

APPENDIX 1

I would like to thank all those who have provided samples for me; they are

Dr.P.A.Broady (PAB)

Dr.E.J.Cox (EJC)

Dr.R.M.Crawford (RMC)

Dr.S.Coles (SC)

Dr.C.J.Grant (CJG)

Dr.F.E.Round (FER)

Mr.D.Shields (DS)

Miss L.P.Smith (LPS)

Miss P.A.Sims (PAS)

Dr.T.M.Whitaker (TMW)

and my parents (GAM)

My own samples are denoted by 'DGM'.

APPENDIX 1List of samples

Not all the samples mentioned below were used directly in the preparation of text or illustrations for this dissertation; all, however, contributed in some way to the observations reported here. Sampling dates are given, where known.

<u>Sample</u>	<u>Collector</u>
1. Abbot's Pool: G.R. ST 536732. Sediment and submerged vegetation. 14.10.74.	DGM
2. Aberdeen beach. Sand. 1.8.75.	DGM
3. Afon Araeth, near Llandeilo, Dyfed. Tube-dwelling diatoms and sediment: several samples. 25.3.75.	DGM
4. Afon Araeth, near Llandeilo, Dyfed. Diatoms from rocks under fast-flowing water. 25.3.75.	DGM
5. Afon Araeth, near Llandeilo, Dyfed. Drainage trickle at the side of Pontbren waterfall - sediment. 25.3.75.	DGM
6. Afon Araeth, near Llandeilo, Dyfed. Sediment from pool at bottom of waterfall; slow flow. 25.3.75.	DGM
7. Afon Bran - the bridge at Llandovery, Dyfed. Scraping taken from drainage trickles on the underside of the bridge arch. 27.3.75.	DGM
8. Afon Bran - bridge. Repeat of 7. 14.4.77.	DGM
9. Afon Bran, at Llandovery. Sediment. 27.3.75	DGM
10. Afon Gwenlas, at Cilycwm, Dyfed. Sediment. 27.3.75.	DGM
11. Afon Tywi, near the railway station, Llandeilo, Dyfed. Sediment + scrapings from rocks. 1.3.75.	DGM
12. Afon Tywi, position as 11. Sediment + scrapings from rocks, slow flow. 25.3.75.	DGM
13. Afon Tywi, position as 11. Pool at side of river; sediment + scrapings from rocks. 25.3.75.	DGM
14. Afon Tywi, position as 11. Epiphytes; area of moderate flow. 25.3.75.	DGM
15. Afon Tywi, position as 11. Sandy sediment; very slow flow. 25.3.75.	DGM
16. Afon Tywi, between Llandovery and Cilycwm, Dyfed. Sediment + scrapings from pebbles; fairly fast flow. 27.3.75.	DGM

SampleCollector

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| 17. Afon Tywi, position as 16. Sediment; slow flow.
27.3.75. | DGM |
| 18. Arne creek, Poole Harbour, Dorset. Sediment (silty).
Early summer, 1976. | DGM |
| 19. Aust, under the Severn Bridge. Sediment. Various dates,
1974-7. | DGM |
| 20. Barrow Gurney, Avon: G.R. ST 526683. Sediment from road-
side stream. 5.2.75. | DGM |
| 21. Bathurst Basin, Bristol: small area of salt-marsh. Sedi-
ment. 2-monthly sampling, 1976-7. | DGM |
| 22. Berkeley: G.R. ST 683987. Sediment from drainage ditch
beside the Little Avon River. 3.10.74. | DGM |
| 23. Bigsweir, Gloucs. Subsidiary arch of the bridge over the
R. Wye; scraping of algal growth on stonework. 23.3.77. | DGM |
| 24. Bigsweir, Gwent. Culvert for stream, under road. Scraping
of algal growth on stonework. 23.3.77. | DGM |
| 25. Bigsweir, Gwent. As 24, but from soil on ledge in culvert.
23.3.77 | DGM |
| 26. Borth, near Aberystwyth. Marine, intertidal sand. July
1975. | DGM |
| 27. Broadmead, Bristol. The conduit in the City Wall. Scraping
from stonework. October 1974. | DGM |
| 28. Brockweir, Gloucs. Stream in village. Sediment. 22.3.77. | DGM |
| 29. Burrington Combe, Avon: G.R. ST 477588. Growths of blue-
green algae on limestone. Growing in wet area of rock
face. 14.10.74. | DGM |
| 30. Burrington Combe; as 29. 7.3.75. | DGM |
| 31. Cader Idris, N.Wales. Algal growths on the pillow lava:
2 samples. July 1975. | DGM |
| 32. Carreg Cennen Castle, near Llandeilo, Dyfed. Scraping
of diatoms from interior stonework of castle. 1.3.75. | DGM |
| 33. Carreg Cennen Castle. Scrapings from outer wall. 1.3.75. | DGM |
| 34. Cloughton Wyke, Yorkshire. Sediment from stream flowing
over sandstone cliff: enrichment from sea spray and sea-
gulls! September 1975. | CJG |
| 35. Cornwall: Tregantle, near Plymouth. Marine, intertidal
sand. Summer 1976. | DS |
| 36. Cotham, Bristol. Scraping from wet stonework (sandstone).
2.2.77. | RMC |

