

AL FAATEH UNIVERSITY  
FACULTY OF SCIENCE  
DEPARTMENT OF BOTANY

# FLORA OF LIBYA

**119-120**

*20th May, 1985*

**Editors:**

S.M.H. JAFRI & A. EL-GADI  
Al Faateh University,  
Faculty of Science,  
Department of Botany, Tripoli.

**ORCHIDACEAE**

by A.B.M. ENAYET HOSSAIN  
& A. EL-GADI

**CYPERACEAE**

by F.B. ERTEEB  
& A.S. SHERIF

illustrations by  
M.Y. SALEEM  
Sami MAKAR  
M. RAFIQUDDIN

## CYPERACEAE

F.B. ERTEEB and A.S. SHERIF

Perennial herbs, rarely annuals, caespitose or with creeping underground rhizome. Stem (culum) solid rarely hollow, often triangular. Leaves 3-ranked with closed sheaths, grass-like, ligule rarely present. Flowers bisexual or unisexual, rarely dioecious, subtended by a scaly bracts and clustered in spikelets. Spikelets either solitary or glomerate in branching or spike-like inflorescence, the whole inflorescence often subtended by leafy-bracts. Perianth usually absent or reduced to bristle-like scales. Stamens 1-6, usually 3. Anthers basifixed. Ovary superior, 1-loculed, style long, stigmas 2 or 3. Ovule solitary. Fruit lenticular, trigonous achene.

A family of 90 genera and c. 4000 species worldwide; represented in Libya by 7 genera and 26 species.

- |    |  |                   |
|----|--|-------------------|
| 1. | + Flowers unisexual; ovary enclosed within an<br>utricle (flask-shaped perianth) | 1. <b>Carex</b>   |
|    | — Flowers bisexual; ovary not enclosed within an<br>utricle                      | 2                 |
| 2. | + Leaves conspicuously prickly on margins and<br>midnerves                       | 6. <b>Cladium</b> |
|    | — Leaves glabrous-hairy but not prickly on margins<br>and midnerves              | 3                 |
| 3. | + Spikelets distichous (arranged in 2 rows)                                      | 4                 |
|    | — Spikelets not distichous (spirally arranged)                                   | 5                 |

## CYPERACEAE

- |    |   |                        |
|----|---|------------------------|
| 4. | + Inflorescence bracts (clearly inflated at base);<br>perianth bristles present   | 3. <b>Schoenus</b>     |
|    | — Inflorescence bracts 3-more (if 2, then inflorescence not terminal) not inflated at base; perianth bristles absent  | 2. <b>Cyperus</b>      |
| 5. | + Bracts subtending inflorescence conspicuously reduced into short glumy-form (much shorter than spikelets); spikelets clearly uniterminal; style dilated at base forming persistent stylopod at the top of achene; plants leafless | 4. <b>Eleocharis</b>   |
|    | — Bracts subtending inflorescence not reduced into glumy-form; spikelets many, terminal pseudolateral; style not dilated at base; plants with well developed leaves   | 6                      |
| 6. | + Plants glabrous; inflorescence pseudolateral  | 5. <b>Scirpus</b>      |
|    | — Plants hairy; inflorescence terminal  | 7. <b>Fimbristylis</b> |

### 1. CAREX

L., SP. Pl. 972. 1753; Gen. Pl. ed. 5: 420. 1754.

Perennial, grass like herbs with leafy stems; monoecious or rarely dioecious. Spikelets either solitary and bractless or arranged in bracteate spikes or panicles. Spikelets of one or both kinds of flowers. Male flowers with 3 included stamens. Female flowers unipistillate included in utricles. Style 1; stigmas 2-3, exserted. Achene trigonous or flattened, sometimes inserted laterally towards the rachis.

c. 2.000 species, mostly in marshes of cooler climates; represented in Libya by 6 species.

- |    |   |                         |
|----|---|-------------------------|
| 1. | + Spikelets bisexual (both male and female flowers present on the same spikelet)    | 2                       |
|    | — Spikelets unisexual (both male and female flowers present on different spikelets) | 3                       |
| 2. | + Ovary with 3 stigmatic branches; utricle trigonous (triangular)                   | 1. <b>C. illegitima</b> |

## CYPERACEAE

- Ovary with 2 stigmatic branches; utricle convex-flat but not trigonous 2. **C. *divisa***
- 3.   + Utricle beakless (if beaked, then truncate) 3. **C. *flacca***  
 — Utricle (at least some) with clear bifid beak 4
- 4.   + Inflorescence with 2-4 male spikelets 4. **Carex sp.**  
 — Inflorescence with only one terminal male spikelet 5
- 5.   + Spikelets 4, linear-oblong or cylindrical; female spikelets clerally distant from terminal male spikelet 5. **C. *distans***  
 — Spikelets 5-more, ovoid; female spikelets (at least the upper two) overlap with male spikelet 6. **C. *extensa***

1.    **Carex *illegitima*** Cesati in Friedr. Reise 27. 1938; Maire, Fl. Afr. Nord. 4: 143, fig. 637. 1959; Keith, Prelim. Check List Lib. Fl. 329. 1965 (Fig. 1).

Perennial glaucescent herb. Rhizome erect creeping and lignified. Stems 20-40 cm long forming dense tufts, erect, slender, triquetrous, scabrous towards the top faces. Leaves longer than the stems, 2-3 mm wide, plane or often canaliculate, scabrous towards the margins. Inferior sheaths without limbs, brown to blackish in colour, resolving into fine fibrilles. Superior sheaths greenish or reddish-brown, sometimes blackish, striate, glabrous and smooth truncate at the top. Ligule very short rounded and brown. Inflorescence 2-5 androgynous spikelets, or in a part male. 1-2 inferior basiliates with very long, unequal, scabrous peduncles, 2-3 superiors contiguous and sessile, multi-flowered, loose, bracts of the superior spikelets foliaceous, setaceous and that of the inferiors longer than the inflorescence; rachis little flexuous and compressed, wingless at the male parts. Male glumes ovate-lanceolate, brown-deep marked, keeled, acute or mucronate, very closely hyalinous towards the margins, densely imbricate, 1-nerved. Stamens 3, anthers linear, reddish-brown c. 2.75 mm, with papillose apicule. Female glumes oval, blackish brown, 1-nerved, green keeled,  $\pm$  very narrowly hyalinous towards the margins, obtuses or acute, glabrous, only scabrous on the mucro. Utricle greenish, long, usually longer than the glume, erect, subcoriaceous, oblong, trigonous, c. 7 mm long, glabrous with 2 lateral projecting nerves, spongy, tapering at the top and long stipitate at the base; the beak very short, sometimes little recurved with brown-black orifice. Achene

CYPERACEAE

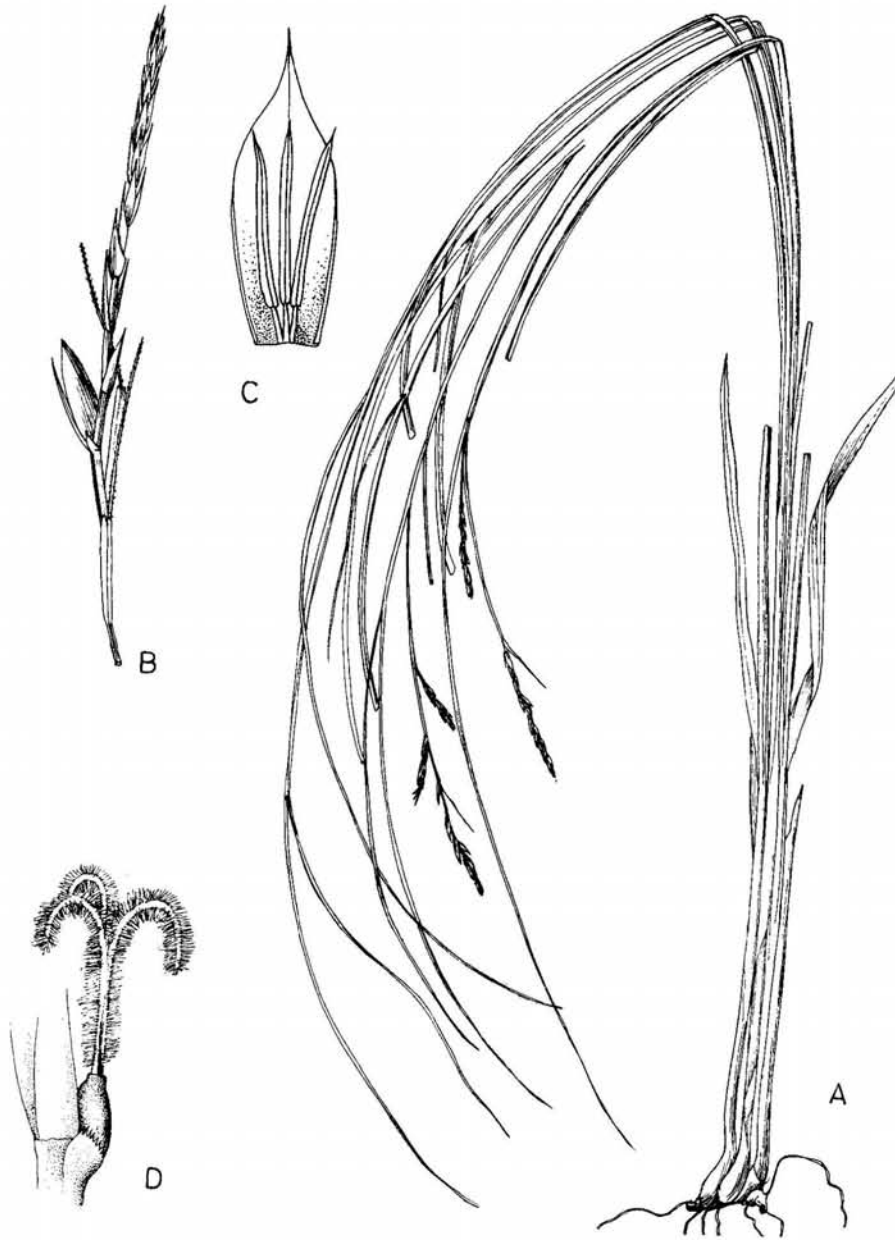


Fig. 1 - *Carex illegitima*: A, habit x 1; B, inflorescence branch x 2; C, male floret x 10; D, female floret x 10.

## CYPERACEAE

oval-oblong, acute narrowly enclosed, olive-yellow, very fine dotted with hard enlarging, not stipitate, 5-6 x 2 mm. Style hardly erect, cone-like at the base, with thickening, persistent towards the achene but without separate constriction, short above the swelling part. Stigmas 3, long, reddish-brown; rachis prolonging within the utricle in a linear, 1-nerved acuminate scale, nearly reaching the achene top.

Type: Described from Greece.

**A-7** Above side in high plateau, wadi Wardama, Beida littorales Derna prorrisu 6 April 1939, *N.Y. Sandwith* 2415 (K); *ibid.*, *N.D. Simpson* 39398 (BM); Wadi El-Hussaien, Ras al-Hilal-Shahat, Gebal Akhadar, 24.1.1967, *L. Boulos* 1425 (ULT)..

Distribution: Europe, Eastern Mediterranean coast of Turkey.

*Fl.* Mar.-Apr.

2. **Carex divisa** Huds., *Fl. Angl.* 348. 1762; Durand et Barratte, *Fl. Lib. Prodr.* 245. 1910; Pamp., *Plant. Trip.* 41. 1914; *Prodr. Fl. Cir.* 144. 1931; Maire, l.c. 105. fig. 622; Keith, l.c. 328; Tack., *St. Fl. Egypt ed. 2:* 771. Pl. 285 B. 1974 (Fig. 2).

*C. brizoides* Poiret, *voyage Barb.* 2.254. 1789, non L.; *C. schoenoides* Desf., *Fl. Atl.* 2. 336. 1794.

Perennial green herb. Rhizome thick, indurated, blackish, long, creeping and branching. Stem 5-75 cm high, erect,  $\pm$  triguetrous, glabrous or often scabrous below the inflorescence. Leaves basal about 5 mm wide  $\pm$  equalling the stem, with plane or canaliculate limb, rigid, keeled,  $\pm$  scabrous towards the margins, the rest glabrous, acute, with short membranous ligule and truncate sheaths. Spikes oblong, 1.5-2.5 cm long,  $\pm$  bracteate, 3-11 spikelets pressed or the inferiors little spaced. Male flowers at the top, female flowers at the base, multi-flowered. Rachis wingless, erect, glabrous. Female glumes membranous, 1-nerved, reddish-brown, whitish towards the keel and margins, ovate, acute, usually mucronate, scabrous towards the keel. Male glumes lanceolate, acute, stamens 3, anthers linear, pale yellow c. 3-4 mm, ending by briefly hispid apicule. Utricle nearly equalling the glume, erect coriaceous, brown, ovate, with rounded and slightly pedicellate base, c. 3 x 2-2.5 mm, contracted into a very short or elongate bidentate beak, margin green and scabrous, plano-convex; with many projecting nerves. Achene, erect, oval-rounded, plano-convex, brown, glabrous and smooth, c. 2-1.5 mm. Style slender. Stigmas 2 brown, exserted.

