

Review of the studies on aero-terrestrial cyanoprokaryotes and algae in Bulgaria with a Checklist of the recorded species. II.

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Abstract. The present paper provides a complete Checklist of species, varieties and forms of aero-terrestrial cyanoprokaryotes and algae in Bulgaria found so far. It contains 157 genera, 413 species, 47 varieties, and 18 forms from seven phyla. The synonyms used in literature and the relevant aero-terrestrial habitats are indicated for each taxon.

Key words: aero-terrestrial algae, Bulgaria, checklist, cyanoprokaryotes, soil algae

Introduction

The present paper is a continuation of the review of phycological studies on the interesting ecological group of aero-terrestrial algae and cyanoprokaryotes in Bulgaria based on the literature containing 81 publications with more than 500 infrageneric taxa (Uzunov & al. 2007). It provides a complete Checklist of the species, varieties and forms found in the country so far. For each taxon the synonyms used in literature are given in brackets and the relevant aero-terrestrial habitats are provided.

The nomenclature follows mainly Ettl & Gärtner (1995), with updatings according to Komárek & Anagnostidis (1999, 2005), Lenzenweger (1996, 1997, 1999, 2003), Hasle & Syvertsen (1997), John & al. (2002), and Wehr & Sheath (2003). An older guide of Matvienko & Dogadina (1978) was also used for improvement of the works of Vodenicharov (1960) and Vodeničarov (1960, 1972) on genus *Botrydium*. The authors' names in the Checklist follow the *Standard Form of Authors of Algal Names* published in *The Freshwater Algal Flora of the British Isles* (John & al. 2002). Occasionally, due to lack of

details in the descriptions, or owing to lack of taxonomic references, it was impossible to update the names. At the same time, it is well known that taxonomy of some groups is often unsatisfactory, or even very unsatisfactory and this is valid even for common and abundant species. In these cases, the old name is left, as provided by the author, and marked with an asterisk (*).

After clarifying the synonyms, especially those of the cyanoprokaryotes and green algae, and after excluding the taxa with unclearly documented habitats, the total number of 569 taxa of seven phyla reported in the investigated literature and summarized in our earlier paper (Uzunov & al. 2007) has decreased. The actual numbers in the taxonomic groups are: *Cyanoprokaryota* – 60 genera, 242 species, nine varieties and eight forms; *Rhodophyta* – three genera and four species, *Ochrophyta*, *Tribophyceae* – seven genera, 18 species and one variety, *Bacillariophyceae* – 11 genera, 12 species, six varieties and one form; *Chlorophyta* – 54 genera, 88 species, 16 varieties and three forms; *Streptophyta* – 15 genera, 41 species, 15 varieties and six forms; *Euglenophyta* – five genera and six species, and *Pyrrhophyta* – two genera and two species.

Checklist of aero-terrestrial cyanoprokaryotes and algae recorded in Bulgaria

Abbreviations used: **a** – aerophytic (unspecified further); **b** – aerophytic on barks; **c** – aerophytic in caves; **m** – aerophytic among mosses; **n** – nival; **r** – aerophytic on rocks; **s** – aerophytic on stones; **t** – terrestrial; **w** – aerophytic on walls. For some of the species the author names in the synonyms, written obviously with typographic errors have been corrected by us.

Cyanoprokaryota

Anabaena cylindrica Lemmerm. – **t**
A. cylindrica f. *hollerbachiana* Elenkin – **t**
A. inaequalis (Kütz.) Bornet & Flahault – **c, t**
A. licheniformis Bory – **r**
A. oscillarioides Bory – **c, t**
A. sphaerica Bornet & Flahault – **t**
A. sphaerica f. *conoidea* Elenkin – **c, t**
A. torulosa (Carm.) Lagerh. – **t**
A. variabilis Kütz. – **c, t**
A. variabilis f. *tenuis* Popova – **t**
A. variabilis var. *steloides* (Canab.) Geitler – **t**
Anabaena spp. – **c, t**
Aphanocapsa concharum Hansg. – **r**
A. grevillei (Berk.) Rabenh. [Syn.: *Microcystis grevillei* (Hass.) Elenkin] – **r, t**
A. incerta (Lemmerm.) Cronberg & Komárek [Syn.: *Microcystis pulvereana* (Lemmerm.) Lemmerm.; *Microcystis pulvereana* var. *incerta* (Lemmerm.) Crow; *Microcystis pulvereana* f. *incerta* (Lemmerm.) Elenkin] – **c, t**
A. litoralis (Hansg.) Komárek & Anagn. (Syn.: *Microcystis litoralis* Hansg.) – **r**
A. marina Hansg. – **r**
A. muscicola (Menegh.) Wille (Syn.: *A. montana* Cramer) – **c, t**
A. nubilum Komárek & Kling [Syn.: *Microcystis pulvereana* var. *racemiformis* Nygaard; *Microcystis pulvereana* f. *racemiformis* (Nygaard) Hollerb.] – **t**
A. parasitica (Kütz.) Komárek & Anagn. (Syn.: *Microcystis parasitica* Kütz.) – **c, r**
Aphanothece caldariorum P.G. Richt. – **c**
A. castagnei (Bréb.) Rabenh. – **r, t**
A. microscopica Nägeli – **t**
A. minutissima (W. West) Komark.-Legn. & Cronberg (Syn.: *Microcystis minutissima* W. West) – **c**
A. nidulans P.G. Richt. – **c**
A. saxicola Nägeli – **c**