<u>Sample</u>	<u>Collector</u>
37. Cove, near Aberdeen. Brackish pool near the quay: stagnant. Sediment. 27.7.75.	DGM
38. Cove, near Aberdeen. Subtidal sediment. 27,7.75.	DGM
39. Cove, near Aberdeen. Supratidal pool (with <u>Oxyrrhis</u>). Sediment. 27.7.75.	DGM
40. Cumberland Basin, Bristol. Steps at NE corner. Tube-dwelling diatoms and sediment. 3.10.74.	DGM
41. Eilat, Israel. Various samples from the fish ponds.	FER
42. Ferrybridge, near Portland, Dorset. Various sediment samples from the saltmarsh and foreshore - brackish and marine sites. Early summer 1976, 1.10.76 and 17.2.77.	DGM
43. Framilode: the Gloucester & Sharpness canal. Sediment. 24.1.75.	EJC
44. Fraserburgh harbour. Intertidal sediment. 30.7.75.	DGM
45. Hill, near Thornbury, Avon: G.R. ST 643948. Roadside ditch. Epiphytes. 3.10.74.	DGM
46. Kilve, Somerset. Tube-dwelling diatoms from the marine intertidal. Date?	EJC
47. Lairston Loch, near Aberdeen. Sediment. 27.7.75.	DGM
48. Llandeilo, Dyfed: Nantyrhibo. Algal growths on water-butt by spring. 31.3.75.	DGM
49. Llandeilo: G.R. SN 672213. Drainage stream over peat. Sediment. 2.4.75.	DGM
50. Llandeilo, Dyfed: G.R. SN 631215. Railway bridge. Scraping of algal growth on stonework. 2.4.75.	DGM
51. Llandudno. Marine intertidal sand. Date?	RMC
52. Loch Darron, near Aberdeen. Sediment. August 1975.	PAS
53. Montrose: entrance to the Montrose Basin. Intertidal sand and silt. August 1975.	DGM
54. Montrose: entrance to the Montrose Basin. Rock-pool at upper tidal limit. Tube-dwelling diatoms. August 1975.	DGM
55. Oahu Island, Hawaii. Epiphytes from <u>Sargassum</u> .	FER
56. Porlock, Somerset. Various samples from the salt-marsh and intertidal - mostly of silty sediment.	DGM
57. Priddy Pond: G.R. ST 547515. Samples of sediment and <u>Sphagnum</u> . 5.2.75 and other dates.	DGM

SampleCollector

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| 58. River Avon: approx. 3-monthly samples of sediment from Pill, Rownham, Bathurst Basin, St. Anne's weir (all tidal stations) and Conham. 1976-7. | DGM |
| 59. River Axe, at Bleadon, Avon. Sediment. 9.1.75. | DGM |
| 60. River Dee, at Aberdeen. A series of sediment samples, from freshwater to ± marine. 1.8.75. | DGM |
| 61. River Don, at Aberdeen. Various sediment samples from the tidal reaches. 1.8.75. | DGM |
| 62. River Wye: approx. 3-monthly samples of sediment from Redbrook, Bigsweir, opposite Llandogo, Brockweir, Lancaut and Beachley. 1976-7. | DGM |
| 63. River Yeo, at Wrington: G.R. ST 466622. Sediment. 14.10.74. | DGM |
| 64. River Ythan, near Aberdeen. A series of sediment samples from freshwater to ± marine. 30.7.75. | DGM |
| 65. River Ythan: estuary. Salt-marsh; pans. Sediment. 30.7.75. | DGM |
| 66. River ?, at Braemar. Sediment. August 1975. | DGM |
| 67. Rockhampton: G.R. ST 647928. Sediment from farmyard puddles. 3.10.74. | DGM |
| 68. Rostherne Mere, Cheshire. Various sediment samples. 21.2.75. | DGM |
| 69. St. Cyrus, near Aberdeen. Salt-marsh. Sediment. 30.7.75. | DGM |
| 70. St. Martin's, Isles of Scilly. Marine, intertidal sand. Various samples. September 1975, 1976, 1977. | DGM
GAM |
| 71. St. Martin's, Isles of Scilly. Epiphytes on <u>Zostera</u> . Sept. 1975. | DGM |
| 72. St. Martin's, Isles of Scilly. Brackish pool. 5.9.75. | DGM |
| 73. Sandbay to Kewstoke: G.R. ST 338644. Drainage ditch. Sediment. 28.10.74. | DGM |
| 74. Sandbay, near Weston-super-Mare. Extensive sampling of the middle and upper reaches of the salt-marsh and the adjoining stretches of sand and silt. 1975-7. (In 1976-7, sampling was approx. 2-monthly). | DGM |
| 75. Sandpoint, near Weston-super-Mare. A series of samples of sediment and tube-dwelling diatoms, from low- to high-shore. 12.2.75. | DGM |
| 76. Sandpoint. Tube-dwelling diatoms + sediment from near the lower tidal limit. 20.1.77. | LPS |
| 77. Santorini Islands, Aegean Sea. Sediment cores. | FER |

