



Checklist of Phytoplankton Species in the Egyptian Waters of the Red Sea and Some Surrounding Habitats (1990-2010)

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors contributed equally to the study, collected the data, wrote the first draft of the manuscript and corrected it according to the reviewer's comments. Both authors read and approve the final manuscript.

Review Article

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ABSTRACT

This review describes the phytoplankton species in the Egyptian waters of the Red Sea and some surrounding habitats namely; Gulf of Suez, Aqaba Gulf and Suez Canal as well as the species abundance during the period from 1990 to 2010.

Although many reviews on the phytoplankton species had been done for some areas of the world, a clear and concise list of the phytoplankton species for Red Sea waters (Egypt) has recently not documented.

Aim of this Review: This review aims to provide a checklist of phytoplankton species found as their names and abundance appear in the cited literature, as well as their current valid, accepted names and their common synonyms. This will allow for a better understanding of the presumed phytoplankton species documented around the areas of Red Sea waters (Egypt).

Place and Duration of Study: The phytoplankton species reported in this review are collected from the different published sources that represent the years spanning 1990-2010.

Keywords: Review; phytoplankton species; Egyptian waters; red sea.

1. INTRODUCTION

The Red Sea is a narrow inland sea separating the Arabian Peninsula, western Asia, from northeastern Africa. It extends northwest from the strait of Bab El-Mandeb to Suez, Egypt, for a distance of 1,900 km (1,200 mile). The maximum depth of the sea is 3,040 m (9,970 ft), and its maximum width is 350 km (220 mile). The northern extremity is divided by the Sinai Peninsula into the Gulfs of Suez and Aqaba. The Suez Canal connects the Red Sea with the Mediterranean Sea and Bab El-Mandeb with the Gulf of Aden, an arm of the Arabian Sea. Its ports are presented by Jeddah of Saudi Arabia, Mukalla of Yemen and Suez located at the Gulf of Suez, which are important for the traffic of the Red Sea [1,2].

The phytoplankton of the northern part of Suez Canal was studied by Dorgham [3]. El-Sherif and Ibrahim [4] studied the phytoplankton production along Suez Canal and they recorded about 139 species represented by three groups (94 Bacillariophyceae, 36 Dinophyceae and five Cyanophytes). Also, a total of 116 taxa were identified in the Bitter Lakes and Tamsah Lake of Suez Canal by Nassar and Shams El-Din [5], among which 72 taxa of diatoms, 16 dinoflagellates, 14 Chlorophytes, 11 Cyanophytes, two Euglenophytes and one silicoflagellate species.

The effect of heavy petroleum hydrocarbons (aromatic derivatives), in addition to some ecological factors, on the distribution of phytoplankton in the northern part of Suez Gulf was studied by Nassar [6]. He concluded that, phytoplankton was comprised mainly of 49 diatoms (89.29 %), 18 Dinoflagellates (9.9 %), five Cyanophytes (0.68 %), three species of Chlorophytes (0.04 %) and one rarely species of silicoflagellates.

The distribution of plankton at different stations in the Red Sea (Taba, Sharm El-Sheikh, Al-Ghardaqa and Safaga) was conducted by El-Sherif and Abo El-Ezz [7]. They concluded that, one hundred and six species of phytoplankton were recorded including 41 diatoms, 53 dinoflagellates, 10 cyanophytes and two chlorophytes.

Nassar [8] found that, the phytoplankton community structure in the coastal water of Suez Gulf was mainly composed of Bacillariophyceae (47 species), Dinophyceae (18 species), Cyanophyceae (4 species) and Chrysophyceae (one species).

The phytoplankton standing crop and species composition in Suez Bay were studied by Nassar and Hamed [9]. They concluded that, a total of 80 species and varieties were identified at the selected stations of the Bay.

The seasonal variations of phytoplankton distribution and abundance in relation to the environmental conditions and human impacts are estimated in the Suez Canal, Suez Gulf and the northern part of the Red Sea, Egypt by Deyab et al. [10]. They observed that, a total of 200 species of phytoplankton belonging to 45 different genera were recorded.

Nassar [11] studied the phytoplankton abundance and species composition in the coastal waters of Suez Gulf. The results indicated 144 species of phytoplankton were observed and classified as 89 diatoms (70.3%), 30 dinoflagellates (6.13%), 12 chlorophytes (18.4%), 12 cyanophytes (5.14%) and one silicoflagellate species. Also, Nassar [12] estimated the seasonal fluctuations of phytoplankton in the coastal waters of the Aqaba Gulf. The phytoplankton abundance included 127 species of phytoplankton, which distributed as; 75 diatoms, 27 dinoflagellates, 16 cyanophytes, eight chlorophytes as well as one silicoflagellate species.

Madkour et al. [13] studied the phytoplankton population along the Egyptian coastal regions of the Red Sea. The phytoplankton abundance was fairly diversified (181 species) and comprised mainly two groups; dinoflagellates (116 species) and diatoms (60 species).

However, there are many published and un-published data about the phytoplankton distribution in the Egyptian Red Sea water, but they scattered and not updated.

The present study aims to collect these data in terms of species composition during the period, 1990-2010, and the reported species are documented, including: 1) the species named as it is appeared in the original publications; 2) the species current, valid and accepted names; and, 3) the common synonyms, verified through the taxonomic database sites; *algaebase.com* (ab), World Register of Marine Species (WoRMS), Canadian Register of Marine Species (CaRMS), Nordic Microalgae and Aquatic Protozoa (NOD) and Integrated Taxonomic Information System (ITIS).

2. METHODS

Phytoplankton standing crop was determined in the represented papers by sedimentation technique as described by Ütermohl [14] and its magnitude is expressed in units per liter. For identification of the algal taxa, the following references were consulted; Peragallo and Peragallo [15], Ghazzawi [16], Cupp [17], Bourrelly [18] and Bold and Wynne [19] for the diatoms and silicoflagellates. Ferguson Wood [20] for dinoflagellates. El-Nayal [21], Huber-Pestaluzzi [22] and Prescott [23] for cyanophytes. Stewart and Mattox [24] for chlorophytes as well as Sourina [25] and Mizuno [26] for identification of different classes of phytoplankton.

3. RESULTS

The phytoplankton data reported in this review are collected from the different published sources that represent the years spanning 1990-2010. The study areas including the Gulfs of Suez and Aqaba [SG and AG], Suez Canal [SC] and the Egyptian waters of the Red Sea [RS].

Generally, the collected phytoplankton data were represented by about 207 phytoplankton species recorded in the Egyptian waters of the Red Sea and the studied surrounding habitats. These species are classified as; 45 genus of Bacillariophyceae (116 species), 15 genera (48 species) of Dinophyceae, 11 genera (20 species) of Chlorophyceae, nine genera (19 species) of Cyanobacteria (Cyanophyceae), two genera (three species) of Euglenophyceae as well as one species of Chrysophyceae (Appendix 1).