CYPERACEAE

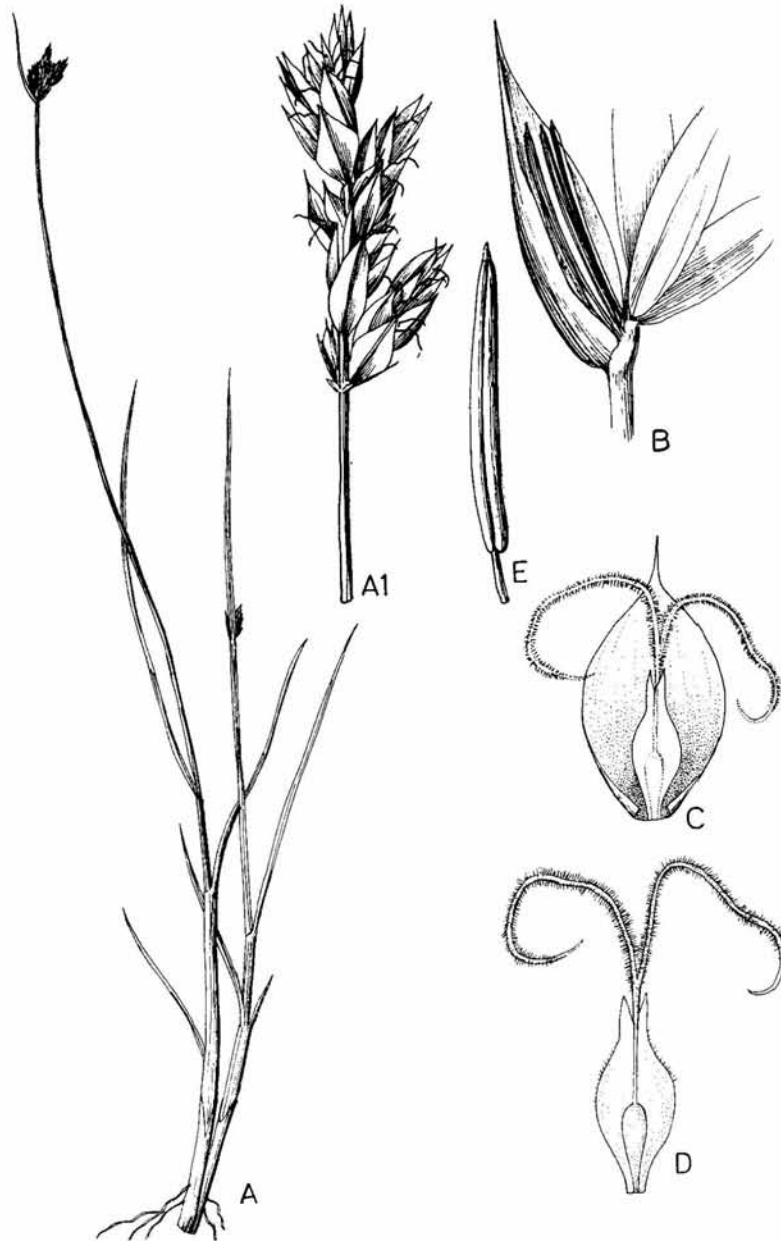


Fig. 2 - *Carex divisa*: A, habit x 1/2; A1, inflorescence branch x 2.5; B, male floret x 15; C, female floret x 10; D, utricle x 15.

## CYPERACEAE

Type: Described from England, Habitat in palustribus sed rarius.

**A-3** Msellata udi Zafrania near water, 12.4.1931, *R. Pampanini* 2934 (Fl.); **A-7** Lamluda, 9.4.1933, *R. Pampanini* 1142 (Fl.); El-Gubba, 7.4.1933, *R. Pampanini* 1141 (Fl.); Cirene, 18.4.1933, *R. Pampanini* 1142, 1143 (Fl.); El-Beda Ain belaneg 3.5.1934, *R. Pampanini* 1145, 1146 (Fl.); El Abrach, Mghernes 4.5.1934, *R. Pampanini* 1147 (Fl.); El-Byeda Dahret Scissu, 7.5.1934, *R. Pampanini* 1148 (Fl.); Slonta, El Faidia le *Houerou* 250365 (MPU); near El Abrach, Gebel Akder, 11.3.1968, *L. Boulos* 2180 (ULT).

Distribution: Europe, C. & W. Asia, Africa and Australia.

Fl. Feb.-July

3. **Carex flacca** Schreb., Spicil. lips. App. No. 669.1771; Keith, l.c. 329; Maire, l.c. 131. fig. 633. 1957.

*C. glauca* Scop., Fl. Carn. ed. 2.2.223. 1772; *C. diversicolor* Druce., Fl. Bucks, 369. 1926.

Perennial glaucous herb. Rhizome long creeping sending long stolons clothed by fawn-coloured scales. Stems 10-90 cm long, erect, rigid, trigonous, striated, glabrous and smooth, leafy only at the base. Leaves shorter than the stems, curved or erect-curved, 2-4 mm wide, keeled, acute, glabrous on both faces, margins and keel scabrous, inferior sheaths reddish-brown, marcescent, resolved into fine fibres, superior sheaths glaucous, striate glabrous and smooth, mucronate above the insertion of the limb, shortly 2-splitted, ligule ovate-rounded, reddish-brown. Spikelets 4-6, of these 2-3 (rarely 1) superior ones male, the others female. Male spikelets red, narrow, cylindrical, 2-3 cm long, close together, sessile with short glumy bracts. Female spikelets often with male ones at the top, subcylindrical, dense flowered, 2-3 cm, ± spaced, ± long pedicelled; rachis erect, scabrous, not winged; bracts foliaceous, erect, the inferior often passing the inflorescence, sometimes slightly sheathed. Male glumes reddish with narrowly hyalinous margins and greenish yellow nerve, obtuse or subacute, narrowly oblong. Stamens 3, anthers linear yellow to orange, c. 2.5-3 mm long with little papillose slender apicule. Female glumes ovate or ovate-lanceolate, brown black or reddish, with greenish yellow keel, ± acute or acuminate, often mucronate or cuspidate, obscurely nerved. Utricle greenish with reddish brown spots, little fawn or brownish-red coloured, passing the glume or little shorter ovate, ellipsoid or subovate, obscurely trigonous 2.7-3 x 1.8 mm, nerves nonvisible, ± scabrous



## CYPERACEAE

towards the edges, rounded-subtruncate at the base, ending in a very short, purplish-brown apicule. Achene smooth, loosely enclosed, obovate, obtusely trigonous c. 2-2.2 x 1.5 mm, faces little hairy below, very finely reticulate, not stipitate at the base, rounded and apiculate at the top. Style not swollen at the base. Stigmas 3, brownish.

Type: "In uliginosis humidisque, ad aquas regionis celidae Hispaniae austro-orientalis".

**A-7** Side of the high plateau, wadi Wardama, Beyda litorea, Derna province, 24.4.1939, *N.D. Simpson* 39397 (BM).

Distribution: W. Asia, N. America, New Zealand and Mediterranean area.

*Fl.* Mar.-June

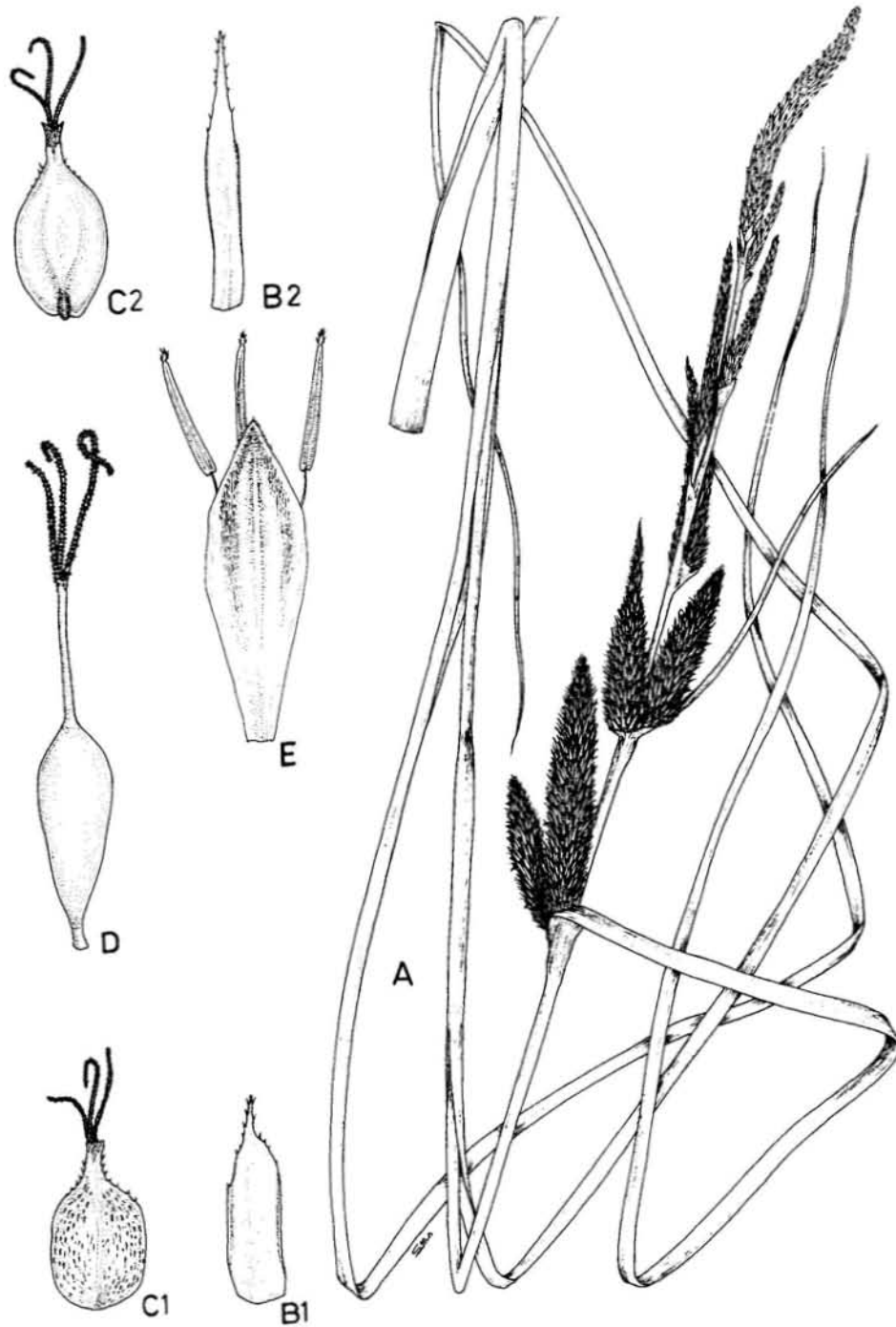
#### 4. *Carex* sp. (Fig. 3)

Perennial, green herb with thick, indurate, brown-black underground rhizome. Stem (culm) erect, slender, glabrous, leafy. Leaves as long as the stem or longer, canaliculate, scabrous towards the margins, the rest glabrous. Ligules short, membranous. Inflorescence spike-like with 2-4 superior male spikelets and usually 2 inferior female spikelets. Male spikelets conspicuously overlapping with each other; female spikelets little spaced from each other. Rachis wingless, erect, glabrous. Male glumes broad, ovate, rounded on back, brownish on the margins, acute-obtuse or rounded, densely imbricate, nerves faint. Stamens 3, anthers linear, reddish-brown, basifixed. Female glumes narrow, lanceolate, greenish, reddish-brown on margins, acute, 1-nerved; the nerve tapered into very sharp point or mucro, glabrous, only minutely scabrous on the mucro. Utricle nearly equalling the glumes or little shorter, greenish or pale-yellow, smooth or with scattered brown glands, ovate-oblong, contracted and rounded above to an elongated bifid beak, brownish and scabrous. Ovary erect, trigonous, glabrous and smooth. Style slender, erect. Stigmas 3, reddish-brown, exserted.

**A-7** Wadi Lathrun, Derna-Susa coastal road, Gebel Akhdar, 11.3.1968, *L. Boulos* 2153 (ULT); Ras el-Hilal, Wadi el-Glaa near the water fall, Ein Kortabpolis, 24.3.1980, *A. El-Gadi & M.A. Siddiqi* 3319 (ULT).

Distribution: Gebel Akhdar area (Libya).

CYPERACEAE



.Fig. 3 - *Carex* sp: A, habit x 1/2; B1-B2, female glume variation x6; C1-C2, utricle variation x6; D, ovary x12; E, male floret x6.

## CYPERACEAE

*Fl.*: March-April.

5. **Carex distans** L., Syst. ed. 10. 2: 1263. 1750; Durand & Barratte, l.c. 246; Pamp., Prodr. Fl. Cir. 144. 1931; Maire, l.c. 161. fig. 647; Keith, l.c. 328 (fig. 4).

Perennial, green herb with caespitose rhizome. Stem 15-100 cm erect, stiff, obtusely triquetrous, glabrous. Basal leaves shorter than the stem, 2-4 mm wide, strongly keeled, acute, scabrous at the upper parts towards the superior face and towards the margins and the keel, the rest glabrous and smooth. Inferior sheaths limbless, brown or reddish marcescent, disintegrating into fibres, superior sheaths greenish, striate, glabrous and smooth with membranous tip prolonging into a ligule-like obtuse appendix, fawn-coloured at the top, elongated, longer than the ligule; ligule rounded, whitish or fawnish-coloured. Inflorescence usually 4 distant spikelets; the terminal male with glumy bract, the laterals female with leafy bracts long sheathed, shorter than the inflorescence. Male spikelets cylindrical, reddish, 1.2-5 cm long. Rachis wingless erect. Male glumes oblong or obovate-oblong, reddish coloured, obtuse to acute, green keeled with one clear nerve. Stamens 3, anthers linear, yellow 2-4 mm with long apicule, slender,  $\pm$  hispidate. Female spikelets oblong-cylindrical to cylindrical, 1-4 x 0.4)0.6 cm with many peduncled flowers, peduncles up to 3 mm long, smooth,  $\pm$  exserted. Rachis wingless, erect. Female glumes large, ovate, reddish-brown narrowly hyalinous towards the margins, green keeled, 3-nerved, prolonging into scabrous mucro. Utricles erect, membranous, oblong, obtusely trigonous longer than the glumes c. 4 mm long, greenish, often reddish-brown dotted, glabrous, with projecting nerves, rounded at the base, and abruptly narrowing at the apex into a broad and  $\pm$  short beak, scabrous towards margins, with reddish bidentate orifice, the dents  $\pm$  erect, scabrous. Ovary trigonous with one style and 3 brownish stigmas. Achene olive-brown, ovate-trigonous narrowly included, matted, smooth, c. 2.5 x 1.25 mm, obliquely apiculate at the top.

Type: The figure in Moris, Hist. 3:18. t. 12. f. 18.

**A-7** El-Beda 4-Mesaf-Saf, Ain Legmeidia 22 April 1934, R. Pampanini & Pichi-Sermolli 1134 (BM); Wadi Derna, 8 April 1939, N.D. Simpson 39429 (BM); Wadi Derna, 200 m, by stream, perennial, tufted, 13.3.1970, P.H. Davis 50365 (ULT); Marsa Susa, lungo il Murcella 7.6.1913, R. Pampanini 1014 (Fl.); Wadi Derna, 14.3.1968, L. Boulos 2457 (ULT).

Distribution: Europe, W. Asia and N. Africa.