Arthrospira jenneri Stizenb. ex Gomont [Syn.: *Spirulina jenneri* (Stizenb.) Geitler] – **t**
A. platensis (Nordst.) Gomont [Syn.: *Spirulina platensis* (Nordst.) Geitler] – **t**
Aulosira laxa Kirchn. – **t**
A. valkanovii Draganov – **t**
Borzia trilocularis Cohn – **t**
Brachytrichia balani (Lloyd) Bornet & Flahault [Syn.: *Brachytrichia quoyi* (C. Agardh) Bornet & Flahault] – **r**
Calothrix aeruginea (Kütz.) Thur. – **r**
C. braunii Bornet & Flahault – **c, s**
C. brevissima G.S. West – **t**
C. confervicola C. Agardh – **r**
C. crustacea Thuret – **r**
C. elenkinii Kossinsk. – **c, t**
C. elenkinii f. *edaphica* Meln. – **t**
C. hollerbachii Draganov – **t**
C. parietina Thuret – **r, t**
C. pulvinata C. Agardh – **b, r**
C. scopulorum (C. Agardh) Bornet & Flahault – **r**
Calothrix sp. [as “*Calothrix* sp. (cf. *C. gracilis* Pritsch.)” by Draganov (1979)] – **t**
Calothrix spp. – **r, t**
Chamaesiphon polonicus (Rostaf.) Hansg. – **r, s**
Chondrocystis dermochroa (Nägeli) Komárek & Anagn. [Syn.: *Gloeocapsa dermochroa* Nägeli] – **c**
Chroococcus cohaerens (Bréb.) Nägeli – **r**
Ch. helveticus Nägeli – **r**
Ch. membraninus (Menegh.) Nägeli – **r**
Ch. minor (Kütz.) Nägeli – **c, r**
Ch. minutus (Kütz.) Nägeli [Syn.: *Gloeocapsa minuta* (Kütz.) Hollerb.] – **c, n, r, t, w**
Ch. minutus* var. *obliteratus* (P.G. Richt.) Hansg. – **r, t
Ch. tenax (Kirchn.) Hieron. – **c**
Ch. turgidus (Kütz.) Nägeli [Syn.: *Gloeocapsa turgida* (Kütz.) Hollerb.] – **c, m, r, t**
Ch. varius A. Braun – **c, r**
Ch. westii (W. West) J.B. Petersen – **c**
Clastidium setigerum Kirchn. – **r**
Cyanocystis minima (Geitler) Komárek & Anagn. (Syn.: *Dermocarpa minima* Geitler) – **r**
Cyanothece aeruginosa (Nägeli) Komárek (Syn.: *Synechococcus aeruginosus* Nägeli) – **n, t**
C. major (Schröter) Komárek (Syn.: *Synechococcus major* Schröter) – **r**
Cylindrospermum alatosporum F.E. Fritsch – **t**
C. catenatum Ralfs – **t**
C. dobrudjense Draganov (Syn.: *C. echinulatum* Draganov) – **t**

