

A check list of the freshwater algal flora of Sierra Leone, Tropical West Africa. I. Cyanophyceae to Conjugatophyceae (exclusive of Bacillariophyceae)

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ABSTRACT Up to present, this is the first check list of the non marine algal flora of Sierra Leone. In this first part 468 taxa, exclusive of diatoms, are reported. For each taxa, the updated nomenclature and the finding localities with references are given.

KEY WORDS Check list, freshwater algae, Sierra Leone, Tropical Africa.

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INTRODUCTION

The first publication on the freshwater algal flora of Sierra Leone (Tropical West Africa) dates back to O'Meara (1876) who, during a meeting of the Dublin Microscopical Club, reported the finding of some *Coscinodiscus* (centric diatoms) in samples from Rockett River. After that only in 1958 Woodhead & Tweed in a check list of the algal flora of the West Africa reported some algae themselves collected in Sierra Leone, Sula Hills (Woodhead & Tweed, 1958); in subsequent papers these authors (1959; 1960) described several new species, that for the extremely poor quality of iconography were considered suspected and in any case invalidly published (Grönblad et al., 1968; Gerrath & Denny, 1979). All the records of Woodhead & Tweed (loc. cit.) except for the newly but invalid described taxa, were not substantiated by any illustration. For all these reasons in this check list the species reported in their papers will not be taken into account.

The first data that can be considered valid for the compilation of this check list are those reported in Mölder (1962) who listed several diatoms collected in Kangari and Sula. Brandham (1967) described a new species of *Micrasterias* from the samples in the collection of Wood-

head & Tweed; Grönblad et al. (1968) published the desmid flora of Njala and Kabala, with several species new to science and Whitton (1968) a list of Cyanophyceae from the North and North West Area.

From 1979 to 1994 several researches were carried out on the freshwater algal flora of Sierra Leone: Alfinito & Mazzoni (1986); Alfinito et al. (1989; 1990; 1994); Carter & Denny (1982; 1987; 1992); Gerrath & Denny (1979; 1980; 1980a; 1988; 1989); Fumanti (1994); Fumanti et al. (1990); Mazzoni (1986); Ricci & Alfinito (1994) and Ricci et al. (1990).

Altogether 14 taxa were described as new:

Cystodinium sonfonense Gerrath et Denny, 1980
Actinotaenium wollei (Grönbl.) Teiling v. *latius* Croasdale in Grönblad et al. 1968

Cosmarium exiguum Archer f. *ocellatum* Grönblad et Croasdale in Grönblad et al., 1968

Cosmarium rossi Ricci in Ricci & Alfinito, 1994
Cosmarium wenmanae Croasdale in Grönblad et al., 1968

Docidium lomaense Alfinito et Mazzoni, 1986
Euastrum divaricatum Lundell v. *ugandanum* Grönblad in Grönblad et al., 1968

Micrasterias echinata Brandham, 1967
Micrasterias mahabuleshwarensis Hobson v. *comperei* Couté et Rousselin v. *semireducta* Scott et Croasdale in Grönblad et al., 1968

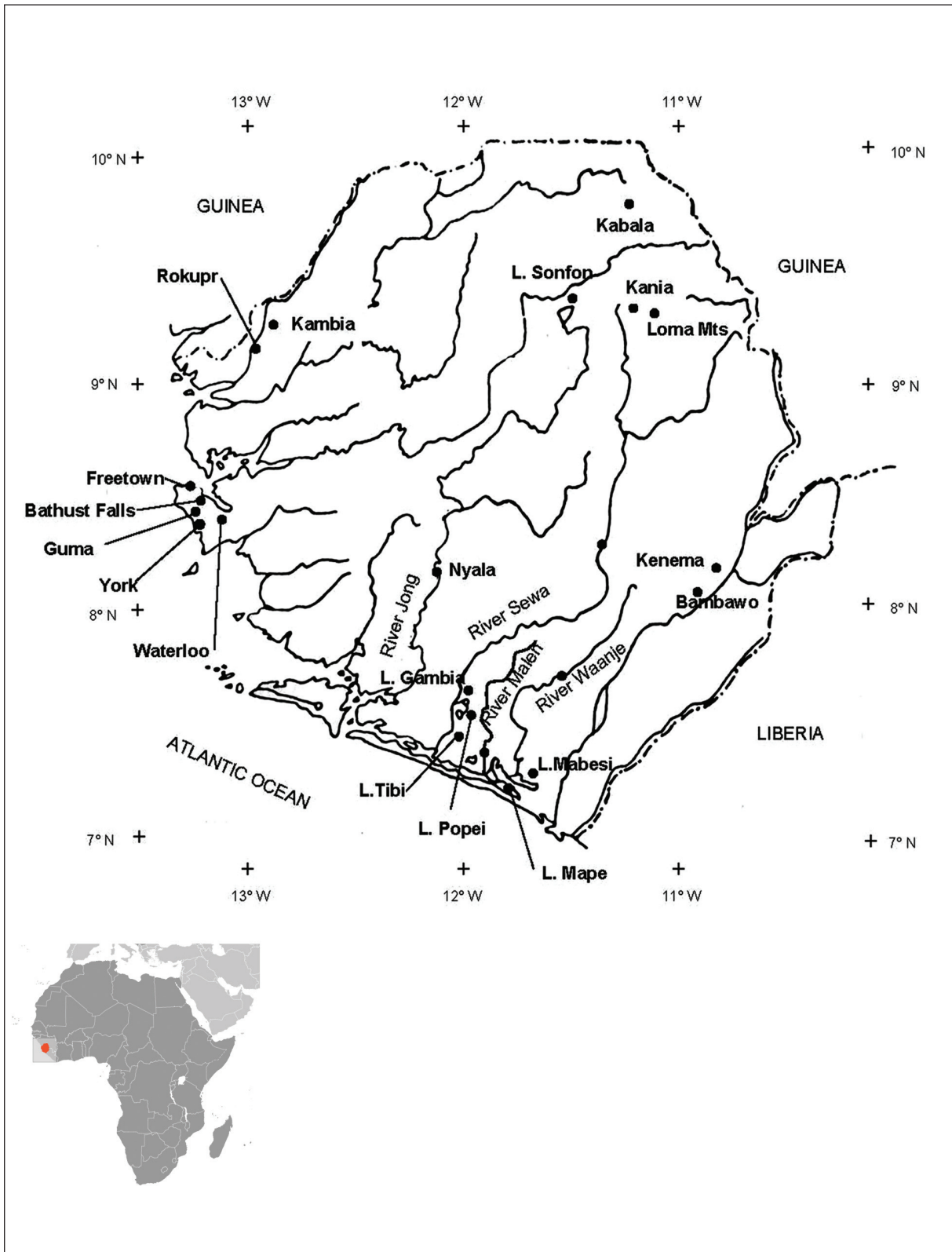


Figure 1. Map of Sierra Leone showing the investigated sites.

Penium cylindraceum Förster f. *majus* Croasdale in Grönblad et al., 1968

Staurastrum contectum Turner f. *concauum* Scott et Croasdale in Grönblad et al., 1968

Staurastrum histrix Ralfs v. *granulatum* Ricci in Ricci et al., 1990

Staurastrum setigerum Cleve v. *pectinatum* West et West f. *paucispiniferum* Croasdale in Grönblad et al., 1968.

Staurastrum spiculiferum Borge v. *glabrum* Gerrath et Denny, 1988

MATERIAL AND METHODS

This first part of the check list, concerning 25 localities, lists all the algal groups, exclusive of diatoms, for a total of 468 taxa, distributed as follows in the different algal classes: Cyanophyceae: 38; Chrysophyceae: 2; Xanthophyceae: 1, Raphidophyceae: 1; Cryptophyceae: 2; Dinophyceae: 7; Euglenophyceae: 73; Prasinophyceae: 1; Chlorophyceae: 55; Conjugatophyceae: 288.

All the taxa reported only as "sp." or with "cfr." but with an iconographic documentation, were taken into account. Those genera cited only as "spp." were counted only as genera.

In the check list, the classification of the algae, given in van den Hoek et al. (1995), was followed at classes level.

For taxa nomenclature checking references used were:

Cyanophyceae: Anagnostidis & Komárek, 1989, 1990; Komárek & Anagnostidis, 1999; 2005; Komárek & Hauer, 2011.

Chrysophyceae: Starmach, 1985.

Xanthophyceae: Ettl, 1978.

Raphidophyceae and Cryptophyceae: Huber-Pestalozzi, 1950.

Dinophyceae: Popovský & Pfiester, 1990.

Euglenophyceae: Huber-Pestalozzi, 1955.

