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ENVIRONMENTAL REQUIREMENTS AND POLLUTION TOLERANCE OF FRESHWATER DIATOMS

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ENVIRONMENTAL REQUIREMENTS AND POLLUTION TOLERANCE OF FRESHWATER DIATOMS

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ENVIRONMENTAL PROTECTION AGENCY

FOREWORD

Man and his environment must be protected from the adverse effects of pesticides, radiation, noise and other forms of pollution, and the unwise management of solid waste. Efforts to protect the environment require a focus that recognizes the interplay between the components of our physical environment--air, water, and land. The National Environmental Research Centers provide this multidisciplinary focus through programs engaged in

- studies on the effects of environmental contaminants on man and the biosphere, and
- a search for ways to prevent contamination and to recycle valuable resources.

This study focuses on one of the most important groups of algae in aquatic ecosystems--the diatoms. Water quality directly effects the species composition of diatom communities and in turn, these changes affect all higher trophic levels. The diatoms are unique among the algae in two ways: they can be routinely identified to the species level, and a great deal of information exists on the range of ecological tolerance of many common species. Data on environmental requirements and pollution tolerance for approximately 300 common diatoms are summarized in this report. This information will be useful in evaluating biological data collected in enforcement cases and in compliance and ambient water quality monitoring conducted under Sections 104(a), 106(2), 308, 314(a), and 316(a) of the FWPCAA of 1972.

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ABSTRACT

Data on the environmental requirements and pollution tolerance of 300 common species and varieties of fresh water diatoms was compiled from 48 references. The following parameters were considered: pH, nutrients, salinity, organic pollution tolerance (saprobien system), current, general habitat, specific habitat, seasonal distribution, temperature and geographical distribution. A consensus of opinions for each parameter was established for most taxa. It is suggested that this compilation be employed to evaluate data from plankton and periphyton samples collected for the assessment of water quality.

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ACKNOWLEDGEMENTS

A compilation of information is, of course, dependent on the original research of others. I am indebted to all of those whose studies have become a part of this project. The data summary form used in this compilation was developed with the help of the Aquatic Biology Section, Methods Development & Quality Assurance Research Laboratory.

RECOMMENDATIONS

This compilation should be used in conjunction with literature for diatom identification to help assess water quality. As a user generates additional information about a diatom species, it should be added to the summary sheet. As more information is gathered, either from the users research or from references not included in this compilation, some consenses may change. Thus, the compilation may become more valuable to the user if used as an active resource.

INTRODUCTION

The objective of this project is to compile, standardize, and centralize ecological information about a number of non-marine diatoms. Most of these diatoms are species common at E P A water surveilance stations on large inland rivers (Weber, 1966). Certain other diatom species that are common in habitats not normally monitored by the E P A are also included. Diatoms considered in this project are included in Apendix A.

During recent years diatoms (Bacillariophyta) have been used with increasing frequency to assess the condition of inland waters. This group of organisms is particularly well-suited for this function for several reasons.

Diatoms can be identified to the species level relatively easily. This is not true of most other groups of algae or aquatic invertebrates. Since taxonomy of diatoms is based on the ornamentation of the inert silica cell wall, samples need no special treatment for preservation. Common species can be identified with a few taxonomic references (Weber, 1966), (Patrick and Reimer, 1966) and (Hustedt, 1930).

Diatoms are among the most ubiquitous of aquatic organisms. They are found in a wide variety of aquatic habitats including lakes, ponds, bogs, marshes, swamps, fens, rivers, creeks and temporary pools. Even man-made habitats such as sewage-treatment-plant trickling filters and irrigation ditches have been exploited by diatoms. In this variety of aquatic habitat diatoms occupy a number of different microhabitats and are often the dominant producers in both plankton and periphyton communities.

Finally, each diatom taxon is thought to occupy a different nitch in the aquatic ecosystem responding individually to different chemical and physical parameters. Some species have broad tolerance ranges and are abundant in a wide variety of habitats and ecological conditions. Other species have very limited tolerance ranges and are normally restricted to specific habitats favorable to their existance. By careful analysis of a diatom community and a knowledge of community members' ecological "preferences" and tolerances, a great deal can be ascertained about the habitat and environment.

As various investigators have studied diatom communities, bits of information concerning the autecology of species has become available. This information is distributed throughout many journals in a number of different languages. In this form the information is of limited use to those who would apply it. The objective of this project is to compile information about a number of common non-marine diatoms. Limited compilations of this type have been used to characterize the environment in which fossil diatom assembleges have accumulated (Colingsworth et. al., 1967) and (Abbott and Van Landingham, 1972). Such a compilation could also be employed to assess water quality in existing aquatic habitats.

ECOLOGICAL PARAMETERS

Diatoms are affected by many different parameters in the environment and it is probably a combination of factors that limit their distribution. Several investigators have designated "spectral ranges" for individual chemical and physical parameters. Several of these defined spectral ranges have been employed in this project. Some parameters have had several spectral ranges applied to them by different authors, others have been inadequately defined. In these cases the spectral ranges have been redefined for purposes of standardization. The parameters considered in this compilation are described below.

1. pH spectrum. The ranges employed for diatom distribution relative to pH were described by Hustedt (1937-1938). Perhaps of greater importance are the optimum pH values for individuals. These values have been reported for several species.

   Acidobiontic: occurring at a pH below 7 with best development below 5.5

   Acidophilous: occurring at a pH around 7 with best development below 7.

   Indifferent: best development around a pH of 7.

   Alkaliphilous: occurring at a pH around 7 with best development over 7.

   Alkalibiontic: occurring only in alkaline water.

2. Nutrient spectrum. This spectrum is a modification of one presented by Smith (1966).

   Eutrophic: characteristic of water with high nutrient concentrations.

   Mesotrophic: characteristic of water with moderate nutrient concentrations.

   Oligotrophic: characteristic of water with low nutrient concentrations.

   Dystrophic: characteristic of water rich in humic material.

3. Halobion spectrum. This spectrum is a modification of Kolbe's (1927). Although Klobe's system is based on chlorides it has been observed that other ions may be of greater importance than chloride in inland waters (Hutchinson, 1957, Christiansen and Reimer, 1968). Kolbe's chloride system is maintained because of the wealth of data appearing in the literature.

   Polyhalobous: occurring in salt concentrations over 40,000 mg/l.

   Euhalobous: marine forms, occurring in salt concentrations of 30,000 to 40,000 mg/l.

   Mesohalobous: brackish-water forms occurring in salt concentrations of 500 to 30,000 mg/l.

   (alpha range): occurring in salt concentrations of 10,000 to 30,000 mg/l.

   (beta range): occurring in salt concentrations of 500 to 10,000 mg/l.

   Oligohalobous: freshwater forms occurring in salt concentrations of less than 500 mg/l.

   (halophilous): stimulated by small amounts of salt.

   (indifferent): tolerates small amounts of salt.

   (halophobous): does not tolerate small amounts of salt.

Euryhalobous (Euryhalinous): occurring over broad ranges of salt concentration, often encompassing 2 or more large spectral designations.

4. Saprobien spectrum. This spectrum was first proposed by Kolkwitz and Marsson (1908) and was later modified by various investigators. The saprobien system has been rejected by some investigators (Schoeman, 1973) in light of recent findings by Cholnoky (1953, 1958 and 1968). Cholnoky's investigations indicate that nitrogenous compounds may be a more important factor than organic pollution in determining the distribution of diatoms. Organic nitrogen requirements, nitrogen heterotrophy, have been demonstrated for a number of species. These species, when present in large numbers, are excellent indicators of organic pollution. The saprobien system is included in this compilation because of the wealth of data available. Information on nitrogen heterotrophy is included when such information is known.

Polysaprobic: characteristic of zone of degredation and putrefication, oxygen usually absent or low in concentration.

Mesosaprobic: characteristic of zone where oxidation of organic load is proceeding.

(alpha range): range of stronger pollution nitrogen in the form of amino acids.

(beta range): range of weaker pollution, nitrogen in the form of ammonia compounds.

Oligosaprobic: characteristic of zone where oxidation of biodegradable compounds is complete. The concentration of inorganic nutrients is usually high.

Saprophilic: occurring usually in polluted waters but also in clean water habitats.

Saproxenous: occurring in clean water habitats but also in polluted ones.

Saprophobic (Katharobic): characteristic of waters that have not been exposed to pollutants.

5. Current spectrum. The designations employed for current were defined by Hustedt (1937-1938).

Limnobiontic: characteristic only of standing waters.

Limnophilous: characteristic of standing water but may be found in running water.

Indifferent: common in both flowing and standing water.

Rheophilous: characteristic of running water but may be found in standing water.

Rheobiontic: characteristic only of running water.

6. General habitat. Type of water body or macrohabitat characteristic for the species.

Marine: characteristic of oceans and seas.

Estuary: characteristic of estuaries and brackish water habitats

Lake: characteristic of large inland bodies of standing water.

Pond: characteristic of small bodies of standing water

River: characteristic of larger streams

Spring and Stream: characteristic of small streams.

Aerophilous: characteristic of non-submerged habitats.

Other: general habitats not listed above

7. Specific habitat. Specific distribution or microhabitat.

Euplanktonic: normally suspended in the water, distribution is current dependent.

Tychoplanktonic: normally associated with periphytic or terrestrial habitats but often suspended in the water.

Periphytic (aufwuchs, littoral): occurring on, but not penetrating, the substrate and submerged objects.

epipelic: occurring on mud.

epilithic: occurring on rock.

epidendric: occurring on wood.

epiphytic: occurring on plants.

epizooic: occurring on animals.

attached: normally sessil.

unattached: normally "free".

8. Seasonal distribution. Authors' comments on seasonal distribution of diatoms are included in this section.

Winter - optimum growth during winter.

Spring - optimum growth during spring.

Summer - optimum growth during summer.

Fall - optimum growth during fall.

9. Temperature spectrum. This spectrum includes both optimum temperatures in centigrade degrees and ranges of temperature change tolerated by individuals.

Euthermal: warm-water forms usually occurring at temperature greater than 30° C.

Mesothermal: temperate-water forms, usually occurring between 15° and 30° C.

Oligothermal: cold-water forms, usually occurring between 0° and 15° C.

Stenothermal: occurring over a temperature range of no greater than 5° C.

Metathermal: occurring over a temperature range of from 5° to 15°.

Eurythermal: occurring over a temperature range of 15° or greater.

Undesignated: either the optimum temperature or the range of tolerance are not designated.

10. Geographical distribution and other pertinent information. Most of the diatoms included in this project are of cosmopolitan or worldly distribution. Comments on geographical distribution are included here. Additional information on factors influencing diatom distribution may also be found here including Hustedt's (1937-1938) oxygen system and Niessen's (1956) calcium system. Authors included in this compilation are listed in Appendix B. Authors are identified by number on each of the diatom species ecology sheets.

DATA COMPILATION

Certain liberties have been taken in the interpretation of authors' comments on diatom ecology. Some authors did not designate spectral categories for some of the parameters. Often inferences were made and enough information was given that enabled a designation to be made in the compilation. For example, if an investigator reported a pH range but no pH spectral designation, the designation was made by inference. In other instances, authors have designated spectral categories for diatoms that have required modification. For example, if an investigator reported a species to be either periphytic or planktonic, it would be placed in the categories periphyton and tychoplankton.

A consensus is established for each of the ecological parameters on which comments have been compiled. The spectral category of a given parameter with the greatest number of entries is considered to be the consensus. Any other categories that have at least half as many entries as this are also mentioned in the consensus.

Ecological information on synonyms for a species are included with that species. For example, data collected pertaining to Navicula gracilis Ehr. will be included under Navicula tripunctata (O.R. Mull.) Bory.

This compilation is not intended to be used as a rigid definitive assessment of the autecology of the species included. It should be remembered that the consensus for any parameter represents the findings of

a wide variety of investigators. These individuals undoubtedly used different methods of specimen collection and analysis of ecological parameters. Keeping these considerations in mind, the compilation should prove useful to those employing diatoms in the assessment of water quality. This compilation is meant to be an active continuing resource. As more information becomes available on any species it may be added. Species not included in this project may be added on blanks provided at the end of the species ecology section.

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APPENDIX A
Diatoms Included in This Compilation

Achnanthes affinis Grun. var. affinis

Achnanthes brevipes Ag. var. brevipes

Achnanthes clevei Grun. var. clevei

Achnanthes coarctata (Bréb.) Grun. var. coarctata

Achnanthes exigua Grun. var. exigua

Achnanthes exigua var. heterovalva Krasske

Achnanthes flexella (Kutz.) Brun. var. flexella

Achnanthes hungarica (Grun.) Grun. var. hungarica

Achnanthes lanceolata (Bréb.) Grun. var. lanceolata

Achnanthes lanceolata var. dubia Grun.

Achnanthes linearis (W. Sm.) Grun. var. linearis

Achnanthes microcephala (Kutz.) Grun. var. microcephala

Achnanthes minutissima Kützz. var. minutissima

Achnanthes nollii Bock var. nollii

Amphipleura pellucida Kützz. var. pellucida

Amphiprora alata Kützz. var. alata

Amphiprora ornata Bailey var. ornata

Amphiprora paludosa W. Sm. var. paludosa

Amphora coffeaeformis Ag. var. coffeaeformis

Amphora inflata Kützz. var. inflata

Amphora ovalis Kützz. var. ovalis

Amphora ovalis var. lybica (Ehr.) Cl.

Amphora ovalis var. pediculus Kutz.

Amphora submontana Hust. var. submontana

Amphora veneta (Kutz.) Hust. var. veneta

Anomoeoneis follis (Ehr.) Cl. var. follis

Anomoeoneis sphaerophora var. sculpta (Ehr.) O. Mull.

Anomoeoneis sphaerophora (Ehr.) Pfitz. var. sphaerophora

Anomoeoneis vitrea (Grun.) Ross var. vitrea

Asterionella formosa Hass. var. formosa

Asterionella formosa var. gracillima (Hantz.) Grun.

Attneya zachariasi Brun. var. zachariasi

Bacillaria paradoxa Gmelin var. paradoxa

Biddulphia laevis Ehr. var. laevis

Caloneis alpestris (Grun.) Cl. var. alpestris

Caloneis amphisbaena (Bory) Cl. var. amphisbaena

Caloneis bacillaris var. thermalis (Grun.) A.Cl.

Caloneis bacillum (Grun.) Cl. var. bacillum

Caloneis schumanniana var. biconstricta Grun.

Caloneis schumanniana (Grun.) Cl. var. schumanniana

Caloneis ventricosa var. truncatula (Grun.) Mesit.

Capartogramma crucicula (Grun. ex Cl.) Ross var. crucicula

Cocconeis diminuta Pant. var. diminuta

Cocconeis pediculus Ehr. var. pediculus

Cocconeis placentula var. euglypta (Ehr.) Cl.

Cocconeis placentula var. lineata (Ehr.) V.H.

Cocconeis placentula Ehr. var. placentula

Cocconeis scutellum Ehr. var. scutellum

Cocconeis thumensis A. Mayer var. thumensis

Coscinodiscus lacustris Grun. var. lacustris

Coscinodiscus rothii var. subsalsa (Juhl.-Dannf.) Hust.

Cyclotella aliquantula Hohn and Hellerman var. aliquantula

Cyclotella atomus Hust. var. atomus

Cyclotella bodanica Eulenst. var. bodanica

Cyclotella caspia Grun. var. caspia

Cyclotella comta (Ehr.) Kutz. var. comta

Cyclotella crypta Reimann, Lewin and Guillard var. crypta

Cyclotella glomerata Bachmann var. glomerata

Cyclotella Kutzingiana Thwaites var. Kutzingiana

Cyclotella meneghiniana Kutz. var. meneghiniana

Cyclotella michiganiana Skv. var. michiganiana

Cyclotella ocellata Pant. var. ocellata

Cyclotella pseudostelligera Hust. var. pseudostelligera

Cyclotella stelligera Cl. u. Grun. var. stelligera

Cyclotella striata (Kutz.) Grun. var. striata

Cylindrotheca gracilis (Breb.) Grun. var. gracilis

Cymatopleura solea (Breb.) W. Sm. var. solea

Cymbella affinis Kutz. var. affinis

Cymbella aspera (Ehr.) Cl. var. aspera

Cymbella austriaca Grun. var. austriaca

Cymbella cistula (Hemprich) Grun. var. cistula

Cymbella hustedtii Krasske var. hustedtii

Cymbella microcephala Grun. var. microcephala

Cymbella naviculaformis Auersw. var. naviculaformis

Cymbella norwegica Grun. var. norwegica

Cymbella prostrata (Berk.) Cl. var. prostrata

Cymbella sinuata Greg. var. sinuata

Cymbella tumida (Bréb.) V.H. var. tumida

Cymbella turgida (Greg.) Cl. var. turgida

Cymbella ventricosa Kütz. var. ventricosa

Denticula elegans Kütz. var. elegans

Diatoma anceps (Ehr.) Grun. var. anceps

Diatoma hiemale (Roth) Heib. var. hiemale

Diatoma tenue var. elongatum Lyngb.

Diatoma vulgare Bory. var. vulgare

Didymosphenia geminata (Lyngb.) M. Schmidt var. geminata

Diploneis elliptica (Kütz.) Cl. var. elliptica

Diploneis interrupta (Kütz.) Cl. var. interrupta

Diploneis oblongella (Naeg. ex. Kütz.) Ross. var. oblongella

Diploneis smithii (Bréb. ex. Kütz.) Cl. var. smithii

Epithemia sorex Kütz. var. sorex

Epithemia turgida (Ehr.) Kütz. var. turgida

Epithemia zebra (Ehr.) Kütz. var. zebra

Eunotia curvata (Kütz.) Lagerst. var. curvata

Eunotia formica Ehr. var. formica

Eunotia pectinalis var. minor (Kütz.) Rabh.

Eunotia pectinalis (O.F. Müll.?) Rabh. var. pectinalis

Eunotia pectinalis var. undulata (Ralfs.) Rabh.

Eunotia pectinalis var. ventricosa Grun.

Fragilaria brevistriata Grun. var. brevistriata

Fragilaria brevistriata var. inflata (Pant.) Hust.

Fragilaria capucina Desm. var. capucina

Fragilaria construens (Ehr.) Grun. var. construens

Fragilaria construens var. subsalina Hust.

Fragilaria construens var. venter (Ehr.) Grun.

Fragilaria crotonensis Kitton var. crotonensis

Fragilaria intermedia Grun. var. intermedia

Fragilaria leptostauron var. dubia (Grun.) Hust.

Fragilaria leptostauron (Ehr.) Hust. var. leptostauron

Fragilaria pinnata Ehr. var. pinnata

Fragilaria vaucheriae (Kutz.) Peters. var. vaucheriae

Fragilaria virescens Ralfs. var. virescens

Frustulia rhomboides var. amphipleuroides (Grun.) Cl.

Frustulia rhomboides (Ehr.) DeT. var. rhomboides

Frustulia vulgaris (Thwaites) DeT. var. vulgaris

Gomphonema abbreviatum (Ag.) Kutz. var. abbreviatum

Gomphonema acuminatum Ehr. var. acuminatum

Gomphonema acuminatum var. coronata (Ehr.) W.Sm.

Gomphonema acuminatum var. brebissonii (Kutz.) Cl.

Gomphonema angustatum (Kutz.) Rabh. var. angustatum

Gomphonema angustatum var. sarcophagus (Greg.) Grun.

Gomphonema constrictum Ehr. var. constrictum

Gomphonema gracile Ehr. var. gracile

Gomphonema intricatum Kutz. var. intricatum

Gomphonema olivaceum (Lyng.) Kutz. var. olivaceum

Gomphonema parvulum var. micropus (Kutz.) Cl.

Gomphonema parvulum Kütz. var. parvulum

Gomphonema parvulum var. subelliptica Cl.

Gompnonema subtile Ehr. var. subtile

Gyrosigma acuminatum (Kütz.) Rabh. var. acuminatum

Gyrosigma macrum (W.Sm.) Griff & Henfr. var. macrum

Gyrosigma obtusatum (Sulliv. and Wormley) Boyer var. obtusatum

Gyrosigma scalproides (Rabh.) Cl. var. scalproides

Gyrosigma spencerii (Queck.) Griff & Henfr. var. spencerii

Hannaea arcus (Ehr.) Patr. var. arcus

Hantzschia amphioxys (Ehr.) Grun. var. amphioxys

Hantzschia virgata (Roper) Grun. var. virgata

Mastogloia braunii Grun. var. braunii

Mastogloia grevillei W.Sm. var. grevillei

Mastogloia smithii Thwaites ex. W.Smith var. smithii

Melosira ambigua (Grun.) O. Müll. var. ambigua

Melosira distans var. africana Grun.

Melosira distans var. alpigena Grun.

Melosira distans (Ehr.) Kütz. var. distans

Melosira distans var. lirata (Ehr.) Bethge

Melosira distans var. lirata f. lacustris (Grun.) Bethge

Melosira granulata var. angustissima O. Müll.

Melosira granulata (Ehr.) Ralfs. var. granulata

Melosira granulata f. curvata Grun.

Melosira islandica O. Müll. var. islandica

Melosira italica (Ehr.) Kütz. var. italica

Melosira italica var. valida Grun.

Melosira varians Ag. var. varians

Meridion circulare (Grev.) Ag. var. circulare

Microsiphona potamos Weber var. potamos

Navicula accomoda Hust. var. accomoda

Navicula americana Ehr. var. americana

Navicula amphibola Cl. var. amphibola

Navicula bacillum Ehr. bacillum

Navicula biconica Patr. var. biconica

Navicula canalis Patr. var. canalis

Navicula capitata var. hungarica (Grun.) Ross

Navicula confervacea (Kutz.) Grun. var. confervacea

Navicula contenta Grun. var. contenta

Navicula contenta f. biceps Arn.

Navicula contenta f. parrallela Peterson

Navicula cryptocephala Kutz. var. cryptocephala

Navicula cryptocephala var. intermedia Grun.

Navicula cryptocephala var. veneta (Kutz.) Rabh.

Navicula cuspidata var. ambigua (Ehr.) Cl.

Navicula cuspidata (Kutz.) Kutz. var. cuspidata

Navicula cuspidata var. heribaudii Per.

Navicula decussis Østr. var. decussis

Navicula elginensis (Greg.) Ralfs. var. elginensis

Navicula exigua var. capitata Patr.

Navicula exigua Greg. ex. Grun. var. exigua

Navicula gastrum (Ehr.) Kutz. var. gastrum

Navicula halophila (Grun.) Cl. var. halophila

Navicula integra (W.Sm.) Ralfs var. integra

Navicula jaernefeltii Hust. var. jaernefeltii

Navicula lanceolata (Ag.) Kutz. var. lanceolata

Navicula luzonensis Hust. var. luzonensis

Navicula minima Grun. var. minima

Navicula mutica Kutz. var. mutica

Navicula mutica var. stigma Patr.

Navicula mutica var. tropica Hust.

Navicula notha Wallace var. notha

Navicula oblonga (Kutz.) Kutz. var. oblonga

Navicula pelliculosa (Breb. ex. Kutz.) Hilse var. pelliculosa

Navicula peregrina (Ehr.) Kutz. var. peregrina

Navicula pseudoscutiformis Hust. var. pseudoscutiformis

Navicula pupula var. capitata Skv. and Meyer

Navicula pupula Kutz. var. pupula

Navicula pupula var. rectangularis (Greg.) Grun.

Navicula pygmea Kutz. var. pygmea

Navicula radiosa Kutz. var. radiosa

Navicula radiosa (Breb. ex. Kutz.) Grun. var. tenella

Navicula reinhardii (Grun.) Grun. var. reinhardii

Navicula rhynchocephala Kutz. var. rhynchocephala

Navicula scutelloides W.Sm. ex. Greg. var. scutelloides

Navicula seminulum var. hustedtii Patr.

Navicula seminulum Grun. var. seminulum

Navicula tripunctata var. schizonemoides (V.H.) Patr.

Navicula tripunctata (O.F. Mull.) Bory var. tripunctata

Navicula viridula var. avenacea (Bréb. ex. Grun.) V.H.

Navicula viridula (Kütz.) Kütz. emend. V.H. var. viridula

Navicula zanoni Hust. var. zanoni

Neidium affine (Ehr.) Pfitz. var. affine

Neidium binode (Ehr.) Hust. var. binode

Neidium bisculcatum (Lagerst.) Cl. var. bisculcatum

Neidium dubium (Ehr.) Cl. var. dubium

Neidium iridis (Ehr.) Cl. var. iridis

Nitzschia acicularis W.Sm. var. acicularis

Nitzschia amphibia Grun. var. amphibia

Nitzschia angustata (W.Sm.) Grun. var. angustata

Nitzschia apiculata (Greg.) Grun. var. apiculata

Nitzschia bacata Hust. var. bacata

Nitzschia capitellata Hust. var. capitellata

Nitzschia clausii Hantzsch var. clausii

Nitzschia closterium (Ehr.) W.Sm. var. closterium

Nitzschia communis Rabh. var. communis

Nitzschia denticula Grun. var. denticula

Nitzschia dissipata (Kütz.) Grun. var. dissipata

Nitzschia elliptica Hust. var. elliptica

Nitzschia filiformis (W.Sm.) Hust. var. filiformis

Nitzschia fonticola Grun. var. fonticola

Nitzschia frustulum Kütz. var. frustulum

Nitzschia holsatica Hust. var. holsatica

Nitzschia hungarica Grun. var. hungarica

Nitzschia kutzingiana Hilse var. kutzingiana

Nitzschia lacunarum Hust. var. lacunarum

Nitzschia linearis (W.Sm.) var. linearis

Nitzschia linearis var. tenuis (W.Sm.) Grun.

Nitzschia lorenziana Grun. var. lorenziana

Nitzschia microcephala Grun. var. microcephala

Nitzschia palea (Kutz.) W.Sm. var. palea

Nitzschia parvula Levis var. parvula

Nitzschia perminuta Grun. var. perminuta

Nitzschia perpusilla Rabh. var. perpusilla

Nitzschia sigma (Kutz.) W.Sm. var. sigma

Nitzschia sigmoidea (Ehr.) W.Sm. var. sigmoidea

Nitzschia sinuata (W.Sm.) Grun. var. sinuata

Nitzschia stagnorum Rabh. var. stagnorum

Nitzschia subliniaris Hust.var. subliniaris

Nitzschia thermalis Kutz. var. thermalis

Nitzschia triblionella var. victoriae Grun.

Nitzschia vermicularis (Kutz.) Grun. var. vermicularis

Opephora martyi Herib. var. martyi

Pinnularia borealis Ehr. var. borealis

Pinnularia gibba Ehr. var. gibba

Pinnularia viridis (Nitz.) Ehr. var. viridis

Rhizosolenia eriensis H.L. Sm. var. eriensis

Rhizosolenia longiseta Zach. var. longiseta

Rhizosolenia minima Lavender var. minima

Rhoicosphenia curvata (Kutz.) Grun. ex. Rabh. var. curvata

Rhopalodia gibba (Ehr.) O. Mull. var. gibba

Stauroneis anceps Ehr. var. anceps

Stauroneis anceps f. gracilis Rabh.

Stauroneis phoenicentron (Nitz.) Ehr. var. phoenicentron

Stauroneis smithii Grun. var. smithii

Stenopterobia intermedia (Lewis) V.H. var. intermedia

Stephanodiscus alpinus Hust. var. alpinus

Stephanodiscus astrea var. minutula (Kutz.) Grun.

Stephanodiscus binderanus (Kutz.) Round var. binderanus

Stephanodiscus dubius (Fricke) Hust. var. dubius

Stephanodiscus hantzschii Grun. var. hantzschii

Stephanodiscus invisitatus Hohn and Hellerman var. invisitatus

Surirella angustata Kutz. var. angustata

Surirella elegans Ehr. var. elegans

Surirella ovalis Bréb. var. ovalis

Surirella ovata Kutz. var. ovata

Surirella striatula Turp. var. striatula

Synedra actinastroides Lemm. var. actinastroides

Synedra acus Kutz. var. acus

Synedra delicatissima var. angustissima Grun.

Synedra mazamaensis Sov. var. mazamaensis

Synedra nana Meist. var. nana

Synedra parasitica var. subconstricta (Grun.) Hust.

Synedra pulchella var. lanceolata f. constricta Hust.

Synedra pulchella var. minutula Hust.

Synedra pulchella var. naviculacea Grun.

Synedra pulchella Ralf. ex. Kutz. var. pulchella

Synedra radians Kutz. var. radians

Synedra rumpens var. familiaris (Kutz.) Grun.

Synedra rumpens var. fragilarioides Grun.

Synedra rumpens Kutz. var. rumpens

Synedra rumpens var. scotica Grun.

Synedra tabulata (Ag.) Kütz. var. tabulata

Synedra tenera W.Sm. var. tenera

Synedra ulna var. impressa Hust.

Synedra ulna var. oxyrhynchus Kutz.

Synedra ulna var. spathulifera (Grun.) V.H.

Synedra ulna (Nitz.) Ehr. var. ulna

Tabellaria fenestrata (Lyngb.) Kutz. var. fenestrata

Tabellaria flocculosa (Roth) Kutz. var. flocculosa

Thalassiosira fluviatilis Hust. var. fluviatilis

Thalassiosira pseudonana (Hust.) Hasle and Heimdal var. pseudonana

Tropidoneis lepidoptera (Greg.) Cl. var. lepidoptera

APPENDIX B

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Taxon Achnanthes affinis Grun. var. affinis

		References																			Concensus & Notes
		4	19	38	45	46															
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous: optimum over 7 (4).
	Indifferent																				
	Alkaliphilous	X	X	X																	
	Alkalibiontic	X																			
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Indifferent and Euryhalobous
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous					X															
	halophilous																				
	indifferent				X																
	halophobous																				
	Euryhalobous				X	X															
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter		X		X																Winter maximum
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Requires high oxygen concentration (4).

Taxon Achnanthes brevipes Ag. var. brevipes

		References										Concensus & Notes
		3	4	8	10	13	20	26	39	41	46	
pH	Acidobiontic											Alkaliphilous
	Acidophilous											
	Indifferent											
	Alkaliphilous				X	X						
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											Mesohalobous
	Euhalobous						X	X	X			
	Mesohalobous		X	X	X	X	X			X	X	
	alpha range											
	beta range	X										
	Oligohalobous											
	halophilous											
	indifferent											
	halophobous											
	Euryhalobous			X				X			X	
Saprobien	Polysaprobic											
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic											
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											
	Tychoplanktonic											
	Periphytic											
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:

Taxon Achnanthes clevei Grun. var. clevei

		References																		Concensus & Notes
		8	9	10	11	14	20	21	22	26	27	38	39	41	46					
pH	Acidobiontic																			Alkaliphilous: range 6.6-9.0 (8,27).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X			X		X	X	X								
	Alkalibiontic					X				X										
Nutrient	Eutrophic						X	X			X									Eutrophic
	Mesotrophic																			
	Oligotrophic							X												
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous								X											
	halophilous																			
	indifferent	X	X	X	X	X				X			X		X					
	halophobous																			
	Euryhalobous														X					
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous									X										
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous	X			X		X													
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes
	Estuary																			
	Lake						X	X			X	X		X						
	Pond																			
	River											X								
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic	X						X			X			X						
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Achnanthes coarctata (Bréb.) Grun. var. coarctata

		References																		Concensus & Notes
		4	8	10	11	12	13	20	26	38	41									
pH	Acidobiontic																			Indifferent; range 6.7-7.8 (8), optimum less than 6 (4).
	Acidophilous	X		X																
	Indifferent		X		X	X	X		X	X										
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X				X											
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous								X											
	Saprophobic																			
Current	Limnobiontic																			Rheobiontic to Limnophilous
	Limnophilous				X															
	Indifferent																			
	Rheophilous																			
	Rheobiontic		X						X											
General Habitat	Marine																			Aerophilous; often found on soil, rocks and mosses (38).
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous								X	X	X									
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Probably Cosmopolitan (24).

Taxon Achnanthes exigua Grun. var. exigua

		References																		Concensus & Notes
		4	8	11	12	14	19	21	26	27	34	35	38	39	46					
pH	Acidobiontic																			Alkaliphilous; range 6.8-9.0 (8, 21, 27), optimum around 8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X		X	X	X	X	X	X							
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X		X			X		X			X	X					
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic								X											
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X	X																
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes, Rivers, Springs and Streams
	Estuary																			
	Lake												X							
	Pond																			
	River												X							
	Spring and Stream							X					X							
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic							X			X									
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal												X							
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24, 34); euryphotic, occurs frequently in aquarium tanks (38).

Taxon Achnanthes exigua var. heterovalva Krasske

		References																		Concensus & Notes
		8	11	14	21	34	38	46												
pH	Acidobiontic																			Alkaliphilous; range 7.0-8.3 (21).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X													
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent	X	X	X		X		X												
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent	X	X																	
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake				X		X													Lakes, Rivers and Streams
	Pond																			
	River						X													
	Spring and Stream				X		X													
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			Periphytic
	Periphytic				X	X														
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal						X													
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24, 34); euryphotic, occurs frequently in aquarium tanks (38).

