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Checklist of marine diatoms from the Turkish coastal waters with updated nomenclature

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ABSTRACT

Marine diatom research in the coastal waters of Turkey started nearly two centuries ago. In the last decades, increasing numbers of contributions extended the knowledge of the marine phytoplankton. While several studies dedicated to planktonic forms and the checklists published concerning on the phytoplankton, relatively low numbers of benthic diatom studies were performed. Therefore, this is the first detailed list of the marine diatoms including both planktonic and benthic forms in Turkish coasts. This paper brings up the checklist of the past research referring to the authors in the last two centuries within the scope of the latest nomenclature. A total of 767 taxa (species, varieties and forms) belonging to 183 genera were listed. This study focussed into the study areas according to the reviewed literature and showed that many areas are yet to be investigated.

Keywords: Biogeography, Checklist, Epilithic, Epipelic, Epiphytic, Marine diatoms, Phytoplankton, Turkey

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Introduction

The knowledge of biodiversity and biogeography of diatoms showed remarkable progress in the last two centuries. In marine diatoms, drawings contributed into systematics and biogeography of the diatoms in mid-late 19th century and continued within the early 20th century with many atlas and monographs (Smith, 1853; Schmidt, 1874-1959; Cleve, 1894-1895; Peragallo and Peragallo, 1897-1908), which are still fundamental sources for marine diatom researchers. In the last decades with the aid of light microscopy (LM) and scanning electron microscopy (SEM), many species were discovered in the marine coastal waters, which extended the knowledge of diatom assemblages from different coasts. The recent monographs revealed many endemic species and increased the data of widespread taxa and some location-specific taxa with introductions to new locations; e.g., Baltic Sea, Snoeijs (1993), Snoeijs and Vilbaste (1994), Snoeijs and Potapova (1995), Snoeijs and Kasperovičienė (1996), and Snoeijs and Balashova (1988), the Bahamas Hein et al. (2008), the Mediterranean, Blanco and Blanco (2014), Madagascar Metzeltin and Lange-Bertalot (2002), Kryk et al., (2020), the Pacific, Lobban et al., (2012), Stidolph et al., (2012). Witkowski et al. (2000) published a monograph of the taxa from different locations of the marine coasts around the world. These monographs and checklists (Hendey, 1974; López-Fuerte and Siqueiros-Beltrones, 2016) provided complete biogeographical dispersal of the benthic diatoms and led further studies in family, genus or even taxon-specific levels (molecular and phylogeny).

The first study in Turkish coastal waters conducted in mid 19th century; Ehrenberg (1844), described species from the Bosphorus in the Sea of Marmara, after some time, Hustedt also described species with drawings in Bosphorus and the Golden Horn in the Sea of Marmara (Hustedt, 1930-1966). Simonsen (1987) illustrated these taxa from Hustedt collection later. However, the first studies were conducted quite a while ago in Turkey; still today, there is very little data in terms of benthic diatoms. The past papers published on the phytoplankton of Turkish coastal waters included several species with ≥ 30 µm diameter which also observed in the benthos. Therefore, some diatom taxa living in benthos with relatively bigger cell size or showing centric morphology which allow cells to suspend in the water column easily (e.g., *Pleurosigma elongatum* W. Smith, *Striatella unipunctata* (Lyngbye) C. Agardh, *Navicula directa* (W. Smith) Brébisson, *Coscinodiscus* spp.) were reported from the surface waters or open waters in Turkish seas. Several authors published checklists regarding phytoplankton composition in the last decades. Koray (2001) reported the phytoplankton from Turkish seas, while Balkıs (2004) published a checklist from the Sea of Marmara, and Taş and Okuş (2016) from the Black Sea. A checklist of freshwater algae, which includes freshwater diatoms, by Aysel (2005), also covered many benthic diatoms; however, any lists comprising exclusively marine benthic diatoms has yet not published. Even though research on marine phytobenthos is increasing, the biodiversity in the marine coasts and the biogeography of the diatoms in Turkey remained unclear. The low number of studies conducted in the coastlines and the outdated nomenclature used in the previous papers prevented to produce a collective list of the benthic diatoms, even though, Turkey surrounded by seas; Black Sea, Mediterranean Sea, the Aegean Sea, and has an inland sea; the Sea of Marmara. However, several benthic studies were already performed, or checklists were published in the adjacent countries, e.g., Romania (Caraus, 2002, 2012, 2017); Russia (Nevrova, 2016); Greece (Foged, 1986; Louvrou, 2007).

Furthermore, the lack of drawings and micrographs or morphological features allowed most of the taxa remained as doubtful in the past studies (Koray 2001). There were recently increasing research, including morphological details providing comparable data for further studies. However, there was still a need for marine diatom lists to understand and enhance taxonomy and biogeography of diatoms in Turkish coasts.

This paper aimed to create a list of reported marine diatom species with updated nomenclature in the coasts of Turkey with an emphasis on doubtful and illustrated taxa within the results of major marine diatom studies performed so far. The list was created to gather all the scattered previous data to provide a comparable key particularly relying on the illustrated taxa for the future research in Turkey.

Methodology

This diatom checklist was created using information from the publications between 1844-2020. The literature search revealed 56 references included planktonic diatoms and marine benthic diatoms in the coasts, coastal lake and lagoons of Turkey. Habitat information and the study areas were presented for each species (Table 1). The references included articles, reviews, checklists, PhD and MSc thesis. Freshwater species reported in some studies were not excluded due to riverine pressure and salinity changes in different locations from the Mediterranean to the Black Sea. However, there were several marine diatom species found in inland waters, according to Maraşlıoğlu and Gönülol (2020), these taxa were not taken into account due to possible misidentifications.

Some species reported with different names from the latest taxonomical order. An effort was put to classify the species with the updates to their current names, according to Guiry and Guiry (2020) and Kociolek et al. (2020). Systematic classification followed Round et al. (1990). Taxa cited in species-level with "confer" and "sp." were not evaluated in the list due to a need of confirmation of these species.

Many species lack images and even reported for the first time, there were no illustrations or morphological features (e.g., dimensions, striae or fibulae counts). Therefore, references used in the list with illustrations were shown with an asterisk in Table 1.

The Current Status of Marine Diatoms in Turkey

The list contained a total of 767 taxa (species, varieties and forms) belonged to 183 genera. Amongst all, 70 taxa belonged to class Coscinodiscophyceae, 130 taxa to Mediophyceae and 567 taxa to Bacillariophyceae (See Checklist). Current nomenclature of the formerly reported taxa was listed (See Updated Nomenclature). According to the literature, the most cited genera with highest numbers of species were *Navicula* Bory (57), *Nitzschia* Hassal (55), *Chaetoceros* Ehrenberg (53), *Mastogloia* Thwaites (31), *Cocconeis* Ehrenberg (23), *Amphora* Ehrenberg ex Kützing (18), *Halamphora* (Cleve) Mereschkowsky (16). The most common six genera in terms of species numbers consisted of 33.1% of all taxa found in the literature. The most common species were *Cylindrotheca closterium* (Ehrenberg) Reinmann & Lewin which was reported from 21 studies and followed by *Nitzschia longissima* (Brébisson ex Kützing) Grunow (cited 19), *Coscinodiscus radiatus* Ehrenberg, *Thalassionema nitzschioides* (Grunow) Mereschkowsky, *Pleurosigma normanii* Ralfs (cited 17), *Licmophora abbreviata* Agardh, *Achnanthes brevipes* Agardh (cited 15) (Table 2).

The reviewed literature revealed that studies in the coastal waters of Turkey were low in numbers. The Sea of Marmara and the Aegean Sea was the most intensively studied areas with 20 and 19 studies, respectively. Studies in the Mediterranean and the Black Sea were rather scarce with 11 and 14 research in terms of both benthic and planktonic species composition and biogeographical dispersal.

The current paper represents the first exclusively detailed marine diatom list in the Turkish coastal waters. Since the studies started in 1844 with Ehrenberg, several authors showed a significant contribution to the diatom composition throughout the years. Several checklists published in the past by various authors (Koray, 2001; Balkıs, 2004; Taş and Okuş, 2016), however, the latest and progressing systematics of diatoms resulted in many synonyms and transferred taxa into a new species of a genus. This paper brings the data altogether with the latest nomenclature with an emphasis on the current names of the cited taxa. An essential part of the studies performed dedicated to mostly planktonic forms of diatoms; the papers here reviewed generally had both benthic and planktonic diatoms. The number of the taxa seems to be high in the checklist; however, diatom species number from the coasts of Turkey are yet far from similar checklists (Hendey, 1974; López-Fuerte and Siqueiros-Beltrones, 2016; Caraus, 2017). The number of only benthic species determined in the Adriatic Sea was 518 (Viličić et al., 2002). In Turkey, the reason for a low number of taxa might be related to the low number of benthic studies performed in these coasts. Most of the studies reviewed in this paper used a similar sampling technique (plankton net), which aimed to take phytoplankton; and in some of these studies, benthic diatoms were also observed. Therefore, the most cited taxa found to be relatively higher in cell size, which observed through the plankton net. However, the recent findings showed (Kaleli et al., 2020) that the number of taxa could increase with the forthcoming studies, which especially aim to reveal benthic species.

The checklist revealed that a high number of freshwater taxa observed in these studies (*Cymbella* spp., *Gomphonema* spp., *Navicula* spp.) mostly in the Black Sea coasts (Soylu et al., 2011; Baytut et al., 2016). It might be related to the freshwater inputs e.g., two major rivers; Kızılırmak and Yeşilırmak, where relatively lower salinity might be a factor to detect the freshwater diatoms in the Black Sea and yielded favourable conditions for the taxa to survive; however, it was observed that marine taxa could dominate in these coastal waters (Kaleli et al., 2017) as well as in the northern Black Sea coasts (Nevrova and Petrov, 2019). Many taxa reported in the list have no documentation or sufficient data on geographical distribution. It is difficult to evaluate the local distribution of the species in comparison to the papers reviewed; however, the list gives an insight into the underlying distribution in the seas of Turkey. The studies used in this checklist revealed that many species lack morphological features and documented as the first record in Turkey. However, in newly reported taxa, LM, SEM and molecular techniques should be given in detail for comparison with the species found in the coasts of Turkey, other coastal areas and beyond. Therefore, this paper revealed the diatom composition in the Turkish coastal waters with the latest nomenclature and could be used as a fundamental list for the latter studies.

Table 1. Literature with all species or partially reported with illustrations marked with an asterisk. Black Sea (B), Sea of Marmara (S), Aegean Sea (A), Mediterranean Sea (M).