Prasinophyceae: Ettl, 1983.

Chlorophyceae, Volvocales: Ettl, 1983.

Chlorophyceae, Tetrasporales: Ettl & Gärtner, 1988.

Chlorophyceae, Chlorococcales: Komárek & Fott, 1983.

Chlorophyceae, Chaetophorales: Printz, 1964.

Chlorophyceae, Oedogoniales: Mrozińska, 1985.

Chlorophyceae, Conjugatophyceae: Coesel & Meester, 2007; Croasdale et al., 1983; Förster, 1982; Prescott et al., 1972; 1975; 1977; 1981; 1982; Růžička, 1977; 1981.

Investigated localities

Bambawo, stream at
Bathurst Falls (Fig. 2)
Freetown
Fourah Bay College, Freetown.
Guma Dam (Fig. 3)
Kabala, river at
Kambia
Kania, pools near (Fig. 4)
Kenema, swamp at
Lake Gambia
Lake Mabesi
Lake Malen
Lake Mape
Lake Popei
Lake Sonfon
Lake Tibi
Loma Mnts, Peak Bintimani (Figs. 5-7)
Njala
River Jong
River Malen
River Sewa
River Waanje
Rokupr
Waterloo
York, swamp at (Fig. 8)

References for Sierra Leone freshwater algae (numbers in bracket after each locality)

- 1: Brandham, 1967.
- 2: Grönblad et al., 1968.
- 3: Whitton, 1968.
- 4: Gerrath & Denny, 1979.
- 5: Gerrath & Denny, 1980.
- 6: Gerrath & Denny, 1980a.
- 7: Alfinito & Mazzoni, 1986.
- 8: Gerrath & Denny, 1988.
- 9: Alfinito et al., 1989.
- 10: Gerrath & Denny, 1989.
- 11: Alfinito et al., 1990.
- 12: Ricci et al., 1990.
- 13: Ricci & Alfinito, 1994.



Fig.2



Fig.3

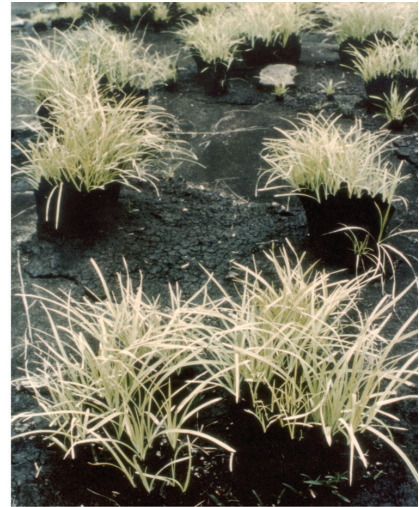


Fig.4



Fig.5



Fig.6



Fig.7



Fig.8

Figure 2. Bathurst Falls (photo W. Rossi).

Figure 3. Guma Dam, pool on lateritic soil (photo W. Rossi).

Figure 4. Little pools near Kania (photo W. Rossi).

Figure 5. Loma Mountains, Peak Bintimani (photo W. Rossi).

Figure 6. Loma Mountains, NE slope of Peak Bintimani, sampling area (photo W. Rossi).

Figure 7. Loma Mountains, NE slope of Peak Bintimani, 1650 m a.s.l., small pools on granitic rock (photo W. Rossi).

Figure 8. Swamp near York (photo W. Rossi).

CHECK LIST

CYANOPHYCEAE

CHROOCOCCALES

Aphanocapsa Nägeli, 1849*A. elachista* West et West, 1894 - Lake Tibi, Lake Sonfon (6)*Aphanothece* Nägeli, 1849*A. stagnina* (Sprengel) A. Braun, 1863 - Kambia (3); Lake Sonfon (6)*Chroococcus* Nägeli, 1849*C. turgidus* (Kütz.) Nägeli, 1849 - Without localities (6)*Eucapsis* Clements et Shantz, 1909*E. alpina* Clements et Shantz, 1909 - Lake Sonfon (6)*Gloeocapsa* Kützing, 1843*G. aeruginosa* Kützing, 1843 - Waterloo (3)*Merismopedia* Meyen, 1839*M. punctata* Meyen, 1839 - Lake Mape, River Jong, River Sewa, Lake Popei, Lake Sonfon (6)

NOSTOCALES

Anabaena Bory ex Bornet et Flahault, 1886*A. fuellebornii* Schmidle, 1902

- Guma Dam (3)

A. promecespora Fremy, 1930 forma

- Lake Popei (6)

A. torulosa (Carm.) Lagerheim ex Bornet et Flahault, 1888

- Rokupr (3)

Anabaena spp.

- Lake Mape, River Jong, Lake Popei, Lake Sonfon (6)

Calothrix Agardh ex Bornet et Flahault, 1886*C. stagnalis* Gomont, 1895 - River Jong, Bambawo, Lake Sonfon (6)*Cylindrospermum* Kützing ex Bornet et Flahault, 1888*C. majus* Kützing ex Bornet et Flahault, 1888

- Freetown (3)

C. licheniforme (Bory) Kützing ex Bornet et Flahault, 1888

- Freetown (3)

Nodularia Mertens ex Bornet et Flahault, 1886

- N. harveyana* Thuret ex Bornet et Flahault, 1888 - Lake Tibi (6)
- Scytonema* Agardh ex Bornet et Flahault, 1886
S. hyalinum Gardner, 1927 - Freetown (3)
- Tolypothrix* Kützing ex Bornet et Flahault, 1886
- T. byssoidea* (Hassal) Kirchner, 1878 - Fourah Bay College (3)
T. distorta Kütz. ex Born. et Flah., 1888
 v. *symplocoides* Hansgirg, 1892 - Fourah Bay College (3)
T. fragilis (Gardner) Geitler, 1932 - Rokupr (3)
T. mangini (Frémy) Geitler, 1932 - Guma Dam (3)
- OSCILLATORIALES**
- Arthrospira* Stitzenberger ex Gomont, 1892
- A. gigantea* (Schmidle) Anagnostidis, 1998 - Lake Gambia, Lake Popei, Lake Mabesi (6)
 = *Spirulina gigantea* Schmidle, 1902
A. jeneri Stitzenb. ex Gomont, 1892 - Lake Sonfon (6)
 = *Spirulina jeneri* (Stizenb.) Geitler, 1925
- Geitlerinema* (Anagn. et Komárek) Anagnostidis, 1989
- G. calcuttense* (Bisw.) Anagnostidis, 1989 - Guma Dam (3)
 = *Oscillatoria calcuttensis* Biswas, 1932
G. splendidum (Grev. ex Gom.) Anagnostidis, 1989 - Freetown (3); Lake Sonfon (6).
 = *Oscillatoria splendida* Greville ex Gomont, 1892
- Lyngbya* Agardh ex Gomont, 1892
- L. birgei* G.M. Smith, 1916 - Lake Mape, River Jong (6)
L. corticicola Brühl et Biswas, 1923 - Kambia (3)
L. martensiana Meneghini ex Gomont, 1892 - Lake Mape, Bambawo, Lake Sonfon (6)
L. nigra Agardh ex Gomont, 1892 - Kambia (3)
L. spiralis Geitler, 1932 - Rokupr (3)
- Oscillatoria* Vaucher ex Gomont, 1892
- O. variabilis* Rao, 1936 - Kambia (3)
 = *O. raoi* De Toni, 1939
 NOTE: *O. variabilis* is one of the unrevised species of *Phormidium* in Komárek & Anagnostidis (2005).
- O. princeps* Vaucher ex Gomont, 1892 - Lake Mape, Lake Sonfon (6)
O. subbrevis Schmidle, 1901 - Lake Mape, Lake Mabesi, River Jong, River Sewa, Lake Sonfon (6)
O. tenuis Agardh ex Gomont, 1892 - Lake Popei, River Jong, Lake Sonfon (5)
- Phormidium* Kützing ex Gomont, 1892
- P. digueti* (Gom.) Anagnostidis et Komárek, 1988 - Lake Sonfon (6)
 = *Lyngbya digueti* Gomont, 1895
P. kuetzingianum (Kirchn.) Anagnostidis et Komárek, 1988 - Kambia (3)
 = *Lyngbya kuetzingiana* Kirchner, 1878