- C. licheniforme* Kütz. – **c, t**
C. licheniforme f. alatosporum Kondr. – **c, t**
C. majus Kütz. – **c, m, r, t**
C. muscicola Kütz. – **c, t**
C. stagnale (Kütz.) Bornet & Flahault – **c, t**
Cylindrospermum sp. juv. – **t**
Cylindrospermum sp. [as “*Cylindrospermum* sp. cf. *C. gregarium* (Zakrz.) Elenkin“ by Draganov (1979)] – **t**
Cylindrospermum spp. – **t**
 Dactylococcopsis mucicola* Hustedt – **t
 D. raphidioides* Hansg. – **t
Dermocarpa sp. – **r**
Dichothrix gypsophila (Kütz.) Bornet & Flahault – **r, t**
D. orsiniana Bornet & Flahault – **r**
 Entophysalis maior* Erceg. – **r
Fischerella maior Gomont – **t**
Geitlerinema amphibium (C. Agardh) Anagn. (Syn.: *Oscillatoria amphibia* C. Agardh) – **t, w**
Gloeocapsa aeruginosa Kütz. – **c**
G. cf. aeruginosa Kütz. – **c**
G. alpina (Nägeli) F. Brand – **b, c, n, r, t**
G. atrata Kütz. (Syn.: *G. montana* Kütz.) – **m, r, t, w**
G. caldariorum Rabenh. (Syn.: *G. polydermatica* Kütz.) – **c**
G. fusco-lutea (Nägeli) Kütz. – **c, r**
G. kuetzingiana Nägeli – **c**
G. punctata Nägeli – **c**
G. rupicola Kütz. – **c**
G. sanguinea (C. Agardh) Kütz. [Syn.: *G. itzigsohnii* Bornet] – **r**
Gloeocapsa sp. [as “*Gloeocapsa* sp. (cf. *G. kuetzingiana* Nägeli?)“ by Draganov (1979)] – **t**
Gloeocapsa spp. – **c, r, w**
Gloeocapsopsis chroococcoides (Nováček) Komárek (Syn.: *Gloeocapsa chroococcoides* Nováček) – **t**
G. crepidinum (Thuret) Geitler ex Komárek (Syn.: *Gloeocapsa crepidinum* Thuret) – **c, r, s, t**
G. magma (Bréb.) Komárek & Anagn. [Syn.: *Gloeocapsa magma* (Bréb.) Kütz. emend. Hollerb.] – **r, t**
 Gloeothece heufleri* Grunow – **m, r, t
G. palea (Kütz.) Rabenh. – **c**
G. rupestris (Lyngb.) Bornet – **c, m, r, t**
Gloeothece sp. – **c**
Heteroleibleinia infixa (Frémy) Anagn. & Komárek (Syn.: *Lyngbya infixa* Frémy) – **r**
Homoeothrix margalefii Komárek & Kalina (Syn.: *Lep-tochaete crustacea* Borzi) – **r, w**
Hydrocoleum turfosum Woron. – **m**
Hyella cf. balani Lehmann – **r**
Isactis plana (Harv.) Thuret – **r, s**
Jaaginema geminatum (Menegh.) Anagn. & Komárek (Syn.: *Oscillatoria geminata* Menegh.) – **r, w**
J. kuetzingianum (Nägeli) Anagn. & Komárek (Syn.: *Oscillatoria kuetzingiana* Nägeli) – **r, t**
J. longarticulatum (Hansg.) Anagn. & Komárek (Syn.: *Oscillatoria longarticulata* Hansg.) – **r**
J. neglectum (Lemmerm.) Anagn. & Komárek (Syn.: *Oscillatoria neglecta* Lemmerm.) – **w**
Kyrtuthrix dalmatica Erceg. – **r**
Leptolyngbya boryana Anagn. & Komárek (Syn.: *Plectonema boryanum* Gomont) – **c, t**
L. calotrichoides (Gomont) Anagn. & Komárek (Syn.: *Plectonema calotrichoides* Gomont) – **r**
L. foveolarum (Rabenh. ex Gomont) Anagn. & Komárek (Syn.: *Phormidium foveolarum* Gomont) – **c, r, t**
L. fragilis (Gomont) Anagn. & Komárek (Syn.: *Phormidium fragile* Gomont) – **t**
L. gracilis (Lindstedt) Anagn. & Komárek (Syn.: *Phormidium gracile* Lindstedt) – **r**
L. gracillima (Zopf ex Hansg.) Anagn. & Komárek (Syn.: *Plectonema gracillimum* Zopf ex Hansg.) – **c, r, t**
L. notata (Schmidle) Anagn. & Komárek (Syn.: *Plectonema notatum* Schmidle) – **c, t**
L. perelegans (Lemmerm.) Anagn. & Komárek (Syn.: *Lyngbya perelegans* Lemmerm.) – **t, w**
L. tenuis (Gomont) Anagn. & Komárek (Syn.: *Phormidium* Gomont) – **t**
L. terebrans (Bornet & Flahault) Anagn. & Komárek (Syn.: *Plectonema terebrans* Bornet & Flahault) – **r**
L. valderiana (Gomont) Anagn. & Komárek [Syn.: *Phormidium valderianum* Gomont as “*Ph. valderianum* (Delponte) Gomont” by Draganov & Dimova (1971)] – **t**
L. voronichiniana Anagn. & Komárek (Syn.: *Phormidium tenuissimum* Woron.) – **t**
Lyngbya aerugineo-coerulea (Kütz.) Gomont – **t**
L. aestuarii Liebm. – **t**
L. confervoides C. Agardh – **r**
L. epiphytica Hieron. – **r**
L. martensiana Menegh. – **s**
L. martensiana var. *mendenhalliana* Kol – **n**
L. semiplena J. Agardh – **r, s**
Lyngbya spp. – **c, r**
Microchaete grisea Thur. – **r**
M. tenera Thur. – **t**
M. tenera f. *minor* Hollerb. – **t**
Microchaete spp. [incl. “*Microchaete* sp. (cf. *M. tenera* Thur.)“ by Draganov & Dimitrova-Burin 1977] – **c, t**
Microcoleus paludosus Gomont – **r, t**
M. vaginatus Gomont – **t**