SampleCollector

78. Sea Mills, Bristol. Puddles under the road bridge; probably liable to periodic tidal flooding from the R. Avon - otherwise, filled by rain and drainage from the bridge. Various dates, especially 20.10.76. DGM
- Scilly - see 'St.Martin's'.
79. Severn Beach, near Bristol. Intertidal silt. Various samples. 11.2.75, and other dates. DGM
80. Shearwater, Wilts. Sediment from shallow water. Early summer 1977. DGM
81. Shiplate, Avon: G.R. ST 361559. Heavily manured ditch; sediment. 9.1.75. DGM
82. Shiplate, Avon: G.R. ST 361559. Shaded pond, containing a thick layer of decaying leaves over most of the bottom. Sediment. 9.1.75. DGM
83. Signy Island, South Orkneys. Material of Hantzschia amphioxys derived from an isolate off moss. PAB
84. Signy Island. Diatoms from the underside of pack-ice. TMW
85. Terrington Marsh, the Wash. Intertidal mud-flats. 2 samples. SC
86. Tockington, near Bristol: G.R. ST 621871. Pond. Epiphytes and sediment. 3.10.74. DGM
87. Tockington, near Bristol: G.R. ST 612866. Ornamental pond in front of Prep. school. Epiphytes. 3.10.74. EJC
88. Trapp to Carreg Cennen Castle, Dyfed. Water-butt by spring. Epiphytes and sediment. 1.3.75. DGM
89. Uphill, near Weston-super-Mare. Banks of a tidal creek. Sediment samples. 9.1.75. DGM
90. Walton in Gordano: G.R. ST 432728. Drainage ditch. Sediment and epiphytes. 28.11.74. DGM
91. Wells: G.R. ST 551458. Fountain in market place, near cathedral; sediment in trough at bottom. 14.10.74. DGM
92. Weston-super-Mare: G.R. ST 307623. Sediment and tube-dwelling diatoms from various parts of the shore. 28.10.74 and other dates. DGM

The following prepared slides were also consulted:

from the British Museum collections

B.M. 26 - 'Nitzschia virgata 2, 3; Pleurosigma transversale β 1.

- Tenby Bay. R.173.' Greville collection.
(for Hantzschia virgata)
- B.M. 388 - 'Epithemia marina' Greville collection.
(for Hantzschia marina)
- B.M. 921 - 'Tryblionella apiculata, Greg. Gregory B.75
Cumbrae. D.W.' Greville collection.
(for Nitzschia apiculata)
- B.M. 12955 - 'Hantzschia intermedia Grun. Spalato.'
Cleve & Möller slide 181. Deby collection.
(for Hantzschia virgata)
- B.M. 18138 - 'Surirella navicularis Bréb. Calvados 1368.'
Kützing collection.
(for Nitzschia navicularis)
- B.M. 18174 - 'Synedra constricta Kütz. Venice 145.'
Kützing collection.
(for Nitzschia apiculata)
- B.M. 18179 - 'Synedra dissipata Kütz.- α) sparsa Falaise 1339.'
Kützing collection.
(for Nitzschia sp.)
- B.M. 18240 - 'Synedra oxyrhyncus Kütz. Falaise 1756.'
Kützing collection.
(for Nitzschia linearis)
- B.M. 20246 - 'Nitzschia Virgata & Marina. Tenby. RC 173.'
Roper collection.
(for Hantzschia virgata)
- B.M. 20247 - 'Nitzschia virgatus F.V. Caldy, Pembroke. R.170.'
Roper collection.
(for Hantzschia virgata)
- B.M. 20250 - 'St.Meols Cheshire Nitzsch: virgata etc.'
Roper collection.
(for Hantzschia virgata)
- B.M. 23285 - 'Tryblionella marginata XIV 3a Lewes Brooks
Sep 15 1851.' W.Smith collection.
(for Nitzschia navicularis)
- B.M. 23286 - 'Tryblionella marginata May 1854.'
W.Smith collection; mounted 1887.
(for Nitzschia navicularis)
- B.M. 23316 - 'Nitzschia sigmoidea Brook near Lewes Oct.18 1851 &
Dec.16 1851. 104.' W.Smith collection.
- B.M. 23317 - 'Nitzschia sigmoidea Lewes Dec.1851.'
W.Smith collection; mounted 1887.
- B.M. 23341 - 'Nitzschia linearis Lewes March 1852.'
W.Smith collection; mounted 1887.

- B.M. 23364 - 'Nitzschia vivax Lewes Oct.1852.'
W.Smith collection; mounted 1887.
(for Hantzschia vivax)
- B.M. 23367 - 'Nitzschia minutissima Beachy Head, Sussex 107.'
W.Smith collection.
(for Nitzschia hantzschiana)
- B.M. 66978 - Hantzschia virgata var. intermedia: Barnstable (U.S.A.)
material - slide deposited by Dr.F.E.Round.

from the Hustedt collection at Bremerhaven

219/85 - 'Voifluss, an Algen. 35.' (type slide of Hantzschia distinctepunctata).

Wa/23 - Sumatra, Ranausee, R 4 h

from the Grunow collection at Vienna

1559a - 'Virgin Is. WI 1865 Cleve 17'

from collections at the University, Bristol

Cleve & Möller slide 48 - 'Tryblionella circumsuta Bail.'
made with material from Christianstad.

Eulenstein type slide 30 - 'Denticula obtusa Sm. Penzance, Anglia.
in aqua dulci ... Sm. Syn. tab.34 fig.292.'

Eulenstein type slide 31 - 'Denticula thermalis Ktz. Abano, Italia.
In thermis ... Ktz. Bac. tab.17 fig.6.'

Dr.F.E.Round's Barnstable material slide 'No.2. 8.3.68.'