Reference	Habitat	Location
1. Ehrenberg (1843)	Epizoic	S
2. Hustedt (1930-1966)*	Benthos	S
3. Egemen et al. (1999)	Planktonic	A
4. Witkowski et al. (2000)*	Benthos	M
5. Aktan (2001)*	Epilithic, Epipelic	S
6. Koray (2001)	Planktonic	B,S,A,M
7. Polat & Işık (2002)	Planktonic	M
8. Türkoğlu & Koray (2002)	Planktonic	B
9. Balkıs (2003)	Planktonic	S
10. De Stefano & Marino (2003)*	Epiphytic	A
11. Balkıs (2004)	Planktonic	S
12. Aktan & Aykulu (2005)*	Epipelic	S
13. Balkıs (2005)*	Benthos	A
14. Baytut et al. (2005)*	Benthos	B
15. Aka & Polat (2006)*	Planktonic	M
16. De Stefano et al. (2006)*	Epiphytic	A
17. Çevik et al. (2008)	Benthos	M
18. Çolak Sabancı (2008)*	Benthos	A
19. De Stefano et al. (2008)*	Epiphytic	A
20. Sıvacı et al. (2008)	Benthos	B
21. Deniz & Taş (2009)	Planktonic	S
22. Gönülol et al. (2009)	Epipelic	B
23. Çolak Sabancı (2010)*	Benthos	A
24. Çolak Sabancı & Koray (2010)*	Benthos	A
25. Polge et al. (2010)	Epipelic	S
26. Altuğ et al. (2011)	Planktonic	S,A
27. Soylu et al. (2011)	Epiphytic	B
28. Çolak Sabancı (2012)*	Benthos	A
29. Özman-Say & Balkıs (2012)	Planktonic	M
30. Çolak Sabancı (2013)*	Benthos	A
31. Ağlaç & Balkıs (2014)	Planktonic	A
32. Aktan et al. (2014)	Epipelic	S
33. Balkıs & Toklu-Alıçlı (2014)	Planktonic	S
34. Blanco & Blanco (2014)*	Benthos	A
35. Pailles et al. (2014)*	Fossil	S
36. Taş (2014)	Planktonic	A
37. Baytut et al. (2016)	Planktonic	B
38. Kısa & Pabuççu (2016)	Benthos, Planktonic	B
39. Pennesi (2016)*	Epiphytic	A

Table 1. Continue

40. Yıldız (2018)*	Benthos	S
41. Kaleli et al. (2017)*	Epilithic	B
42. Kaleli et al. (2018)*	Epilithic	B
43. Li et al. (2018)*	Benthos	A,M
44. Kaleli et al. (2019)*	Epilithic, Epipsammic	M
45. Kaleli et al. (2020)*	Benthos	M
46. Tüfekçi et al. (2008)	Planktonic	S
47. Topçu (2011)	Planktonic	A
48. Taşkın et al. (2019)	Planktonic, Benthic	B,S,A,M
49. Baytut et al. (2013)*	Planktonic	B
50. Taş & Okuş (2006)	Planktonic	B
51. Balkıs & Taş (2016)	Planktonic	S
52. Taş (2017)*	Planktonic	S
53. Taş & Becerril (2017)*	Planktonic	S
54. Ayaz et al. (2018)	Benthic	M
55. Eker-Develi & Kıdeyş (2003)	Planktonic	B
56. Feyzioğlu & Seyhan (2007)	Planktonic	B

Table 2. Most common species in the Turkish coastal waters.

Taxon	Citations	Taxon	Citations
Cylindrotheca closterium	21	***Thalassionema fraunfeldii***	15
Nitzschia longissima	19	***Striatella unipunctata***	15
Coscinodiscus radiatus	17	***Ditylum brightwelli***	14
Thalassionema nitzschioides	17	***Cerataulina pelagica***	13
Pleurosigma normanii	17	***Chaetoceros affinis***	13
Licmophora abbreviata	16	***Chaetoceros lorenzianus***	13
Pseudosolenia calcar-avis	16	***Hemiaulus hauckii***	13
Achnanthes brevipes	15	***Pseudo-nitzschia pungens***	13
Grammatophora marina	15	***Skeletonema costatum***	13
Melosira moniliformis	15	***Proboscia alata***	12

Conclusion

Investigation of the marine diatoms started nearly two centuries ago in Turkish coasts, however, still, a lot of geographical spots were not investigated, and their diatom composition remains unknown. The list comprised many benthic diatoms as well as the previously expressed planktonic forms, nevertheless, showed that total taxa in the Turkish coasts were not entirely determined yet. The future studies should focus on the benthic diatom composition with the help of LM and SEM to provide additional data for further implications. Morphological details of the benthic diatoms would enhance the knowledge not only on the taxonomy but also the biodiversity and their geographical dispersal in the coastal waters like estuarine areas, coastal lakes and lagoons. This paper brought marine planktonic and benthic studies together and comprised a dataset which could be comparative for the future studies in Turkey and other regions. Although there were checklists on marine plankton, this study provided a list of diatoms including both forms from the coasts of Turkey. However, many of the species were not illustrated, future studies could extend the knowledge with accurate identification with the aid of the illustrated studies in the region. It should be noted that there have been no changes in the taxonomy of the genera and species, the nomenclature was updated in several taxa which were transferred or currently not in use anymore, therefore, more research should be carried out to clarify the systematic problems of diatoms in Turkish coastal waters.

Etik Standart ile Uyumluluk

Conflict of interests: The authors declare that for this article they have no actual, potential or perceived conflict of interests.

Ethics committee approval: Ethics committee approval is not required for this study.

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Disclosure: -

Updated Nomenclature

List of updated species nomenclature (Taxa) cited in the previous studies (Cited Name), and their synonyms.

Current Name	Cited Name
***Achnanthes brevipes* var. *intermedia* (Kützing) Cleve**	*Achnanthes intermedia* Kützing
***Achnanthes parvula* Kützing**	*Achnanthes brevipes* var. *parvula* (Kützing) Cleve
***Achnanthes wellsiae* (Reimer) Witkowski & Lange-Bertalot**	*Astartiella welsiae* (Reimer) Witkowski & Lange-Bertalot
***Actinocyclus octonarius* var. *ralfsii* (Smith) Hendey**	*Actinocyclus ralfsii* (Smith) Ralfs
***Amphicocconeis disculoides* (Hustedt) Stefano & Marino**	*Cocconeis disculoides* Hustedt
***Amphitetras antediluviana* Ehrenberg**	*Triceratium antediluvianum* (Ehrenberg) Grunow
***Aneumastus tuscula* (Ehrenberg) Mann & Stickle**	*Navicula tuscula* (Ehrenberg) Grunow
***Ardissonea formosa* (Hantzsch) Grunow**	*Synedra formosa* Hantzsch
***Asterionellopsis glacialis* (Castracane) Round**	*Asterionella japonica* Cleve
***Azpeitia nodulifera* (Schmidt) Fryxell & Sims**	*Coscinodiscus nodifer* Schmidt
***Bacillaria socialis* (Gregory) Ralfs**	*Bacillaria paradoxa* Gmelin *Nitzschia paradoxa* (Gmelin) Grunow
***Berkeleya scopulorum* (Brébisson ex Kützing) Cox**	*Navicula scopulorum* Brébisson ex Kützing var. *scopularum*
***Biddulphia biddulphiana* (Smith) Boyer**	*Biddulphia pulchella* Gray
***Brebissonia lanceolata* (Agardh) Mahoney & Reimer**	*Navicula lanceolata* (Agardh) Kützing
***Caloneis amphisbaena* var. *subsalina* (Donkin) Cleve**	*Caloneis subsalina* (Donkin) Hendey
***Catacombas gaillonii* (Bory) D.M.Williams & Round**	*Synedra gaillonii* (Bory) Ehrenberg
***Chaetoceros atlanticus* var. *neopolitanus* (Schröder) Hustedt**	*Chaetoceros neapolitanus* Schröder
***Chaetoceros neogracilis* Van Landingham**	*Chaetoceros gracilis* Schütt
***Chaetoceros protuberans* Lauder**	*Chaetoceros didymus* var. *protuberans* (Lauder) Gran & Yendo
***Chaetoceros willei* Gran**	*Chaetoceros affinis* var. *willei* (Gran) Hustedt
***Cocconeis distans* Gregory**	*Cocconeis granulifera* Greville
***Conticribra weissflogii* (Grunow) Stachura-Suchoples & Williams**	*Thalassiosira weissflogii* (Grunow) Fryxell & Hasle
***Coronia decora* (Brébisson) Ruck & Guiry**	*Campylodiscus decorus* Brébisson