Taxon Achnanthes flexella (Kutz.) Brun var. flexella

		References										Concensus & Notes
		4	10	11	12	13	27	35	36	38	39	
pH	Acidobiontic											
	Acidophilous	X	X				X			X		Indifferent to Acidophilous; range 6.0-7.3 (27), optimum around 6 (4).
	Indifferent			X	X	X		X		X		
	Alkaliphilous											
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											
	Euhalobous											Halophobous
	Mesohalobous											
	alpha range											
	beta range											
	Oligohalobous											
	halophilous											
	indifferent											
	halophobous		X							X		
	Euryhalobous											
Saprobien	Polysaprobic											
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic											
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											
	Limnophilous			X								Limnophilous
	Indifferent											
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											
	Estuary											Lakes, Ponds and Bogs
	Lake									X		
	Pond									X		
	River											
	Spring and Stream											
	Aerophilous											
	Other									X		
Specific Habitat	Euplanktonic											
	Tychoplanktonic											
	Periphytic											
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:
Requires high oxygen concentration (4); indifferent to iron and calcium concentrations (36).

Taxon Achnanthes hungarica (Grum.) Grun. var. hungarica

		References								Concensus & Notes
		4	20	21	26	27	38	45	46	
pH	Acidobiontic									Alkaliphilous; range 6.4-8.3 (21, 27), optimum about 8.5 (4).
	Acidophilous									
	Indifferent									
	Alkaliphilous	X		X	X	X	X			
	Alkalibiontic	X								
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									Indifferent
	Euhalobous									
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous			X						
	halophilous									
	indifferent				X			X	X	
	halophobous									
	Euryhalobous								X	
Saprobien	Polysaprobic									Beta-Mesosaprobic
	Mesosaprobic									
	alpha range									
	beta range				X					
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									Limnophilous to Indifferent
	Limnophilous			X						
	Indifferent				X					
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									Lakes and Ponds
	Estuary									
	Lake							X		
	Pond							X		
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									Periphytic
	Tychoplanktonic									
	Periphytic				X					
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									Fall maximum
	Spring									
	Summer									
	Fall							X		
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Cosmopolitan (21, 24); often associated with aquatic plants, especially Lemna (26); can thrive only at oxygen saturation (4).

Taxon Achnanthes lanceolata (Bréb.) Grun. var. lanceolata

		References																		Concensus & Notes
		4	8	9	11	12	13	14	19	21	26	27	34	35	38	39	43	45	46	
pH	Acidobiontic																			
	Acidophilous																			Alkaliphilous; range 4-9 (21, 27, 43), optimum 7.2-7.5 (4).
	Indifferent					X									X					
	Alkaliphilous	X	X	X	X			X	X	X	X	X		X	X		X			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X			X	X		X	X		X			X	X	X	X	
	halophobous																			
	Euryhalobous																	X	X	
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Oligosaprobic
	beta range																			
	Oligosaprobic										X									
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			Rheophilous to Rheobiontic
	Rheophilous								X		X				X					
	Rheobiontic		X		X															
General Habitat	Marine																			
	Estuary																			
	Lake																			Springs and Streams
	Pond																			
	River																			
	Spring and Stream								X	X					X		X			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic								X				X					X		Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																	X		
	unattached																	X		
Seasonal Dist.	Winter																			
	Spring								X									X		Spring and Fall maxima
	Summer																			
	Fall																	X		
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (24, 34); requires high oxygen concentrations (4); calciphilous (36); one of first taxa to colonize new stream (33).

Taxon Achnanthes lanceolata var. dubia Grun.

		References							Concensus & Notes
		8	11	12	13	14	27	38	
pH	Acidobiontic								Alkaliphilous to Indifferent; range 7.0-9.0 (27).
	Acidophilous								
	Indifferent			X	X			X	
	Alkaliphilous	X	X			X	X	X	
	Alkalibiontic								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								Indifferent
	Euhalobous								
	Mesohalobous								
	alpha range								
	beta range								
	Oligohalobous								
	halophilous								
	indifferent	X	X			X			
	halophobous								
	Euryhalobous								
Saprobien	Polysaprobic								
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Saprophobic								
Current	Limnobiontic								
	Limnophilous								Indifferent to Rheophilous
	Indifferent		X	X					
	Rheophilous							X	
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								
	Tychoplanktonic								
	Periphytic								
	epipelic								
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Undesignated								

Geographical distribution and additional comments:
Observed especially in rather well aerated flowing waters and does not seem to appear in large numbers under conditions of heavy organic enrichment (38).

Taxon Achnanthes linearis (W.Sm.) Grun. var. linearis

		References																		Concensus & Notes
		4	8	9	10	12	13	19	26	27	35	38	39							
pH	Acidobiontic																			
	Acidophilous	X																		Indifferent to Alkaliphilous; range 6.0-8.0 (27), optimum 6.5-6.8 (4), or 7.5 (27).
	Indifferent				X	X	X		X		X	X								
	Alkaliphilous		X	X				X		X										
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X								X							
	halophobous								X			X								
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous								X											
	Saprophobic																			
Current	Limnobiontic																			Indifferent to Rheophilous
	Limnophilous																			
	Indifferent		X																	
	Rheophilous							X												
	Rheobiontic																			
General Habitat	Marine																			Aerophilous
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous							X												
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Oligothermal and Stenothermal
	Mesothermal																			
	Oligothermal							X												
	Stenothermal							X												
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Especially abundant in mountainous regions (20); thrives in high oxygen concentrations (4).

Taxon Achnanthes microcephala (Kutz.) Grun. var. microcephala

		References										Concensus & Notes
		4	8	9	10	11	12	13	19	21	38	
pH	Acidobiontic											Indifferent to Alkaliphilous; range 6.5-8.5 (21, 38), optimum 6.4-6.6 (4).
	Acidophilous	X										
	Indifferent				X	X	X	X				
	Alkaliphilous			X							X	
	Alkalibiontic									X		
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											Indifferent
	Euhalobous											
	Mesohalobous											
	alpha range											
	beta range											
	Oligohalobous									X		
	halophilous											
	indifferent		X	X	X	X						
	halophobous											
	Euryhalobous											
Saprobien	Polysaprobic											
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic											
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											Indifferent to Limnophilous
	Limnophilous									X		
	Indifferent			X			X					
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											
	Tychoplanktonic											
	Periphytic											
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:
Cosmopolitan (21); the best indicator of permanent oxygen concentration in weakly acid waters (4).

Taxon Achnanthes minutissima Kutz. var. minutissima

		References																		Concensus & Notes
		2	3	4	7	8	9	10	11	12	13	19	21	26	27	34	35	38	39	43	
pH	Acidobiontic																				Indifferent; range 4.3-9.2 (2, 8, 21 27, 43), optimum 7.5-7.8 (4).
	Acidophilous																				
	Indifferent					X	X	X	X	X	X		X	X	X		X			X	
	Alkaliphilous	X		X														X			
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous												X			X					
	halophilous																				
	indifferent					X	X	X	X					X					X		
	halophobous																			X	
	Euryhalobous																				
Saprobien	Polysaprobic																				Mesosaprobic to Oligosaprobic
	Mesosaprobic		X																		
	alpha range				X																
	beta range				X																
	Oligosaprobic											X		X							
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent					X			X											X	
	Rheophilous											X									
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic															X					
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				Eurythermal
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal												X								
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (24, 34, 39); one of the most ubiquitous diatoms known (39); is the best indicator of high oxygen concentrations in alkaline waters (4); calcium and iron indifferent (36).

Taxon Achnanthes nollii Bock var. nollii

		References	Concensus & Notes
		38	
pH	Acidobiontic		Alkaliphilous?, single record from a relatively hard water alkaline stream
	Acidophilous		
	Indifferent		
	Alkaliphilous	X	
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		Streams
	Lake		
	Pond		
	River		
	Spring and Stream	X	
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Amphipleura pellucida Kütz. var. pellucida

		References											Concensus & Notes
		4	8	9	11	21	26	27	30	34	38	45	46	
pH	Acidobiontic													Alkaliphilous; range 6.2-8.0 (8, 27), optimum about 7.3 (4).
	Acidophilous													
	Indifferent													
	Alkaliphilous	X	X	X	X		X	X						
	Alkalibiontic													
Nutrient	Eutrophic					X								Eutrophic
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Halobion	Polyhalobous													Indifferent
	Euhalobous													
	Mesohalobous													
	alpha range													
	beta range													
	Oligohalobous													
	halophilous													
	indifferent		X	X	X				X			X		
	halophobous						X					X		
	Euryhalobous											X		
Saprobien	Polysaprobic													Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic													
	alpha range													
	beta range							X						
	Oligosaprobic						X		X					
	Saprophilic													
	Saproxenous													
	Saprophobic													
Current	Limnobiontic		X		X									Limnobiontic
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic													
General Habitat	Marine													
	Estuary													
	Lake													
	Pond													
	River													
	Spring and Stream													
	Aerophilous													
	Other													
Specific Habitat	Euplanktonic													Periphytic
	Tychoplanktonic											X		
	Periphytic					X			X			X		
	epipelic													
	epilithic													
	epidendric													
	epizooic													
	epiphytic													
	attached											X		
	unattached											X		
Seasonal Dist.	Winter											X		Winter maximum
	Spring													
	Summer													
	Fall													
Temperature	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Undesignated													

Geographical distribution and additional comments:
Cosmopolitan (34); usually found in fairly hard water (38).

Taxon Amphiprora alata Kutz. var. alata

		References				Concensus & Notes
		4	9	20	46	
pH	Acidobiontic					
	Acidophilous					
	Indifferent					
	Alkaliphilous					
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Mesohalobous
	Euhalobous					
	Mesohalobous		X	X		
	alpha range				X	
	beta range					
	Oligohalobous					
	halophilous					
	indifferent					
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine		X			Marine and Salty Lakes and Ditches
	Estuary				X	
	Lake				X	
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					Periphytic
	Tychoplanktonic					
	Periphytic		X			
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Amphiprora ornata Baily var. ornata

		References			Concensus & Notes
		20	21	26	
pH	Acidobiontic				
	Acidophilous		X		Indifferent to Acidophilous
	Indifferent		X		
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				Halophobous
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent				
	halophobous			X	
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				Saproxenous
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous		X		
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake	X			Lakes, Ponds, Rivers and Ditches
	Pond	X			
	River	X			
	Spring and Stream				
	Aerophilous				
	Other	X			
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic	X			Periphytic
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:

Taxon Amphiprora paludosa W.Sm. var. paludosa

		References								Concensus & Notes
		3	4	9	20	21	29	39	46	
pH	Acidobiontic									
	Acidophilous									Indifferent
	Indifferent					X				
	Alkaliphilous									
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous				X					Mesohalobous
	Mesohalobous		X	X	X	X	X	X		
	alpha range									
	beta range	X								
	Oligohalobous									
	halophilous									
	indifferent									
	halophobous									
	Euryhalobous		X			X				
Saprobien	Polysaprobic									
	Mesosaprobic									Oligosaprobic
	alpha range									
	beta range									
	Oligosaprobic					X				
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									Rivers; near the mouths of coastal rivers.
	Lake									
	Pond									
	River		X							
	Spring and Stream									
	Aerophilous									
	Other		X							
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic									
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Taxon Amphora coffeaeformis Ag. var. coffeaeformis

		References																	Concensus & Notes
		3	4	7	8	9	20	21	26	29	39	46							
pH	Acidobiontic																		
	Acidophilous							X											Alkaliphilous; range 4.5-8.2 (8, 21), optimum over 8 (4).
	Indifferent							X											
	Alkaliphilous		X		X				X										
	Alkalibiontic																		
Nutrient	Eutrophic																		
	Mesotrophic																		
	Oligotrophic																		
	Dystrophic																		
Halobion	Polyhalobous											X							
	Euhalobous								X										Mesohalobous
	Mesohalobous				X	X	X	X		X	X								
	alpha range																		
	beta range	X																	
	Oligohalobous																		
	halophilous																		
	indifferent																		
	halophobous																		
	Euryhalobous							X	X			X							
Saprobien	Polysaprobic																		
	Mesosaprobic																		Alpha-Mesosaprobic
	alpha range			X															
	beta range																		
	Oligosaprobic																		
	Saprophilic																		
	Saproxenous																		
	Saprophobic																		
Current	Limnobiontic																		
	Limnophilous																		
	Indifferent																		
	Rheophilous																		
	Rheobiontic																		
General Habitat	Marine																		
	Estuary																		
	Lake																		
	Pond																		
	River																		
	Spring and Stream																		
	Aerophilous																		
	Other																		
Specific Habitat	Euplanktonic																		
	Tychoplanktonic																		
	Periphytic																		
	epipelic																		
	epilithic																		
	epidendric																		
	epizooic																		
	epiphytic																		
	attached																		
	unattached																		
Seasonal Dist.	Winter																		
	Spring																		
	Summer																		
	Fall																		
Temperature	Euthermal																		
	Mesothermal																		
	Oligothermal																		
	Stenothermal																		
	Metathermal																		
	Eurythermal																		
	Undesignated																		

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Amphora inflata Kutz. var. inflata

		References			Concensus & Notes
		4	26	38	
pH	Acidobiontic				Alkaliphilous; optimum 7.5-8.5 (4).
	Acidophilous				
	Indifferent				
	Alkaliphilous	X	X	X	
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				Indifferent
	Euhalobous				
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent		X	X	
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				Saproxenous
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous		X		
	Saprophobic				
Current	Limnobiontic				Rheophilous
	Limnophilous				
	Indifferent				
	Rheophilous		X		
	Rheobiontic				
General Habitat	Marine				Aerophilous
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous		X		
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
Cosmopolitan (24); thrives at high oxygen concentrations (4).

Taxon Amphora ovalis Kutz. var. ovalis

		References																				Concensus & Notes
		2	7	8	9	10	11	14	19	20	21	26	27	29	30	31	34	36	39	43	46	
pH	Acidobiontic																					Alkaliphilous; range 6.2-9.0 (2, 8, 21, 27), optimum 7-8.5 (36).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous	X		X	X	X	X	X			X	X	X				X	X				
	Alkalibiontic																					
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous										X			X								
	halophilous																					
	indifferent			X	X	X	X	X				X					X		X		X	
	halophobous																			X		
	Euryhalobous			X																		
Saprobien	Polysaprobic																					Oligosaprobic
	Mesosaprobic																					
	alpha range		X																			
	beta range																					
	Oligosaprobic		X									X			X	X						
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Indifferent to Limnophilous
	Limnophilous								X													
	Indifferent			X			X															
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Standing water
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other								X			X										
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																					
	Periphytic									X	X	X					X					
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					
	Spring																					
	Summer																					
	Fall																					
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calciphilous (36).

Taxon Amphora ovalis var. lybica (Ehr.) Cl.

		References									Concensus & Notes
		10	11	12	13	14	29	34	35	45	
pH	Acidobiontic										Alkaliphilous
	Acidophilous										
	Indifferent	X									
	Alkaliphilous		X	X	X	X		X	X		
	Alkalibiontic									X	
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Halobion	Polyhalobous										Indifferent
	Euhalobous										
	Mesohalobous										
	alpha range										
	beta range										
	Oligohalobous										
	halophilous						X				
	indifferent	X				X	X	X			
	halophobous										
	Euryhalobous						X				
Saprobien	Polysaprobic										
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Saprophobic										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										
	Estuary										
	Lake										
	Pond										
	River										
	Spring and Stream										
	Aerophilous										
	Other										
Specific Habitat	Euplanktonic										Periphytic
	Tychoplanktonic										
	Periphytic							X			
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										Fall; weak fall maximum
	Spring										
	Summer										
	Fall									X	
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:

Taxon Amphora ovalis var. pediculus Kutz.

		References																		Concensus & Notes
		7	8	9	10	11	12	13	14	19	21	26	27	29	39	43	46			
pH	Acidobiontic																			Alkaliphilous; range 4.5-9.0 (8, 21, 27).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X	X	X	X	X	X	X		X	X	X							
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous										X			X						
	halophilous																			
	indifferent		X	X	X	X			X			X			X		X			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Mesosaprobic to Oligosaprobic
	Mesosaprobic																			
	alpha range	X																		
	beta range	X																		
	Oligosaprobic											X								
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X			X				X										
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Spring, Stream and Aerophilous
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream											X								
	Aerophilous															X				
	Other																			
Specific Habitat	Euplanktonic																			Periphytic, Epiphytic
	Tychoplanktonic																			
	Periphytic									X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic		X																	
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (24); large growth in highly aerated situations (21).

Taxon Amphora submontana Hust. var. submontana

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous	X	Alkaliphilous; optimum around 7.5 (4).
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Amphora veneta (Kutz.) Hust. var. veneta

		References																			Concensus & Notes
		3	4	8	9	10	12	13	20	26	29	39	46								
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 7.2-7.8 (8), optimum over 8.5 (4).
	Indifferent							X		X											
	Alkaliphilous		X			X	X														
	Alkalibiontic		X	X																	
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous								X												Indifferent and Euryhalobous
	alpha range																				
	beta range																				
	Oligohalobous								X												
	halophilous				X	X															
	indifferent			X						X	X	X	X								
	halophobous																				
	Euryhalobous	X									X		X								
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic			X																	
	Limnophilous																				
	Indifferent									X											Limnobiontic to Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic								X												Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (24); mesooxybiont (26); often found with Epithemia sorex (20).

Taxon Anomoeoneis follis (Ehr.) Cl. var. follis

		References																			Concensus & Notes
		20	21	35																	
pH	Acidobiontic																				
	Acidophilous		X																		Acidophilous to Indifferent
	Indifferent			X																	
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Halophobous
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous		X																		
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Northern alpine form (20); lives in water with humic acid (21).

Taxon Anomoeoneis sphaerophora (Ehr.) Pfitz. var. sphaerophora

		References																		Concensus & Notes
		4	8	9	11	14	20	21	27	34	35	38	39	46						
pH	Acidobiontic																			Alkalibiontic; range 6.4-9.0 (8, 27), optimum above 8.5 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous																			
	Alkalibiontic	X	X	X	X	X			X		X	X								
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Halophilous
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range						X													
	Oligohalobous																			
	halophilous		X	X	X	X		X		X		X	X	X						
	indifferent																			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous		X		X															
	Rheobiontic																			
General Habitat	Marine																			Lakes, Ponds, Streams and Intermittant Pools.
	Estuary																			
	Lake											X								
	Pond											X								
	River																			
	Spring and Stream											X								
	Aerophilous																			
	Other											X								
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic									X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); frequent in polluted water near human dwellings (21).

Taxon Anomoeoneis sphaerophora var. sculpta (Ehr.) O. Müll.

		References																			Concensus & Notes
		4	34	38	46																
pH	Acidobiontic																				Alkalibiontic
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic			X																	
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous	X																			Mesohalobous to Halophilous
	alpha range																				
	beta range				X																
	Oligohalobous																				
	halophilous		X	X																	
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				Lakes, Ponds, Rivers and Pools
	Lake			X																	
	Pond			X																	
	River			X																	
	Spring and Stream																				
	Aerophilous																				
	Other			X																	
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				Periphytic
	Periphytic		X																		
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Anomoeoneis vitrea (Grun.) Ross var. vitrea

		References																		Concensus & Notes
		4	9	10	11	12	13	20	21	26	27	35	36	38	39					
pH	Acidobiontic		X																	Indifferent to Alkalibiontic; range 6.2-9.2 (21, 27), optimum 6.7 (4).
	Acidophilous	X																		
	Indifferent			X	X	X					X									
	Alkaliphilous								X				X	X						
	Alkalibiontic						X			X		X								
Nutrient	Eutrophic								X											Eutrophic to Oligotrophic
	Mesotrophic																			
	Oligotrophic								X											
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous								X	X										
	halophilous																			
	indifferent			X	X										X					
	halophobous		X																	
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous									X										
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent				X															
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic							X	X											
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Probably Cosmopolitan (20); calcium indifferent (36).

Taxon Asterionella formosa Hass. var. formosa

		References																	Concensus & Notes
		4	7	8	9	14	20	26	27	30	31	38	39	41	45	46			
pH	Acidobiontic																		Alkaliphilous; range 4.0-9.0 (8, 27), optimum 7.2-7.8 (4, 45).
	Acidophilous																		
	Indifferent																		
	Alkaliphilous	X		X	X	X		X	X						X				
	Alkalibiontic																		
Nutrient	Eutrophic						X					X							Eutrophic to Mesotrophic
	Mesotrophic											X							
	Oligotrophic																		
	Dystrophic																		
Halobion	Polyhalobous																		Indifferent
	Euhalobous																		
	Mesohalobous																		
	alpha range																		
	beta range																		
	Oligohalobous							X								X			
	halophilous																		
	indifferent			X	X	X							X						
	halophobous																		
	Euryhalobous															X			
Saprobien	Polysaprobic																		Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic																		
	alpha range																		
	beta range		X						X										
	Oligosaprobic		X					X		X	X								
	Saprophilic																		
	Saproxenous																		
	Saprophobic																		
Current	Limnobiontic			X															Limnophilous to Limnobiontic
	Limnophilous							X											
	Indifferent																		
	Rheophilous																		
	Rheobiontic																		
General Habitat	Marine																		
	Estuary																		
	Lake																		
	Pond																		
	River																		
	Spring and Stream																		
	Aerophilous																		
	Other																		
Specific Habitat	Euplanktonic						X			X		X		X	X				Euplanktonic
	Tychoplanktonic																		
	Periphytic																		
	epipelic																		
	epilithic																		
	epidendric																		
	epizooic																		
	epiphytic																		
	attached																		
	unattached																		
Seasonal Dist.	Winter																		Summer maximum
	Spring																		
	Summer														X				
	Fall																		
Temperature	Euthermal																		
	Mesothermal																		
	Oligothermal																		
	Stenothermal																		
	Metathermal																		
	Eurythermal																		
	Undesignated																		

Geographical distribution and additional comments:
Cosmopolitan but seldom observed in tropics (24).

Taxon Asterionella formosa var. gracillima (Hantz.) Grun.

		References																		Concensus & Notes
		9	20	29	38															
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent																			
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous			X																
	halophilous																			
	indifferent	X																		
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic		X																	
	Tychoplanktonic																			Euplanktonic
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			Oligothermal
	Oligothermal				X															
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Attheya zachariasi Brun var. zachariasi

		References		Concensus & Notes
		20	26	
pH	Acidobiontic			Alkaliphilous
	Acidophilous			
	Indifferent			
	Alkaliphilous		X	
	Alkalibiontic			
Nutrient	Eutrophic	X		Eutrophic
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			Oligohalobous
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous		X	
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			Oligosaprobic
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic		X	
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			Lakes, Ponds and Rivers
	Estuary			
	Lake	X		
	Pond	X		
	River	X		
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic	X		Euplanktonic
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			Fall maximum
	Spring			
	Summer			
	Fall	X		
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Bacillaria paradoxa Gmelin var. paradoxa

		References																		Concensus & Notes
		8	14	20	21	26	29	30	31	34	41	46								
pH	Acidobiontic																			Indifferent
	Acidophilous																			
	Indifferent		X			X														
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Mesohalobous and Euryhalobous
	Euhalobous																			
	Mesohalobous	X	X		X	X	X			X	X	X								
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent																			
	halophobous																			
	Euryhalobous	X		X	X	X	X	X		X		X								
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic							X	X											
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic									X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Oligothermal
	Mesothermal																			
	Oligothermal										X									
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Euryoxbiontic (36).

Taxon Biddulphia laevis Ehr. var. laevis

		References		Concensus & Notes
		4	46	
pH	Acidobiontic			Alkaliphilous to Alkalibiontic; optimum over 8.5 (4).
	Acidophilous			
	Indifferent			
	Alkaliphilous	X		
	Alkalibiontic	X		
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			Mesohalobous to Oligohalobous
	Euhalobous			
	Mesohalobous	X		
	alpha range			
	beta range		X	
	Oligohalobous	X		
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Caloneis alpestris (Grun.) Cl. var. alpestris

		References																	Concensus & Notes
		8	11	12	13	20	34	35	36	38									
pH	Acidobiontic																		
	Acidophilous																		Alkaliphilous
	Indifferent																		range 6.4-8.5 (8, 36).
	Alkaliphilous	X	X	X	X			X	X										
	Alkalibiontic								X										
Nutrient	Eutrophic																		
	Mesotrophic									X									Mesotrophic
	Oligotrophic																		
	Dystrophic																		
Halobion	Polyhalobous																		
	Euhalobous																		Halophilous to
	Mesohalobous																		Indifferent
	alpha range																		
	beta range																		
	Oligohalobous																		
	halophilous	X																	
	indifferent		X																
	halophobous																		
	Euryhalobous																		
Saprobien	Polysaprobic																		
	Mesosaprobic																		
	alpha range																		
	beta range																		
	Oligosaprobic																		
	Saprophilic																		
	Saproxenous																		
	Saprophobic																		
Current	Limnobiontic																		
	Limnophilous																		
	Indifferent	X																	Indifferent to
	Rheophilous					X													Rheophilous
	Rheobiontic																		
General Habitat	Marine																		
	Estuary																		
	Lake																		
	Pond																		
	River																		
	Spring and Stream																		
	Aerophilous																		
	Other																		
Specific Habitat	Euplanktonic																		
	Tychoplanktonic																		
	Periphytic						X												Periphytic
	epipelic																		
	epilithic																		
	epidendric																		
	epizooic																		
	epiphytic																		
	attached																		
	unattached																		
Seasonal Dist.	Winter																		
	Spring																		
	Summer																		
	Fall																		
Temperature	Euthermal																		
	Mesothermal																		
	Oligothermal																		
	Stenothermal																		
	Metathermal																		
	Eurythermal																		
	Undesignated																		

Geographical distribution and additional comments:
Likes calcium and cool climates (38).

Taxon Caloneis amphisbaena (Bory) Cl. var. amphisbaena

		References																		Concensus & Notes
		3	4	8	9	20	26	27	31	38	39	45	46							
pH	Acidobiontic																			Alkaliphilous; range 6.4-9.0 (8, 27)
	Acidophilous																			
	Indifferent																			
	Alkaliphilous			X	X		X	X												
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Halophilous
	Euhalobous																			
	Mesohalobous		X								X									
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous	X		X	X	X						X								
	indifferent						X						X							
	halophobous																			
	Euryhalobous									X										
Saprobien	Polysaprobic																			Beta-Mesosaprobic to Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range								X											
	Oligosaprobic						X													
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent			X																
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic											X								
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
In Europe, Asia, Africa, and North America (24).

Taxon: Caloneis bacillaris var. thermalis (Grun.) A.Cl.

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Found in water of high mineral content (38).

Taxon Caloneis bacillum (Grun.) Cl. var. bacillum

		References																			Concensus & Notes
		4	8	9	10	11	12	13	14	19	21	26	27	34	35	38	39	46			
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous;
	Indifferent						X			X											range 4.3-9.0 (8, 21, 27)
	Alkaliphilous	X	X	X	X	X		X	X	X	X	X	X		X	X					optimum 7.5-8 (4, 21)
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Indifferent
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous										X			X							
	halophilous															X					
	indifferent		X	X	X				X			X					X	X			
	halophobous																				
	Euryhalobous																	X			
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				Saproxenous
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous											X									
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				Rheophilous
	Indifferent																				
	Rheophilous		X			X				X											
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake															X					Springs and Streams
	Pond																				"crenophilous"
	River															X					
	Spring and Stream		X								X			X							
	Aerophilous																				
	Other															X					
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic													X							Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); in soft or hard water (38).

Taxon Caloneis schumanniana var. bioconstricta Grun.

		References								Concensus & Notes
		8	9	11	12	14	20	26	38	
pH	Acidobiontic									Alkaliphilous; range 6.7-8.0 (8).
	Acidophilous									
	Indifferent									
	Alkaliphilous	X			X	X				
	Alkalibiontic							X		
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									Indifferent: but also found in brackish water (38).
	Euhalobous									
	Mesohalobous								X	
	alpha range									
	beta range									
	Oligohalobous								X	
	halophilous									
	indifferent	X	X	X				X		
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									Saproxenous
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous							X		
	Saprophobic									
Current	Limnobiontic	X		X						Limnobiontic
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									Lakes and Ponds
	Estuary									
	Lake						X			
	Pond						X			
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									Periphytic
	Tychoplanktonic									
	Periphytic						X			
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Seems to prefer water with a fair amount of calcium (38).

Taxon Caloneis schumanniana (Grun.) Cl. var. schumanniana

		References																		Concensus & Notes
		4	8	9	10	11	12	13	14	20	21	26	29	34	35	38	46			
pH	Acidobiontic																			Alkaliphilous to Alkalibiontic; range 7.2 to over 8 (4, 8), optimum over 8 (4)
	Acidophilous																			
	Indifferent			X																
	Alkaliphilous	X			X		X		X											
	Alkalibiontic		X					X				X			X					
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous															X				
	alpha range																			
	beta range																			
	Oligohalobous										X		X	X						
	halophilous																			
	indifferent		X	X	X	X			X			X					X			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous										X									
	Saprophobic																			
Current	Limnobiontic		X			X														Limnobiontic
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake									X										
	Pond									X										
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic									X				X						
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); seems to prefer water with a fair amount of calcium (38).

Taxon Caloneis ventricosa var. truncatula (Grun.) Meist.

		References										Concensus & Notes
		8	9	10	11	12	21	26	27	38	39	
pH	Acidobiontic											
	Acidophilous											Alkaliphilous; range 6.0-9.0 (27).
	Indifferent											
	Alkaliphilous	X	X	X	X	X	X	X	X			
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											
	Euhalobous											Indifferent
	Mesohalobous											
	alpha range											
	beta range									X		
	Oligohalobous						X			X		
	halophilous											
	indifferent	X	X	X				X			X	
	halophobous											
	Euryhalobous											
Saprobien	Polysaprobic											
	Mesosaprobic											Oligosaprobic
	alpha range											
	beta range											
	Oligosaprobic							X				
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											
	Limnophilous											Indifferent
	Indifferent	X										
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											
	Tychoplanktonic											
	Periphytic						X					Periphytic
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:

Cosmopolitan (21).

Taxon Capartogramma crucicula (Grun. ex Cl.) Ross var. crucicula

		References	Concensus & Notes
		38	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous	X	Mesohalobous?
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River	X	River
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Cocconeis diminuta Pant. var. diminuta

		References									Concensus & Notes
		4	8	9	11	14	20	21	26	27	45	
pH	Acidobiontic											Alkalibiontic; range 6.4-8.3 (8, 27), optimum around 8 (4).
	Acidophilous											
	Indifferent											
	Alkaliphilous	X										
	Alkalibiontic		X	X	X	X			X	X	X	
Nutrient	Eutrophic							X				Eutrophic
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											Indifferent to Halophobous
	Euhalobous											
	Mesohalobous										X	
	alpha range											
	beta range											
	Oligohalobous							X				
	halophilous											
	indifferent		X	X	X							
	halophobous					X			X			
	Euryhalobous											
Saprobien	Polysaprobic											Saproxenous
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic											
	Saprophilic											
	Saproxenous								X			
	Saprophobic											
Current	Limnobiontic											Indifferent
	Limnophilous											
	Indifferent		X		X							
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											Lakes, Ponds and Rivers
	Estuary											
	Lake						X					
	Pond						X					
	River						X					
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											Periphytic, Attached or Unattached
	Tychoplanktonic											
	Periphytic							X			X	
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached										X	
	unattached										X	
Seasonal Dist.	Winter										X	Winter maximum
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:
Probably Cosmopolitan (21).

Taxon Cocconeis pediculus Ehr. var. pediculus

		References																			Concensus & Notes
		4	7	8	9	10	11	14	19	20	21	26	27	29	30	36	38	39	43	46	
pH	Acidobiontic																				Alkaliphilous; range 4.7-9.0 (27), optimum 7-9 (27), 8.5 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X		X	X	X	X	X					X			X		X			
	Alkalibiontic	X																			
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent; but apparently tolerates some salt.
	Euhalobous																				
	Mesohalobous	X								X		X									
	alpha range																				
	beta range																				
	Oligohalobous																				
	nalophilous																		X	X	X
	indifferent			X	X	X		X				X		X	X	X	X	X			
	halophobous																				
	Euryhalobous													X					X		
Saprobien	Polysaprobic																				Saproxenous to Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range		X												X						
	Oligosaprobic														X						
	Saprophilic																				
	Saproxenous											X									
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent				X		X												X		
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Epiphytic
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic		X							X							X				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (24, 26); calcium indifferent (36).

Taxon Cocconeis placentula var. euglypta (Ehr.) Cl.