P. okeni (Agardh ex Gom.) Anagnostidis et Komárek, 1988 - Freetown (3)
= *Oscillatoria okeni* Agardh ex Gomont, 1892

Spirulina Turpin ex Gomont, 1892

S. major Kützing ex Gomont, 1892 - York (3); Lake Mape, Lake Popei (6).

Symplocastrum (Gomont) Kirchner, 1898

S. muelleri (Nägeli ex Gomont.) Anagnostidis, 2001 - Kambia (3)
= *Schizothrix muelleri* Nägeli ex Gomont, 1892

STIGONEMATALES

Hapalosiphon Nägeli in Kützing ex Bornet et Flahault, 1886

H. arboreus West et West, 1894 - Lake Sonfon (6)

H. flexuosus Borzi, 1892 - Lake Popei (6)

CHRYSOPHYCEAE

OCHROMONADALES

Dinobryon Ehrenberg, 1835

D. sertularia Ehrenberg, 1838 - Lake Tibi (6)

D. sertularia v. *protuberans* (Lemm.) Krieger, 1930 - Lake Gambia, River Waanje, Lake Tibi,
Lake Mape (6)

XANTHOPHYCEAE

MISHOCOCCALES

Ophiocytium Nägeli, 1849

O. majus Nägeli, 1849 - Lake Sonfon (6)

RAPHIDOPHYCEAE

VACUOLARIALES

Gonyostomum Diesing, 1866

G. semen (Ehr.) Diesing, 1866 - Lake Sonfon (6)

CRYPTOPHYCEAE**CRYPTOMONADALES***Cryptomonas* Ehrenberg, 1831*C. marssonii* Skuja, 1848*C. ovata* Ehrenberg, 1832

- River Malen, Lake Sonfon (6)
- Lake Mape, River Waanje, Lake Popei, Lake Tibi, River-Jong, Lake Sonfon (6)

DINOPHYCEAE**PERIDINIALES***Ceratium* Schrank, 1793*C. brachyceros* Daday, 1907*C. hirundinella* (O. F. Müller) Dujardin, 1841 forma

- Lake Sonfon (6)
- Lake Mape, River Waanje, River Jong (6)

Gymnodinium Stein, 1878*G. fuscum* (Ehr.) Stein, 1878

- Lake Tibi, Lake Gambia (6)

Peridinium Ehrenberg, 1832*P. umbonatum* Stein, 1883= *P. inconspicuum* Lemmermann, 1899

- Lake Mape, River Waanje, Lake Gambia (6)

DINOCOCCALES*Cystodinium* Klebs, 1912*C. sonfonense* Gerrath et Denny, 1980

- Lake Sonfon (6)

Stylodinium Klebs, 1912*S. globosum* Klebs, 1912= *S. cerasiforme* Pascher, 1927

- Lake Sonfon (6)

Tetradinium Klebs, 1912*T. javanicum* Klebs, 1912

- Lake Sonfon (6)

EUGLENOPHYCEAE**EUGLENALES***Astasia* Dujardin, 1841*A. torta* Pringsheim, 1942

- Lake Sonfon (4)

Entosiphon Stein, 1878

- E. sulcatum* (Dujardin) Stein, 1878 - Lake Sonfon (4)
Entosiphon sp. - Lake Sonfon (4)
- Euglena* Ehrenberg, 1838
- E. acus* Ehrenberg, 1838 - Lake Tibi, Lake Mabesi, Lake Sonfon (4)
E. charkowiensis Swirenko, 1913 - River Waanje, Lake Gambia, Lake Tibi, Lake Sonfon (4)
- E. geniculata* Dujardin, 1841 - Lake Sonfon (4)
E. gracilis Klebs, 1883 - Lake Sonfon (4)
E. limnophila Lemm., 1898 v. *lemmermannii* Drezelpolsky, 1925 - Lake Sonfon (4)
E. oblonga Schmitz, 1884 - Lake Sonfon (4)
E. spirogyra Ehrenberg, 1838 v. *suprema* Skuja, 1932 - Lake Sonfon (4)
E. viridis Ehrenberg, 1830 - Lake Sonfon (4)
Euglena sp. 1 - Lake Sonfon (4)
Euglena sp. 2 - Lake Malen (4)
- Gyropaigne* Skuja, 1939
- G. lefevrei* Bourrelly et Georges, 1951 - Lake Sonfon (4)
- Lepocinclis* Perty, 1849
- L. acuta* Prescott, 1949 - Lake Sonfon (4)
L. fusiformis (Carter) Lemm. em. Conrad, 1934 - Lake Sonfon (4)
v. *fusiformis* f. *fusiformis*
L. fusiformis v. *fusiformis* f. *lemmermannii* (Conrad) Huber-Pestalozzi, 1955 - Lake Sonfon (4)
= *L. fusiformis* (Carter) Lemm., 1901 v. *lemmermannii* Conrad, 1935
L. fusiformis v. *amphirhynchus* Nygaard, 1949 - Lake Sonfon (4)
L. marssonii Lemmermann em. Conrad, 1935 - Lake Sonfon (4)
L. ovum (Ehr.) Lemmermann, 1910 v. *ovum* - Lake Sonfon (4)
L. ovum v. *angustata* (Defl.) Conrad, 1935 - Lake Tibi (4)
L. ovum v. *globula* (Perty) Lemmermann, 1910 - Lake Sonfon (4)
L. texta (Dujardin) Lemmermann em. Conrad, 1935 - Lake Sonfon (4)
Lepocinclis sp. - Lake Sonfon (4)
- Menoidium* Perty, 1852
- M. gracile* Playfair, 1921 - Lake Sonfon (4)
- Notosolenus* Stokes, 1884
- Notosolenus* sp. - Lake Sonfon (4)
- Phacus* Dujardin, 1841
- P. acuminatus* Stokes, 1885 forma - Lake Sonfon (4)
P. atraktoides Pochmann, 1942 - Lake Sonfon (4)
P. brachykentron Pochmann, 1942 forma - Lake Sonfon (4)
P. brevicaudatus (Klebs) Lemmermann, 1910 - Lake Gambia (4)
P. contortus Bourrelly, 1952 v. *complicatus* Bourrelly, 1952 - Lake Sonfon (4)
P. ephippion Pochmann, 1942 - Lake Mape (4)
P. glaber (Defl.) Pochmann, 1942 - Lake Sonfon (4)
P. hamatus Pochmann, 1942 - Lake Sonfon (4)

- P. inflexus* (Kisselew) Pochmann, 1942 - Lake Sonfon (4)
P. longicauda (Ehr.) Dujardin, 1841 v. *longicauda* - Lake Sonfon (4)
P. longicauda v. *major* Swirenko, 1915 - Lake Sonfon (4)
P. longicauda v. *rotunda* (Pochm.) Huber-Pestalozzi, 1955 - Lake Mabesi (4)
P. meson Pochmann, 1942 - Lake Mabesi (4)
P. onyx Pochmann, 1942 - Lake Sonfon (4)
P. orbicularis Hübner, 1896 - River Waanje, Lake Sonfon (4)
P. pleuronectes (Müller) Dujardin, 1841 forma - Lake Mabesi, Lake Sonfon (4).
P. polytrophos Pochmann, 1942 - Lake Sonfon (4)
P. pseudonordstedtii Pochmann, 1942 - Lake Sonfon (4)
v. *minuscola* (Conrad) Huber-Pestalozzi, 1955 - Lake Sonfon (4)
P. stokesii Lemmermann, 1910 - Lake Sonfon (4)
P. tortus (Lemm.) Skvortzow, 1928 - Lake Malen, Lake Sonfon (4)
P. undulatus (Skvortz.) Pochmann, 1942 - Lake Sonfon (4)
P. viguieri Allorge et Lefèvre, 1930 - Lake Sonfon (4)
Phacus sp. 1 - Lake Sonfon (4)
Phacus sp. 2 - Lake Sonfon (4)
- Strombomonas* Deflandre, 1930
- S. fluviatilis* (Lemm.) Deflandre, 1930 - Lake Mabesi (4)
S. schauinslandii (Lemm.) Deflandre, 1930 - Lake Mabesi, Lake Malen (4)
S. tambowika (Swir.) Deflandre, 1930 - Lake Mabesi (4)
S. tetraptera Balech et Dastugue, 1937 - Lake Mabesi (4)
S. verrucosa (Daday) Deflandre, 1930 - Lake Mabesi (4)
v. *zmiewika* (Swir.) Deflandre, 1930
- Trachelomonas* Ehrenberg, 1833
- T. abrupta* Swirenko em. Defl., 1926 - River Waanje, River Jong, Lake Sonfon (4)
T. armata (Ehr.) Stein, 1833 - Lake Mabesi, Lake Sonfon (4)
T. crispa Balech, 1944 - Lake Sonfon (4)
T. dubia Swirenko em. Deflandre, 1926 - Lake Sonfon (4)
T. globularis (Awer.) Lemmermann, 1910 - Lake Sonfon (4)
v. *punctata* Skvortzow, 1917 - Lake Sonfon (4)
T. hispida (Perty) Stein, 1883 v. *hispida* - Lake Sonfon (4)
T. hispida v. *crenulatocollis* (Maskell) Lemmermann, 1910 - Lake Sonfon (4)
T. hispida v. *duplex* Deflandre, 1926 - River Jong (4)
T. intermedia Dangeard, 1902 - Lake Sonfon (4)
T. janczewskii Drezelp., 1921 var. *minor* Drezelpolski, 1925 - Lake Sonfon (4)
T. naviculiformis Defl., 1926 v. *bourellyi* Huber-Pestalozzi, 1955 - Lake Sonfon (4)
T. oblonga Lemmermann, 1899 - Lake Mape, Lake Sonfon (4)
T. scabra Playfair, 1915 forma - Lake Mabesi (4)
T. speciosa Deflandre, 1926 - Lake Sonfon (4)
T. superba Swirenko em. Deflandre, 1926 - Lake Sonfon (4)
T. volvocinopsis Swirenko, 1914 - Lake Mape, Lake Sonfon (4)
T. woycickii Koczwara, 1915 - Lake Sonfon (4)
T. zingeri Roll, 1925 - Lake Sonfon (4)