4. CONCLUSION

There are many un-accepted names of the phytoplankton species that previously recorded in the published literatures in the Egyptian waters of the Red Sea as well as some surrounding habitats during the period 1990-2010, so this review describes these species as their names and abundance as presented in the cited literatures, as well as their current, valid, accepted names and their common synonyms according to some taxonomic algal database sites.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX**Appendix 1. List of the documented phytoplankton species at the different sites and their frequency**

Name used in original paper	Current used (valid and accepted) name	Synonyms	Sites			
			RS	SG	AG	SC
Class: Bacillariophyceae						
<i>Achnanthes brevipes</i> C. Agardh	<i>Achnanthes brevipes</i> C. Agardh (ab)	<i>Achnanthes brevipes</i> (Agardh) Gaillon, <i>Achnantheidium brevipes</i> (Agardh) Heiberg, <i>Achnantheidium brevipes</i> (Agardh) Cleve	-	-	-	+
<i>Amphiprora alata</i> Kütz	<i>Amphiprora alata</i> (Ehrenberg) Kützing (ab)	<i>Entomoneis alata</i> (Ehrenberg) Reimer in Patrick & Reimer	+	+	+	++
<i>Amphiprora paludosa</i> W. Smith	<i>Amphiprora paludosa</i> W. Smith (ab)	<i>Entomoneis paludosa</i> (W.Smith) Reimer in Patrick & Reimer	+	+	-	++
<i>Amphora grevilleana</i> Cleve	<i>Amphora grevilleana</i> Gregory (WoRMS)	<i>Amphora complexa</i> Gregory, <i>Amphora</i> <i>fasciata</i> Gregory, <i>Amphora sulcata</i> Gregory	-	+	+	-
<i>Amphora lineolata</i> Ehr	<i>Amphora lineolata</i> Ehrenberg (ab)	<i>Navicula lineolata</i> Ehrenberg	+	+	-	-
<i>Amphora marina</i> Smith	<i>Amphora marina</i> W. Smith (ab)	<i>Amphora marina</i> W. Smith	+	+	++	+
<i>Asterionella japonica</i> Cleve	<i>Asterionellopsis</i> <i>glacialis</i> (F. Castracane) F.E. Round (ab)		+	+	+++	+++
<i>Asterionella kariana</i> Grun	<i>Asteroplanus karianus</i> (Grunow) C. Gardner & R.M. Crawford (ab)	<i>Asterionella kariana</i> Grunow, <i>Asterionellopsis</i> <i>kariana</i> (Grunow) F.E. Round	+	+	++	-
<i>Bacillaria paradoxa</i> (Gmel.) Grun	<i>Bacillaria paradoxa</i> J.F. Gmelin (ab)	<i>Oscillaria paxillifera</i> (O.F. Müller) Schrank	+	+	+	+
<i>Bacteriastrium</i> <i>delicatulum</i> Cleve	<i>Bacteriastrium</i> <i>delicatulum</i> Cleve (ab)		-	-	-	+
<i>Bacteriastrium</i> <i>hyalinum</i> Lauder	<i>Bacteriastrium hyalinum</i> Laud. (ab)		+	+	+	+
<i>Bellerochea malleus</i> Brigh.	<i>Bellerochea malleus</i> (Brightwell) Van Heurck, <i>Bellerochea</i> <i>horologicalis</i> Stosch (WoRMS)	<i>Triceratium malleus</i> Brightwell	-	+	-	+
<i>Biddulphia aurita</i> (Lyng.) Breb.	<i>Odontella aurita</i> (Lyngbye) C.A. Agardh (ab)	<i>Biddulphia aurita</i> (Lyngbye) Brébisson	+	+	+	+
<i>Biddulphia longicuris</i> Grev.	<i>Odontella longicuris</i> (Greville) Hoban (ab)	<i>Biddulphia longicuris</i> var. <i>hyaline</i> (Schröd.) Cupp	-	-	-	+
<i>Biddulphia mobiliensis</i> (J.W.Bailey Grunow	<i>Odontella mobiliensis</i> (J.W. Bailey) Grunow (ab)	<i>Biddulphia mobiliensis</i> Grunow, <i>Zygoceros</i> <i>mobiliensis</i> J.W. Bailey, <i>Biddulphia baileyi</i> W. Smith	-	-	-	+

<i>Biddulphia obtusa</i> Kütz	<i>Biddulphia obtusa</i> (Kützing) Ralfs (ab)	<i>Biddulphia roperiana</i> Greville, <i>Odontella obtusa</i> Kützing, <i>Biddulphia aurita</i> var. <i>obtuse</i> (Kützing) Hustedt	-	+	+	+
<i>Biddulphia smithii</i> Van Heurck	<i>Cerataulus smithii</i> Ralfs ex Pritchard (ab)		-	-	-	+
<i>Campylodiscus noricus</i> var. <i>hibernica</i> (Ehr) Grun	<i>Campylodiscus</i> <i>hibernicus</i> Ehrenberg (ab)		+	+	+	+
<i>Cerataulina bergonii</i> H. Peragallo	<i>Cerataulina elagic</i> (Cleve) Hendey (ab)	<i>Cerataulus bergonii</i> H. Peragallo	+	+	+	+
<i>Chaetoceros affinis</i> Lauder	<i>Chaetoceros affinis</i> Lauder (ab)	<i>Chaetoceros angulatus</i> Schütt, <i>Chaetoceros</i> <i>ralfsii</i> Cleve, <i>Chaetoceros</i> <i>javanicus</i> Cleve, <i>Chaetoceros schuttii</i> Cleve	-	+	-	++
<i>Chaetoceros</i> <i>anastomosans</i> Grunow	<i>Chaetoceros</i> <i>anastomosans</i> Grunow (ab)		+	-	-	++
<i>Chaetoceros</i> <i>coarctatus</i> Lauder	<i>Chaetoceros coarctatus</i> Lauder (ab)	<i>Chaetoceros rude</i> Cleve	+	+	+	-
<i>Chaetoceros</i> <i>compressus</i> Lauder	<i>Chaetoceros</i> <i>compressus</i> Lauder (ab)	<i>Chaetoceros contortus</i> Schütt	+	+	+	+
<i>Chaetoceros</i> <i>curvisetus</i> Cleve	<i>Chaetoceros curvisetus</i> Cleve (ab)		+	+++	++	+++
<i>Chaetoceros</i> <i>decepiens</i> Cleve	<i>Chaetoceros decepiens</i> Cleve (ab)	<i>Chaetoceros grunowii</i> Schütt	+	++	++	++
<i>Chaetoceros densus</i> Cleve	<i>Chaetoceros densus</i> (Cleve) Cleve (ab)	<i>Chaetoceros borealis</i> var. <i>densum</i> Cleve	+	+	-	+
<i>Chaetoceros lauderi</i> Ralfs	<i>Chaetoceros lauderi</i> Ralfs (ab)	<i>Chaetoceros weissflogii</i> Schütt	+	+	+	-
<i>Chaetoceros</i> <i>lorenzianus</i> Gran	<i>Chaetoceros</i> <i>lorenzianus</i> Grunow (ab)	<i>Chaetoceros cellulosus</i> Lauder	+	+	+	+
<i>Chaetoceros</i> <i>peruvianus</i> Brightwell	<i>Chaetoceros</i> <i>peruvianus</i> Brightwell (ab)	<i>Chaetoceros chilensis</i> Kraske, <i>Chaetoceros</i> <i>convexicornis</i> Mangin, <i>Chaetoceros peruvianum</i> var. <i>currens</i> Peragallo, <i>Chaetoceros</i> <i>peruvioatlanticum</i> Karsten	+	+	+	+
<i>Chaetoceros radicans</i> Schütt	<i>Chaetoceros radicans</i> Schütt (ab)	<i>Chaetoceros scolopendra</i> Cleve	+	+	-	+
<i>Chaetoceros</i> <i>tetrastichon</i> Cleve	<i>Chaetoceros</i> <i>tetrastichon</i> Cleve (ab)		+	+	-	+
<i>Chaetoceros</i> <i>tortissimus</i> Gran	<i>Chaetoceros</i> <i>tortissimus</i> Gran (ab)		+++	+	++	+
<i>Climacodium</i> <i>biconcavum</i> Cleve	<i>Climacodium</i> <i>biconcavum</i> Cleve (WoRMS)		+	++	+	+
<i>Climacodium</i> <i>frauenfeldianum</i> Grun	<i>Chaetoceros</i> <i>frauenfeldianum</i> Grunow (ab)		+	+	+	+