CYPERACEAE

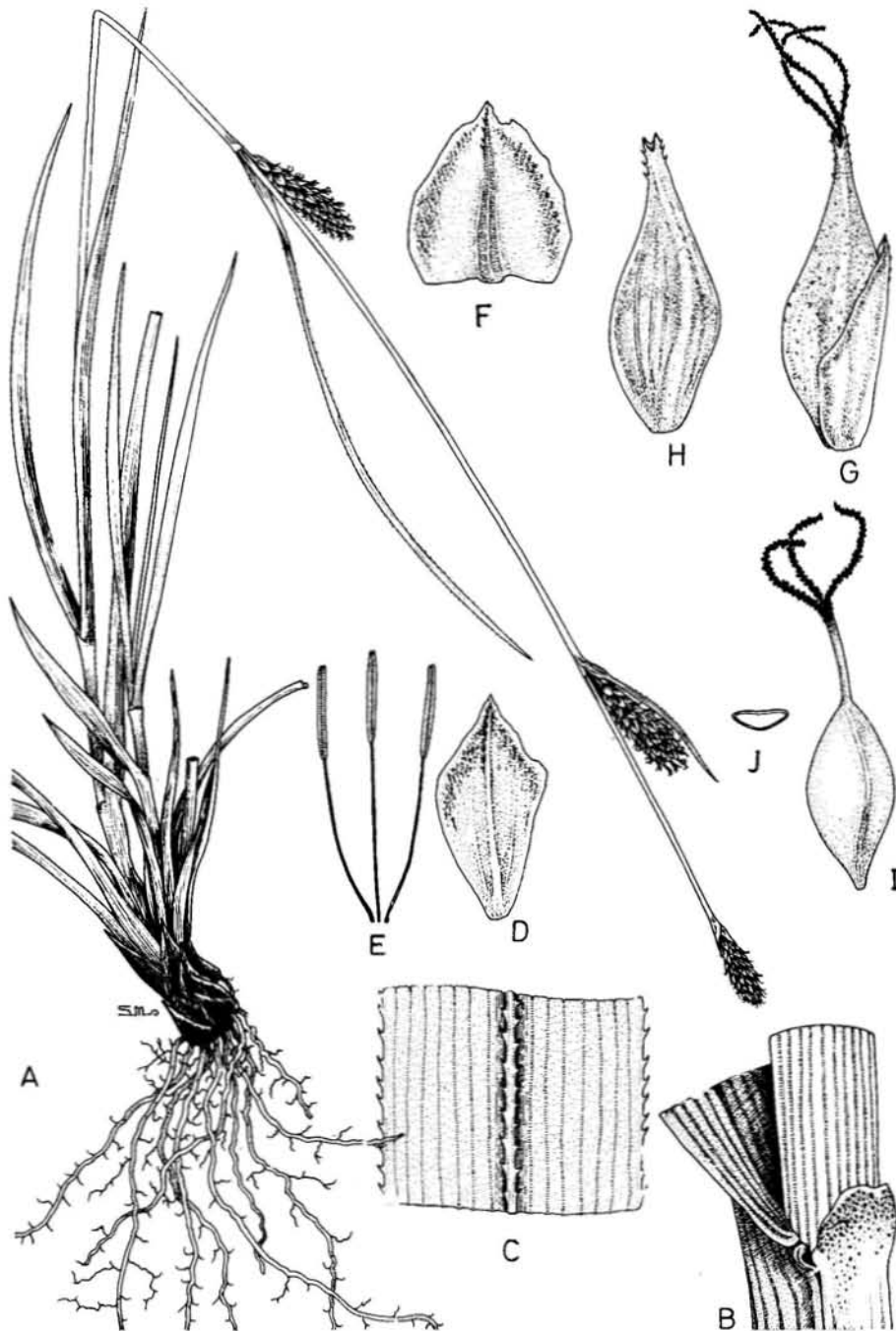


Fig. 4 - *Carex distans*: A, habit x 1; B, ligulate leaf sheath (basal portion) x 10; C, portion of leaf (dorsal view) x 10; D, male glume x 10; E, stamens x 10; F, female glume x 10; G, female floret x 10; H, utricle x 10; I, ovary x 10; J, t.s. of ovary x 6.

## CYPERACEAE

*Fl.*: Mar.-June.

6. **Carex extensa** Good in Trans. Linn. Soc. 2: 175. tab. 21. fig. 7. 1794; Durand & Barratte, l.c. 246; Pamp., Plant Trip. 41. 1914; Prodr., Fl. Cir. 144. 1931; Maire, l.c. 165, fig. 649; Keith, l.c. 329; Tack., l.c. 773. pl. 285 fig. A.  
*C. nervosa* Desf. Fl. Atl. 2. p. 337. 1800.

Perennial herb, ± glaucous. Rhizome densely caespitose. Stem erect, 15-35 cm obtusely triquetrous, rigid, striate, glabrous. Leaves basal, ± as long as the stem, 1.5-2.5 mm wide, rigid, flat or ± canaliculate, acute, ± glabrous, striate at both faces the superior part scabrous and the inferior sheaths leafless, brownly striped, marcescent splitting into fine fibres. Superior sheaths green, glabrous and glossy with a membranous, truncate or notched orifice; ligule short and rounded. Inflorescence 3-4 spikelets the superiors closed together while the inferiors slightly spaced, the terminal male usually sessile with scaly bracts, sometimes prolonging into a foliaceous point, the laterals female, and often male at the top, subsessile or peduncled with one foliaceous bract at the axil, briefly sheathed, the bract longer than the inflorescence and reflected. Male spikelets linear or linear-oblong, 1-2 cm x 3 mm, bright red; rachis erect, wingless, glabrous. Male glumes lanceolate, acute, reddish, 1-nerved, strongly keeled, the keel green ending in a scabrous mucro. Stamens 3, anthers orange-yellow, linear c. 2 mm, with long slender often hispid apicule. Female spikelets ovate or oblong, many flowered, 8-16 x 6 mm, the superior compact and very close to the male spikelets or contiguous with them, the inferior little spaced ± peduncled; rachis erect, glabrous, wingless. Female glumes large, ovate, acute, reddish or copper-coloured, with large green keel, 3 nerved, prolonged into a scabrous mucro. Utricle longer than the glume, erect or suberect, membranous, ovate, obtusely trigonous, c. 3 mm long, olive-grey, rounded at the base, shortly beaked at the top, smooth with brown orifice, rusty, briefly bidentate with smooth erect dents. Achene included, ovate trigonous, 2.5 x 1.2 mm, olive-brown, smooth or hardly dotted, with oblique apicule at the top. Stigmas 3, brownish.

Syntypes: Described from N. temperate regions and S. America.

**A-3** Tajura, near water, 22.3.1931, *Zordda* (Fl.); Ain Zara, near water, 22.2.1931, *R. Pampanini* 3448 (Fl.); Mamm in Tripolitania, March 1955, spikes in 3's greyish green, sedge to 1 feet growing in clumps of *Juncus maritimus* Lamk., *K.M. Guichard* KG/Lib/613 (BM); **A-7** Wadi Derna *Le Houerou* 230363 (MPU).

Distribution: Europe, Turkey, Africa.

*Fl.* Apr.-July

CYPERACEAE

2. **Cyperus**

L., Sp. Pl. 44. 1753; Gen. Pl. ed. 5:26. 1754.

*Pycreus* Beauv., Fl. Owar. 2:48.t.86. 1807;

*Juncellus* (Griseb.) Clarke in Hook. f., Fl. Brit. Ind. 6:594. 1893.

Perennial or annual herbs. Stems turfted or forming horizontal creeping rhizomes. Leaves usually tristichous on one often  $\pm$  triquetrous stem, superior leaves often whorled. Inflorescence paniculate, umbellate or capitulate, with umbel rays often unequal. Spikelets usually with numerous flowers rarely reduced to 1-3. Glumes distichous and keeled, the lowest two sterile, the others fertile. Hypogynous bristles 0. Stamens 3 or rarely 1. Style with 2-3 filiform stigmas. Achene flattened, biconvex or trigonous, usually mucronate towards the base.

c. 550 species mostly in tropics and warm temperate regions represented in Libya by 10 species.

- |    |   |                             |
|----|---|-----------------------------|
| 1. | + Ovary with 2 stigmatic branches   | 2                           |
|    | — Ovary with 3 stigmatic branches   | 3                           |
| 2. | + Spikelets in a pseudo-lateral cluster with only 2 inflorescence bracts (one long and one short); glumes whitish or greenish to blackish | 1. <b>C. laevigatus</b>     |
|    | — Spikelets in a terminal umbel with 3-7 inflorescence bracts; glumes brown   | 2. <b>C. mundtii</b>        |
| 3. | Umbel rays numerous 15-more   | 4                           |
|    | — Umbel rays 10 or less   | 5                           |
| 4. | + Inflorescence bracts lanceolate, usually 2 of which shorter than the umbel rays; umbel rays about 100                                   | 3. <b>C. papyrus*</b>       |
|    | — Inflorescence bracts linear, usually 2 of which longer than the umbel rays; umbel rays 15-25  | 4. <b>C. alternifolius*</b> |
| 5. | + Inflorescence globose-subglobose  | 6                           |
|    | — Inflorescence umbel   | 7                           |
| 6. | + Spikelets in clear terminal globose (head-like); plants with clear creeping rizome and short roots; glumes brownish                     | 6. <b>C. kalli</b>          |

CYPERACEAE

- Spikelets in terminal-pseudo-lateral subglobose; plants with long fibrous roots and no distinct rhizome; glumes greenish 7. **C. conglumeratus**
- 7. + Annuals with fibrous roots; leaves ligulate 5. **C. fuscus**  
 — Perennials with distinct rhizomes; leaves not ligulate 8
- 8. + Involucral bracts 3 or more times as long as the inflorescence; rhizomes creeping but not inflated into tubercles 8. **C. longus**  
 — Not as above 9
- 9. + Rhizomes swollen into small black tubercles; mature spikelets 1-more cm long; glumes reddish brown and green 10. **C. rotundus**  
 — Rhizomes not swollen into small black tubercles; mature spikelets less than 1 cm long; glumes reddish golden 9. **C. esculentus**
- 1. **Cyperus laevigatus** L., Mant. 2 p. 179. 1771; Durand & Barratte, Fl. Lib. Prodr. 248. 1910; Pamp., Pl. Trip. 42. 1914; Prodr. Fl. Cir. 142. 1931; Corti, Fl. Veg. Fezz. 60. 1942; Maire, Fl. Afr. Nord. 4: 34. Fig. 588. 1957; Keith, l.c. 241 (Fig. 5).

*Juncellus laevigatus* (L.) C.B. Clarke Il.cc. 596. 1884; *Pycrus laevigatus* (L.) Nees in Linnaea 10: 130. 1836.

Perennial herb with creeping rhizome. Stems erect, c. 5-45 cm high, compressed-triangular, enclosed by 2-3 sheaths at the base, one of which developing into a short erect rigid and narrow leaf, c. 2.5-5 cm long; the sheaths mucronate and 3-7 cm long. Leafy bracts 2, the inferior erect if continuing the stem, the other ± shorter than the inflorescence. Inflorescence pseudolateral head of 1-12, sometimes up to 50, oblong or linear lanceolate, acute, spikelets, 4-20 x 2 mm, pale greenish white or black with 12-30 flowers. Rachis wingless, erect. Glumes densely imbricate, ovate, obtuse, whitish, greenish-yellow or blackish, 3 green nerved at the keel. Stamens 3, anthers linear, the connective prolonging into a small apicule, c. 0.4 mm long. Style short. Stigmas 2. Achene about half as long as the glume, ovate or ovate-oblong, slightly apiculate.

CYPERACEAE



Fig. 5 *Cyperus laevigatus*: A, habit x 1; B, spikelet x 8; C, glume x 15; D, floret with glume removed x 15.



## CYPERACEAE

Type: Caput bonae spei, *Konig*

**A-3** Near hot water spring c. 11 km east of Tripoli, 10.7.78, *F.B. ERteeb* 242-F (ULT); **A-3** km from Tarhuna, 23.3.1977, *S. Alavi & S.A. Faruqi* 1142-S (ULT); Sharshara (Tarhuna) herbaceous near water, 19.5.1978, *S.M. Mustafa* 18 (ULT); id., 26.1.1969, *L. Boulos* (ULT); id., 17.3.1978, *R. Labany* 51/B (ULT); **A-6** Benghazi near water, 21.10.1977, *F.B. E-Rteeb & M.A. Siddiqi* 135 (ULT); **A-7** Libya c. Wadi Derna, 200 m, shingle by stream, perennial, spikes black, 31.3.1970, *Davis* 50362 (ULT); Wadi Derna, 14.3.1968, *L. Boulos* 2433 (ULT); Wadi Lathrun c. midway along the coastal road between Derna and Susa in most ground near a ditch close to the sea coast, 19.1.1967, *L. Boulos* 1117 (ULT). **C-4** El Hofra (El Hofra) traghan c. 400 m, 13.5.1933, *R. Corti* 695 (Fl.); **D-3** 41 km from Brak towards Hun on hot water spring, 7.3.1978, *S.A. Faruqi* 1606 (ULT); Mafu, Al-Mandura and Truna Zallaf sand dunes area on the salty lake shores, 10.11.3.1975, *A. Siala & M.A. Abu Raya* 9 specimens s.n. (ULT); 96 km from the high way, on way to Brak 30.3.1973, *S.I. Ali* 1406 (ULT); **E-1** Al Barkat, Ghat in and near the pond c. ½ m tall common, flowers whitish, 24.2.1976, *S.M.H. Jafri* 6343 (ULT); **G-8** Gebel Al Awenat, 7.11.1968, *L. Boulos* 3153, 3197, 3217 (ULT).

Distribution: S. Europe, Africa, Pakistan, E. Asia, tropical America and Australia.

A variable species, often split into a number of infraspecific taxa; forms with 1-2 (-6) blackish spikelets are often treated as var. *distachyos* (All.) Coss. & Dur., while the type variety has (5-) 10-30 (-50), whitish or straw-coloured spikelets. Both the forms have been found in our area.

*Fl.*: During the whole year.

2. **Cyperus mundtii** (Nees) Kunth, Enum. Pl. 2, p. 17. 1837; Corti, l.c. 60; Maire, l.c. 40 fig. 591; Keith, l.c. 422; Tack., l.c. 783.

*Pycneus mundtii* Nees, in Linnaea 10: 31. 1836; Cufodont., Enum., Pl. Aethiop. 2: 1443. 1969; *C. turfusus* Salzm. in Boiss., Voy. Esp. 626. 1839; *C. densifolius* Nees ex Kunth, l.c.

Perennial green herb. Rhizome long creeping, slender with elongated internodes and short brown black scales. Stems erect or ascending or often decumbent at the base, 15-50 cm, condensed trigonous, leafy up to the middle or above, glabrous and smooth. Leaves numerous, tristichous towards the sterile branches and subdistichous

## CYPERACEAE

towards the fertile branches 5-10 cm x 3-5 mm, keeled, denticulate, scabrous at the top towards the margin and keel, rest glabrous and smooth. Sheaths long membranous and truncate at the top usually  $\pm$  light brown purple, leafy bracts 3-7, unequal, nearly as long as the umbel rays or the inferior sometimes slightly longer. Inflorescence simple or small compound umbel, 4-8 rays, primary rays long 0.5-5 cm, secondary rays, small numerous, slender, all provided with one brown bract. Spikes short  $\pm$  fascicular, 3-10 spikelets, oblong-lanceolate, 6-10 x 2 mm, compressed, 10-18 flowered. Rachis wingless, erect. Glumes imbricate, ovate, obtuse, keeled, greenish-yellow and 3-nerved on the back, sometimes with 2 non-projecting nerves, brown  $\pm$  deep towards the margin. Stamens 3, anthers linear, 0.8-1 mm, the connective prolonging into a short apicule. Style elongated, slender. Stigmas 2, exserted. Achene about  $\frac{1}{2}$  the size of glume, obovate to obovate-oblong, shortly apiculate, brown, compressed, biconvex.