	References																	Concensus & Notes
		8	9	12	13	14	19	20	21	26	27	34	38	39	45			
pH	Acidobiontic																	
	Acidophilous																	Alkaliphilous; range 6.2-9.0 (8, 27).
	Indifferent				X													
	Alkaliphilous	X	X	X	X	X	X			X	X		X					
	Alkalibiontic														X			
Nutrient	Eutrophic																	
	Mesotrophic																	
	Oligotrophic																	
	Dystrophic																	
Halobion	Polyhalobous																	
	Euhalobous																	Indifferent
	Mesohalobous																	
	alpha range																	
	beta range																	
	Oligohalobous																	
	halophilous																	
	indifferent	X	X			X			X	X		X	X	X				
	halophobous																	
	Euryhalobous																	
Saprobien	Polysaprobic																	
	Mesosaprobic																	
	alpha range																	Oligosaprobic
	beta range																	
	Oligosaprobic									X								
	Saprophilic																	
	Saproxenous																	
	Saprophobic																	
Current	Limnobiontic																	
	Limnophilous																	
	Indifferent	X							X									Indifferent to Rheophilous
	Rheophilous						X											
	Rheobiontic																	
General Habitat	Marine																	
	Estuary																	
	Lake																	
	Pond																	
	River																	
	Spring and Stream																	
	Aerophilous																	
	Other																	
Specific Habitat	Euplanktonic																	
	Tychoplanktonic																	
	Periphytic						X	X	X			X						Periphytic and Epiphytic
	epipelic																	
	epilithic																	
	epidendric																	
	epizooic																	
	epiphytic												X		X			
	attached																	
	unattached																	
Seasonal Dist.	Winter																	
	Spring														X			Fall maximum
	Summer																	
	Fall						X								X			
Temperature	Euthermal							X										Euthermal
	Mesothermal																	
	Oligothermal																	
	Stenothermal																	
	Metathermal																	
	Eurythermal																	
	Undesignated																	

Geographical distribution and additional comments:

Cosmopolitan (21, 24).

Taxon Cocconeis placentula var. lineata (Ehr.) V.H.

		References										Concensus & Notes
		10	11	13	14	19	20	21	26	27	34	38
pH	Acidobiontic											Alkaliphilous; range 4.7-9.0 (27), most frequent 7-9 (27).
	Acidophilous											
	Indifferent											
	Alkaliphilous	X	X		X	X			X	X		X
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											Indifferent
	Euhalobous											
	Mesohalobous											
	alpha range											
	beta range											
	Oligohalobous											
	halophilous											
	indifferent	X	X	X				X	X		X	X
	halophobous											
	Euryhalobous											
Saprobien	Polysaprobic											Oligosaprobic
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic								X			
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											Indifferent to Rheophilous
	Limnophilous											
	Indifferent			X					X			
	Rheophilous						X					
	Rheobiontic											
General Habitat	Marine											
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											Periphytic
	Tychoplanktonic											
	Periphytic						X	X	X			X
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											Fall maximum
	Spring											
	Summer											
	Fall						X					
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:

Cosmopolitan (21).

Taxon Cocconeis placentula Ehr. var. placentula

		References																		Concensus & Notes
		4	7	8	9	10	11	14	19	20	21	26	27	34	35	38	39	43	45	46	
pH	Acidobiontic																				Alkaliphilous; range 4.7-9.0 (8, 27), optimum around 8 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X		X	X	X	X	X	X			X	X		X	X		X			
	Alkalibiontic																		X		
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																			X	
	halophilous																				
	indifferent			X	X	X	X	X			X	X	X			X	X	X			
	halophobous																				
	Euryhalobous			X																X	
Saprobien	Polysaprobic																				Saprophobic to Alpha-Mesosaprobic
	Mesosaprobic																				
	alpha range		X																		
	beta range																				
	Oligosaprobic								X			X									
	Saprophilic																				
	Saproxenous																				
	Saprophobic		X																		
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent			X			X				X							X			
	Rheophilous								X												
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic and Epiphytic
	Tychoplanktonic																				
	Periphytic								X	X	X			X							
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic															X			X		
	attached																				
	unattached																				
Seasonal Dist.	Winter																				Fall maximum
	Spring																		X		
	Summer																				
	Fall								X										X		
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36).

Taxon Cocconeis scutellum Ehr. var. scutellum

		References								Concensus & Notes
		4	8	10	13	14	21	26	39	
pH	Acidobiontic									Alkaliphilous
	Acidophilous									
	Indifferent									
	Alkaliphilous					X				
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous			X	X	X	X	X	X	Euhalobous
	Mesohalobous	X					X			
	alpha range									
	beta range									
	Oligohalobous									
	halophilous									
	indifferent									
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine							X		Marine
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									Periphytic
	Periphytic						X			
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Cosmopolitan (21).

Taxon Cocconeis thumensis A.Mayer var. thumensis

		References																		Concensus & Notes
		4	10	11	14	26														
pH	Acidobiontic																			Alkaliphilous to Alkalibiontic; optimum around 8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X		X																
	Alkalibiontic				X	X														
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Halophobous to Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent			X																
	halophobous				X	X														
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous					X														
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous		X																	
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Coscinodiscus lacustris Grun. var. lacustris

		References							Concensus & Notes
		4	20	22	23	26	41	46	
pH	Acidobiontic								Indifferent to Alkaliphilous
	Acidophilous								
	Indifferent					X			
	Alkaliphilous					X			
	Alkalibiontic								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								Euryhalobous, Beta-Mesohalobous to Halophilous
	Euhalobous								
	Mesohalobous								
	alpha range								
	beta range			X		X			
	Oligohalobous								
	halophilous		X				X		
	indifferent								
	halophobous								
	Euryhalobous			X	X			X	
Saprobien	Polysaprobic								
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Saprophobic								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								Periphytic to Tychoplanktonic
	Tychoplanktonic		X						
	Periphytic		X	X					
	epipelic								
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Undesignated								

Geographical distribution and additional comments:
Cosmopolitan (21, 23); mesooxybiontic (26).

Taxon Coscinodiscus rothii var. subsalsa (Juhl.-Dannf.) Hust.

		References 22	23	24	Concensus & Notes
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				
	Mesohalobous				Halophilous and Euryhalobous
	alpha range				
	beta range				
	Oligohalobous				
	halophilous	X	X		
	indifferent				
	halophobous				
	Euryhalobous		X		
Saprobien	Polysaprobic				
	Mesosaprobic		X		Mesosaprobic
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
Cosmopolitan (23, 24).

Taxon Cyclotella aliquantula Hohn and Hellerman var. aliquantula

		References	Concensus & Notes
		18	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		Rivers
	Lake		
	Pond		
	River	X	
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Cyclotella atomus Hust. var. atomus

		References 18	26	Concensus & Notes
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			Halophilous
	alpha range			
	beta range			
	Oligohalobous			
	halophilous		X	
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			River
	Lake			
	Pond			
	River	X		
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Cyclotella bodanica Eulenst. var. bodanica

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous	X	Acidophilous; optimum under 7 (4).
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Cyclotella caspia Grun. var. caspia

		References	Concensus & Notes
		22	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous	X	Mesohalobous and Euryhalobous
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous	X	
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Cyclotella comta (Ehr.) Kutz. var. comta

		References																			Concensus & Notes
		6	8	9	10	11	12	13	14	20	21	24	26	27	29	31	35	39	41	46	
pH	Acidobiontic																				Alkaliphilous
	Acidophilous																				
	Indifferent				X		X		X												
	Alkaliphilous		X	X		X		X					X	X			X				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous												X		X					X	
	halophilous																				
	indifferent		X	X	X	X			X									X			
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Saproxenous to Alpha-Mesosaprobic
	Mesosaprobic																				
	alpha range	X																			
	beta range	X																			
	Oligosaprobic															X					
	Saprophilic																				
	Saproxenous												X								
	Saprophobic																				
Current	Limnobiontic																				Limnophilous to Indifferent
	Limnophilous		X			X															
	Indifferent									X											
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes; prefers subalpine lakes (24).
	Estuary																				
	Lake											X									
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic				X					X	X								X		Euplanktonic
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (10, 21, 24).

Taxon Cyclotella crypta Reimann, Lewin and Guillard var. crypta

		References	Concensus & Notes
		42	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous	X	Mesohalobous
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Cyclotella glomerata Bachmann var. glomerata

		References 4	20	34	Concensus & Notes
pH	Acidobiontic				
	Acidophilous	X			Acidophilous; optimum less than 7 (4).
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent				
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic		X	X	
	Tychoplanktonic				
	Periphytic				Euplanktonic
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:

Taxon Cyclotella kützingiana Thwaites var. kutzingiana

		References																		Concensus & Notes
		4	6	8	10	11	12	13	14	20	26	31	35	39						
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent			X	X		X	X	X				X							Indifferent; range 6.4-8.0 (8), optimum about 8 (4).
	Alkaliphilous	X				X														
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range																			
	Oligohalobous										X									
	halophilous																			
	indifferent			X	X	X	X		X					X						
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Saprophobic to Beta-Mesosaprobic
	beta range		X																	
	Oligosaprobic		X									X								
	Saprophilic		X																	
	Saproxenous		X								X									
	Saprophobic		X																	
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent			X		X				X										Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Cyclotella meneghiniana Kutz. var. meneghiniana

		References																			Concensus & Notes
		3	4	6	8	9	11	20	24	26	27	29	30	31	34	36	39	41	43	45	46	
pH	Acidobiontic																					Alkaliphilous; range 6.4-9.0 (8, 27, 43), optimum 8-8.5 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous		X		X	X	X			X	X								X			
	Alkalibiontic																					
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Halophilous
	Euhalobous																					
	Mesohalobous		X																			
	alpha range																					
	beta range																					
	Oligohalobous															X					X	
	halophilous	X			X	X	X	X	X	X		X					X		X			
	indifferent																					
	halophobous																					
	Euryhalobous																				X	
Saprobien	Polysaprobic																				X	Alpha-Mesosaprobic
	Mesosaprobic								X												X	
	alpha range			X									X							X		
	beta range			X																		
	Oligosaprobic													X	X							
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent				X		X	X											X			
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic		X								X											Periphytic, Tychoplanktonic and Euplanktonic
	Tychoplanktonic							X							X							
	Periphytic							X							X							
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Fall maximum
	Spring																					
	Summer																					
	Fall																	X				
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:

Cosmopolitan (21, 24); euryoxybiontic (26); a facultative nitrogen heterotroph (4); calcium indifferent (36).

Taxon Cyclotella michiganiana Skv. var. michiganiana

		References	Concensus & Notes
		48	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic	X	Oligotrophic
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic	X	
	Tychoplanktonic		
	Periphytic		Euplanktonic
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Cyclotella ocellata Pant. var. ocellata

		References																			Concensus & Notes
		4	8	12	14	20															
pH	Acidobiontic																				Indifferent to Alkaliphilous; range 6.7-8.8 (4, 8), optimum 8.4-8.8 (4).
	Acidophilous																				
	Indifferent		X		X																
	Alkaliphilous	X		X																	
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent				X																
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic		X																		Limnobiontic
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic					X															
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Europe, Asia and Africa (24).

Taxon Cyclotella pseudostelligera Hust. var. pseudostelligera

		References																		Concensus & Notes
		11	13	14	21	26														
pH	Acidobiontic																			Indifferent
	Acidophilous																			
	Indifferent		X	X		X														
	Alkaliphilous	X																		
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent	X		X	X															
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic					X														
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous	X																		
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Cyclotella stelligera Cl. u. Grun. var. stelligera

		References											Concensus & Notes
		4	8	11	12	14	20	26	34	35	39	45	
pH	Acidobiontic												
	Acidophilous												Indifferent to Alkaliphilous; optimum 7.5-8 (4, 45).
	Indifferent				X	X		X		X			
	Alkaliphilous	X										X	
	Alkalibiontic												
Nutrient	Eutrophic	X											Eutrophic
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
Halobion	Polyhalobous												Indifferent
	Euhalobous												
	Mesohalobous												
	alpha range												
	beta range												
	Oligohalobous							X	X				
	halophilous												
	indifferent		X	X		X					X	X	
	halophobous												
	Euryhalobous											X	
Saprobien	Polysaprobic												
	Mesosaprobic												Saprophobic
	alpha range												
	beta range												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Saprophobic							X					
Current	Limnobiontic		X	X									Limnobiontic
	Limnophilous												
	Indifferent												
	Rheophilous												
	Rheobiontic												
General Habitat	Marine												
	Estuary												
	Lake												
	Pond												
	River												
	Spring and Stream												
	Aerophilous												
	Other												
Specific Habitat	Euplanktonic												
	Tychoplanktonic								X				Periphytic to Tychoplanktonic
	Periphytic							X	X				
	epipelic												
	epilithic												
	epidendric												
	epizooic												
	epiphytic												
	attached												
	unattached												
Seasonal Dist.	Winter												
	Spring												Fall maximum
	Summer												
	Fall											X	
Temperature	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Undesignated												

Geographical distribution and additional comments:

Cosmopolitan (21, 24).

Taxon Cyclotella striata (Kütz) Grun. var. striata

		4	8	9	13	20	26														Concensus & Notes
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous to Indifferent; range 6.8 8.0 (8).
	Indifferent						X														
	Alkaliphilous		X																		
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous				X	X															Mesohalobous
	Mesohalobous	X	X	X		X															
	alpha range																				
	beta range						X														
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous		X																		
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Cylindrotheca gracilis (Bréb.) Grun. var. gracilis

		References																			Concensus & Notes
		4	5	12	20	26	46														
pH	Acidobiontic																				Indifferent to Alkaliphilous
	Acidophilous																				
	Indifferent					X															
	Alkaliphilous			X																	
	Alkalibiontic																				
Nutrient	Eutrophic	X																			Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Mesohalobous to Halophilous and Euryhalobous (see comment below)
	Euhalobous																				
	Mesohalobous	X				X	X														
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous			X	X																
	indifferent																				
	halophobous																				
	Euryhalobous					X	X														
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Shallow Pools
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other		X																		
Specific Habitat	Euplanktonic	X																			Euplanktonic or Periphytic
	Tychoplanktonic																				
	Periphytic		X																		
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Oligooxybiontic (26); nitrogen heterotroph (4); total conductivity, concentration of sulfates, magnesium, calcium or some intercombination of same may be more critical to growth and distribution of this diatom than the chloride or sodium ions (5).

Taxon Cymatopleura solea (Bréb.) W.Sm. var. solea

		References																			Concensus & Notes
		2	3	4	7	8	9	11	13	14	21	26	27	29	30	31	35	39	43	45	46	
pH	Acidobiontic																					Alkaliphilous; range 5.4-9.0 (8, 27), optimum somewhat over 8 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous			X		X	X	X	X	X		X	X				X			X		
	Alkalibiontic																					
Nutrient	Eutrophic	X																				Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous										X											
	halophilous																					
	indifferent					X	X	X		X		X						X		X	X	
	halophobous																					
	Euryhalobous													X							X	
Saprobien	Polysaprobic																					Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic																					
	alpha range				X																	
	beta range				X															X		
	Oligosaprobic		X									X			X	X						
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent					X		X											X			
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																		X			
	Periphytic										X				X				X			
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Fall maximum
	Spring																					
	Summer																					
	Fall																			X		
Temperature	Euthermal																					Oligothermal
	Mesothermal																					
	Oligothermal			X																		
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36).

Taxon Cymbella affinis Kutz. var. affinis

	References	1	4	8	9	10	11	12	13	14	20	21	26	27	35	39						Concensus & Notes
pH	Acidobiontic																					Alkaliphilous to Alkalibiontic; range 4.3-9.0 (8, 26, 27) optimum 7.8-8.5 (4, 26).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous		X			X		X	X	X			X		X							
	Alkalibiontic			X	X		X							X								
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous											X										
	halophilous																					
	indifferent			X	X	X	X			X			X		X							
	halophobous																					
	Euryhalobous																					
Saprobien	Polysaprobic																					Saprophobic to Oligosaprobic
	Mesosaprobic																					
	alpha range																					
	beta range																					
	Oligosaprobic												X									
	Saprophilic																					
	Saproxenous																					
	Saprophobic	X											X									
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent			X			X					X	X									
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic																					
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Summer form
	Spring																					
	Summer	X																				
	Fall																					
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); best development in warmer lands (20).

Taxon Cymbella aspera (Ehr.) Cl. var. aspera

		References																			Concensus & Notes
		2	4	8	9	10	11	12	14	21	26	27	29	35	36						
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 6.3-9.0 (2, 8, 21, 27), optimum 7-8.5 (4, 36).
	Indifferent	X								X											
	Alkaliphilous	X	X	X	X	X	X	X	X		X	X		X	X						
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Indifferent
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous									X											
	halophilous																				
	indifferent			X	X	X	X		X		X		X								
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				Oligosaprobic
	beta range																				
	Oligosaprobic										X										
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent			X			X														Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic									X											Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring	X																			Spring form
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal	X																			Mesothermal and Methathermal
	Oligothermal																				
	Stenothermal																				
	Metathermal	X																			
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21); oxygen saturation is optimal (4); calcium indifferent (36).

Taxon Cymbella austriaca Grun. var. austriaca

		References			Concensus & Notes
		4	11	13	
pH	Acidobiontic				
	Acidophilous	X			Acidophilous to Indifferent; optimum less than 6 (4).
	Indifferent			X	
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				Indifferent
	Euhalobous				
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent		X		
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous		X		Limnophilous
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
In alpine water (20).

Taxon Cymbella cistula (Hemprich) Grun. var. cistula

		References																		Concensus & Notes
		4	8	9	11	12	13	14	19	21	26	31	35	36	39	41	46			
pH	Acidobiontic																			Alkaliphilous; range 4.3-8.6 (4, 8, 36), optimum around 8 (4).
	Acidophilous																			
	Indifferent					X														
	Alkaliphilous	X	X	X	X		X	X		X	X		X	X						
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X										
	halophilous																			
	indifferent		X	X	X			X			X				X		X			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic										X	X								
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic								X											Limnophilous to Limnobiontic
	Limnophilous		X		X															
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes
	Estuary																			
	Lake															X				
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic										X									
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); oxygen saturation is optimal (4).

Taxon Cymbella hustedtii Krasske var. hustedtii

		References 11	14	Concensus & Notes
pH	Acidobiontic			Indifferent
	Acidophilous			
	Indifferent	X	X	
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			Indifferent
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent	X	X	
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			Limnophilous
	Limnophilous		X	
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Cymbella microcephala Grun. var. microcephala

		References																		Concensus & Notes
		4	7	8	9	10	11	12	13	14	21	26	27	29	30	34	35	36	39	
pH	Acidobiontic																			Alkaliphilous; range 4.3-9.0 (8, 13, 27), optimum around 7.2 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X		X	X	X	X	X	X	X	X		X		X	X	X			
	Alkalibiontic																	X		
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous										X			X		X				
	halophilous																			
	indifferent		X		X	X	X			X								X		
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range		X																	
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent			X			X													
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic														X					
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); oxygen saturation is optimal (4); calcium indifferent (36).

Taxon Cymbella naviculiformis Auersw. var. naviculiformis

		References																	Concensus & Notes
		4	8	9	10	11	12	13	14	21	26	27	29	34	35	36	45		
pH	Acidobiontic																		
	Acidophilous															X			Indifferent; range 6.0-9.0 (8, 21, 27, 36), optimum 7.5-8.0 (4).
	Indifferent		X		X	X	X	X	X	X	X	X			X				
	Alkaliphilous	X		X										X			X		
	Alkalibiontic																		
Nutrient	Eutrophic																		
	Mesotrophic																		
	Oligotrophic																		
	Dystrophic																		
Halobion	Polyhalobous																		
	Euhalobous																		
	Mesohalobous																		Indifferent
	alpha range																		
	beta range																		
	Oligohalobous									X			X	X					
	nalophilous																		
	indifferent		X	X	X	X			X		X						X		
	halophobous																		
	Euryhalobous																		
Saprobien	Polysaprobic																		
	Mesosaprobic																		
	alpha range																		Oligosaprobic
	beta range																		
	Oligosaprobic										X								
	Saprophilic																		
	Saproxenous																		
	Saprophobic																		
Current	Limnobiontic																		
	Limnophilous																		
	Indifferent		X			X				X									Indifferent
	Rheophilous																		
	Rheobiontic																		
General Habitat	Marine																		
	Estuary																		
	Lake																		
	Pond																		
	River																		
	Spring and Stream																		
	Aerophilous																		
	Other																		
Specific Habitat	Euplanktonic																		
	Tychoplanktonic																		
	Periphytic													X					Periphytic
	epipelic																		
	epilithic																		
	epidendric																		
	epizooic																		
	epiphytic																		
	attached																		
	unattached																		
Seasonal Dist.	Winter																		
	Spring																		Weak Fall maximum
	Summer																		
	Fall																X		
Temperature	Euthermal																		
	Mesothermal																		
	Oligothermal																		
	Stenothermal																		
	Metathermal																		
	Eurythermal																		
	Undesignated																		

Geographical distribution and additional comments:

Cosmopolitan (21, 24); calcium indifferent (36); oxygen saturation is optimal (4).

Taxon Cymbella norwegica Grun. var. norwegica

		References				Concensus & Notes
		4	10	12	36	
pH	Acidobiontic					Indifferent; range 7.0-8.5 (36).
	Acidophilous	X				
	Indifferent		X	X		
	Alkaliphilous				X	
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Indifferent
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous					
	halophilous					
	indifferent		X			
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
Boreal form (10); northern alpine form (20).

Taxon Cymbella prostrata (Berk.) Cl. var. prostrata

		References																		Concensus & Notes
		1	4	8	9	11	12	14	20	26	27	29	31	35	36	39	46			
pH	Acidobiontic																			Alkaliphilous; range 4.0-9.0 (8, 27), optimum 7-8.5 (4, 36).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X	X	X	X	X	X		X	X			X	X					
	Alkalibiontic																			
Nutrient	Eutrophic										X									Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range								X											
	Oligohalobous								X											
	halophilous											X								
	indifferent			X	X	X		X		X		X				X	X			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic	X									X			X						
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous				X		X													
	Rheobiontic																			
General Habitat	Marine																			Lakes
	Estuary																			
	Lake											X								
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic											X								
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			Summer form
	Spring																			
	Summer		X																	
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Oxygen saturation is optimal (4); calcium indifferent (36).

Taxon Cymbella sinuata Greg. var. sinuata

		References																			Concensus & Notes
		4	8	11	12	13	14	21	26	29	39	43	46								
pH	Acidobiontic																				Indifferent; range 5.5-8.2 (8, 21, 43), optimum around 8 (4).
	Acidophilous																				
	Indifferent		X	X	X	X	X	X				X									
	Alkaliphilous	X																			
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous							X		X											
	halophilous																				
	indifferent		X	X			X		X		X	X									
	halophobous											X									
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic		X	X																	Limnobiontic
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic							X													
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				Eurythermal and Oligothermal to Mesothermal
	Mesothermal											X									
	Oligothermal											X									
	Stenothermal																				
	Metathermal																				
	Eurythermal											X									
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Cymbella tumida (Brëb.) V.H. var. tumida

		References								Concensus & Notes
		1	8	11	13	21	26	27	29	41	
pH	Acidobiontic										Alkaliphilous to Alkalibiontic; range 6.5-9.0 (8, 21, 27).
	Acidophilous										
	Indifferent										
	Alkaliphilous				X	X	X				
	Alkalibiontic		X	X				X			
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Halobion	Polyhalobous										Indifferent to Halophobous
	Euhalobous										
	Mesohalobous										
	alpha range										
	beta range										
	Oligohalobous					X			X		
	halophilous										
	indifferent		X	X							
	halophobous				X		X				
	Euryhalobous										
Saprobien	Polysaprobic										Oligosaprobic to Saproxenous
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic		X								
	Saprophilic										
	Saproxenous						X				
	Saprophobic										
Current	Limnobiontic										Indifferent
	Limnophilous										
	Indifferent			X	X			X			
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										Lakes or Streams
	Estuary										
	Lake									X	
	Pond										
	River										
	Spring and Stream						X				
	Aerophilous										
	Other										
Specific Habitat	Euplanktonic										Periphytic
	Tychoplanktonic										
	Periphytic						X				
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										Summer form
	Spring										
	Summer		X								
	Fall										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments;

Cosmopolitan (21, 24).

Taxon Cymbella turgida (Greg.) Cl. var. turgida

		References																		Concensus & Notes
		4	8	10	11	12	13	14	21	26	27	34	35	46						
pH	Acidobiontic																			Alkaliphilous; range 6.2-8.5 (8, 21, 27), optimum somewhat under 7.5 (4).
	Acidophilous																			
	Indifferent		X	X		X					X									
	Alkaliphilous	X		X		X	X	X	X	X		X	X							
	Alkalibiontic				X															
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous											X								
	halophilous																			
	indifferent		X	X	X			X		X				X						
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic									X										
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic		X		X															Limnobiontic
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic								X			X								
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); oxygen saturation is optimal (4).

Taxon Cymbella ventricosa Kutz. var. ventricosa

		References																				Concensus & Notes
		1	3	4	7	8	10	11	14	19	26	27	29	31	34	35	36	39	43	45	46	
pH	Acidobiontic																					Indifferent; range 5.3-8.5 (19, 27, 43), optimum 7.7-7.8 (4).
	Acidophilous																					
	Indifferent				X	X	X	X	X	X	X	X				X			X			
	Alkaliphilous			X													X					
	Alkalibiontic																					
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous									X					X							
	halophilous					X	X	X	X		X		X						X		X	X
	indifferent																			X		
	halophobous																				X	X
	Euryhalobous					X							X									
Saprobien	Polysaprobic																					Oligosaprobic to Mesosaprobic
	Mesosaprobic																					
	alpha range				X																X	
	beta range				X																X	
	Oligosaprobic	X	X											X								
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Rheophilous to Indifferent
	Limnophilous																					
	Indifferent										X									X		
	Rheophilous					X		X														
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																					
	Periphytic										X					X				X		
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Summer and Fall form
	Spring																					
	Summer		X																			
	Fall																				X	
Temperature	Euthermal																					Eurythermal and Oligothermal to Mesothermal
	Mesothermal																			X		
	Oligothermal																			X		
	Stenothermal																					
	Metathermal																					
	Eurythermal																			X		
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesooxybiontic (26); oxygen saturaiton is optimal (4).

Taxon Denticula elegans Kutz. var. elegans

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous	X	Alkaliphilous; optimum around 8 (4).
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Diatoma anceps (Ehr.) Grun. var. anceps

		References						Concensus & Notes
		4	20	26	38	43	45	
pH	Acidobiontic							Alkaliphilous?
	Acidophilous	X						
	Indifferent							
	Alkaliphilous						X	
	Alkalibiontic			X				
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Halobion	Polyhalobous							Halophobous to Indifferent
	Euhalobous							
	Mesohalobous							
	alpha range							
	beta range							
	Oligohalobous							
	halophilous							
	indifferent						X	
	halophobous			X				
	Euryhalobous							
Saprobien	Polysaprobic							Saproxenous
	Mesosaprobic							
	alpha range							
	beta range							
	Oligosaprobic							
	Saprophilic							
	Saproxenous			X				
	Saprophobic							
Current	Limnobiontic							Rheophilous to Rheobiontic
	Limnophilous							
	Indifferent							
	Rheophilous					X		
	Rheobiontic			X				
General Habitat	Marine							
	Estuary							
	Lake							
	Pond							
	River							
	Spring and Stream							
	Aerophilous							
	Other							
Specific Habitat	Euplanktonic							Periphytic or Tychoplanktonic
	Tychoplanktonic					X		
	Periphytic					X		
	epipelic							
	epilithic							
	epidendric							
	epizooic							
	epiphytic							
	attached							
	unattached							
Seasonal Dist.	Winter							Fall maximum
	Spring							
	Summer							
	Fall						X	
Temperature	Euthermal							Oligothermal
	Mesothermal							
	Oligothermal				X			
	Stenothermal							
	Metathermal							
	Eurythermal							
	Undesignated							

Geographical distribution and additional comments:

Often found in mountainous regions (38).

Taxon Diatoma hiemale (Roth) Heib. var. heimale

		References						Concensus & Notes
		4	12	13	26	38	43	
pH	Acidobiontic							
	Acidophilous	X						
	Indifferent							
	Alkaliphilous		X				X	Alkaliphilous to Alkalibiontic; range 6.3-8.2 (43), optimum less than 7 (4).
	Alkalibiontic			X	X			
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Halobion	Polyhalobous							
	Euhalobous							
	Mesohalobous							Halophobous
	alpha range							
	beta range							
	Oligohalobous					X		
	halophilous							
	indifferent							
	halophobous			X	X			
	Euryhalobous							
Saprobien	Polysaprobic							
	Mesosaprobic							
	alpha range							Saproxenous
	beta range							
	Oligosaprobic							
	Saprophilic							
	Saproxenous				X			
	Saprophobic							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Marine							
	Estuary							
	Lake							
	Pond							
	River							
	Spring and Stream							
	Aerophilous							
	Other							
Specific Habitat	Euplanktonic							
	Tychoplanktonic							
	Periphytic							
	epipelic							
	epilithic							
	epidendric							
	epizooic							
	epiphytic							
	attached							
	unattached							
Seasonal Dist.	Winter							
	Spring							
	Summer							
	Fall							
Temperature	Euthermal							
	Mesothermal							
	Oligothermal				X	X		Stenothermal and Oligothermal
	Stenothermal					X		
	Metathermal							
	Eurythermal							
	Undesignated							

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Diatoma tenue var. elongatum Lyngb.

		References																		Concensus & Notes
		4	7	8	9	10	11	12	14	24	26	30	38	39	45	46				
pH	Acidobiontic																			Alkaliphilous to Indifferent; range 6.4-8.3 (8), optimum 7.4-7.8 (4).
	Acidophilous																			
	Indifferent			X			X				X				X					
	Alkaliphilous	X			X	X		X	X											
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Halophilous
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range												X							
	Oligohalobous												X							
	halophilous			X	X	X	X		X		X			X	X	X				
	indifferent																			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range											X			X					
	Oligosaprobic		X									X								
	Saprophilic																			
	Saproxenous																			
	Saprophobic		X																	
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent			X			X													
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Bogs
	Estuary																			
	Lake			X																
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other			X																
Specific Habitat	Euplanktonic									X										Euplanktonic to Periphytic
	Tychoplanktonic														X					
	Periphytic														X					
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Probably Cosmopolitan but seldom seen in the tropics (24); mesooxybiontic (26).

Taxon Diatoma vulgare Bory. var. vulgare

		References																		Concensus & Notes
		1	4	7	8	9	11	12	13	19	20	26	27	29	31	38	39	43	46	
pH	Acidobiontic																			Alkalibiontic to Alkaliphilous; range 6.4-8.3 (8, 27, 43), optimum about 8.2 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous			X				X		X								X		
	Alkalibiontic				X	X	X		X			X	X							
Nutrient	Eutrophic		X													X				Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent				X	X	X					X					X	X	X	
	halophobous													X						
	Euryhalobous																			
Saprobien	Polysaprobic																			Beta-Mesosaprobic to Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range			X						X					X					
	Oligosaprobic	X		X																
	Saprophilic																			
	Saproxenous											X								
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous				X		X			X	X	X				X		X		
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic and Epiphytic
	Tychoplanktonic																			
	Periphytic												X							
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic												X							
	attached																			
	unattached																			
Seasonal Dist.	Winter	X																		Winter dominant
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal and Oligothermal to Mesothermal
	Mesothermal																	X		
	Oligothermal															X		X		
	Stenothermal																			
	Metathermal																			
	Eurythermal																	X		
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan but seldom observed in the tropics (24); in summer dominant on Cladophora in large eutrophic lakes, and in winter on other substrata in the surf zone (27).

Taxon Didymosphenia geminata (Lyngb.) M. Schmidt var. geminata

		References	Concensus & Notes
		15	
pH	Acidobiontic		
	Acidophilous		Indifferent; optimum 6.5-7.4 (15).
	Indifferent	X	
	Alkaliphilous		
	Alkalibiontic		
Nutrients	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Diploneis elliptica (Kutz.) Cl. var. elliptica

		References												Concensus & Notes
		4	8	9	10	11	12	13	20	21	26	29	38	39	
pH	Acidobiontic														Indifferent to Alkaliphilous; range 6.4-8.2 (8), optimum around 8 (4).
	Acidophilous														
	Indifferent		X	X	X	X	X								
	Alkaliphilous	X						X			X				
	Alkalibiontic														
Nutrient	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Halobion	Polyhalobous														Indifferent
	Euhalobous														
	Mesohalobous														
	alpha range														
	beta range												X		
	Oligohalobous												X		
	halophilous														
	indifferent		X	X	X	X				X	X	X		X	
	halophobous														
	Euryhalobous														
Saprobien	Polysaprobic														Saproxenous
	Mesosaprobic														
	alpha range														
	beta range														
	Oligosaprobic														
	Saprophilic														
	Saproxenous										X				
	Saprophobic														
Current	Limnobiontic														Limnophilous
	Limnophilous		X			X					X				
	Indifferent														
	Rheophilous														
	Rheobiontic														
General Habitat	Marine														
	Estuary														
	Lake														
	Pond														
	River														
	Spring and Stream														
	Aerophilous														
	Other														
Specific Habitat	Euplanktonic														Periphytic; deep water form (20, 21).
	Tychoplanktonic														
	Periphytic								X	X					
	epipelic														
	epilithic														
	epidendric														
	epizooic														
	epiphytic														
	attached														
	unattached														
Seasonal Dist.	Winter														
	Spring														
	Summer														
	Fall														
Temperature	Euthermal														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Undesignated														

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Diploneis interrupta (Kutz.) Cl. var. interrupta

		References													Concensus & Notes
		3	4	8	9	10	11	12	13	26	38	39	41	46	
pH	Acidobiontic														Alkaliphilous; range 6.8-7.9 (8).
	Acidophilous														
	Indifferent														
	Alkaliphilous			X		X		X							
	Alkalibiontic														
Nutrient	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Halobion	Polyhalobous														Mesohalobous
	Euhalobous														
	Mesohalobous		X	X	X	X	X	X	X	X	X	X	X		
	alpha range														
	beta range	X												X	
	Oligohalobous														
	halophilous														
	indifferent														
	halophobous														
	Euryhalobous									X					
Saprobien	Polysaprobic														
	Mesosaprobic														
	alpha range														
	beta range														
	Oligosaprobic														
	Saprophilic														
	Saproxenous														
	Saprophobic														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous														
	Rheobiontic														
General Habitat	Marine														
	Estuary									X					Coastal form
	Lake														
	Pond														
	River														
	Spring and Stream														
	Aerophilous														
	Other														
Specific Habitat	Euplanktonic														
	Tychoplanktonic														
	Periphytic														
	epipelic														
	epilithic														
	epidendric														
	epizooic														
	epiphytic														
	attached														
	unattached														
Seasonal Dist.	Winter														
	Spring														
	Summer														
	Fall														
Temperature	Euthermal														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Undesignated														

Geographical distribution and additional comments:

Taxon Diploneis oblongella (Naeg. ex. Kütz.) Ross var. oblongella

		References																		Concensus & Notes
		4	8	9	10	12	13	14	16	19	26	34	35	38	46					
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent				X	X				X										Alkaliphilous; optimum over 8 (4).
	Alkaliphilous	X	X	X			X	X		X	X		X							
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range													X						
	Oligohalobous													X	X					
	halophilous																			
	indifferent		X	X	X			X			X	X								
	halophobous																			
	Euryhalobous													X						
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Saproxenous
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous										X									
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent		X						X											Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			Aerophilous
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous													X						
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic											X								Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan but seldom in tropics (24); calcium indifferent (36).