<i>Climacosphenia moniligera</i> Ehr.	<i>Climacosphenia moniligera</i> Ehr. (ab)		+++	+++	+	++
<i>Cocconeis placentula</i> Ehr.	<i>Cocconeis placentula</i> Ehrenberg (ab)	<i>Cocconeis pediculus</i> var. <i>placentula</i> (C.G. Ehrenberg) A. Grunow, <i>Cocconeis communis</i> f. <i>placentula</i> (Ehrenberg) Chmielewski	+	+	+	+
<i>Coscinodiscus excentricus</i> Ehr.	<i>Coscinodiscus excentricus</i> Ehr. (ab)		+	+	+	+
<i>Coscinodiscus granii</i> Gough	<i>Coscinodiscus granii</i> Gough (ab)		+	+	++	+
<i>Coscinodiscus marginatus</i> Ehr.	<i>Coscinodiscus marginatus</i> Ehrenberg (ab)	<i>Coscinodiscus limbatus</i> Ehrenberg, <i>Coscinodiscus fimbriatus-limbatus</i> Ehrenberg	-	-	-	+
<i>Coscinodiscus radiates</i> Ehr.	<i>Azpeitia nodulifera</i> (A.W.F. Schmidt) G.A. Fryxell & P.A. Sims (ab)	<i>Coscinodiscus radiatus</i> H.L. Smith	++	+++	+	+
<i>Coscinodiscus radiatus</i> var. <i>oculus-iridis</i> Ehr.	<i>Coscinodiscus oculus-iridis</i> (Ehrenberg) Ehrenberg (ab)	<i>Coscinodiscus radiatus</i> var. <i>oculus-iridis</i> Ehrenberg, <i>Coscinodiscus oculus-iridis</i> var. <i>genuina</i> Grunow, <i>Coscinodiscus oculus-iridis</i> var. <i>typicus</i> Cleve-Euler	+	+	+	+
<i>Cyclotella meneghiniana</i> Kütz	<i>Cyclotella meneghiniana</i> Kützing (ab)	<i>Cyclotella kutzingiana</i> var. <i>meneghiniana</i> (Kützing) Brun, <i>Stephanocyclus meneghiniana</i> (Kützing) Skabichevskii, <i>Surirella melosiroides</i> G.G.A. Meneghini ms. in Kützing	+	+	+	-
<i>Cymbella ventricosa</i> Kütz	<i>Cymbella ventricosa</i> (C. Agardh) C. Agardh (ab)	<i>Encyonema ventricosum</i> (C. Agardh) Grunow in A. Schmidt et al.	+	+	+	-
<i>Diploneis didyma</i> Ehr.	<i>Diploneis didyma</i> (Ehrenberg) Ehrenberg (ab)	<i>Diploneis didyma</i> (Ehrenberg) Ehrenberg, <i>Navicula didymus</i> Ehrenberg, <i>Pinnularia didyma</i> Ehrenberg	-	-	+	-
<i>Diploneis interrupta</i> (Kütz) Cleve	<i>Diploneis interrupta</i> (Kützing) Cleve (ab)	<i>Navicula interrupta</i> Kützing, <i>Schizonema interruptum</i> (Cleve) Kuntze	+	+	+	+
<i>Fragilaria capucina</i> Desm.	<i>Fragilaria capucina</i> Desmazières, <i>Fragilaria pectinalis</i> (O.F. Müller) Lyngbye (ab)	<i>Fragilaria capucina</i> var. <i>lanceolata</i> Grunow in van Heurck, <i>Fragilaria capucina</i> f. <i>lanceolata</i> (Grunow) Hustedt, <i>Fragilaria capucina</i> f. <i>lanceolata</i> (Grunow) Skabichevskii	+	+	+	+

<i>Fragillaria construens</i> (Ehr.) Grun.	<i>Fragillaria construens</i> (Ehrenberg) Grunow (ab)	<i>Staurosira construens</i> Ehrenberg, <i>Staurosira venter</i> var. <i>construens</i> (Ehrenberg) Cleve & Möller, <i>Nematoplata construens</i> (Ehrenberg) Kuntze	++	+	-	-
<i>Gramatophora marina</i> (Lyng.) Kütz	<i>Grammatophora marina</i> (Lyngbye) Kützing (ab)	<i>Diatoma marina</i> Lyngbye	+	-	-	-
<i>Gramatophora oceanica</i> Ehr.	<i>Grammatophora oceanica</i> Ehrenberg (WoRMS)	<i>Grammatophora marina</i> var. <i>communis</i> Grunow ex Van Heurck	+	-	-	-
<i>Guinardia flaccida</i> H. Peragallo	<i>Guinardia flaccida</i> (Castracane) H. Peragallo (ab)	<i>Rhizosolenia castracanei</i> Cleve, <i>Henseniella baltica</i> Schütt, <i>Guinardia baltica</i> Schütt	+++	+++	+	++
<i>Gyrosigma acuminatum</i> (Kütz) Rabenh.	<i>Gyrosigma acuminatum</i> (Kützing) Rabenhorst (WoRMS)	<i>Frustulia acuminata</i> Kützing, <i>Gyrosigma kuetzingii</i> (Grunow) Cleve, <i>Gyrosigma spenceri</i> (W. Smith) Griffith & Henfrey, <i>Gyrosigma spencerii</i> (J.W. Bailey ex Quekett) Griffith & Henfrey, <i>Navicula acuminata</i> (Kützing) Kützing, <i>Navicula spencerii</i> J.W. Bailey ex Quekett, <i>Pleurosigma acuminatum</i> (Kützing) W. Smith, <i>Pleurosigma acuminatum</i> (Kützing) Grunow, <i>Pleurosigma gracilentum</i> Rabenhorst, <i>Pleurosigma kuetzingii</i> Grunow, <i>Pleurosigma spenceri</i> var. <i>kuetzingii</i> (Grunow) Grunow, <i>Pleurosigma spencerii</i> (Bailey ex Quekett) W. Smith, <i>Scalptrum spenceri</i> (Quekett) Kuntze, <i>Sigmatella acuminata</i> (Kützing) Brébisson & Godey	-	-	+	-
<i>Gyrosigma attenuatum</i> Ehr.	<i>Gyrosigma attenuatum</i> (Kützing) Rabenhorst (ab)	<i>Gyrosigma hippocampus</i> (Ehrenberg) Hassall, <i>Frustulia attenuata</i> Kützing, <i>Sigmatella attenuata</i> (Kützing) Brébisson & Godey, <i>Navicula attenuata</i> (Kützing) Kützing, <i>Pleurosigma attenuatum</i> (Kützing) W. Smith, <i>Scalptrum attenuatum</i> (Kützing) Kuntze, <i>Gyrosigma attenuatum</i> (Kützing) Cleve	++	+	+	+