Type: Zwellendam and George in Capland, *Mundt*

**E-1** Fezzan occidentale Regia di Gat - Tin Geraben laghetto grande, Veget. di costa 28. 12. 1934R. *Corti*, 671 (FI), Sorg. Angiosc. (Tin. Geraben), Sommerso 1.3. 1934, R. *Corti* 672, 673 (FI); Elbaracat. 700 m. Sorg. grande 1.3. 1943, R. *Corti* 674, 675 (FI.), Tunin, 700 m<sup>2</sup> deposito d'acqua, 5.3. 1934, R. *Corti* 676-679 (FI.), Tunin 700 m. nei giardini di Mustafa 18.3. 1934, R. *Corti* 680-684 (FI).

Distribution: Southern Spain, Egypt, Oasis of Libyan desert. Tropical Africa and Australia.

Like *C. rotundus* but stamens only 2 in a floret.

*Fl.*: Apr.-Nov.

3. **Cyperus papyrus** L., Sp. Pl. 47. 1753; Durand & Barratte, l.c. 248; Keith, l.c. 422; Maire, l.c. 11. fig. 575; Tack., l.c. 790.

Tall, perennial with very short lignified rhizome. Stems 2-5, up to 2 (-3) m,  $\pm$  triquetrous, leafless. Leafy bracts 4-10, 2 shorter than the inflorescence, brown with large base over 1.5 cm, lanceolate-acuminate. Inflorescence compound subumbel; umbel rays numerous carrying spike of few needle-like remote spikelets. Spikelets cylindrical 1-2 cm long, 6-10 mm large; rachis winged, wings large lanceolate, yellow; glumes  $\pm$  dense, imbricate, ovate or oblong, obtuse. Stamens 3 with linear anthers, red or white in colour. Style long. Stigmas 3. Achene  $\frac{1}{2}$ - $\frac{3}{5}$  the length of the glume, oblong-trigonal.

## CYPERACEAE

Syntypes: Described from Sicily, Egypt, Syria etc.

Recorded by Durand & Barratte (l.c.) from Sidi EL-Mesri as cultivated.

Distribution: Trop. Africa, cultivated elsewhere as an ornamental.

The plant is commonly cultivated as an ornamental. Egyptian paper reed or Payrus was used in making paper substitute in ancient times. Now used for floor matting.

*Fl.*: During summer      *Vern.* Bordi

4.      \***Cyperus alternifolius** L., Mant. 2. 28. 1771; Keith, l.c. 420; Maire, l.c. 23. fig. 582. (Fig. 6).

Perennial herb with short and thick rhizome. Stem fascicular 45-130 cm tall, subcylindrical, erect, leafless, smooth glabrous, slightly thickened below and covered with 2-3 greenish brown or whitish leaves at the base, one covering the other, the longer one completely covering  $\pm \frac{1}{3}$  the stem. Leafy bracts 10-23, subequal, linear, flat c. 0.4-1.5 cm wide, acuminate, keeled, the keel and margins are scabrous, rough, other parts glabrous and smooth. Inflorescence compound umbel, dense, primary rays 15-25. 2-5 (8) cm long, bracteate at the base, the bract 0.5-0.1 cm long, secondary rays 5-10, varying from subsessile to 1.5-2 cm long, bracteate at the base, the bractlets 3-5 mm long. Spikelets oblong-lanceolate, 5-10 x 1.5-2 mm, many-flowered; rachis erect, wingless. Glumes dense imbricate, lanceolate brownish-white in colour. Stamens 3. Style short. Stigmas 3, long. Achene c.  $\frac{2}{3}$  the glume length, oblong, trigonal.

Type: Habitat in Virginia.

**A-3** Tripoli, Faculty of Agriculture farm, AL-Faateh University, 24.5.1972, *Sawosan, Suzen and Asaem* 33 (ULT); Al-Fornage area near Tripoli, 14.5.1978, *Mufida M.M.* 67 (ULT); University Campus, 24.12.1978, *F.B. Rateeb* 246-F (ULT) University Campus, 22.6.1978, *F.B. E-Rteeb* 241-F (ULT).

Distribution: An American species, usually cultivated as an ornamental plant in our gardens.

CYPERACEAE

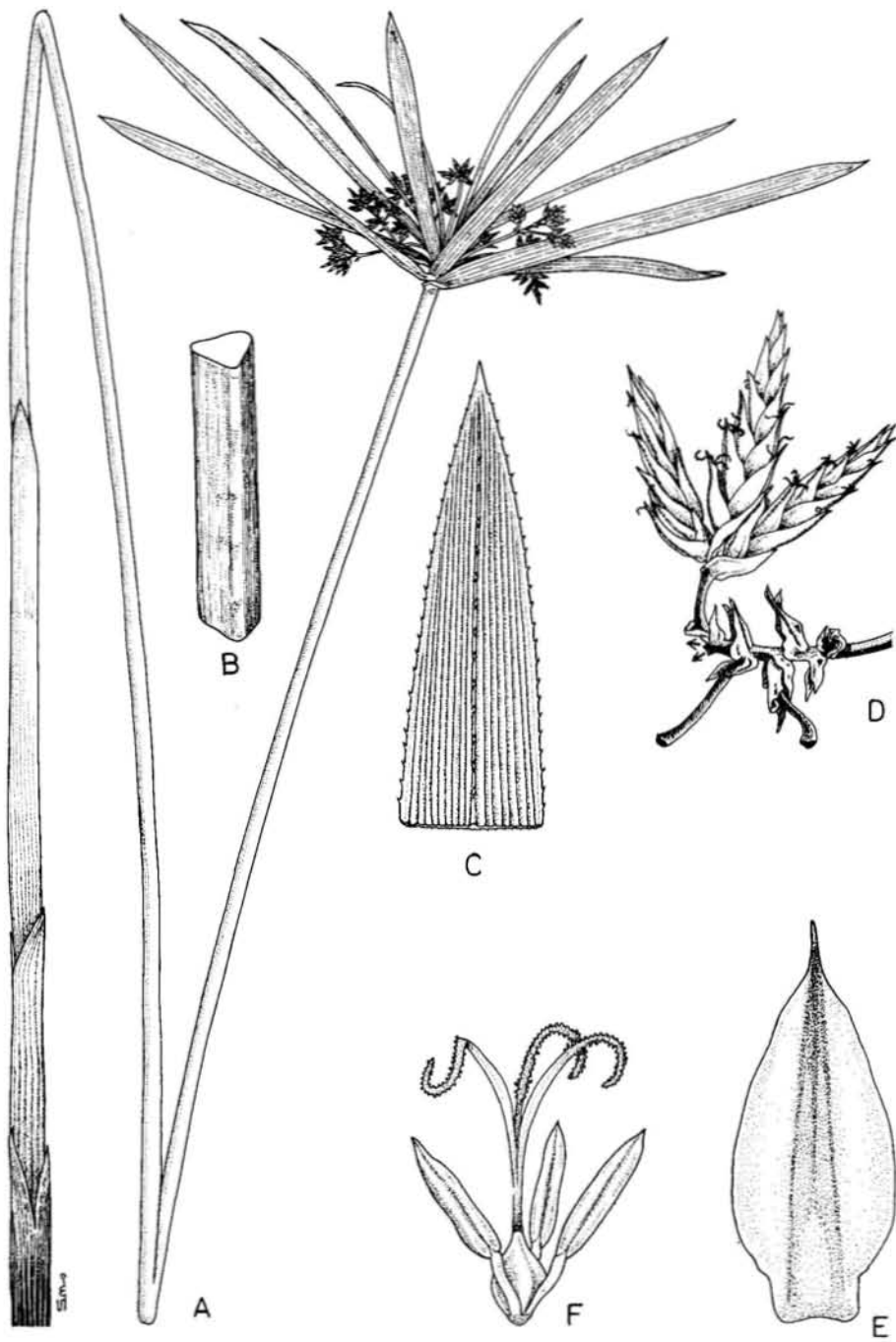


Fig. 6 - *Cyperus alternifolius*: A, habit x 1/2; B, portion of stem x 2; C, upper portion of leaf x 5; D, spikelet x 5; E, glume x 20; F, floret with glume removed x 20.

## CYPERACEAE

*Fl.*: Dec.-May

5. **Cyperus fuscus** L., Sp. Pl. 46. 1753; Maire, l.c. 24, fig. 583.

*C. virescens* Hoffm., Deutschl. Fl. 1: 21. 1791; *C. fuscus* var. *virescens* (Hoffm.) Vahl, Enum. 2: 336.1806.

Annual glabrous with fibrous reddish roots. Stems fascicular, numerous, caespitose, 5-20 cm high, triquetrous. Leaves all basal,  $\pm$  longer than the stem, 2-4 mm wide, glabrous, with brownish-purple sheaths. Bracts 3-4 erect or reflexed, much exceeding the inflorescence. Inflorescence simple or compound umbel with 3-8 unequal divergent rays, up to 2 cm long. Spikelets linear lanceolate 4-6 x 1.5 mm, erect or slightly compressed. Rachis wingless. Glumes, small, densely imbricate, and spreading, ovate, dark purple or brownish margins and 3-nerved, green, mucronate keel. Stamens 2. Style long. Stigmas 3. Achene smaller than the glume, oblong-trigonous, apiculate, yellowish.

Type: Habitat in Galliae, Germaniae, Helvetiae partis bumidis.

**A-7** Near Old Harbour east of Derna, marsh in soft dark brown mud with standing water, sea level, 21.9.1951. *C.H. Gimmingham* C 1/31 (K).

Distribution: C. & S. Europe, most of Asia, Egypt and naturalized in Eastern North America.

*Fl.*: May-Sept.

6. **Cyperus kalli** (Forsk.) Murb., Contr. Fl. Tun. 3: 24. 1899; Maire, l.c. 26 fig. 584; Keith, l.c. 420 (Fig. 7).

*Scirpus kalli* Forsk., Fl. Aegypt-Arab. Descr. 15. 1775; Keith, l.c. 421; *C. capitatus* Vand., Fasc. Pl. 5. 1771 non Burm. f. (1768); Durand & Barratte, l.c. 247; *C. aegyptiacus* Glox. obs. Bot. 20, tab. 3. 1785; Pamp., Plant. Trip. 42. 1914; *Schoenus mucronatus* L., Sp. Pl. 42. 1753; *C. mucronatus* (L.) Mabilie, Rech. Fl. Corse, 1. 27. 1867 non Rottb. 1773; Pamp., Fl. Cir. 141. 1931; *C. schoenoides* Griseb., Spicil. Fl. Rumel. 2. 421. 1844.

Perennial glaucous herb. Rhizome long; oblique, slender, reflexed in tubercles.

CYPERACEAE

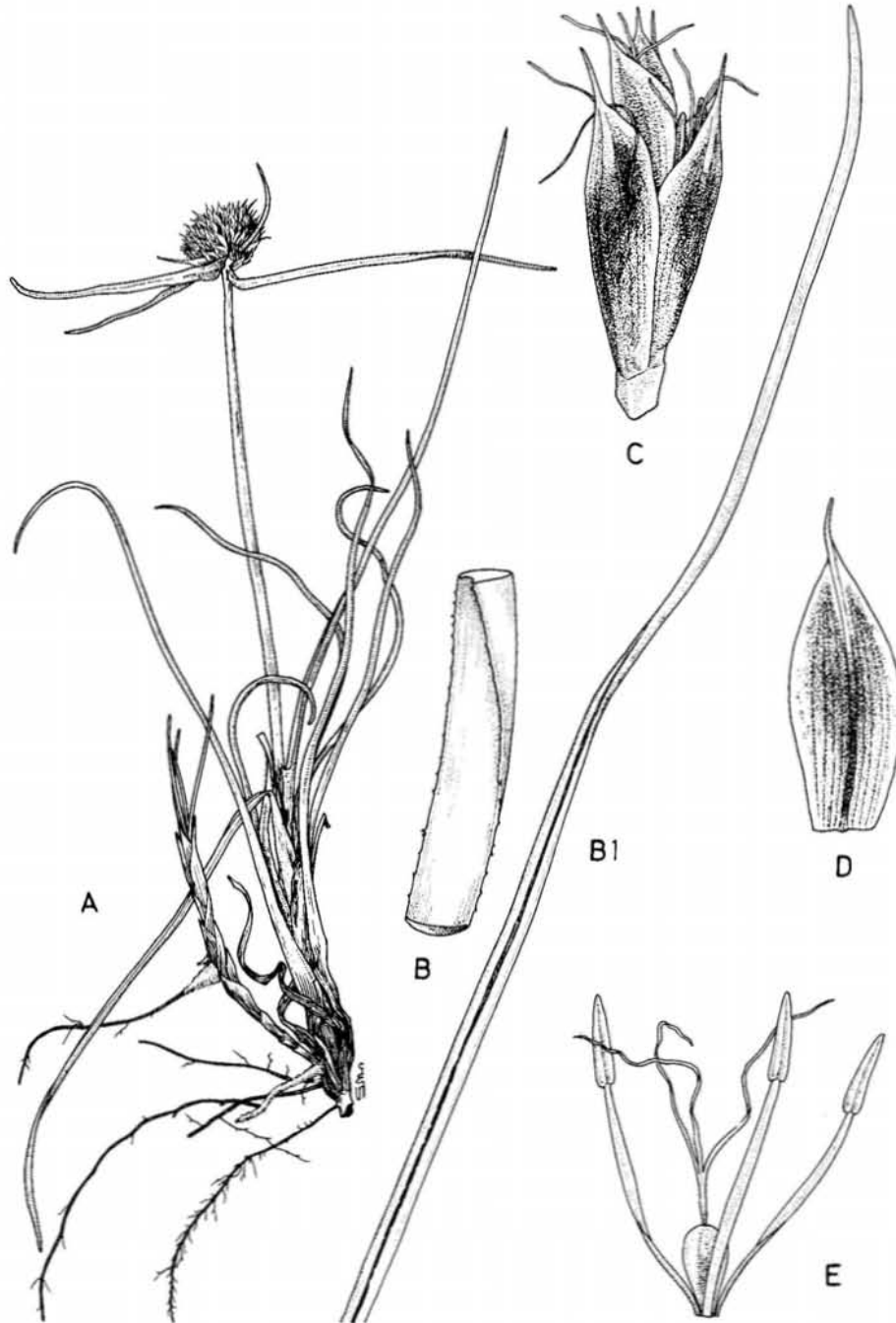


Fig. 7 *Cyperus kalli*: A, habit x ½; B, basal portion of leaf x 5; C, spikelet x 5; D, glume x 5; E, floret with glume removed x 5.

