



# COOPERATIVE EXTENSION SERVICE MAINE SEA GRANT PROJECT

University of Maine and U.S. Department of Agriculture Cooperating

The SEA GRANT Advisory Service is conducted by the Cooperative Extension Service for the U of M Coherent Project SEA GRANT Program. Send correspondence to Paul D. Ring, Extension Marine Specialist, Ira C. Darling Center, Walpole, Maine 04573.

MAINE SEA GRANT INFORMATION LEAFLET 9  
March 1975

**CIRCULATING COPY**  
**Sea Grant Depository**

Bernard J. McAlice  
Associate Professor of Oceanography  
Ira C. Darling Center  
University of Maine  
Walpole, Maine 04573

## PRELIMINARY CHECK LIST OF PLANKTONIC MICROALGAE FROM THE GULF OF MAINE

This is a first attempt to assemble a current list of the microalgae which have been reported from plankton collections in the Gulf of Maine. Most of the species listed are true phytoplankters, but a number of benthic forms appear as well. This is not surprising in an area as dynamic as the coastal region of the Gulf of Maine. Several species which are usually considered to be fresh water organisms occur in inshore and estuarine collections. Whether or not these organisms are viable for long in brackish and marine waters is an open question; recent work by Foerster (1973) has shown that we should not be too hasty in consigning them to a purely limnetic existence.

The list has been compiled from both published sources and unpublished data acquired by investigators at the University of Maine. Poor representation of naked flagellates no doubt reflects biases in methods of collection and preservation rather than the absence of these forms from the flora.

With few exceptions, classification of the Bacillariophyceae follows Hendey (1964) and that of the other groups, Parke and Dixon (1968). Recent changes in specific and generic assignments have been included where appropriate. Simonsen's (1972) suggested emendation of the centric diatoms, although provocative, must still be considered preliminary.

Genera within families, and species within genera, are listed alphabetically. Numbers in parentheses refer to the numbered notes following the taxonomic list. No attempt has been made to include complete synonymies here; synonyms noted are those under which a species has been reported from the Gulf of Maine.

---

Ira C. Darling Center Reference No. 75-1

CLASS CYANOPHYCEAE

CHROOCOCCALES (1)

Chroococcaceae

- Merismopedia* Meyen
- M. elegans* Braun
- M. punctata* Meyen

NOSTOCALES (2)

Oscillatoriaceae

- Spirulina* (Turpin) Gomont
- S. major* (Kützing) Gomont

CLASS DINOPHYCEAE

PROROCENTRALES

Prorocentraceae

- Exuviella* Cienkowski
- E. baltica* Lohmann
- E. marina* Cienkowski
  
- Mesoporos* Lillick
- M. assymmetricus* (Schiller) Lillick
- M. perforatus* (Gran) Lillick (3)
  
- Prorocentrum* Ehrenberg
- P. micans* Ehrenberg
- P. minimum* Schiller
- P. scutellum* Schröder
- P. triangulatum* Martin

DINOPHYSIALES

Dinophysiaceae

- Dinophysis* Ehrenberg
- D. acuminata* Claparéde and Lachmann
- D. acuta* Ehrenberg
- D. arctica* Mereschkowsky
- D. longi-alata* Gran and Braarud
- D. norvegica* Claparéde and Lachmann
- D. ovum* Schütt
- D. parvula* Schütt (4)
- D. robusta* Gran and Braarud
- D. rotunda* Claparéde and Lachmann (5)
- D. sphaerica* Stein

PERIDINIALES

Gymnodiniaceae

- Amphidinium* Claparéde and Lachmann
- A. oceanicum* Lohmann
  
- Gymnodinium*
- G. lohmannii* Paulsen
- G. splendens* Lebour

Noctilucaceae

- Noctiluca* Suriray
- N. scintillans* (Macartney) Ehrenberg (6)

Glenodiniopsidaceae

*Pyrophacus* Stein

*P. horologium* Stein

Glenodiniaceae

*Diplopeltopsis* Pavillard

*D. minor* (Paulsen) Pavillard

*Diplopsalis* Bergh

*D. lenticula* Bergh (7)

*Glenodinium* Ehrenberg

*G. danicum* Paulsen

*Oblea* Balech

*O. rotunda* (Lebour) Balech (8)