" slide of material from a puddle at Mauville, New
Jersey, U.S.A. (for Hantzschia amphioxys)

APPENDIX 2List of diatom species and genera mentioned
in this dissertation.Achnanthes BoryAchnanthesA. minutissima Kütz.Achnanthidium Kütz.A. brevipes Ag.var. intermedia (Kütz.) CleveA. coarctata Bréb.Allonitzschia A.MannA. munifica A.MannAmphipleura Kütz.A. pellucida Kütz.Amphiprora Ehr.A. alata (Ehr.) Kütz.A. galerita GiffenA. gigantea Grun.A. hyalina Eulenstein ex Van HeurckA. medulica Peragallo & Peragallo(A. nitzschioides Cleve) = Nitzschia amphiproraA. ornata BaileyA. paludosa W.SmithA. pulchra Bailey(A. rugosa Grove & Sturt, non Petit) = Nitzschia groveiA. sulcata O'MearaAmphora Ehr.(A. gamma Karsten) ?= Hantzschia marinaA. ovalis Kütz.var. pediculus Kütz.Anomoeoneis PfitzerAnorthoneis Grun.Asterionella Hassall ex W.SmithAuliscus Ehr.Auricula Castracane, nom. cons.Bacillaria Gmelin(B. cursoria Donkin) = Nitzschia cursoriaB. linkei (Hustedt) comb. nov.(B. paradoxa Gmelin) = Bacillaria paxilliferB. paxillifer (O.F.Müller) Hendey(B. sigmoidea Nitzsch) = Nitzschia sigmoideaBerkeleya GrevilleB. rutilans (Trentepohl) Grun.

Caloneis CleveC. bacillum (Grun.) MereschkowskyCampylodiscus Ehr.Chuniella KarstenClavularia GrevilleCocconeis Ehr.C. placentula Ehr.Coscinodiscus Ehr.C. nitidus Greg.Cyclotella (Kütz.) Bréb.C. meneghiniana Kütz.Cylindrotheca Rabh.C. closterium (Ehr.) Reimann & LewinC. fusiformis Reimann & LewinC. gracilis (Bréb. in Kütz.) Grun.C. signata Reimann & LewinCymatonitzschia SimonsenC. marina (Lewis) SimonsenC. shulzei (Boyer) SimonsenCymatopleura W. Smith, nom. cons.Cymbella Ag.C. cesatii (Rabh.) Grun.var. paradoxa GeitlerC. cymbiformis (Ag.? Kütz.) Van Heurck(C. pediculus Kütz.) = Amphora ovalis var. pediculusC. prostrata (Berkeley) CleveC. turgida (Gregory) Cleve)Cymbellonitzschia Hust.C. diluviana Hust.C. hossamedinii SalahC. minima Hust.Denticula Kütz.D. amphicephala Hust.D. bacillum Hust.D. bicuneata Hust.D. costata Hust.D. elegans Kütz.D. elongata Hust.(D. interrupta Reichelt) = Nitzschia interrupta(D. kützingii Grun.) = Nitzschia denticulaD. lanceolata Hust.D. lata Hust.D. lauta BaileyD. linearis Hust.(D. obtusa W. Smith) = Nitzschia denticulaD. parva Hust.D. pelagica Hust.var. intermedia Hust.

D. rhynchocephala Hust.

D. robusta Hust.

D. seminae Simonsen & Kanaya

(D. sinuata W. Smith) = Nitzschia sinuata

D. spathulifera Hust.

(D. tabellaria Grun.) = Nitzschia sinuata var. tabellaria

D. tenuis Kütz.

D. thermalis Kütz.

D. valida (Pedicino) Grun.

D. vanheurckii Brun

Diatoma Bory, nom. cons.

D. vulgare Bory

var. producta Grun.

Didymosphenia M. Schmidt, nom. cons.

D. geminata (Lyngbye) M. Schmidt

Diploneis Ehr.

D. ovalis (Hilse) Cleve

Disconeis Cleve

D. belawani Meister

(Echinella Lyngbye)

(E. obtusa Lyngbye) = Diatoma sp.?

Epithemia Bréb.

E. argus Kütz.

E. cistula (Ehr.) Grun.

var. lunaris Grun.

(E. gibba Ehr.) = Rhopalodia gibba

E. hyndmanni W. Smith

E. intermedia Fricke

E. muelleri Fricke

(E. radula Bréb.) = Hantzschia marina

E. reicheltii Fricke

E. sorex Kütz.

E. turgida (Ehr.) Kütz.

E. zebra (Ehr.) Kütz.

Eunotia Ehr.

E. elegans Østrup

E. robusta Ralfs

Fragilaria Lyngbye

(F. antarctica Castracane) = Nitzschia kerguelensis

(F. castracanei De Toni) = Nitzschia kerguelensis

(F. cylindrus Grun.) = Nitzschia cylindrus

(F. linearis Castracane) = Nitzschia castracanei

(F. oceanica Cleve) = Nitzschia grunowii

(Fragilariopsis Hust.) = section of Nitzschia

(F. atlantica Paasche) = Nitzschia paaschei

(F. kerguelensis (O'Meara) Hust.) = Nitzschia kerguelensis

(F. linearis (Castracane) Frenguelli) = Nitzschia castracanei

(F. rhombica (O'Meara) Hust.) = Nitzschia angulata

Frustulia Ag, nom. cons.

Gomphonema Ag., nom. cons.

- G. constrictum Ehr.
G. sphaerophorum Ehr.

Gomphonitzschia Grun.

- G. agma Hohn & Helleman
G. clevei Grun.
G. exigua Sovereign
G. indica Skwortzow
G. saigoni Meister
G. ungeriana Grun.