***Coscinodiscopsis jonesiana* (Greville) Sar & Sunesen**	*Coscinodiscus jonesianus* (Greville) Ostenfeld
***Coscinodiscus pavillardii* Forti**	*Coscinodiscus perforatus* var. *pavillardi* (Forti) Hustedt
***Craticula cuspidata* (Kützing) Mann**	*Navicula cuspidata* (Kützing) Kützing
***Craticula cuspidata* var. *heribaudii* (Peragallo) J.Y.Li & Y.Z.Qi**	*Navicula cuspidata* var. *heribaduii* (Peragallo) Cleve
***Craticula halophila* (Grunow) Mann**	*Navicula cuspidata* var. *halophila* Grunow
***Ctenophora pulchella* (Ralfs ex Kützing) Williams & Round**	*Synedra pulchella* (Ralfs) Kützing
***Cylindrotheca closterium* (Ehrenberg) Reimann & Lewin**	*Nitzschia closterium* (Ehrenberg) Smith
***Cymbopleura inaequalis* (Ehrenberg) Krammer**	*Cymbella inaequalis* (Ehrenberg) Rabenhorst
***Cymbopleura naviculiformis* (Auerswald ex Heiberg) Krammer**	*Cymbella naviculiformis* (Auerswald) Cleve
***Dactyliosolen fragilissimus* (Bergon) Hasle**	*Rhizosolenia fragilissima* Bergon
***Dactyliosolen mediterraneus* (H. Peragallo) H.Peragallo**	*Leptocylindrus mediterraneus* (H.Peragallo) Hasle
***Delphineis australis* Watanabe, Tanaka, Reid, Kumada & Nagudo**	*Rhaphoneis surirella* var. *australis* (Petit) Grunow
***Delphineis surirella* (Ehrenberg) Andrews**	*Rhaphoneis surirella* (Ehrenberg) Grunow
***Didymosphenia geminata* (Lyngbye) Mart.Schmidt**	*Gomphonema geminatum* (Lyngbye) Agardh
***Diploneis crabro* (Ehrenberg) Ehrenberg**	*Navicula crabro* (Ehrenberg) Kützing
***Ellerbeckia arenaria* (D.Moore ex Ralfs) R.M.Crawford**	*Melosira arenaria* Moore ex Ralfs
***Encyonema leiblenii* (Agardh) Silva, Jahn, Veiga Ludwig & Menezes**	*Encyonema prostratum* (Berkeley) Kützing
***Entomoneis alata* (Ehrenberg) Ehrenberg**	*Amhiprora alata* (Ehrenberg) Kützing
***Entomoneis costata* (Hustedt) Reimer**	*Amphiprora costata* Hustedt
***Entomoneis pulchra* (Bailey) Reimer**	*Amphiprora pulchra* Bailey
***Eupyxidicula turris* (Greville) S.Blanco & C.E.Wetzel**	*Stephanopyxis turris* (Greville) Ralfs
***Fallacia forcipata* (Greville) Stickle & Mann**	*Navicula forcipata* Grevillei
***Fallacia forcipata* var. *densestriata* (A.W.F.Schmidt) Gogorev**	*Navicula forcipata* Grevillei var. *densestriata* A.Schmidt
***Fogedia finmarchica* (Cleve & Grunow) Witkowski, Metzeltin & Lange-Bertalot**	*Navicula finmarchica* (Cleve & Grunow) Cleve
***Fragilaria tabulata* var. *truncata* (Greville) Lange-Bertalot**	*Synedra fasciculata* Ehrenberg var. *truncata* (Greville) Patrick
***Fragilariopsis rhombica* (O'Meara) Hustedt**	*Nitzschia angulata* Hasle
***Grammatophora oceanica* Ehrenberg**	*Grammatophora oceanica* (Smith) Hustedt
***Guinardia delicatula* (Cleve) Hasle**	*Rhizosolenia delicatula* Cleve
***Guinardia striata* (Stolterfoth) Hasle**	*Rhizosolenia stolterfothii* H. Peragallo
***Gyrosigma acuminatum* (Kützing) Rabenhorst**	*Gyrosigma spenceri* (Quekett) Griffith & Henfrey
***Gyrosigma macrum* (W.Smith) J.W.Griffith & Henfrey**	*Pleurosigma macrum* Smith
***Gyrosigma reversum* (Gregory) Hendey**	*Pleurosigma reversum* Gregory
***Gyrosigma robustum* (Grunow) Cleve**	*Pleurosigma robustum* Grunow
***Halamphora coffeiformis* (C.Agardh) Levkov**	*Amphora coffeaeformis* (Agardh) Kützing
***Halamphora costata* (W.Smith) Levkov**	*Amphora costata* Smith
***Halamphora exigua* (Gregory) Levkov**	*Amphora exigua* Gregory
***Halamphora holsatica* (Hustedt) Levkov**	*Amphora holsatica* Hustedt
***Halamphora normanii* (Rabenhorst) Levkov**	*Amphora normannii* Rabenhorst
***Halamphora subholsatica* (Krammer) Levkov**	*Amphora subholsatica* Krammer
***Halamphora veneta* (Kützing) Levkov**	*Amphora veneta* Kützing
***Halamphora wisei* (Salah) Álvarez-Blanco & Blanco**	*Amphora turgida* var. *wisei* Salah
***Helicotheca thamesis* (Shrubsole) Ricard**	*Streptotheca tamesis* Shrubsole
***Hippodonta capitata* (Ehrenberg) Lange-Bertalot, Metzeltin & Witkowski**	*Navicula capitata* Ehrenberg
***Iconella biseriata* (Brébisson) Ruck & Nakov**	*Surirella biseriata* Brébisson
***Karayevia clevei* (Grunow) Round & Bukhtiyarova**	*Achnanthes clevei* Grunow
***Karayevia rostrata* (Hustedt) Bukhtiyarova**	*Achnanthes clevei* Grunow var. *rostrata* Hustedt
***Lyrella abrupta* (Gregory) Mann**	*Navicula abrupta* (Gregory) Donkin
***Lyrella atlantica* (Schmidt) Mann**	*Navicula abrupta* var. *atlantica* (Schmidt) Peragallo & Peragallo
***Lyrella lyra* (Ehrenberg) Karajeva**	*Navicula lyra* Ehrenberg
***Lyrella lyroides* (Hendey) Mann**	*Navicula lyroides* Hendey
***Mastogloia albertii* A.Pavlov, E.Jovanovska, C.E.Wetzel, L.Ector & Z.Levkov**	*Mastogloia smithii* var. *amphicephala* Grunow
***Mastogloia lacustris* (Grunow) Grunow**	*Mastogloia smithii* var. *lacustris* (Grunow) M.Voigt

***Melosira moniliformis* (Müller) Agardh**	*Melosira moniliformis* (Müller) Agardh var. *moniliformis*
***Metacolioneis tumida* (Brébisson ex Kützing) Blanco & Wetzel**	*Scoliopleura tumida* (Brébisson ex Kützing) Rabenhorst
***Microtabella interrupta* (Ehrenberg) Round**	*Striatella interrupta* (Ehrenberg) Heiberg
***Navicula capitatoradiata* H.Germain**	*Navicula cryptocephala* var. *intermedia* Grunow
***Navicula comoides* (Dillwyn) Peragallo & Peragallo**	*Navicula pseudocomoides* Hendey
***Navicula cryptotenella* Lange-Bertalot**	*Navicula radiosa* var. *tenella* (Brébisson ex Kützing) Van Heurck
***Navicula phyllepta* Kützing**	*Navicula lanceolata* var. *phyllepta* (Kützing) Van Heurck
***Navicula ramosissima* (Agardh) Cleve**	*Navicula ramosissima* var. *ramosissima* (Agardh) Cleve
***Navicula tripunctata* (Müller) Bory**	*Navicula gracilis* Ehrenberg
***Navicula veneta* Kützing**	*Navicula cryptocephala* var. *veneta* (Kützing) Rabenhorst
***Navicula viridula* var. *avenacea* (Brébisson) Van Heurck**	*Navicula avenacea* (Brébisson et Godey) Brébisson ex Grunow
***Navicymbula pusilla* (Grunow) Krammer**	*Cymbella pusilla* Grunow
***Neocalyptrella robusta* (Norman ex Ralfs) Hernández-Becerril & Meave del Castillo**	*Rhizosolenia robusta* G.Norman ex Ralfs
***Odontidium hyemale* (Roth) Kützing**	*Diatoma hiemalis* Heibe
***Olifantiella muscatinei* (Reimer & Lee) Van de Vijver, Ector & Wetzel**	*Olifantiella pseudobiremis* Riaux-Gobin
***Pantocsekiella comensis* (Grunow) Kiss & Ács**	*Cyclotella comensis* Grunow
***Pantocsekiella kuetzingiana* (Thwaites) Kiss & Ács**	*Cyclotella meneghiniana* var. *kutzingiana* (Thwaites) Playfair
***Pantocsekiella ocellata* (Pantocsek) Kiss & Ács**	*Cyclotella ocellata* Pantocsek
***Paraplaconeis placentula* (Ehrenberg) Kulikovskiy & Lange-Bertalot**	*Navicula placentula* (Ehrenberg) Kützing
Parlibellus berkeleyii (Kützing) E.J.Cox	*Navicula pseudocomoides* Hendey
***Parlibellus plicatus* (Donkin) Cox**	*Navicula plicata* Donkin
***Petroneis latissima* (Gregory) Stickle & Mann**	*Navicula latissima* Gregory
***Pinnunavis elegans* (Smith) Okuno**	*Navicula elegans* Smith
***Placoneis elginensis* (Gregory) Cox**	*Navicula elginensis* (Gregory) Ralfs
***Plagiogramma minus (W.Gregory)* Chunlian Li, Ashworth & Witkowski**	*Dimerogramma minor* (Gregory) J.Ralfs
***Plagiogrammopsis vanheurckii* (Grunow) Hasle, Stosch & Syvertsen**	*Plagiogramma van-heurckii* Grunow
***Planothidium hauckianum* (Grunow) Bukhtiyarova**	*Achnanthes hauckiana* Grunow
***Planothidium hauckianum* var. *rostratum* (Schulz ex Hustedt) Andresen, Stoermer & Kreis, Jr.**	*Achnanthes houckiana* Grunow var. *rostrata* Shultz
***Planothidium lanceolatum* (Brébisson ex Kützing) Lange-Bertalot**	*Achnanthes lanceolata* (Brébisson) Grunow
***Pleurosigma formosum* var. *dalmatica (dalmaticum)* Grunow**	*Pleurosigma decorum* W. Smith var. *dalmaticum* sensu Peragallo
***Pleurosigma normanii* Ralfs**	*Pleurosigma affine* Grunow
***Proboscia alata* (Brightwell) Sundström**	*Rhizolenia alata* Brightwell *Rhizosolenia alata* Brightwell f. *gracillima* (Cleve) Gran
***Proboscia indica* (H.Peragallo) Hernández-Becerril**	*Proboscia alata* f. *indica* (H.Peragallo) Gran
***Psammodictyon panduriforme* (W.Gregory) D.G.Mann**	*Nitzschia panduformis* Gregory
***Psammodiscus nitidus* (Gregory) Round & Mann**	*Coscinodiscus nitidus* Gregory
***Pseudo-nitzschia pungens* (Grunow ex Cleve) Hasle**	*Nitzschia pungens* Grunow ex Cleve
***Pseudo-nitzschia seriata* (Cleve) H.Peragallo**	*Nitzshia seriata* Cleve
***Pseudosolenia calcar-avis* (Schultze) Sundström**	*Rhizosolenia calcar-avis* M.Schultze
***Rhizosolenia acuminata* (H. Peragallo) H. Peragallo**	*Rhizosolenia acuminata* (H. Peragallo) Gran
***Rhizosolenia imbricata* Brightwell**	*Rhizolenia shrubsolei* Cleve *Rhizosolenia imbricata* var. *shrubsolei* (Cleve) Schröder
***Rhopalodia constricta* (W.Smith) Krammer**	*Rhopalodia musculus* var. *constricta* (Brébisson ex Smith) H. & M. Peragallo
***Sellaphora pupula* (Kützing) Mereschkowsky**	*Navicula pupula* Kützing
***Seminavis eulensteinii* (Grunow) D.B.Danielidis, K.Ford & D.Kennett**	*Amphora angusta* var. *ventricosa* (Gregory) Cleve
***Meuniera membranacea* (Cleve) P.C.Silva**	*Stauroneis membranacea* (Cleve) Hustedt
***Staurophora amphioxys* (Gregory) Mann**	*Stauroneis gregorii* Ralfs
***Stellarima stellaris* (Roper) Hasle & Sims**	*Coscinodiscus stellaris* Roper