Peridiniaceae

*Heterocapsa* Stein

*H. triquetra* (Ehrenberg) Stein (9)

*Minuscula* Lebour

*M. bipes* (Paulsen) Lebour (10)

*Peridinium* Ehrenberg

*P. achromaticum* Levander

*P. americanum* Gran and Braarud

*P. breve* (Paulsen) Paulsen

*P. brevipes* Paulsen (11)

*P. cerasus* Paulsen

*P. conicoides* Paulsen

*P. conicum* (Gran) Ostenfeld and Schmidt

*P. conicum* forma *asamushi* Abé

*P. crassipes* Kofoid

*P. curvipes* Ostenfeld

*P. denticulatum* Gran and Braarud

*P. depressum* Bailey

*P. divergens* Ehrenberg

*P. excentricum* Paulsen

*P. globulus* Stein

*P. granii* Ostenfeld (11)

*P. hangoei* Schiller (12)

*P. monacanthum* Broch

*P. obtusum* Karsten

*P. ovatum* (Pouchet) Schiller

*P. pallidum* Ostenfeld

*P. pellucidum* (Bergh) Schütt

*P. pentagonum* Gran

*P. pyriforme* (Paulsen) Paulsen

*P. quarnerense* (Schröder) Broch (13)

*P. roseum* Paulsen

*P. simplex* Gran and Braarud

*P. steinii* Jörgensen

*P. subcurvipes* Lebour

*P. subinerme* Paulsen

- P. thorianum* Paulsen
- P. trochoideum* (Stein) Lemmermann (14)
- P. variegatum* Peters

Gonyaulacaceae

*Gonyaulax* Diesing

- G. catenata* (Levander) Kofoid
- G. grindleyi* Reinecke (15)
- G. orientalis* Lindemann (16)
- G. spinifera* (Claparède and Lachmann)
- G. tamarensis* Lebour
- G. triacantha* Jörgensen

Ceratiaceae

*Ceratium* Schrank

- C. arcticum* (Ehrenberg) Cleve
- C. bucephalum* (Cleve) Cleve
- C. furca* (Ehrenberg) Claparède and Lachmann
- C. fusus* (Ehrenberg) Dujardin
- C. hirundinella* (O. F. Müller) Bergh
- C. lineatum* (Ehrenberg) Cleve
- C. longipes* (Bailey) Gran
- C. macroceros* (Ehrenberg) Cleve
- C. tripos* (O. F. Müller) Nitzsch
- C. tripos* var. *atlanticum* Ostenfeld
- C. tripos* f. *subsalsum* Ostenfeld

Oxytoxaceae

*Oxytoxum*

- O. gracile* Gran
- O. reticulatum* (Stein) Bütschli

CLASS HAPTOPHYCEAE

PRYMNESIALES

Phaeocystaceae

*Phaeocystis* Lagerheim

- P. poucheti* (Hariot) Lagerheim

Syracosphaeraceae

*Acanthoica* Lohmann

- A. acanthifera* Lohmann
- A. acanthos* Schiller
- A. coronata* Lohmann
- A. monospina* Schiller

*Calyptosphaera* Lohmann

- C. oblonga* Lohmann
- C. uvella* Schiller

*Lohmannosphaera* Schiller

- L. adriatica* Schiller
- L. subclausa* Gran and Braarud

*Pontosphaera* Lohmann  
*P. huxleyi* Lohmann  
*P. ovalis* Schiller

*Syracosphaera* Lohmann  
*S. apsteini* Lohmann  
*S. mediterranea* Lohmann  
*S. pulchra* Lohmann

Coccolithaceae

*Coccolithus* Schwarz  
*C. pelagicus* (Wallich) Schiller

*Discosphaera* Haeckel  
*D. tubifera* (Murray and Blackman) Ostenfeld

*Rhabdosphaera* Haeckel  
*R. stylifera* Lohmann  
*R. tubulosa* Schiller

Braarudosphaeraceae

*Braarudosphaera* Deflandre  
*B. bigelowii* (Gran and Braarud) Deflandre (17)