<i>Hemiaulus heibergii</i> Cleve	<i>Hemiaulus heibergii</i> Cleve (ab)		+++	+	++	+
<i>Hemiaulus hauckii</i> Grunow	<i>Hemiaulus hauckii</i> Grunow ex Van Heurck (ab)	<i>Hemiaulus delicatulus</i> Lemmermann	+	+	-	-
<i>Hemidiscus cuneiformis</i> Wallich	<i>Hemidiscus cuneiformis</i> Wallich (ab)	<i>Euodia cuneiformis</i> (Wallich) Schütt, <i>Euodia gibba</i> (Bailey) Ralfs, <i>Euodia radiata</i> Castracane	-	+	-	-
<i>Lauderia borealis</i> Gran	<i>Lauderia annulata</i> Cleve (WoRMS)		+	++	+	+
<i>Leptocylindrus danicus</i> Cleve	<i>Leptocylindrus danicus</i> (ab)		++	++	+	-
<i>Licmophora abbreviata</i> Ag.	<i>Licmophora abbreviata</i> C. Agardh (ab)		+	++	+	+
<i>Licmophora flabellata</i> (Gran) Ag.	<i>Licmophora flabellata</i> C. Agardh (ab)	<i>Exilaria flabellata</i> Greville	++	+++	+++	+
<i>Licmophora gracilis</i> (Her.) Grunow	<i>Licmophora gracilis</i> (Ehrenberg) Grunow (WoRMS)	<i>Podosphenia gracilis</i> Ehrenberg	+	+	+++	+
<i>Lithodesmium undulatum</i> Ehr.	<i>Lithodesmium undulatum</i> Ehrenberg (ab)	<i>Ditylum intricatum</i> Grunow, <i>Triceratium undulatum</i> Brightwell, <i>Triceratium intricatum</i> T. West, <i>Lithodesmium victoriae</i> Karsten, <i>Ditylum undulatum</i> Mann	-	-	+	+
<i>Melosira granulata</i> var. <i>angustissima</i> Ehr.	<i>Aulacoseira granulata</i> var. <i>angustissima</i> (O.F. Müller) Simonsen (ab)		+	++	+++	+
<i>Melosira italica</i> (Ehr.) Kütz	<i>Aulacoseira italica</i> (Ehrenberg) Simonsen (ab)	<i>Melosira italica</i> (Ehr.) Ktz.	++	++	+++	-
<i>Melosira sulcata</i> (Ehr.) Kütz	<i>Paralia sulcata</i> (Ehrenberg) Cleve (ab)	<i>Melosira sulcata</i> (Ehrenberg) Kützing	+	+	-	+
<i>Melosira varians</i> C. Ahardh	<i>Melosira varians</i> C. Agardh (ab)	<i>Lysigonium varians</i> (C. Agardh) DeToni	+	-	-	+
<i>Navicula cancellata</i> Donkin	<i>Navicula cancellata</i> Donkin (WoRMS)	<i>Navicula retusa</i> var. <i>cancellata</i> (Donkin) R. Ross	+	+	+	+
<i>Navicula cryptocephala</i> Kützing	<i>Navicula cryptocephala</i> Kützing (ab)	<i>Navicula cryptocephala</i> <i>forma terrestris</i> Lund, <i>Schizonema cryptocephalum</i> (Kützing) Kuntze, <i>Navicula cryptocephala</i> Lange-Bertalot	-	-	-	+
<i>Navicula dicephala</i> Ehr.	<i>Navicula dicephala</i> (Ehrenberg) W. Smith (ab)		+	+	-	+
<i>Navicula distans</i> (W. smith) Ralfs	<i>Navicula distans</i> (W. Smith) Schmidt (ab)	<i>Pinnularia distans</i> W. Smith	+	+	+	-
<i>Navicula gracilis</i> Ehr.	<i>Navicula gracilis</i> Ehrenberg, <i>Navicula tripunctata</i> (O.F. Müller)		+	+	+	+

	Bory de Saint-Vincent (WoRMS)					
<i>Navicula lyra</i> var. <i>atlantica</i> (Schum) Cleve	<i>Navicula lyra</i> var. <i>atlantica</i> A.Schmidt (ab)	<i>Navicula atlantica</i> A.Schmidt, <i>Lyrella atlantica</i> (Schmidt) D.G. Mann in F.E. Round, R.M. Crawford & D.G. Mann	+	+	-	-
<i>Navicula membranacea</i> (Cleve) Silva	<i>Navicula membranacea</i> Cleve (WoRMS)	<i>Meuniera membranacea</i> (Cleve) P.C. Silva	+	-	+	-
<i>Navicula placentula</i> Ehr.	<i>Navicula placentula</i> (Ehrenberg) Kützing (ab)		+	+	+	+
<i>Nitzschia closterium</i> W. Smith	<i>Nitzschia closterium</i> (Ehrenberg) W.Smith (ab)	<i>Ceratoneis closterium</i> Ehrenberg, <i>Nitzschiella closterium</i> (Ehrenberg) Rabenhorst, <i>Nitzschia longissima</i> var. <i>closterium</i> (Ehrenberg) Van Heurck, <i>Nitzschia curvirostris</i> var. <i>Closterium</i> (Ehrenberg) De Toni, <i>Nitzschiella longissima</i> var. <i>closterium</i> (Ehrenberg) Peragallo & Peragallo, <i>Homoeocladia closterium</i> (Ehrenberg) Kuntze, <i>Cylindrotheca closterium</i> (Ehrenberg) Reimann & Lewin	+	+	+	+
<i>Nitzschia Kützingiana</i> Hilse	<i>Nitzschia kützingiana</i> Hilse (ab)		-	+	-	++
<i>Nitzschia longissima</i> Ehr.	<i>Nitzschia longissima</i> (Brébisson) Ralfs in Pritchard (ab)	<i>Nitzschiella longissima</i> (Brébisson) Rabenhorst, <i>Ceratoneis longissima</i> Brébisson, <i>Nitzschia birostrata</i> W. Smith	++	+++	+++	++
<i>Nitzschia obtusa</i> W. Smith	<i>Nitzschia obtusa</i> W. Smith (ab)	<i>Bacillaria obtusa</i> (W. Smith) Elmore in Barbour	+	+	-	+
<i>Nitzschia palea</i> (Kütz) W. Smith	<i>Nitzschia palea</i> (Kützing) W.Smith (ab)		-	+	+	+
<i>Nitzschia pungens</i> var. <i>atlantica</i> Cleve	<i>Nitzschia pungens</i> var. <i>atlantica</i> Cleve (ab)		++	+++	+++	++
<i>Nitzschia seriata</i> Cleve	<i>Pseudo-nitzschia seriata</i> (Cleve) H.Peragallo (ab)	<i>Nitzschia seriata</i> Cleve	+	-	+	+
<i>Nitzschia pacifica</i> Cupp.	<i>Nitzschia pacifica</i> Cupp (ab)		-	-	-	+
<i>Nitzschia sigma</i> Kütz	<i>Nitzschia sigma</i> (Kützing) W. Smith (ab)	<i>Sigmatella sigma</i> (Kützing) Frenguelli, <i>Homoeocladia sigma</i> (Kützing) Kuntze, <i>Synedra sigma</i> Kützing	+	++	+	+++
<i>Plagiogramma vanheurckii</i> Grun	<i>Plagiogramma vanheurckii</i> Grunow (ab)	<i>Plagiogrammopsis vanheurckii</i> (Grunow) Hasle, von Stosch & Syvertsen	-	+	-	+