***Tabularia affinis* var. *acuminata* (Grunow) Aboal**	*Synedra tabulata* var. *acuminata* (Grunow) Hustedt
***Tabularia fasciculata* (Agardh) Williams & Round**	*Synedra affinis* Kützing *Synedra fasciculata* (Agardh) Kützing *Synedra tabulata* (C. Agardh) Kützing var. *fasciculata* (Kützing) Grunow
***Tetramphora intermedia* (Cleve) Stepanek & Kociolek**	*Amphora rhombica* Kitton var. *intermedia* Cleve
***Tetramphora ostrearia* (Brébisson) Mereschkowsky**	*Amphora ostrearia* Brébisson ex Kützing
***Thalassionema fraunfeldii* (Grunow) Hallegraeff**	*Thalassiothrix frauenfeldii* (Grunow) Grunow
***Thalassiosira eccentrica* (Ehrenberg) Cleve**	*Coscinodiscus excentricus* Ehrenberg
***Thalassiosira gravida* Cleve**	*Thalassiosira rotula* Meunier
***Thalassiosira leptopus* (Grunow) Hasle & Fryxell**	*Coscinodiscus lineatus* Ehrenberg
***Toxarium hennedyanum* (Gregory) Pelletan**	*Synedra hennedyana* Gregory
***Toxarium undulatum* Bailey**	*Synedra undulata* (Bailey) Gregory
***Triceratium pelagicum* (Schröder) Sournia**	*Biddulphia pelagica* Schröder
***Trieres mobiliensis* (Bailey) Ashworth & Theriot**	*Biddulphia mobiliensis* (Bailey) Grunow & Van Heurck *Odontella mobiliensis* (Bailey) Grunow
***Trieres regia* (Schultze) Ashworth & Theriot**	*Odontella regia* (Schulze) Ostenfeld
***Tryblionella acuminata* Smith**	*Nitzschia acuminata* (W.Smith) Grunow
***Tryblionella apiculata* Gregory**	*Nitzschia apiculata* (Gregory) Grunow
***Tryblionella granulata* (Grunow) Mann**	*Nitzschia granulata* Grunow
***Tryblionella navicularis* (Brébisson) Ralfs**	*Nitzschia navicularis* (Brébisson ex Kützing) Grunow
***Tryblionella punctata* Smith**	*Nitzschia punctata* (Smith) Grunow
***Ulnaria danica* (Kützing) Compère & Bukhtiyarova**	*Synedra ulna* (Nitzsch) Ehrenberg var. *danica* (Kützing) Grunow
***Ulnaria ulna* (Nitzsch) Compère**	*Fragilaria ulna* (Nitzsch) Lange-Bertalot *Synedra ulna* (Nitzsch) Ehrenberg

Checklist

List of diatom species reported from previous 56 papers. Nomenclature updated, according to Guiry and Guiry (2020) and Kociolek et al. (2020). Systematics followed Round et al. (1990).

Coscinodiscophyceae	
Actinocyclus cuneiformis (Wallich) F.Gómez, Lu Wang & Senjie Lin	3
Actinocyclus normnanii f. *subsalus* (Juhlin-Dannfelt) Hustedt	37
Actinocyclus octonarius Ehrenberg	6,37,48
Actinocyclus octonarius var. *ralfsii* (Smith) Hendey	6
Actinocyclus subtilis (Gregory) Ralfs	5
Actinoptychus splendens (Shadbolt) Ralfs	6,48
Asterolampra grevillei (Wallich) Greville	6,7,29,31,36,48,51
Asterolampra marylandica Ehrenberg	6,7,15,29,31,36,48
Asterolampra vanheurckii Brun	6,48
Asteromphalus flabellatus (Brébisson) Greville	6,7,18,29,36,48
Asteromphalus heptactis (Brébisson) Ralfs	6,7,29,36,48
Asteromphalus hookeri Ehrenberg	6,15,29,48
Asteromphalus hyalinus Karsten	6,48
Aulacoseira granulata (Ehrenberg) Simonsen	14,25,37
Aulacoseira italica (Ehrenberg) Simonsen	25
Azpeitia nodulifera (Schmidt) Fryxell & Sims	3,6,48,56
Coscinodiscopsis jonesiana (Greville) Sar & Sunesen	6,48
Coscinodiscus asteromphalus Ehrenberg	6,48
Coscinodiscus centralis Ehrenberg	6,8,11,29,48,51
Coscinodiscus concinnus Smith	6,8,21,31,37,48,51,52
Coscinodiscus gigas Ehrenberg	6,48
Coscinodiscus granii Gough	3,6,8,9,11,48,51,52,56
Coscinodiscus janischii Schmidt	37

Coscinodiscus marginatus Ehrenberg	6,8,48
Coscinodiscus oculus-iridis (Ehrenberg) Ehrenberg	6,48,51
Coscinodiscus pavillardii Forti	6,8,48
Coscinodiscus perforatus Ehrenberg	7,8,9,11,15,29,31,37,51
Coscinodiscus radiatus Ehrenberg	6,7,8,9,11,15,21,26,29,31,33,37,48, 50,51,52,56
Coscinodiscus wailesii Gran & Angst	6,37,48
Dactyliosolen antarcticus Castracane	6,29,48
Dactyliosolen blavyanus (H.Peragallo) Hasle	6,48
Dactyliosolen fragilissimus (Bergon) Hasle	6,8,9,11,33,46,48,50,51,52,56
Dactyliosolen mediterraneus H.Peragallo	6,29,31,48,51
Ellerbeckia arenaria (D.Moore ex Ralfs) R.M.Crawford	6
Eupyxidicula turris (Greville) S.Blanco & C.E.Wetzel	6,11,51
Gallionella asperula Ehrenberg	1
Guinardia cylindrus (Cleve) Hasle	6,9,48,51
Guinardia delicatula (Cleve) Hasle	6,8,11,31,48,50,51,52
Guinardia flaccida (Castracane) Peragallo	6,8,9,11,31,33,46,47,48,51
Guinardia striata (Stolterfoth) Hasle	6,8,11,17,29,31,47,48,50,51,52
Hyalodiscus scoticus (Kützing) Grunow	37
Melosira borreri Greville	6,8,48
Melosira dubia Kützing	2
Melosira moniliformis (Müller) Agardh	3,4,5,6,9,11,12,15,25,29,32,37,48,51,52
Melosira moniliformis var. *octogona* (Grunow) Hustedt	4
Melosira nummuloides Agardh	2,3,5,6,12,21,25,37,48,51,52,56
Melosira varians Agardh	22,25,37,56
Neocalyptrella robusta (Norman ex Ralfs) Hernández-Becerril & Meave del Castillo	3,6,31,48,51,52
Paralia sulcata (Ehrenberg) Cleve	6,25,29,48,51
Podosira hormoides (Montagne) Kützing	37
Proboscia alata (Brightwell) Sundström	3,8,9,11,29,31,33,46,51,52,55,56
Proboscia alata f. *alata* (Brightwell) Sundström	6,47,50
Proboscia alata f. *gracillima* (Brightwell) Sundström	6,50
Proboscia indica (H.Peragallo) Hernández-Becerril	6,47,50
Pseudosolenia calcar-avis (Schultze) Sundström	6,8,9,11,17,29,31,33,46,47,48,50,51,52,55,56
Rhizosolenia acuminata (H.Peragallo) H.Peragallo	6,48
Rhizosolenia bergonii H.Peragallo	6,48
Rhizosolenia castracanei H.Peragallo	6,31,48,52
Rhizosolenia faeroensis Ostenfeld	51
Rhizosolenia hebetata J.W.Bailey	11,33,51,52
Rhizosolenia hebetata var. *semispina* (Hensen) Gran	6,48,50
Rhizosolenia imbricata Brightwell	3,6,8,29,47,48,50,51
Rhizosolenia setigera Brightwell	6,8,9,11,33,46,47,48,51,52
Rhizosolenia styliformis Brightwell	6,11,29,31,46,47,48,50,51
Rhizosolenia temperei H.Peragallo	6,48,51
Stellarima stellaris (Roper) Hasle & Sims	6,48,51
Stephanopyxis palmeriana (Greville) Grunow	6,8,48
Triceratium dubium Brightwell	6,48
Triceratium favus Ehrenberg	6,48
Triceratium pelagicum (Schröder) Sournia	6,48
Mediophyceae	
Amphitetras antediluviana Ehrenberg	18
Ardissonea crystallina (C.Agardh) Grunow	5,18
Ardissonea crystallina var. *dalmatica* (Kützing) Mills	41,45
Ardissonea formosa (Hantzsch) Grunow	17
Bacteriastrum comosum Pavillard	6,48

Bacteriastrum delicatulum Cleve	3,6,8,11,29,47,48,51
Bacteriastrum elegans Pavillard	6,29,31,48
Bacteriastrum elongatum Cleve	6,48,50
Bacteriastrum hyalinum Lauder	3,6,8,11,31,47,48,51,52
Bacteriastrum mediterraneum Pavillard	6,48
Bellerochea horologicalis Stosch	6,48
Biddulphia alternans (Bailey) Van Heurck	6,37,48,51
Biddulphia biddulphiana (Smith) Boyer	6,7,29,48
Biddulphia tridens (Ehrenberg) Ehrenberg	6,48
Cerataulina pelagica (Cleve) Hendey	6,8,9,11,29,31,33,37,46,48,51,52,56
Chaetoceros aequatorialis Cleve	52,53
Chaetoceros affinis Lauder	6,8,9,11,29,37,47,48,50,51,52,53,56
Chaetoceros anastomosans Grunow	6,48,50
Chaetoceros atlanticus Cleve	6,48
Chaetoceros atlanticus var. *neopolitanus* (Schröder) Hustedt	6,31
Chaetoceros borealis Bailey	6,48
Chaetoceros brevis Schütt	6,8,11,48,50,51,52,53,56
Chaetoceros coarctatus Lauder	6,48
Chaetoceros compressus Lauder	6,8,37,48,50,51,52
Chaetoceros constrictus Gran	6,8,9,11,37,48,50,51,52,53,56
Chaetoceros contortus Schütt	53
Chaetoceros costatus Pavillard	6,9,11,31,48,50,51,52,53
Chaetoceros crinitus Schütt	6,48,56
Chaetoceros criophilus Castracane	51
Chaetoceros curvisetus Cleve	6,8,9,11,37,48,50,51,52,53,55,56
Chaetoceros dadayi Pavillard	6,29,31,48
Chaetoceros danicus Cleve	6,8,9,11,29,31,48,50,51,52,53,56
Chaetoceros debilis Cleve	6,8,9,48,51,52,53
Chaetoceros decipiens Cleve	6,8,9,29,31,37,47,48,50,51,52,53,56
Chaetoceros densus (Cleve) Cleve	6,11,48,51
Chaetoceros diadema (Ehrenberg) Gran	6,9,11,31,48,50,51,52,53
Chaetoceros didymus Ehrenberg	11,29,31,33,48,51,52,53
Chaetoceros didymus var. *anglicus* (Grunow) Gran	6
Chaetoceros diversus Cleve	6,11,29,37,48,51
Chaetoceros eibenii Grunow	6,31,48
Chaetoceros fragilis Meunier	51
Chaetoceros holsaticus Schütt	6,8,9,11,31,48,50,51,52,53
Chaetoceros imbricatus Mangin	6,48
Chaetoceros laciniosus Schütt	6,8,9,11,48,50,51
Chaetoceros lauderi Ralfs ex Lauder	6,11,48,51,52,53,56
Chaetoceros lorenzianus f. *forceps* Meunier	53
Chaetoceros lorenzianus Grunow	6,8,9,11,29,37,46,47,48,50,51,52,53
Chaetoceros messanensis Castracane	6,8,31,48,50,51
Chaetoceros neogracilis Van Landingham	6,8,37,48
Chaetoceros pendulus Karsten	37
Chaetoceros perpusillus Cleve	6,48
Chaetoceros peruvianus Brightwell	6,9,11,29,31,37,48,50,51,52,53
Chaetoceros protuberans Lauder	6,8
Chaetoceros pseudocurvisetus Mangin	6,8,31,37,48
Chaetoceros rostratus Ralfs	6,11,29,31,33,48,51,53
Chaetoceros saltans Cleve	6,48
Chaetoceros similis Cleve	6,48,50,51
Chaetoceros simplex Ostenfeld	6,37,48,50,51
Chaetoceros socialis Lauder	6,8,11,31,37,48,51,52