PRASINOPHYCEAE

POLYBLEPHARIDALES

Pyramimonas Schmarda, 1849

- P. tetrarynchus* Schmarda, 1849 - Lake Sonfon (5)

CHLOROPHYCEAE**VOLVOCALES***Chlamydomonas* Ehrenberg, 1833*C. pseudotarda* Bourrelly, 1951

- Lake Sonfon (5)

Chlamydomonas sp.

- Lake Sonfon (5)

Eudorina Ehrenberg, 1831*E. elegans* Ehrenberg, 1831

- Lake Malen, River Jong (5)

Pandorina Bory, 1824*P. morum* (O. F. Müller) Bory, 1824

- River Jong, Lake Sonfon (5)

TETRASPORALES*Chlamydocapsa* Fott, 1972*C. ampla* (Kütz.) Fott, 1972

- Lake Sonfon (5)

= *Gloeocystis ampla* (Kütz.) Lagerheim, 1883*Stylosphaeridium* Geitler et Gimesi, 1925*Stylosphaeridium stipitatum* (Bachm.) Geitler et Gimesi, 1925

- Lake Sonfon (5)

= *Characium stipitatum* (Bachm.) Wille, 1911**CHLOROCOCCALES***Ankistrodesmus* Corda, 1838*A. bibraianus* (Reinsch) Koršikov, 1953

- Lake Mape, Lake Gambia, Lake Tibi, Lake Popei, Lake Sonfon (5)

A. fusiformis Corda, 1838

- Lake Tibi, Lake Popei, Lake Sonfon (5)

A. gracilis (Reinsch) Koršikov, 1953

- Lake Sonfon (5)

Botryococcus Kützing, 1849*B. braunii* Kützing, 1849

- River Jong, Lake Gambia, Lake Popei, Lake Sonfon (5)

Characium A. Braun in Kützing, 1849*C. ensiforme* Hermann, 1863

- Lake Gambia (5)

= *C. ambiguum* Hermann, 1863*C. rostratum* Reinhard ex Printz, 1914

- Lake Sonfon (5)

Coelastrum Nägeli, 1849*C. cambricum* Archer, 1868

- River Waanje, River Malen, Lake Gambia, Lake Tibi, Lake Popei, Lake Mabesi, Lake Mape, Lake Sonfon (5)

- C. sphaericum* Nägeli, 1849 - Lake Tibi, Lake Popei, River Jong, Lake Sonfon (5)
- Coenochloris* Koršikov, 1953
- C. pyrenoidosa* Koršikov, 1953 - Lake Tibi (5)
- Crucigenia* Morren, 1830
- C. quadrata* Morren, 1830 - Lake Tibi (5)
- Dictyosphaerium* Nägeli, 1849
- D. pulchellum* Wood, 1872 - Lake Gambia, Lake Popei, Lake Tibi, River Jong, River Malen, Lake Sonfon (5)
- Dimorphococcus* A. Braun, 1855
- D. lunatus* A. Braun, 1855 - Lake Tibi, Lake Mape, Lake Sonfon (5)
- Gloeocystis* Nägeli, 1849
- G. major* Gerneck ex Lemmermann, 1915 - Lake Sonfon (5)
Gloeocystis sp. - Lake Gambia (5)
- Kirchneriella* Schmidle, 1893
- K. lunaris* (Kirchner) Möbius, 1894 - Lake Tibi, Lake Sonfon (5)
- Micractinium* Fresenius, 1858
- M. pusillum* Fresenius, 1858 - Lake Sonfon (5)
- Monoraphidium* Komárková-Legnerová, 1969
- M. contortum* (Thuret) Komárková-Legnerová, 1969 - Lake Sonfon (5)
M. convolutum (Corda) Komárková-Legnerová, 1969 - Lake Sonfon (5)
M. griffithii (Berkeley) Komárková-Legnerová, 1969 - Lake Tibi (5)
M. irregulare (G. M. Smith) Komárková-Legnerová, 1969 - Lake Sonfon (5)
- Oocystis* A. Braun, 1855
- O. borgei* Snow, 1903 - Lake Gambia, Lake Sonfon (5).
O. solitaria Wittrock, 1879 - Lake Sonfon (5).
= *O. crassa* Wittrock, 1880
- Palmodictyon* Kützing, 1845
- P. lobatum* Koršikov, 1953 - Lake Sonfon (5)
- Pediastrum* Meyen, 1829
- P. angulosum* (Ehr.) Meneghini, 1840 v. *asperum* Sulek, 1969 - River Waanje, River Jong, River Malen, Lake Mape, Lake Popei, Lake Tibi (5)
P. biradiatum Meyen, 1829 - River Waanje, Lake Sonfon (5)

- P. boryanum* (Turpin) Meneghini, 1840 - River Waanje, River Malen, Lake Mape, Lake Sonfon (5)
- P. duplex* Meyen, 1829 - River Waanje, River Jong, River Malen, Lake Mape (5)
- P. tetras* (Ehr.) Ralfs, 1844 - River Waanje, River Jong, River Sewa, Lake Tibi, Lake Gambia, Lake Popei, Lake Sonfon (5)
- Scenedesmus* Meyen, 1829
- S. acuminatus* (Lagerh.) Chodat, 1902 - River Jong, River Malen, Lake Mape, Lake Sonfon (5)
- S. armatus* Chodat, 1913 - River Malen, Lake Mape, Lake Sonfon (5)
- S. brasiliensis* Bohlin, 1897 - Lake Sonfon (5)
- S. ecornis* (Ehr.) Chodat, 1926 - Lake Sonfon (5)
- S. gutwinskii* Chodat, 1926 v. *heterospina* Bodrogsközy, 1950 - Lake Sonfon (5)
- S. kissii* Hortobágy, 1975 - Lake Tibi, Lake Popei, River Jong (5)
- = *S. quadricauda* (Turp.) Brebisson, 1835 v. *biornatus* Kiss, 1939
- S. quadricauda* (Turpin) Brébisson, 1835 - River Waanje, Lake Mape, Lake Tibi, Lake Gambia, River Jong, Lake Popei (5)
- Sphaerocystis* Chodat, 1897
- S. schroeteri* Chodat, 1897 - River Jong, Lake Mape, Lake Mabesi, Lake Sonfon (5)
- Tetraedron* Kützing, 1845
- T. regulare* Kützing, 1845 - Lake Sonfon (5)
- Tetrallantos* Teiling, 1916
- T. lagerheimii* Teiling, 1916 - Lake Tibi, Lake Sonfon (5)
- Westella* de Wildeman, 1897
- W. botryoides* (W. West) de Wildeman, 1897 - Lake Sonfon (5)
- CHAETOPHORALES**
- Chaetosphaeridium* Klebahn, 1892
- C. pringsheimii* Klebahn, 1893 - Lake Tibi, Lake Popei (5)
- Microspora* Thuret, 1850
- M. aequabilis* Wichmann, 1937 v. *minor* Wichmann, 1937 - Lake Sonfon (5)
- Microthamnion* Nägeli, 1849
- M. strictissimum* Rabenhorst, 1863 - Lake Mape, Lake Sonfon (5)
- Oligochaetophora* G. S. West, 1911