- Microcoleus* sp. – t
- **Microcystis pulverea* (Wood) Forti [Syn.: *Polycystis pulverea* (Wood) Wolle] – c, r, t
- Nodularia harveyana* Thur. – t
- N. harveyana* f. *sphaerocarpa* (Bornet & Flahault) Elenkin – t
- N. spumigena* Martens – t
- N. spumigena* f. *major* (Kütz.) Elenkin – t
- Nostoc calcicola* Bréb. – r, t
- N. commune* Vaucher – r, t
- N. disciforme* F.E. Fritsch – t
- N. ellipso sporum* Rabenh. – m, r, t
- N. humifusum* (Carmich.) Bornet & Flahaut – c, r, t
- N. imperfectum* Schwabe & El-Ayouty – t
- N. linckia* (Roth) Bornet & Flahault – c, r, t
- N. microscopicum* (Carmich.) Hook) Bornet & Flahault – c, m, r, t
- N. muscorum* C. Agardh [(Syn.: *Stratonostoc linckia* f. *muscorum* (C. Agardh) Elenkin] – c, r, t
- N. paludosum* Kütz. [Syn.: *Amorphonostoc paludosum* (Kütz.) Elenkin] – t, w
- N. punctiforme* (Kütz.) Har. [Syn.: *Amorphonostoc punctiforme* (Kütz.) Elenkin] – c, t
- N. punctiforme* var. *populorum* Geitler [Syn. *Amorphonostoc punctiforme* f. *populorum* (Geitler) Hollerb.] – t
- N. sphaericum* Vaucher – r, t
- N. spongiaeforme* C. Agardh – t
- N. verrucosum* Vaucher – r
- Nostoc* spp. – c, t
- Oscillatoria funiformis* (Vouk) Komárek [Syn.: *Spirulina funiformis* (Vouk) Komárek] – r
- O. limicola* Kütz. – w
- O. limosa* C. Agardh ex Gomont – c, t
- O. nigro-viridis* Thwaites – r
- O. princeps* Vaucher – r
- O. sancta* var. *aequinoctialis* Gomont – r, t
- O. sancta* var. *caldariorum* Lagerh. – r, t
- O. simplicissima* Gomont – r, w
- O. tenuis* C. Agardh – c, t
- Oscillatoria* sp. – c, t
- Petalonema alatum* Berk. [Syn.: *Scytonema alatum* (Berk.) Borzi] – r, s
- Phormidium acuminatum* (Gomont) Anagn. & Komárek (Syn.: *Oscillatoria acuminata* Gomont) – t
- Ph. ambiguum* Gomont – c, t
- Ph. amoenum* Kütz. (Syn.: *Oscillatoria amoena* Gomont) – r, t
- Ph. animale* (C. Agardh ex Gomont) Anagn. & Komárek (Syn.: *Oscillatoria animalis* C. Agardh ex Gomont) – t
- Ph. autumnale* (C. Agardh) Trevis. ex Gomont – r, s, t, w
- Ph. breve* (Kütz. ex Gomont) Anagn. & Komárek [Syn.: *Oscillatoria brevis* Kütz. ex Gomont] – c, r, t
- Ph. corallinae* (Gomont ex Gomont) Anagn. & Komárek (Syn.: *Oscillatoria corallinae* Gomont ex Gomont) – r
- Ph. corium* Gomont – b, r, t, w
- Ph. dimorphum* Lemmerm. – t
- Ph. favosum* Gomont ex Gomont – t
- Ph. formosum* (Bory ex Gomont) Anagn. & Komárek (Syn.: *Oscillatoria formosa* Bory ex Gomont) – t
- Ph. granulatum* (Gardner) Anagn. (Syn.: *Oscillatoria granulata* Gardner) – t
- Ph. grunowianum* (Gomont) Anagn. & Komárek (Syn.: *Oscillatoria terebriformis* f. *grunowiana* Elenkin) – t
- Ph. hormoides* Setch. & Gardner [Syn.: *Leptolyngbya hormoides* (Setch. & Gardner) Anagn.] – r
- Ph. inundatum* Kütz. – t
- Ph. irriguum* (Kütz.) Anagn. & Komárek [Syn.: *Oscillatoria irrigua* (Gomont) Kütz.] – r, t
- Ph. jadinianum* Gomont – b, t
- Ph. kuetzingianum* (Kirchn.) Anagn. & Komárek – c
- Ph. laetevirens* (Crouan ex Gomont) Anagn. & Komárek (Syn.: *Oscillatoria laetevirens* Crouan ex Gomont) – r
- Ph. lividum* Nägeli – t
- Ph. molle* Gomont – c, r, t
- Ph. molle* f. *tenuis* Woron. – t
- Ph. nigrum* (Vaucher ex Gomont) Anagn. & Komárek (Syn.: *Oscillatoria nigra* Vaucher ex Gomont) – t
- Ph. papyraceum* Gomont – r, t
- Ph. subfuscum* Kütz. (Syn.: *Phormidium subfuscum* var. *joannianum* Gomont) – r
- Ph. subfuscum* var. *inaequale* Nägeli – r
- Ph. terebriforme* (C. Agardh) Anagn. & Komárek (Syn.: *Oscillatoria terebriformis* C. Agardh) – r, t
- Ph. uncinatum* Gomont – t, w
- Phormidium* spp. – c, r, t
- Planktothrix agardhii* (Gomont) Anagn. & Komárek (Syn.: *Oscillatoria agardhii* Gomont) – r, t
- Plectonema puteale* (Kirchn.) Hansg. – t
- P. tomasinianum* Bornet ex Gomont – t
- Plectonema* spp. – c, t
- Pleurocapsa fuliginosa* Hauck – r
- P. minor* Hansg. [Syn.: *Scopulonema minus* (Hansg.) Geitler] – c
- P. minuta* Geitler – r
- Pleurocapsa* sp. – r
- Porphyrosiphon luteus* (Gomont) Anagn. & Komárek (Syn.: *Lyngbya lutea* Gomont) – r
- Pseudanabaena catenata* Lauterb. – t

