit trigonous (with three faces and three angles). Utricle with distinct beak, forked, split or notched at tip. Top of sheath concave, truncate or with a very narrow projecting frill on opposite side from leaf blade. Female spikes all, or almost all, exceeding 20mm in length, narrowly elliptic to cylindrical**

	<i>Carex rostrata</i> (Bottle Sedge) [12]	<i>Carex vesicaria</i> (Bladder Sedge) [13]	<i>Carex riparia</i> (Great Pond-sedge) [15]	<i>Carex acutiformis</i> (Lesser Pond-sedge) [16]	<i>Carex pseudocyperus</i> (Hop Sedge) [11]	<i>Carex sylvatica</i> (Wood Sedge) [8]
<b>General Habit</b>	Rhizomes far-creeping; tufts sparse, scattered, 20-100cm	Rhizomes shortly creeping; shoots 2-3 in each tuft, slender, 30-120cm	Rhizomes far-creeping, shoots tufted, 60-130cm	Rhizomes far-creeping; shoots tufted, 60-150cm	Rhizomes short; shoots loosely tufted, 40-90cm	Rhizomes short; <b>shoots usually densely tufted, spreading or nodding, 15-60cm</b>
<b>Leaf Sheaths and Ligules</b>	Sheaths herbaceous, thick, spongy, brown sometimes streaked with red; inner face hyaline becoming brown, with ladder-like fibres on splitting, apex straight. <b>Ligule 2-3mm (shorter than leaf width), rounded</b>	Sheaths becoming purple-red with age, persistent; inner face hyaline, splitting into ladder-like fibres, apex straight or concave. Ligule 5-8mm (longer than leaf width), acute	Sheaths grey-brown or red-tinged, whitish-hyaline at base with distinct crosswalls; inner face hyaline becoming brown, persistent, occasionally splitting into ladder-like fibres, concave at apex. <b>Ligule 5-10mm, obtuse or rounded</b>	Sheaths brown, usually red-streaked, persistent, innermost not translucent; inner face hyaline-brown, persistent, usually splitting into ladder-like fibres, concave at apex. <b>Ligule 5-15mm, acute</b>	Sheaths becoming pink or grey-brown, persistent; inner face hyaline, splitting to ladder-like fibres, apex straight or concave. <b>Ligule 10-15mm, obtuse</b>	Sheaths hyaline becoming brown; inner face splitting but persisting as brown membrane, apex concave. <b>Ligule c. 2mm, obtuse</b>
<b>Leaf Blades</b>	30-120cm x 2-7mm, bluish-green on upper surface, dark green and shiny on under surface, rough, rigid, overwintering, keeled, pleated or inrolled, <b>tapering to a long (20-60mm) needle-like point</b> , exceeding inflorescence	30-150cm x 4-8mm, mid- or yellow-green, soon decaying, thin, rigid, pleated, finely toothed for entire length, gradually tapering to a fine point, roughly equalling inflorescence	60-160cm x 6-15mm, bluish green persisting as pale brown litter, rigid, erect, keeled, sometimes pleated, <b>gradually narrowing then abruptly narrowing to a short trigonous tip</b> , exceeding inflorescence	60-150cm x 7-10mm, bluish green becoming dull green and often reddish at tip, red-brown on dying, shallowly keeled or pleated, <b>gradually tapering to a fine arching tip</b> , more or less equalling inflorescence	40-120cm x 5-12mm, <b>bright yellowish-green</b> , becoming yellow and then grey-brown on dying, erect, pleated, <b>very rough on margins and keel</b> , tapering gradually to a fine point, exceeding inflorescence	<b>5-60cm</b> x 3-6mm, mid- to yellow-green, brownish and bleached on dying, overwintering, slightly keeled or pleated, <b>abruptly tapered to a fine point</b>

	<i>Carex rostrata</i> (Bottle Sedge) [12]	<i>Carex vesicaria</i> (Bladder Sedge) [13]	<i>Carex riparia</i> (Great Pond-sedge) [15]	<i>Carex acutiformis</i> (Lesser Pond-sedge) [16]	<i>Carex pseudocyperus</i> (Hop Sedge) [11]	<i>Carex sylvatica</i> (Wood Sedge) [8]
<b>Stems</b>	Smooth and almost round below, slightly rough and trigonous with blunt angles above	Smooth below, rough on angles above, trigonous with slightly convex faces and slightly obtuse angles	Rough, with three concave faces and three sharp angles	Rough, often smooth below, trigonous with three concave faces and three sharp angles	Trigonous with more or less flat faces and acute, sharp, rough angles	<b>Slender</b> , trigonous with slightly convex faces and somewhat blunt angles