O. simplex G. S. West, 1911 - Lake Sonfon (5)

Ulothrix Kützing, 1836

U. amphigranulata Skuja, 1948 - Lake Sonfon (5)

U. subtilis Kützing, 1845 - Lake Sonfon (5)

Uronema Lagerheim, 1887

U. confervicolum Lagerheim, 1887 v. *africanum* (Borge) Printz, 1964 - Lake Sonfon (5)
= *U. africanum* Borge, 1928

OEDOGONIALES

Bulbochaete Agardh, 1817

Bulbochaete spp. - Lake Mape, Lake Tibi, Lake Popei, Lake Sonfon (5)

Oedogonium Link, 1820

O. mammiferum Wittrock, 1874 - Lake Sonfon (5)

O. patulum Tiffany, 1934 - Lake Sonfon (5)

O. reinschii Roy ex Cook, 1884 - Lake Sonfon (5)

Oedogonium spp. - River Jong, River Sewa, Lake Mape, Lake Gambia, Lake Tibi, Lake Popei, Lake Sonfon (5)

CONJUGATOPHYCEAE

ZYGNEMATALES

Cylindrocystis Meneghini ex de Bary, 1858

C. brebissonii Menegh. ex de Bary, 1858 v. *brebissonii* - Lake Sonfon (5); Kania (9); Bathurst Falls (11); Guma Dam (12); York (13)

C. brebissonii v. *minor* West et West, 1902 - Lake Tibi (5)

C. crassa de Bary, 1858 - Lake Sonfon (5)

Mougeotia Agardh, 1824

Mougeotia spp. - Lake Mape, River Jong, Bambawo, Lake Gambia, River Sewa, Lake Tibi, Lake Popei, River Malen, Lake Sonfon (5)

Netrium (Näg.) Itzsigson et Rothe em. Lütkemüller, 1902

N. digitus Itzsigson et Rothe, 1856 v. *digitus* - Kabala (2); Njala (2); River Sewa (5); Loma Mnts (7); Kania (9); Bathurst Falls (11)

N. digitus v. *lamellosum* (Bréb.) Grönblad, 1920 - Njala (2)

N. digitus v. *rhomboideum* Grönblad, 1920 - Njala (2); York (13)

N. oblongum (de Bary) Lütkemüller, 1902 v. *oblongum* - Loma Mnts (7)

N. oblongum v. *cylindricum* West et West, 1903 - Kabala (2)

Spirogyra Link in Nees, 1820

Spirogyra spp.

- Lake Mape, River Jong, River Waanje, Lake Tibi, Lake Popei, Lake Sonfon (5)

DESMIDIALES

Actinotaenium Teiling, 1954

A. capax (Joshua) Teiling, 1954 v. *minus* (Schmidle) Teiling, 1954

A. clevei (Lundell) Teiling, 1954

A. crassiusculum (de Bary) Teiling, 1954

A. cucurbita (Bréb.) Teiling, 1954 v. *cucurbita*

A. cucurbita v. *cucurbita* f. *rotundatum* (Krieger) Teiling, 1954

A. cucurbita (Bréb.) Teiling, 1954 forma

A. cfr. *cucurbita* (Bréb.) Teiling, 1954

A. cucurbitinum (Bisset) Teiling, 1954 v. *cucurbitinum*

A. cucurbitinum v. *truncatum* (Krieger) Teiling, 1954

Actinotaenium sp. ad *A. phymatosporum* (Nordst.)

= *Penium* sp. Kouwets et Coesel, 1984 acced.

ad *P. phymatosporum* Nordstedt, 1876 acced.)

A. subglobosum (Nordst.) Teiling, 1954

A. wollei (West et West) Teiling, 1954 v. *wollei*

A. wollei v. *latius* Croasdale in Grönblad et al., 1968

- Loma Mnts (7)
- York (13)
- Guma Dam (12); York (13)
- Njala (2); Loma Mnts (7); Lake Sonfon (8); Kania (9); Bathurst Falls (11); York (13)
- Njala (2); York (13)
- Lake Sonfon (8)
- Njala (2)
- Njala (2)
- York (13)
- Njala (2)
- Njala (2); Kabala (2); Guma Dam (12).
- York (13)
- Njala (2); Kabala (2); Lake Sonfon (8); Guma Dam (12)

Bambusina Kützing ex Kützing, 1849

B. borneri (Ralfs) Cleve, 1864

- Guma Dam (12)

Closterium Nitzsch ex Ralfs, 1848

C. abruptum W. West, 1892 v. *angustissimum* (Schmidle) Roll, 1915

C. abruptum v. *brevius* (West et West) West et West, 1904

C. acerosum (Schrank) Ehrenberg ex Ralfs, 1848

C. cfr. *attenuatum* Ralfs, 1848

C. baillyanum (Bréb.) Brébisson, 1856

C. closterioides (Ralfs) Louis et Peeters, 1967 v. *closterioides*

= *C. libellula* Focke, 1847 v. *libellula*, invalidly published according Růžička (1977) art. 13 ICBN

C. closterioides v. *intermedium* (Roy et Bisset.) Růžička, 1973

= *C. libellula* Focke, 1847 v. *intermedium* (Roy et Bisset) G. S. West, 1914

C. cornu Ehrenberg ex Ralfs, 1848

C. costatum Corda ex Ralfs, 1848 forma

C. cynthia De Notaris, 1867

C. cynthia De Notaris, 1867 forma

C. diana Ehrenberg ex Ralfs, 1848 v. *diana*

C. diana v. *minus* Hieronymus, 1895

C. diana v. *pseudodiana* (Roy) Krieger, 1932

- Lake Mabesi (10)
- Loma Mnts (7); Lake Sonfon (8); York (13)
- River Waanje (10)
- Njala (2)
- Njala (2)
- Njala (2); Kania (9)
- Njala (2); Kania (9); River Jong, Lake Tibi (10); Bathurst Falls (11)
- Kania (9)
- Lake Mabesi (10)
- Njala (2); Lake Sonfon (8); Kania (9); River Jong, Lake Popei (10); Bathurst Falls (11); Guma Dam (12); York (13)
- Njala (2)
- Njala (2)
- Njala (2); Lake Sonfon (8); River Waanje, Lake Gambia, Lake Tibi, Lake Popei (10); Guma Dam (12); York (13)
- Njala (2); Kabala (2)

- C. directum* Archer, 1862
= *C. ulna* Focke, 1847, invalidly published according Růžička (1977) art 13 ICBN
- C. ehrenbergii* Menegh. ex Ralfs, 1848 v. *ehrenbergii*
C. ehrenbergii v. *ehrenbergii* forma
C. ehrenbergii v. *malinvernianum* (De Notaris) Rabenhorst, 1868
C. gracile Bréb. ex Ralfs, 1848
- C. incurvum* Brébisson, 1856
C. infractum Messikömmmer, 1929 v. *rotundatum* Grönblad, 1947
C. kuetzlingii Brébisson, 1856
- C. moniliferum* (Bory) Ehrenberg ex Ralfs, 1848
C. navicula (Bréb.) Lütkenmüller, 1902
C. nematodes Joshua, 1886
C. parvulum Nägeli, 1849 v. *parvulum*
C. parvulum v. *angustum* West et West, 1900
C. praelongum Brébisson, 1856
- C. psudolunula* Borge, 1909
C. pusillum Hantzsch in Rabenhorst, 1861 v. *laticeps* Grönblad, 1942
C. ralfsii Brébisson ex Ralfs, 1848 v. *hybridum* Rabenhorst, 1863
C. rostratum Ehrenberg ex Ralfs, 1848
C. setaceum Ehr. ex Ralfs, 1848
- C. striolatum* Ehrenberg ex Ralfs, 1848
- C. subulatum* (Kütz.) Brébisson, 1856
C. tumidum Johnson, 1895
Closterium sp.
- Cosmarium* Corda ex Ralfs, 1848
- C. amoenum* Brébisson ex Ralfs, 1848
C. anceps Lundell, 1871
C. angulosum Brébisson, 1856 v. *angulosum*
C. angulosum v. *concinnum* (Rabenh.) West et West, 1901
C. cfr. *asphaerosporum* Nordstedt, 1879
C. binum Nordstedt, 1880
- C. bioculatum* Brébisson ex Ralfs, 1848
C. bioculatum Brébisson ex Ralfs, 1848 forma
C. bipunctatum Börgesen, 1890
C. boeckii Wille, 1880
C. capense (Nordst.) De Toni, 1889 v. *nyassae* Schmidle, 1902
C. candianum Delponte, 1877
= *C. circulare* Reinsch, 1867
C. commissurale Bréb. ex Ralfs, 1848 v. *crassum* Nordstedt, 1870
C. connatum Brébisson ex Ralfs, 1848 v. *connatum*
C. connatum v. *constrictum* Bourrelly, 1961
C. conspersum Ralfs, 1848 v. *latum* (Bréb.) West et West, 1892
C. contractum Kirchner, 1872 forma
C. decoratum West et West, 1895
C. decoratum West et West, 1895 forma
C. emarginatum West et West, 1895 forma
- Bathurst Falls (11)
- Lake Sonfon (8); River Jong (10)
- Njala (2)
- Njala (2)
- Lake Sonfon (8); River Jong, Lake Mabesi (10)
- River Jong (10)
- Njala (2)
- Lake Sonfon (8); River Waanje, Lake Mabesi (10)
- Njala (2); Kabala (2); Bambawo (10)
- Njala (2); Kabala (2); Lake Sonfon (8)
- Njala (2)
- Njala (2); Kabala (2)
- Njala (2); Lake Popei, River Jong (10)
- Lake Sonfon (8); Lake Mape, Lake Gambia, Lake Malen (10)
- Njala (2)
- Loma Mnts (7)
- Lake Sonfon (8); Guma Dam (12)
- Njala (2)
- Njala (2); Kabala (2); Lake Mape, River Jong (10)
- River Sewa (10); Bathurst Falls (11); Guma Dam (12)
- River Jong (10)
- Lake Popei (10)
- Njala (2)
- Njala (2)
- Kania (9)
- Lake Sonfon (8)
- Lake Sonfon (8)
- Njala (2)
- Njala (2); Kabala (2); Lake Sonfon (8); Bathurst Falls (11)
- Kania (9)
- Njala (2)
- Kabala (2)
- Njala (2)
- Lake Sonfon (8)
- Lake Sonfon (8)
- Bathurst Falls (11)
- York (13)
- York (13)
- Njala (2)
- Njala (2)
- Njala (2); Guma Dam (12); York (13)
- Njala (2)
- Lake Sonfon (8)