CLASS CHRYSOPHYCEAE

OCHROMONADALES

Ochromonadaceae

*Cyclonexis* Stokes  
*C. annularis* Stokes

Dinobryaceae

*Dinobryon* Ehrenberg  
*D. sertularia* Ehrenberg

Synuraceae

*Chrysosphaerella* Lauterborn  
*C. longispina* Lauterborn

*Synura* Ehrenberg  
*S. uvella* Ehrenberg

DICTYOCHALES

Dictyochaceae

*Dictyocha* Ehrenberg  
*D. fibula* Ehrenberg  
*D. speculum* Ehrenberg (18)

CLASS BACILLARIOPHYCEAE

BACILLARIALES

Coscinodiscaceae

*Actinocyclus* Ehrenberg  
*A. octonarius* Ehrenberg var. *octonarius* (19)

*Coscinodiscus* Ehrenberg (20)  
*C. argus* Ehrenberg

*C. asteromphalus* Ehrenberg  
*C. centralis* Ehrenberg  
*C. cinctus* Kützing  
*C. concinnus* W. Smith  
*C. curvatulus* Grunow  
*C. lineatus* Ehrenberg  
*C. marginatus* Ehrenberg  
*C. oculus-iridis* Ehrenberg  
*C. radiatus* Ehrenberg  
*C. stellaris* Roper  
*C. sub-bulliens* Jörgensen

*Coscinosira* Gran  
*C. oestrupii* Ostenfeld  
*C. polychorda* (Gran) Gran

*Cyclotella* Kützing  
*C. comta* (Ehrenberg) Kützing  
*C. striata* (Kützing) Grunow

*Endictya* Ehrenberg  
*E. oceanica* Ehrenberg

*Hyalodiscus* Ehrenberg  
*H. subtilis* Bailey

*Melosira* Agardh  
*M. arctica* (Ehrenberg) Dickie (21)  
*M. granulata* (Ehrenberg) Ralfs  
*M. italica* (Ehrenberg) Kützing (22)  
*M. juergensii* Agardh  
*M. moniliformis* (O. F. Müller) Agardh (23)  
*M. nummuloides* Agardh

*Paralia* Heiberg  
*P. sulcata* (Ehrenberg) Cleve (24)

*Porosira* Jörgensen  
*P. glacialis* (Grunow) Jörgensen (25)

*Skeletonema* Greville  
*S. costatum* (Greville) Cleve

*Stephanodiscus* Ehrenberg  
*S. rotula* (Kützing) Hendey (26)

*Stephanopyxis* Ehrenberg  
*S. turris* (Greville) Ralfs

*Thalassiosira* Cleve  
*T. baltica* (Grunow) Ostenfeld  
*T. bioculata* (Grunow) Ostenfeld  
*T. decipiens* (Grunow) Jörgensen  
*T. eccentrica* (Ehrenberg) Cleve (27)  
*T. gravida* Cleve  
*T. hyalina* (Grunow) Gran  
*T. nordenskioldii* Cleve  
*T. subtilis* (Ostenfeld) Gran

Actinodiscaceae

*Actinoptychus* Ehrenberg

*A. senarius* (Ehrenberg) Ehrenberg (28)

Biddulphia

*Biddulphia* Gray

*B. alternans* (Bailey) Van Heurck (29)

*B. aurita* (Lyngbye) Brebisson

*B. mobiliensis* (Bailey) Grunow

*B. regia* (M. Schultze) Ostenfeld

*B. rhombus* (Ehrenberg) W. Smith

*Cerataulina* Peragallo

*C. pelagica* (Cleve) Hendey (30)

*Ditylum* Bailey

*D. brightwelli* (T. West) Grunow

*Eucampia* Ehrenberg

*E. recta* Gran and Braarud

*E. zodiacus* Ehrenberg

*Hemiaulus* Ehrenberg

*H. hauckii* Grunow

*Lithodesmium* Ehrenberg

*L. undulatum* Ehrenberg

*Isthmia* Agardh

*I. nervosa* Kützing

*Streptotheca* Shrubsole

*S. tamesis* Shrubsole

*Trigonium* Cleve

*T. arcticum* (Brightwell) Cleve

Chaetoceraceae

*Chaetoceros* Ehrenberg

*C. affine* Lauder

*C. atlanticum* Cleve

*C. boreale* Bailey

*C. breve* Schütt

*C. ceratosporum* Ostenfeld

*C. cinctum* Gran

*C. compressum* Lauder (31)