## CYPERACEAE

covered by large brown scales. Stems often 10-40 cm, erect, triquetrous, rigid. Leaves usually shorter than the stem, 3-6 cm long recurved, semi-cylindrical, canaliculate, or  $\pm$  flat, margins dentate. Leafy bracts 3-4, dilated at the base, longer than the inflorescence, 10-15 cm long. Inflorescence capitate, simple, dense, hemispherical, c. 2 cm long and c. 2.5 cm, large, consists of numerous subsessile spikelets up to 35. Spikelets oblong-lanceolate, acute 8-15 x 3-4 mm, 4-11 flowered. Rachis wingless, rigid. Glumes 7-8 x 3.5-4 mm, densely imbricate, mucro 1-1.5 mm long, ovate, obtuse, reddish-brown, 11-nerved,  $\pm$  hyalinous towards margins. Stamens 3, anthers linear, yellow, 2.5 mm long with the connective prolonging into a short reddish apicule. Style long, little compressed. Stigmas 3, long. Achene  $\frac{1}{2}$ -2-3 of the size of glume, 2.5-3 x 1.5 mm, obovate or obovate-oblong, trigonous, black or blackish-brown, pale brown at the base, shortly apiculate.

Type: Described from Egypt.

**A-3** Joudayem 15.3.1974, coll. ign. 35 (ULT); Liptis Magna (Libda), 29.3.1975, *Fauzia G.* 142 (ULT); *ibid.*, *A. Gummudi* 237 (ULT); *ibid.* 1.5.1979, *M.M. Abdel Razig* 469 (ULT); *ibid.* *G. Faris* 610 (ULT); *ibid.*, *Salem Egaley* 609 (ULT); *ibid.* *M. Godeh* 405 (ULT); *ibid.* *K. Retami* 322 (ULT); **B-4** Wadi Jarif project c. 20 km West of Sirte, near sea shore, 16.4.1978, *Fathi Erteeb, Ramadan and Siddiqi* 278 (ULT).

Distribution: Mediterranean region and Canaries.

*Fl.* Apr.-Sept.

7. **Cyperus conglomeratus** Rottb., *Descr. et Icon.* p. 21, tab. 15, fig. 7. 1773; Durand & Barratte, *l.c.* 248; Keith, *l.c.* 240; Maire, *l.c.* 29, Fig. 586. (Fig. 8).

Perennial herb of sand dunes, roots c. 10-15 cm long, coarse covered with felt-like hairs. Stems fascicular, 6-40 cm, erect, glabrous, triquetrous or irregularly angled covered at the base by brownish sheaths, shiny, bearing some leaves at the base, the rest of the stem leafless. Leaves more longer or shorter than the stem, c. 12-36 x 2-4 mm canaliculate or enrolled, margins slightly scabrous, sheaths dilated. Leafy bracts 2-4, rigid, longer than the inflorescence, the lower most one long. Inflorescence subglobose. Spikelets dense, fascicular 1.3-2 cm long, 8-16-flowered. Rachis rigid, wingless. Glumes  $\pm$  dense, imbricate, ovate or ovate-oblong 4-5 x 3 mm, greenish white, obtuse, keeled at the top, hyalinous towards the margins, 13-15-nerved, pale or deep brown, with erect or slightly excurved mucro, c.  $\frac{1}{2}$ -1 mm long. Stamens 3

CYPERACEAE

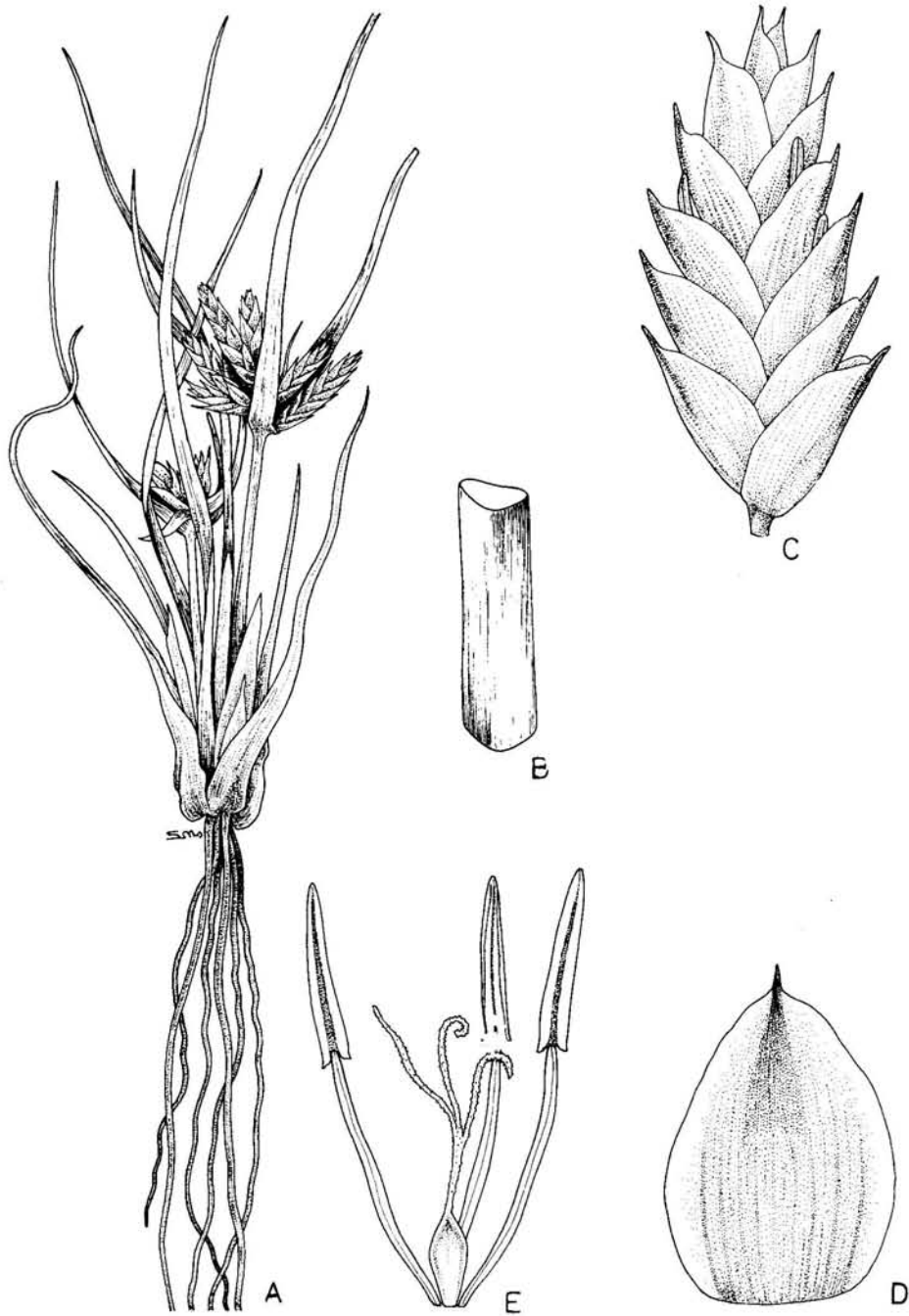


Fig. 8 - *Cyperus conglomeratus*: A, habit x 1; B, portion of stem x 5; C, spikelet x 5; D, glume x 8; E, floret with glume removed x 8.



## CYPERACEAE

yellow, linear. Stigmas 3, 2.5-3.5 mm long. Achene 1½-2 x 1 mm, obovate, trigonous.

Type: Arabia, "In Insula Gorab & Circa Ghunfudam", Forskal.

**D-3** Wadi El Hemreit c. 47 km from Truna near Sabha, 12.3.1975, *Abu Raya & A.R. Siala* s.n. (ULT); Libya desert approx. lat. 17.26' long. 24° to altitude c. 2300 m rolling sand country (c. cf. *conglomeratus*) 28.10.1932, *W.B.K. Shaw* 233 (K); **E-1** near Anai on dunes 11.4.1952, *K.M. Guichard* (KG/Lib./351) (BM).

Distribution: Egypt, Sudan, Aethiopia, Arabia to Sind, Senegal, Madagascar.

*Fl.* During the year.

8. ***Cyperus longus*** L., Sp. Pl. 45. 1753; Pamp., Fl. Cir. 142. 1931; Maire, l.c. 14. fig. 577; Keith, l.c. 421. (fig. 9).

*C. badius* Desf., Fl. Atlant. 1:3 45. 1798; *C. longus* ssp. *badius* (Desf.) Murb., Cont., Fl. Tun. 33: 27. 1899; Maire, l.c. 16. fig. 578.

Perennial green herb. Rhizome, ± long, creeping, indurated, robust, stiff, sometimes branching. Stem 40-100 cm, triangular, glabrous, sheathed and leafy only at the base. Leaves shorter than the stems about 30 x 0.4-0.7 cm, keeled towards back, scabrous at margin and keel, acute, dark greenish. Leafy bracts 3-6, longer than the inflorescence. Primary inflorescence compound, loose with 6-10 unequal rays, 20 cm long, triangled, subtended by whitish leafy bract at the base. Secondary rays setaceous, unequal, up to 10 cm long. Primary spikelets congested, of 3-12 secondary spikelets. The last ones nearly suberect, linear, acute (0.7) 1-1.5 x 1-1.5 mm, slightly compressed 8 (12) -3-flowered. Rachis winged, the wings lanceolate, margins whitish, persistent. Glumes ± densely imbricate, membranous 1.5-2.5 mm long, ovate, obtuse, mucronate with green keel, fuscescen, 5-7-nerved with ± white hyalinous margins. Stamens 3, linear, yellow, the connective prolonging into appendix. Style long. Stigmas 3. Achene ⅓ to ½ of the glume length, reddish-brown, oblong or oblong-obovate.

Syntypes: Habitat in Italiae, Galliae paludibus.

**A-7** Cirene *Le Houerou* 60763 (MPU); Shahat ruins, 14.4.1979, *Ramadan & Siddiqi* 2483 (ULT).

CYPERACEAE



Fig. 9 - *Cyperus longus*: A, inflorescence branch x  $\frac{1}{2}$ ; B, spikelet x 12; C, ovary x 20.

## CYPERACEAE

Distribution: Europe, N. Africa, W. Asia, Aethiopia & Macaronesia.

Libyan material is represented by *C. longus* L. ssp. *badius* (Desf.) Murb.

*Fl.*: Apr.-Sept.

9. ***Cyperus esculentus*** L., Sp. Pl. 45. 1753; Durand & Barrate, l.c. 248; Corti, Fl. Veg. Fezz. 59. 1942; Maire, l.c. 20. fig. 580; Keith, l.c. 420.

*C. aureus* Ten., fl. Nap. Prodr. 1, p. 8. 1811 (non Georgi, 1802); *C. melanorhizus* Delile, Fl. Aeg. 3. 50. 1812.

Perennial herb. Rhizome short with many fibrous roots, sending many subterranean slender stolons, covered by distant scales, ending by subglobose or ovoid small tubers. Stems 10-40 cm, rigid, triquetrous, glabrous, carrying numerous leaves at their base, slightly thick and covered with brownish sheaths. Leaves usually shorter than the stems, sometimes exceeding the stem or nearly equal, display or erect and recurved, 3-8 mm wide, plane, little rigid, externally keeled, with revolute margins, glabrous, scabrous at the top of margins and keel, acute. Leafy bracts 3-6, the 1-2 inferior longer than the inflorescence. Inflorescence simple or compound, loose, 5-10 slender, rays, c. 2-10 cm long, sheathed at their bases by prophyll tubulous, sometimes elongated towards the back into a short limb. Spikes large ovate, loose, 5-15 spikelets. Spikelets distichous,  $\pm$  divaricate, linear-oblong, obtuse, 5-12 x 2 mm, with 8-16 flowers; rachis large, winged, wings hyalinous with tapering end, usually completely coalescent with the superior glume. Glumes membranous, little densely imbricate, little display at the top, ovals, obtuse or truncate, sometimes little mucronulate,  $\pm$  keeled, 7-nerved, yellowish, golden, or reddish, hyalinous towards the margins, scarlet at the top. Stamens 3, anthers linear, c. 1.2 mm, yellow, with the connective prolonging into an ovate, short, reddish appendix. Style long, slender. Stigmas 3, long, much exerted. Achene  $\frac{1}{2}$  of the glume, obovate, trigonous, obtuse, apiculate, greyish-brown, glossy, very finely dotted, c. 1.2-1.5 x 1-1.2 mm.

Syntypes: Habitat Monspeli, inque Italia, Oriente.

Reported from Tajura, Tripoli and Ghat by Durand et Barratte, l.c. 248; Corti, l.c. 59; Keith, l.c. 420.

Distribution: Mediterranean region, Paleo- and Neo-tropical regions. North temperate America, Macaronesia.

## CYPERACEAE

Fl. Apr.-Dec.

Vern. Hab Azeez

10. **Cyperus rotundus** L., Sp. Pl. 45. 1753; Durand & Barratte, l.c. 248; Pamp., Pl., Trip. 42. 1914; Prodr. Fl. Cir. 142. 1931; Maire, l.c. 16. fig. 579; Keith, l.c. 422 (fig. 10).

*C. tetrastachyos* Desf. Fl. Atl. 1. 45. tab. 8. 1798; *C. olivaris* Targ.-Tozz. in Mem. Soc. Ital. Sc. 13.2. 338. 1807; *C. tuberosus* Rottb., Descr. et Icon 28. tab. 7. fig. 1. 1773; *C. rotundus* ssp. *tuberosus* (Rottb.) Kukenth., Pflanzeur. 101: 113. 1935; Maire, l.c. 19.

Perennial herb with long slender stolons, swollen into small ellipsoid, black tubercles. Stems erect slender, rigid, 15-40 cm long, triquetrous, glabrous and smooth, densely leafy at the base, slightly thick at the basal portion and surrounded by marcescent brownish to whitish sheaths. Leaves 3-12, all basal, usually shorter, sometimes equalling to longer than the stem, rigid, 2-6 mm wide, acute, glabrous, only scabrous towards the margins and the keel, bracts 2-6 (8) equal to longer than the inflorescence. Inflorescence simple or compound umbel, loose, rays 3-11, unequal, 1.5-6 cm long, subtended by scaly bract at the base, each umbel ray consists of 3-11 spikes forming a corymb-like subinflorescence. Spikes linear or linear-lanceolate, acute, 10-20 x 1.5-2 mm, consists of many flowers up to 100; rachis winged. Glumes densely imbricate, ovate, 3-4 x 1.5-2 mm, 7 nerved brownish-red or dull yellow in colour, margins narrowly hyalinous, and with green nerved keel. Stamens 3, anthers linear, yellow 1.5-2 mm long, the connective prolonging into oval reddish appendix, c. ½ mm long. Style long slender. Stigmas 3, long. Achene up to 2/3 of the size of glume, obovate-subglobose, trigonous, c. 1.2-1.5 x 0.8-0.9 mm, brown to blackish, very shortly apiculate.