P. frigida (F.E. Fritsch.) Anagn. (Syn.: *Phormidium frigidum* F.E. Fritsch) – **t**
P. limnetica (Lemmerm.) Komárek (Syn.: *Oscillatoria limnetica* Lemmerm.) – **n**
P. mucicola (Naumann & Hub.-Pest) Schwabe (Syn.: *Phormidium mucicola* Naum. & Hub.-Pest.) – **t**
Pseudanabaena sp. – **t**
Pseudophormidium battersii (Gomont) Anagn. (Syn.: *Plectonema battersii* Gomont) – **r**
P. golenkinianum (Gomont) Anagn. (Syn.: *Plectonema golenkinianum* Gomont) – **r**
P. hollerbachianum (Elenkin) Anagn. (Syn.: *Plectonema boryanum* f. *hollerbachianum* Elenkin) – **t**
Rivularia atra Roth – **r**
R. bullata (Poir.) Berk. – **r**
R. haematitis (DC.) C. Agardh – **r, s**
R. rufescens Nägeli – **r**
Schizothrix calcicola Gomont – **c, t**
S. cresswellii Harv. – **r**
S. heufleri Grunow ex Gomont [Syn.: *S. heufleri* f. *microcoleiformis* (Hansg.) Forti] – **r, t**
S. lardacea Gomont – **c, r, t, w**
S. vaginata (Nägeli) Gomont – **r**
Schizothrix sp. – **t**
Scytonema hofmanni C. Agardh – **b, m, r, t**
S. julianum (Kütz.) Menegh. – **c**
S. mirabile (Dillwyn.) Bornet – **r**
S. myochrous (Dillwyn.) C. Agardh – **r**
S. ocellatum Lyngb. – **t**
Scytonema sp. – **c**
Spirulina adriatica Hansg. – **r**
S. major Kütz. – **t**
S. meneghiniana Zanardini – **r**
Spirulina sp. – **r**
Stanieria sphaerica (Setch. & N.L. Gardner) Anagn. & Pantazidou (Syn.: *Dermocarpa sphaerica* Setch. & N.L. Gardner) – **r**
Stigonema figuratum C. Agardh – **t**
S. hormoides (Kütz.) Hansg. – **r, t**
S. informe Kütz. – **r, s**
S. mamillosum (Lyngb.) C. Agardh – **r**
S. mirabile Beck – **m, r, t**
S. ocellatum Thur. – **m, t**
S. panniforme Bornet & Flahault – **r, t**
S. panniforme var. *alpinum* (Kütz.) Hansg. – **t**
S. turfaceum Cooke – **c, r**
Symploca laete-viridis Gomont – **r**
S. meneghiniana Kütz. – **w**
S. muscorum Gomont – **c, m, r, t**

Synechocystis salina Wislouch – **t**
Tolypothrix byssoidea (Hassall.) Kirchn. – **c, m, r**
T. polymorpha Lemmerm. – **t**
T. tenuis Kütz. – **c, r, t**
T. tenuis var. *calcarata* (Schmidle) B.A. Whitton – **c**
Tolypothrix spp. – **c, t**
Trichocoleus sociatus (W. & G.S. West) Anagn. (Syn.: *Microcoleus sociatus* W. & G.S. West) – **t**
T. tenerimus (Gomont) Anagn. (Syn.: *Microcoleus tenerimus* Gomont) – **r**
Xenococcus pallidus (Hansg.) Komárek & Anagn. (Syn.: *Xenococcus schousboei* var. *pallida* Hansg.) – **r**
X. schousboei Thur. – **r**
Xenococcus sp. – **r**
Xenotholos kernerii (Hansg.) Gold-Morgan (Syn.: *Xenococcus kernerii* Hansg.) – **m**
Yonedella sp. (Syn.: *Sphaeronema* sp.) – **r**