*C. concavicornis* Mangin

*C. constrictum* Gran

*C. convolutum* Castracane

*C. crinitum* Schütt

*C. curvisetum* Cleve

*C. danicum* Cleve

*C. debile* Cleve

*C. decipiens* Cleve

*C. densum* Cleve

*C. diadema* (Ehrenberg) Gran (32)

*C. didymum* Ehrenberg

*C. difficile* Cleve  
*C. fragile* Meunier  
*C. furcellatum* Bailey  
*C. gracile* Schütt  
*C. lacinosum* Schütt  
*C. lauderi* Ralfs  
*C. lorenzianum* Grunow  
*C. mitra* Cleve  
*C. pelagicum* Cleve  
*C. perpusillum* Cleve  
*C. peruvianum* Brightwell  
*C. pseudocrinitum* Ostenfeld  
*C. radicans* Schütt  
*C. seiracanthum* Gran  
*C. septentrionale* Oestrup  
*C. simile* Cleve  
*C. simplex* Ostenfeld  
*C. sociale* Lauder  
*C. subtile* Cleve  
*C. teres* Cleve  
*C. wighamii* Brightwell  
*C. willei* Gran (33)

Leptocylindraceae

*Bacteriosira* Gran

*B. fragilis* Gran

*Dactyliosolen* Castracane

*D. mediterraneus* Peragallo

*Detonula* Schütt

*D. confervacea* (Cleve) Gran (34)

*Guinardia* Peragallo

*G. flaccida* (Castracane) Peragallo

*Lauderia* Cleve

*L. borealis* Gran

*Leptocylindrus* Cleve

*L. danicus* Cleve

*L. minimus* Gran

Corethronaceae

*Corethron* Castracane

*C. criophilum* Castracane (35)

Rhizosolenaceae

*Rhizosolenia* Brightwell

*R. alata* Brightwell

*R. bergonii* Peragallo

*R. calcar-avis* Schultze

*R. delicatula* Cleve

*R. fragilissima* Bergon (36)

*R. hebetata* forma *semispina* (Hensen) Gran

*R. obtusa* Hensen



*R. shrubsolei* Cleve (37)  
*R. setigera* Brightwell  
*R. styliformis* Brightwell

Fragilariaceae

*Asterionella* Hassall

*A. formosa* Hassall (38)  
*A. glacialis* Castracane (39)  
*A. kariana* Grunow

*Fragilaria* Lyngbye

*F. capucina* Desmazières  
*F. crotonensis* Kitton  
*F. cylindrus* Grunow  
*F. islandica* Grunow  
*F. oceanica* Cleve  
*F. pinnata* Ehrenberg  
*F. virescens* Ralfs

*Grammatophora* Ehrenberg

*G. angulosa* Ehrenberg  
*G. marina* (Lyngbye) Kützing  
*G. serpentina* Ehrenberg

*Licmophora* Agardh

*L. flabellata* (Greville) Agardh  
*L. juergensii* Agardh  
*L. lyngbyei* (Kützing) Grunow (40)

*Rhabdonema* Kützing

*R. adriaticum* Kützing  
*R. arcuatum* (Lyngbye) Kützing

*Rhaphoneis* Ehrenberg

*R. amphicerus* (Ehrenberg) Ehrenberg  
*R. surirella* (Ehrenberg) Grunow

*Striatella* Agardh

*S. unipunctata* (Lyngbye) Agardh

*Synedra* Ehrenberg

*S. affinis* Kützing  
*S. gaillonii* (Bory) Ehrenberg  
*S. ulna* (Nitzsch) Ehrenberg (41)  
*S. ulna* var. *longissima* (W. Smith) Brun (42)  
*S. undulata* (Bailey) Gregory

*Tabellaria* Ehrenberg

*T. fenestrata* (Lyngbye) Kützing

*Thalassionema* (Grunow) Hustedt

*T. nitzschioides* Hustedt (43)