Grammatophora Ehr.

(Grunowia Rabenhorst) = section of Nitzschia

(G. sinuata (W.Smith) Rabh.) = Nitzschia sinuata

Gyrosigma Hassall, nom. cons.

- G. eximium (Thwaites) Boyer
G. fasciola (Ehr.) Cleve

Hantzschia Grun., nom. cons.Hantzschia

- H. amphioxys (Ehr.) Grun.
 var. amphilepta Grun.
 var. capitata O.Müller
 (var. distinctepunctata Hust.) = Hantzschia distincte-
punctata

- H. baltica Simonsen
H. borivliana Gandhi
H. directa Pantocsek
H. distinctepunctata (Hust.) Hust.
H. elongata (Hantzsch) Grun.
H. exilis (Frenguelli) Frenguelli
H. faba (Frenguelli) ?Frenguelli
H. fenestrata Hust.
H. herrmannii Hust.
H. limi (Frenguelli) ?Frenguelli
H. mirabilis Hust.
H. pseudomarina Hust.
H. segmentalis Brun
H. sigma Hust.
H. spectabilis (Ehr.) Hust.
H. subandina Frenguelli
H. virgata (Roper) Grun.
 var. borealis Grun.
 (var. capitellata Hust.) = var. leptocephala
 var. gracilis Hust.
 var. intermedia (Grun.) Round
 var. kariana Cleve & Grun.
 var. leptocephala Østrup
 var. wittii (Grun.) Grun.
H. vivax (W.Smith) Hust.
H. weyprechtii Grun.
 (H. wittii Grun.) = Hantzschia virgata var. wittii

Pseudoepithemia Grun.

- H. marina (Donkin) Grun.

H. marina(var. genuina Cleve-Euler) = typevar. lata Cleve-Eulervar. leptocephala Østrupvar. obtusa Cleve-Euler(Homoeocladia Ag.)(H. vidovichii Grun.) = Nitzschia vidovichiiLicmophora Ag., nom. cons.Melosira Ag., nom. cons.Meridion Ag.Nanoneis NorrisN. hasleae NorrisNavicula BoryN. contenta Grun.N. cryptocephala Kütz.N. cuspidata Kütz.N. grevillei (Ag.) CleveN. lyra Ehr.N. monilifera CleveN. mutica Kütz.N. pelliculosa (Bréb.) HilseN. pusilla W. SmithN. ramosissima (Ag.) CleveNitzschia Hassall, nom. cons.(Angulares Grun.)(Angustatae Peragallo & Peragallo)(sect. Apiculatae Grun.)(sect. Bacillaria (Gmelin) Grun.) = Bacillaria(Ceratoneis (Ehr.) Grun.)(sect. Circumsutae Grun.)(Constrictae Grun.)(sect. Costatae Hust.) = sect. Epithemioideaesect. Dissipatae Grun.sect. Dubiae Grun.sect. Epithemioideae Grun.(Eunitzschia Frenguelli)sect. Fragilariopsis (Hust.) Haslesect. Grunowia (Rabh.) Grun.(Homoeocladia (Ag.) Peragallo & Peragallo)sect. Insignes Grun.sect. Lanceolatae Grun.sect. Lineares Grun.sect. Nitzschiella (Rabh.) Grun.(sect. Obtusae Grun.)sect. Panduriformes Grun.sect. Perrya (Kitton) Grun.sect. Pseudoamphiprora Grun.(Pseudoeunotia Grun.)sect. Pseudonitzschia (Peragallo & Peragallo) Hustedt(sect. Pseudotryblionella Grun.)sect. Scalares Grun.(sect. Sigmata Grun.)(Sigmatella Frenguelli)(sect. Sigmoideae Grun.) = sect. Nitzschia

- sect. Spathulatae Grun.
 (sect. Spectabiles Grun.)
 sect. Tryblionella (W.Smith) Grun.
 (sect. Vivaces Grun.)
 (Zotheca (Pantocsek) Frenguelli)

- N. acicularis W.Smith
N. acidoclinata Lange-Bertalot
N. actinastroides (Lemmerman) Van Goor
N. actydrophila Hasle
N. acula Hantzsch
N. acuminata (W.Smith) Grun.
N. acus Cleve
N. acuta Cleve
N. adamata Hust.
N. adducta Hust.
N. adeliana Manguin
N. admissa Hust.
N. adriatica Grun.
N. aerophila Hust.
N. aestatis Giffen
N. aestuarii Hust.
N. affinis Grun.
N. agnewii Cholnoky
N. alba Lewin & Lewin
N. americana Hasle
N. amoena Hust.
N. amphibia Grun.
N. amphiprora Grun.
N. amplexens Hust.
N. angularis W.Smith
 (var. affinis Grun.) = Nitzschia affinis
N. angulata Hasle
N. angustata (W.Smith) Grun.
 var. acuta Grun.
 (N. antiqua Grove & Sturt) = Nitzschia groveana
N. apiculata (Greg.) Grun.
N. aquaea Poretzky
N. arctica Cleve
N. ardua Cholnoky
N. areolata Hust.
N. attenuata Østrup
N. austriaca Hust.
N. bacillariaeformis Hust.
N. balatonis Grun.
N. barbieri M.Peragallo
N. bathurstensis Giffen
N. beagleana Patrick
N. behrei Hust.
N. bella Sovereign
N. bicapitata Cleve
N. bicuneata Grun.
N. bilobata W.Smith
N. biscalpta A.Mann
 (N. bombiformis Grun.) = var. of Nitzschia constricta
N. braarudii Hasle
N. bremensis Hust.
N. brevirostris Hust.
N. brevistriata Grun.
 (N. brightwellii Kitton) = the next?
N. brightwellii Ralfs in Pritchard
N. calida Grun.