Type: Habitat in India.

**A-2** Joddayem 35 km West of Tripoli, 19.5.1977, *S.I. Ali* 425 (ULT); **A-3** Al Jadayeda c. 8 km East of Tripoli, 20.11.1975, *F.B. Erteeb* 12 (ULT); Mahalet El-Fateh 600 m from the highway c. 10 km East of Tripoli, growing as a common weed in a farm, 2.10.1979, *F.B. Rateeb* 496-F (ULT). **G-8** Gebel Kufra, 7.11.1968, *L. Boulos* 3190 (ULT).

Distribution: N. Africa, S. Europe, W. Asia Paleo- and Neo-tropical areas.

CYPERACEAE



Fig. 10 - *Cyperus rotundus*: A, habit x 1/2; B, spikelet x 5; C, glume x 15; E, floret with glume removed x 15.

## CYPERACEAE

A very polymorphic species with size and shape of spikelets and achene characters which have often been used to split it into a number of infraspecific categories.

*Fl.* May-Dec.

### 3. **SCHOENUS**

L., *Sp. Pl.* 42. 1753; *Gen. Pl.* ed. 5: 26. 1754.

Perennial herbs with usually rigid stems and leafless below the inflorescence. Leaves usually basal, narrow, subulate or reduced to brown sheaths or in some species the stem  $\pm$  leafy. Inflorescence terminal, surrounded by 2 imbricate bracts. Spikelets few flowered, flowers all hermaphrodite and fertile. Glumes distichous, imbricate, 1-6, inferior ones sterile; rachis flexuous. Stamens 3, rarely 4-6. Style not swollen at the base. Stigmas 3. Achene  $\pm$  trigonous, obovoid or ovoid.

A genus of 100 species, distributed in N. and S. Africa, Australia, New Zealand, S.W. Europe; represented in Libya by only one species.

**Schoenus nigricans** L., *Sp. Pl.* 43. 1753; Durand & Barratte, *Fl. Lib. Prodr.* 247. 1910; Pamp., *Pl. Trip.* 42. 1914; Maire, *Fl. Afr. Nord.* 4: 93. fig. 619. 1957; Keith, l.c. 871 (Fig. 11).

Non-rhizomatous perennial herbs. Stems densely tufted, erect c. 15-60 cm, glabrous. Leaves basal, narrow, filiform, grooved, about  $\frac{1}{2}$  as long as the stem; sheaths enclosing 5-6 cm of the stem. Inflorescence terminal supported by 2 dark brown bracts, inflated below and scabrous at the top; the inferior bract is much longer than the inflorescence, c. 3.5-8.5 cm long; the superior one is much shorter, 0.5-2 cm long. Spikelets 5-15, sessile or subsessile, oblong-lanceolate. Rachis wingless, glabrous. Glumes 6-7 lanceolate, keeled, 1-nerved, slightly scabrous on the keel, the inferior ones sterile while the 1-3 superior ones fertile. Perianth bristles 3-6, brown, shorter than the achenes. Stamens 3, anticous, filaments brown, anthers linear, yellow 3.5-7 mm, the connective prolonging into a mucro, c. 0.7 mm long. Style 6 mm long. Stigmas 3, papillose. Achene trigonous, whitish obovate to obovate-oblong  $\frac{1}{3}$  of the glume length.

Syntypes: Habitat in Europae paludibus astate, exsiccatis.

**A-3** Ainzara, 19.11.1931, *R. Pampanini* 102-108 (FI); Tajaura, 21.11.1931, *R. Pampanini* 129-143 (FI); *ibid.*, 22.3.1931 Zorda (FI); **A-7** Wadi Gala above Ras al-Hilal

CYPERACEAE

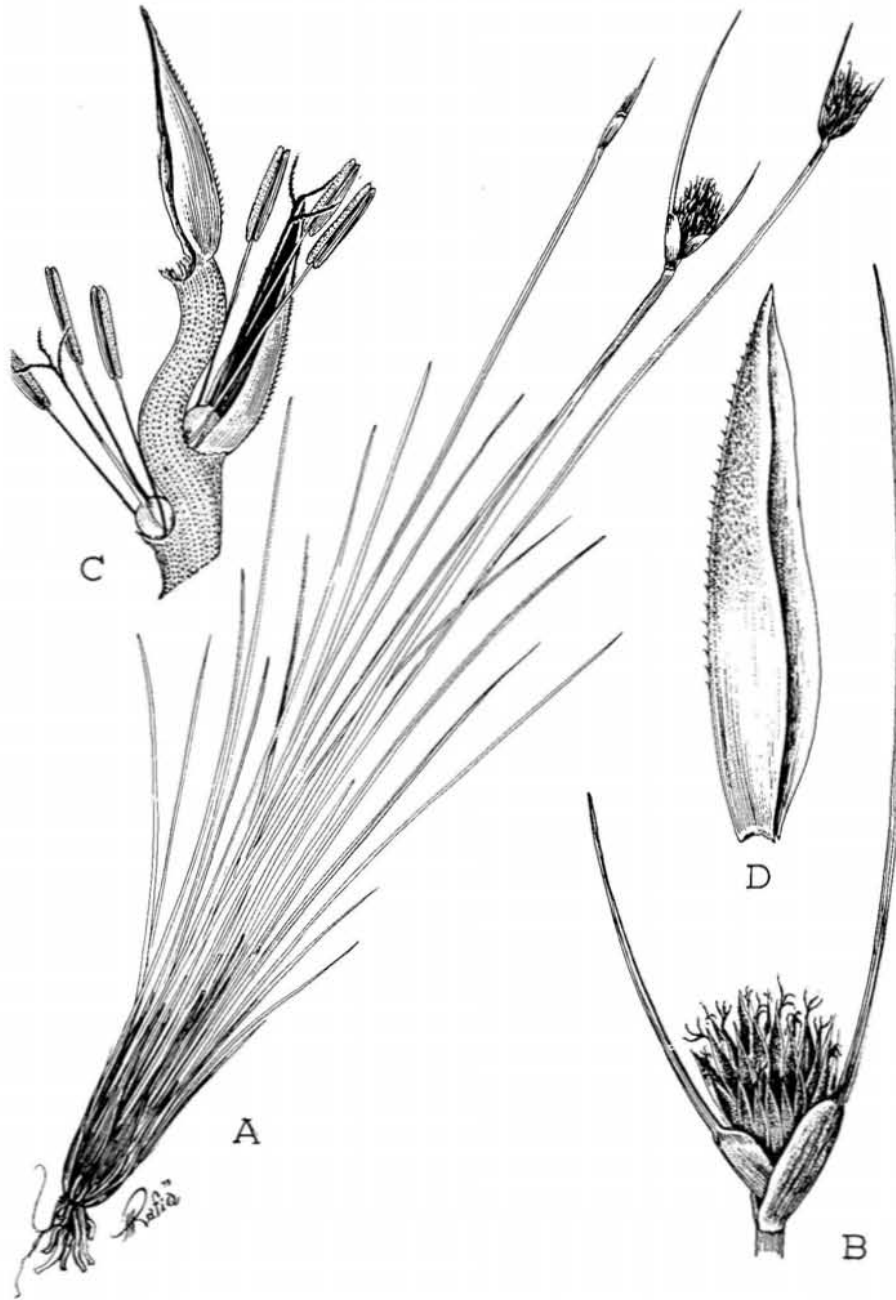


Fig. 11 - *Schoenus nigricans*: A, habit x ½; B, flowering head x 2; C, floret with glume removed x 10; D, glume x 10.

## CYPERACEAE

350 m. by stream perennial, 27.3.1970, *P.H. Davis* 50158 (ULT).

Distribution: Most of Europe, N. & S. Africa, W. Asia and N. America.

*Fl.* Apr.-Oct.

### 4. ELEOCHARIS

R. Br. Prodr. 224. 1810.

*Heleocharis* Lestib., Ess. Cyperaceae 41. 1819.

Perennial or annual herbs, rhizomatous; stems tufted, leafless, simple 30-40 cm high. Leaves reduced to sheaths enclosing the lower parts of the stems. Inflorescence terminal, solitary, ebracteate. Spikelets with many, hermophrodite, rarely few flowers. Glumes imbricate, the inferior 1-2 sterile; perianth bristles 3-8, usually scabrous. Stamens 3, rarely 1-2. Style dilated at the base forming a persistent often bulbous stylopode. Stigmas 2-3, filiform. Achene obovoid or nearly globular, trigonous, crowned with the bulbous stylopode.

A genus with 200 species of cosmopolitan distribution; only 2 species are recorded from Libya.

+ Perennials; spikelets elongated, 10-20 mm long;

glumes ovate-oblong

1. ***E. palustris***

— Annuals; spikelets globose 5-6 mm long; glumes

ovate-rounded

2. ***F. caribaea***

1. ***Eleocharis palustris*** (L.) R. Br., Prodr. N. Holl. 1: 244. 1810; Durand & Barratte, Fl. Lib. Prodr. 247. 1910; Pamp. Prodr. Fl. Cir. 143. 1931; Maire, Fl. Afr. Nord. 4: 81. fig. 611. 1959; Keith, l.c. 537; Tack., St. Fl. Egypt ed. 2: 778. pl. 288. Fig. A. 1974.

*Scirpus palustris* L., Sp. Pl. 47. 1753.

Perennial, glabrous herb with creeping rhizome. Stem 9-50 cm high. Spikelets elongated, subcylindrical, lanceolate or linear-lanceolate 6-15 mm long, many flowered. Rachis erect, glabrous, wingless. Glumes ovate-rounded or ovate-oblong. The lowest two sterile and shorter than the fertile glumes, perianth bristles variable in number, 3-6. Stamens 3. Style slender, short with conical or ovoid flattened base.



## CYPERACEAE

Stigmas 2, long papillose. Achene yellowish-brown, about ½ the glume length, ovoid biconvex.

Syntypes: Habitat in Europae fossis & inundatis.

**A-7** pond side, Lamluda, Derna province, 11.4.1939, *N.Y. Simpson* 39506 (BM); Lamluda, 9.4.1933, *R. Pampanini* 1169 (FI); El-Abrac, 9.4.1933, *R. Pampanini* 1170 (FI.); El-Gubba Ain Mra, 28.4.1934, *R. Pampanini & P. Sermolli* 1172 (FI.); El Beida, Bir Jacal 2.5. - 7.5. 1934; *R. Pampanini & P. Sermolli* 1196, 1197 (FI.).

Distribution: Cosmopolitan.

*Fl.* Mar.-Oct.

2. ***Eleocharis caribaea*** (Rottb.) Blake in *Rhodora*, 20:24. 1918; Maire, l.c. 81. fig. 612; Tack., l.c. 780. pl. 288, fig. C. (Fig. 12).

*Scirpus caribaeus* Rottb., *Descr. Pl. Rar. Progr.* 24. 1772; *E. caduca* (Delile) Schult. *Mant.* 11.88. 1824; R. Corti, *Fl. Fezz.*, Ghat, 63. 1942; Keith, l.c. 537; *E. ovata* (Roth.) Roem. et Sch. var. *gaetula* Maire, *Shara central*, 72. 1933.

Annual, tufted herb. Stem 3-25 cm dense, slender covered with 2 sheaths at the base. Spikelets small, globose, ovate 4-9 mm long, pale brown or greenish, many flowered. Rachis glabrous and wingless. The lowest glumes large, herbaceous, 3-nerved, sterile. Ferile glumes ovate, obovate or rounded, 1-nerved, obtuse, pale-brown or white, perianth bristles 5-8, rusty-brown, retrorse-scabrous. Stamens 3, anthers pale-yellow, linear, briefly apiculate. Style deciduous, short. Stigmas 2, long papillose. Achene black, biconvex, obovate, rounded at the top.

Type: Ex insula Caribaea St. Crucis miserunt Nobilissimus Centurio de Rohr & B. Faber. *Tab. XV* fig. 3.

**E-1** West Fezzan, Ghat (Tunin), 700 m, near water, 5.3.1939, *R. Corti* 706, 708 (FI.).

Distribution: Paleo- and Neo-tropical regions.

CYPERACEAE

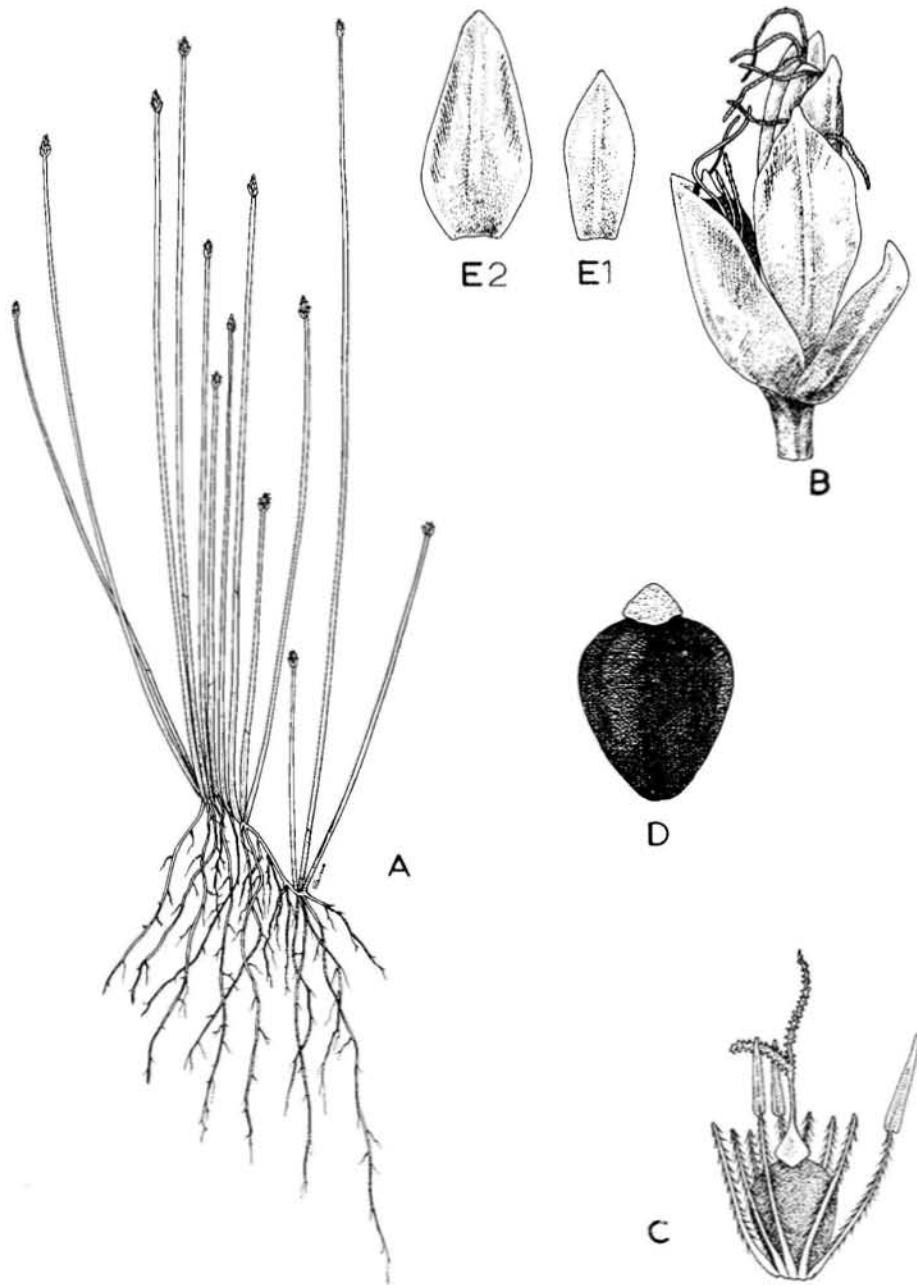


Fig. 12 - *Eleocharis caribaea*: A, habit x 1/2; B, spikelet x 15; C, floret with glume removed x 15; D, fruit x 25; E1-E2, glume variation.