*Thalassiothrix* Cleve and Grunow

*T. frauenfeldii* Grunow  
*T. longissima* Cleve and Grunow

Eunotiaceae

*Eunotia* Ehrenberg

*E. arcus* Ehrenberg

Achnanthaceae

*Achnanthes* Bory

*A. brevipes* Agardh

*A. longipes* Agardh

*A. obliqua* (Gregory) Hustedt (44)

*A. subsessilis* Kützing

*A. taeniata* Grunow

*Cocconeis* Ehrenberg

*C. placentula* Ehrenberg

*C. scutellum* Ehrenberg

*Rhoicosphenia* Grunow

*R. curvata* (Kützing) Grunow

Naviculaceae

*Amphiprora* Ehrenberg

*A. alata* (Ehrenberg) Kützing

*Caloneis* Cleve

*C. brevis* (Gregory) Cleve (45)

*Diploneis* Ehrenberg

*D. didyma* (Ehrenberg) Cleve (46)

*D. smithii* (Brebisson) Cleve (47)

*Gyrosigma* Hassall

*G. acuminatum* (Kützing) Rabenhorst (48)

*G. attenuatum* (Kützing) Rabenhorst (49)

*G. balticum* (Ehrenberg) Cleve (50)

*G. fasciola* (Ehrenberg) Cleve (51)

*G. macrum* (W. Smith) Griffiths and Henfrey

*G. strigilis* (W. Smith) Cleve (52)

*Navicula* Bory (53)

*N. crucigera* (W. Smith) Cleve (54)

*N. cuspidata* (Kützing) Kützing

*N. digito-radiata* (Gregory) Ralfs

*N. directa* (W. Smith) Ralfs

*N. dissipata* Hustedt

*N. distans* (W. Smith) Schmidt

*N. elegans* W. Smith

*N. pygmaea* Kützing

*N. rhyncocephala* Kützing

*N. salinarum* Grunow

*N. vanhoffeni* Gran

*Pinnularia* Ehrenberg

*P. ambigua* Cleve (55)

*P. major* (Kützing) Rabenhorst (56)

*P. viridis* (Nitzsch) Ehrenberg (57)

- Pleurosigma* W. Smith  
*P. aestuarii* (Brebisson) W. Smith  
*P. angulatum* (Quekett) W. Smith  
*P. decorum* W. Smith  
*P. elongatum* W. Smith  
*P. formosum* W. Smith  
*P. intermedium* W. Smith  
*P. longum* Cleve  
*P. normanii* Ralfs  
*P. strigosum* W. Smith  
*P. stuxbergii* Cleve and Grunow
- Scoliotropis* Cleve  
*S. latestriata* (Brebisson) Cleve (58)
- Stauroneis* Ehrenberg  
*S. anceps* Ehrenberg
- Trachyneis* Cleve  
*T. aspera* (Ehrenberg) Cleve (59)
- Cymbellaceae  
*Amphora* Ehrenberg  
*A. lineolata* Ehrenberg
- Epithemiaceae  
*Epithemia* Brebisson  
*E. musculus* Kützing
- Bacillariaceae  
*Bacillaria* Gmelin  
*B. paxillifer* (O. F. Müller) Hendey (60)
- Cylindrotheca* Rabenhorst  
*C. closterium* (Ehrenberg) Reimann and Lewin (61)  
*C. gracilis* (Brebisson) Grunow
- Nitzschia* Hassall  
*N. angularis* W. Smith  
*N. bilobata* W. Smith  
*N. brebissonii* W. Smith  
*N. delicatissima* Cleve  
*N. insignis* Gregory  
*N. littoralis* Grunow  
*N. longissima* (Brebisson) Ralfs  
*N. obtusa* W. Smith  
*N. pungens* var. *atlantica* Cleve  
*N. seriata* Cleve  
*N. sigma* (Kützing) W. Smith  
*N. sigmoidea* (Ehrenberg) W. Smith  
*N. vermicularis* (Kützing) Grunow
- Surirellaceae  
*Campylodiscus* Ehrenberg  
*C. echeneis* Ehrenberg  
*C. fastuosus* Ehrenberg (62)  
*C. hibernicus* Ehrenberg (63)