- N. californica (Mereschkowsky) nov. comb.? (from Nitzschiella)
N. campechiana Grun.
N. capitellata Hust.
N. castracanei Hasle
N. chilensis Hust.
N. chutteri Archibald
N. circumscuta (Bailey) Grun.
N. claasseniae Cholnoky
N. clausii Hantzsch
N. clausiiformis Gandhi
N. claviceps Schrader
N. coarctata Grun.
N. cocconeiformis Grun.
N. communis Rabh.
N. commutata Grun.
N. conformata Hust.
N. congolensis Hust.
N. constricta (Greg.) Grun.
 var. bombiformis Grun.
N. copiastriata Hohn & Hellerman
N. corpulenta Hendey
N. creticola Østrup
N. cryophila Cleve
N. cursoria (Donkin) Grun.
N. curta (Van Heurck) Hasle
N. curvirostris Cleve
N. cuspidata Hasle
N. custodis Cholnoky
N. cylindrica Burckle
N. cylindrus (Grun.) Hasle
N. davidsonii Grun. & Dickie
N. debilis (Arnott) Grun.
N. decipiens Hust.
N. delicatissima Cleve
 (N. delicatula Hasle) = Nitzschia pseudodelicatissima
N. delognei Grun.
N. denticula Grun.
 (var. delognei Grun.) = Nitzschia solgensis
 var. rostrata Gandhi
 (var. minor Cleve) = Nitzschia kittonii?
N. denticuloides Hust.
 (N. denticuloides Schrader, nom. illeg.)
N. diaphana Cleve
N. didyma Hust.
N. dilatata Peragallo & Peragallo
N. diserta Hust.
N. dippelii Grun.
N. dissipata (Kütz.) Grun.
 var. media (Hantzsch) Grun.
 (var. acula (Hantzsch) Cleve-Euler) = Nitzschia acula
N. distans Gregory
 var. tumescens Grun.
N. divergens Hust.
N. diversicostata Brun
N. doljensis Pantocsek
N. droebakensis Hasle
N. dubia W. Smith
N. dubiiformis Hust.
N. efferans Schrader
N. elegans Hust.
N. elegantula Grun.
 (N. elongata Hassall) = Nitzschia sigmoidea

- N. epithemioides Grun.
N. erosa Giffen
N. evenescens Schrader
N. eximia Grun.
N. falcata O.Müller
N. fasciculata Grun.
N. febigerii Grun.
N. fenestrata Mereschkowsky
N. ferox Hust.
N. filiformis (W.Smith) Hust.
N. firthii Fuge
N. flexa Schumann
N. flexoides Geitler
N. fluminensis Grun.
N. fonticola Grun.
N. fossilis
N. fragilarioides Grun.
N. fraudulenta Cleve
N. frauenfeldii Grun.
N. frickei Hustedt
N. frigida Grun.
N. frustulum (Kütz.) Grun.
 (var. perpusilla (Rabh.) Grun.) = Nitzschia hantzschiana?
 var. perminuta Grun.
N. fussiformis Pantocsek
N. garrensis Hust.
N. geitleri Hust.
N. geniculata Hust.
N. gigantea (Ehr.) Grun.
N. gladiformis Hust.
N. gracilis Hantzsch
N. gracillima Heiden & Kolbe
N. graciloides Hustedt
N. gradifera Hust.
N. graeffei Grun.
N. grandis Kitton
N. granii Hasle
 var. subcurvata Hasle
N. granulata Grun.
N. groveana De Toni
N. grovei Grun.
N. grundleri Grun.
N. grunowii Hasle
N. habershawii Febiger
N. halteriformis Hust.
N. hantzschiaeformis Fritsch & Rich
N. hantzschiana Rabh.
 (N. heidenii Meister) = Nitzschia kittonii?
N. heimii Manguin
N. hemistriata Hagelstein
N. heufleriana Grun.
N. hönkii Hust.
 (N. holsatica Hust.) = Nitzschia actinastroides
N. hondoensis Hanna & Grant
N. hummii Hust.
N. hungarica Grun.
N. hustedtiana (Hust.) Cholnoky
N. hustedti-debes Hust.
N. hyalina Greg.
N. hybrida Grun.
N. hybridaeformis Hust.