<b>Inflorescence</b>	Up to 1/2 length of stem; bracts leaf-like, equalling or exceeding inflorescence. Male spikes 2-4, 20-70mm, lower with bristle-like bracts. Female spikes 2-5, contiguous with each other (but usually separated from male spikes) or lowermost separated, 30-80mm, cylindric, more or less erect, very shortly stalked or lowest shortly stalked	1/4 - 1/3 length of stem; bracts leaf-like, lower exceeding inflorescence. Male spikes 2-4, 10-40mm, lower often with bristle-like bracts. Female spikes 2-3, more or less contiguous with each other but separated from male spikes, 20-40mm, oblong-cylindric, erect and very shortly stalked, or lowest nodding on stalk as long as spike	C. 1/3 length of stem; lower bracts leaf-like, exceeding inflorescence, upper bracts bristle-like. Male spikes 3-6, contiguous, 2-6cm. Female spikes 1-5, more or less contiguous, 3-10cm, cylindrical to spindle-shaped, upper erect, more or less unstalked, often male at top, lower on rough shortly ensheathed stalks up to length of spike	C. 1/3 length of stem; bracts leaf-like, exceeding inflorescence. Male spikes 2-3, clustered, 1-4cm, lower with bristle-like bracts. Female spikes 3-4, more or less contiguous except for lowest which is often separated, 2-5cm, cylindric, erect, upper unstalked and often male at top, lowest shortly stalked	1/6 – 1/4 length of stem; bracts leaf-like, <b>much broader than stem, lowest 3-4 times longer than inflorescence. Male spike 1</b> , 20-60mm. Female spikes 3-5, clustering and equalling or exceeding male spike, 20-100mm, cylindric, <b>pendulous on slender rough stalks</b>	1/3 – 1/2 length of stem; bracts leaf-like, equalling or exceeding inflorescence. Male spike usually 1, 10-40mm, slender. <b>Female spikes 3-5, more or less separated, lax-flowered, pendent on rough, thread-like stalks up to 3 times the length of the spike</b> , partly ensheathed at the base

	<i>Carex rostrata</i> (Bottle Sedge) [12]	<i>Carex vesicaria</i> (Bladder Sedge) [13]	<i>Carex riparia</i> (Great Pond-sedge) [15]	<i>Carex acutiformis</i> (Lesser Pond-sedge) [16]	<i>Carex pseudocyperus</i> (Hop Sedge) [11]	<i>Carex sylvatica</i> (Wood Sedge) [8]
<b>Flowers</b>	Male glumes 5-6mm, elliptic-oblancoate, acute or obtuse, brown with paler midrib. <b>Female glumes</b> 4.5-5mm, oblong-lanceolate, acute, <b>conspicuously narrower than utricle</b> , purplish-brown with pale midrib. Utricle 4.5-6mm, spreading in fruit, ovoid, swollen, faintly ribbed, yellow-green; beak 1-1.5mm, smooth, bifid, <b>strikingly 'waisted' at base</b>	Male glumes 4-6mm, elliptic or oblanceolate, more or less acute, purplish-brown with green or pale midrib and hyaline margins. <b>Female glumes</b> 4-6mm, narrowly lanceolate, acute or <b>prolonged into a hyaline point, conspicuously smaller in both directions than utricle</b> , purplish-brown with pale or green midrib. Utricles 6-8mm, ovoid-ellipsoid, somewhat swollen, ribbed, olive-green, shiny; gradually narrowed into a smooth, bifid, 2mm beak	<b>Male glumes 7-9mm</b> , oblong-lanceolate, <b>prolonged to point</b> , dark brown with paler midrib and margins. Female glumes 7-10mm, oblong-lanceolate or narrowly ovate, prolonged into fine point, longer than utricle, dark purplish-brown, midrib paler or green. Utricles 5-8mm, ovoid, swollen, faintly ribbed, green or brown; apex <b>gradually tapered into 1.5mm distinctly bifid beak</b>	<b>Male glumes 5-6mm</b> , oblong to oblanceolate, <b>obtuse or slightly acute</b> , purple-brown with a pale midrib. Female glumes 4-5mm, oblong-lanceolate, acute or prolonged to fine point, not longer than utricle, red- or purple-brown with paler midrib. Utricle 3-5mm, ellipsoid-ovoid, ribbed, green; <b>beak c. 0.3mm, shallowly notched</b>	<b>Male glumes</b> 5-7mm, elliptic-lanceolate, <b>with a long point fringed with hairs</b> , brown with a greenish midrib. <b>Female glumes</b> 5-10mm, ovate, <b>drawn out into a long, needle-like point fringed with hairs</b> , brownish hyaline with green midrib. Utricles 4-5mm, broader than glumes, ovoid-ellipsoid, ribbed, green, spreading in fruit but rapidly dropping off; beak c. 2mm, smooth and deeply bifid	Male glumes 4-5mm, oblong-oblancoate, apex acute or obtuse with a short bristle-like point, straw-coloured to brown with a green midrib. Female glumes 3-5mm, ovate-lanceolate, acute or shortly prolonged, hyaline, straw-coloured or brown with green midrib. <b>Utricles</b> 4-5mm, ellipsoid or obovoid, green <b>with a prominent nerve at each side</b> ; beak 1-1.5mm, bifid