CYPERACEAE

5. SCIRPUS

L., Sp. Pl. 47. 1753; Gen. Pl. ed. 5: 26. 1754.

Annual or perennial herbs. Stems leafy or leafless, triquetrous or reduced, often rush-like. Leaves, if present with wide limb or just rush-formed. Inflorescence consists of one or more spikelets making simple or compound umbel. Spikelets usually multiflowered. Perianth bristles 6 or 0. Stamens 1-3. Style filiform, deciduous. Stigmas 2-3, plumose. Achene obovoid, trigonous or biconvex, papillose apiculate at the top.

A genus with 300 species, cosmopolitan, characteristic of wet moist bogs and marshes; represented in Libya by 5 species.

- |    |   |                           |
|----|---|---------------------------|
| 1. | + Stem leafy; inflorescence with a terminal umbel subtended by leafy bracts; stolons inflated at the end into small tubercles | 1. <b>S. maritimus</b>    |
|    | — Stem leafless; inflorescence pseudolateral with small scaly bracts; stolons not so inflated at the ends                     | 5                         |
| 2. | + Spikelets ovate, crowded in dense globose heads   | 2. <b>S. holoschoenus</b> |
|    | — Spikelets solitary or in groups of 3-5 but not in dense globose heads   | 3                         |
| 3. | + Annual; perianth bristles 0; glumes glabrous and smooth   | 3. <b>S. cernus</b>       |
|    | — Perennial; perianth bristles 4-6, glumes $\pm$ ciliate towards the margins  | 4                         |
| 4. | + Stems trigonous; perianth bristles long, plumose at top   | 4. <b>S. litoralis</b>    |
|    | — Stems cylindrical; perianth bristles with long retrorse apicules  | 5. <b>S. lacustris</b>    |

1. **Scirpus maritimus** L., Pl. 51. 1753; Durand & Barratte, Fl. Lib. Prodr. 247. 1910; Pamp., Prodr. Fl. Cir. 143. 1931; Maire, Fl. Afr. Nord. 4: 48. Fig. 595. 1957; Keith, l.c. 876; Cufodontis Enumn. Pl. Aethiop. 2: 1471. 1969.

*S. tuberosus* Desf., Fl. Atl. 1: 50. 1798; Beetle in Am. J. Bot. 29. 84. 1942; S.

## CYPERACEAE

*maritimus* var. *tuberosus* (Desf.) Roem. et Schult (1817); *Bolboschoenus* *maritimus* (L.) Palla in Koch, Synop. ed. 3: 3. 2532. 1904; Kom., Fl. U.R.S.S. 3: 56, t. 3. fig. 10. 1935.

Perennial herb with underground stolons, swollen at the ends into tubers which round into additional stolons, the rest of the rhizome slender and black in colour. Stem leafy, erect, 30-100 cm high, triquetrous, glabrous, smooth below, scabrous above towards the angles. Leaves  $\pm$  longer than the stem, c. 4-7 mm wide, keeled, scabrous towards the margins and the keel; sheaths long, membranous, truncate, glabrous. Leafy bracts 2-4, at least the lowest one longer than the inflorescence, 5-20 cm long. Inflorescence simple or rarely compound umbel, with lateral rays usually slightly longer, sometimes as long as the centrals, carrying 2-5 clustered spikelets. Spikelets ovate or oblong, sometimes lanceolate or linear oblong, 0.8-3 cm x 3-4 mm, multiflowered. Rachis wingless, erect. glumes ovate 1.5-2.5 mm long, reddish-brown, pale at the base and towards the margins, membranous, glabrous or very fine pubescent, bifid at the top, 1-nerved, strongly keeled, the keel ending in along mucro out of the lobes; bristles 3-6, scabrous and roughly retrorse. Stamens 3, anthers pale-yellow, linear 3.5-4 mm long, apiculate. Style long. Stigmas 2-3, papillose. Achenes dark-brown or blackish, obovate rounded and apiculate at the top 2.5-3 x 1.7-1.9 mm, plano-convex, subtrigonus and smooth.

Syntypes: Habitat in Europe litoribus maritimis.

**A-7** El-Gubba, Ain Mara, 6 May 1934, *R. Pampanini et Pichi Sermolli* 1189 (FI.); El-Hania, 8 May 1934, *R. Pampanini et P. Sermolli* 1910 (FI.); Between Barce and Tolmeta, by pond on open plateau, 14.4.1939, *N.Y. Sandwith* 2633 (K).

Distribution: Cosmopolitan.

*S. maritimus* L. and *S. tuberosus* Desf. are sometimes treated as separate species, the former is said to be European and the latter of Orient (vide Beetle, l.c.) but Cufodontis (l.c.) still considers them conspecific. However, in the absence of material in our herbarium Cufodontis has been followed. Maire (l.c.) makes no mention of *S. tuberosus* Desf.

Fl. Mar.-Dec. Vern. Smar

2. **Scirpus holoschoenus** L., Sp. Pl. 49. 1753; Durand & Barratte, l.c. 246;

## CYPERACEAE

Pamp., Plant. Trip. 42. 1914; Fl. Cir. 143. 1931; Maire, l.c. 51. fig. 597;  
Keith, l.c. 874. (Fig. 13).

*Holoshoenus vulgaris* Link, Hort. Berol. 1, 293. 1827.

Perennial herb with thick creeping rhizome. Stems tufted, erect. c. 30-250 cm high, terete 1-5 mm in diam., rigid, cylindrical, rush-shaped, leafless. Leaves reduced into sheaths, sheaths rarely rigid, long and leaf like. Sheaths brown, coriaceous, striate, dilated, ± erect, imbricate, dissociated into reticulate filaments chiefly towards the ventral face. The lower sheaths ovate or ovate-lanceolate, acuminate, the upper ones usually with limb, erect, canaliculate, rigid, scabrous towards the margins only. Leafy bracts usually 2, the lower most erect, prickly, appearing as if continuation of stem, longer than the inflorescence, the upper one much shorter. Inflorescence simple or compound, sometimes reduced into one cluster of spikelets. Spikelets condensed in globose capitula, 5-12 mm in diam., ovate, many flowered, rachis erect and wingless. Glumes navicular, keeled, obovate, rounded and mucronate, 7-nerved, brown, ± hyaline towards the margins and keel, ± denticulate-laciniate, or slightly laciniate towards the margins, somewhat hispid towards the keel, perianth bristles 0. Stamens 3, anthers exserted, yellowish, linear 1-2 mm, the connective prolonging into ± papillose apicule. Style slender and short. Stigmas 3, exserted, papillose 1.5-3 mm. Achene 1-1.25 x 0.8 mm, plano-convex, subtrigonus, obovate, apiculate, greenish black, transversely slightly reddish-cristulate.

Type: Habitat in Europa Australi

**A-2** Ain Rumia, Yefren, 1.12.1967, *L. Boulos* 1848 (ULT); Ain Zarga Jado, 600 m by stream, tufted, perennial, 17.8.1970, *Davis* 49672 (Eid) ssp. *globiferous* Wadi c. 2-5 km from Yefren limestone soil 5.6.1974, *B. Faris* 390 (ULT); **A-3** Tripoli, 14.6.1978, *A.D. Ahmed* 6-AD (ULT); Wadi Ka'am 15.4.1978, *Fathi, Siddiqi & Ramadan* 174/Z (ULT); Afset Ennagha c. 21 km West of Tarhuna, forming a community near underground water wells up to 2 m high 9.10.1977, *A. El-Gadi* 310 (ULT); Sharshara 25.3.1976, *F.B. Rateeb* 36 (ULT); Wadi Ka'am, 1.5 m high growing in large tufts 22.4.1939, *N.Y. Sandwith* 2711; *N.D. Simpson* 39653 (BM) ssp. *globiferous*; **A-7** Wadi Latrun Derna-Susa coastal road, 11.3.1968, *L. Boulos* 2. 56 (ULT); Wadi Derna, 14.3.1968, *L. Boulos* 389, 2456 (ULT); *Ras-El-Hilal*, 15.5.1978, *M. Meshina* 94 (ULT); Shahat, 5.5.1978, Gazala and *O. Shetawi* 8. 29 (ULT).

Distribution: Europe, Mediterranean region, C. & W. Asia, S. Africa, Canaries.

CYPERACEAE



Fig. 13 - *Scirpus holoschoenus*: A, habit x 1; B1 x 2, B2 x 1, flowering branch variation; C, floret with glume removed x 10; D, glume x 10; E, fruit x 25; F, a spike from flowering head x 5.

## CYPERACEAE

Fl. July-Sept.

Vern. Dees

3. **Scirpus cernuus** Vahl. Enum. 2. 245. 1806; Maire l.c. 57. fig. 600; Keith, l.c. 874.

*S. savii* Seb. et. Maur., Fl. Rom., 22. 1808; Durand & Barratte, l.c. 256; Pamp., Pl. Trip. 43. 1914; *Isolepis savii* Hab. Consp. fl. Graec. 3. 308. 1904.

Perennating annual herb. Stems tufted, 3-30 cm, setaceous. Sheaths yellowish brown or brown. Leafy bracts 1, appearing as if continuation of stem, short, slightly longer than the inflorescence. Inflorescence usually reduced into one spikelet, sometimes 2-3 spikelets. Spikelets ovate, 1.5-5 mm long, with 4-20 flowers, greenish or brown, rachis erect, slightly winged. The lowest glume often prolonging into a short green limb, appearing as 2nd glume, leafy bract, bearing one flower in its axil. Glumes ovate, rounded, navicular rounded towards back and base, inferiorly keeled, acute or the superior glume obtuse, 9-11 nerves, glabrous and smooth. Perianth bristles 0. Stamens 2, anthers pale yellow, linear-oblong, c. 0.6 mm, briefly apiculate. Style slender, short. Stigmas 3, papillose, brownish, exserted. Achene 0.75-0.9 x 0.6-0.75 mm, greyish-brown, obtuse, trigonous, briefly apiculate.

Type: Habitat in Lusitania.

Reported by Durand and Barratte (l.c.) from Tajaura, Ain Zara etc.

Distribution: Almost Cosmopolitan.

4. **Scirpus litoralis** Schrad., Fl. Germ. 1. 142. 1806; Durand & Barratte, l.c. 247; Pamp., Pl. Trip. 43. 1914; Prodr. Fl. Cir. 143. 1931; Corti, Fl. Fezz. 62. 1942; Maire, l.c. 65. fig. 603; Keith, l.c. 376 (Fig. 14).

*S. aegyptiacus* Decne. in Ann. Sc. Nat. Ser. II. 4: 196. 1835; *Schoenoplectus litoralis* (Schrad.) Palla in Sitzb. Zool.-bot. Ges. Wien. 38: 49. 1888.

Perennial dark green herb with short, thick creeping rhizome. Stems erect 60-100 cm high and c. 1 cm diam., sharply trigonous, glabrous and smooth, sometimes terete at the base, triangular below the inflorescence. Leaves reduced into membranous sheaths, 4-20 cm long, splitting into fibres. Leafy bracts 2; the inferior one erect appearing as a continuation of the stem, c. 2-4.8 mm as long as the inflorescence,

CYPERACEAE

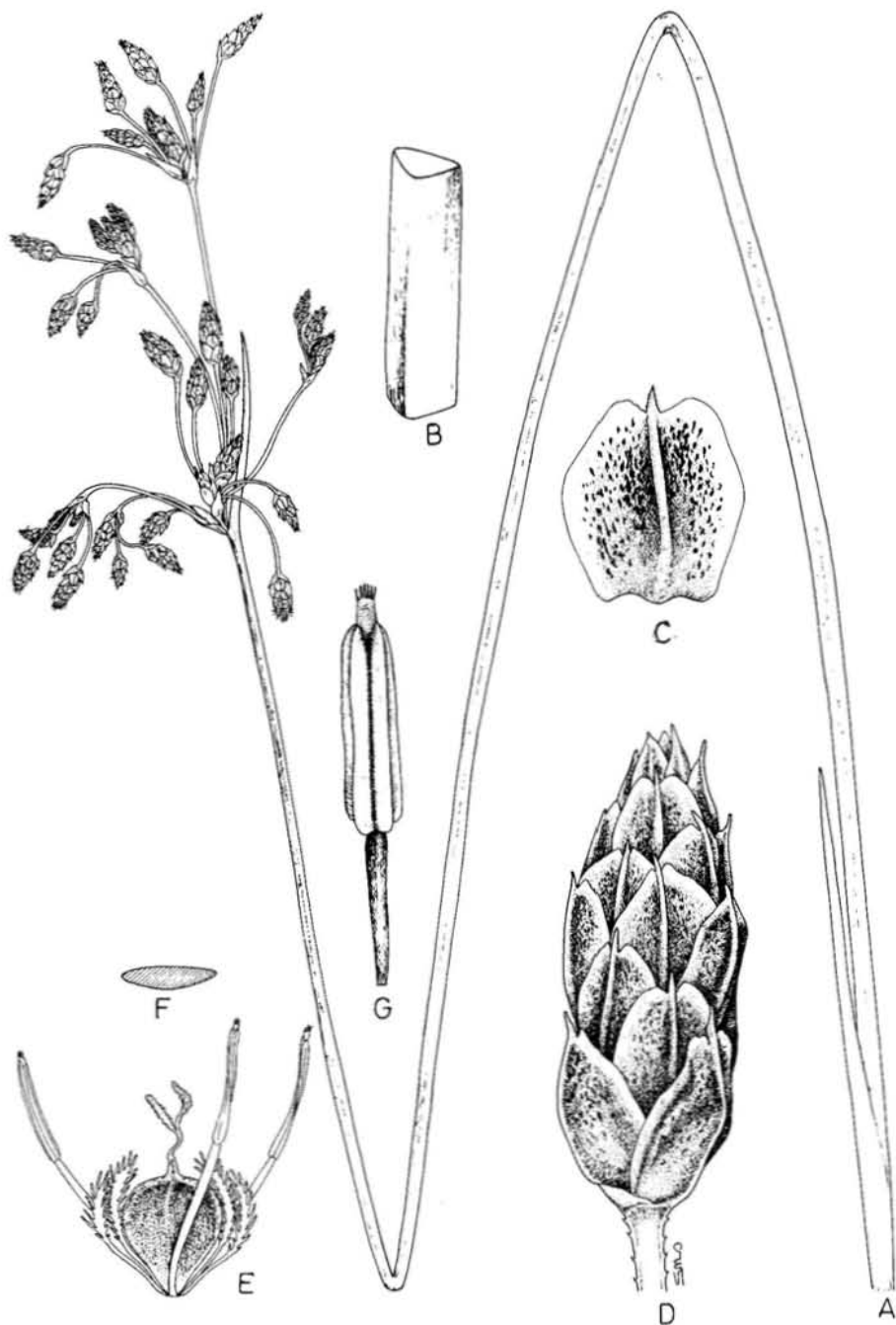


Fig. 14 - *Scirpus littoralis*: A, flowering branch x 1; B, portion of stem x 5; C, glume x 10; D, spikelet x 8; E, flower with glume removed x 10; F, t.s. of ovary x 10; G, stamen x 20.