- N. ignorata Krasske
N. improvisa Simonsen
N. incerta (Grun.) Peragallo & Peragallo
N. incognita Krasske
N. inconspicua Grun.
N. incrustans Grun.
N. incurva (Grun.) Peragallo & Peragallo
N. indica Schrader
N. inducta Hust.
N. ingenua Hust.
N. insecta Hust.
N. insignis Greg.
 (var. adriatica Grun.) = Nitzschia adriatica
N. intercedens Grun.
N. intermedia Hantzsch
N. interrupta (Reichelt) Hust.
N. irremissa Cholnoky
N. irresoluta Hust.
N. irritans Cholnoky
N. islandica Østrup
N. janei Salah
N. janischii Grun.
N. januaria Schrader
N. jelineckii Grun.
N. kaikonkiensis Woodhead & Tweed
N. karrooensis Cholnoky
N. kerguelensis (O'Meara) Hasle
N. kittlii Grun.
N. kittonii H.L. Smith
N. knysnensis Cholnoky
N. kowiensis Giffen
N. kurzii Rabh.
N. kützingiana Hilse
N. kützingii Rabh.
N. lacunarum Hust.
N. laevissima Grun.
N. lagunae Cholnoky
N. lanceola Grun.
N. lanceolata W. Smith
N. lauenburgiana Hust.
N. lecointei Van Heurck
N. lesinensis Grun.
N. leucosigma Benecke
N. levidensis (W. Smith) Grun.
N. limes Pantocsek
N. limicola Grun.
N. linearis W. Smith
N. lineola Cleve
 (N. linkei Hust.) = Bacillaria linkei
N. lionella Cholnoky
N. littoralis Grun.
N. loczyi Pantocsek
N. longa Grun.
N. longirostris Hust.
N. longissima (Bréb.) Ralfs
 f. parva Grun.
N. lorenziana Grun.
N. lurida Cholnoky
N. macilenta Greg.
N. magnacarina Hohn & Hellerman
N. majuscula Grun.

- N. maleinterpretaria Schrader
N. marginulata Grun.
N. marina Grun.
N. martiana (Ag.) Van Heurck
N. maxima Grun.
(N. media Hantzsch) = var. of Nitzschia dissipata
N. mediterranea Hust.
N. minuta Bleisch
N. minutissima W. Smith
N. miocenica Burckle
N. mirabilis Cleve-Euler
N. miramarensis Hagelstein
N. mitchelliana Greenloaf
N. moissacensis Héribaud
N. mollis Hust.
var. africana Cholnoky
N. mucronata Pantocsek
N. muranensis Cholnoky
N. natalensis Cholnoky
N. nathorsti Brun
N. navicularis (Bréb.) Grun.
N. ngoziensis O. Müller
N. nicobarica Grun.
N. norvegica Hasle
N. novaehollandiae Grun.
N. nyassensis O. Müller
N. oamaruensis Schrader
N. obliquecostata (Van Heurck) Hasle
N. oblongella Østrup
N. obtusa W. Smith
var. scalpelliformis Grun.
var. nana Grun.
N. ocellata Cleve
N. oliffii Cholnoky
N. paaschei Hasle
N. pacifica Cupp
N. palea (Kütz.) W. Smith
N. paleacea Grun.
N. pamirensis Hust.
N. panduriformis Greg.
(var. abrupta Peragallo & Peragallo) = Nitzschia rorida
var. lata (Witt) Grun.
var. peralbata Peragallo & Peragallo
(N. paradoxa (Gmelin) Grun.) = Bacillaria paxillifer
N. parallela Hust.
N. partita Hust.
N. parvula Lewis
N. parvuloides Cholnoky
N. pellucida Grun.
N. pennata Tempère & Brun
N. peragallii Hasle
N. perlonga Pantocsek
(N. perpusilla Rabh.) = Nitzschia hantzschiana?
N. perspicua Cholnoky
(N. perspicua Sovereign, nom. illeg.)
N. persuadens Cholnoky
N. perversa Grun.
(N. petitiana Grun.) = Hantzschia weyprechtii?
N. plana W. Smith
N. plicatula Hust.
N. polaris Grun.

- N. ponciensis Hagelstein
N. praelonga Cleve
N. pretoriensis Cholnoky
N. princeps Hanna & Grant
N. prolongata Hust.
N. pseudocarinata Cholnoky
N. pseudodelicatissima Hasle
N. pseudohybrida Hust.
N. pseudolinearis Hust.
N. pseudonana Hasle
N. pseudoseriata Hasle
N. pseudosigma Hust.
N. pseudostagnorum Hust.
N. pulcherrima Grun. & Kitton
N. pulchra Hust. 1952 (sect. ?Tryblionella)
(N. pulchra Hust. 1955 (sect. Dubiae), nom. illeg.)
N. punctata (W. Smith) Grun.
var. coarctata Grun.
(f. minores Hust.) = Nitzschia hustediana
N. punctata-elongata Karsten
N. pungens Grun.
(var. atlantica Cleve) = the type
N. pusilla Grun.
N. putrida (Cohn) Benecke
N. quarnerensis Grun.
N. quickiana Hagelstein
N. rabenhorstii Grun.
N. rautenbachiae Cholnoky
N. recta Hantzsch
N. rectangulata Hust.
N. rectiformis Hust.
N. reinhardii Alexejenko
N. reinholdii Kanaya & Koizumi
N. rhopalodioides Hust.
N. ritscheri (Hust.) Hasle
N. romana Grun.
N. romanowiana Pantocsek
N. rorida Giffen
N. rostellata Hust.
N. rostrata Grun.
N. rotula Carter
N. rousselini Maillard
N. ruda Cholnoky
N. rufitorrentis Cholnoky
N. rugosa Hust.
N. salvadorina Hust.
N. scalaris (Ehr.) W. Smith
N. scaligera Grun.
N. scherffeliana Krenner
N. schliephackeana Grun.
N. separanda (Hust.) Hasle
N. serians Rabh.
N. seriata Cleve
N. siberica Grun.
N. sibula Giffen
N. sricula (Castracane) Hust.
var. rostrata Hust.
N. sigma (Kütz.) W. Smith
var. incisa Mereschkowsky
N. sigmaformis Hust.
N. sigmatella Greg.