Chaetoceros subsecundus (Grunow ex Van Heurck) Hustedt	8,37,51
Chaetoceros tenuissimus Menuier	37,49
Chaetoceros teres Cleve	6,48,50,52,53
Chaetoceros tetrastichon Cleve	6,48,50
Chaetoceros tortissimus Gran	6,8,48,51,52,53
Chaetoceros vistulae Apstein	6,8,48
Chaetoceros vixvisibilis Schiller	56
Chaetoceros wighamii Brightwell	6,8,37,48,50,51,52,53,56
Chaetoceros willei Gran	6,50,51
Climacosphenia elongata Mereschkowsky	6,8,48
Climacosphenia moniligera Ehrenberg	6,7,15,17,29,36,48,50,52
Conticribra weissflogii (Grunow) Stachura-Suchoples & Williams	6,48
Cyclotella atomus Hustedt	37
Cyclotella caspia Grunow	56
Cyclotella choctawhatcheeana Prasad	37
Cyclotella meneghiniana Kützing	6,20,25,37
Cyclotella radiosa (Grunow) Lemmermann	25
Cyclotella striata (Kützing) Grunow	3
Cymatosira belgica Grunow	45
Cymatosira lorenziana Grunow	41,45
Detonula confervacea (Cleve) Gran	6,37,48,50,51,52
Detonula pumila (Castracane) Gran	6,11,48,50,51
Ditylum brightwelli (T.West) Grunow	6,8,9,11,31,33,37,46,47,48,50,51,52,56
Eucampia cornuta (Cleve) Grunow	6,31,48
Eucampia zodiacus Ehrenberg	6,31,29,47,48
Eunotogramma marinum (Smith) H.Peragallo & M.Peragallo	18,28,41,45
Helicotheca tamesis (Shrubsole) Ricard	6,9,11,33,48,51
Hemiaulus hauckii Grunow	6,8,9,29,31,33,37,47,48,50,51,52,56
Hemiaulus membranaceus Cleve	6,48,51
Hemiaulus sinensis Greville	6,11,31,48,51,52,56
Lauderia annulata Cleve	6,9,11,33,47,48,50,51,52
Leptocylindrus danicus Cleve	6,8,9,33,37,46,47,48,50,51,52,56
Leptocylindrus minimus Gran	6,8,11,29,37,47,48,50,51,52
Lindavia comta (Kützing) Nakov, Guillory, Julius, Theriot & Alverson	38
Lindavia glomerata (H.Bachmann) Adesalu & Julius	37
Lithodesmium undulatum Ehrenberg	6,29,31,48
Neohuttonia reichardtii (Grunow) Hustedt	45
Odontella aurita (Lyngbye) Agardh	6,15,29,41,48
Odontella obtusa Kützing	37
Odontella sinensis (Greville) Grunow	51
Pantocsekiella comensis (Grunow) Kiss & Ács	20
Pantocsekiella kuetzingiana (Thwaites) Kiss & Ács	27,37
Pantocsekiella ocellata (Pantocsek) Kiss & Ács	22,25,27
Plagiogrammopsis vanheurckii (Grunow) Hasle, Stosch & Syvertsen	6,48
Pleurosira laevis (Ehrenberg) Compère	25
Skeletonema costatum (Greville) Cleve	6,8,9,11,31,32,33,46,47,48,50,51,56
Skeletonema dohrnii Sarno & Kooistra	37
Skeletonema marinoi Sarno & Zingone	49,52
Skeletonema menzelii Guillard, Carpenter & Reimann	6,48
Stephanodiscus hantzschii Grunow	37
Stephanodiscus minutulus (Kützing) Cleve & Möller	37
Thalassiosira allenii Takano	6,8,9,11,21,48,50,51
Thalassiosira angulata (Gregory) Hasle	6,9,11,37,48,51
Thalassiosira angustelineata (Schmidt) Fryxel & Hasle	6,8,9,11,21,33,37,48,51,56

Thalassiosira antarctica Comber	51
Thalassiosira antiqua (Grunow) Proschkina-Lavrenko	37
Thalassiosira decipiens (Grunow) Jörgensen	6,8,21,48,56
Thalassiosira eccentrica (Ehrenberg) Cleve	6,8,11,25,37,50,51
Thalassiosira fragilis G.Fryxell	51
Thalassiosira gravida Cleve	6,8,9,11,21,31,33,37,48,51,52,56
Thalassiosira hyalina (Grunow) Gran	6,48,51
Thalassiosira leptopus (Grunow) Hasle & Fryxell	6,8,11,48,51
Thalassiosira minima Gaarder	52
Thalassiosira nordenskioeldii Cleve	6,8,9,11,29,37,48,51,52,56
Thalassiosira parva Proschkina-Lavrenko	37
Thalassiosira subtilis (Ostenfeld) Gran	6,8,48
Thalassiosira tenera Proschkina-Lavrenko	6,48
Toxarium hennedyanum (Gregory) Pelletan	6,48
Toxarium undulatum Bailey	3,6,7,8,17,29,36,37,48,50,52
Trieres mobiliensis (Bailey) Ashworth & Theriot	6,7,15,18,29,31,36,37,48
Trieres regia (Schultze) Ashworth & Theriot	6,48
Bacillariophyceae	
Achnanthes bacillaris Ehrenberg	1
Achnanthes brevipes var. *angustata* Greville	18,20
Achnanthes brevipes var. *brevipes* Agardh	3,4,5,6,9,11,12,18,25,28,33,37,38,48,51
Achnanthes brevipes var. *intermedia* (Kützing) Cleve	17,18,25,28
Achnanthes coarctata (Brébisson ex W.Smith) Grunow	37
Achnanthes danica (Flögel) Grunow	45
Achnanthes kuwaitensis Hendey	18
Achnanthes lacunarum Hustedt	25
Achnanthes longipes Agardh	3,6,8,18,28,36,37,48,56
Achnanthes parvula Kützing	17,18,25,28
Achnanthes pseudobrevipes Aleem	18
Achnanthes wellsiae (Reimer) Witkowski & Lange-Bertalot	25
Achnanthidium affine (Grunow) Czarnecki	38
Achnanthidium minutissimum (Kützing) Czarnecki	20
Adlafia brockmannii (Hustedt) Bruder & Hinz	37
Amphicocconeis debesi (Hustedt) De Stefano	16
Amphicocconeis disculoides (Hustedt) Stefano & Marino	3,10
Amphipleura pellucida (Kützing) Kützing	20
Amphiprora angustata Hendey	3
Amphora angustata Cleve	3
Amphora arenicola Grunow ex Cleve	48,56
Amphora bigibba var. *interrupta* (Grunow) Cleve	41
Amphora binodis Gregory	18
Amphora cingulata Cleve	37
Amphora commutata Grunow	20,22,25
Amphora cymbamphora Cholnoky	41,44,45
Amphora delicatissima Krasske	5,12,51
Amphora eximia J.R.Carter	37
Amphora graeffeana Hendey	41
Amphora hamata Heiden	44
Amphora helenensis Giffen	40
Amphora laevis Gregory	37
Amphora marina Smith	6,41,48
Amphora ocellata Donkin	37
Amphora ovalis (Kützing) Kützing	5,6,12,18,20,25,27,29,32,37,51,56
Amphora pediculus (Kützing) Grunow	20,25,37

Amphora proteus Gregory	18,28,41,44
Aneumastus tuscula (Ehrenberg) Mann & Stickle	5,12,32,51
Anomoeoneis sphaerophora (Kützing) Pfitzer	17,20,22,44
Anomoeoneis sphaerophora var. *sculpta* (Ehrenberg) Müller	17
Anorthoneis exentrica (Donkin) Grunow	5,12,51
Anorthoneis vortex Sterrenburg	45
Asterionella bleakeleyii Smith	11,51
Asterionella formosa Hassal	37
Asterionella notata Grunow	6
Asterionellopsis glacialis (Castracane) Round	6,7,8,11,15,29,36,48,50,51,52,56
Bacillaria paxillifera (Müller) T.Marsson	3,6,7,8,11,15,17,20,26,29, 31,37,48,51
Bacillaria socialis (Gregory) Ralfs	18
Berkeleya antarctica Grunow	41
Berkeleya micans (Lyngbye) Grunow	40,41
Berkeleya obtusa (Greville) Grunow	40
Berkeleya rutilans (Trentepohl ex Roth) Grunow	41
Berkeleya scopulorum (Brébisson ex Kützing) Cox	18,28
Berkeleya sparsa M.Mizuno	40,41
Biremis lucens (Hustedt) Sabbe, Witkowski & Vyverman	40
Brachysira aponina Kützing	44
Brachysira estonarium Witkowski, Lange-Bertalot & Metzeltin	44,45
Brebissonia lanceolata (Agardh) Mahoney & Reimer	6,8,20
Caloneis amphisbaena (Bory) Cleve	20,25
Caloneis amphisbaena var. *subsalina* (Donkin) Cleve	3,37
Caloneis bacillum (Grunow) Cleve	37
Caloneis clevei (Lagerstedt) Cleve	20
Caloneis liber (Smith) Cleve	45
Caloneis linearis (Cleve) Boyer	18,41
Caloneis permagna (Bailey) Cleve	37
Caloneis silicula (Ehrenberg) Cleve	22,27
Caloneis undulata (W.Gregory) Krammer	37
Caloneis westii (W.Smith) Hendey	20,37
Campylodiscus bicostatus W.Smith ex Roper	20
Campylodiscus echeneis Ehrenberg ex Kützing	48
Campylodiscus fastuosus Ehrenberg	3
Catacombas gaillonii (Bory) D.M.Williams & Round	18,25,48
Catenula adhaerens (Mereschkowsky) Mereschkowsky	45
Chamaepinnularia alexandrowiczii Witkowski, Lange-Bertalot & Metzeltin	44
Chamaepinnularia clamans (Hustedt) Witkowski, Lange-Bertalot & Metzeltin	40,41
Chamaepinnularia hassiaca (Krasske) Cantonati & Lange-Bertalot	38
Cocconeis costata Gregory	18
Cocconeis diaphana Smith	45
Cocconeis dirupta Gregory	45
Cocconeis dirupta var. *flexella* (Janisch & Rabenhorst) Grunow	18,28
Cocconeis disculus (Schumann) Cleve	5
Cocconeis distans Gregory	16,18
Cocconeis guttata Hustedt & Aleem	41
Cocconeis irregularis (P.Schulz) Witkowski	41
Cocconeis latecostata Hustedt	41
Cocconeis margaritifera Ehrenberg	1
Cocconeis notata Petit	2
Cocconeis pediculus Ehrenberg	5,18,22,25,27,28,37
Cocconeis pellucida Grunow	18