Taxon Diploneis smithii (Bréb. ex. W. Sm.) Cl. var. smithii

		References						Concensus & Notes
		4	20	27	34	38	46	
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Halobion	Polyhalobous							
	Euhalobous	X	X	X			X	Mesohalobous to Euhalobous and Euryhalobous
	Mesohalobous	X	X		X	X		
	alpha range							
	beta range							
	Oligohalobous							
	halophilous							
	indifferent							
	halophobous							
	Euryhalobous			X	X		X	
Saprobien	Polysaprobic							
	Mesosaprobic							
	alpha range							
	beta range							
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Saprophobic							
Current	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
General Habitat	Marine							
	Estuary							
	Lake							
	Pond							
	River							
	Spring and Stream							
	Aerophilous							
	Other							
Specific Habitat	Euplanktonic							
	Tychoplanktonic							Periphytic
	Periphytic				X			
	epipelic							
	epilithic							
	epidendric							
	epizooic							
	epiphytic							
	attached							
	unattached							
Seasonal Dist.	Winter							
	Spring							
	Summer							
	Fall							
Temperature	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Undesignated							

Geographical distribution and additional comments:

Taxon Epithemia sorex Kütz. var. sorex

		References																			Concensus & Notes
		4	7	8	9	10	11	12	13	14	20	21	26	27	29	31	34	35	39	46	
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 4.7-9.0 (8, 21, 27), optimum 8.3-8.5 (4).
	Indifferent																				
	Alkaliphilous	X		X	X	X	X	X	X	X				X				X			
	Alkalibiontic											X	X								
Nutrient	Eutrophic	X																			Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous	X									X										
	alpha range																				
	beta range																				
	Oligohalobous										X										
	halophilous											X			X		X				
	indifferent			X	X	X	X			X		X	X				X		X	X	
	halophobous																				
	Euryhalobous			X																X	
Saprobien	Polysaprobic																				Saproxenous to Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range		X																		
	Oligosaprobic															X					
	Saprophilic																				
	Saproxenous												X								
	Saprophobic																				
Current	Limnobiontic			X																	Limnobiontic to Rheophilous
	Limnophilous																				
	Indifferent																				
	Rheophilous						X														
	Rheobiontic																				
General Habitat	Marine																				Aerophilous
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous	X										X									
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic										X	X					X				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Epithemia turgida (Ehr.) Kütz. var. turgida

		References																			Concensus & Notes
		4	7	8	9	10	11	12	13	14	20	21	26	27	29	30	31	34	35	36	39	
pH	Acidobiontic																					Alkaliphilous to Alkalibiontic; range 4.6-9.0 (8, 27) optimum around 8.2 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous	X		X	X	X	X	X				X		X				X	X			
	Alkalibiontic								X	X		X	X							X		
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range										X											
	Oligohalobous										X											
	halophilous																					
	indifferent			X	X	X	X			X			X		X			X			X	
	halophobous																					
	Euryhalobous														X							
Saprobien	Polysaprobic																					Saproxenous to Beta-Mesosaprobic
	Mesosaprobic																					
	alpha range																					
	beta range		X																			
	Oligosaprobic															X	X					
	Saprophilic																					
	Saproxenous												X									
	Saprophobic																					
Current	Limnobiontic																					Limnophilous
	Limnophilous			X			X															
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																					
	Periphytic											X						X				
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					
	Spring																					
	Summer																					
	Fall																					
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calciphilous (36).

Taxon Epithemia zebra (Ehr.) Kutz. var. zebra

		References																			Concensus & Notes
		2	4	7	8	9	10	11	13	14	21	26	27	29	31	34	35	39	46		
pH	Acidobiontic																				Alkaliphilous to Alkalibiontic; range 4.7-9.0 (2, 8, 21, 27), optimum 8.2-8.5 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X	X		X	X	X	X					X								
	Alkalibiontic								X	X	X	X					X				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous										X			X							
	halophilous																				
	indifferent				X	X	X	X		X		X				X		X	X		
	halophobous																				
	Euryhalobous																		X		
Saprobien	Polysaprobic																				Saproxenous to Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range			X																	
	Oligosaprobic														X						
	Saprophilic																				
	Saproxenous											X									
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent				X																
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic															X					
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal	X																			Eurythermal and Mesothermal to Euthermal
	Mesothermal	X																			
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal	X									X										
	Undesignated																				

Geographical distribution and additional comments:

Cosmopolitan (5, 20).

Taxon Eunotia curvata (Kütz.) Lagerst. var. curvata

	References	2	4	8	9	10	11	12	14	21	26	27	35	38	39	45	Concensus & Notes
pH	Acidobiontic																
	Acidophilous		X	X			X			X		X		X		X	Acidophilous to Indifferent; range 4.0-9.0 (2, 8, 27), optimum 5.5-6.0 (4).
	Indifferent	X			X	X		X	X		X		X				
	Alkaliphilous																
	Alkalibiontic																
Nutrient	Eutrophic											X					Eutrophic to Oligotrophic
	Mesotrophic																
	Oligotrophic											X					
	Dystrophic																
Halobion	Polyhalobous																Indifferent to Halophobous
	Euhalobous																
	Mesohalobous																
	alpha range																
	beta range																
	Oligohalobous									X							
	halophilous																
	indifferent				X	X			X		X						
	halophobous			X			X								X		
	Euryhalobous																
Saprobien	Polysaprobic																Oligosaprobic
	Mesosaprobic																
	alpha range																
	beta range																
	Oligosaprobic										X						
	Saprophilic																
	Saproxenous																
	Saprophobic																
Current	Limnobiontic																Indifferent
	Limnophilous																
	Indifferent			X			X										
	Rheophilous																
	Rheobiontic																
General Habitat	Marine																Springs, Streams, Rivers, Ponds and Lakes
	Estuary																
	Lake											X					
	Pond											X		X			
	River													X			
	Spring and Stream									X				X			
	Aerophilous																
	Other																
Specific Habitat	Euplanktonic																Tychoplanktonic or Periphytic, attached or unattached
	Tychoplanktonic															X	
	Periphytic															X	
	epipelic																
	epilithic																
	epidendric																
	epizooic																
	epiphytic																
	attached															X	
	unattached															X	
Seasonal Dist.	Winter																
	Spring																
	Summer																
	Fall																
Temperature	Euthermal																
	Mesothermal																
	Oligothermal																
	Stenothermal																
	Metathermal																
	Eurythermal																
	Undesignated																

Geographical distribution and additional comments:
Cosmopolitan (21, 24); widely distributed in water of low mineral content (38); calcium indifferent (36).

Taxon Eunotia formica Ehr. var. formica

		References								Concensus & Notes
		4	8	21	24	26	27	35	38	
pH	Acidobiontic									
	Acidophilous	X							X	Indifferent;
	Indifferent		X	X	X	X	X	X	X	range 6-7.6 (8, 26, 27),
	Alkaliphilous									optimum less than 6 (4).
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									Halophobous
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous			X						
	halophilous									
	indifferent									
	halophobous		X							
	Euryhalobous									
Saprobien	Polysaprobic									
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic		X							
	Limnophilous									
	Indifferent									Limnobiontic
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic			X						Periphytic
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Probably Cosmopolitan (21).

Taxon Eunotia pectinalis var. minor (Kutz.) Rabh.

		References									Concensus & Notes
		9	10	11	12	13	21	26	29	34	38	
pH	Acidobiontic											Indifferent to Acidophilous
	Acidophilous	X		X				X				
	Indifferent		X		X	X					X	
	Alkaliphilous											
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											Halophobous
	Euhalobous											
	Mesohalobous											
	alpha range											
	beta range											
	Oligohalobous						X			X		
	halophilous											
	indifferent		X									
	halophobous	X		X				X	X			
	Euryhalobous											
Saprobien	Polysaprobic											Oligosaprobic
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic							X				
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											Indifferent
	Limnophilous											
	Indifferent			X								
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											Aerophilous
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous									X		
	Other											
Specific Habitat	Euplanktonic											Periphytic
	Tychoplanktonic											
	Periphytic									X		
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:
Cosmopolitan (21); tolerates more calcium than many species of Eunotia (38).

Taxon Eunotia pectinalis (O.F. Müll.?) Rabh. var. pectinalis

		References																		Concensus & Notes
		4	7	8	9	10	11	12	13	21	26	27	35	38	39					
pH	Acidobiontic																			
	Acidophilous	X		X	X		X				X	X	X							Acidophilous; range 5.0-8.0 (8, 27), optimum around 6.5 (4).
	Indifferent					X		X	X											
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic													X						
	Mesotrophic																			Oligotrophic to Eutrophic
	Oligotrophic											X		X						
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Halophobous
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X	X									
	halophilous																			
	indifferent					X														
	halophobous			X	X		X				X			X						
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range		X																	Oligosaprobic to Alpha-Mesosaprobic
	beta range																			
	Oligosaprobic										X									
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent			X			X													Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (21, 24); prefers water of low mineral content (38); most commonly found in the cooler regions or in the northern or central parts of the United States (38).

Taxon Eunotia pectinalis var. undulata (Ralfs) Rabh.

		References				Concensus & Notes
		21	26	27	38	
pH	Acidobiontic					Acidophilous to Indifferent; range 5.7-7.9 (27).
	Acidophilous			X		
	Indifferent				X	
	Alkaliphilous					
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Halophobous
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous	X				
	halophilous					
	indifferent					
	halophobous		X			
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
Cosmopolitan (21); water of low mineral content (38).

Taxon Eunotia pectinalis var. ventricosa Grun.

		References						Concensus & Notes
		8	11	21	26	27	34	
pH	Acidobiontic							
	Acidophilous	X	X		X	X		Acidophilous; range 6.2-7.3 (27).
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Halobion	Polyhalobous							
	Euhalobous							
	Mesohalobous							Halophobous
	alpha range							
	beta range							
	Oligohalobous			X		X		
	halophilous							
	indifferent							
	halophobous	X	X		X			
	Euryhalobous							
Saprobien	Polysaprobic							
	Mesosaprobic							
	alpha range							Oligosaprobic
	beta range							
	Oligosaprobic				X			
	Saprophilic							
	Saproxenous							
	Saprophobic							
Current	Limnobiontic							
	Limnophilous							
	Indifferent	X	X					Indifferent
	Rheophilous							
	Rheobiontic							
General Habitat	Marine							
	Estuary							
	Lake							
	Pond							
	River							
	Spring and Stream							
	Aerophilous							
	Other							
Specific Habitat	Euplanktonic							
	Tychoplanktonic							
	Periphytic					X		Periphytic
	epipelic							
	epilithic							
	epidendric							
	epizooic							
	epiphytic							
	attached							
	unattached							
Seasonal Dist.	Winter							
	Spring							
	Summer							
	Fall							
Temperature	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Undesignated							

Geographical distribution and additional comments:
Cosmopolitan (21); often found with the nominate variety (38).

Taxon Fragilaria brevistriata Grun. var. brevistriata

		References																		Concensus & Notes
		4	8	9	10	11	12	14	20	21	26	27	29	35	38	39				
pH	Acidobiontic																			Alkaliphilous; range 6.5-9.0 (8, 27), optimum 7.5-7.8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X	X			X	X		X						
	Alkalibiontic																			
Nutrient	Eutrophic											X								Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous														X					
	halophilous												X							
	indifferent		X	X	X	X		X		X	X					X				
	halophobous																			
	Euryhalobous		X																	
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic										X									
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X			X														
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake											X								
	Pond											X								
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic								X	X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); in a wide range of conductivity (38).

Taxon Fragilaria brevistriata var. inflata (Pant.) Hust.

		References			Concensus & Notes
		12	27	38	
pH	Acidobiontic				
	Acidophilous				Alkaliphilous; range 7.4-9.0 (27).
	Indifferent				
	Alkaliphilous	X	X	X	
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent				
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
Seems to prefer water of fairly high conductivity (38).

Taxon Fragilaria capucina Desm. var. capucina

		References																			Concensus & Notes
		4	7	8	9	10	11	12	13	20	21	26	27	29	30	38	39	43	45	46	
pH	Acidobiontic																				Alkaliphilous; range 6.2-9.0 (27) optimum 6.8 (45), 7.4-7.8 (4).
	Acidophilous																		X		
	Indifferent																				
	Alkaliphilous	X		X	X	X	X	X	X			X	X			X		X			
	Alkalibiontic																				
Nutrient	Eutrophic									X	X		X								Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent			X	X	X	X					X				X		X	X	X	
	halophobous													X			X				
	Euryhalobous																				
Saprobien	Polysaprobic																				Oligosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic		X									X			X						
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent			X			X											X			
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes and Ponds
	Estuary																				
	Lake												X								
	Pond												X								
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic and Tychoplanktonic
	Tychoplanktonic									X	X										
	Periphytic									X	X										
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				Spring maximum
	Spring																		X		
	Summer																				
	Fall																				
Temperature	Euthermal																				Eurythermal and Oligothermal to Mesothermal
	Mesothermal																	X			
	Oligothermal																	X			
	Stenothermal																				
	Metathermal																				
	Eurythermal																	X			
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21); calcium indifferent (36).

Taxon Fragilaria construens (Ehr.) Grun. var. construens

		References																			Concensus & Notes
		4	7	8	9	10	11	12	13	21	26	27	29	31	34	35	38	39	43	45	46	
pH	Acidobiontic																					Alkaliphilous; range 6.0-9.0 (8, 27); optimum 7.7-7.8 (4), 6.7 (45).
	Acidophilous																			X		
	Indifferent																					
	Alkaliphilous	X		X	X	X	X	X	X		X	X				X	X		X			
	Alkalibiontic																					
Nutrient	Eutrophic									X		X										Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous									X					X						X	
	halophilous																					
	indifferent			X	X	X	X				X		X				X	X	X			
	halophobous																					
	Euryhalobous			X						X			X								X	
Saprobien	Polysaprobic																					Oligosaprobic to Alpha-Mesosaprobic
	Mesosaprobic																					
	alpha range		X																			
	beta range																					
	Oligosaprobic										X			X								
	Saprophilic																					
	Saproxenous																					
	Saprophobic		X																			
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent			X			X															
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Lakes, Ponds, Springs and Streams
	Estuary																					
	Lake											X										
	Pond											X										
	River																					
	Spring and Stream																		X			
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic and Tychoplanktonic
	Tychoplanktonic														X		X					
	Periphytic									X		X			X		X					
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Fall maximum
	Spring																					
	Summer																					
	Fall																			X		
Temperature	Euthermal																					Eurythermal and Oligothermal to Mesothermal
	Mesothermal																		X			
	Oligothermal																		X			
	Stenothermal																					
	Metathermal																					
	Eurythermal																		X			
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); an indicator of oxygenated waters (4), calcium indifferent (36).

Taxon Fragilaria construens var. subsalina Hust.

		References																			Concensus & Notes
		9	12	14	26	34	41	45	46												
pH	Acidobiontic																				Alkaliphilous
	Acidophilous																				
	Indifferent																				
	Alkaliphilous		X	X				X													
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Halophilous
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous	X			X	X	X		X												
	indifferent			X																	
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic					X															Periphytic or Tychoplanktonic
	Periphytic					X															
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Fragilaria construens var. venter (Ehr.) Grun.

		References																			Concensus & Notes
		7	8	9	10	11	14	21	26	27	34	35	38	39							
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 6.0-9.0 (8, 27).
	Indifferent																				
	Alkaliphilous		X	X	X	X	X		X	X		X									
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic												X								Oligotrophic to Mesotrophic
	Oligotrophic												X								
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Indifferent
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous							X			X										
	halophilous																				
	indifferent		X	X		X	X		X					X							
	halophobous																				
	Euryhalobous							X													
Saprobien	Polysaprobic																				
	Mesosaprobic																				Mesosaprobic to Saprophobic
	alpha range									X											
	beta range									X											
	Oligosaprobic								X												
	Saprophilic																				
	Saproxenous																				
	Saprophobic									X											
Current	Limnobiontic		X			X															Limnobiontic
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				Spring form
	Lake																				
	Pond																				
	River																				
	Spring and Stream							X													
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic										X										Tychoplanktonic or Periphytic
	Periphytic										X										
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Fragilaria crotonensis Kitton var. crotonensis

		References																		Concensus & Notes
		4	8	9	10	11	12	13	14	20	26	27	29	30	38	41				
pH	Acidobiontic																			Alkaliphilous; range 6.8-8.3 (8, 27), optimum around 8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X	X	X		X	X								
	Alkalibiontic																			
Nutrient	Eutrophic									X										Eutrophic to Mesotrophic
	Mesotrophic														X					
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X	X			X				X		X					
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range													X						
	Oligosaprobic										X			X						
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X			X				X										
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic				X										X	X				Euplanktonic
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Europe, Asia, Africa and America (24).

Taxon Fragilaria intermedia Grun. var. intermedia

		References																		Concensus & Notes
		4	9	13	20	21	26	29	36	43	46									
pH	Acidobiontic																			Alkaliphilous; range 6.9-8.2 (43), optimum probably over 8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X			X			X										
	Alkalibiontic								X											
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous					X														
	halophilous																			
	indifferent		X				X	X			X									
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic				X															
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal and Oligothermal to Mesothermal
	Mesothermal									X										
	Oligothermal									X										
	Stenothermal																			
	Metathermal																			
	Eurythermal									X										
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); characteristic of oxygen rich water (4).

Taxon Fragilaria leptostauron var. dubia (Grun.) Hust.

		References	Concensus & Notes
		9	
pH	Acidobiontic		Indifferent
	Acidophilous		
	Indifferent	X	
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		Indifferent
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent	X	
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Fragilaria leptostauron (Ehr.) Hust. var. leptostauron

		References							Concensus & Notes
		4	9	11	26	38	39	46	
pH	Acidobiontic								Alkaliphilous to Indifferent; optimum probably around 8 (4).
	Acidophilous								
	Indifferent		X						
	Alkaliphilous	X			X				
	Alkalibiontic								
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								Indifferent to Halophobous
	Euhalobous								
	Mesohalobous								
	alpha range								
	beta range								
	Oligohalobous					X			
	halophilous								
	indifferent		X	X				X	
	halophobous				X		X		
	Euryhalobous								
Saprobien	Polysaprobic								Oligosaprobic
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic				X				
	Saprophilic								
	Saproxenous								
	Saprophobic								
Current	Limnobiontic								Limnophilous
	Limnophilous			X					
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								Epipelic
	Tychoplanktonic								
	Periphytic								
	epipelic					X			
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Undesignated								

Geographical distribution and additional comments:

Lives in oxygen rich water (4).

Taxon Fragilaria pinnata Ehr. var. pinnata

		References																	Concensus & Notes
		4	7	8	9	10	11	12	13	14	19	20	21	26	27	34	35	38	39	46	
pH	Acidobiontic																				Alkaliphilous; range 5.7-9.0 (8, 27), optimum 7.6-7.8 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X		X	X	X	X	X	X	X				X	X		X				
	Alkalibiontic																				
Nutrient	Eutrophic												X		X						Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																	X			
	halophilous																				
	indifferent			X	X	X	X			X			X	X		X			X	X	
	halophobous																				
	Euryhalobous																			X	
Saprobien	Polysaprobic																				Beta-Mesosaprobic to Oligosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range		X																		
	Oligosaprobic													X							
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic										X										Indifferent to Limnobiontic
	Limnophilous																				
	Indifferent			X			X														
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes and Ponds
	Estuary																				
	Lake														X						
	Pond														X						
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic															X					
	Periphytic											X	X			X					
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); thrives optimally only in oxygen rich water (4).

Taxon Fragilaria vaucheriae (Kütz.) Peters. var. vaucheriae

		References																		Concensus & Notes
		8	10	11	12	13	14	21	27	29	30	31	34	35	38	39	46			
pH	Acidobiontic																			
	Acidophilous							X												Alkaliphilous; range 5.0-9.0 (8, 27), optimum 6.5-9.0 (27).
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X		X					X						
	Alkalibiontic																			
Nutrient	Eutrophic								X											Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous							X		X					X					
	halophilous																			
	indifferent	X	X	X			X									X	X			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic												X							
	alpha range																			
	beta range											X								
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent to Rheophilous
	Limnophilous																			
	Indifferent	X		X																
	Rheophilous							X												
	Rheobiontic																			
General Habitat	Marine																			Springs and Streams; may prefer flowing, well aerated water (21).
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream							X												
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic							X	X		X									
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic										X									
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Oligothermal
	Mesothermal																			
	Oligothermal														X					
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Fragilaria virescens Ralfs var. virescens

		References										Concensus & Notes
		4	10	11	13	20	26	29	35	38	45	46	
pH	Acidobiontic												Indifferent; optimum 6.4-6.8 (4).
	Acidophilous	X											
	Indifferent		X	X	X		X		X				
	Alkaliphilous												
	Alkalibiontic												
Nutrient	Eutrophic												
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
Halobion	Polyhalobous												Indifferent to Halophobous
	Euhalobous												
	Mesohalobous												
	alpha range												
	beta range												
	Oligohalobous									X			
	halophilous												
	indifferent		X	X							X		
	halophobous						X	X				X	
	Euryhalobous												
Saprobien	Polysaprobic												Oligosaprobic
	Mesosaprobic												
	alpha range												
	beta range												
	Oligosaprobic						X						
	Saprophilic												
	Saproxenous												
	Saprophobic												
Current	Limnobiontic												Indifferent
	Limnophilous												
	Indifferent			X									
	Rheophilous												
	Rheobiontic												
General Habitat	Marine												Streams and Ditches
	Estuary												
	Lake												
	Pond												
	River												
	Spring and Stream					X							
	Aerophilous												
	Other					X							
Specific Habitat	Euplanktonic												
	Tychoplanktonic												
	Periphytic												
	epipelic												
	epilithic												
	epidendric												
	epizooic												
	epiphytic												
	attached												
	unattached												
Seasonal Dist.	Winter												Spring and Fall form
	Spring										X		
	Summer												
	Fall										X		
Temperature	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Undesignated												

Geographical distribution and additional comments:
From oxygen rich water (4); alpine form (20).

Taxon Frustulia rhomboides var. amphipleuroides (Grun.) Cl.

		References																			Concensus & Notes
		22	26	38																	
pH	Acidobiontic																				
	Acidophilous		X	X																	Acidophilous to Indifferent
	Indifferent		X																		
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Halophobous
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous	X	X																		
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				Saproxenous
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous		X																		
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Frequent in northern Europe (20); from water of low mineral content (38).

Taxon Frustulia rhomboides (Ehr.) DeT. var. rhomboides

		References									Concensus & Notes
		4	9	13	20	21	26	27	35	38	
pH	Acidobiontic										
	Acidophilous	X	X	X				X	X	X	Acidophilous; range 4.5-8.2 (21, 27, 38), optimum around 6 (4).
	Indifferent					X	X				
	Alkaliphilous										
	Alkalibiontic										
Nutrient	Eutrophic										
	Mesotrophic										Oligotrophic to Dystrophic
	Oligotrophic							X			
	Dystrophic							X			
Halobion	Polyhalobous										
	Euhalobous										Indifferent to Halophobous
	Mesohalobous										
	alpha range										
	beta range										
	Oligohalobous										
	halophilous										
	indifferent					X	X				
	halophobous			X							
	Euryhalobous										
Saprobien	Polysaprobic										
	Mesosaprobic										Saproxenous
	alpha range										
	beta range										
	Oligosaprobic										
	Saprophilic										
	Saproxenous						X				
	Saprophobic										
Current	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										
	Estuary										
	Lake									X	Bogs, Lakes and Streams
	Pond										
	River										
	Spring and Stream					X					
	Aerophilous										
	Other				X					X	
Specific Habitat	Euplanktonic										
	Tychoplanktonic										Periphytic
	Periphytic					X					
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										
	Spring										
	Summer										
	Fall										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Frustulia vulgaris (Thwaites) DeT. var. vulgaris

		References																		Concensus & Notes
		4	8	9	10	11	12	20	21	26	29	34	38	43	45	46				
pH	Acidobiontic																			
	Acidophilous																			Alkaliphilous; range 6.3-8.2 (8, 43, 45), optimum 7.5-8 (4).
	Indifferent						X						X							
	Alkaliphilous	X	X	X	X	X				X				X	X					
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X	X			X	X		X		X	X	X				
	halophobous										X									
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			Oligosaprobic
	alpha range																			
	beta range																			
	Oligosaprobic									X										
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent		X			X			X					X						Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic											X								Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring														X					Spring maximum
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal													X						Eurythermal and Oligothermal to Mesothermal
	Oligothermal													X						
	Stenothermal																			
	Metathermal																			
	Eurythermal													X						
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); usually found in water of low mineral content (38).

Taxon Gomphonema abbreviatum (Ag.) Kutz. var. abbreviatum

		References																			Concensus & Notes
		4	20																		
pH	Acidobiontic																				Alkaliphilous; optimum 7.5-8.2 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X																			
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				Indifferent
	Indifferent		X																		
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Gomphonema acuminatum Ehr. var. acuminatum

		References																			Concensus & Notes
		2	4	8	9	10	11	12	13	14	21	26	27	29	30	31	35	39			
pH	Acidobiontic																				Alkaliphilous; range 5.4-9.0 (2, 8, 27), optimum around 8 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X	X	X	X	X	X	X	X	X	X	X	X				X				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous										X			X							
	halophilous																				
	indifferent			X	X	X	X			X		X						X			
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Oligosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic											X			X	X					
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Limnophilous
	Limnophilous			X		X				X											
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic										X										
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				Mesothermal and Metathermal
	Mesothermal	X																			
	Oligothermal																				
	Stenothermal																				
	Metathermal	X																			
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); more abundant in temperate than tropical regions (24).

Taxon Gomphonema acuminatum var. coronata (Ehr.) W. Sm.

		References										Concensus & Notes
		8	9	10	11	12	26	27	29	39	46	
pH	Acidobiontic											
	Acidophilous											
	Indifferent	X	X	X	X	X		X				Indifferent; range 5.7-9.0 (8, 27).
	Alkaliphilous						X					
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											
	Euhalobous											
	Mesohalobous											Indifferent
	alpha range											
	beta range											
	Oligohalobous								X			
	halophilous											
	indifferent	X	X	X	X		X			X	X	
	halophobous											
	Euryhalobous											
Saprobien	Polysaprobic											
	Mesosaprobic											
	alpha range											Oligosaprobic
	beta range											
	Oligosaprobic						X					
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											
	Limnophilous	X			X							Limnophilous
	Indifferent											
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											
	Tychoplanktonic											
	Periphytic											
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:
Calcium indifferent (36).

Taxon Gomphonema acuminatum var. brébissonii (Kütz.) Cl.

		References										Concensus & Notes
		8	9	10	11	12	14	26	27	29	39	
pH	Acidobiontic											Alkaliphilous; range 6.4-8.5 (8, 27).
	Acidophilous											
	Indifferent											
	Alkaliphilous	X	X	X	X	X	X	X	X			
	Alkalibiontic											
Nutrient	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
Halobion	Polyhalobous											Indifferent
	Euhalobous											
	Mesohalobous											
	alpha range											
	beta range											
	Oligohalobous									X		
	halophilous											
	indifferent	X	X	X	X		X	X			X	
	halophobous											
	Euryhalobous											
Saprobien	Polysaprobic											Oligosaprobic
	Mesosaprobic											
	alpha range											
	beta range											
	Oligosaprobic							X				
	Saprophilic											
	Saproxenous											
	Saprophobic											
Current	Limnobiontic											Limnophilous
	Limnophilous	X			X							
	Indifferent											
	Rheophilous											
	Rheobiontic											
General Habitat	Marine											
	Estuary											
	Lake											
	Pond											
	River											
	Spring and Stream											
	Aerophilous											
	Other											
Specific Habitat	Euplanktonic											
	Tychoplanktonic											
	Periphytic											
	epipelic											
	epilithic											
	epidendric											
	epizooic											
	epiphytic											
	attached											
	unattached											
Seasonal Dist.	Winter											
	Spring											
	Summer											
	Fall											
Temperature	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Undesignated											

Geographical distribution and additional comments:

Taxon Gomphonema angustatum (Kutz.) Rabh. var. angustatum

		References																		Concensus & Notes
		2	3	4	8	9	10	11	12	13	14	19	26	27	29	31	34	43	45	46	
pH	Acidobiontic																				Alkaliphilous; range 6-9.0 (2, 8, 27, 43), optimum 7.5-7.7 (4).
	Acidophilous																				
	Indifferent	X																			
	Alkaliphilous			X	X	X	X	X	X	X	X		X	X				X			
	Alkalibiontic																				
Nutrient	Eutrophic													X							Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous														X		X				
	halophilous																				
	indifferent				X	X	X	X			X		X					X		X	
	halophobous																				
	Euryhalobous																			X	
Saprobien	Polysaprobic																				Oligosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic		X													X					
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent				X			X										X			
	Rheophilous											X									
	Rheobiontic																				
General Habitat	Marine																				Ponds, Springs and Streams
	Estuary																				
	Lake																				
	Pond													X							
	River																				
	Spring and Stream												X								
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic																X				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																		X		Fall and Winter maxima
	Spring																				
	Summer																				
	Fall																		X		
Temperature	Euthermal																				Eurythermal to Metathermal, Oligothermal to Mesothermal
	Mesothermal	X																X			
	Oligothermal	X																X			
	Stenothermal																				
	Metathermal	X																			
	Eurythermal																	X			
	Undesignated																				

Geographical distribution and additional comments:

Taxon Gomphonema angustatum var. sarcophagus (Greg.) Grun.

		References				Concensus & Notes
		8	10	12	26	
pH	Acidobiontic					
	Acidophilous					Indifferent to Alkaliphilous; range 6.4-8.2 (8).
	Indifferent	X		X		
	Alkaliphilous	X			X	
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					
	Euhalobous					Indifferent
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous					
	halophilous					
	indifferent	X	X		X	
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					Oligosaprobic
	alpha range					
	beta range					
	Oligosaprobic				X	
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					Indifferent
	Indifferent	X				
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Gomphonema constrictum Ehr. var. constrictum

		References																		Concensus & Notes
		4	7	8	9	10	11	12	13	14	21	26	27	31	34	35	39	46		
pH	Acidobiontic																			Alkaliphilous; range 6.2-9 (8, 27), optimum around 8 (4).
	Acidophilous																			
	Indifferent								X											
	Alkaliphilous	X		X	X	X	X	X		X		X	X			X				
	Alkalibiontic																			
Nutrient	Eutrophic												X							Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous										X									
	halophilous																			
	indifferent			X	X	X	X			X		X					X	X		
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range		X																	
	beta range		X																	
	Oligosaprobic		X									X		X	X					
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent			X			X													
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Ponds
	Estuary																			
	Lake																			
	Pond												X							
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic										X									
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); calciphilous (36).

Taxon Gomphonema gracile Ehr. var. gracile

		References																		Concensus & Notes
		2	4	10	11	12	13	20	21	27	34	35	39	46						
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent				X		X		X	X		X								Indifferent to Alkaliphilous; range 5.5-9.0 (21, 27), optimum 7.2-7.4 (4).
	Alkaliphilous		X	X		X														
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous								X											
	halophilous																			
	indifferent			X	X						X		X	X						
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic				X			X												
	Limnophilous							X												Limnobiontic to Limnophilous
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic	X									X									Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36).