*Surirella* Turpin  
*S. gemma* (Ehrenberg) Kützing  
*S. ovalis* Brebisson

CLASS PRASINOPHYCEAE

HALOSPHAERALES

Halosphaeraceae  
*Halosphaera* Schmitz  
*H. viridis* Schmitz

CLASS EUGLENOPHYCEAE

EUGLENALES

Euglenaceae (64)  
*Eutreptia* Perty  
*E. lanowii* Steuer

CLASS CHLOROPHYCEAE (65)

CHLOROCOCCALES (66)

Hydrodictyaceae  
*Pediastrum* Meyen  
*P. duplex* Meyen

Oocystaceae  
*Dictyosphaerium* Naegeli  
*D. pulchellum* Wood

*Kirchneriella* Schmidle  
*K. obesa* (West) Schmidle

Scenedesmaceae  
*Scenedesmus* Meyen  
*S. dimorphis* (Turpin) Kützing  
*S. quadricauda* (Turpin) Brebisson

ZYGNEMATALES (67)

Desmidiaceae  
*Closterium* Nitzsch  
*C. diana* Ehrenberg

*Micrasterias* Agardh  
*M. foliacea* Bailey

*Xanthidium* Ehrenberg  
*X. antilopaeum* (Brebisson) Kützing

INCERTAE SEDIS

*Polyasterias problematica* (Cleve) Meunier  
*Trochiscia clevei* Lemmermann

NOTES

- 1) An unidentified species of *Gleocapsa* Kützing (Chroococcaceae) has been reported.
- 2) Unidentified species of *Lyngbya* (Agardh) Gomont (Oscillatoriaceae) and *Anabaena* (Bory) Bornet and Flahault (Nostocaceae) have been reported.
- 3) Synonym *Exuviella perforata* Gran. Lillick (1940) listed both *Mesoporos perforatus* (Gran) Lillick and *Exuviella perforata* Gran.
- 4) Synonym *Phalacroma parvulum* (Schütt) Jörgensen.
- 5) Synonym *Phalacroma rotundatum* (Claparède and Lachmann) Kofoid and Michener.
- 6) Synonym *Noctiluca miliaris* Suriray.
- 7) Synonym *Glenodinium lenticula* (Bergh) Schiller. Lillick's (1940) report of *Glenodinium lenticulata* (Bergh) Schiller is no doubt a misspelling of *G. lenticula*. Burkholder's (1933) report of *Dinophysis lenticula* Bergh should probably be referred to the present species, rather than to *Dinophysis recurva* Kofoid and Skogsberg (synonym *Dinophysis lenticula* Pavillard).
- 8) Synonym *Peridiniopsis rotunda* Lebour. Lillick's (1940) report of *Peridinium rotundum* (Lebour) Schiller probably also refers to this species.
- 9) Synonym *Peridinium triquetrum* (Ehrenberg) Lebour.
- 10) Synonym *Peridinium minusculum* Pavillard.
- 11) The *Peridinium granii* Ostenfeld of Gran and Braarud (1935) is actually *P. brevipes* Paulsen. *Peridinium gracile* Gran and Braarud (1935) is *P. granii* Ostenfeld (Schiller, 1937).
- 12) Synonym *Peridinium novascotiense* Gran and Braarud.
- 13) Synonym *Peridinium globulus* var. *quarnerense* Schröder.
- 14) Synonym *Peridinium faroense* Paulsen.
- 15) Synonym *Protoceratium reticulatum* (Claparède and Lachmann) Bütschli. See von Stosch (1969)
- 16) Gran (1933) identified this species using Lebour (1925); the identity of Lebour's organism has been questioned by Gaarder (1954).
- 17) Synonym *Pontosphaera bigelowi* Gran and Braarud.
- 18) Synonym *Distephanus speculum* (Ehrenberg) Haeckel.
- 19) Synonym *Actinocyclus ehrenbergii* Ralfs.
- 20) The species listed are those in whose identities some confidence can be placed. In addition, Bigelow (1926) reported *Coscinodiscus crassus*, *C. denarius*, *C. heterosporus*, *C. subtilis*, and *C. woodwardii*, all without taxonomic authorities. Hustedt (1930) listed *C. crassus* Bailey, *C. heterosporus* Ehrenberg, and *C. woodwardii* A. Schmidt as synonyms of *C. argus* Ehrenberg, but Cleve-Euler (1951) gave the first two of these specific status. Hustedt (1930) gave *C. woodwardii* Eulenstein as a synonym of *C. perforatus* Ehrenberg.  
Cleve-Euler (1951) listed *C. subtilis* Ehrenberg as a valid species, and took issue with Hustedt's (1930) discussion in which he considered it identical with *C. eccentricus* Ehrenberg [= *Thalassiosira eccentrica* (Ehrenberg) Cleve (Fryxell and Hasle 1972)].