Cocconeis pelta Schmidt	45
Cocconeis peltoides Hustedt	45
Cocconeis placentula Ehrenberg	17,18,28,37,38,44
Cocconeis placentula var. *euglypta* (Ehrenberg) Grunow	20
Cocconeis placentula var. *rouxii* (Héribaud-Joseph & Brun) Cleve	25
Cocconeis pseudo-marginata Gregory	18,23,28,48
Cocconeis scutellum Ehrenberg	5,6,8,12,18,19,28,32,37,44,48,51
Cocconeis scutellum var. *parva* (Grunow) Cleve	19
Cocconeis scutellum var. *posidoniae* M.De Stefano, D.Marino & L.Mazzella	19
Cocconeis speciosa Gregory	3
Coronia decora (Brébisson) Ruck & Guiry	6,17,37,48
Cosmioneis lundstroemii (Cleve) D.G.Mann	37
Cosmioneis pusilla (Mann) Stickle	28
Craspedostauros decipiens (Hustedt) E.J.Cox	2
Craticula cuspidata (Kützing) Mann	6,22,27,28
Craticula cuspidata var. *heribaudii* (Peragallo) J.Y.Li & Y.Z.Qi	18
Craticula halophila (Grunow) Mann	18
Ctenophora pulchella (Ralfs ex Kützing) Williams & Round	18,28,37
Cylindrotheca closterium (Ehrenberg) Reimann & Lewin	3,5,6,7,8,9,11,12,15,17,21,25,26,29,31,32,33,36,37,38,48,51,52,56
Cymatopleura elliptica (Brébisson) W.Smith	20,37
Cymatopleura solea (Brébisson) W.Smith	20,22,37
Cymbella affinis Kützing	18,20,27,28,37,38
Cymbella cistula (Ehrenberg) Kirchner	27,37,38
Cymbella cymbiformis Agardh	14,37
Cymbella cymbiformis var. *nonpunctata* Fontell	37
Cymbella helvetica Kützing	37,38
Cymbella hustedtii Krasske	37
Cymbella lanceolata (C.Agardh) C.Agardh	6,8,20
Cymbella turgidula Grunow	6
Cymbella ventricosa Kützing	27
Cymbopleura inaequalis (Ehrenberg) Krammer	14
Cymbopleura naviculiformis (Auerswald ex Heiberg) Krammer	20
Delicata delicatula (Kützing) Krammer	37
Delphineis australis Watanabe, Tanaka, Reid, Kumada & Nagudo	18,28
Delphineis karstenii (Boden) G.Fryxell	18,44
Delphineis minutissima (Hustedt) Simonsen	41
Delphineis surirella (Ehrenberg) Andrews	45
Denticula subtilis Grunow	41
Diatoma moniliformis Kützing	37
Diatoma tenuis C.Agardh	37
Diatoma vulgaris Bory	6,27,37,38
Didymosphenia geminata (Lyngbye) Mart.Schmidt	6,56
Dimeregramma acutum Hustedt	34
Diplomenora cocconeiformis (Schmidt) Blazé	45
Diploneis aestuari Hustedt	41
Diploneis bombus (Ehrenberg) Ehrenberg	4,6,9,11,29,33,44,48,51
Diploneis chersonensis (Grunow) Cleve	17,37,41,48
Diploneis crabro (Ehrenberg) Ehrenberg	6,8,48
Diploneis decipiens Cleve-Euler	48
Diploneis interrupta (Kützing) Cleve	20
Diploneis notabilis (Greville) Cleve	18
Diploneis ovalis (Hilse) Cleve	20
Diploneis parma Cleve	20

Diploneis pseudovalis Hustedt	4,22,27
Diploneis smithii (Brébisson) Cleve	37
Diploneis stroemii Hustedt	41
Encyonema leibleinii (Agardh) Silva, Jahn, Veiga Ludwig & Menezes	22,27,37
Encyonema minutum (Hilse) Mann	22,27,37
Encyonema silesiacum (Bleisch) D.G.Mann	22
Encyonopsis cesatii (Rabenhorst) Krammer	37
Entomoneis alata (Ehrenberg) Ehrenberg	5,6,12,18,22,48,51
Entomoneis calixasini Paillès, Blanc-Valleron & Poulin	35
Entomoneis costata (Hustedt) Reimer	25,48
Entomoneis gigantea (Grunow) Nizamuddin	6,15,29,48
Entomoneis ornata (Bailey) Reimer	48
Entomoneis paludosa (W.Smith) Reimer	22,48
Entomoneis pulchra (Bailey) Reimer	3
Eolimna minima (Grunow) Lange Bertalot	37
Epithemia argus (Ehrenberg) Kützing	20
Epithemia gibba (Ehrenberg) Kützing	20
Epithemia muelleri Fricke	17,48
Epithemia sorex Kützing	20,22,27,37
Eucocconeis flexella (Kützing) Meister	20
Eunotia arcus Ehrenberg	37
Eunotia bigibba Kützing	37
Eunotia septentrioralis Østrup	37
Fallacia clepsidroides Witkowski	4
Fallacia cryptolyra (Brockmann) Stickle & D.G.Mann	25
Fallacia florinae (M.Møller) Witkowski	40
Fallacia forcipata (Greville) Stickle & Mann	18,28,37,41
Fallacia forcipata var. *densestriata* (A.W.F.Schmidt) Gogorev	18,28
Fallacia nyella Hustedt	41
Fallacia pseudony (Hustedt) Mann	41,45
Fallacia pygmaea (Kützing) Stickle & D.G.Mann	37
Fallacia schaeferae (Hustedt) Mann	44,45
Fallacia subforcipata (Hustedt) D.G.Mann	41
Fogedia finmarchica (Cleve & Grunow) Witkowski, Metzeltin & Lange-Bertalot	18
Fogedia giffeniana (Foged) Witkowski, Lange-Bertalot, Metzeltin & Bafana	41
Fragilaria amphicephaloides Lange-Bertalot	37
Fragilaria capucina Desmazières	37
Fragilaria crotonesis Kitton	6,37
Fragilaria eichornii Witkowski & Lange-Bertalot	41
Fragilaria gracillima Mayer	37
Fragilaria inflata Pantocsek	37
Fragilaria striatula Lyngbye	48
Fragilaria tabulata var. *truncata* (Greville) Lange-Bertalot	25
Fragilaria vaucheriae (Kützing) J.B.Petersen	37,38
Fragilariopsis atlantica Paasche	6,48
Fragilariopsis cylindrus (Grunow ex Cleve) Helmcke & Krieger	6,51
Fragilariopsis oceanica (Cleve) Hasle	5,12,48,51
Fragilariopsis rhombica (O'Meara) Hustedt	56
Frustulia creuzburgensis (Krasske) Hustedt	37
Frustulia rhomboides (Ehrenberg) De Toni	20
Gedaniella flavovirens (H.Takano) Chunlian Li, A.Witkowski & M.P.Ashworth	43
Gedaniella guenter-grassi (Witkowski & Lange-Bertalot) Chunlian Li, S.Sato & Witkowski	40
Gedaniella mutabilis Chunlian Li & Witkowski	40

Geisleria acceptata (Hustedt) Lange-Bertalot & Metzeltin	25
Glyphodesmis distans (W.Gregory) Grunow	41
Gomphonema acuminatum Ehrenberg	20
Gomphonema affine Kützing	37
Gomphonema angustatum (Kützing) Rabenhorst	20,25
Gomphonema capitatum Ehrenberg	22
Gomphonema helveticum Brun	27
Gomphonema minutum (C.Agardh) C.Agardh	37
Gomphonema olivaceum (Hornemann) Brébisson	20,27,37
Gomphonema parvulum (Kützing) Kützing	22,27,38
Gomphonema subtile Ehrenberg	37
Gomphonema truncatum Ehrenberg	37
Gomphonemopsis obscura (Krasske) Lange-Bertalot	40,41
Grammatophora angulosa Ehrenberg	18,28,41,44,48,51
Grammatophora angulosa var. *mediterranea* Grunow	45
Grammatophora arcuata Ehrenberg	18,34
Grammatophora macilenta W.Smith	41
Grammatophora marina (Lyngbye) Kützing	5,6,8,9,11,15,18,29,32,36,37,48,50,51,56
Grammatophora oceanica Ehrenberg	18,28,41,48
Grammatophora oceanica var. *macilenta* (Smith) Grunow	18
Grunowia solgensis (A.Cleve) Aboal	37
Gyrosigma acuminatum (Kützing) Rabenhorst	6,8,18,20,25,37,38
Gyrosigma attenuatum (Kützing) Robenhorst	6,29,48
Gyrosigma balticum (Ehrenberg) Rabenhorst	6,7,15,17,18,28,29,48
Gyrosigma eximium (Thwaites) Boyer	17,37,44
Gyrosigma fasciola (Ehrenberg) Griffith & Henfrey	5,6,9,11,12,25,32,37,48,51
Gyrosigma hippocampus Ehrenberg	3,6
Gyrosigma macrum (W.Smith) J.W.Griffith & Henfrey	6
Gyrosigma obscurum (W.Smith) Griffith & Henfrey	25,37
Gyrosigma peisone (Grunow) Hustedt	25
Gyrosigma reversum (Gregory) Hendey	13,33,48,51
Gyrosigma robustum (Grunow) Cleve	18
Gyrosigma scalproides (Rabenhorst) Cleve	25
Gyrosigma strigilis (Smith) Cleve	27
Gyrosigma tenuissimum (W.Smith) Griffith & Henfrey	6,15,17,29,41,48
Halamphora acutiuscula (Kützing) Levkov	37,44
Halamphora capitata (Hagelstein) A.Blanco & S.Blanco	40
Halamphora coffeiformis (C.Agardh) Levkov	5,12,18,20,25,37,41,51
Halamphora costata (W.Smith) Levkov	5,12,51
Halamphora exigua (Gregory) Levkov	5,12,18,28,37,51
Halamphora holsatica (Hustedt) Levkov	20,37
Halamphora hyalina (Kützing) Rimet & R.Jahn	6,48
Halamphora kolbei (Aleem) A.Blanco & S.Blanco	40
Halamphora normanii (Rabenhorst) Levkov	20,37
Halamphora pseudohyalina (Simonsen) J.G.Stepanek & Kociolek	41
Halamphora staurophora (Juhlin-Dannfelt) Alvarez Blanco & S.Blanco	41
Halamphora subholsatica (Krammer) Levkov	4,44
Halamphora tenerrima (Aleem & Hustedt) Levkov	40,44
Halamphora turgida (Gregory) Levkov	28,37,41
Halamphora veneta (Kützing) Levkov	18,37
Halamphora wisei (Salah) Álvarez-Blanco & Blanco	18,34
Hannaea arcus (Ehrenberg) Patrick	6,37,56
Hantzschia amphioxys (Ehrenberg) Grunow	5,12,18,20,28,32,37,51
Haslea britannica (Hustedt & Aleem) Witkowski, Lange-Bertalot & Metzeltin	41