- C. exiguum* Archer, 1864 v. *exiguum* f. *ocellatum* Grönblad et Croasdale in Grönblad et al., 1968 - Njala (2)
- C. exiguum* v. *subrectangulum* West et West, 1908 - York (13)
- C. exiguum* Archer, 1864 forma 1 - Njala (2)
- C. exiguum* Archer, 1864 forma 2 - Njala (2)
- C.* cfr. *exiguum* Archer, 1864 - Njala (2)
- C. freemanii* West et West, 1902 v. *ocellatum* Krieger, 1932 forma - Njala (2)
- C. geminatum* Lundell, 1871 forma - Lake Sonfon (8)
- C. hammeri* Reinsch, 1867 forma - Njala (2); Kabala (2)
- C. humile* (Gay) Nordstedt, 1889 forma - Njala (2)
- C. javanicum* Nordstedt, 1880 - Loma Mnts (7)
- C. laeve* Rabenhorst, 1868 v. *leave* - Njala (2); Bathurst Falls (11)
- C. laeve* v. *messikommeri* Croasdale in Prescott et al., 1981 = *C. laeve* Rabenhorst, 1868 v. *rotundatum* Messikömmer, 1935 - Lake Sonfon (8)
- C. laeve* v. *westii* Krieger et Gerloff, 1969 - Njala (2)
- = *C. laeve* Rabenhorst, 1868 v. *septentrionale* Wille in Taylor, 1934
- C. loefgrenii* Borge, 1918 forma - Njala (2)
- C. mansangense* West et West, 1907 v. *africanum* Fritsch et Rich, 1924 - Loma Mnts (7); Bathurst Falls (11)
- C. meneghini* Brébisson ex Ralfs, 1848 - Njala (2)
- C. minimum* West et West, 1895 - Lake Sonfon (8)
- C. moniliforme* Turpin ex Ralfs, 1848 - Njala (2)
- C. nitidulum* De Notaris, 1867 - Kania (9)
- C. obsoletum* (Hantzsch) Reinsch, 1867 - Njala (2); Loma Mnts (7)
- C. orthostichum* Lundell, 1871 v. *pumilum* Lundell, 1871 - Njala (2)
- C. polymorphum* Nordst., 1870 v. *africanum* Bourrelly, 1957 - Lake Sonfon (8)
- C. polymorphum* v. *africanum* Bourrelly, 1957 forma - Njala (2)
- C. porrectum* Nordstedt, 1870 - York (13)
- C. portianum* Archer, 1860 v. *nephroideum* Wittrock, 1872 - Lake Sonfon (8)
- C. pseudamoenum* Wille, 1884 v. *inornatum* (Joshua) Croasdale in Grönblad et al, 1968 - Njala (2)
- C. pseudobroomei* Wolle, 1884 - Bathurst Falls (11); York (13)
- C. pseudoconnatum* Nordstedt, 1870 - Bathurst Falls (11)
- C. pseudopyramidatum* Lundell, 1871 v. *pseudopyramidatum* - Njala (2); Kania (9)
- C. pseudopyramidatum* v. *oculatum* Krieger, 1932 - York (13)
- C. pseudoretusum* Duceclier, 1918 v. *africanum* (Fritsch) Krieger et Gerloff, 1962 - Lake Sonfon (8); Bathurst Falls (11); York (13)
- C. punctulatum* Bréb., 1856 v. *subpunctulatum* (Nordst.) Börgesen, 1894 - Njala (2)
- C. pyramidatum* Brébisson ex Ralfs, 1948 v. *pyramidatum* - Lake Sonfon (8)
- C. pyramidatum* Brébisson ex Ralfs, 1948 v. *pyramidatum* forma - Lake Sonfon (8)
- C. pyramidatum* v. *stephani* (Irene-Marie) Krieger et Gerloff, 1965 - Loma Mnts (7)
- C. quadratum* Ralfs, 1848 v. *africanum* Fritsch et Stephens, 1921 - Kania (9)
- C. quadrum* Lundell, 1871 v. *quadrum* - Kabala (2)
- C. quadrum* v. *minus* Nordstedt, 1873 - York (13)
- C. ralfsii* Brébisson ex Ralfs, 1848 v. *montanum* Raciborski, 1885 - Loma Mnts (7)
- C. regnelli* Wille, 1884 v. *regnelli* - Lake Sonfon (8)
- C. regnelli* v. *minimum* Eichler et Gutwinski, 1894 - Kania (9)
- C. rossii* Ricci in Ricci & Alfinito, 1994 - York (13)
- C. salisburii* Fritsch et Rich, 1937 forma - Lake Sonfon (8)
- C. sexangulare* Lundell, 1871 v. *minus* Roy et Bisset, 1886 - Lake Sonfon (8)
- = *C. sexangulare* Lundell, 1871 f. *minima* Nordstedt, 1887
- C. subconstrictum* Schmidle, 1902 - Lake Sonfon (8)
- C. subcostatum* Nordstedt, 1876 - Njala (2)
- C. subcostatum* Nordstedt, 1876 forma - Njala (2)
- C. subprotumidum* Nordstedt, 1876 - Kania (9)