- N. sigmoidea (Nitzsch) W. Smith
N. silicula Hust.
N. siliqua Archibald
(N. singalensis) = Nitzschia senegalensis Grun.?
N. sinuata (W. Smith) Grun.
(var. denticuloides Biswas) = Nitzschia solgensis?
var. tabellaria Grun.
N. smithii Ralfs in Pritchard
N. sociabilis Hust.
N. socialis Greg.
N. solgensis Cleve-Euler
(N. spathulata Bréb.) = Nitzschia spathulata W. Smith
N. spathulata W. Smith
(var. hyalina (Greg.) Grun.) = Nitzschia hyalina
N. spathulifera Grun.
N. speciosa Hust.
N. sphaerophora Cleve-Euler
N. spiculoides Hust.
N. spiculum Hust.
N. stagnorum Rabh.
N. staurophora Giffen
N. stefaninii Frenguelli
N. steynii Cholnoky
N. subacicularis Hust.
N. subamphioxoides Hust.
N. subcohaerens (Grun.) Cleve-Euler
N. subcostata Grun.
N. subcurvata Hasle
N. subdenticula Hust.
N. subdilatata Grun.
N. subfraudulenta Hasle
N. sublinearis Hust.
N. subpacifica Hasle
N. subpunctata Cholnoky
N. subtilis (Kütz.) Grun.
N. subvitrea Hust.
N. suecica (Grun.) Cleve-Euler
N. sulcata Grun.
N. tenuirostris Mereschkowsky
N. tenuis W. Smith
N. tenuissima Peragallo & Peragallo
N. terricola Lund
N. terryana Tempère & Peragallo
N. tetraplacata Mereschkowsky
(N. thermalis (Ehr.) Auerswald) = ?
N. thermalis Kütz.
N. thermaloides Hust.
N. thienemannii Hust.
N. tongatensis Grun.
N. transvaalensis Cholnoky
N. tryblionella Hantzsch in Rabh.
(var. debilis (Arnott) Mayer) = Nitzschia debilis
(var. levidensis (W. Smith) Grun.) = Nitzschia levidensis
(var. salinarum Grun.) = Nitzschia levidensis?
N. tubicola Grun.
N. turgidula Hust.
N. umbilicata Hust.
N. vacillata Giffen
N. vacua Hust.
N. valdestriata Aleem & Hustedt
N. valga Cholnoky

- N. valida Cleve & Grun.
N. vanheurckii (M.Peragallo) Hasle
N. vasta Hust.
N. ventricosa Kitton
N. vermicularis (Kütz.) Grun.
N. vidovichii (Grun.) Van Heurck
(N. virgata Roper) = Hantzschia virgata
N. visurgis Hust.
N. vitrea Norman
var. salinarum Grun.
(N. vivax W.Smith) = Hantzschia vivax
N. volcanica Sovereign
N. vulpecula Giffen
N. vulpeculoides Giffen
N. weissflogii Grun.
var. interrupta Grun.
var. sparsa Grun.
var. subglabra Grun.
N. woltereckii Hust.
N. zebuana A.Mann

(Odontidium Kütz.)

(Perrya Kitton) = section of Nitzschia
(P. pulcherrima Kitton) = Nitzschia pulcherrima

Phaeodactylum Bohlin

P. tricornutum Bohlin

Pinnularia Ehr., nom. cons.

P. borealis Ehr.

P. debesii Hust.

P. nobilis Ehr.

P. trevelyana (Donkin) Rabh.

Planktoniella Schütt

P. muriformis (Loeblich, Wight & Darley) Round

Pleurosigma W.Smith, nom. cons.

P. angulatum (Quekett) W.Smith

P. delicatulum W.Smith

Pseudoeunotia Grun.

Raphoneis Ehr.

R. surirella (Ehr.) Grun.

Rhabdonema Kütz., nom. cons.

R. adriaticum Kütz.

R. arcuatum (Lyngbye) Kütz.

Rhoicosphenia Grun.

Rhopalodia O.Müller

R. gibba (Ehr.) O.Müller

R. gibberula (Ehr.) O.Müller

R. gracilis O.Müller

R. hirundiformis O.Müller

var. turgida Fricke

R. musculus (Kütz.) O.Müller

R. parallela (Grun.) O.Müller
R. vermicularis O.Müller

(Schizonema Ag.)

(S. grevillei Ag.) = Navicula grevillei

Scoliopleura Grun.

S. tumida (Bréb. ex Kütz.) Rabh.

Striatella Ag.

Surirella Turpin

S. gemma (Ehr.) Kütz.

S. spiralis Kütz.

Synedra Ehr.

S. berolinensis Lemmermann

(S. gigantea Ehr.) = Nitzschia gigantea?

S. limnetica Lemmermann

S. parasitica W.Smith

var. subconstricta Grun.

S. ulna (Nitzsch) Ehr.

Triceratium Ehr.

T. antediluvianum Ehr.

Tropidoneis Cleve

(Tryblionella W.Smith) = section of Nitzschia

(T. querandina Frenguelli)

(Zothea Fantocsek) = part of Nitzschia sect. Tryblionella

(Z. granulata Pantocsek) = Nitzschia granulata

Abbreviations used:

Ag. = Agardh

Bréb. = de Brébisson

Ehr. = Ehrenberg

Greg. = Gregory

Grun. = Grunow

Hust. = Hustedt

Kütz. = Kützing

Rabh. = Rabenhorst