<i>Pleurosigma angulatum</i> (Quekett) W. Smith	<i>Pleurosigma angulatum</i> W. Smith (ab)		+	+	+	+
<i>Rhabdonema adriaticum</i> Kütz	<i>Rhabdonema adriaticum</i> Kützing (ab)		+	+	+	+
<i>Rhizosolenia imbricata</i> var. <i>shrubsolei</i> (Cleve) Schröder	<i>Rhizosolenia imbricata</i> var. <i>shrubsolei</i> (Cleve) Schröder (WoRMS)	<i>Rhizosolenia imbricata</i> Brightwell	+	+	+	+
<i>Rhizosolenia alata</i> Brightwell	<i>Proboscia alata</i> (Brightwell) Sündstrom (ab)	<i>Rhizosolenia alata</i> Brightwell	+	+	+	++
<i>Rhizosolenia alata</i> f. <i>gracillima</i> Cleve	<i>Rhizosolenia alata</i> var. <i>gracillima</i> (Cleve) Grunow ex Van Heurck (ab)		++	+++	+++	+
<i>Rhizosolenia alata</i> f. <i>indica</i> H. Peragallo	<i>Rhizosolenia alata</i> f. <i>indica</i> (H. Peragallo) Gran in Brandt, Apstein & Nord (ab)		-	+	+	+
<i>Rhizosolenia bergonii</i> H. Peragallo	<i>Rhizosolenia bergonii</i> H. Pérangolo (ab)	<i>Rhizosolenia amputata</i> Ostenfeld	+	-	+	-
<i>Rhizosolenia calcar avis</i> M. Schultze	<i>Pseudosolenia calcar-avis</i> (Schultze) Sundström (ab)	<i>Rhizosolenia calcar avis</i> M. Schultze	+	++	+	+
<i>Rhizosolenia delicatula</i> Cleve	<i>Rhizosolenia delicatula</i> Cleve (ab)	<i>Guinardia delicatula</i> (Cleve) Hasle	+	-	+	-
<i>Rhizosolenia fragilissima</i> Bergon	<i>Rhizosolenia fragilissima</i> Bergon (ab)	<i>Dactyliosolen fragilissimus</i> (Bergon) G.R. Hasle	-	-	-	+
<i>Rhizosolenia hebatata</i> Bailey	<i>Rhizosolenia hebatata</i> J.W. Bailey (ab)	<i>Rhizosolenia hebatata</i> f. <i>hiemalis</i> Gran	+	+	+	-
<i>Rhizosolenia robusta</i> Norman Ralfs	<i>Rhizosolenia robusta</i> G.Norman ex Ralfs in Pritchard (ab)		-	-	-	+
<i>Rhizosolenia stolterfothii</i> H. Peragallo	<i>Rhizosolenia stolterfothii</i> H. Peragallo (ab)	<i>Guinardia striata</i> (Stolterfoth) Hasle, <i>Pyxilla stephanos</i> Hensen	+	+	+++	+
<i>Rhizosolenia styliformis</i> Brightwell	<i>Rhizosolenia styliformis</i> Brightwell (ab)	<i>Rhizosolenia styliformis</i> var. <i>polydactyla</i> van Heurck, <i>Rhizosolenia styliformis</i> var. <i>longispina</i> Hustedt	-	+	+	+
<i>Schroederella delicatula</i> H. Peragallo	<i>Schroederella delicatula</i> (H.Peragallo) Pavillard (ab)	<i>Detonula pumila</i> (Castracane) Gran	-	+	+	+
<i>Skeletonema costatum</i> (Grev.) Cleve	<i>Skeletonema costatum</i> (Greville) Cleve (ab)	<i>Melosira costata</i> Greville	-	+	-	++
<i>Stephanopyxis nipponica</i> Gran. & Yendo	<i>Stephanopyxis nipponica</i> Gran & Yendo (ab)		-	-	-	+
<i>Striatella delicatula</i> (Kütz) Grun	<i>Striatella delicatula</i> (Kützing) Grunow ex Van Heurck (ab)		+	+	+	-
<i>Striatella unipunctata</i> Lyngb.	<i>Striatella unipunctata</i> (Lyngbye) C. Agardh (ab)	<i>Fragilaria unipunctata</i> Lyngbye	+	++	-	+

<i>Surirella baldjickii</i> Norman	<i>Surirella baldjickii</i> G. Norman (ab)		-	+	-	-
<i>Surirella ovata</i> Kütz	<i>Surirella minuta</i> Brébisson (WoRMS)		+	+	+	+
<i>Surirella robusta</i> Her.	<i>Surirella robusta</i> Ehrenberg (ab)		-	+	-	+
<i>Surirella capronii</i> Bréb	<i>Surirella capronii</i> Brébisson ex F. Kitton (ab)		+	+	-	+
<i>Synedra ulna</i> Nitzsch.	<i>Synedra ulna</i> (Nitzsch) Ehrenberg (ab)	<i>Ulnaria ulna</i> (Nitzsch) P. Compère	+	+	+	+
<i>Synedra undulata</i> Bail.	<i>Synedra undulata</i> (J.W.Bailey) Gregory (ab)		+	++	++	+
<i>Tabellaria fenestrata</i> (Lyng.) Kütz	<i>Tabellaria fenestrata</i> (Lyngbye) Kützing (ab)		-	+	+	-
<i>Thalassionema nitzschioides</i> Grun	<i>Thalassionema nitzschioides</i> (Grunow) Mereschkowsky (ab)	<i>Thalassiothrix nitzschioides</i> var. <i>javanica</i> Grunow, <i>Synedra nitzschioides</i> Grunow, <i>Thalassiothrix nitzschioides</i> (Grunow) Grunow, <i>Thalassiothrix curvata</i> Castracane, <i>Synedra nitzschioides</i> var. <i>minor</i> Cleve, <i>Thalassiothrix fraunfeldii</i> var. <i>Nitzschioides</i> (Grunow) Jørgensen	+	+	+	++
<i>Thalassiosira angustelineata</i> (Schmidt) Fryxell & Hasle .	<i>Thalassiosira angustelineata</i> (A.Schmidt) G.Fryxell & Hasle (ab)	<i>Coscinodiscus angustelineatus</i> A.Schmidt	-	-	+	+
<i>Thalassiothrix mediterranea</i> Pavill.	<i>Thalassiothrix mediterranea</i> Pavillard (ab)		+	+	-	-
<i>Thalassiothrix frauenfeldii</i> Grun	<i>Thalassiothrix frauenfeldii</i> (Grunow) Grunow (WoRMS)	<i>Thalassionema frauenfeldii</i> (Grunow) Tempère & Peragallo	+	+	+	+
<i>Thalassiothrix longissima</i> Cleve & Grun	<i>Thalassiothrix longissima</i> Cleve & Grunow (ab)	<i>Synedra thalassiothrix</i> Cleve	++	++	++	+
<i>Tropidoneis antarctica</i> var. <i>polyasta</i> Gran and Angst	<i>Tropidoneis antarcticavar. polyplasta</i> Gran & Angst, (ab)		-	+	+	-
<i>Tropidoneis lepidoptera</i> (Greg.) Cleve	<i>Plagiotropis lepidoptera</i> (Gregory) Kuntze (ab)	<i>Amphiprora lepidoptera</i> Gregory, <i>Tropidoneis lepidoptera</i> (Gregory) Cleve, <i>Orthotropis lepidoptera</i> (Gregory) Van Heurck	+	+	+	-
Class: Dinophyceae						
<i>Centrodinium intermedium</i> Pavill.	<i>Centrodinium intermedium</i> Pavillard (ab)		-	+	+	-