Taxon Gomphonema intricatum Kutz. var. intricatum

		References																		Concensus & Notes
		4	8	9	11	12	13	14	20	21	26	27	29	35	39					
pH	Acidobiontic																			Alkaliphilous; range 5.5-9.0 (8, 21, 27), optimum 7.2-7.3 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X	X		X	X	X		X						
	Alkalibiontic																			
Nutrient	Eutrophic											X								Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X			X							
	halophilous																			
	indifferent		X	X	X			X			X				X					
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous										X									
	Saprophobic																			
Current	Limnobiontic		X		X				X											Limnobiontic
	Limnophilous								X											
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake											X								
	Pond											X								
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic									X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Gomphonema olivaceum (Lyng.) Kütz. var. olivaceum

		References																			Concensus & Notes
		1	4	7	8	9	11	12	13	14	19	20	26	27	29	31	39	41	43	46	
pH	Acidobiontic																				Alkalibiontic; range 6.4-9.0 (8, 27, 43).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous		X					X	X												
	Alkalibiontic		X		X	X	X			X	X		X	X					X		
Nutrient	Eutrophic													X							Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous														X						
	halophilous																				
	indifferent				X	X	X			X			X				X		X	X	
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Oligosaprobic to Mesosaprobic
	Mesosaprobic																				
	alpha range			X																	
	beta range			X												X					
	Oligosaprobic	X											X								
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous											X									
	Indifferent				X		X				X								X		
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes and Ponds
	Estuary																				
	Lake													X							
	Pond													X							
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic										X								X		
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter	X																			Winter or Spring form
	Spring																	X			
	Summer																				
	Fall																				
Temperature	Euthermal																				Eurythermal and Oligothermal to Mesothermal
	Mesothermal																		X		
	Oligothermal																		X		
	Stenothermal																				
	Metathermal																				
	Eurythermal																		X		
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan, but not abundant in the tropics (24).

Taxon Gomphonema parvulum var. subelliptica Cl.

		References	Concensus & Notes
		29	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		Oligohalobous
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Gomphonema parvulum var. micropus (Kütz.) Cl.

		References								Concensus & Notes
		8	10	11	12	13	14	29	34	
pH	Acidobiontic									
	Acidophilous									Indifferent; range 6.6-8.0 (8).
	Indifferent	X	X	X	X	X				
	Alkaliphilous						X			
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									Indifferent
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous							X		
	halophilous									
	indifferent	X	X	X			X		X	
	halophobous									
	Euryhalobous								X	
Saprobien	Polysaprobic									
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									Rheophilous to Rheobiontic
	Rheophilous	X								
	Rheobiontic			X						
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic								X	Periphytic
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Taxon Gomphonema parvulum Kütz. var. parvulum

		References																			Concensus & Notes
		3	4	7	8	9	10	11	12	13	14	20	21	26	29	31	34	35	39	43	46	
pH	Acidobiontic																					Indifferent: range 4.2-9.0 (8, 21, 43); optimum 7.8-8.2 (4).
	Acidophilous																					
	Indifferent				X	X	X	X	X				X	X				X		X		
	Alkaliphilous		X				X		X		X											
	Alkalibiontic																					
Nutrient	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous																					
	halophilous	X													X							
	indifferent				X	X	X	X			X		X	X			X		X	X	X	
	halophobous																					
	Euryhalobous				X								X				X			X	X	
Saprobien	Polysaprobic																					Mesosaprobic
	Mesosaprobic																X					
	alpha range			X																		
	beta range															X						
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Rheophilous
	Limnophilous											X										
	Indifferent													X								
	Rheophilous				X			X												X		
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																					
	Periphytic																X			X		
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					
	Spring																					
	Summer																					
	Fall																					
Temperature	Euthermal																					Mesothermal and Stenothermal
	Mesothermal												X							X		
	Oligothermal																					
	Stenothermal												X							X		
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21); a facultative nitrogen heterotroph and may be a pollution indicator (4); the great adaptability of this species accounts for its variability (21); calcium and iron indifferent (36).

Taxon Gomphonema subtile Ehr. var. subtile

		References				Concensus & Notes
		4	12	20	21	
pH	Acidobiontic					Indifferent to Acidophilous; range 5.8-8 (21), most frequent 6.5-7.8 (31). optimum under 7 (4).
	Acidophilous	X				
	Indifferent		X		X	
	Alkaliphilous					
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Halophobous
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous			X		
	halophilous					
	indifferent					
	halophobous				X	
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					Periphytic
	Tychoplanktonic					
	Periphytic				X	
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
Cosmopolitan (21, 23).

Taxon Gyrosigma acuminatum (Kutz.) Rabh. var. acuminatum

		References															Concensus & Notes
		4	8	9	11	12	14	22	26	27	36	38	39	45	46		
pH	Acidobiontic																Alkalibiontic; range 6.4-8.3 (8, 27, 36), optimum over 8 (4).
	Acidophilous																
	Indifferent																
	Alkaliphilous	X				X					X						
	Alkalibiontic		X	X	X		X		X	X		X					
Nutrient	Eutrophic									X							Eutrophic
	Mesotrophic																
	Oligotrophic																
	Dystrophic																
Halobion	Polyhalobous																Indifferent
	Euhalobous																
	Mesohalobous	X															
	alpha range																
	beta range																
	Oligohalobous							X	X			X					
	halophilous													X			
	indifferent		X	X	X		X		X				X		X		
	halophobous																
	Euryhalobous														X		
Saprobien	Polysaprobic																Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic																
	alpha range																
	beta range													X			
	Oligosaprobic									X							
	Saprophilic																
	Saproxenous																
	Saprophobic																
Current	Limnobiontic																Rheophilous to Indifferent
	Limnophilous																
	Indifferent									X							
	Rheophilous		X	X													
	Rheobiontic																
General Habitat	Marine																Lakes and Ponds
	Estuary																
	Lake										X						
	Pond										X						
	River																
	Spring and Stream																
	Aerophilous																
	Other																
Specific Habitat	Euplanktonic																Periphytic
	Tychoplanktonic																
	Periphytic										X						
	epipelic																
	epilithic																
	epidendric																
	epizooic																
	epiphytic																
	attached																
	unattached																
Seasonal Dist.	Winter																Spring and Fall form
	Spring														X		
	Summer																
	Fall														X		
Temperature	Euthermal																
	Mesothermal																
	Oligothermal																
	Stenothermal																
	Metathermal																
	Eurythermal																
	Undesignated																

Geographical distribution and additional comments:

Cosmopolitan (23); calciphilous (36).

Taxon Gyrosigma macrum (W. Sm.) Griff. & Henfr. var. macrum

		References				Concensus & Notes
		22	26	38	46	
pH	Acidobiontic					
	Acidophilous					Alkaliphilous
	Indifferent					
	Alkaliphilous		X			
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					
	Euhalobous	X				
	Mesohalobous		X	X	X	Mesohalobous and Euryhalobous
	alpha range					
	beta range					
	Oligohalobous					
	halophilous					
	indifferent					
	halophobous					
	Euryhalobous	X	X		X	
Saprobien	Polysaprobic					
	Mesosaprobic					Oligosaprobic
	alpha range					
	beta range					
	Oligosaprobic		X			
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Gyrosigma obtusatum (Sulliv. and Wormley) Boyer var. obtusatum

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
New England States, Middle Atlantic States, East Central States; South Carolina, Kentucky (38).

Taxon Gyrosigma scalproides (Rabh.) Cl. var. scalproides

		References																		Concensus & Notes
		4	8	13	20	21	26	38												
pH	Acidobiontic																			
	Acidophilous			X																Alkaliphilous; range 6.7-8.6 (4, 8), optimum 8.3-8.6 (4), 7.7 (21).
	Indifferent		X					X												
	Alkaliphilous	X	X			X	X	X												
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X			X	X													
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Oligosaprobic
	beta range																			
	Oligosaprobic						X													
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			Rheophilous
	Rheophilous		X					X												
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			Lakes, Ponds, Springs, Streams, Ditches and partially Aerophilous
	Lake				X															
	Pond				X															
	River																			
	Spring and Stream					X														
	Aerophilous					X														
	Other				X															
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21).

Taxon Gyrosigma spencerii (Quek.) Griff. & Henfr. var. spencerii

		References												Concensus & Notes
		3	4	8	9	13	14	20	26	34	36	38	46	
pH	Acidobiontic													Alkaliphilous to Alkalibiontic; range 6.6-8.5 (4, 8), optimum no less than 8.5 (4).
	Acidophilous													
	Indifferent			X										
	Alkaliphilous					X			X		X			
	Alkalibiontic		X				X							
Nutrient	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Halobion	Polyhalobous													Mesohalobous to Indifferent
	Euhalobous													
	Mesohalobous		X		X	X		X	X					
	alpha range												X	
	beta range	X												
	Oligohalobous		X											
	halophilous													
	indifferent						X			X		X		
	halophobous													
	Euryhalobous			X					X					
Saprobien	Polysaprobic													Oligosaprobic
	Mesosaprobic													
	alpha range													
	beta range													
	Oligosaprobic								X					
	Saprophilic													
	Saproxenous													
	Saprophobic													
Current	Limnobiontic													Indifferent
	Limnophilous													
	Indifferent			X										
	Rheophilous													
	Rheobiontic													
General Habitat	Marine													Streams, Rivers and Lakes
	Estuary													
	Lake											X		
	Pond													
	River											X		
	Spring and Stream									X		X		
	Aerophilous													
	Other													
Specific Habitat	Euplanktonic													Periphytic
	Tychoplanktonic													
	Periphytic									X				
	epipelic													
	epilithic													
	epidendric													
	epizooic													
	epiphytic													
	attached													
	unattached													
Seasonal Dist.	Winter													
	Spring													
	Summer													
	Fall													
Temperature	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Undesignated													

Geographical distribution and additional comments:

Taxon Hannaea arcus (Ehr.) Patr. var. arcus

		References																		Concensus & Notes
		4	10	12	20	21	24	26	30	38	43	45								
pH	Acidobiontic																			Alkaliphilous to Indifferent range 7.2-8 (43), optimum 7.3-7.4 (4).
	Acidophilous																			
	Indifferent		X	X																
	Alkaliphilous	X						X			X									
	Alkalibiontic							X												
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent to Halophobous
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous					X		X												
	halophilous																			
	indifferent		X									X								
	halophobous										X									
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous							X												
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous		X		X	X	X			X	X									
	Rheobiontic							X												
General Habitat	Marine																			Springs and Streams
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream				X	X														
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Stenothermal and Oligothermal
	Mesothermal																			
	Oligothermal			X					X	X	X									
	Stenothermal								X		X									
	Metathermal										X									
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Probably Cosmopolitan but not frequent in the tropics (24); from temperate to arctic regions (21); prefers mountainous regions (38).

Taxon Hantzschia amphioxys (Ehr.) Grun. var. amphioxys

		References																		Concensus & Notes
		2	4	7	8	9	10	11	12	13	21	26	27	28	29	31	34	39	45	46	
pH	Acidobiontic																				Alkaliphilous; range 5.4-9.2 (2,8,21,27), optimum 7.8-8 (4).
	Acidophilous																				
	Indifferent									X		X	X								
	Alkaliphilous	X	X		X	X	X	X	X		X										
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent; withstands osmotic changes by forming inner valves (4).
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous		X								X				X						
	halophilous																				
	indifferent				X	X	X	X				X						X	X	X	
	halophobous																				
	Euryhalobous																		X		
Saprobien	Polysaprobic																				Mesosaprobic
	Mesosaprobic															X					
	alpha range			X															X		
	beta range																		X		
	Oligosaprobic											X									
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent				X			X													
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Aerophilous; but best development in water (21).
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous										X			X							
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic																X				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				Spring maximum
	Spring																		X		
	Summer																				
	Fall																				
Temperature	Euthermal																				Eurythermal and Oligothermal to Mesothermal
	Mesothermal	X																			
	Oligothermal	X																			
	Stenothermal																				
	Metathermal																				
	Eurythermal	X																			
	Undesignated																				

Geographical distribution and additional comments:

Cosmopolitan (21, 24); extraordinary adaptability and is therefore an extremely ubiquitous diatom (21); the most widespread soil diatom, being found in the soil in all parts of the world (28); calcium indifferent (36); very broad ecological tolerance (45).

Taxon Hantzschia virgata (Roper) Grun. var. virgata

		References			Concensus & Notes
		9	26	46	
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous			X	Euhalobous to Mesohalobous and Euryhalobous
	Mesohalobous	X	X		
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent				
	halophobous				
	Euryhalobous		X	X	
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine		X		Marine
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:

Taxon Mastogloia braunii Grun. var. braunii

		References								Concensus & Notes
		4	9	10	12	20	38	39	46	
pH	Acidobiontic									Alkaliphilous
	Acidophilous									
	Indifferent									
	Alkaliphilous			X						
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									
	Mesohalobous	X	X	X	X	X	X	X		Mesohalobous
	alpha range									
	beta range								X	
	Oligohalobous									
	halophilous									
	indifferent									
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary						X			Estuaries
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Pariphytic									
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Taxon Mastogloia grevillei W.Sm. var. grevillei

		References		Concensus & Notes
		20	38	
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake	X	X	Lakes, Ponds, Rivers, Streams and Ditches
	Pond		X	
	River		X	
	Spring and Stream	X		
	Aerophilous			
	Other	X		
Specific Habitat	Euplanktonic			
	Tychoplanktonic			Periphytic
	Periphytic	X	X	
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Mastogloia smithii Thwaites Ex. W. Sm. var. smithii

		References																		Concensus & Notes
		4	8	9	20	36	38	46												
pH	Acidobiontic																			
	Acidophilous																			Alkaliphilous; range 6.4-8.5 (8, 36).
	Indifferent		X																	
	Alkaliphilous		X			X		X												
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent to Mesohalobous
	Mesohalobous	X		X																
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X				X	X												
	halophobous																			
	Euryhalobous							X												
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			Indifferent
	Indifferent		X																	
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake	X					X													Lakes
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic	X			X															Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Calciphilous (36).

Taxon Melosira ambigua (Grun.) O. Mull. var. ambigua

		References																			Concensus & Notes
		4	8	11	12	14	20	21	24	26	31	35	46								
pH	Acidobiontic																				Indifferent to Alkaliphilous; range 6.4-8.0 (8).
	Acidophilous																				
	Indifferent		X	X	X																
	Alkaliphilous					X				X		X									
	Alkalibiontic																				
Nutrient	Eutrophic	X					X	X	X	X											Eutrophic
	Mesotrophic																				
	Oligotrophic	X						X													
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous									X			X								
	halophilous																				
	indifferent		X	X		X															
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Oligosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic									X	X										
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent		X	X			X														
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic						X	X	X												Euplanktonic
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesooxybiontic (26).

Taxon Melosira distans var. africana Grun.

		References	Concensus & Notes
		13	
pH	Acidobiontic		
	Acidophilous	X	Acidophilous
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		Halophobous
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous	X	
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Melosira distans var. alpigena Grun.

		References		Concensus & Notes
		12	13	
pH	Acidobiontic			
	Acidophilous	X		Indifferent?
	Indifferent			
	Alkaliphilous		X	
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Melosira distans (Ehr.) Kütz. var. distans

		References								Concensus & Notes
		4	10	11	12	13	20	26	27	35	
pH	Acidobiontic										Acidophilous; range 4.2-6.6 (27), optimum around 6.5 (4).
	Acidophilous	X	X		X	X		X	X	X	
	Indifferent			X							
	Alkaliphilous										
	Alkalibiontic										
Nutrient	Eutrophic										Oligotrophic to Dystrophic
	Mesotrophic										
	Oligotrophic					X					
	Dystrophic					X					
Halobion	Polyhalobous										Halophobous
	Euhalobous										
	Mesohalobous										
	alpha range										
	beta range										
	Oligohalobous										
	halophilous										
	indifferent			X							
	halophobous		X		X			X			
	Euryhalobous										
Saprobien	Polysaprobic										Saproxenous
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic										
	Saprophilic										
	Saproxenous							X			
	Saprophobic										
Current	Limnobiontic										Indifferent
	Limnophilous										
	Indifferent			X							
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										Pools and Ditches
	Estuary										
	Lake										
	Pond										
	River										
	Spring and Stream										
	Aerophilous										
	Other						X				
Specific Habitat	Euplanktonic										Periphytic
	Tychoplanktonic										
	Periphytic					X	X				
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										
	Spring										
	Summer										
	Fall										
Temperature	Euthermal										Stenothermal and Oligothermal
	Mesothermal										
	Oligothermal					X					
	Stenothermal					X					
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:

Found in boarder areas between temperate and arctic climates (13).

Taxon Melosira distans var. lirata (Ehr.) Bethge

		References			Concensus & Notes
		10	12	35	
pH	Acidobiontic				Acidophilous
	Acidophilous	X	X	X	
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				Halophobous
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent				
	halophobous	X			
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:

Taxon Melosira distans var. lirata f. lacustris (Grun.) Bethge

		References	Concensus & Notes
		34	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		Oligohalobous
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic	X	Periphytic or Tychoplanktonic
	Periphytic	X	
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Melosira granulata var. angustissima Müll.

		References																		Concensus & Notes
		7	8	9	11	14	24	26	27	34	41									
pH	Acidobiontic																			Alkaliphilous: range 6.2-9.0 (8, 27).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X	X	X	X		X	X											
	Alkalibiontic																			
Nutrient	Eutrophic						X	X	X											Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous							X												
	halophilous																			
	indifferent		X	X	X	X				X										
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Mesosaprobic
	Mesosaprobic																			
	alpha range	X																		
	beta range	X																		
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic		X		X															Limnobiontic
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Ponds and Lakes
	Estuary																			
	Lake								X											
	Pond								X											
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic							X		X	X	X								Euplanktonic
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Melosira granulata (Ehr.) Ralfs var. granulata

		References																		Concensus & Notes
		4	7	8	9	11	12	13	14	20	21	24	26	27	29	30	31	34	41	46
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X		X	X	X	X	X	X				X	X						
	Alkalibiontic																			
Nutrient	Eutrophic							X			X		X	X						
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous												X		X					X
	halophilous																			
	indifferent			X	X	X			X									X		
	halophobous																			
	Euryhalobous																			X
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range		X																	
	beta range		X																	
	Oligosaprobic															X	X			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous			X		X														
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake							X					X	X						
	Pond							X						X						
	River							X												
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic							X		X	X	X	X					X	X	
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer									X										
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Concensus & Notes:

pH: Alkaliphilous; range 6.3-9.0 (7, 27), optimum 7.9-8.2 (4).

Nutrient: Eutrophic

Halobion: Indifferent

Saprobien: Oligosaprobic to Mesosaprobic

Current: Limnophilous

General Habitat: Lakes, Ponds and Rivers

Specific Habitat: Euplanktonic

Seasonal Dist.: Summer form

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Melosira granulata f. curvata Grun.

		References		Concensus & Notes
		9	11	
pH	Acidobiontic			Alkaliphilous
	Acidophilous			
	Indifferent			
	Alkaliphilous	X	X	
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			Indifferent
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent	X	X	
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic		X	Limnobiontic
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Melosira islandica O. Müll. var. islandica

		References								Concensus & Notes
		4	12	14	20	27	39	46		
pH	Acidobiontic									
	Acidophilous	X								Alkaliphilous
	Indifferent									
	Alkaliphilous		X	X						
	Alkalibiontic					X				
Nutrient	Eutrophic				X					
	Mesotrophic									Eutrophic to Oligotrophic
	Oligotrophic				X					
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									Indifferent
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous							X		
	halophilous									
	indifferent			X			X			
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic									
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring				X					Spring and Fall maxima
	Summer									
	Fall				X					
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Taxon Melosira italica (Ehr.) Kutz. var. italica

		References																			Concensus & Notes
		4	8	10	11	12	13	20	24	26	29	31	34								
pH	Acidobiontic																				Alkaliphilous to Indifferent; range 6.7-8 (4.8), optimum not less than 8 (4).
	Acidophilous																				
	Indifferent		X		X		X			X											
	Alkaliphilous	X		X		X	X			X											
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent to Halophobous
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous										X										
	halophilous																				
	indifferent			X	X		X						X								
	halophobous						X			X											
	Euryhalobous																				
Saprobien	Polysaprobic																				Oligosaprobic to Saproxenous
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic											X									
	Saprophilic																				
	Saproxenous									X											
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent		X		X																
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes, Ponds, Rivers and Ditches
	Estuary																				
	Lake							X													
	Pond							X													
	River							X													
	Spring and Stream																				
	Aerophilous																				
	Other							X													
Specific Habitat	Euplanktonic																				Periphytic to Tychoplanktonic
	Tychoplanktonic						X						X								
	Periphytic						X	X	X				X								
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (24); indifferent to iron concentration (36); from fairly cold, temperate climates (13).

Taxon Melosira italica var. valida Grun.

		References																		Concensus & Notes
		20	35																	
pH	Acidobiontic																			
	Acidophilous																			Alkaliphilous
	Indifferent																			
	Alkaliphilous		X																	
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent																			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic	X																		
	Tychoplanktonic																			Euplanktonic
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Melosira varians Ag. var. varians

		References																			Concensus & Notes
		1	2	4	8	9	11	14	19	20	21	26	27	29	31	34	39	41	43	45	46	
pH	Acidobiontic																					Alkaliphilous; range 6.4-9.0 (8, 27, 43), optimum about 8.5 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous			X	X	X	X	X	X			X	X						X	X		
	Alkalibiontic																					
Nutrient	Eutrophic			X					X	X	X		X									Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous			X																		
	alpha range																					
	beta range																					
	Oligohalobous											X		X		X					X	
	halophilous																					
	indifferent				X	X	X	X									X		X	X		
	halophobous																					
	Euryhalobous																				X	
Saprobien	Polysaprobic											X									X	Beta-Mesosaprobic, but showing a great range.
	Mesosaprobic																		X			
	alpha range																			X		
	beta range		X							X	X				X	X				X		
	Oligosaprobic	X							X													
	Saprophilic																					
	Saproxenous																					
	Saprophobic								X													
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent				X		X															
	Rheophilous								X													
	Rheobiontic																					
General Habitat	Marine																					Lakes, Ponds, Springs, Streams and Ditches
	Estuary																					
	Lake									X									X			
	Pond									X												
	River									X												
	Spring and Stream																		X			
	Aerophilous																					
	Other									X												
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic															X						
	Periphytic								X		X	X							X			
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic												X									
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Summer form
	Spring																			X		
	Summer	X																X		X		
	Fall																	X				
Temperature	Euthermal																					Eurythermal and Oligothermal to Mesothermal
	Mesothermal																		X			
	Oligothermal																		X			
	Stenothermal																					
	Metathermal																					
	Eurythermal																		X			
	Undesignated																					

Geographical distribution and additional comments:

Cosmopolitan (21); euryoxybiontic (26); indifferent to iron concentration (36); probably an obligate nitrogen hetertroph (4); has an extraordinary large ecological span which on one hand has massive growths in eutrophic waters in the summer and on the other hand large growths in katharobic water in January and February (19).

Taxon Meridion circulare (Grev.) Ag. var. circulare

		References																			Concensus & Notes
		4	7	8	9	10	11	13	14	19	21	26	27	29	31	34	38	39	43	45	46	
pH	Acidobiontic																					Alkaliphilous; range 6.4-9.0 (8, 27, 43); optimum around 8 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous	X		X	X	X	X	X	X	X		X	X						X			
	Alkalibiontic																					
Nutrient	Eutrophic												X									Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous	X										X					X				X	
	halophilous																					
	indifferent			X	X	X	X		X										X	X		
	halophobous													X				X				
	Euryhalobous																				X	
Saprobien	Polysaprobic																					Oligosaprobic
	Mesosaprobic																					
	alpha range																					
	beta range																					
	Oligosaprobic		X												X	X						
	Saprophilic																					
	Saproxenous											X										
	Saprophobic		X																			
Current	Limnobiontic																					Rheobiontic to Rheophilous
	Limnophilous																					
	Indifferent							X														
	Rheophilous										X	X					X					
	Rheobiontic			X			X			X									X			
General Habitat	Marine																					Lakes, Ponds, Rivers, Springs and Streams
	Estuary																					
	Lake							X					X									
	Pond							X					X									
	River							X														
	Spring and Stream							X		X												
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic or Tychoplanktonic
	Tychoplanktonic																			X		
	Periphytic																			X		
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached							X														
	unattached																					
Seasonal Dist.	Winter																					Spring form
	Spring																			X		
	Summer																					
	Fall																					
Temperature	Euthermal																					Eurythermal and Oligothermal to Mesothermal
	Mesothermal																		X			
	Oligothermal																		X			
	Stenothermal																					
	Metathermal																					
	Eurythermal																		X			
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); seldom in the tropics (24); calciphilous (36); an indicator of high oxygen concentration (4).

Taxon Microsiphona potamus Weber var. potamus

		References	Concensus & Notes
		48	
pH	Acidobiontic		Alkaliphilous; range 7.0-8.5 (48).
	Acidophilous		
	Indifferent		
	Alkaliphilous	X	
	Alkalibiontic		
Nutrient	Eutrophic	X	Eutrophic
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		Streams
	Lake		
	Pond		
	River		
	Spring and Stream	X	
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic	X	Euplanktonic
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		Summer and Fall form
	Spring		
	Summer	X	
	Fall	X	
Temperature	Euthermal		
	Mesothermal	X	Metathermal and Oligothermal to Mesothermal
	Oligothermal	X	
	Stenothermal		
	Metathermal	X	
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Widespread in United States, ranks near Cyclotella meneghiniana in pollution tolerance (48).

Taxon Navicula accomoda Hust. var. accomoda

		References				Concensus & Notes
		4	26	28	38	
pH	Acidobiontic					Alkaliphilous
	Acidophilous					
	Indifferent					
	Alkaliphilous		X			
	Alkalibiontic					
Nutrient	Eutrophic	X				Eutrophic
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Indifferent
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous					
	halophilous					
	indifferent		X			
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic		X	X		Polysaprobic to Mesosaprobic
	Mesosaprobic			X		
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					Sewage treatment plant ponds and trickling filters
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other			X		
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
Euryoxybiontic (26); probably an obligate nitrogen heterotroph (4).

Taxon Navicula americana Ehr. var. americana

		References							Concensus & Notes
		4	21	26	27	34	35	38	
pH	Acidobiontic								Alkaliphilous; range 5.5-8 (21, 27); optimum around 7.5 (4).
	Acidophilous								
	Indifferent		X						
	Alkaliphilous	X		X	X		X	X	
	Alkalibiontic				X				
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								Indifferent
	Euhalobous								
	Mesohalobous								
	alpha range								
	beta range								
	Oligohalobous					X			
	halophilous								
	indifferent		X	X				X	
	halophobous								
	Euryhalobous								
Saprobien	Polysaprobic								Saproxenous
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic								
	Saprophilic								
	Saproxenous			X					
	Saprophobic								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								Periphytic
	Tychoplanktonic								
	Periphytic		X			X			
	epipelic								
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Undesignated								

Geographical distribution and additional comments:

Cosmopolitan (21).

Taxon Navicula amphibola Cl. var. amphibola

		References																		Concensus & Notes
		4	8	9	10	12	13	26	38											
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent		X						X											Alkaliphilous to Indifferent; range 6.6-7.6 (8).
	Alkaliphilous				X	X	X	X												
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous	X																		Indifferent
	alpha range																			
	beta range																			
	Oligohalobous								X											
	halophilous																			
	indifferent		X	X	X			X	X											
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			Saproxenous
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous							X												
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent		X																	Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Navicula bacillum Ehr. bacillum

		References																		Concensus & Notes
		4	8	9	10	11	12	13	14	21	26	27	29	35	38					
pH	Acidobiontic																			
	Acidophilous																			Alkaliphilous to
	Indifferent							X	X	X	X			X						Indifferent:
	Alkaliphilous	X	X	X	X	X	X					X			X					range 6.4-9.0 (8, 21, 27).
	Alkalibiontic																			optimum 7.8-8 (4).
Nutrient	Eutrophic											X								
	Mesotrophic																			Eutrophic
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range														X					
	Oligohalobous														X					
	halophilous																			
	indifferent		X	X	X	X		X	X	X	X		X							
	halophobous							X			X		X							
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Saproxenous
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous										X									
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			Indifferent
	Indifferent		X			X														
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake											X								Lakes and Ponds
	Pond											X								
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic									X										Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Navicula biconica Patr. var. biconica

		References	Concensus & Notes
		38	
pH	Acidobiontic		
	Acidophilous		Indifferent
	Indifferent	X	
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Soft water form (38).

Taxon Navicula canalis Patr. var. canalis

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobcus		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Seems to prefer water of low mineral content (38).

Taxon Navicula capitata var. hungarica (Grun.) Ross

		References																			Concensus & Notes
		4	8	9	11	12	21	26	31	34	39	43	46								
pH	Acidobiontic																				Alkaliphilous; range 6.4-9.0 (8, 43), optimum about 8 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X	X	X	X	X	X	X													
	Alkalibiontic											X									
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous									X	X										
	indifferent		X	X	X		X	X				X	X								
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Oligosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic							X	X												
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Rheophilous
	Limnophilous																				
	Indifferent																				
	Rheophilous		X		X							X									
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic						X														
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				Eurythermal and Oligothermal to Mesothermal
	Mesothermal											X									
	Oligothermal											X									
	Stenothermal																				
	Metathermal																				
	Eurythermal											X									
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesooxybiontic (26); seems to tolerate a great variety of water conditions (38).

Taxon Navicula confervacea (Kutz.) Grun. var. confervacea

		References					Concensus & Notes
		4	21	26	34	38	
pH	Acidobiontic						Alkaliphilous to Indifferent; range 5-8.4 (21), optimum about 8.4 (4).
	Acidophilous						
	Indifferent			X			
	Alkaliphilous	X	X				
	Alkalibiontic						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Halobion	Polyhalobous						Indifferent
	Euhalobous						
	Mesohalobous						
	alpha range						
	beta range						
	Oligohalobous						
	halophilous						
	indifferent			X			
	halophobous						
	Euryhalobous						
Saprobien	Polysaprobic						Beta-Mesosaprobic
	Mesosaprobic						
	alpha range						
	beta range		X		X		
	Oligosaprobic						
	Saprophilic						
	Saproxenous						
	Saprophobic						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Marine						Aerophilous in shallow water
	Estuary						
	Lake						
	Pond						
	River						
	Spring and Stream						
	Aerophilous					X	
	Other					X	
Specific Habitat	Euplanktonic						Periphytic
	Tychoplanktonic						
	Periphytic				X		
	epipelic						
	epilithic						
	epidendric						
	epizooic						
	epiphytic						
	attached						
	unattached						
Seasonal Dist.	Winter						
	Spring						
	Summer						
	Fall						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
	Undesignated						

Geographical distribution and additional comments:

Taxon Navicula contenta Grun. var. contenta

		References																		Concensus & Notes
		4	10	12	13	21	26	46												
pH	Acidobiontic																			
	Acidophilous	X																		Indifferent to Alkaliphilous; optimum less than 6 (4).
	Indifferent		X		X	X														
	Alkaliphilous			X		X	X													
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X				X	X												
	halophobous							X												
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			Aerophilous
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous					X	X													
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); prefers oxygen rich water (4); polyoxybiontic (26).

Taxon Navicula contenta f. biceps Arn.

		References																			Concensus & Notes
		7	10	12	13	21	26	38													
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous
	Indifferent		X																		
	Alkaliphilous			X	X		X	X													
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				Indifferent
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous					X															
	indifferent		X				X	X													
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				Aerophilous; often associated with moss (38).
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous	X					X	X													
	Other							X													
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); polyoxybiontic (26).

Taxon Navicula contenta f. parallela Peterson

		References																		Concensus & Notes
		12	13	21	26															
pH	Acidobiontic																			Alkaliphilous
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X		X															
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous			X																
	halophilous																			
	indifferent				X															
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Aerophilous
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous			X	X															
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); polyoxybiontic (26).

Taxon Navicula cryptocephala Kutz. var. cryptocephala

		References																			Concensus & Notes
		1	3	4	7	8	9	10	11	14	19	26	27	30	31	34	35	38	43	45	46	
pH	Acidobiontic																					Alkaliphilous; range 5.4-9.0 (8, 27, 43), optimum around 8 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous			X		X	X	X	X	X	X		X				X		X			
	Alkalibiontic																					
Nutrient	Eutrophic			X																		Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous			X																		
	alpha range																					
	beta range																	X				
	Oligohalobous										X							X				
	halophilous																					
	indifferent						X	X	X	X		X				X				X	X	
	halophobous																		X			
	Euryhalobous		X			X															X	
Saprobien	Polysaprobic																					Beta-Mesosaprobic, but tolerant of a broad saprobien spectrum.
	Mesosaprobic																					
	alpha range				X															X		
	beta range				X									X	X					X		
	Oligosaprobic	X			X																	
	Saprophilic				X																	
	Saproxenous				X																	
	Saprophobic				X																	
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent					X			X										X			
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Lakes, Rivers and Bogs
	Estuary																					
	Lake																	X				
	Pond																					
	River																	X				
	Spring and Stream																					
	Aerophilous																					
	Other																	X				
Specific Habitat	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic																					
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Spring, Summer and Fall
	Spring																			X		
	Summer	X																				
	Fall																			X		
Temperature	Euthermal																					Eurythermal and Oligothermal to Mesothermal
	Mesothermal																		X			
	Oligothermal																		X			
	Stenothermal																					
	Metathermal																					
	Eurythermal																		X			
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); euryoxybiontic (26); calcium indifferent (36).