- C. succisum* G. S. West, 1992 f. *jaoi* Krieger et Gerloff, 1962 - Lake Sonfon (8)
C. tenue Archer, 1868 - Njala (2)
C. venustum (Bréb.) Archer ex Pritchard, 1862 - Lake Sonfon (8)
C. wenmanae Croasdale in Grönblad et al., 1968 - Njala (2); Bathurst Falls (11)
C. westii Bernard, 1908 - Loma Mnts (7)
C. zonatum Lundell, 1871 v. *subcylindricum* Grönblad et Scott in Grönblad et al., 1958 - Njala (2)
Cosmarium sp. 1 - Njala (2)
Cosmarium sp. 2 - Njala (2)
- Cosmocladium* Brébisson, 1856
- C. tuberculatum* Prescott, 1935 - Lake Sonfon (8); Lake Tibi (10)
- Desmidium* Agardh ex Ralfs, 1848
- D. aequale* West et West, 1896 f. *elliptica* West et West, 1896 - Njala (2)
D. cfr. *aptogonum* Brébisson ex Kützing, 1849 forma - Njala (2)
D. gracilipes (Nordst.) Lagerheim, 1886 - Guma Dam (12)
D. gracilipes (Nordst.) Lagerheim, 1886 forma - Njala (2)
- Docidium* Brébisson ex Ralfs, 1848
- D. baculum* Brébisson ex Ralfs, 1848 - Lake Sonfon (8)
D. lomaense Alfinito et Mazzoni, 1986 - Loma Mnts (7)
- Euastrum* Ehrenberg ex Ralfs, 1848
- E. abruptum* Nordstedt, 1869 v. *lagoense* (Nordst.) Krieger, 1937 - River Jong (10)
E. ansatum Ehrenberg ex Ralfs, 1848 v. *ansatum* - Lake Sonfon (8)
E. ansatum v. *dideltiforme* Duceillier, 1918 - Njala (2)
E. ansatum v. *javanicum* (Gutw.) Krieger, 1937 - Lake Sonfon (8)
E. bidentatum Nägeli, 1849 forma - Njala (2)
E. binale (Turp.) Ehrenberg ex Ralfs, 1848 - Njala (2)
v. *cosmarioides* (West et West) Krieger, 1937 forma 1 - Njala (2)
E. binale v. *cosmarioides* (West et West) Krieger, 1937 forma 2 - Njala (2)
E. binale v. *groenbladii* (Messik.) Krieger, 1937 - Loma Mnts (7)
E. binale v. *groenbladii* (Messik.) Krieger, 1937 forma - Njala (2)
E. binale v. *pseudopapilliferum* Förster, 1963 - Loma Mnts (7)
E. bombayense Brandham, 1967 v. *gracile* Brandham, 1967 - River Sewa (10)
E. brasiliense Borge, 1903 v. *simplicius* Borge, 1903 - Loma Mnt (7)
E. denticulatum (Kirchner) Gay, 1884 v. *denticulatum* - Lake Sonfon (8); River Waanje, River Jong (10), Bathurst Falls (11)
- Lake Tibi, Lake Mabesi, Lake Mape (10)
- Njala (2); Kabala (2)
- Lake Sonfon (8); Bathurst Falls (11)
- Lake Tibi, Lake Popei, Lake Mabesi (10)
- E. denticulatum* v. *quadrifarium* Krieger, 1937 - Njala (2)
E. cfr. *denticulatum* (Kirchner) Gay, 1884 - Guma Dam (12)
E. didelta Ralfs ex Ralfs, 1848 v. *didelta* - Kania (9)
E. didelta v. *bengalicum* Lagerheim, 1888 - Njala (2)
E. divaricatum Lund., 1871 v. *uguandanum* Grönblad in Grönblad et al., 1968 - Njala (2)
E. gemmatum Brébisson ex Ralfs, 1848 v. *gemmatum* - Guma Dam (12)
E. gemmatum v. *tenuius* Krieger, 1937 - Kania (9)
E. germanicum (Schmidle) Krieger, 1937 - Njala (2)
E. humbertii Bourrelly et Leboime, 1946 - Njala (2)
E. inerme (Ralfs) Lundell, 1871 - Njala (2)
E. ivoirensis Bourrelly, 1961 - Bathurst Falls (11); Guma Dam (12)

- E. ivoirensis* Bourrelly, 1961 forma - Lake Sonfon (8)
E. luetskemuelleri DuceL., 1918 v. *carriolicum* (Lütkem.) Krieger, 1937 - York (13)
E. luetskemuelleri v. *carriolicum* (Lütkem.) Krieger, 1937 forma - Njala (2)
E. platycerum Reinsch, 1875 v. *eximium* Grönblad, 1958
 f. *clausum* Grönbl. et Scott in Grönblad et al., 1958 - River Sewa, River Jong (10)
 NOTE: this taxon is invalidly published, art. 37 ICBN, according Růžička (1981)
E. pulchellum Brébisson, 1856 v. *retusum* West et West, 1905 - Njala (2)
E. pseudosinuosum Förster, 1964 - Kania (8); York (13)
E. serratum Joshua, 1886 v. *crenulatum* Hirano, 1967 forma - York (13)
E. sibiricum Boldt, 1885 v. *exsectum* (Grönbl.) Krieger, 1937 - Lake Sonfon (9)
E. sinuosum Lenormand 1861 v. *scrobiculatum* (Nordst.) Krieger, 1937 - York (13)
E. sinuosum v. *subjeneri* West et West, 1902 - Bathurst Falls (11); York (13)
E. spinulosum Delponte, 1876 var. *aequilobium* (West et West) Krieger, 1937 - River Sewa (10)
E. subbinale Messikömmmer, 1956 - Kania (9)
E. subhexalobum West et West, 1898 v. *subhexalobum* - Lake Sonfon (8)
E. subhexalobum v. *scrobiculatum* Grönblad, 1945 - Njala (2)
E. sublobatum Brébisson ex Ralfs, 1848 v. *incrassatum* Scott et Prescott, 1961 - Njala (2)
E. sublobatum Brébisson ex Ralfs, 1848 variety? - Njala (2)
E. triggiberum West et West, 1895 - Lake Tibi, Lake Popei (10)
E. truncatiforme G.S. West, 1907 v. *africanum* Bourrelly, 1957 - York (13)
E. truncatiforme v. *africanum* Bourrelly, 1957 forma - Lake Sonfon (8)
E. truncatum Joshua, 1886 v. *trifolium* (Cohn) Krieger, 1937 forma - York (13)
E. validum West et West, 1896 v. *validum* - Njala (2)
E. validum West et West, 1896 v. *validum* forma - Njala (2)
E. validum v. *subvalidum* (Behre) Bourrelly, 1961 forma - Njala (2)
 NOTE: this taxon is invalidly published, art. 33 ICBN, according Růžička (1981)
Euastrum sp. - Njala (2)
- Gonatozygon* de Bary, 1856
- G. aculeatum* Hastings, 1892 - Lake Mape, River Waanje, River Jong (10)
G. kinahani (Arch.) Rabenhorst, 1868 - Lake Sonfon (8); Lake Mape, Lake Tibi (10)
G. monotaenium de Bary, 1856 - Kabala (2); River Sewa (10)
- Groenbladia* Teiling, 1952
- G. fennica* (Grönbl.) Teiling, 1952 - Njala (2)
G. inflata Scott et Grönblad, 1957 - Njala (2)
G. neglecta (Racib.) Teiling, 1952
 cfr. v. *elongata* Scott et Grönblad, 1957 - Njala (2)
- Haplotaenium* Bando, 1988
- H. minutum* (Ralfs) Bando, 1988 v. *gracile* (Wille) Bando, 1988 - Bathurst Falls (11); York (13)
 = *Pleurotaenium minutum* (Ralfs) Delp., 1877 v. *gracile* (Wille) Krieger, 1932
- Hyalotheca* Ehrenberg ex Ralfs, 1848
- H. dissiliens* (Sm.) Bréb. ex Ralfs, 1848 v. *tatrica* Racib., 1885 - Njala (2); York (13)

Micrasterias Agardh ex Ralfs, 1848

- M. ambadiensis* (Grönbl. et Scott) Thomasson, 1960 - River Waanje, River Jong (10)
M. americana Ehrenberg ex Ralfs, 1848 v. *americana* forma - Njala (2)
M. americana v. *bimamillata* Bourrelly et Couté in Couté & Rousselin, 1975 forma - River Jong (10)
M. americana v. *hybrida* Woodhead et Tweed, 1959 - Lake Sonfon (8); River Jong (10)
 NOTE: this taxon has been validated by Gerrath & Denny (1998) designating as neotype their fig. 49 (Gerrath & Denny, *loc. cit.*, pag. 47)
M. crux-melitensis (Ehr.) Hassall ex Ralfs, 1848 - Lake Sonfon (8); River Jong (10).
M. decemdentata (Näg.) Archer, 1861 - Lake Sonfon (8)
M. echinata Brandham, 1967 - Kenema (1); River Jong, River Sewa (10); York (13)
M. foliacea Bailey ex Ralfs, 1848 - River Jong, Lake Gambia, Lake Popei, River Sewa, Lake Tibi (10)
M. furcata Ralfs, 1848 - Njala (2); River Jong (10)
 = *M. radiata* Hassall, 1845
M. jenneri Ralfs, 1848 v. *simplex* W. West, 1890 forma - River Jong (10)
M. mahabuleshwariensis Hobson, 1863 v. *comperei* Couté et Rousselin, 1975 - River Waanje, River Jong, Lake Popei, River Sewa, (10)
M. mahabuleshwariensis v. *semireducta* Scott et Croasdale in Grönblad et al., 1968 - Njala (2)
M. pinnatifida Kütz. ex Ralfs, 1848 v. *polymorpha* Bourrelly in Bourrelly & Manguin, 1949 - River Jong (10)
M. radians Turner, 1892 - River Waanje, River Jong (10)
M. thomasiana Archer, 1892 v. *notata* (Nordst.) Grönblad, 1920 - River Jong (10)
M. tropica Nordstedt, 1870 v. *elongata* Schmidle, 1898 - Lake Sonfon (8)
M. truncata (Corda) Brébisson ex Ralfs, 1848 v. *truncata* - Njala (2)
M. truncata v. *crenata* (Bréb.) Reinsch, 1867 - Loma Mnts (7)
- Penium* Brébisson ex Ralfs 1848 em. Kouwets et Coesel, 1984
- P. cylindraceum* Förster, 1965 v. *cylindraceum* f. *majus* Croasdale in Grönblad et al., 1968 - Njala (2)
P. cylindrus (Ehr.) Brébisson ex Ralfs, 1848 - Bathurst Falls (11); Guma Dam (12); York (13)
P. margaritaceum (Ehr.) Brébisson ex Ralfs, 1848 - Njala (2)
P. multicostatum Scott et Grönblad, 1957 - Kania (9)
P. polymorphum (Perty) Perty, 1852 - Njala (2)
- Pleurotaenium* Nägeli, 1849
- P. coronatum* (Bréb.) Rabenhorst, 1868 v. *fluctuatum* W. West, 1892 - Guma Dam (12)
P. ehrenbergii (Bréb.) de Bary, 1858 v. *ehrenbergii* - Njala (2); Loma Mnts (7); Lake Popei, River Jong (10); Bathurst Falls (11); Guma Dam (12)
P. ehrenbergii v. *curtum* Krieger, 1937 - Njala (2)
P. ehrenbergii v. *undulatum* Schaarschmidt, 1883 - Njala (2); York (13)
P. moniliferum West et West, 1895 - Lake Sonfon (8)
P. nodulosum (Bréb.) de Bary, 1858 - York (13)
P. ovatum Nordstedt, 1877 - Njala (2); River Jong (10)
P. simplicissimum Grönblad, 1920 - Lake Sonfon (8)
P. subcoronulatum (Turn.) West et West, 1895 v. *subcoronulatum* - Njala (2); Lake Mape, Lake Popei, River Sewa, Lake Tibi (10)