<i>Ceratium breve</i> (Ostenfeld & Schmidt)	<i>Ceratium breve</i> (Ostenfeld & Schmidt) Schroder (ab)	<i>Ceratium tripos</i> var. <i>breve</i> Ostenfeld & Schmidt, <i>Ceratium curvicorne</i> Schmidt, <i>Neoceratium breve</i> (Ostenfeld & Schmidt) F. Gómez, D. Moreira & P. López-Garcia	+	+	-	+
<i>Ceratium candelabrum</i> (Ehr) Stein	<i>Ceratium candelabrum</i> (Ehrenberg) Stein (ab)	<i>Ceratium candelabrum</i> (Ehrenberg), <i>Neoceratium candelabrum</i> (Ehrenberg) F. Gómez, D. Moreira & P. López-Garcia	+	+	+	-
<i>Ceratium egyptiacum</i> Halim	<i>Ceratium egyptiacum</i> Halim (ab)	<i>Neoceratium egyptiacum</i> (Halim) F. Gomez, D. Moreira & P. Lopez-Garcia	-	+	+	+
<i>Ceratium extensum</i> (Gourret) Cleve	<i>Ceratium extensum</i> (Gourret) Cleve-Euler (ab)	<i>Ceratium fusus</i> var. <i>extensum</i> Gourret, <i>Neoceratium extensum</i> (Gourret) F. Gomez, D. Moreira & P. Lopez-Garcia	-	+	+	+
<i>Ceratium falcatum</i> (Kofoid) -Jørgensen	<i>Ceratium falcatum</i> (Kofoid) E.G. Jørgensen (ab)	<i>Ceratium pennatum</i> f. <i>falcatum</i> Kofoid, <i>Ceratium inflatum</i> subsp. <i>falcatum</i> (Kofoid) Peters, <i>Neoceratium falcatum</i> (Kofoid) F. Gomez, D. Moreira & P. Lopez-Garcia	-	+	+	+
<i>Ceratium furca</i> Ehr.	<i>Ceratium furca</i> (Ehrenberg) Claparède & Lachmann (WoRMS)		+	+	+	++
<i>Ceratium fusus</i> (Ehr) Dujardin	<i>Ceratium fusus</i> (Ehrenberg) Dujardin (ab)	<i>Peridinium fusus</i> Ehrenberg, <i>Ceratophorus fusus</i> (Ehrenberg) Diesing, <i>Amphiceratium fusus</i> (Ehrenberg) Vanhoeffen, <i>Triceratium fusus</i> (Ehrenberg) S.T. Moses, <i>Neoceratium fusus</i> (Ehrenberg) F. Gomez, D. Moreira & P. Lopez-Garcia	+	+	+	+
<i>Ceratium karsteni</i> Pavillard	<i>Ceratium karstenii</i> Pavillard (WoRMS)		+	+	+	+
<i>Ceratium kofoidi</i> Jörgensen	<i>Ceratium kofoidii</i> E.G. Jörgensen (WoRMS)		+	+	+	+
<i>Ceratium longirostrum</i> Gourret	<i>Ceratium longirostrum</i> Gourret (ab)	<i>Neoceratium longirostrum</i> (Gourret) F. Gomez, D. Moreira & P. Lopez-Garcia	+	-	-	+
<i>Ceratium macroceros</i> var. <i>gallicum</i> Kofoid	<i>Ceratium macroceros</i> var. <i>gallicum</i> (Kofoid) Peters (ab)	<i>Ceratium gallicum</i> Kofoid	+	+	+	+

<i>Ceratium massiliense</i> (Gourret) Jörgensen	<i>Ceratium massiliense</i> (Gourret) E.G .Jørgensen (ab)	<i>Ceratium tripos</i> var. <i>massiliense</i> Gourret, <i>Neoceratium massiliense</i> (Gourret) F.Gomez, D.Moreira & P.Lopez-Garcia	+	+	+	+
<i>Ceratium pewntagonum</i> Gourret	<i>Ceratium pentagonum</i> Gourret (ab)	<i>Neoceratium pentagonum</i> (Gourret) F. Gomez, D. Moreira & P. Lopez-Garcia	-	+	+	-
<i>Ceratium puchellum</i> Schröder	<i>Ceratium pulchellum</i> Schröder (WoRMS)	<i>Ceratium tripos</i> var. <i>puchellum</i> (Schröder) López	-	+	-	++
<i>Ceratium setaceum</i> Jörgensen	<i>Ceratium setaceum</i> E.G. Jörgensen (WoRMS)		+	+	+	-
<i>Ceratium symmetricum</i> Pavillard	<i>Ceratium symmetricum</i> Pavillard (ab)	<i>Ceratium gracile</i> var. <i>symmetricum</i> (Pavillard) Jörgensen, <i>Neoceratium symmetricum</i> (Pavillard) F. Gomez, D. Moreira & P. Lopez-Garcia	-	-	-	+
<i>Ceratium trichoceros</i> (Ehr) Kofoid	<i>Ceratium trichoceros</i> (Ehrenberg) Kofoid (WoRMS)		+	+	+	+
<i>Ceratium tripos</i> (O.F.Müller) Nitzsch	<i>Ceratium tripos</i> (O.F.Müller)Nitzsch (WoRMS)		+	+	+	+
<i>Dinophysis caudata</i> Saville-Kent	<i>Dinophysis caudata</i> Saville-Kent (ab)	<i>Dinophysis homuncula</i> Stein, <i>Dinophysis diegensis</i> Kofoid	+	+	-	+
<i>Dinophysis fortii</i> Pavillard	<i>Dinophysis fortii</i> Pavillard (ab)		+	+	-	+
<i>Diplopsalis rotunda</i> (Lebour) Wood	<i>Diplopsalis rotunda</i> Wood (ab)		-	+	+	+
<i>Exuviaella baltica</i> Lohmann	<i>Exuviaella baltica</i> Lohmann (ab)	<i>Prorocentrum balticum</i> (Lohmann) Loeblich	+	+	+	-
<i>Exuviaella compressa</i> Ostenfeld	<i>Exuviaella compressa</i> (Bailey) Knudsen & in Ostenfeld (ab)	<i>Prorocentrum compressum</i> (Bailey) Abé ex Dodge	+	+	+	+
<i>Exuviaella marina</i> Cienkowski	<i>Exuviaella marina</i> Cienkowski (ab)	<i>Prorocentrum lima</i> (Ehrenberg) F. Stein	-	-	-	+
<i>Gonyaulax minuta</i> Kofoid & Mich.	<i>Gonyaulax minuta</i> Kofoid & Michener (WoRMS)		+	+	+	+
<i>Gonyaulax spinifera</i> (Claparède & Lachmann) Diesing	<i>Gonyaulax spinifera</i> (Claparède & Lachmann) Diesing (WoRMS)	<i>Gonyaulax levanderi</i> (Lemmermann) Paulsen, <i>Spiniferites mirabilis</i> (M.R. Rossignol) Sarjeant, <i>Spiniferites ramosus</i> (Ehrenberg) Mantell, <i>Tectatodinium pellitum</i> Wall	-	-	+	+