## CYPERACEAE

sometimes shorter, the superior bract-like, c. 0.5-1.5 cm long, dilated at the base. Inflorescence compound umbel with solitary peduncled spikelets, rarely sessile; rays up to 5 cm long. Spikelets oblong 6-12 x 2.5-4 mm, rachis wingless, erect. Glumes ovate 3-4 x 1.5-3.5 mm brownish with green projecting keel, hyalinous towards the margins, rounded or slightly emarginate at the top with short c. ½ mm long, scabrous mucro. Perianth bristles 4, equalling or longer than the achene. Stamens 3, anthers pale-yellow, linear, 1.8-2 mm long, the connective prolonging into a short reddish, hispid appendix. Style long. Stigmas 2. Achene brownish to blackish 1.5-2 x 1-1.7 mm, obovate, apiculate.

Syntypes: "In maritimis inundatis prope Duino et Monfalcone", *Wulfen*.

**A-3** Wadi Ain Ka'am 18.4.1978, *Salwa H.H.* 5 (ULT).

Distribution: S. Europe, W. Tropical Africa and Tropical S. W. Asia.

*Fl.* Mar.-Aug.

5. ***Scirpus lacustris*** L., Sp. Pl. 48. 1753; Durand & Barratte, l.c. 246; Pamp., Pl. Trip. 43. 1914; Prodr. Fl. Cir. 143. 1931; Maire, l.c. 61. Fig. 602; Keith, l.c. 846.

*S. tabernaemontani* Gm., Fl. Bad. 1: 101. 1805; *S. lacustris* ssp. *tabernaemontani* (Gm.) Syme, Engl. Bot. ed. 10. 3: 63. 1870.

Perennial glaucous herb with long creeping rhizome. Stems tall, leafless, c. 0.8-3 m. and 1.5 cm in diam., erect or slightly curved, glabrous and smooth, sheathing at base, inferior sheaths brown blue, usually dissociated into reticulate fibres; the upper sheaths greenish with short limb, plane or canaliculate, erect, glabrous, long, obtuse, sometimes covered with very long ribbons. Leafy bracts 1-5, the inferior one appearing as if stem continuation, sheathed at the base, cylindrical, green little longer than the inflorescence or shorter, the upper one ± ascending, scale-like with one very short, foliaceous point, sometimes reduced into a mucro. Inflorescence simple or compound with glomerated spikelets and the central ones usually sessile, the lateral ones ± with long peduncles, c. 10 cm long. Spikelets ovate or oblong up to 11 mm long, many flowered; rachis erect, wingless. Glumes usually deep reddish-brown, pale towards the edges, 1-nerved, ovate, acute or obtuse and emarginate, mucronate,

## CYPERACEAE

± keeled, fimbriate, ciliate towards the margins and sometimes towards the keel, sometimes pilose or papillose towards the back. Perianth bristles 6, scabrous, rough, retrorse, little-longer than the achene or shorter. Stamens 3, anthers pale-yellow, the filament brown black, prolonging into reddish papillose apicule or hispid. Style slender, long. Stigmas 2-3 long, brown, papillose exerted. Achene little smaller than the glume 2.3 x 1.2-2 mm, ovate, apiculate, plano-convex, often sub-trigonous, greyish, smooth.

Syntypes: "In Europae aquis puris stagnantibus et fluviatibus".

**A-7** El Gubba Ain Mara, Scerscera, 6.5.1934, *Pampanini et Pichi-Sermolli* 1191 (Fl.) under syn. *tabernaemonti*.

Distribution: Europe, Asia, Africa, Australia, North and Central America.

Fl. Mar.-July

Vern. Smar

### 6. CLADIUM

P. Br., His. Jamaic. 114. 1756.

Mostly perennial robust plants of varied habits, with horizontal creeping rhizome. Stems tall and leafy throughout or only at the base, sometimes rush-like with all the leaves reduced to sheathing scales. Leaves either terete and continuous or marked with transverse septa or vertically flattened. Inflorescence in terminal and often with lateral panicles. Spikelets 1-3-flowered, rarely (4-6). Flowers usually hermaphrodite, sometimes the upper or lower males. Glumes imbricate, 3-ranked, keeled, the lower 1-4 sterile. Perianth bristles 0. Stamens 3, rarely 1-2. Style linear with swollen base. Stigmas 3, rarely 2. Achene trigonous to globular, smooth.

c. 50 species of tropical and temperate regions especially in Australia; represented in Libya by 1 species.

**Cladium mariscus** (L.) R. Br., Prodr. 1. 92. 1810; Durand & Barratte, Fl. Lib. Prodr. 247. 1910; Pamp., Pl. Trip. 41. 1914; Maire, Fl. Afr. Nord. 4: 95. Fig. 620. 1957; Keith, l.c. 375.

*Schoenus mariscus* L., Sp. Pl. 42. 1753; *C. durandoi* Chabert, B. Soc. Bot. France, 36. 321. 1889; *Mariscus serratus* Gilib, Exerc. 2, 512. 1792; *Scirpus*

## CYPERACEAE

*sylvaticus* Poiret, Voyage Barb. 2. 91. 1789; non L. (1753).

Perennial herb with horizontal creeping rhizome. Stems 70-200 cm high, leafy up to the inflorescence and often producing leafy branches from the upper axils. Leaves nearly erect and flat, the upper part and margins serrate. Inflorescence compound terminal umbel accompanied by lateral umbels, all forming a leafy panicle of c. 50 cm long. Spikelets in small numerous clusters c. 12-30, each spikelet c. 3-4.5 mm long, rusty-brown, ovoid, oblong or lanceolate. Rachis erect, short, glabrous wingless. Glumes 5-7, broad, short, obtuse, ovate to ovate-lanceolate, 1 nerved, membranous, 1-2 superior glumes fertile. perianth bristles 0. Stamens 2, anthers 2, pale-yellow apiculate. Style elongated, slender. Stigmas 2, (3) papillose. Achene nearly as long as the glume, ovate or ovate-lanceolate.

Type: "Habitat in Europae paludibus".

**A-3** Ain Zara near water, 22.4.1913, *R. Pampanini* 3450 (FI.); 19.2.1912, *R. Pampanini* 115 (FI.); Tajaura, 21.11.1912, *R. Pampanini* 127 (FI.); 22.11.1931, Zodde (FI.).

Distribution: Nearly cosmopolitan.

*Fl.* Apr.-Aug.

### 7. FIMBRISTYLIS

Vahl, Enum. 2: 285. 1806.

Annual or perennial herbs. Rhizome absent or very short. Stems  $\pm$  leafy. Inflorescence a terminal umbel, simple or compound or in a single terminal spikelet. Spikelets many flowered, the 2 inferior glumes sterile, the superior flowers usually males, fertile glumes in 3 or more spikelets. Perianth bristles 0. Stamens 3 rarely 1-2, anthers linear oblong, muticous. Styler base flattened. Stigmas 2 or 3.

c. 300 species of tropical and subtropical regions; represented in Libya by 1 species.

***Fimbristylis ferruginea* (L.) Vahl, Enum. 2. 291. 1806; Corti, Fl. Veg. Fezz. 64. 1942; Keith, l.c. 503; Maire, Fl. Afr. Nord 4: 86. Fig. 615. 1957.**

*Scirpus ferrugineus* L., Sp. Pl. ed. 2: 74. 1762.

## CYPERACEAE

Biennial or perennial glabrous herb. Stems densely tufted, 15-80 cm long, erect, rigid. Leaves few, short, hairy or glabrous, lamina narrow, linear usually shorter than the sheath. Leafy bracts 3-5, shorter than the umbel or at least the inferior one exceeding the inflorescence. Umbel simple or compound. Spikelets few 5-10, sometimes reduced to 1 or 2, dark or light in colour, varying in size,  $\pm 8-15 \times 4$  mm, oblong densely flowered; rachis not winged, erect, glabrous. Inferior sterile glumes narrow, pubescent prolonging into a green ciliate, scabrous aristule. Superior fertile glumes large, ovate, yellow at the base, pubescent and dense towards the inferior half, obovate, subacute at the top, the inferior often mucronate, uninerved, weakly keeled c. 4 mm long. Stamens 3, anthers linear c. 1 mm. Style long, flattened, villose on the margins, dilated at the base. Stigmas 2, linear-lanceolate. Achene nearly  $\frac{1}{2}$  the length of the glume, obovate, biconvex, smooth, pale-yellow becoming brown.

Type: In Jamaica paludibus maritimis, *Sloane*.

**E-1** West of Fezzan, Ghat area, Elbarcat 700 mm, 2.3. 1934, *R. Corti* 698 to 705 (FI.).

Distribution: Tropical and subtropical regions.

A rare species in our area, confined to the southern parts only.

*Fl.* May-Nov.

## INDEX TO CYPERACEAE

<i>Bolboschoenus maritimus</i> (L.) Palla	35
<b>Carex</b> L.	2
<i>C. brizoides</i> Poir.	5
<b>C. distans</b> L.	10
<i>C. diversicolor</i> Druce	7
<b>C. divisa</b> Huds.	5
<b>C. extensa</b> Good.	12
<b>C. flacca</b> Schreb.	7
<i>C. glauca</i> Scop.	7
<b>C. Sp.</b>	8
<b>C. illegitima</b> Cesate	3
<i>C. nervosa</i> Desf.	12
<i>C. schoenoides</i> Desf.	5
<b>Cladium</b> P. Browne	41
<i>C. durandoi</i> Chabert	41
<b>Cladium mariscus</b> (L.) R. Br.	41
<b>Cyperus</b> L.	13
<i>C. aegyptiacus</i> Glox	20
<b>C. alternifolius</b> L.	18
<i>C. aureus</i> Ten.	26
<i>C. badius</i> Desf.	24
<b>C. capitatus</b> Vand.	20
<b>C. conglomeratus</b> Rottb.	22
<i>C. densifolius</i> Nees ex Kunth	16
<b>C. esculentus</b> L.	26
<b>C. fuscus</b> L.	20
<b>C. fuscus</b> L. var. <i>virescens</i> (Hoffm.) Vahl	20
<b>C. kalli</b> (Forsk.) Murbeck.	20
<b>C. laevigatus</b> L.	14
<b>C. longus</b> L.	24
<i>C. longus</i> L. ssp. <i>badius</i> (Desf.) Murb.	24
<i>C. melanorhizus</i> Delile	26
<i>C. mucronatus</i> (L.) Mabilie	20

<b>C. mundtii</b> (Nees) Kunth.	16
<i>C. olivaris</i> Targ. - Tozz.	27
<b>C. papyrus</b> L.	17
<b>C. rotundus</b> L.	27
<i>C. rotundus</i> ssp. <i>tuberosus</i> Rottb.	27
<i>C. schoenoides</i> Griseb.	20
<i>C. tetrastachyos</i> Desf.	27
<i>C. tuberosus</i> Rottb.	27
<i>C. turfusus</i> Salzm.	16
<i>C. virescens</i> Hoffm.	20
<b>Eleocharis</b> R. Br.	31
<i>E. caduca</i> (Delile) Schult.	32
<b>E. caribaea</b> (Rottb.) Blake	32
<i>E. ovata</i> (Roth.) Roem et Sch.	32
var. <i>graetula</i> Maire	32
<b>E. palustris</b> (L.) R. Br.	31
<b>Frimbristylis</b>	42
<b>F. ferruginea</b> (L.) Vahl.	42
<i>Heleocharis</i> Lestib.	31
<i>Holoshoenus vulgaris</i> Link	36
<i>Isolepis savii</i> Hab.	38
<i>Juncellus</i> (Griseb.) Clarke	13
<i>Juncellus laevigatus</i> (L.) C.B. Clarke	14
<i>Juncus maritima</i> Lamk.	12
<i>Mariscus serratus</i> Gilib.	41
<i>Pycreus</i> Beauv	13
<i>Pycreus laevigatus</i> (L.) Nees	14
<i>P. mundtii</i> Nees	16
<i>Schoenoplectus litoralis</i> (Schrad.) Palla	38
<b>Scirpus</b> L.	34
<i>S. aegyptiacus</i> Decne	38
<i>S. caribaeus</i> Rottb.	32
<b>S. cernuus</b> Vahl.	38
<i>S. ferrugineus</i> L.	42
<b>S. holoshoenus</b> L.	35

<i>S. kalli</i> Forsk.	20
<b>S. lacustris</b> L.	40
<i>S. lacustris</i> ssp. <i>tabernaemontani</i> (Gm.) Syme	40
<b>S. littoralis</b> Schrad.	38
<b>S. maritimus</b> L.	34
<i>S. maritimus</i> var. <i>tuberosus</i> (Desf.) Roem. et Schult	35
<i>S. palustris</i> L.	31
<i>S. savii</i> Seb. et Mur.	38
<i>S. sylvaticus</i> Poiret	41-42
<i>S. tabernaemontani</i> Gmel	40
<i>S. tuberosus</i> Desf.	34
<b>Shoenus</b> L.	29
<i>S. mariscus</i> L.	41
<i>S. mucronatus</i> L.	20
<b>S. nigricans</b> L.	29