Rhodophyta

Asterocystis smaragdiana Reinsch – **r**
Chantransia chalybea* (Roth) Fries – **w
Porphyridium cruentum Nägeli – **r**
P. purpureum (Bory) Drew & Ross – **w**

Chlorophyta

Actinastrum hantzschii Lagerh. – **t**
Apatococcus lobatus (Chodat) J.B. Petersen – **r**
Borodinella polytetras V.V. Mill. – **r**
Chaetomorpha aerea (Dillw.) Kütz. – **s**
Chlamydomonas debaryana var. *atactogama* (Korshikov) Gerloff (Syn.: *Ch. atactogama* Korshikov) – **t**
Ch. elliptica Korshikov – **t**
Ch. fungicola Puym. – **a** (on fungi)
Ch. nivalis (F.A. Bauer) Wille [Syn.: *Sphaerella nivalis* (F.A. Bauer) Sommerfelt] – **n**
Chlamydomonas spp. – **t**
Chlorella ellipsoidea* Gerneck – **t
Ch. miniata (Nägeli) Oltm. [Syn.: *Palmellococcus miniatus* (Nägeli) Chodat] – **r**
Ch. minutissima Fott & Nováková – **c**
Ch. pyrenoidosa* Chick. – **t
Ch. trebouxioides Punčoch. – **c**
Ch. vulgaris Beij. – **t**
Chlorococcum ellipsoideum Deason & Bold – **t**
Ch. infusionum (Schrank) Menegh. [Syn.: *Ch. humicola* (Nägeli) Rabenh.] – **t**
Chlorococcum spp. – **t**
Cladophora glomerata var. *genuina* f. *marina* Hanck – **r**