Taxon Navicula cryptocephala var. intermedia Grun.

		References													Concensus & Notes
		1	3	4	8	9	10	11	12	13	14	26	27	34	
pH	Acidobiontic														Alkaliphilous; range 6.2-9.0 (8, 27).
	Acidophilous														
	Indifferent														
	Alkaliphilous				X	X	X	X	X	X	X	X	X		
	Alkalibiontic														
Nutrient	Eutrophic												X		Eutrophic
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Halobion	Polyhalobous														Indifferent
	Euhalobous														
	Mesohalobous			X											
	alpha range														
	beta range														
	Oligohalobous														
	halophilous													X	
	indifferent				X	X	X	X			X	X			
	halophobous														
	Euryhalobous		X												
Saprobien	Polysaprobic														Oligosaprobic
	Mesosaprobic														
	alpha range														
	beta range														
	Oligosaprobic	X													
	Saprophilic														
	Saproxenous														
	Saprophobic														
Current	Limnobiontic														Rheophilous
	Limnophilous														
	Indifferent														
	Rheophilous				X			X							
	Rheobiontic														
General Habitat	Marine														Lakes and Ponds
	Estuary														
	Lake												X		
	Pond												X		
	River														
	Spring and Stream														
	Aerophilous														
	Other														
Specific Habitat	Euplanktonic														Periphytic
	Tychoplanktonic														
	Periphytic												X	X	
	epipelic														
	epilithic														
	epidendric														
	epizooic														
	epiphytic														
	attached														
	unattached														
Seasonal Dist.	Winter														Summer form
	Spring														
	Summer	X													
	Fall														
Temperature	Euthermal														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Undesignated														

Geographical distribution and additional comments:
Euryoxybiontic (26).

Taxon Navicula cryptocephala var. veneta (Kütz.) Rabh.

		References																			Concensus & Notes
		3	8	9	11	12	13	14	20	21	26	27	29	34	38						
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 6.4-9.0 (8, 27).
	Indifferent																				
	Alkaliphilous		X	X	X	X	X	X			X	X									
	Alkalibiontic																				
Nutrient	Eutrophic											X									
	Mesotrophic																				Eutrophic
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous								X												Indifferent to Mesohalobous; apparently Euryhalobous
	Mesohalobous								X	X				X	X						
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous												X	X							
	indifferent		X	X	X			X			X										
	halophobous																				
	Euryhalobous	X	X																		
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				Rheobiontic
	Rheophilous																				
	Rheobiontic		X		X																
General Habitat	Marine																				
	Estuary																				Springs, Streams, Aerophilous, Lakes and Ponds
	Lake											X									
	Pond											X									
	River																				
	Spring and Stream									X											
	Aerophilous									X											
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic													X							Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Euryoxybiontic (26).

Taxon Navicula cuspidata var. ambigua (Ehr.) Cl.

		References																		Concensus & Notes
		8	10	12	13	14	21	26	29	34	45	46								
pH	Acidobiontic																			Alkaliphilous; range 6.5-8.2 (8), optimum 7.4 (45).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X	X		X	X									
	Alkalibiontic																			
Nutrients	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous								X											
	halophilous																			
	indifferent	X	X			X	X	X		X	X	X								
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range										X									
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous	X																		
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic						X			X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			Fall maximum
	Spring																			
	Summer																			
	Fall										X									
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36); euryoxybiontic (26).

Taxon Navicula cuspidata (Kütz.) Kütz. var. cuspidata

		References																		Concensus & Notes
		2	4	8	9	10	11	13	14	20	21	26	27	29	30	31	34	35	38	46	
pH	Acidobiontic																				Alkaliphilous; range 6.3-9.0 (2, 8, 27), optimum 8.3-8.6 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X	X	X	X	X	X	X	X		X	X	X				X	X			
	Alkalibiontic		X																		
Nutrient	Eutrophic												X								Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous		X																		
	alpha range																				
	beta range																				
	Oligohalobous																		X		
	halophilous																				
	indifferent			X	X	X	X		X		X	X		X			X			X	
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range														X	X					
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous										X										
	Indifferent			X			X														
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes and Ponds
	Estuary																				
	Lake												X								
	Pond												X								
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic									X	X		X				X				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); euryoxybiontic (26).

Taxon Navicula cuspidata var. heribaudii Per.

		References			Concensus & Notes
		10	12	21	
pH	Acidobiontic				Alkaliphilous
	Acidophilous				
	Indifferent				
	Alkaliphilous	X	X	X	
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				Indifferent
	Euhalobous				
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent	X		X	
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic			X	Periphytic
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
Cosmopolitan (21).

Taxon Navicula decussis Østr. var. decussis

		References				Concensus & Notes
		11	14	26	38	
pH	Acidobiontic					Alkaliphilous
	Acidophilous					
	Indifferent				X	
	Alkaliphilous	X	X	X		
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Indifferent
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous				X	
	halophilous					
	indifferent	X	X	X		
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					Oligosaprobic
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic			X		
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					Rheophilous
	Limnophilous					
	Indifferent					
	Rheophilous	X				
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Navicula elginensis (Greg.) Ralfs var. elginensis

		References 4	38	Concensus & Notes
pH	Acidobiontic			
	Acidophilous			Alkaliphilous; optimum 7.5-7.8 (4).
	Indifferent			
	Alkaliphilous	X		
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			Oligohalobous to Beta-Mesohalobous
	Mesohalobous			
	alpha range			
	beta range		X	
	Oligohalobous		X	
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Navicula exigua var. capitata Patr.

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		Oligohalobous
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Seems to prefer water of less than 100 ppm hardness ($CaCO_3$) (38).

Taxon Navicula exigua Greg. ex. Grun. var. exigua

		References								Concensus & Notes
		4	8	11	13	21	26	27	38	
pH	Acidobiontic									Alkaliphilous; range 6.4-8.3 (8, 21, 27), optimum 7.5-8.0 (4).
	Acidophilous									
	Indifferent						X		X	
	Alkaliphilous	X	X	X	X	X		X		
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									Indifferent to Halophobous
	Euhalobous									
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous					X			X	
	halophilous									
	indifferent		X	X	X		X			
	halophobous				X		X			
	Euryhalobous									
Saprobien	Polysaprobic									Saproxenous
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous						X			
	Saprophobic									
Current	Limnobiontic									Indifferent
	Limnophilous									
	Indifferent		X	X						
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									Periphytic
	Tychoplanktonic									
	Periphytic					X				
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Navicula gastrum (Ehr.) Kütz. var. gastrum

		References																			Concensus & Notes
		4	8	11	13	14	21	26	27	29	31	34	35	38	46						
pH	Acidobiontic																				Indifferent; range 6.4-8.0 (8, 27), optimum around 8 (4).
	Acidophilous																				
	Indifferent		X	X	X	X	X	X					X								
	Alkaliphilous	X							X												
	Alkalibiontic																				
Nutrients	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range													X							
	Oligohalobous						X							X	X						
	halophilous																				
	indifferent		X	X		X		X		X		X									
	halophobous				X			X													
	Euryhalobous																				
Saprobien	Polysaprobic																				Saprophobic to Saproxenous
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous							X													
	Saprophobic										X										
Current	Limnobiontic																				Limnophilous
	Limnophilous		X	X																	
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic						X					X									
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Navicula halophila (Grun.) Cl. var. halophila

		References																			Concensus & Notes
		4	8	9	10	11	12	13	20	21	23	38	39	41	45						
pH	Acidobiontic																				Alkaliphilous; range 6.7-7.8 (8).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous		X		X																
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous	X	X	X	X	X	X	X	X	X	X	X	X	X	X						Mesohalobous
	alpha range																				
	beta range																				
	Oligohalobous											X									
	halophilous									X	X										
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous		X																		Limnophilous
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 23); from water of high mineral content (38).

Taxon Navicula integra (W.Sm.) Ralfs var. integra

		References																		Concensus & Notes
		3	4	8	9	20	25	29	39	41	46									
pH	Acidobiontic																			
	Acidophilous																			Indifferent; range 6.4-8.2 (8).
	Indifferent			X	X		X													
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Halophilous
	Mesohalobous		X			X														
	alpha range	X																		
	beta range																			
	Oligohalobous																			
	halophilous			X	X		X	X	X	X	X									
	indifferent																			
	halophobous																			
	Euryhalobous										X									
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			Rheophilous
	Rheophilous			X																
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Mesooxybiontic (26); seems to prefer water with high mineral content, often found in polluted water (38).

Taxon Navicula jaernefeltii Hust. var. jaernefeltii

		References																			Concensus & Notes
		13	35																		
pH	Acidobiontic																				
	Acidophilous	X	X																		Acidophilous
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Navicula lanceolata (Ag.) Kutz. var. lanceolata

		References																			Concensus & Notes
		4	8	9	11	12	14	20	21	26	27	38									
pH	Acidobiontic																				Alkaliphilous; range 6.3-9.0 (8, 27), optimum about 8 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X	X	X	X	X	X		X	X	X										
	Alkalibiontic																				
Nutrients	Eutrophic										X										Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range							X				X									
	Oligohalobous							X				X									
	halophilous																				
	indifferent		X	X	X		X		X	X											
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Limnophilous
	Limnophilous		X		X																
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes and Ponds
	Estuary																				
	Lake										X										
	Pond										X										
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic								X												
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21); seems to prefer water of high mineral content (38).

Taxon Navicula luzonensis Hust. var. luzonensis

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Seems to prefer water of fairly high mineral content (38).

Taxon Navicula minima Grun. var. minima

		References											Concensus & Notes
		4	8	11	12	13	14	21	26	27	35	38	
pH	Acidobiontic												Alkaliphilous; range 6.2-9.0 (8, 27), optimum 7.5-8 (4).
	Acidophilous												
	Indifferent				X		X						
	Alkaliphilous	X	X	X		X			X	X	X		
	Alkalibiontic												
Nutrient	Eutrophic									X			Eutrophic
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
Halobion	Polyhalobous												Indifferent
	Euhalobous												
	Mesohalobous												
	alpha range												
	beta range											X	
	Oligohalobous							X				X	
	halophilous												
	indifferent		X	X			X		X				
	halophobous												
	Euryhalobous												
Saprobien	Polysaprobic												Oligosaprobic
	Mesosaprobic												
	alpha range												
	beta range												
	Oligosaprobic								X				
	Saprophilic												
	Saproxenous												
	Saprophobic												
Current	Limnobiontic												Indifferent
	Limnophilous												
	Indifferent		X	X									
	Rheophilous												
	Rheobiontic												
General Habitat	Marine												Ponds, Springs and Streams
	Estuary												
	Lake												
	Pond									X			
	River												
	Spring and Stream							X					
	Aerophilous												
	Other												
Specific Habitat	Euplanktonic												Periphytic; especially among fallen leaves (27).
	Tychoplanktonic												
	Periphytic									X			
	epipelic												
	epilithic												
	epidendric												
	epizooic												
	epiphytic												
	attached												
	unattached												
Seasonal Dist.	Winter												
	Spring												
	Summer												
	Fall												
Temperature	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Undesignated												

Geographical distribution and additional comments:
Cosmopolitan (21); tolerant of oxygen poor water (4); calcium indifferent (36).

Taxon Navicula mutica Kutz. var. mutica

		References																					Concensus & Notes
		3	4	8	9	10	11	12	13	20	21	26	34	38	45	46							
pH	Acidobiontic																						Indifferent to Alkaliphilous; range 6.5-8.5 (4, 8), optimum 7.5 (45), 8.5 (4).
	Acidophilous																						
	Indifferent			X		X	X	X	X			X											
	Alkaliphilous		X		X						X			X	X								
	Alkalibiontic		X																				
Nutrient	Eutrophic																						
	Mesotrophic																						
	Oligotrophic																						
	Dystrophic																						
Halobion	Polyhalobous																						Oligohalobous, Halophilous to Indifferent
	Euhalobous																						
	Mesohalobous		X								X			X									
	alpha range																						
	beta range									X													
	Oligohalobous		X								X			X									
	halophilous	X			X	X																	
	indifferent			X		X	X					X			X	X							
	halophobous																						
	Euryhalobous														X	X							
Saprobien	Polysaprobic																						
	Mesosaprobic																						
	alpha range																						
	beta range																						
	Oligosaprobic																						
	Saprophilic																						
	Saproxenous																						
	Saprophobic																						
Current	Limnobiontic																						Indifferent
	Limnophilous																						
	Indifferent			X			X																
	Rheophilous																						
	Rheobiontic																						
General Habitat	Marine																						Aerophilous, Springs, Streams, also found frequently in the soil (21).
	Estuary																						
	Lake																						
	Pond																						
	River																						
	Spring and Stream										X												
	Aerophilous										X			X									
	Other																						
Specific Habitat	Euplanktonic																						Periphytic to Tychoplanktonic
	Tychoplanktonic														X								
	Periphytic												X		X								
	epipelic																						
	epilithic																						
	epidendric																						
	epizooic																						
	epiphytic																						
	attached														X								
	unattached														X								
Seasonal Dist.	Winter																						Fall maximum
	Spring																						
	Summer																						
	Fall														X								
Temperature	Euthermal																						
	Mesothermal																						
	Oligothermal																						
	Stenothermal																						
	Metathermal																						
	Eurythermal																						
	Undesignated																						

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesoxybiontic (26); characteristic of oxygen rich waters (4).

Taxon Navicula mutica var. stigma Patr.

		References	Concensus & Notes
		38	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal	X	Mesothermal
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated	X	

Geographical distribution and additional comments:

Taxon Navicula mutica var. tropica Hust.

		References	Concensus & Notes
		38	
pH	Acidobiontic		
	Acidophilous		Indifferent
	Indifferent	X	
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		Oligohalobous
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Navicula notha Wallace var. notha

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Seems to prefer water of low mineral content (38).

Taxon Navicula oblonga (Kutz.) Kutz. var. oblonga

		References															Concensus & Notes
		4	8	9	11	14	20	21	22	26	27	29	36	38	39	46	
pH	Acidobiontic																Alkaliphilous; range 5.7-9.0 (8, 27, 36), optimum 8.3-8.7 (4).
	Acidophilous																
	Indifferent																
	Alkaliphilous	X	X	X	X	X				X	X		X				
	Alkalibiontic	X															
Nutrient	Eutrophic										X						Eutrophic
	Mesotrophic																
	Oligotrophic																
	Dystrophic																
Halobion	Polyhalobous																Indifferent; can invade brackish water, but not frequently (4).
	Euhalobous																
	Mesohalobous																
	alpha range																
	beta range	X					X							X			
	Oligohalobous	X					X	X	X			X		X			
	halophilous			X													
	indifferent		X		X	X				X					X	X	
	halophobous																
	Euryhalobous															X	
Saprobien	Polysaprobic																Saproxenous
	Mesosaprobic																
	alpha range																
	beta range																
	Oligosaprobic																
	Saprophilic																
	Saproxenous										X						
	Saprophobic																
Current	Limnobiontic																Indifferent
	Limnophilous																
	Indifferent		X		X												
	Rheophilous																
	Rheobiontic																
General Habitat	Marine																Lakes and Ponds
	Estuary																
	Lake										X						
	Pond										X						
	River																
	Spring and Stream																
	Aerophilous																
	Other																
Specific Habitat	Euplanktonic																Periphytic
	Tychoplanktonic																
	Periphytic								X								
	epipelic																
	epilithic																
	epidendric																
	epizooic																
	epiphytic																
	attached																
	unattached																
Seasonal Dist.	Winter																
	Spring																
	Summer																
	Fall																
Temperature	Euthermal																
	Mesothermal																
	Oligothermal																
	Stenothermal																
	Metathermal																
	Eurythermal																
	Undesignated																

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36); seems to prefer water of high mineral content (38).

Taxon Navicula pelliculosa (Breb. ex. Kutz.) Hilse var. pelliculosa

		References																		Concensus & Notes
		4	19	20	21	26	27	29	38											
pH	Acidobiontic																			
	Acidophilous						X													Alkaliphilous; range 5.5-8.0 (4, 27), optimum around 8 (4).
	Indifferent						X													
	Alkaliphilous	X			X	X														
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range																			
	Oligohalobous							X	X											
	halophilous																			
	indifferent				X	X														
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Oligosaprobic
	beta range																			
	Oligosaprobic				X	X														
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			Marshes
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other			X																
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Seems to prefer water of high mineral content (38).

Taxon Navicula peregrina (Ehr.) Kütz. var. peregrina

		References												Concensus & Notes
		3	4	8	9	10	12	13	26	35	38	41	46	
pH	Acidobiontic													Alkaliphilous; range 6.8-7.9 (8).
	Acidophilous													
	Indifferent			X										
	Alkaliphilous			X		X	X	X		X				
	Alkalibiontic													
Nutrien?	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
Halobion	Polyhalobous													
	Euhalobous													
	Mesohalobous		X	X	X	X	X	X			X	X	X	Mesohalobous
	alpha range								X					
	beta range	X												
	Oligohalobous													
	halophilous													
	indifferent													
	halophobous													
	Euryhalobous												X	
Saprobien	Polysaprobic													
	Mesosaprobic													
	alpha range													
	beta range													
	Oligosaprobic													
	Saprophilic													
	Saproxenous													
	Saprophobic													
Current	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic													
General Habitat	Marine													
	Estuary													
	Lake													
	Pond													
	River													
	Spring and Stream													
	Aerophilous													
	Other													
Specific Habitat	Euplanktonic													
	Tychoplanktonic													
	Periphytic													
	epipelic													
	epilithic													
	epidendric													
	epizooic													
	epiphytic													
	attached													
	unattached													
Seasonal Dist.	Winter													
	Spring													
	Summer													
	Fall													
Temperature	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Undesignated													

Geographical distribution and additional comments:
Seems to prefer water of high mineral content (38).

Taxon Navicula pseudoscutiformis Hust. var. pseudoscutiformis

		References																		Concensus & Notes
		7	10	12	13	26	27	35	38	46										
pH	Acidobiontic																			
	Acidophilous																			Indifferent:
	Indifferent		X	X	X	X	X	X												range 5.9-7.5 (27).
	Alkaliphilous																			
	Alkalibiontic																			
Nutrients	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X			X			X	X										
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Saproxenous to
	beta range	X																		Beta-Mesosaprobic
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous					X														
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal								X											Oligothermal
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Sometimes found in water of high mineral content (38).

Taxon Navicula pupula Kutz. var. pupula

		References																			Concensus & Notes
		4	8	9	10	11	12	13	14	21	26	27	29	34	35	38	46				
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent		X	X	X	X	X	X	X		X	X			X						Indifferent
	Alkaliphilous	X																			
	Alkalibiontic																				
Nutrien	Eutrophic											X									
	Mesotrophic																				Eutrophic
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Indifferent
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous															X					
	indifferent		X	X	X	X			X	X	X		X	X			X				
	halophobous																				
	Euryhalobous																X				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent		X			X															Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				Ponds
	Pond											X									
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic													X							Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Navicula pupula var. capitata Skv. and Meyer

		References																	Concensus & Notes
		8	9	10	11	12	13	14	21	26	27	38							
pH	Acidobiontic																		Indifferent; range 5.7-9.0 (8, 27).
	Acidophilous																		
	Indifferent	X	X	X	X	X	X	X		X	X	X							
	Alkaliphilous																		
	Alkalibiontic																		
Nutrient	Eutrophic										X								Eutrophic
	Mesotrophic																		
	Oligotrophic																		
	Dystrophic																		
Halobion	Polyhalobous																		Indifferent
	Euhalobous																		
	Mesohalobous																		
	alpha range																		
	beta range																		
	Oligohalobous																		
	halophilous											X							
	indifferent	X	X	X	X			X	X	X									
	halophobous																		
	Euryhalobous																		
Saprobien	Polysaprobic																		
	Mesosaprobic																		
	alpha range																		
	beta range																		
	Oligosaprobic																		
	Saprophilic																		
	Saproxenous																		
	Saprophobic																		
Current	Limnobiontic																		Indifferent
	Limnophilous																		
	Indifferent	X			X														
	Rheophilous																		
	Rheobiontic																		
General Habitat	Marine																		Ponds
	Estuary																		
	Lake																		
	Pond										X								
	River																		
	Spring and Stream																		
	Aerophilous																		
	Other																		
Specific Habitat	Euplanktonic																		
	Tychoplanktonic																		
	Periphytic																		
	epipelic																		
	epilithic																		
	epidendric																		
	epizooic																		
	epiphytic																		
	attached																		
	unattached																		
Seasonal Dist.	Winter																		
	Spring																		
	Summer																		
	Fall																		
Temperature	Euthermal																		
	Mesothermal																		
	Oligothermal																		
	Stenothermal																		
	Metathermal																		
	Eurythermal																		
	Undesignated																		

Geographical distribution and additional comments:
Cosmopolitan (21); mesooxybiontic (26).

Taxon Navicula pupula var. rectangularis (Greg.) Grun.

		References																			Concensus & Notes
		8	9	10	11	12	13	14	21	26	27	34	38								
pH	Acidobiontic																				
	Acidophilous																				Indifferent;
	Indifferent	X	X	X	X	X	X	X		X	X										range 6.2-8.2 (8, 27).
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic										X										
	Mesotrophic																				Eutrophic
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Indifferent
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent	X	X	X	X			X	X	X		X									
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent	X			X																Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				Ponds
	Pond										X										
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic											X									Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Cosmopolitan (21); seems to prefer water of higher mineral content than the nominate variety and has been found in salt bogs (38); mesooxybiontic (26).

Taxon Navicula pygmaea Kutz. var. pygmaea

		References													Concensus & Notes
		3	4	9	10	11	13	20	21	26	29	38	41	46	
pH	Acidobiontic														Alkalibiontic to Alkaliphilous
	Acidophilous														
	Indifferent														
	Alkaliphilous				X										
	Alkalibiontic						X			X					
Nutrient	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Halobion	Polyhalobous														Mesohalobous
	Euhalobous														
	Mesohalobous		X	X	X	X		X	X		X	X			
	alpha range	X													
	beta range									X				X	
	Oligohalobous		X									X			
	halophilous						X						X		
	indifferent														
	halophobous														
	Euryhalobous	X									X				
Saprobien	Polysaprobic														Mesosaprobic? sometimes in polluted water (38).
	Mesosaprobic											X			
	alpha range														
	beta range														
	Oligosaprobic														
	Saprophilic														
	Saproxenous														
	Saprophobic														
Current	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous														
	Rheobiontic														
General Habitat	Marine														
	Estuary														
	Lake														
	Pond														
	River														
	Spring and Stream														
	Aerophilous														
	Other														
Specific Habitat	Euplanktonic														
	Tychoplanktonic														
	Periphytic														
	epipelic														
	epilithic														
	epidendric														
	epizooic														
	epiphytic														
	attached														
	unattached														
Seasonal Dist.	Winter														
	Spring														
	Summer														
	Fall														
Temperature	Euthermal														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Undesignated														

Geographical distribution and additional comments:
Cosmopolitan (21); mesooxybiontic (26).

Taxon Navicula radiosa Kutz. var. radiosa

		References																			Concensus & Notes
		4	8	9	10	11	12	13	14	21	26	27	29	31	34	35	38	39	43		
pH	Acidobiontic																				
	Acidophilous	X								X											Indifferent; range 4.3-9.0 (8, 21, 27 43), optimum 6.5-7 (4).
	Indifferent	X	X			X		X	X	X	X	X				X	X		X		
	Alkaliphilous			X	X		X														
	Alkalibiontic																				
Nutrients	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Indifferent
	alpha range																				
	beta range																				
	Oligohalobous																X				
	halophilous												X								
	indifferent		X	X	X	X			X	X					X		X	X	X		
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				Oligosaprobic to Beta-Mesosaprobic
	beta range													X							
	Oligosaprobic										X										
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent		X			X													X		Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic									X					X						Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																		X		Eurythermal and Oligothermal to Mesothermal
	Oligothermal																		X		
	Stenothermal																				
	Metathermal																				
	Eurythermal																		X		
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36).

Taxon Navicula radiosa var. tenella (Bréb. ex. Kutz.) Grun.

		References																		Concensus & Notes
		10	11	19	34	37	38													
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent		X																	Indifferent to Alkaliphilous
	Alkaliphilous	X																		
	Alkalibiontic																			
Nutrients	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous					X														
	alpha range																			
	beta range																			
	Oligohalobous					X														
	halophilous																			
	indifferent	X	X				X													
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent			X																Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic				X	X														Periphytic
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (21, 23).

Taxon Navicula reinhardtii (Grun.) Grun. var. reinhardtii

		References																		Concensus & Notes
		4	7	8	9	11	12	13	14	26	27	29	38	46						
pH	Acidobiontic																			Alkalibiontic to Alkaliphilous; range 6.6-8.3 (8, 27), optimum around 8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X					X	X												
	Alkalibiontic			X	X	X			X	X	X									
Nutrient	Eutrophic										X									Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range												X							
	Oligohalobous																			
	halophilous																			
	indifferent			X	X	X			X	X		X		X						
	halophobous																			
	Euryhalobous			X								X								
Saprobien	Polysaprobic																			Saproxenous to Beta-Mesoaprobic
	Mesosaprobic																			
	alpha range																			
	beta range		X																	
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous									X										
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake										X									
	Pond										X									
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Navicula rhynchocephala Kutz. var. rhynchocephala

	References	4	8	9	10	11	12	13	20	21	26	27	29	31	38	39	45	46			Concensus & Notes
pH	Acidobiontic																				Alkaliphilous; range 6.4-9.0 (8, 27), optimum 7.3-7.6 (4).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous	X	X	X	X	X	X	X			X	X									
	Alkalibiontic																				
Nutrients	Eutrophic											X									Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent to Halophilous
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range								X												
	Oligohalobous								X												
	halophilous			X	X		X						X		X						
	indifferent		X			X				X	X				X	X		X			
	halophobous																				
	Euryhalobous																	X			
Saprobien	Polysaprobic																				Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range													X			X				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent		X			X															
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Ponds
	Estuary																				
	Lake																				
	Pond											X									
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic									X											
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				Spring and Fall maxima
	Spring																X				
	Summer																				
	Fall																X				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesooxybiontic (26); seems to prefer water of high mineral content (38).

Taxon Navicula scutelloides W. Sm. ex. Greg. var. scutelloides

		References																		Concensus & Notes
		4	8	11	14	20	21	24	26	27	38	39	41	45	46					
pH	Acidobiontic																			Alkalibiontic; range 6.4-9.0 (8, 27), optimum not over 8 (4).
	Acidophilous																			
	Indifferent						X													
	Alkaliphilous	X					X													
	Alkalibiontic		X	X	X				X	X										
Nutrient	Eutrophic									X										Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous						X				X				X					
	halophilous																			
	indifferent		X	X	X				X			X		X						
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous								X											
	Saprophobic																			
Current	Limnobiontic		X	X					X											Limnobiontic
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes
	Estuary																			
	Lake	X				X	X	X		X			X							
	Pond									X										
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic	X					X			X			X							
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 23, 24); however less abundant in the tropics (24).

Taxon Navicula seminulum var. hustedtii Patr.

		References	Concensus & Notes
		38	
pH	Acidobiontic		
	Acidophilous	X	Acidophilous
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Found in water low in mineral content, fairly rich in humates (38).

Taxon Navicula seminulum Grun. var. seminulum

		References									Concensus & Notes
		4	8	9	10	13	26	27	35	38	
pH	Acidobiontic										Indifferent; range 5.4-8.4 (2, 27), optimum about 8.4 (4).
	Acidophilous										
	Indifferent		X	X	X	X	X	X	X		
	Alkaliphilous	X									
	Alkalibiontic										
Nutrient	Eutrophic							X			Oligotrophic to Eutrophic
	Mesotrophic										
	Oligotrophic							X			
	Dystrophic										
Halobion	Polyhalobous										Indifferent to Beta-Mesohalobous
	Euhalobous										
	Mesohalobous										
	alpha range										
	beta range									X	
	Oligohalobous									X	
	halophilous		X								
	indifferent			X			X				
	halophobous										
	Euryhalobous										
Saprobien	Polysaprobic										
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Saprophobic										
Current	Limnobiontic										Indifferent
	Limnophilous										
	Indifferent		X								
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										Ponds
	Estuary										
	Lake										
	Pond							X			
	River										
	Spring and Stream										
	Aerophilous										
	Other										
Specific Habitat	Euplanktonic										
	Tychoplanktonic										
	Periphytic										
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										
	Spring										
	Summer										
	Fall										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:
Probably Cosmopolitan but seldom seen in the tropics (24); a facultative nitrogen heterotroph that tolerates low oxygen concentration (4); mesooxybiontic (26).

Taxon Navicula tripunctata var. schizonemoides (V.H.) Patr.

		References	Concensus & Notes
		38	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		Oligohalobous
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Seems to prefer water of fairly high mineral content (38).

Taxon Navicula tripunctata (O.F. Müll.) Bory var. tripunctata

		References																		Concensus & Notes
		4	8	9	11	12	13	14	19	20	26	27	29	38	43	46				
pH	Acidobiontic																			Alkaliphilous; range 6.4-9.0 (27, 43), optimum about 8.3 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X	X	X	X	X	X	X	X		X	X			X					
	Alkalibiontic																			
Nutrient	Eutrophic											X								Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent and Euryhalobous
	Euhalobous																			
	Mesohalobous	X																		
	alpha range																			
	beta range									X				X						
	Oligohalobous													X		X				
	halophilous																			
	indifferent		X	X	X			X			X		X		X					
	halophobous																			
	Euryhalobous		X						X				X			X				
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic										X									
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent										X									
	Rheophilous		X		X				X						X					
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake											X								
	Pond											X								
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic								X	X		X								
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal and Oligothermal to Mesothermal
	Mesothermal														X					
	Oligothermal														X					
	Stenothermal																			
	Metathermal																			
	Eurythermal														X					
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Navicula viridula var. avenacea (Bréb. ex. Grun.) V.H.

		References																		Concensus & Notes
		3	10	12	38	43														
pH	Acidobiontic																			Alkaliphilous; range 6.9-8.2 (43).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X	X	X	X														
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Oligohalobous, Indifferent to Halophilous
	Euhalobous																			
	Mesohalobous		X																	
	alpha range																			
	beta range																			
	Oligohalobous				X															
	halophilous	X																		
	indifferent					X														
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous					X														
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal and Oligothermal to Mesothermal
	Mesothermal					X														
	Oligothermal					X														
	Stenothermal																			
	Metathermal																			
	Eurythermal					X														
	Undesignated																			

Geographical distribution and additional comments:

Taxon Navicula viridula (Kutz.) Kutz. emend. V.H., var. viridula

		References																			Concensus & Notes
		1	4	8	9	10	11	12	14	20	21	26	27	29	34	38	39	45			
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent															X					Alkaliphilous; range 5.5-9.0 (8, 21,27), optimum 7.5 (4, 21).
	Alkaliphilous		X	X	X	X	X	X	X		X	X	X			X					
	Alkalibiontic																				
Nutrient	Eutrophic												X								Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous									X											
	alpha range																				
	beta range																				
	Oligohalobous									X				X	X	X					
	halophilous																				
	indifferent			X	X	X	X		X		X	X					X	X			
	halophobous																				
	Euryhalobous										X							X			
Saprobien	Polysaprobic																				
	Mesosaprobic																				Oligosaprobic to Mesosaprobic
	alpha range																	X			
	beta range																	X			
	Oligosaprobic	X																			
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent											X									Rheophilous to Indifferent
	Rheophilous			X			X														
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				Lakes and Ponds
	Lake												X								
	Pond												X								
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																	X			Periphytic
	Periphytic										X				X			X			
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				Summer form
	Summer	X																			
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesooxybiontic (26).

Taxon Navicula zanoni Hust. var. zanoni

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		Alkaliphilous; range 7.5-8 (4).
	Indifferent		
	Alkaliphilous	X	
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Neidium affine (Ehr.) Pfitz. var. affine

		References									Concensus & Notes
		4	8	9	10	12	13	21	35	38	
pH	Acidobiontic										Indifferent to Alkaliphilous; range 5.5-8.3 (8, 21), optimum around 6 (4).
	Acidophilous	X									
	Indifferent			X	X	X		X		X	
	Alkaliphilous		X				X		X		
	Alkalibiontic										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Halobion	Polyhalobous										Indifferent
	Euhalobous										
	Mesohalobous										
	alpha range										
	beta range										
	Oligohalobous							X			
	halophilous										
	indifferent		X	X	X						
	halophobous										
	Euryhalobous										
Saprobien	Polysaprobic										
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Saprophobic										
Current	Limnobiontic										Rheophilous
	Limnophilous										
	Indifferent										
	Rheophilous		X								
	Rheobiontic										
General Habitat	Marine										
	Estuary										
	Lake										
	Pond										
	River										
	Spring and Stream										
	Aerophilous										
	Other										
Specific Habitat	Euplanktonic										
	Tychoplanktonic										
	Periphytic										
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										
	Spring										
	Summer										
	Fall										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:
Cosmopolitan (21, 23, 24).