- 21) Synonym *Melosira hyperborea* (Grunow) Schütt.
- 22) Synonym *Melosira crenulata* Kützing.
- 23) Synonym *Melosira borerri* Greville.
- 24) Synonym *Melosira sulcata* (Ehrenberg) Kützing
- 25) Synonym *Lauderia glacialis* Gran.
- 26) Synonym *Stephanodiscus astrea* (Ehrenberg) Grunow.
- 27) Synonym *Coscinodiscus eccentricus* Ehrenberg (Fryxell and Hasle, 1972).
- 28) Synonym *Actinoptychus undulatus* (Bailey) Ralfs.
- 29) Synonym *Triceratium alternans* Bailey.
- 30) Synonym *Cerataulina bergoni* Peragallo.
- 31) Synonym *Chaetoceros contortum* Schütt.
- 32) Synonym *Chaetoceros subsecundus* (Grunow) Hustedt.
- 33) Synonym *Chaetoceros affinis* var. *willei* (Gran) Hustedt.
- 34) Synonym *Detonula cystifera* Gran.
- 35) Hendey (1937) viewed the genus *Corethron* as monospecific. Synonyms *Corethron hystrix* Hensen, *C. valdiviae* Karsten.
- 36) Synonym *Rhizosolenia faroensis* Ostenfeld.
- 37) Synonym *Rhizosolenia imbricata* var. *shrubsolei* (Cleve) Schröder.
- 38) Synonyms *Asterionella bleakleyi* W. Smith, *A. formosa* var. *gracillima* (Hantzsch) Grunow, *A. gracillima* (Hantzsch) Heiberg (Körner, 1970)
- 39) Synonym *Asterionella japonica* Cleve (Körner, 1970)
- 40) Synonym *Licmophora abbreviata* Agardh.
- 41) Synonym *Synedra radians* W. Smith.
- 42) Synonym *Synedra longissima* W. Smith.
- 43) Synonym *Thalassiothrix nitzschioides* Grunow.
- 44) Synonym *Stauroneis obliqua* Gregory.
- 45) Synonym *Navicula brevis* Gregory.
- 46) Synonym *Navicula didyma* Ehrenberg.
- 47) Synonym *Navicula smithii* Brebisson.
- 48) Synonym *Pleurosigma acuminatum* (Kützing) Grunow.
- 49) Synonym *Pleurosigma attenuatum* (Kützing) W. Smith.
- 50) Synonym *Pleurosigma balticum* (Ehrenberg) W. Smith.
- 51) Synonym *Pleurosigma fasciola* (Kützing) W. Smith.
- 52) Synonym *Pleurosigma strigilis* W. Smith.

- 53) Besides the species listed here, Bigelow (1926) noted *Navicula gelida*, *N. frigida*, and *N. lata*, all without taxonomic authorities. The first is probably *N. gelida* Grunow. The identities of the other two are uncertain, but possible candidates are *Navicula pelagica* Cleve (synonym *N. frigida* Jörgensen) and *N. lata* (Brebisson) Kützing.
- 54) Synonym *Schizonema cruciger* W. Smith.
- 55) Synonym *Navicula retusa* Brebisson.
- 56) Synonym *Navicula major* Kützing.
- 57) Synonym *Navicula viridis* Kützing.
- 58) Synonym *Scoliopleura latestriata* Grunow.
- 59) Synonym *Navicula aspera* Ehrenberg.
- 60) Synonyms *Bacillaria paradoxa* Gmelin, *Nitzschia paradoxa* Grunow.
- 61) Synonym *Nitzschia closterium* W. Smith.
- 62) Synonym *Campylodiscus thuretii* Brebisson.
- 63) Reported only by Fritz (1921), who was unsure of the identification; her figure is no help.
- 64) Unidentified species of *Euglena* Ehrenberg (Euglenaceae) have been reported.
- 65) An unidentified species of *Carteria* Diesing (Volvocales, Chlamydomonadaceae) has been reported.
- 66) Unidentified species of *Ankistrodesmus* Corda (Oocystaceae), *Oocystis* Naegeli (Oocystaceae), and *Crucigenia* Morren (Scenedesmeaceae) have been reported.
- 67) Unidentified species of *Spirogyra* Link (Zygnemataceae) and of *Euastrum* Ehrenberg, *Sphaerososma* Corda, and *Staurostrum* Meyen (Desmidiaceae) have been reported.