<b>Hampshire Habitat and Distribution</b>	Mainly in the New Forest, Avon Valley and NE Hants, with a scattering over acid soils and in the main river valleys elsewhere. In very wet mires, frequently with open water, in both acid and alkaline conditions	Local in the Avon Valley, New Forest and Thames Basin; very rare elsewhere. In swamps, ditches and ponds on mineral (non-peaty) soils; tolerant of shade	Common along main river-valleys, scattered elsewhere, largely absent from New Forest. Beside rivers, ponds and ditches	Widespread in all river valleys and in NE, occasional in New Forest, scattered elsewhere. Banks of still and flowing water, marshes, wet meadows, carr and moist woods	Local in New Forest area and NE Hants; rare and scattered elsewhere. Swamps, pond margins, ditches, rivers and carr; mostly on mineral soils and not in very acid conditions	Widespread throughout the county, often common, except near the sea. Woodland and old hedgebanks; not on most acid soils



**TABLE 13: Flowers borne in several spikes, of two dissimilar forms on the one stem, upper spikes wholly of male flowers, lower entirely or predominantly of female flowers. Utricles not hairy or downy, but possibly with small bumps or with teeth on the beak. Stigmas 3; nut within fruit trigonous (with three faces and three angles). Utricle with distinct beak, forked, split or notched at tip. Top of sheath concave, truncate or with a very narrow projecting frill on opposite side from leaf blade. Female spikes globose, ovoid or broadly elliptical, not exceeding 20mm in length**

	<i>Carex extensa</i> (Long-bracted Sedge)	<i>Carex viridula subsp. brachyrrhyncha</i> (Long-stalked Yellow Sedge)	<i>Carex viridula subsp. oedocarpa</i> (Common Yellow Sedge)	<i>Carex viridula subsp. viridula</i> (Small-fruited Yellow Sedge)
<b>General Habit</b>	Rhizomes short; shoots 5-40cm, tufted, tufts often large	Rhizomes short; <b>shoots a few together, loosely tufted, 20-75cm</b>	Rhizome short; shoots more or less densely tufted, 5-40cm	Rhizomes short; shoots sparsely or distinctly tufted, 5-40cm
<b>Leaf Sheaths and Ligules</b>	Sheaths orange-brown or red-tinged, darkening and fibrous on decay; inner face narrow, hyaline, concave at apex. Ligule 2mm, rounded	Sheaths hyaline and ribbed becoming pink-brown and fibrous; inner face more or less straight at apex. Ligules 1mm, rounded, forming a tube at top of sheath	Sheaths hyaline or white with green veins, persistent, becoming grey-brown; inner face more or less straight at apex. Ligule c. 1mm, rounded and sometimes shallowly notched at the apex	Sheaths white or hyaline, becoming grey-brown, persistent; inner face straight at apex. Ligule 1mm, rounded, forming a short tube at top of sheath
<b>Leaf Blades</b>	5-35cm x 2-3mm, <b>grey- or bluish-green</b> , red-brown then grey on death, overwintering, rigid, keeled and usually <b>inrolled at margins, gradually tapered to a blunt apex</b>	10-40cm x 2-3.5mm, mid- to yellow-green, bleached straw colour on dying, <b>not overwintering, little more than half as long as stem</b> , keeled, rather abruptly narrowed to a rough, blunt, trigonous point	5-35cm x 1.5-5mm, yellow-green, straw colour on dying, often overwintering, equalling or a little shorter than stem, rigid, flat, <b>tapering rapidly</b> to the tip	15-40cm x 1.5-3mm, yellow- to grey-green, becoming pale grey-green, persistent and sometimes overwintering, equalling or slightly exceeding the stem, rigid, usually channelled or sometimes more or less flat, <b>tapering gradually</b> to a blunt tip