Taxon Neidium binode (Ehr.) Hust. var. binode

		References																		Concensus & Notes
		9	15	19	26	38														
pH	Acidobiontic																			
	Acidophilous		X																	Indifferent
	Indifferent	X			X	X														
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Halophobous to Indifferent
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent				X															
	halophobous	X	X																	
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			Oligosaprobic
	alpha range																			
	beta range																			
	Oligosaprobic				X	X														
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous			X																
	Indifferent																			Limnophilous
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Neidium bisulcatum (Lagerst.) Cl. var. bisulcatum

		References								Concensus & Notes
		4	10	12	13	20	26	38	45	
pH	Acidobiontic									Indifferent; range 5.4-7.7 (26), optimum 5-6 (4).
	Acidophilous	X								
	Indifferent		X	X	X		X			
	Alkaliphilous									
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									Indifferent and Euryhalobous
	Euhalobous									
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous									
	halophilous									
	indifferent		X						X	
	halophobous									
	Euryhalobous								X	
Saprobien	Polysaprobic									Beta-Mesosaprobic
	Mesosaprobic									
	alpha range									
	beta range								X	
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									Lakes, Rivers, Brooks and Pools
	Estuary									
	Lake							X		
	Pond									
	River							X		
	Spring and Stream					X				
	Aerophilous									
	Other					X				
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic									
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter								X	Winter maximum
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Taxon Neidium dubium (Ehr.) Cl. var. dubium

		References																		Concensus & Notes
		4	8	9	11	13	14	26	27	38	46									
pH	Acidobiontic																			Indifferent; range 6-9.0 (4, 8, 27), optimum around 6 (4)
	Acidophilous	X																		
	Indifferent		X	X	X	X	X	X		X										
	Alkaliphilous																			
	Alkalibiontic								X											
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X		X	X			X									
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic							X												
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X		X															
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Streams
	Estuary																			
	Lake									X										
	Pond																			
	River																			
	Spring and Stream									X										
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Neidium iridis (Ehr.) Cl. var. iridis

		References																		Concensus & Notes
		4	8	9	11	12	13	14	21	26	27	29	35	38	39					
pH	Acidobiontic																			Indifferent; range 4.-9.0 (21, 27), optimum around 6 (4).
	Acidophilous	X																		
	Indifferent		X	X	X	X		X	X	X	X		X	X						
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Halophobous to Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous								X											
	halophilous																			
	indifferent		X				X	X		X										
	halophobous		X	X	X							X			X					
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic									X				X						
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic		X		X									X						Limnobiontic
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes, Ponds, Bogs, and occasionally Rivers
	Estuary																			
	Lake													X						
	Pond													X						
	River													X						
	Spring and Stream																			
	Aerophilous																			
	Other													X						
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); calcium indifferent (36).

Taxon Nitzschia acicularis W. Sm. var. acicularis

		References																		Concensus & Notes
		4	7	8	11	12	19	20	21	26	29	30	31	34	35	41	46			
pH	Acidobiontic																			Alkaliphilous; range 6.4-8.6 (8, 21), optimum 8.3-8.5 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X		X	X	X			X	X					X					
	Alkalibiontic																			
Nutrient	Eutrophic	X					X		X											Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous						X		X		X									
	halophilous																			
	indifferent			X	X					X							X			
	halophobous																			
	Euryhalobous																X			
Saprobien	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic													X		X				
	alpha range		X																	
	beta range		X						X			X	X							
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous			X	X					X										
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic	X					X	X	X											Euplanktonic
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (5, 20); mesooxybiontic (26).

Taxon Nitzschia amphibia Grun. var. amphibia

		References																		Concensus & Notes
		2	3	4	8	9	10	11	12	13	14	21	26	27	29	34	39	43	46	
pH	Acidobiontic																			Alkaliphilous to Alkalibiontic; range 4.0-9.3 (8, 21, 27, 43), optimum slightly over 8.5 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous			X			X		X	X	X		X					X		
	Alkalibiontic			X	X	X		X						X						
Nutrient	Eutrophic													X						Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous			X																
	alpha range																			
	beta range		X																	
	Oligohalobous											X			X					
	halophilous																			
	indifferent	X			X	X	X	X			X					X	X		X	
	halophobous																	X		
	Euryhalobous																	X		
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent				X			X										X		
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes, Ponds and Streams
	Estuary																			
	Lake											X		X						
	Pond													X						
	River																			
	Spring and Stream											X								
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic											X				X		X		
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal, Oligothermal to Mesothermal
	Mesothermal																	X		
	Oligothermal																	X		
	Stenothermal																			
	Metathermal																			
	Eurythermal																	X		
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); it is at least a facultative nitrogen heterotroph (4); mesooxybiontic (26).

Taxon Nitzschia angustata (W.Sm.) Grun. var. angustata

		References																		Concensus & Notes
		4	8	10	11	12	13	14	26	27	29	35	39							
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent						X	X												Alkaliphilous; range 6.4-8.5 (8, 27), optimum around 8.5 (4).
	Alkaliphilous	X	X	X	X	X			X	X		X								
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous	X																		Indifferent
	alpha range																			
	beta range																			
	Oligohalobous										X									
	halophilous																			
	indifferent		X	X	X			X	X				X							
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			Saproxenous
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous								X											
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous		X		X															Limnophilous
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Nitzschia apiculata (Greg.) Grun. var. apiculata

		References																			Concensus & Notes
		3	4	8	9	10	11	12	26	29	39	41	43								
pH	Acidobiontic																				Alkaliphilous to Indifferent; range 6.4-8.2 (8).
	Acidophilous																				
	Indifferent			X									X								
	Alkaliphilous					X		X	X												
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Mesohalobous
	Euhalobous																				
	Mesohalobous		X	X	X	X	X		X	X	X	X	X								
	alpha range																				
	beta range	X																			
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous								X												
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Rheophilous to Indifferent
	Limnophilous																				
	Indifferent								X												
	Rheophilous			X																	
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Nitzschia bacta Hust. var. bacata

		References			Concensus & Notes
		4	14	21	
pH	Acidobiontic				Alkaliphilous to Acidophilous, optimum 6.5-7.0 (4).
	Acidophilous	X			
	Indifferent				
	Alkaliphilous		X	X	
	Alkalibiontic				
Nutrient	Eutrophic	X			Eutrophic
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				Indifferent
	Euhalobous				
	Mesohalobous				
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent		X		
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				Lakes
	Estuary				
	Lake			X	
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				Periphytic or Tychoplanktonic
	Tychoplanktonic			X	
	Periphytic			X	
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
Tropical Asia and Africa (24).

Taxon Nitzschia capitellata Hust. var. capitellata

		References							Concensus & Notes
		4	10	20	21	26	39	46	
pH	Acidobiontic								Indifferent to Alkalibiontic; range 7-9.2 (21, 26), optimum 7.3-7.8 (4).
	Acidophilous								
	Indifferent					X			
	Alkaliphilous	X	X						
	Alkalibiontic				X				
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								Halophilous
	Euhalobous								
	Mesohalobous								
	alpha range								
	beta range								
	Oligohalobous								
	halophilous		X	X		X	X	X	
	indifferent				X				
	halophobous								
	Euryhalobous								
Saprobien	Polysaprobic								
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Saprophobic								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								Periphytic to Tychoplanktonic
	Tychoplanktonic					X			
	Periphytic				X	X			
	epipelic								
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Undesignated								

Geographical distribution and additional comments:
Found in Europe and tropical Asia (21, 24) and Africa (24); an obligate nitrogen heterotroph (4); mesooxybiontic (26).

Taxon Nitzschia clausii Hantzsch var. clausii

		References						Concensus & Notes
		4	19	20	21	26	46	
pH	Acidobiontic							Alkaliphilous to Indifferent; range 6.8-8.2 (20), optimum about 8.2 (4).
	Acidophilous							
	Indifferent					X		
	Alkaliphilous	X			X			
	Alkalibiontic							
Nutrients	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Halobion	Polyhalobous							Indifferent to Mesohalobous
	Euhalobous							
	Mesohalobous					X		
	alpha range							
	beta range			X				
	Oligohalobous	X						
	halophilous							
	indifferent				X		X	
	halophobous							
	Euryhalobous							
Saprobien	Polysaprobic							
	Mesosaprobic							
	alpha range							
	beta range							
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Saprophobic							
Current	Limnobiontic							Indifferent to Rheophilous
	Limnophilous							
	Indifferent		X					
	Rheophilous				X			
	Rheobiontic							
General Habitat	Marine							
	Estuary							
	Lake							
	Pond							
	River							
	Spring and Stream							
	Aerophilous							
	Other							
Specific Habitat	Euplanktonic							Periphytic
	Tychoplanktonic							
	Periphytic		X					
	epipelic							
	epilithic							
	epidendric							
	epizooic							
	epiphytic							
	attached							
	unattached							
Seasonal Dist.	Winter							More frequent in Summer than Fall
	Spring							
	Summer		X					
	Fall		X					
Temperature	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Undesignated							

Geographical distribution and additional comments:
Cosmopolitan (21); mesooxybiontic (26); in water with high concentrations of dissolved oxygen (4).

Taxon Nitzschia closterium (Ehr.) W.Sm. var. closterium

		References																			Concensus & Notes
		3	4	11	20	29	46														
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous			X	X	X															Alpha-Mesohalobous
	alpha range	X					X														
	beta range																				
	Oligohalobous																				
	halophilous					X															
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine		X																		
	Estuary																				Marine
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic		X		X																
	Tychoplanktonic																				Euplanktonic
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Nitzschia communis Rabh. var. communis

		References																		Concensus & Notes
		4	8	9	11	21	26	29	31	39	41									
pH	Acidobiontic																			Alkalibiontic to Alkaliphilous; range 4.3-8.2 (8, 21), optimum 8 (4).
	Acidophilous																			
	Indifferent					X														
	Alkaliphilous	X					X													
	Alkalibiontic		X	X	X															
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous					X		X												
	halophilous																			
	indifferent		X	X	X		X			X										
	halophobous																			
	Euryhalobous		X																	
Saprobien	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic										X									
	alpha range																			
	beta range								X											
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X		X	X														
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); an obligate nitrogen heterotroph (4); mesooxybiontic (26).

Taxon Nitzschia denticula Grun. var. denticula

		References										Concensus & Notes
		4	8	9	10	11	12	14	29	35	36	39	
pH	Acidobiontic												Alkaliphilous; range 6.4-8.5 (4, 8), optimum 8.2-8.5 (4).
	Acidophilous												
	Indifferent		X										
	Alkaliphilous	X			X		X	X		X			
	Alkalibiontic										X		
Nutrient	Eutrophic												
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
Halobion	Polyhalobous												Indifferent
	Euhalobous												
	Mesohalobous												
	alpha range												
	beta range												
	Oligohalobous								X				
	halophilous												
	indifferent		X	X	X	X		X				X	
	halophobous												
	Euryhalobous				X								
Saprobien	Polysaprobic												
	Mesosaprobic												
	alpha range												
	beta range												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Saprophobic												
Current	Limnobiontic												Indifferent
	Limnophilous												
	Indifferent		X			X							
	Rheophilous												
	Rheobiontic												
General Habitat	Marine												
	Estuary												
	Lake												
	Pond												
	River												
	Spring and Stream												
	Aerophilous												
	Other												
Specific Habitat	Euplanktonic												
	Tychoplanktonic												
	Periphytic												
	epipelic												
	epilithic												
	epidendric												
	epizooic												
	epiphytic												
	attached												
	unattached												
Seasonal Dist.	Winter												
	Spring												
	Summer												
	Fall												
Temperature	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Undesignated												

Geographical distribution and additional comments:
In water with high oxygen concentration (4).

Taxon Nitzschia dissipata (Kutz.) Grun. var. dissipata

		References																		Concensus & Notes
		4	7	8	9	11	13	19	21	24	26	27	29	31	35	39	43	46		
pH	Acidobiontic																			Alkaliphilous to Alkalibiontic; range 5.5-9.0 (8, 27, 43), optimum about 8 (4)
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X					X	X	X		X				X					
	Alkalibiontic			X	X	X		X				X					X			
Nutrient	Eutrophic											X								Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous							X	X				X							
	halophilous																			
	indifferent			X	X	X					X					X		X		
	halophobous																X			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous			X	X			X									X			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake											X								
	Pond											X								
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic							X	X								X			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			Eurythermal and Oligothermal to Mesothermal
	Mesothermal																X			
	Oligothermal																X			
	Stenothermal																			
	Metathermal																			
	Eurythermal																X			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (21, 24); in water with high oxygen concentration (4); mesooxybiontic (26).

Taxon Nitzschia elliptica Hust. var. elliptica

		References	Concensus & Notes
		4	
pH	Acidobiontic		Alkaliphilous;
	Acidophilous		
	Indifferent		
	Alkaliphilous	X	
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous	X	Mesohalobous
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Often found in carbonate or sulfate rich water, can withstand oxygen depleted water (4).

Taxon Nitzschia filiformis (W. Sm.) Hust. var. filiformis

		References								Concensus & Notes
		4	8	9	20	24	26	46		
pH	Acidobiontic									Indifferent
	Acidophilous									
	Indifferent						X			
	Alkaliphilous									
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									
	Mesohalobous	X	X	X	X	X	X	X		Mesohalobous
	alpha range									
	beta range									
	Oligohalobous									
	halophilous									
	indifferent									
	halophobous									
	Euryhalobous					X	X	X		
Saprobien	Polysaprobic									
	Mesosaprobic									Saprophilic
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic						X			
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic									
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Probably Cosmopolitan (24); not fully autotrophic (4); euryoxybiontic (26).

Taxon Nitzschia fonticola Grun. var. fonticola

		References																		Concensus & Notes
		2	4	7	8	10	11	12	13	19	21	26	27	34	35	39				
pH	Acidobiontic																			Alkaliphilous to Alkalibiontic; range 6.0-9.0 (8, 21, 27), optimum 8.2-8.6 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X		X	X	X	X			X		X							
	Alkalibiontic		X						X			X			X					
Nutrien	Eutrophic												X							Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent																			
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Mesosaprobic to Oligosaprobic
	Mesosaprobic																			
	alpha range			X																
	beta range																			
	Oligosaprobic	X																		
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent				X		X													
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes, Ponds, Springs and Streams
	Estuary																			
	Lake												X							
	Pond												X							
	River																			
	Spring and Stream										X									
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic										X									
	Periphytic									X	X			X						
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Nitzschia frustulum Kutz. var. frustulum

		References																			Concensus & Notes
		3	4	8	10	11	12	13	14	20	21	26	27	29	34	35	39	46			
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent												X								Alkaliphilous; range 6.2-8.6 (8, 21, 27).
	Alkaliphilous			X	X	X	X	X	X		X	X				X					
	Alkalibiontic																				
Nutrient	Eutrophic		X																		Eutrophic
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Halophilous to Indifferent and apparently Euryhalobous
	Euhalobous	X																			
	Mesohalobous		X							X											
	alpha range																				
	beta range																				
	Oligohalobous									X											
	halophilous							X	X		X	X			X			X			
	indifferent			X	X	X								X			X				
	halophobous																				
	Euryhalobous			X										X				X			
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic			X		X															Limnobiontic
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic		X																		Euplanktonic, Tychoplanktonic and Periphytic
	Tychoplanktonic														X						
	Periphytic														X						
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); seems to be an obligate nitrogen heterotroph (4); mesooxybiontic (26).

Taxon Nitzschia holsatica Hust. var. holsatica

		References 4	8	20	21	Concensus & Notes
pH	Acidobiontic					Alkaliphilous; range 6.4-8.0 (8), optimum 7.5-8.0 (4).
	Acidophilous					
	Indifferent					
	Alkaliphilous	X	X		X	
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Indifferent
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous				X	
	halophilous					
	indifferent		X			
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					Beta-Mesosaprobic
	Mesosaprobic					
	alpha range					
	beta range				X	
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic		X			Limnobiontic
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					Lakes
	Estuary					
	Lake				X	
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic	X		X	X	Euplanktonic
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
Middle Europe and Tropical Asia (21).

Taxon Nitzschia hungarica Grun. var. hungarica

		References												Concensus & Notes
		4	8	9	20	21	24	26	29	34	39	41	43	46	
pH	Acidobiontic														Alkaliphilous; range 6.5-8.2 (8).
	Acidophilous														
	Indifferent														
	Alkaliphilous		X	X				X							
	Alkalibiontic												X		
Nutrient	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
Halobion	Polyhalobous														Mesohalobous to Halophilous
	Euhalobous														
	Mesohalobous	X	X			X			X		X			X	
	alpha range									X					
	beta range				X			X							
	Oligohalobous				X										
	halophilous			X		X		X		X		X	X		
	indifferent														
	halophobous														
	Euryhalobous													X	
Saprobien	Polysaprobic														
	Mesosaprobic														
	alpha range														
	beta range														
	Oligosaprobic														
	Saprophilic														
	Saproxenous														
	Saprophobic														
Current	Limnobiontic														Indifferent to Rheophilous
	Limnophilous														
	Indifferent							X							
	Rheophilous		X												
	Rheobiontic														
General Habitat	Marine														
	Estuary														
	Lake														
	Pond														
	River														
	Spring and Stream														
	Aerophilous														
	Other														
Specific Habitat	Euplanktonic														Periphytic
	Tychoplanktonic														
	Periphytic									X					
	epipelic														
	epilithic														
	epidendric														
	epizooic														
	epiphytic														
	attached														
	unattached														
Seasonal Dist.	Winter														
	Spring														
	Summer														
	Fall														
Temperature	Euthermal														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Undesignated														

Geographical distribution and additional comments:
Cosmopolitan (21, 24); withstands oxygen depleted waters (4); mesooxybiontic (26).

Taxon Nitzschia kutzingiana Hilse var. Kutzingiana

		References											Concensus & Notes
		4	8	9	10	11	12	13	14	26	27	46	
pH	Acidobiontic												
	Acidophilous												Alkaliphilous; range 6.4-8.4 (8, 27), optimum 7.5-7.8 (4).
	Indifferent												
	Alkaliphilous	X	X	X	X	X	X	X	X	X	X		
	Alkalibiontic												
Nutrient	Eutrophic										X		
	Mesotrophic												Eutrophic
	Oligotrophic												
	Dystrophic												
Halobion	Polyhalobous												
	Euhalobous												
	Mesohalobous												Indifferent
	alpha range												
	beta range												
	Oligohalobous												
	halophilous												
	indifferent		X	X	X	X			X	X		X	
	halophobous												
	Euryhalobous		X										
Saprobien	Polysaprobic												
	Mesosaprobic												
	alpha range												
	beta range												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Saprophobic												
Current	Limnobiontic												
	Limnophilous												
	Indifferent		X			X							Indifferent
	Rheophilous												
	Rheobiontic												
General Habitat	Marine												
	Estuary												
	Lake										X		Lakes and Ponds
	Pond										X		
	River												
	Spring and Stream												
	Aerophilous												
	Other												
Specific Habitat	Euplanktonic												
	Tychoplanktonic												
	Periphytic												
	epipelic												
	epilithic												
	epidendric												
	epizooic												
	epiphytic												
	attached												
	unattached												
Seasonal Dist.	Winter												
	Spring												
	Summer												
	Fall												
Temperature	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Undesignated												

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Nitzschia lacunarum Hust. var. lacunarum

		References																			Concensus & Notes
		4	20																		
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous	X	X																		Mesohalobous to Halophilous
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous		X																		
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Also in carbonate-rich waters (4).

Taxon Nitzschia linearis (W.Sm.) var. linearis

		References																		Concensus & Notes
		1	4	8	9	10	11	12	19	20	21	26	27	29	31	34	43			
pH	Acidobiontic																			Alkaliphilous; range 6.4-9.0 (8, 27, 43), optimum around 7.8 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X	X	X	X	X	X	X			X	X				X			
	Alkalibiontic																			
Nutrient	Eutrophic												X							Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous										X			X		X				
	halophilous																			
	indifferent			X	X	X	X					X								
	halophobous															X				
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic														X					
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Rheobiontic
	Limnophilous																			
	Indifferent									X										
	Rheophilous																			
	Rheobiontic			X			X		X			X					X			
General Habitat	Marine																			Springs and Streams "crenophilous"
	Estuary																			
	Lake																			
	Pond												X							
	River																			
	Spring and Stream									X	X					X	X			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic	X														X				
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			Summer form
	Spring																			
	Summer	X																		
	Fall																			
Temperature	Euthermal																			Eurythermal and Oligothermal to Mesothermal
	Mesothermal																X			
	Oligothermal																X			
	Stenothermal																			
	Metathermal																			
	Eurythermal																X			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (21, 24); a truly autotrophic species living only in oxygen rich water (4); mesooxybiontic (26); from a polluted crustose community (1).

Taxon Nitzschia linearis var. tenuis (W.Sm.) Grun.

		References	Concensus & Notes
		20	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		Oligohalobous
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Nitzschia lorenziana Grun. var. lorenziana

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrients	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous	X	
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobion	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine	X	
	Estuary		Marine
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		Periphytic
	Periphytic	X	
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Nitzschia microcephala Grun. var. microcephala

		References							Consensus & Notes
		4	8	9	21	26	29	46	
pH	Acidobiontic								Alkaliphilous; range 7-8.5 (21), optimum 8.3-8.5 (4).
	Acidophilous								
	Indifferent								
	Alkaliphilous	X	X	X		X			
	Alkalibiontic				X				
Nutrient	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								Halophilous to Indifferent
	Euhalobous								
	Mesohalobous								
	alpha range								
	beta range								
	Oligohalobous				X				
	halophilous		X	X			X		
	indifferent					X		X	
	halophobous								
	Euryhalobous								
Saprobion	Polysaprobic								
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Saprophobic								
Current	Limnobiontic								Indifferent
	Limnophilous								
	Indifferent		X						
	Rheophilous								
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								
	Tychoplanktonic								
	Periphytic								
	epipelic								
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								Eurythermal
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal				X				
	Undesignated								

Geographical distribution and additional comments:
Cosmopolitan (21, 24); an obligate nitrogen heterotroph (4); mesooxybiontic (26).

Taxon Nitzschia palea (Kutz.) W.Sm. var. palea

		References																			Concensus & Notes
		1	2	4	7	8	9	11	12	13	19	20	21	26	27	29	34	35	41	43	45	
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent					X	X	X	X	X				X	X			X		X		Indifferent: range 4.2-9.0 (2, 8, 21, 27, 43) optimum about 8.4 (4).
	Alkaliphilous		X	X									X									
	Alkalibiontic																					
Nutrient	Eutrophic			X									X		X							Eutrophic
	Mesotrophic																					
	Oligotrophic														X							
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous																					
	halophilous																					
	indifferent		X			X	X	X					X			X	X			X	X	
	halophobous																					
	Euryhalobous										X										X	
Saprobien	Polysaprobic	X										X		X							X	Mesosaprobic to Polysaprobic
	Mesosaprobic	X										X	X				X		X	X	X	
	alpha range				X																	
	beta range				X																	
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent					X		X												X		
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Lakes and Ponds
	Estuary																					
	Lake														X							
	Pond														X							
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Tychoplanktonic or Periphytic
	Tychoplanktonic																X					
	Periphytic																X					
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Spring, Summer and Fall
	Spring										X										X	
	Summer										X											
	Fall																				X	
Temperature	Euthermal																					Eurythermal; range 0°-30°C (2, 43).
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal		X								X									X		
	Undesignated																					

Geographical distribution and additional comments:

Cosmopolitan (21); a very good indicator of pollution, an obligate nitrogen heterotroph (4); euryoxybiont (26); calcium indifferent (36); tolerates a wide span of ecological conditions (45).

Taxon Nitzschia parvula Levis var. parvula

		References						Concensus & Notes
		4	8	20	26	31	41	
pH	Acidobiontic							
	Acidophilous							Indifferent; range 6.6-7.9 (8).
	Indifferent		X		X			
	Alkaliphilous							
	Alkalibiontic							
Nutrient	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
Halobion	Polyhalobous							
	Euhalobous							
	Mesohalobous	X						Beta-Mesohalobous to Indifferent
	alpha range							
	beta range		X		X			
	Oligohalobous							
	halophilous					X		
	indifferent		X					
	halophobous							
	Euryhalobous							
Saprobien	Polysaprobic							
	Mesosaprobic							Beta-Mesosaprobic
	alpha range							
	beta range					X		
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Saprophobic							
Current	Limnobiontic							
	Limnophilous							Indifferent
	Indifferent		X					
	Rheophilous							
	Rheobiontic							
General Habitat	Marine							
	Estuary							
	Lake							
	Pond							
	River							
	Spring and Stream							
	Aerophilous							
	Other							
Specific Habitat	Euplanktonic							
	Tychoplanktonic							
	Periphytic							
	epipelic							
	epilithic							
	epidendric							
	epizooic							
	epiphytic							
	attached							
	unattached							
Seasonal Dist.	Winter							
	Spring							
	Summer							
	Fall							
Temperature	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Undesignated							

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Nitzschia perminuta Grun. var. perminuta

		References				Concensus & Notes
		4	13	14	26	
pH	Acidobiontic					
	Acidophilous	X				Alkaliphilous; optimum is less than, but near 7 (4).
	Indifferent					
	Alkaliphilous		X	X	X	
	Alkalibiontic					
Nutrient	Eutrophic	X				
	Mesotrophic					Eutrophic
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					
	Euhalobous					
	Mesohalobous					Indifferent
	alpha range					
	beta range					
	Oligohalobous					
	halophilous					
	indifferent			X	X	
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
A nitrogen heterotroph (4), mesooxybiontic (26).

Taxon Nitzschia perpusilla Rabh. var. perpusilla

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrient	Eutrophic	X	
	Mesotrophic		Eutrophic
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
Probably a facultative nitrogen heterotroph (4).

Taxon Nitzschia sigma (Kütz.) W.Sm. var. sigma

		References											Consensus & Notes
		4	8	9	20	21	24	26	34	39	41	46	
pH	Acidobiontic												
	Acidophilous												Alkalibiontic to Indifferent; range 6.8-7.8 (8, 21), optimum 8.5 (4).
	Indifferent		X					X					
	Alkaliphilous	X	X										
	Alkalibiontic					X							
Nutrient	Eutrophic												
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
Halobion	Polyhalobous												
	Euhalobous				X		X						
	Mesohalobous		X	X	X	X	X		X	X	X	X	Mesohalobous and Euryhalobous
	alpha range												
	beta range												
	Oligohalobous												
	halophilous												
	indifferent												
	halophobous												
	Euryhalobous		X			X	X	X	X			X	
Saprobion	Polysaprobic												
	Mesosaprobic												
	alpha range												
	beta range												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Saprophobic												
Current	Limnobiontic												
	Limnophilous												
	Indifferent												
	Rheophilous												
	Rheobiontic												
General Habitat	Marine												
	Estuary												
	Lake												
	Pond												
	River												
	Spring and Stream												
	Aerophilous												
	Other												
Specific Habitat	Euplanktonic												
	Tychoplanktonic												
	Periphytic								X				Periphytic
	epipelic												
	epilithic												
	epidendric												
	epizooic												
	epiphytic												
	attached												
	unattached												
Seasonal Dist.	Winter												
	Spring												
	Summer												
	Fall												
Temperature	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Undesignated												

Geographical distribution and additional comments:
Mesooxybiontic (26).

Taxon Nitzschia sigmoidea (Ehr.) W.Sm. var. sigmoidea

		References																		Concensus & Notes
		4	7	8	9	11	12	14	26	27	29	30	31	35	39	46				
pH	Acidobiontic																			
	Acidophilous																			Alkaliphilous; range 6.0-9.0 (8, 27), optimum is 8.5 (4).
	Indifferent																			
	Alkaliphilous	X		X	X	X	X	X	X	X				X						
	Alkalibiontic																			
Nutrients	Eutrophic									X										Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous										X									
	halophilous																			
	indifferent			X	X	X		X	X						X	X				
	halophobous																			
	Euryhalobous																			
Saprobion	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range		X																	
	beta range		X																	
	Oligosaprobic								X			X	X							
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent			X		X														
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake									X										
	Pond									X										
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic									X										
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24); withstands oxygen depleted waters (4).

Taxon Nitzschia sinuata (W.Sm.) Grun. var. sinuata

		References																		Concensus & Notes
		4	8	9	11	12	13	36	39											
pH	Acidobiontic																			
	Acidophilous																			Indifferent;
	Indifferent		X	X	X	X	X													range 6.7-7.8 (8)
	Alkaliphilous	X																		optimum around 8 (4).
	Alkalibiontic							X												
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X				X											
	halophobous																			
	Euryhalobous																			
Saprobion	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent		X		X															Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Only in oxygen rich water (4).

Taxon Nitzschia stagnorum Rabh. var. stagnorum

		References																		Concensus & Notes
		4	8	10	13	24	26	31												
pH	Acidobiontic																			Indifferent to Alkaliphilous; range 6.6-7.7 (8) optimum 8.4 (4).
	Acidophilous																			
	Indifferent		X		X		X													
	Alkaliphilous	X		X																
	Alkalibiontic																			
Nutrients	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous						X													
	halophilous																			
	indifferent		X	X																
	halophobous																			
	Euryhalobous																			
Saprobion	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range							X												
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic		X																	Limnobiontic
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24); an obligate nitrogen heterotroph which cannot reproduce without organic nitrogen (4); mesooxybiontic (26).

Taxon Nitzschia sublinearis Hust. var. sublinearis

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		Alkaliphilous; optimum 7.5-8 (4).
	Indifferent		
	Alkaliphilous	X	
	Alkalibiontic		
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		Oligohalobous
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobion	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Nitzschia thermalis Kütz. var. thermalis

		References																		Concensus & Notes
		3	4	7	8	9	12	13	29	39	46									
pH	Acidobiontic																			Alkaliphilous; range 6.6-8.2 (8), optimum 8.4 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous		X		X	X	X	X												
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous								X		X									
	halophilous																			
	indifferent	X			X	X				X										
	halophobous																			
	Euryhalobous																			
Saprobion	Polysaprobic																			Alpha-Mesosaprobic
	Mesosaprobic																			
	alpha range			X																
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous			X																
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (24); an obligate nitrogen heterotroph, it withstands oxygen depleted waters (4).

Taxon Nitzschia tryblionella var. victoriae Grun.

		References																			Concensus & Notes
		26	34																		
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Indifferent
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent	X	X																		
	halophobous																				
	Euryhalobous																				
Saprobion	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic		X																		Periphytic and Tychoplanktonic
	Periphytic		X																		
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Cosmopolitan (21).

Taxon Nitzschia vermicularis (Kutz.) Grun. var. vermicularis

		References								Concensus & Notes
		4	8	9	26	27	29	31	34	
pH	Acidobiontic									
	Acidophilous					X				Indifferent to Alkaliphilous; range 5.7-8.2 (8, 27).
	Indifferent		X	X						
	Alkaliphilous	X			X					
	Alkalibiontic									
Nutrients	Eutrophic									
	Mesotrophic									Oligotrophic
	Oligotrophic					X				
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									Indifferent to Halophilous
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous						X			
	halophilous			X						
	indifferent		X		X					
	halophobous									
	Euryhalobous									
Saprobion	Polysaprobic									
	Mesosaprobic									Oligosaprobic
	alpha range									
	beta range									
	Oligosaprobic				X			X	X	
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									Indifferent
	Indifferent		X							
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake					X				Lakes and Ponds
	Pond					X				
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									Periphytic
	Periphytic					X				
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:

Taxon Opephora martyi Herib. var. martyi

		References																		Concensus & Notes
		4	8	11	12	13	14	26	27	29	34	35	38	41	46					
pH	Acidobiontic																			Alkaliphilous to Alkalibiontic; range 6.4-9.0 (8, 27), optimum 7.8-8.2 (4).
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X			X	X	X	X				X								
	Alkalibiontic		X	X					X											
Nutrien	Eutrophic								X											Eutrophic to Mesotrophic
	Mesotrophic												X							
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X	X		X							
	halophilous																			
	indifferent		X	X			X	X							X					
	halophobous																			
	Euryhalobous														X					
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous		X	X																
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Rivers
	Estuary																			
	Lake												X	X						
	Pond																			
	River												X							
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic										X			X						
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Pinnularia borealis Ehr. var. borealis

		References																		Concensus & Notes
		4	8	9	10	11	12	13	21	26	27	29	34	38	39	46				
pH	Acidobiontic	X																		
	Acidophilous	X							X		X									Indifferent; range 4-8 (8, 21, 27), optimum less than 6 (4).
	Indifferent		X	X	X	X	X	X		X										
	Alkaliphilous																			
	Alkalibiontic																			
Nutrients	Eutrophic										X									
	Mesotrophic																			
	Oligotrophic																			Eutrophic
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			
	alpha range																			Indifferent
	beta range																			
	Oligohalobous								X			X	X							
	halophilous																			
	indifferent		X	X	X	X				X					X	X				
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Oligosaprobic
	beta range																			
	Oligosaprobic									X										
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent		X			X														Indifferent
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake										X									Lakes, Ponds, Rivers and Aerophilous
	Pond										X			X						
	River													X						
	Spring and Stream																			
	Aerophilous								X											
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			Periphytic
	Periphytic												X							
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			Oligothermal
	Oligothermal													X						
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); in water of low mineral content (38).