- C. vagabunda* (L.) Hoek. – **r**
C. acicularis (Smith) Belcher & Swale – **t**
Coelastrum microporum Nägeli – **t**
Crucigeniella rectangularis (Nägeli) Komárek – **t**
C. tetrapedia (Kirchn.) W. & G.S. West – **t**
 Cystococcus nivicolus* Kol – **n
Excentrosphaera viridis Moore – **t**
Geminella sp. – **t**
Gloeocystis rupestris (Lyngb.) Rabenh. – **r, t**
Gonium pectorale O.F. Müll. – **t**
 Hormidiopsis* sp. – **t
 Hormidium* sp. – **t
 Hormiscia flaccida* (Kütz.) Lagerh. – **b, m, w
 H. flaccida* var. *fragilis* (Hock & Harv.) Hansg. – **b
 H. flaccida* var. *minor* Hansg. – **t
 H. flaccida* var. *varia* (Kütz.) De Wild. – **r, t
 H. subtilis* var. *albicans* (Kütz.) Hansg. – **r
 Hormococcus flaccidus* (Kütz.) Chodat – **b, t
Hormotila mucigena Borzi – **m, r**
Kentrosphaera gibberosa Voden. & Benderl. – **w**
Klebsormidium flaccidum (Kütz.) P.C. Silva, Mattox & W.H. Blackw. [Syn.: *Hormidium flaccidum* (Kütz.) A. Braun; *Stichococcus flaccidus* (Kütz.) Gay] – **n, r, t**
K. pseudostichococcus (Heering) Ettl & G. Gärtner (Syn.: *Hormidium pseudostichococcus* Heering) – **b, w**
K. subtile (Kütz.) Tracanna ex Tell [Syn.: *Hormidium subtile* (Kütz.) Heering; *Ulothrix subtilis* Kütz.] – **t**
Korschpalmella microscopica (Korshikov) Fott – **t**
Micractinium parvulum (Kuff.) Hegew. & Schnepf – **t**
Microthamnion kützingianum Nägeli – **t**
Monoraphidium arcuatum (Korshikov) Hindák – **t**
Oedogonium braunii Kütz. – **t**
Oedogonium sp. – **t, w**
Oocystis pusilla Hansg. – **a**
O. rupestris Kirchn. – **r**
Palmella mucosa Kütz. – **b, r**
Pandorina morum (O.F. Müll.) Bory – **t**
Pediastrum boryanum var. *granulatum* (Kütz.) A. Braun – **t**
P. duplex Meyen [incl. var. *clathratum* (A. Braun) Lagerh. & var. *reticulatum* Lagerh.] – **t**
 Pleurococcus aureo-viridis* (Kütz.) Rabenh. – **w
 P. vulgaris* Menegh. – **b, r, s, t, w
Protoderma cohaerens (Wittr.) Printz (Syn. *Pleurococcus vulgaris* f. *cohaerens* Wittr. as “*Pleurococcus vulgaris* var. *cohaerens* Wittr.” by Kol 1956) – **n**
Porochloris tetragona Pascher – **m**
Prasiola crispa (Lightf.) Menegh. s.l. [Syn.: *Hormidium parietinum* var. *delicatum* Hansg.; *Schizogonium crispum* (Lightf.) Gay ad var. *prasioloides* Chodat] – **b, r, t, w**
 Protococcus viridis* C. Agardh – **b, r, s, t, w
Protoderma viride Kütz. – **t**
Protosiphon botryoides G.A. Klebs. – **t**
Raphidonema brevirostre Scherff. – **n**
R. tatrae var. *yellowstonensis* Kol – **n**
Scenedesmus acuminatus (Lagerh.) Chodat – **t**
S. armatus Chodat [as „*S. armatus* Chodat forma” by Kiriakow (1970)] – **w**
 S. bicaudatus* Dedus. – **t
 S. bijugatus* Kütz. – **t
S. communis Hegew. [Syn.: *Scenedesmus quadricauda* (Turpin) Bréb.] – **t**
S. ecornis (Ehrenb.) Chodat – **t**
 S. obliquus* (Turpin) Kütz. – **t
 S. obliquus* var. *alternans* Christ. – **t
S. opoliensis var. *mononensis* Chodat – **t**
 S. ovalternus* Chodat – **a
S. subspicatus Chodat – **t**
S. tenuispina Chodat – **t**
Scotiella antarctica F.E. Fritsch – **n**
S. nivalis (Shuttlew.) F.E. Fritsch – **n**
 Sphaerocystis schroeteri* Chodat [Syn.: **Gloeococcus schroeteri* (Chodat) Lemmerm.] – **t
Sphaeroplea annulina (Roth) C. Agardh – **t**
S. annulina var. *lata* Petkoff – **t**
S. turfosa W. & G.S. West. – **m**
Stichococcus bacillaris Nägeli – **t**
S. bacillaris *f. *cryophylla* Chodat – **n**
S. bacillaris *var. *major* (Nägeli) Rabenh. – **s**
 Stigeoclonium falklandicum* (Kütz.) Kütz. [as “*S. falklandicum* var. *genuinum* (Kütz.) Hansg.” by Petkoff 1908-1909] – **w
S. tenue Kuetz. – **t**
 S. tenue* var. *irregulare* (Kütz.) Rabenh. – **w
Tetraedron minimum (A. Braun) Hansg. – **t**
 T. pachydermum* var. *minor* Reinsch – **n
Tetrastrum glabrum (Roll) Ahlstrom & Tiffany – **t**
Trebouxia arboricola Puym. – **b, r**
T. cf. excentrica Archibald – **c**
Trentepohlia aurea (L.) Mart. – **c, m, r**
T. aurea var. *lanosa* Kütz. – **m**
T. iolithus (L.) Wallr. – **r**
 T. piceana* C.A. Mey. – **b
T. umbrina (Kütz.) Bornet – **b**
Trochiscia granulata (Reinsch) Hansg. – **t, w**
 T. nivalis* Lagerh. – **n

**T. reticularis* (Reinsch.) Hansg. – t
Ulothrix aequalis var. *variabilis* Petkoff – b
U. subtilissima Rabenh – t
U. tenerrima Kütz. [Syn.: *Ulothrix subtilis* var. *tenerri-*
ma (Kütz.) Kirchn.] – t, w
U. variabilis Kütz. – t
Urococcus insignis Hassall – m

Streptophyta

Closterium acerosum (Schrank) Ehrenb. – t
C. angustatum Kütz. – m
C. intermedium Ralfs – m
C. closterioides (Ralfs) Louis & Peeters (Syn.: *Closteri-*
um libellula Focke) – m
C. moniliferum f. *devnense* Petkoff – w
C. navicula (Bréb.) Lütkem. [Syn.: ?*Penium navicula*
 Bréb ad. f. *wilei* Schmidle in Petkoff 1939] – c
C. parvulum Nägeli – m
C. pronum Bréb. – t
Cosmarium angulosum Bréb. – a
C. blytii var. *quadrinotatum* Lütkem. – m
C. conspersum var. *latum* (Bréb.) W. West – m
C. crenatum var. *nanum* Wittr. – r
 **C. curtum* var. *exiguum* Hansg. – r
 **C. curtum* var. *exiguum* f. *polymorpha* Petkoff – r
C. garrolense Roy & Bisset – a
C. hammeri var. *homalodermum* W. West – m
C. holmiense J.W.G. Lund – a
C. laeve Rabenh. – c
C. nasutum f. *granulata* Nordst. – m
C. notabile Bréb. – a, r
C. pseudamoenum var. *carinthiaca* Schmidle – m
C. punctulatum var. *subpunctulatum* (Nordst.) Börges-
 en – m
C. quadratum Ralfs – m
C. regnellii f. *minor* Boldt – m
C. tetragonum (Nägeli) W. Archer – a
C. tumens Nordst. – r
Cylindrocystis brebissonii (Menegh.) de Bary – m
C. brebissonii var. *jenneri* (Ralfs) Hansg. – m
C. brebissonii var. *turgida* Schmidle – m
C. crassa de Bary – m
Disphinctium sp. – r
Euastrum alpinum Messik. – m
E. ansatum Ehrenb. – m
E. bidentatum Nägeli – m
E. binale (Turpin) Ehrenb. – m, r
E. binale var. *minus* W. West – m
E. dubium Nägeli – a