#### References

- Bigelow, H. B. 1926. Plankton of the offshore waters of the Gulf of Maine. Fish. Bull. 40:1-509.
- Burkholder, P. R. 1933. A study of the phytoplankton of Frenchmans Bay and Penobscot Bay, Maine. Int. Rev. ges. Hydrobiol. Hydrogr. 28:262-284.
- Cleve-Euler, A. 1951. Die Diatomeen von Schweden und Finnland. I. K. Svenska VetenskAkad. Handl. Ser. 4. 2(1):1-163.
- Foerster, J. W. 1973. The fate of freshwater algae entering an estuary. In L. H. Stevenson and R. R. Colwell, Eds. Estuarine Microbial Ecology. Univ. So. Carolina Press. pp 387-420.
- Fritz, C. M. 1921. Plankton diatoms, their distribution and bathymetric range in St. Andrews waters. Contr. Canad. Biol. 1918-1920:49-62.
- Fryxell, G. A. and G. R. Hasle. 1972. *Thalassiosira eccentrica* (Ehrenb.) Cleve, *T. symmetrica* sp. nov., and some related centric diatoms. J. Phycol. 8:297-317.
- Gaarder, K. R. 1954. Dinoflagellatae from the "Michael Sars" North Atlantic deep-sea expedition 1910. Rept. sci. Results "Michael Sars" North Atl. deep-sea Exped. 1910 2(3):1-62.

- Gran, H. H. 1933. Studies on the biology and chemistry of the Gulf of Maine. II. Distribution of phytoplankton in August, 1932. Biol. Bull. 64:159-182.
- Gran, H. H. and T. Braarud. 1935. A quantitative study of the phytoplankton in the Bay of Fundy and the Gulf of Maine. J. biol. Bd. Canada 1:279-467.
- Hendey, N. I. 1937. The plankton diatoms of the southern seas. Discovery Rep. 16:151-364.
- \_\_\_\_\_. 1964. An introductory account of the smaller algae of British coastal waters. V. Bacillariophyceae (Diatoms). Fishery Invest., London, Ser. 4:1-317.
- Hustedt, F. 1930. Die Kieselalgen Deutschlands, Österreichs and der Schweiz. In L. Rabenhorst, Kryptogamen-Flora. 7(1):1-920.
- Körner, H. 1970. Morphologie und Taxonomie der Diatomeengattung *Asterionella*. Nova Hedwigia 20:557-725.
- Lebour, M. V. 1925. The Dinoflagellates of Northern Seas. Mar. Biol. Assn. Plymouth. 250 pp.
- Lillick, L. C. 1940. Phytoplankton and planktonic protozoa of the Gulf of Maine. II. Qualitative composition of the planktonic flora. Trans. Am. Phil. Soc. 31:193-237.
- Parke, M. and P. S. Dixon. 1968. Check-list of British marine algae - second revision. J. mar. biol. Assn. U. K. 48:783-832.
- Schiller, J. 1937. Dinoflagellatae (Peridineae). In L. Rabenhorst, Kryptogamen-Flora 10(3), Part 2:1-589.
- Simonsen, R. 1972. Ideas for a more natural system of the centric diatoms. Nova Hedwigia, Beihefte 39:37-53.
- von Stosch, H. A. 1969. Dinoflagellaten aus der Nordsee. I. Über *Cachorina niei* Loeblich (1968), *Gonyaulax grindleyi* Reinecke (1967) und eine Methode zur Darstellung von Peridineenpanzern. Helgoländer wiss. Meeresunters. 19:558-568.