<i>Gymnodinium mitratum</i> J.Schiller <i>Noctiluca miliaris</i> Suriray	<i>Gymnodinium mitratum</i> J.Schiller (ab) <i>Noctiluca scintillans</i> (Macartney) Kofoid & Swezy (ab)		-	+	+	-
			+	-	+	+
<i>Oxytoxum sceptrum</i> (Stein) Schroder	<i>Oxytoxum sceptrum</i> (F. Stein) Schröder (ab)		-	-	-	+
<i>Oxytoxum scolopax</i> Stein	<i>Oxytoxum scolopax</i> Stein (WoRMS)		-	+	+	+
<i>Phalacroma rapa</i> Stein	<i>Phalacroma rapa</i> Jörgensen (WoRMS)	<i>Dinophysis rapa</i> (Stein) Balech, <i>Prodinophysis rapa</i> (Stein) Balech	+	+	+	+
<i>Pronotiluca spinifera</i> (Lohmann) Schiller	<i>Pronotiluca spinifera</i> (Lohmann) (IT IS)		+	-	+	-
<i>Prorocentrum gracile</i> Schütt	<i>Prorocentrum gracile</i> Schütt (WoRMS)	<i>Prorocentrum diamantinae</i> Wood, <i>Prorocentrum macrurus</i> Athanassapoulos, <i>Prorocentrum sigmoides</i> Böhm	+	+	+	-
<i>Prorocentrum micans</i> Ehr.	<i>Prorocentrum micans</i> Ehrenberg (ab)	<i>Prorocentrum schilleri</i> Böhrn, <i>Prorocentrum levantinoide</i> Bursa, <i>Prorocentrum pacificum</i> Wood	+	+	+	+
<i>Prorocentrum schilleri</i> Bohm	<i>Prorocentrum schilleri</i> Böhrn (ab)		-	+	+	-
<i>Protoperidinium cerasus</i> Paulsen	<i>Protoperidinium cerasus</i> (Paulsen) Balech (ab)	<i>Peridinium cerasus</i> Paulsen	+	+	+	+++
<i>Protoperidinium conicum</i> (Bailey) Balech	<i>Protoperidinium conicum</i> (Gran) Balech (CaRMS)	<i>Peridinium conicum</i> (Gran) Ostenfeld & Schmidt	-	+	+	+
<i>Protoperidinium depressum</i> Bailey	<i>Protoperidinium depressum</i> (Bailey) Balech (CaRMS)		+	+	+	++
<i>Protoperidinium divergens</i> Ehr.	<i>Protoperidinium divergens</i> (Ehrenberg) Balech (CaRMS)		+	+	+	+
<i>Protoperidinium globules</i> Stein	<i>Protoperidinium globulus</i> (Stein) Balech (CaRMS)		+	+	+	-
<i>Protoperidinium oblongum</i> (Aur.) Parke & Dodge	<i>Protoperidinium oblongum</i> (Aurivillius) Parke & Dodge (CaRMS)	<i>Peridinium oblongum</i> (Aurivillius) Cleve	-	-	-	+
<i>Protoperidinium ovatum</i> Pouchet	<i>Protoperidinium ovatum</i> Pouchet (CaRMS)		-	-	+	+
<i>Protoperidinium steini</i> Jorgensen	<i>Protoperidinium steinii</i> (Jörgensen) Balech (CaRMS)		+	+	+	-
<i>Protoperidinium trocho-ideum</i> Stein	<i>Protoperidinium trochoideum</i> (Stein) Lemmermann WoRMS)		+	+	-	+
<i>Pyrocystis fusiformis</i>	<i>Pyrocystis fusiformis</i> C.W.Thomson (ab)	<i>Dissodinium fusiforme</i> (Wyville-Thomson ex Murray) Matzenauer, <i>Murracystis fusiformis</i> (C.W. Thomson) Haeckel,	-	+	++	-

		<i>Dissodinium fusiformis</i> (J. Murray) Matzenauer.				
<i>Pyrocystis lunula</i> Schütt (W. Thom.) Murray	<i>Pyrocystis lunula</i> (J.Schütt) J. Schütt (WoRMS)	<i>Diplodinium lunula</i> (Schütt) Klebs, <i>Dissodinium lunula</i> (Schütt) Klebs, <i>Gymnodinium lunula</i> Schütt	-	+	+	-
<i>Pyrophacus horologicum</i> Stein	<i>Pyrophacus horologicum</i> Stein (ab)		+	+	+	+
Class: Chlorophyceae						
<i>Ankistrodesmus falcatus</i> Ralfs	<i>Ankistrodesmus falcatus</i> (Corda) Ralfs (ab)	<i>Rhaphidium polymorphum</i> var. <i>falcatum</i> De Toni, <i>Rhaphidium fasciculatum</i> Kützing, <i>Ankistrodesmus lundbergii</i> Koshikov	-	+	-	-
<i>Actinastrum hantzschii</i> Lagerheim	<i>Actinastrum hantzschii</i> Lagerheim (ab)		-	+	+	+
<i>Chlorella vulgaris</i> Beyerinck	<i>Chlorella vulgaris</i> Beyerinck [Beijerinck] (WoRMS)	<i>Chlorella candida</i> Shihira & Krauss, <i>Chlorella communis</i> Artari, <i>Chlorella pyrenoidosa</i> var. <i>duplex</i> (Kützing) West, <i>Chlorella terricola</i> Gollerbach [Hollerbach], <i>Chlorella vulgaris</i> var. <i>viridis</i> Chodat, <i>Pleurococcus beijerinckii</i> Artari	-	+	+	+
<i>Closterium gracile</i> Brebisson	<i>Closterium gracile</i> Brébisson ex Ralfs (ab)	<i>Closterium limneticum</i> var. <i>tenuis</i> Lemmermann, <i>Closterium gracile</i> var. <i>tenuis</i> (Lemmermann) West & G.S. West, <i>Closterium gracile</i> var. <i>elongatum</i> West & G.S. West	-	+	+	+
<i>Coelastrum astroideum</i> De Notaris	<i>Coelastrum astroideum</i> De Notaris (ab)	<i>Coelastrum microporum</i> f. <i>astroidea</i>	-	+	+	+
<i>Crucigenia quadrata</i> Morren	<i>Crucigenia quadrata</i> Morren (ab)	<i>Crucigeniella quadrata</i> (Morren) Gaillon, <i>Staurogenia quadrata</i> (Morren) Kützing	-	-	-	+
<i>Oocystis borgei</i> Snow	<i>Oocystis borgei</i> J.W. Snow (ab)	<i>Oocystella borgei</i> (J. Snow) Hindák	-	+	+	-
<i>Oocystis solitaria</i> Wittr.	<i>Oocystis solitaria</i> Wittrock (WoRMS)	<i>Oocystella solitaria</i> (Wittrock) Hindák, <i>Oocystis crassa</i> Wittrock <i>Oocystis solitaria</i> var. <i>notabile</i> West & G.S. West	-	+	-	-
<i>Pediastrum biwae</i> Negoro	<i>Pediastrum duplex</i> Meyen (ab)		-	+	+	-
<i>Pediastrum clathratum</i> Lemm.	<i>Pediastrum clathratum</i> (Schröder) Lemmermann (ab)	<i>Pediastrum duplex</i> Meyen	-	-	+	-