- P. subcoronulatum* (Turn.) West et West, 1895 v. *subcoronulatum* forma - Njala (2); Kabala (2)
P. subcoronulatum v. *africanum* (Schmidle) Krieger, 1937 - River Sewa (10)
P. subcoronulatum v. *detum* West et West, 1896 - Njala (2)
P. subcoronulatum v. *detum* West et West, 1896 forma - Njala (2)
P. trabecula Nägeli, 1849 v. *trabecula* - Lake Sonfon (7); River Waanje (10)
P. trabecula v. *crassum* Wittrock, 1872 - York (13)
P. truncatum (Bréb.) Nägeli, 1849 - York (13)
- Staurastrum* Meyen em. Ralfs, 1848
- S. avicula* Brébisson ex Ralfs, 1848 - Loma Mnts (7)
S. brachiatum Ralfs, 1848 - Lake Sonfon (8)
S. brebissonii Archer ex Pritchard, 1861 - Lake Sonfon (8)
S. cerastes Lundell, 1871 v. *pulchrum* Scott et Grönblad, 1957 forma - Njala (2)
S. contectum Turner, 1892 f. *concauum* Scott et Croasdale in Grönblad et al., 1968 - Njala (2)
S. dilatatum (Ehr.) Ralfs, 1848 v. *dilatatum* - Njala (2); Kabala (2)
S. dilatatum v. *hibernicum* West et West, 1912 - Njala (2)
S. disputatum West et West, 1912 v. *sinense* (Lütkm.) West et West, 1912 - Njala (2)
S. distentum Wolle, 1892 forma - Lake Sonfon (8)
S. forficulatum Lundell, 1871 v. *minus* (Fritch et Rich) Grönblad et Scott in Grönblad et al., 1958 forma - Njala (2)
S. furcatum (Ehr.) Brébisson, 1856 v. *furcatum* - Bathurst Falls (11); Guma Dam (12)
S. furcatum v. *asymmetricum* Grönblad et Scott in Grönblad et al., 1958 - Njala (2)
S. gladiosum Turner, 1885 - Njala (2); Kabala (2); Lake Sonfon (8)
S. hystrix Ralfs, 1848 v. *granulatum* Ricci in Ricci et al., 1990 - Guma Dam (12)
S. inconspicuum Nordstedt, 1873 - Lake Sonfon (8)
S. leptopus Krieger, 1932 forma - Njala (2)
S. longibrachiatum (Borge) Gutwinski, 1902 v. *africanum* Bourrelly, 1961 - Njala (2)
S. margaritaceum (Ehr.) Meneghini ex Ralfs, 1848 forma - Kabala (2)
S. manfeldtii Delponte, 1876 v. *africanum* Hodgett, 1926 - York (13)
S. micron West et West, 1896 - Kabala (2)
S. orbiculare (Ehr.) Ralfs, 1848 v. *depressum* Roy et Bisset, 1886 - Njala (2); Lake Sonfon (8)
S. pelagicum West et West, 1902 - Guma Dam (12)
S. pinnatum Turner, 1892 v. *hydra* Krieger, 1932 - Njala (2)
S. pseudotetracerum (Nordst.) West et West, 1895 - Lake Sonfon (8); York (13)
S. quadrangulare (Bréb.) Ralfs, 1848 - Njala (2)
S. quadrangulare (Bréb.) Ralfs, 1848 forma - Kabala (2)
S. quadricornutum Roy et Bisset, 1886 - Lake Sonfon (8)
S. setigerum Cleve, 1864 v. *pectinatum* West et West, 1896 f. *paucispiniferum* Croasdale in Grönblad et al., 1968 - Njala (2)
S. setigerum v. *pectinatum* West et West, 1896 forma - Njala (2)
S. spiculiferum Borge, 1918 v. *glabrum* Gerrath et Denny, 1988 - Lake Sonfon (8)
S. subindentatum West et West, 1907 v. *ornatum* Bourrelly, 1961 forma - Njala (2)
S. teliferum Ralfs, 1848 v. *ordinatum* Börgesen, 1894 - Guma Dam (12)
S. tetracerum Ralfs, 1848 - Njala (2); Kabala (2); Kania (9); Bathurst Falls (11)
- S. wildemanii* Gutwinski, 1902 v. *wildemanii* f. *quadrspinum* Thomasson, 1966 - Njala (2)
S. wildemanii v. *horizontale* Scott et Prescott, 1956 - Njala (2)
S. wildemanii v. *majus* (West et West) Scott et Prescott, 1956 - Njala (2)

Staurodesmus Teiling, 1948

- S. cuspidatus* (Bréb.) Teiling, 1967 - Njala (2)
 = *Staurastrum cuspidatum* (Bréb.) Ralfs, 1848
- S. glaber* (Ehr.) Teiling, 1967 - Njala (2)
 = *Staurastrum glabrum* (Ehr.) Ralfs, 1848
- S. incus* (Bréb.) Teiling, 1967 forma 1 - Njala (2)
 = *Arthrodesmus incus* (Bréb.) Ralfs, 1848 forma 1
- S. incus* (Bréb.) Teiling, 1967 forma 2 - Njala (2)
 = *Arthrodesmus incus* (Bréb.) Ralfs, 1848 forma 2
- S. incus* (Bréb.) Teiling, 1967 forma 3 - Kabala (2)
 = *Arthrodesmus incus* (Bréb.) Ralfs, 1848 forma 3
- S. omearii* (Arch.) Teiling, 1948 forma - Njala (2); Kabala (2)
 = *Staurastrum o'omearii* Archer, 1858 forma
- S. patens* (Nordstedt) Croasdale, 1957 v. *patens* f. *inflatus*
 (W. West) Teiling, 1967 - Lake Sonfon (8)

Teilingia Bourrelly, 1964

- T. excavata* (Ralfs) Bourrelly, 1964 - Njala (2)
 = *Sphaerosoma excavatum* Ralfs, 1848
- T. granulata* (Roy et Bisset) Bourrelly, 1964 - Njala (2); Lake Sonfon (8)
 = *Sphaerosoma granulatum* Roy et Bisset, 1886

Tetmemorus Ralfs ex Ralfs, 1848

- T. granulatus* (Bréb.) Ralfs ex Ralfs, 1848 - Loma Mnts (7)
- T. laevis* (Kütz.) ex Ralfs, 1848 v. *laevis* - Kania (8): Guma Dam (12); York (13)
- T. laevis* v. *borgei* Förster, 1965 - Kania (9)

Xanthidium Ehrenberg ex Ralfs, 1848

- X. octocorne* (Ehr.) Ralfs, 1848 - Njala (2)
 = *Arthrodesmus octocornis* (Ehr.) Ralfs, 1848
- X. urniforme* (West et West) Scott et Croasdale in Grönblad et al., 1968 - Njala (2); Guma Dam (12); York (13)

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