<b>Stems</b>	Rigid, sometimes arched, trigonous with flat to slightly convex sides and very rounded angles	Trigonous with flat to slightly convex faces and weakly acute angles	Almost rounded with three very indistinct rounded angles, <b>often curved</b>	Almost rounded with three very indistinct rounded angles, <b>straight</b>

	<i>Carex extensa</i> (Long-bracted Sedge)	<i>Carex viridula subsp. brachyrrhyncha</i> (Long-stalked Yellow Sedge)	<i>Carex viridula subsp. oedocarpa</i> (Common Yellow Sedge)	<i>Carex viridula subsp. viridula</i> (Small-fruited Yellow Sedge)
<b>Inflorescence</b>	1/3 – ½ length of stem; <b>bracts</b> leaf-like, often downturned, <b>lower far exceeding inflorescence</b> . Male spike 1 or occasionally up to 3, 5-25mm. Female spikes 2-4, contiguous or with lowest widely separated, 5-20mm, almost globular to cylindrical, on stalks wholly within the sheaths, except for the lowest	1/10 – 1/4 of stem length; bracts leaf-like or the upper glumaceous, sometimes downturned, somewhat exceeding inflorescence. Male spike 1, 10-20mm. Female spikes 2-4, upper contiguous, lower usually well separated, 8-15mm, ovoid, unstalked or lowest on stalks hidden in the sheath	Mostly in upper half of stem, but <b>often with lowest spike separated towards base of stem</b> ; bracts leaf-like, often downturned, rather flaccid, mostly exceeding inflorescence. Male spike 1, 15-20mm. Female spikes 2-4, contiguous except for the lowest, 7-13mm, ovoid, on stalks up to four times the length of the spike, half ensheathed	Up to 3/4 of stem but mostly much less; bracts leaf-like, stiff, spreading, not usually downturned, lowest exceeding inflorescence. Male spike 1, 5-20mm. Female spikes 2-5, contiguous, unstalked and clustered under male but lowest sometimes widely separated and stalked, 5-10mm, ovoid
<b>Flowers</b>	Male glumes 3-4mm, obovate-elliptic, obtuse, red-brown with paler midrib. <b>Female glumes</b> 1.5-2mm, broadly ovate, <b>obtuse with a short fine point</b> , red-brown with pale or green midrib and somewhat hyaline margins. <b>Utricles</b> 3-4mm, ovoid or ellipsoid, weakly ribbed, <b>grey-green</b> or brownish with purple blotches; beak 0.5-0.75mm, smooth, shallowly notched, <b>not widely spreading in fruit</b>	Male glumes 3-3.5mm, lanceolate-elliptic, broadly acute at apex, orange- or red-brown with green midrib. Female glumes 2.5-4mm, ovate-lanceolate, acute, orange- or red-brown with green midrib and sometimes a hyaline margin, dropping early. <b>Utricles</b> 3.5-5mm, obovoid, ribbed, spreading widely or lowest pointing downwards, yellow-green; <b>contracted abruptly and curving to a beak 1.5-2mm, set at an angle to the main axis</b>	Male glumes 3-4mm, oblong-lanceolate, obtuse, orange-brown to hyaline with paler midrib. Female glumes 3.5mm, ovate, broadly acute and sometimes with very short projecting point, brown with green midrib. Utricles 3-4mm, obovoid, weakly ribbed, spreading widely or lowest pointing downwards when ripe, yellow-green; rather abruptly narrowed into 1mm bifid beak which is not or scarcely out of line with the axis,	Male glumes 4mm, oblong-lanceolate, acute, orange-brown with green midrib. Female glumes 2-3mm, ovate, broadly acute, pale yellow-brown with green midrib. <b>Utricles 2-3.5mm</b> , obovoid, faintly nerved, only slightly swollen, yellow-green; <b>beak 0.5-1mm</b> , straight, split at tip
<b>Hampshire Habitat and Distribution</b>	Infrequent by the coast. In upper parts of saltmarshes and brackish grassland over sandy or gravelly substrates	Localised and infrequent in main river valleys and chalk spring areas. Fen meadows and open calcareous mires	Very widespread and common on New Forest; widespread and common in Hampshire and London Basins and Wealden edge; scattered and rare in river valleys. Wet bog hollows, bare peat, pond and ditch margins, woodland rides, old wet meadows and fens. Tolerates acid or slightly basic conditions	Very rare; 3 sites in New Forest, 1 or 2 elsewhere. Bare shores of acidic water bodies, on mineral substrates