<i>Pediastrum duplex</i> Meyen	<i>Pediastrum duplex</i> Meyen (ab)	<i>Pediastrum napoleonis</i> Ralfs, <i>Pediastrum pertusum</i> Kützing, <i>Pediastrum selenaea</i> Kützing, <i>Pediastrum duplex</i> var. <i>reticulatum</i> Lagerheim, <i>Pediastrum duplex</i> var. <i>clathratum</i> (A.Braun) Lagerheim	-	-	+	-
<i>Pediastrum simplex</i> (Meyen) Lemm.	<i>Pediastrum simplex</i> Meyen (ab)	<i>Pediastrum clathratum</i> (Schröder) Lemmermann, <i>Pediastrum simplex</i> var. <i>radians</i> Lemmermann, <i>Pediastrum simplex</i> var. <i>duodenarium</i> (J.W. Bailey) Rabenhorst, <i>Pediastrum enoplon</i> West & G.S. West, <i>Pediastrum simplex</i> var. <i>granulatum</i> Lemmermann	-	+	-	-
<i>Pediastrum tetras</i> Ralfs	<i>Pediastrum tetras</i> (Ehrenberg) Ralfs (ab)	<i>Pediastrum ehrenbergii</i> (Corda) A.Braun, <i>Pediastrum tetras</i> var. <i>excisum</i> Rabenhorst	-	-	-	+
<i>Pleurotaenium trabecula</i> (Ehr) Naeg.	<i>Pleurotaenium trabecula</i> Nägeli (ab)	<i>Docidium ehrenbergii</i> var. [delpontei] f. <i>constricta</i> Playfair, <i>Closterium trabecula</i> Ehrenberg, <i>Docidium trabecula</i> Ehrenberg Reinsch, <i>Pleurotaenium trabecula</i> var. [trabecula] f. <i>clavatum</i> (Kützing) Reinsch, <i>Pleurotaenium trabecula</i> f. <i>granulatum</i> G.S. West.	-	-	-	+
<i>Scenedesmus bijuga</i> (Turpin) Lagerheim	<i>Scenedesmus bijuga</i> (Turpin) Lagerheim (WoRMS)		-	+	-	+
<i>Scenedesmus obliquus</i> Turp.	<i>Scenedesmus obliquus</i> (Turpin) Kützing (WoRMS)	<i>Achnanthes obliqua</i> Turpin, <i>Scenedesmus acutus</i> Meyen, <i>Scenedesmus acutus</i> f. <i>alternans</i> Hortobagyi, <i>Scenedesmus bijugatus</i> Kützing, <i>Scenedesmus dactylococcoides</i> Chodat, <i>Scenedesmus dimorphus</i> (Turpin) Kützing	-	-	-	+
<i>Scenedesmus quadricauda</i> (Turpin) Breb.	<i>Scenedesmus quadricauda</i> (Turpin) Brébisson (WoRMS)	<i>Achnanthes quadricauda</i> Turpin	-	-	-	+
<i>Staurastrum gracile</i> Ralfs	<i>Staurastrum gracile</i> Ralfs (WoRMS)		-	+	-	+
<i>Staurastrum paradoxum</i> Meyen	<i>Staurastrum paradoxum</i> Meyen (ab)	<i>Phycastrum paradoxum</i> (Meyen) Kützing	-	+	-	-

<i>Treubaria crassipina</i> G. M. Smith	<i>Treubaria crassipina</i> G. M. Smith (WoRMS)		-	+	+	-
Class: Cyanophyceae						
<i>Anabaena</i> sp. Bory	<i>Anabaena</i> Bory de Saint-Vincent ex Bornet & Flahault (WoRMS)		-	+	-	-
<i>Aphanocapsa marina</i> Hans.	<i>Aphanocapsa marina</i> Hansgirg (ab)	<i>Anacystis marina</i> (Hansgirg) Drouet & Dailey, <i>Microcystis</i> <i>marina</i> (Hansgirg) P.C. Silva	-	+	+	-
<i>Chroococcus turgidus</i> (Kütz) Naeg.	<i>Chroococcus turgidus</i> (Kütz) Nägeli (ab)		+	+	+	+
<i>Gomphosphaeria</i> <i>aponina</i> Kütz	<i>Gomphosphaeria</i> <i>aponina</i> Kützling (WoRMS)		-	+	-	+
<i>Lyngbya limnetica</i> Lemm.	<i>Lyngbya limnetica</i> Lemmermann (WoRMS)		+	+	++	-
<i>Lyngbya major</i> Meneghini	<i>Lyngbya major</i> Meneghini ex Gomont (ab)		+	-	++	++
<i>Lyngbya majuscula</i> (Dillwyn) Harvey	<i>Lyngbya majuscula</i> Harvey ex Gomont (WoRMS)		+	-	+	-
<i>Merismopedia punctata</i> Meyen	<i>Merismopedia punctata</i> Meyen (WoRMS)	<i>Merismopedia convoluta</i> <i>f. minor</i> Wille, <i>Merismopedia haumanii</i> Kufferath, <i>Merismopedia</i> <i>kuetzingii</i> Nägeli	+	+	+	+
<i>Oscillatoria agardhii</i> Gomont	<i>Oscillatoria agardhii</i> Gomont (ab)	<i>Planktothrix agardhii</i> (Gomont) Anagnostidis & Komárek	-	+	+	-
<i>Oscillatoria curviseps</i> C. Agardh	<i>Oscillatoria curviseps</i> C. Agardh ex Gomont (WoRMS)		-	-	+	-
<i>Oscillatoria erythraeum</i> Drouet	<i>Oscillatoria erythraea</i> (Ehrenberg) Geitler (ab)		+	+	+	+
<i>Oscillatoria formosa</i> Bory.	<i>Oscillatoria formosa</i> Bory de Saint-Vincent ex Gomont (ab)	<i>Phormidium formosum</i> (Bory de Saint-Vincent ex Gomont) Anagnostidis & Komárek	-	+	+	-
<i>Oscillatoria limnetica</i> Lemmermann	<i>Oscillatoria limnetica</i> Lemmermann (ab)		+	+	-	+
<i>Oscillatoria limosa</i> Ag.	<i>Oscillatoria limosa</i> C. Agardh (ab)		+	+	-	+
<i>Oscillatoria simplicissima</i> Gom.	<i>Oscillatoria simplicissima</i> Gomont (WoRMS)	<i>Phormidium simplicissimum</i> (Gomont) Anagnostidis & Komárek	+++	++	+++	+
<i>Oscillatoria tenuis</i> Agardh.	<i>Oscillatoria tenuis</i> C. Agardh (WoRMS)		+	+	+	+
<i>Phormidium</i> sp.			+	+	+	+
<i>Spirulina major</i> KG.	<i>Spirulina major</i> Kützling ex Gomont (WoRMS)	<i>Arthrospira major</i> (Kützling) Crow	+	+	+	+
<i>Spirulina platensis</i> (Gomont) Geitler	<i>Spirulina platensis</i> (Gomont) Geitler, <i>Arthrospira platensis</i> Gomont (ab)		+	-	-	+

Class: Euglenophyceae						
<i>Euglena gracilis</i> Klebs	<i>Euglena gracilis</i> Klebs (WoRMS)		-	+	-	+
<i>Euglena acus</i> Ehr.	<i>Euglena acus</i> (O.F. Müller) Ehrenberg (WoRMS)	<i>Lepocinclis acus</i> (O.F. Müller) Marin & Melkonian	-	+	-	-
<i>Phacus caudatus</i> Hübner	<i>Phacus caudatus</i> Hübner (WoRMS)		-	-	-	+
Class: Chrysophyceae						
<i>Dictyocha fibula</i> Ehr.	<i>Dictyocha fibula</i> Ehrenberg (WoRMS)		+	+	+	+

Note: + means present (≤ 100 unit/L); ++ means Frequent ($> 100-1000$ unit/L); +++ Dominant (> 1000 unit/L) and - means absent.

RS = Red Sea, SG =SuezGulf, AG =AqabaGulf and SC =Suez Canal.

Ab = algaebase.com,

WoRMS=<http://www.marinespecies.org/aphia.php?p=taxdetails&id=597657%20%28WoRMS%29>,

CaRMS=<http://www.marinespecies.org/carms./aphia.php?p=taxdetails&id=109553> (CaRMS)

ITIS = Integrated taxonomic information system

NOD = <http://nordicmicroalgae.org> (NOD)

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