Haslea nautica (Cholnoky) Giffen	41
Haslea ostrearia (Gaillon) Simonsen	48
Haslea spicula (Hickie) Bukhtiyarova	38,48
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin & Witkowski	20
Iconella biseriata (Brébisson) Ruck & Nakov	17,22
Karayevia amoena (Hustedt) Bukhtiyarova	2
Karayevia clevei (Grunow) Round & Bukhtiyarova	18,28
Karayevia rostrata (Hustedt) Bukhtiyarova	25
Licmophora abbreviata Agardh	5,6,7,8,9,11,12,18,29,31,34,36,48,50,51,52
Licmophora dalmatica (Kützing) Grunow	40
Licmophora debilis (Kützing) Grunow ex Van Heurck	40,41
Licmophora ehrenbergii (Kützing) Grunow	6,18,28,37,48,56
Licmophora ehrenbergii f. *grunowii* (Mereschkowsky) Hustedt	18,45
Licmophora flabellata (Greville) Agardh	6,8,18,28,41,48,51
Licmophora gracilis (Ehrenberg) Grunow	6,8,11,18,28,48
Licmophora hyalina (Kützing) Grunow	18,28
Licmophora lyngbyei (Kützing) Grunow ex Van Heurck	3,17,37
Licmophora paradoxa (Lyngbye) Agardh	5,6,8,12,32,48,51
Lyrella abrupta (Gregory) Mann	18,28,37,41
Lyrella atlantica (Schmidt) Mann	18
Lyrella clavata (W.Gregory) D.G.Mann	41
Lyrella lyra (Ehrenberg) Karajeva	5,12,13,18,32,33,48,51
Lyrella lyroides (Hendey) Mann	18
Mastogloia acutiuscula Grunow	44
Mastogloia albertii A.Pavlov, E.Jovanovska, C.E.Wetzel, L.Ector & Z.Levkov	17,18
Mastogloia angulata Lewis	6,17,44,48
Mastogloia aquilegiae Grunow	18,30
Mastogloia baldjikiana Grunow	30
Mastogloia belaensis Voigt	44
Mastogloia binotata (Grunow) Cleve	18,28,30,34,44
Mastogloia braunii Grunow	18,20,28,48
Mastogloia crucicula (Grunow) Cleve	44,45
Mastogloia crucicula var. *alternans* Zanon	44
Mastogloia danseyi (Thwaites) Thwaites ex Smith	48
Mastogloia emarginata Hustedt	45
Mastogloia exigua Lewis	18,37
Mastogloia fimbriata (Brightwell) Cleve	6,39,48
Mastogloia gieskeii Cholnoky	41
Mastogloia grevillei W.Smith	48
Mastogloia grunowii Schmidt	18,30
Mastogloia ignorata Hustedt	30,41
Mastogloia labuensis Cleve	17
Mastogloia lacustris (Grunow) Grunow	18,48
Mastogloia lanceoalata Thwaites ex Smith	18,28,44
Mastogloia ovalis A.Schmidt	45
Mastogloia paradoxa Grunow	30,41
Mastogloia pumila (Grunow) Cleve	2,18,20,28,30,37,41
Mastogloia pusilla Grunow	40
Mastogloia pusilla var. *subcapitata* Hustedt	40,41
Mastogloia similis Hustedt	30,41
Mastogloia smithii Thwaites ex Smith	17,18,20,22,28,37
Mastogloia splendida (Gregory) Peragallo	6
Mastogloia urvae Witkowski	40,48
Mastogloia vasta Hustedt	30,48

Meloneis mimallis Louvrou, Danielidis & Economou-Amilli	45
Metacolioneis tumida (Brébisson ex Kützing) Mann	18
Microtabella interrupta (Ehrenberg) Round	6,8,48
Nanofrustulum shiloi (J.J.Lee, Reimer & McEnery) Round, Hallsteinsen & Paasche	43
Navicula abrupta var. *rattrayi* (Pantocsek) Peragallo & Peragallo	18
Navicula arenaria Donkin	18,28
Navicula arenaria var. *rostellata* Lange-Bertalot	45
Navicula cancellata Donkin	6,18,48
Navicula capitatoradiata H.Germain	18
Navicula cari Ehrenberg	20,27
Navicula cincta (Ehrenberg) Ralfs	18,28,37,38
Navicula cryptocephala Kützing	5,12,18,20,25,28,32,51
Navicula cryptotenella Lange-Bertalot	18,25,28,37,44
Navicula decussata Ehrenberg	1
Navicula digitoradiata (Gregory) Ralfs	18
Navicula directa (W.Smith) Ralfs	5,12,51
Navicula distans (Smith) Ralfs	3,48
Navicula exigua W.Gregory	25
Navicula formenterae Cleve	18
Navicula germanopolonica Witkowski & Lange-Bertalot	40
Navicula globosa F.Meister	37
Navicula gregaria Donkin	27,37
Navicula grevilleana Hendey	18
Navicula inornata Grunow	18
Navicula johanrossi Giffen	28
Navicula libonensis Schoeman	37
Navicula lusoria Giffen	45
Navicula menaiana Hendey	18,48
Navicula menisculus Schumann	5,12,20,38,51
Navicula metareichardtiana Lange-Bertalot & Kusber	44
Navicula palpepralis Brébisson ex W.Smith	5,12,32,41,51
Navicula parapontica Witkowski, Kulikovskiy, Nevrova & Lange-Bertalot	40,41
Navicula pavillardii Hustedt	40
Navicula pennata Schmidt	6,8,18,37,48
Navicula pennata var. *pontica* Mereschowsky	37
Navicula phyllepta Kützing	18,37
Navicula pontica (Mereschkowksy) A.Witkowski, M.Kulikovskiy, E.Nevrova & Lange-Bertalot	41
Navicula pseudosilicula Hustedt	18
Navicula radiosa Kützing	20,22,25,27
Navicula ramosissima (Agardh) Cleve	18,25,44,48
Navicula ramosissima var. *mollis* (W. Smith) Hendey	18
Navicula ramosissima var. *mucosa* (Aleem) Hendey	5,12,18,28,32,51
Navicula resecta J.R.Carter	37
Navicula rostellata Kützing	5,12,38,51
Navicula ryhncocephala Kützing	27,37
Navicula salinarum Grunow	18,22,25,37
Navicula scabriuscula (Cleve & Grove) Mereschkowsky	28
Navicula sigma Ehrenberg	37
Navicula slesvicensis Grunow	20
Navicula subagnita Proschkina Lavrenko	40,41,44
Navicula subinflata Grunow	18
Navicula tenella Brébisson ex Kützing	5,12,25,51
Navicula transitans Cleve	29,48

Navicula tripunctata (Müller) Bory	5,12,18,22,25,27,28,51
Navicula tripunctata var. *schizonemoides* (Van Heurck) R.M.Patrick	25
Navicula trivialis Lange-Bertalot	37
Navicula veneta Kützing	18,22,37
Navicula viridula (Kützing) Ehrenberg	38
Navicula viridula var. *avenacea* (Brébisson) Van Heurck	18
Navicula zostereti Grunow	6,8,48
Navicymbula pusilla (Grunow) Krammer	18,28,38,44
Navicymbula pusilla var. *lata* Krammer	40,44
Neidiopsis levanderi (Hustedt) Lange-Bertalot & Metzeltin	37
Neidium dubium (Ehrenberg) Cleve	37
Neosynedra provincialis (Grunow) Williams & Round	40,41
Nitzschia acicularis (Kützing) Smith	3,22,37
Nitzschia aequorea Hustedt	45
Nitzschia amabilis Suzuki	41,45
Nitzschia amphibia Grunow	38
Nitzschia amplectens Hustedt	37
Nitzschia angularis Smith	18,28
Nitzschia bilobata Smith	3
Nitzschia brevissima Grunow	20
Nitzschia capitellata Hustedt	2
Nitzschia clausii Hantzsch	20,37,41
Nitzschia communata Grunow	25,38
Nitzschia compressa var. *balatonis* (Grunow) Lange-Bertalot	24
Nitzschia constricta f. *parva* Grunow	18
Nitzschia dissipata (Kützing) Rabenhorst	22,27,37,38
Nitzschia elegantula Grunow	44
Nitzschia flexa Schumann	37
Nitzschia fonticola (Grunow) Grunow	22,38
Nitzschia fontifuga Cholnoky	44
Nitzschia frustulum (Kützing) Grunow	5,12,18,28,51
Nitzschia frustulum var. *perpusilla* (Rabenhorst) Van Heurck	5,12
Nitzschia fusiformis Grunow	41
Nitzschia improvisa Simonsen	44
Nitzschia incerta (Grunow) M.Peragallo	37
Nitzschia inconspicua Grunow	44
Nitzschia insignis W.Gregory	26
Nitzschia intermedia Hantzsch	18,28
Nitzschia kuetzingiana Hilse	25
Nitzschia linearis (Agardh) Smith	18,20,28,37
Nitzschia linearis var. *subtilis* Hustedt	24
Nitzschia longissima (Brébisson ex Kützing) Grunow	3,5,6,7,8,9,11,12,15,18,21,29,36,37,48,50,51,52,56
Nitzschia lorenziana Grunow	6,18,28,29,33,48,51
Nitzschia microcephala Grunow	24
Nitzschia nana Grunow	37
Nitzschia nanodissipata Chunlian Li & Witkowski	45
Nitzschia navis-varingica Lundholm & Moestrup	54
Nitzschia obtusa Smith	18,37
Nitzschia ovalis Arnott	37,38
Nitzschia palea (Kützing) Smith	5,12,20,27,32,37,38,51
Nitzschia prolongata Hustedt	40
Nitzschia recta Hantzsch ex Rabenhorst	37
Nitzschia rectilonga Takano	21,50,51