E. gyanum De Toni – m
E. oblongum (Grev.) Ralfs ex Ralfs – m
Mesotaenium chlamydosporum var. *violascens* (de Ba-
 ry) W. Krieg. – a
M. endlicherianum Nägeli – m
M. endlicherianum var. *grande* Nordst. – m
M. macrococcum (Kütz.) J. Roy & Bisset – a, m
M. murificum Arch. – a
Micrasterias crux-melitensis (Ehrenb.) Ralfs – t
M. thomasiana var. *notata* Grönblad – m
Mougeotia nummuloides (Hass.) De Toni. – r
Mougeotia sp. ster. – t
Penium rufescens Cleve – t
P. polymorphum Perty – m
Roya obtusa (Bréb.) W. & G.S. West – r
Spirogyra varians (Hass.) Kütz. – s
Spirogyra spp. ster. – c, t
Spirotaenia obscura Ralfs – m
Spondylosium pulchellum W. Archer – m
Staurastrum basichondroides Gutw. – m
 **S. dejectum* var. *convergens* Wolle – m
 **S. gladiusum* f. *ornata* Laporte – m
 **S. muricatiforme* var. *minus* Roub. – m
S. muticum (Bréb.) Ralfs – m
S. pseudopisciforme f. *dimidio-minor* Grönblad – m
Zygnema sp. ster. – s, t

Ochrophyta

Tribophyceae

Botrydium corniforme Voden. – t
B. granulatum Grev. – t
B. granulatum var. *acysta* V.V. Mill. – t
B. milleri Voden. – t
B. pachydermum V.V. Mill. – t
B. tuberosum Iyengar – t
B. woroninii (V.V. Mill.) emend. Voden. – t
Botrydium sp. – t
Bumilleria sicula Borzi – t
Chloridella sp. – t
Goniochloris fallax Fott – t
Heterococcus viridis Chodat – t
Heterococcus sp. – t
Tribonema bombycinum Derbès & Solier (Syn.: *Con-*
ferva bombycina C. Agardh) – t
Vaucheria geminata (Vaucher) DC. – r
V. hamata Walz – t, w
V. racemosa (Vaucher) DC. – s
V. terrestris (Vaucher) Lyngb. – t
Vaucheria sp. ster. – t

Bacillariophyceae

- Amphora ovalis* var. *pediculus* Kütz. – t
Anomoeoneis sphaerophora var. *sculpta* (Her.) O.F. Müll. – t
Cymbella cymbiformis Kütz. – w
Cymbella sp. – w
Hantzschia amphioxys (Ehrenb.) Grunow – t
H. amphioxys f. *capitata* O.F. Müll. – t
H. amphioxys var. *compacta* Hust. – t
Navicula nivalis Ehrenb. [Syn.: *Navicula mutica* var. *nivalis* (Ehrenb.) Hust.] – t
N. pelliculosa (Bréb.) Hilse – t
N. viridula var. *slesvicencis* Grunow – c, w
Navicula spp. – t
Nitzschia palea (Kütz.) W. Smith – t
Pinnularia borealis Ehrenb. – c, w
P. intermedia (Lagerst.) Cleve – t
P. interrupta W. Smith – t
Stauroneis anceps Ehrenb. – t
Surirella ovalis var. *minuta* Bréb. – w
Tabellaria flocculosa (Roth) Kütz. – m
Toxarium undulatum var. *poniticum* Petkoff as “*Taxorium undulatum* var. *poniticum*” in Petkoff (1919) – r

Euglenophyta

- Astasia klebsi* Lemmerm. – t
Astasia sp. – t
Euglena spp. – t, w
Petalomonas mediocanellata Stein – t
Phacus spp. – t
Polytoma uvella Ehrenb. – t

Pyrrhophyta

- **Gloeodinium montanum* G.A. Klebs. – r
Gymnodinium spp. – t

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