Nitzschia rectirobusta Lange-Bertalot	24
Nitzschia reversa W.Smith	41
Nitzschia scalpelliformis Grunow	24,28
Nitzschia sicula (Castracane) Hustedt	6,48
Nitzschia sigma (Kützing) Smith	6,7,8,17,18,20,29,33,37,50,51
Nitzschia sigmoidea (Nitzsch) Smith	3,15,17,26,29,33,37,48,51
Nitzschia socialis Gregory	18
Nitzschia socialis var. *massiliensis* Grunow	18,40
Nitzschia supralitorea Lange-Bertalot	24
Nitzschia tryblionella Hantzsch	20,37
Nitzschia umbonata (Ehrenberg) Lange-Bertalot	22,37
Nitzschia valdestriata Aleem & Hustedt	44,45
Nitzschia vermicularis (Kützing) Lange-Bertalot	24
Nitzschia vidovichii (Grunow) Grunow	24
Odontidium hyemale (Roth) Kützing	56
Olifantiella muscatinei (Reimer & Lee) Van de Vijver, Ector & Wetzel	42
Paraplaconeis placentula (Ehrenberg) Kulikovskiy & Lange-Bertalot	20,22,32
Parlibellus bennikei Witkowski	28
Parlibellus berkeleyi (Kützing) Cox	18,40,41
Parlibellus calvus Witkowski, Metzeltin & Lange-Bertalot	40
Parlibellus delognei (Van Heurck) E.J.Cox	41
Parlibellus plicatus (Donkin) Cox	17
Petrodictyon gemma (Ehrenberg) Mann	6,18,28,29,31,48,51,52
Petroneis humerosa (Brébisson ex Smith) Stickle & Mann	5,12,20,32,48,51
Petroneis latissima (Gregory) Stickle & Mann	3
Phaeodactylum tricornutum Bohlin	6,48
Pinnularia aestuarii Cleve	37
Pinnularia bipectinalis (Schumann) Greguss	37
Pinnularia borealis Ehrenberg	37
Pinnularia claviculus (Gregory) Rabenhorst	37
Pinnularia gentilis (Donkin) Cleve	37
Pinnularia interrupta W.Smith	22
Pinnularia lundii Hustedt	37
Pinnularia microstauron (Ehrenberg) Cleve	37
Pinnunavis elegans (Smith) Okuno	3
Placoneis amphibola Cleve	25
Placoneis clementis (Grunow) Cox	20
Placoneis elginensis (Gregory) Cox	27,38
Placoneis gastrum (Ehrenberg) Mereschkowsky	38
Placoneis placentula (Ehrenberg) Mereschkowsky	20,32,51
Plagiogramma minus (Gregory) Chunlian Li, Ashworth & Witkowski	18,41
Plagiogramma minus var. *nanum* (Gregory) Chunlian Li, Ashworth & Witkowski	41,45
Plagiogramma pulchellum var. *pygmaeum* (Greville) H.Peragallo & M.Peragallo	45
Plagiogramma tenuissimum Hustedt	41,45
Plagiotropis lepidoptera (Gregory) Kuntze	37,41
Plagiotropis lepidoptera var. *minor* (Cleve) Czarnecki & J.L.Wee	41
Plagiotropis lepidoptera var. *proboscidea* (Cleve) Reimer	41
Planothidium depertidum (Giffen) Witkowski, Lange-Bertalot & Metzeltin	40,41
Planothidium hauckianum (Grunow) Bukhtiyarova	18,38
Planothidium hauckianum var. *rostratum* (Schulz ex Hustedt) Andresen, Stoermer & Kreis, Jr.	25
Planothidium lanceolatum (Brébisson ex Kützing) Lange-Bertalot	25
Planothidium lilljeborgei (Grunow) Witkowsi, Lange-Bertalot & Metzeltin	45
Planothidium rostratoholoarcticum Lange-Bertalot & Bąk	25

Pleurosigma aestuarii (Brébisson ex Kützing) W.Smith	37
Pleurosigma angulatum (Quekett) Smith	5,6,8,12,51
Pleurosigma delicatulum Smith	6,48
Pleurosigma elongatum Smith	6,7,15,17,25,29,37,38,44,48
Pleurosigma formosum Smith	6,41
Pleurosigma formosum var. *dalmatica (dalmaticum)* Grunow	18
Pleurosigma normani Ralfs	3,6,7,9,15,17,18,21,29,31,33,36,41,48,50,51,56
Pleurosigma rigidum Smith	6,18,48
Pleurosigma salinarum (Grunow) Grunow	5,12,18,25,28,51
Pleurosigma strigosum Smith	3,44
Podocystis perrinensis Ricard	6,17,29
Proschkinia bulnheimii (Grunow) Karayeva	45
Proschkinia complanata (Grunow) D.G.Mann	41
Psammodictyon panduriforme (W.Gregory) D.G.Mann	5,6,12,18,28,37,48,51
Psammodictyon panduriforme var. *continuum* (Grunow) Snoeijs	45
Psammodictyon rudum (Cholnoky) D.G.Mann	41
Psammodiscus nitidus (Gregory) Round & Mann	18,28,48
Pseudo-nitzschia calliantha Lundholm, Moestrup & Hasle	48,49,51,52
Pseudonitzschia delicatissima (Cleve) Heiden	6,8,11,31,48,50,51,56
Pseudo-nitzschia fraudulenta (Cleve) Hasle	6,11,48,50,51
Pseudo-nitzschia pseudodelicatissima (Hasle) Hasle	6,8,9,29,31,48,51,55
Pseudo-nitzschia pungens (Grunow ex Cleve) Hasle	3,6,8,9,11,31,46,47,48,50,51,52,56
Pseudo-nitzschia pungens var. *aveirensis* Lundholm, Churro, Carreira & Calado	49
Pseudo-nitzschia seriata (Cleve) H.Peragallo	11,48,51
Pseudostaurosira elliptica (Schumann) Edlund, Morales & Spaulding	44
Pseudostaurosira perminuta (Grunow) Sabbe & Wyverman	41
Pteroncola inane (Giffen) Round	5
Rhabdonema adriaticum Kützing	5,6,8,15,18,28,29,36,48
Rhabdonema arcuatum (Lyngbye) Kützing	48
Rhabdonema minutum Kützing	37
Rhaphoneis amphiceros f. *gemmifera* (Ehrenberg) Peragallo & Peragallo	18
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	20,27,37
Rhoicosphenia marina (Kützing) Schmidt	5
Rhopalodia acuminata Krammer	44
Rhopalodia constricta (W.Smith) Krammer	18
Rhopalodia gibberula (Ehrenberg) Müller	20
Rhopalodia musculus (Kützing) Müller	17,18,28
Scoliopleura peisonis Grunow	28
Sellaphora pupula (Kützing) Mereschkowsky	20,32,51
Seminavis basilica Dainelidis	41
Seminavis eulensteinii (Grunow) D.B.Danielidis, K.Ford & D.Kennett	18
Seminavis insignis A.Blanco & S.Blanco	40,41
Seminavis robusta Danielidis & Mann	23,41,48
Seminavis strigosa (Hustedt) Danielidis & Economou-Amilli	40,44
Simonsenia delognei (Grunow) Lange-Bertalot	20
Stauroneis anceps Ehrenberg	20
Stauroneis membranacea (Cleve) Hustedt	5
Stauroneis smithii Grunow	22
Staurophora amphioxys (Gregory) Mann	18,28
Staurosirella martyi (Héribaud-Joseph) E.A.Morales & K.M.Manoylov	37
Staurosirella pinnata (Ehrenberg) D.M.Williams & Round	38
Stenopterobia sigmatella (Gregory) Ross	6
Striatella delicatula Kützing Grunow ex Van Heurck	6,8,48,56

Striatella unipunctata (Lyngbye) Agardh	5,6,7,8,9,11,15,17,18,29,31,32,36,37,41,48,50, 51,52
Surirella angusta Kützing	20,37
Surirella brebissonii Krammer & Lange-Bertalot	22
Surirella elegans Ehrenberg	17,37
Surirella fastuosa (Ehrenberg) Ehrenberg	3,6,7,17,18,29,48
Surirella minuta Brébisson	25,37
Surirella muelleri Hustedt	37
Surirella ovalis Brébisson	14,20,27,37
Surirella pandura Peragallo & Peragallo	6,48
Surirella robusta Ehrenberg	3
Surirella striatula Turpin	3,4,6,17,18,20,25,48
Synedra fulgens (Greville) Smith	6
Synedra gaillonii var. *macilenta* (Grunow) H.Peragallo	18,23
Tabellaria flocculosa (Roth) Kützing	6
Tabularia affinis var. *acuminata* (Grunow) Aboal	25
Tabularia fasciculata (Agardh) Williams & Round	5,12,18,25,28,37,44,51
Tabularia investiens (W.Smith) Williams & Round	37,41
Tabularia parva (Kützing) D.M.Williams & Round	5,12,18,44,51
Tabularia tabulata (C.Agardh) Snoeijs	6,25,32,44
Tetramphora intermedia (Cleve) Stepanek & Kociolek	18
Tetramphora lineolata (Ehrenberg) Mereschkowsky	41
Tetramphora rhombica (Kitton) Stepanek & Kociolek	6,48
Tetramphora sulcata (Brébisson) Stepanek & Kociolek	41
Tetramphora ostrearia (Brébisson) Mereschkowsky	45
Thalassionema fraunfeldii (Grunow) Hallegraeff	3,6,7,8,15,17,21,26,29,31,36,48,50,51,52
Thalassionema nitzschioides (Grunow) Mereschkowsky	3,6,7,8,9,11,21,29,31,36,37,48,50,51,52,55,56
Thalassiophysa hyalina (Greville) Paddock & P.A.Sims	7,29,48
Thalassiothrix longissima Cleve & Grunow	3,6,8,26,29,48,50,51
Thalassiothrix mediterranea Pavillard	6,7,8,15,29,31,36,37,48,50
Toxonidea insignis Donkin	5,12,18,51
Trachyneis aspera (Ehrenberg) Cleve	13,18,41,48
Trachysphenia acuminata Peragallo	45
Trachysphenia australis Petit	18,28,48
Trachysphenia australis var. *rostellata* Hustedt	23
Tryblionella acuminata Smith	18,20,28
Tryblionella angustata W.Smith	22,25
Tryblionella apiculata Gregory	5,12,18,27,28,41,44,51
Tryblionella circumsuta (Bailey) Ralfs	48
Tryblionella coarctata (Grunow) Mann	4,28,41
Tryblionella compressa (Bailey) Poulin	24,28
Tryblionella granulata (Grunow) Mann	18,44
Tryblionella hungarica (Grunow) Frenguelli	25
Tryblionella levidensis W.Smith	22
Tryblionella marginulata (Grunow) Mann	45
Tryblionella navicularis (Brébisson) Ralfs	18
Tryblionella pararostrata (Lange-Bertalot) Clavero & Hernández-Mariné	44
Tryblionella punctata Smith	18
Tryblionella victoriae Grunow	38
Ulnaria acus (Kützing) Aboal	22
Ulnaria danica (Kützing) Compère & Bukhtiyarova	14,37
Ulnaria ulna (Nitzsch) Compère	6,7,15,17,20,27,29,34,38,56

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