Taxon Pinnularia gibba Ehr. var. gibba

		4	7	8	9	10	11	12	13	14	21	26	27	31	34	35	36	46				Concensus & Notes
		References																				
pH	Acidobiontic																					
	Acidophilous	X		X	X	X	X	X			X		X				X					Acidophilous; range 4.3-8.2 (8, 21, 27) optimum about 6 (4).
	Indifferent								X	X		X				X						
	Alkaliphilous																					
	Alkalibiontic																					
Nutrient	Eutrophic	X																				Eutrophic to Oligotrophic
	Mesotrophic																					
	Oligotrophic												X									
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous										X				X							
	halophilous																					
	indifferent				X	X				X		X						X				
	halophobous																					
	Euryhalobous																					
Saprobien	Polysaprobic																					Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic																					
	alpha range																					
	beta range		X																			
	Oligosaprobic											X		X								
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent			X			X															
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Springs and Streams "crenophilous"
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream										X				X							
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																					
	Periphytic														X							
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					
	Spring																					
	Summer																					
	Fall																					
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); mesooxybiontic (26); can live in oxygen poor water (4); calcium and iron indifferent (36).

Taxon Pinnularia viridis (Nitz.) Ehr. var. viridis

		References																			Concensus & Notes
		2	4	7	8	9	10	11	13	14	21	26	27	29	34	35	38	39	41	46	
pH	Acidobiontic																				
	Acidophilous		X																		Indifferent; range 4.2-9.0 (2, 8, 21, 27); optimum 5.6-6 (4).
	Indifferent	X			X	X	X	X	X	X		X	X			X	X				
	Alkaliphilous	X									X										
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Indifferent
	alpha range																				
	beta range																				
	Oligohalobous										X			X							
	halophilous																				
	indifferent				X	X	X	X		X		X						X		X	
	halophobous																				
	Euryhalobous																			X	
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range			X																	Oligosaprobic to Alpha-Mesosaprobic
	beta range																				
	Oligosaprobic											X									
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent				X			X			X										Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic														X						Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																		X		Spring and Fall maxima
	Summer																				
	Fall																		X		
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				Eurythermal
	Stenothermal																				
	Metathermal																				
	Eurythermal	X																			
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21); probably withstands oxygen poor waters (4); mesooxybiontic (21); calcium indifferent (36); found in water of higher mineral content than many of the species belonging to Pinnularia (38).

Taxon Rhizosolenia eriensis H.L. Smith var. eriensis

		References		Concensus & Notes
		4	20	
pH	Acidobiontic			Alkaliphilous; optimum 7.5-8 (4).
	Acidophilous			
	Indifferent			
	Alkaliphilous	X		
	Alkalibiontic			
Nutrient	Eutrophic		X	Eutrophic
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			Indifferent
	Limnophilous			
	Indifferent		X	
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Rhizosolenia longiseta Zach. var. longiseta

		References				Concensus & Notes
		4	11	20	26	
pH	Acidobiontic					
	Acidophilous					
	Indifferent				X	Alkaliphilous; optimum somewhat less than 8 (4).
	Alkaliphilous	X	X		X	
	Alkalibiontic					
Nutrient	Eutrophic			X		
	Mesotrophic					Eutrophic
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					
	Euhalobous					Indifferent
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous				X	
	halophilous					
	indifferent		X			
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					Saproxenous
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous				X	
	Saprophobic					
Current	Limnobiontic		X			
	Limnophilous					Limnobiontic
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake			X		Lakes, Ponds and Rivers
	Pond			X		
	River			X		
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Rhizosolenia minima Lavender var. minima

		References	Concensus & Notes
		4	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrients	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous	X	Oligohalobous to Mesohalobous; can invade brackish water (4).
	alpha range		
	beta range		
	Oligohalobous	X	
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic	X	Euplanktonic
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Rhoicosphenia curvata (Kutz.) Grun. ex. Rabh. var. curvata

		References																			Concensus & Notes
		4	7	8	9	11	14	15	20	26	27	29	30	31	34	38	39	43	45	46	
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 5.4-9.0 (8, 27, 43), optimum somewhat over 8 (4).
	Indifferent				X																
	Alkaliphilous	X		X		X	X			X	X					X		X			
	Alkalibiontic																				
Nutrien[illegible]	Eutrophic										X										
	Mesotrophic																				Eutrophic
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous								X												Indifferent
	alpha range																				
	beta range																				
	Oligohalobous								X	X		X				X					
	halophilous														X				X		
	indifferent			X	X	X	X				X						X	X			
	halophobous																				
	Euryhalobous										X	X									
Saprobien	Polysaprobic																				
	Mesosaprobic														X						
	alpha range		X					X					X								Mesosaprobic
	beta range		X					X					X	X							
	Oligosaprobic		X							X											
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent			X		X												X			Indifferent to Rheophilous
	Rheophilous	X						X		X						X					
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																	X			Epiphytic; particularly on Cladophora (27).
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic	X									X										
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																		X		Spring maximum
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				Eurythermal
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																	X			
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (20); lives optimally in oxygen rich waters (4).

Taxon Rhopalodia gibba (Ehr.) O. Mull. var. gibba

		References																				Concensus & Notes
		4	7	8	9	10	11	12	13	14	21	26	27	29	31	34	35	39	41	45	46	
pH	Acidobiontic																					Alkaliphilous to Alkalibiontic; range 6.4-9.0 (8, 21, 27), optimum about 7.8 (4).
	Acidophilous																					
	Indifferent																					
	Alkaliphilous	X		X	X	X	X	X					X									
	Alkalibiontic	X							X	X	X	X					X					
Nutrien	Eutrophic												X									Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous																					
	halophilous																					
	indifferent			X	X	X	X			X	X	X		X		X		X			X	
	halophobous																					
	Euryhalobous													X							X	
Saprobien	Polysaprobic																					Alpha-Mesosaprobic to Oligosaprobic
	Mesosaprobic																					
	alpha range		X																			
	beta range		X																	X		
	Oligosaprobic														X							
	Saprophilic																					
	Saproxenous											X										
	Saprophobic																					
Current	Limnobiontic																					Indifferent
	Limnophilous																					
	Indifferent			X		X																
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Springs and Streams "crenophilous"
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream										X					X						
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic
	Tychoplanktonic																					
	Periphytic										X					X			X			
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																			X		Winter maximum
	Spring																					
	Summer																					
	Fall																					
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24).

Taxon Stauroneis anceps Ehr. var. anceps

		References																			Concensus & Notes
		4	7	8	9	10	11	12	13	14	20	21	26	27	28	30	34	38	45	46	
pH	Acidobiontic																				Indifferent; range 5.0-9.0 (21), optimum near 7 (4).
	Acidophilous																				
	Indifferent	X	X	X	X		X	X	X		X	X			X	X	X				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic											X		X							Eutrophic to Oligotrophic
	Mesotrophic																				
	Oligotrophic													X							
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent			X	X	X				X		X	X				X		X	X	
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range		X																		
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Indifferent
	Limnophilous																				
	Indifferent			X																	
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				Lakes and Ponds
	Estuary																				
	Lake													X							
	Pond													X							
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Periphytic
	Tychoplanktonic																				
	Periphytic										X	X					X				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				Spring and Fall maxima
	Spring																		X		
	Summer																				
	Fall																		X		
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (6, 20); mesooxybiontic (26); calcium indifferent (36).

Taxon Stauroneis anceps f. gracilis Rabh.

		References								Concensus & Notes
		10	12	13	20	26	27	34	38	
pH	Acidobiontic									
	Acidophilous			X		X	X			Acidophilous to Indifferent; range 6.0-6.8 (27).
	Indifferent	X	X						X	
	Alkaliphilous									
	Alkalibiontic									
Nutrient	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									
	Euhalobous									Indifferent
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous									
	halophilous									
	indifferent	X						X		
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									
	Tychoplanktonic									
	Periphytic				X			X		Periphytic
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
A mesooxybiont bound to a low chloride concentration (26).

Taxon Stauroneis phoenicentron (Nitz.) Ehr. var. phoenicentron

		References																			Concensus & Notes
		1	2	3	7	8	10	11	20	21	26	27	28	30	33	34	38	43	45	46	48	
pH	Acidobiontic																					
	Acidophilous																					Indifferent; range 6-8.2 (7, 33).
	Indifferent	X		X	X		X						X	X	X			X	X	X	X	
	Alkaliphilous																					
	Alkalibiontic																					
Nutrient	Eutrophic									X		X										
	Mesotrophic																					
	Oligotrophic											X										Eutrophic to Oligotrophic
	Dystrophic																					
Halobion	Polyhalobous																					
	Euhalobous																					
	Mesohalobous																					Indifferent
	alpha range																					
	beta range																					
	Oligohalobous																X					
	halophilous																					
	indifferent					X	X	X		X	X					X				X		
	halophobous																					
	Euryhalobous																					
Saprobien	Polysaprobic																					
	Mesosaprobic																					
	alpha range				X																	Beta-Mesosaprobic
	beta range				X									X				X				
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Saprophobic																					
Current	Limnobiontic																					
	Limnophilous																					
	Indifferent					X		X														Indifferent
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic								X	X						X			X			Periphytic
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					
	Spring																					
	Summer																					
	Fall																					
Temperature	Euthermal																					
	Mesothermal																					Eurythermal
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal		X																			
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21); euryoxybiontic, therefore also living in polluted water (26); calcium indifferent (36); apparently has a wide range of ecological tolerance (38).

Taxon Stauroneis smithii Grun. var. smithii

		References																		Concensus & Notes
		4	8	9	10	11	12	13	14	21	26	29	36	38	49	46				
pH	Acidobiontic																			Indifferent to Alkaliphilous
	Acidophilous																			
	Indifferent		X	X	X	X	X													
	Alkaliphilous	X						X	X		X			X						
	Alkalibiontic																			
Nutrients	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X		X								
	halophilous																			
	indifferent		X	X	X	X			X		X				X					
	halophobous																			
	Euryhalobous																			
Saprobion	Polysaprobic																			Saproxenous
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous										X									
	Saprophobic																			
Current	Limnobiontic																			Rheophilous
	Limnophilous																			
	Indifferent																			
	Rheophilous		X			X														
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21); from oxygen rich waters (4).

Taxon Stenopterobia intermedia (Lewis) V.H. var. intermedia

		References							Concensus & Notes
		4	12	27	29	35	37	45	
pH	Acidobiontic	X						X	
	Acidophilous		X	X		X			Acidophilous to Acidobiontic; range 4.6-7.3 (27), optimum 5.5 (4), 4.3 (45).
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
Nutrients	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
Halobion	Polyhalobous								
	Euhalobous								Oligohalobous to Halophobous
	Mesohalobous								
	alpha range								
	beta range								
	Oligohalobous						X		
	halophilous								
	indifferent								
	halophobous				X				
	Euryhalobous								
Saprobien	Polysaprobic								
	Mesosaprobic								
	alpha range								
	beta range								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Saprophobic								
Current	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rhecphilous								
	Rheobiontic								
General Habitat	Marine								
	Estuary								
	Lake								
	Pond								
	River								
	Spring and Stream								
	Aerophilous								
	Other								
Specific Habitat	Euplanktonic								
	Tychoplanktonic								
	Periphytic								
	epipelic								
	epilithic								
	epidendric								
	epizooic								
	epiphytic								
	attached								
	unattached								
Seasonal Dist.	Winter								
	Spring								
	Summer								
	Fall								
Temperature	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Undesignated								

Geographical distribution and additional comments:
Cosmopolitan (23).

Taxon Stephanodiscus alpinus Hust. var. alpinus

		References	Concensus & Notes
		47	
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrients	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake	X	Lakes
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic	X	
	Tychoplanktonic		
	Periphytic		Euplanktonic
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:
In disturbed areas of large lakes (47).

Taxon Stephanodiscus astraea var. minutula (Kütz.) Grun.

		References																		Concensus & Notes
		8	9	11	13	14	24	26	27	39	41	46								
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent																			Alkalibiontic; range 6.4-9.0 (8, 27).
	Alkaliphilous					X														
	Alkalibiontic	X	X	X	X			X	X											
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			
	Mesohalobous																			Indifferent
	alpha range																			
	beta range																			
	Oligohalobous							X				X								
	halophilous																			
	indifferent	X	X	X		X				X										
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			Saproxenous
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous							X												
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous																			
	Indifferent	X																		Indifferent to Rheophilous
	Rheophilous			X																
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake										X									Lakes
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic						X				X									
	Tychoplanktonic																			Euplanktonic
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Stephanodiscus binderanus (Kutz.) Round var. binderanus

		References				Concensus & Notes
		4	22	31	47	
pH	Acidobiontic					
	Acidophilous					
	Indifferent					
	Alkaliphilous					
	Alkalibiontic					
Nutrient	Eutrophic				X	
	Mesotrophic					Eutrophic
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					
	Euhalobous					Oligohalobous to Mesohalobous
	Mesohalobous	X				
	alpha range					
	beta range					
	Oligohalobous		X			
	halophilous					
	indifferent					
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					Oligosaprobic
	alpha range					
	beta range					
	Oligosaprobic			X		
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					Lakes
	Lake				X	
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic	X			X	
	Tychoplanktonic					
	Periphytic					Euplanktonic
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:
Found in disturbed areas of large lakes (47).

Taxon Stephanodiscus dubius (Fricke) Hust. var. dubius

		References									Concensus & Notes
		4	8	9	11	12	20	26	27	41	
pH	Acidobiontic										Alkalibiontic; range 6.4-9.0 (8, 27).
	Acidophilous										
	Indifferent										
	Alkaliphilous					X					
	Alkalibiontic		X	X	X			X	X		
Nutrients	Eutrophic								X		Eutrophic
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Halobion	Polyhalobous										Indifferent
	Euhalobous										
	Mesohalobous	X									
	alpha range										
	beta range										
	Oligohalobous										
	halophilous							X			
	indifferent		X	X	X						
	halophobous										
	Euryhalobous										
Saprobien	Polysaprobic										Oligosaprobic
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic							X			
	Saprophilic										
	Saproxenous										
	Saprophobic										
Current	Limnobiontic		X		X						Limnobiontic to Indifferent
	Limnophilous										
	Indifferent						X				
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										Lakes and Ponds
	Estuary										
	Lake								X	X	
	Pond								X		
	River										
	Spring and Stream										
	Aerophilous										
	Other										
Specific Habitat	Euplanktonic	X					X		X	X	Euplanktonic
	Tychoplanktonic										
	Periphytic										
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										
	Spring										
	Summer										
	Fall										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:

Taxon Stephanodiscus hantzschii Grun. var. hantzschii

		References																		Concensus & Notes
		4	7	8	9	11	14	21	24	26	27	29	30	34	41	46				
pH	Acidobiontic																			Alkalibiontic to Alkaliphilous; range 6.6-9.0 (8, 27), optimum 8.2 (4)
	Acidophilous																			
	Indifferent																			
	Alkaliphilous	X					X			X										
	Alkalibiontic			X	X						X									
Nutrient	Eutrophic	X						X			X									Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X		X				X				
	halophilous																			
	indifferent		X		X	X					X									
	halophobous																			
	Euryhalobous															X				
Saprobien	Polysaprobic																			Beta-Mesosaprobic
	Mesosaprobic								X											
	alpha range																			
	beta range							X					X							
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent to Rheophilous
	Limnophilous																			
	Indifferent			X		X														
	Rheophilous														X					
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic	X									X			X						Euplanktonic
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			Spring form
	Spring														X					
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21, 24); probably an obligate nitrogen heterotroph (4); euryoxybiontic (26).

Taxon Stephanodiscus invisitatus Hohn an Hellerman var. invisitatus

		References		Concensus & Notes
		18	32	
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic		X	Eutrophic
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			Rivers
	Pond			
	River	X		
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:
Found throughout the United States (32).

Taxon Surirella angustata Kutz. var. angustata

		References																			Concensus & Notes
		2	4	8	9	11	12	19	21	24	26	34	43	45	46						
pH	Acidobiontic																				Alkaliphilous; range 6-9 (2, 8, 21, 43), optimum around 7.5.
	Acidophilous																				
	Indifferent								X					X							
	Alkaliphilous	X	X	X	X	X	X	X			X		X								
	Alkalibiontic																				
Nutrients	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous							X	X			X									
	halophilous																				
	indifferent			X	X	X					X			X	X						
	halophobous																				
	Euryhalobous														X						
Saprobion	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Rheobiontic
	Limnophilous																				
	Indifferent										X										
	Rheophilous							X													
	Rheobiontic			X		X							X								
General Habitat	Marine																				Spring form "crenophilous"
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream								X			X	X								
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				Tychoplanktonic or Periphytic
	Tychoplanktonic											X		X							
	Periphytic											X		X							
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				Spring or Fall maximum
	Spring								X												
	Summer																				
	Fall													X							
Temperature	Euthermal																				Mesothermal to Oligothermal, Methathermal to Eurythermal
	Mesothermal	X											X								
	Oligothermal	X											X								
	Stenothermal																				
	Metathermal	X																			
	Eurythermal												X								
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 24); euryoxbiontic (26).

Taxon Surirella elegans Ehr. var. elegans

		References								Concensus & Notes
		4	8	21	26	27	29	35	39	
pH	Acidobiontic									Alkaliphilous to Indifferent; range 5.3-8.5 (8, 27), optimum around 8.
	Acidophilous									
	Indifferent		X			X				
	Alkaliphilous	X			X			X		
	Alkalibiontic									
Nutrient?	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									Indifferent
	Euhalobous									
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous			X			X			
	halophilous									
	indifferent		X		X				X	
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									Saproxenous
	Mesosaprobic									
	alpha range									
	beta range									
	Oligosaprobic									
	Saprophilic									
	Saproxenous				X					
	Saprophobic									
Current	Limnobiontic		X							Limnobiontic
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic									Periphytic
	Tychoplanktonic									
	Periphytic			X						
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Cosmopolitan (21).

Taxon Surirella ovalis Bréb. var. ovalis

		References																			Concensus & Notes
		4	8	9	10	13	36	41	46												
pH	Acidobiontic																				Alkaliphilous; range 6.5-8.5 (4, 8), optimum over 8.5 (4).
	Acidophilous																				
	Indifferent						X														
	Alkaliphilous	X	X		X																
	Alkalibiontic	X																			
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous	X		X	X	X	X	X	X												Mesohalobous
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous		X																		
	indifferent																				
	halophobous																				
	Euryhalobous						X		X												
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				Oligosaprobic
	beta range																				
	Oligosaprobic						X														
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent		X																		Indifferent
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Surirella ovata Kutz. var. ovata

		References																			Concensus & Notes
		3	4	8	9	11	12	13	19	26	31	39	43	45	46						
pH	Acidobiontic																				Alkaliphilous; range 6.4-8.2 (8), optimum 7.5-8 (4, 45).
	Acidophilous																				
	Indifferent																				
	Alkaliphilous		X	X	X	X	X	X	X	X			X	X							
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range	X	X																		
	Oligohalobous																				
	halophilous																				
	indifferent				X	X				X		X	X	X	X						
	halophobous																				
	Euryhalobous	X												X	X						
Saprobien	Polysaprobic			X																	Mesosaprobic
	Mesosaprobic			X																	
	alpha range													X							
	beta range										X			X							
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Rheophilous
	Limnophilous																				
	Indifferent																				
	Rheophilous			X		X			X				X								
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter								X					X							Winter maximum
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				Oligothermal, Eurythermal, range 0° -24°C.
	Mesothermal																				
	Oligothermal		X																		
	Stenothermal																				
	Metathermal																				
	Eurythermal		X																		
	Undesignated																				

Geographical distribution and additional comments:

Taxon Surirella striatula Trup. var. striatula

		References					Concensus & Notes
		4	8	20	26	46	
pH	Acidobiontic						
	Acidophilous						Indifferent; range 6.7-7.8 (8).
	Indifferent		X				
	Alkaliphilous						
	Alkalibiontic						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Halobion	Polyhalobous						
	Euhalobous	X		X			
	Mesohalobous	X	X	X			Mesohalobous
	alpha range				X		
	beta range					X	
	Oligohalobous						
	halophilous						
	indifferent						
	halophobous						
	Euryhalobous						
Saprobien	Polysaprobic						
	Mesosaprobic						
	alpha range						
	beta range						
	Oligosaprobic						
	Saprophilic						
	Saproxenous						
	Saprophobic						
Current	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
General Habitat	Marine		X				
	Estuary		X				Marine or Estuary
	Lake						
	Pond						
	River						
	Spring and Stream						
	Aerophilous						
	Other						
Specific Habitat	Euplanktonic						
	Tychoplanktonic						
	Periphytic						
	epipelic						
	epilithic						
	epidendric						
	epizooic						
	epiphytic						
	attached						
	unattached						
Seasonal Dist.	Winter						
	Spring						
	Summer						
	Fall						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
	Undesignated						

Geographical distribution and additional comments:

Taxon Synedra actinastroides Lemm. var. actinastroides

		References																			Concensus & Notes
		8	10	20	31																
pH	Acidobiontic																				Indifferent; range 6.6-7.7 (10).
	Acidophilous																				
	Indifferent		X																		
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				Indifferent
	Euhalobous																				
	Mesohalobous																				
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent		X																		
	halophobous																				
	Euryhalobous																				
Saprobion	Polysaprobic																				Beta-Mesosaprobic
	Mesosaprobic																				
	alpha range																				
	beta range				X																
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				Limnophilous to Indifferent
	Limnophilous	X																			
	Indifferent			X																	
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Synedra acus Kutz. var. acus

		References																		Concensus & Notes
		1	4	8	9	10	11	12	14	21	26	27	29	30	31	34	35	38	45	
pH	Acidobiontic																			Alkaliphilous; range 6.2-9.0 (8, 27), optimum 7.4-7.6 (4).
	Acidophilous																			
	Indifferent				X													X		
	Alkaliphilous		X	X		X	X	X	X		X	X					X			
	Alkalibiontic																			
Nutrient	Eutrophic											X								Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous									X	X		X							
	halophilous																		X	
	indifferent			X	X	X	X		X							X				
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range													X						
	Oligosaprobic	X									X			X	X					
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous			X			X													
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake											X								
	Pond											X								
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic or Tychoplanktonic
	Tychoplanktonic															X			X	
	Periphytic									X						X			X	
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																		X	
	unattached																			
Seasonal Dist.	Winter																			Spring and Summer form
	Spring																		X	
	Summer	X																		
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Cosmopolitan (21); seems to prefer water which does not have a very low conductivity, more often found in waters of medium hardness (38).

Taxon Synedra delicatissima var. angustissima Grun.

		References																		Concensus & Notes
		5	8	9	11	14	26	38	39											
pH	Acidobiontic																			Indifferent
	Acidophilous																			
	Indifferent		X	X	X															
	Alkaliphilous					X														
	Alkalibiontic																			
Nutrient	Eutrophic						X													
	Mesotrophic																			Eutrophic
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Indifferent
	Euhalobous																			
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X	X	X	X			X											
	halophobous																			
	Euryhalobous																			
Saprobion	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Limnophilous
	Limnophilous	X	X		X															
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic						X	X												Euplanktonic
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Often in water of medium hardness (38).

Taxon Synedra mazamaensis Sov. var. mazamaensis

		References	Concensus & Notes
		38	
pH	Acidobiontic		Alkalibiontic?; range 7.2-8.4 (38).
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic	X	
Nutrient	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon Synedra nana Meist. var. nana

		References 4	11	13																Concensus & Notes
pH	Acidobiontic																			
	Acidophilous	X																		
	Indifferent		X	X																Indifferent to Acidophilous; optimum 5.5 (4).
	Alkaliphilous																			
	Alkalibiontic																			
Nutrient	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			
	Euhalobous																			Indifferent
	Mesohalobous																			
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous																			
	indifferent		X																	
	halophobous																			
	Euryhalobous																			
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			
	Limnophilous		X																	Limnophilous
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic																			
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:

Taxon Synedra parasitica var. subconstricta (Grun.) Hust.

		References					Concensus & Notes
		8	9	11	26	38	
pH	Acidobiontic						Alkaliphilous; range 6.5-8.3 (8).
	Acidophilous						
	Indifferent						
	Alkaliphilous	X	X	X	X		
	Alkalibiontic						
Nutrient	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
Halobion	Polyhalobous						Indifferent
	Euhalobous						
	Mesohalobous						
	alpha range						
	beta range						
	Oligohalobous						
	halophilous						
	indifferent	X	X	X	X		
	halophobous						
	Euryhalobous						
Saprobien	Polysaprobic						Oligosaprobic
	Mesosaprobic						
	alpha range						
	beta range						
	Oligosaprobic			X			
	Saprophilic						
	Saproxenous						
	Saprophobic						
Current	Limnobiontic						Indifferent
	Limnophilous						
	Indifferent	X		X			
	Rheophilous						
	Rheobiontic						
General Habitat	Marine						
	Estuary						
	Lake						
	Pond						
	River						
	Spring and Stream						
	Aerophilous						
	Other						
Specific Habitat	Euplanktonic						Epiphytic on other diatoms
	Tychoplanktonic						
	Periphytic						
	epipelic						
	epilithic						
	epidendric						
	epizooic						
	epiphytic				X		
	attached						
	unattached						
Seasonal Dist.	Winter						
	Spring						
	Summer						
	Fall						
Temperature	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
	Undesignated						

Geographical distribution and additional comments:
Often found with the nominate variety (38).

Taxon Synedra pulchella var. lanceolata f. constricta Hust.

		References		Concensus & Notes
		20	26	
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous		X	Mesohalobous
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic	X		Periphytic
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Synedra pulchella var. minutula Hust.

		References		Concensus & Notes
		8	20	
pH	Acidobiontic			Indifferent
	Acidophilous			
	Indifferent	X		
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			Mesohalobous
	Mesohalobous		X	
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			Indifferent
	Indifferent	X		
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			Periphytic
	Periphytic		X	
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Synedra pulchella var. naviculacea Grun.

		References				Concensus & Notes
		8	9	20	45	
pH	Acidobiontic					Indifferent: range 6.8-7.9 (8).
	Acidophilous					
	Indifferent	X				
	Alkaliphilous					
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Mesohalobous
	Euhalobous					
	Mesohalobous	X	X	X	X	
	alpha range					
	beta range					
	Oligohalobous					
	halophilous					
	indifferent					
	halophobous					
	Euryhalobous	X				
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					Indifferent
	Limnophilous					
	Indifferent	X				
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic					Periphytic
	Tychoplanktonic					
	Periphytic			X		
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					Spring and Fall maxima
	Spring				X	
	Summer					
	Fall				X	
Temperature	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Synedra pulchella Ralfs ex Kütz. var. pulchella

		References																		Concensus & Notes
		3	4	8	9	10	11	12	20	24	26	27	41	43	46					
pH	Acidobiontic																			Alkaliphilous to Indifferent; range 6.8-7.9 (8, 27),
	Acidophilous																			
	Indifferent			X			X				X									
	Alkaliphilous			X		X	X	X												
	Alkalibiontic																			
Nutrient	Eutrophic										X									Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Mesohalobous
	Euhalobous																			
	Mesohalobous		X	X	X	X	X		X	X			X	X	X					
	alpha range																			
	beta range	X																		
	Oligohalobous																			
	halophilous																			
	indifferent																			
	halophobous																			
	Euryhalobous			X							X				X					
Saprobien	Polysaprobic																			
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic			X																Limnobiontic?
	Limnophilous																			
	Indifferent																			
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			
	Estuary																			
	Lake																			
	Pond																			
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic								X											
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (24).

Taxon Synedra radians Kutz. var. radians

		References								Concensus & Notes
		8	9	10	21	27	29	31	38	
pH	Acidobiontic									Alkaliphilous
	Acidophilous									
	Indifferent									
	Alkaliphilous	X	X	X		X			X	
	Alkalibiontic									
Nutrient	Eutrophic					X				Eutrophic
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
Halobion	Polyhalobous									Indifferent
	Euhalobous									
	Mesohalobous									
	alpha range									
	beta range									
	Oligohalobous				X		X			
	halophilous									
	indifferent	X	X	X						
	halophobous									
	Euryhalobous									
Saprobien	Polysaprobic									Beta-Mesosaprobic
	Mesosaprobic									
	alpha range									
	beta range							X		
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Saprophobic									
Current	Limnobiontic									Limnophilous
	Limnophilous	X								
	Indifferent									
	Rheophilous									
	Rheobiontic									
General Habitat	Marine									
	Estuary									
	Lake									
	Pond									
	River									
	Spring and Stream									
	Aerophilous									
	Other									
Specific Habitat	Euplanktonic				X	X			X	Euplanktonic
	Tychoplanktonic									
	Periphytic									
	epipelic									
	epilithic									
	epidendric									
	epizooic									
	epiphytic									
	attached									
	unattached									
Seasonal Dist.	Winter									
	Spring									
	Summer									
	Fall									
Temperature	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Undesignated									

Geographical distribution and additional comments:
Cosmopolitan (21, 24); often found in water with fairly high mineral content (38).

Taxon Synedra rumpens var. familiaris (Kutz.) Grun.

		References																			Concensus & Notes
		29	34	38																	
pH	Acidobiontic																				
	Acidophilous																				Indifferent
	Indifferent			X																	
	Alkaliphilous																				
	Alkalibiontic																				
Nutrients	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Oligohalobous
	alpha range																				
	beta range																				
	Oligohalobous	X	X																		
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic		X																		Periphytic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
A common tropical species (21).

Taxon Synedra rumpens var. fragilarioides Grun.

		References		Concensus & Notes
		24	38	
pH	Acidobiontic			
	Acidophilous			
	Indifferent		X	Indifferent
	Alkaliphilous			
	Alkalibiontic			
Nutrients	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			Prefers Waterfalls, Springs and Brooks.
	Lake			
	Pond			
	River			
	Spring and Stream		X	
	Aerophilous			
	Other		X	
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic	X		Periphytic
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Cosmopolitan, especially frequent in the tropics (24); often in water with high conductivity (38).

Taxon Synedra rumpens Kütz. var. rumpens

		References								Concensus & Notes
		2	4	8	10	11	21	27	34	35	
pH	Acidobiontic										
	Acidophilous		X								Indifferent; range 6-9.0 (2, 8, 27), 6.4-6.8 (4).
	Indifferent	X		X	X	X		X			
	Alkaliphilous									X	
	Alkalibiontic										
Nutrient	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
Halobion	Polyhalobous										
	Euhalobous										
	Mesohalobous										Indifferent
	alpha range										
	beta range										
	Oligohalobous						X		X		
	halophilous										
	indifferent			X	X	X					
	halophobous										
	Euryhalobous										
Saprobien	Polysaprobic										
	Mesosaprobic										
	alpha range										
	beta range										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Saprophobic										
Current	Limnobiontic										
	Limnophilous										Indifferent
	Indifferent			X		X					
	Rheophilous										
	Rheobiontic										
General Habitat	Marine										
	Estuary										
	Lake										
	Pond										
	River										
	Spring and Stream										
	Aerophilous										
	Other										
Specific Habitat	Euplanktonic										
	Tychoplanktonic										
	Periphytic								X		Periphytic
	epipelic										
	epilithic										
	epidendric										
	epizooic										
	epiphytic										
	attached										
	unattached										
Seasonal Dist.	Winter										
	Spring										
	Summer										
	Fall										
Temperature	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Undesignated										

Geographical distribution and additional comments:

Probably Cosmopolitan (21).

Taxon Synedra rumpens var. scotica Grun.

		References		Concensus & Notes
		8	38	
pH	Acidobiontic			
	Acidophilous			
	Indifferent	X	X	Indifferent; range 6.7-7.7 (8).
	Alkaliphilous			
	Alkalibiontic			
Nutrient	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent			
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			
	Mesosaprobic			
	alpha range			
	beta range			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:
Found in water of low conductivity (38).

Taxon Synedra tabulata (Ag.) Kutz. var. tabulata

		References																		Concensus & Notes
		4	8	9	10	11	12	14	21	26	27	41	46							
pH	Acidobiontic																			Alkaliphilous; range 6.4-9.0 (8, 27).
	Acidophilous																			
	Indifferent							X		X										
	Alkaliphilous		X	X	X	X	X				X									
	Alkalibiontic																			
Nutrient	Eutrophic										X									Eutrophic
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
Halobion	Polyhalobous																			Mesohalobous to Halophilous
	Euhalobous																			
	Mesohalobous	X			X			X		X		X	X							
	alpha range																			
	beta range																			
	Oligohalobous																			
	halophilous		X	X		X														
	indifferent																			
	halophobous																			
	Euryhalobous								X	X			X							
Saprobien	Polysaprobic																			Oligosaprobic
	Mesosaprobic																			
	alpha range																			
	beta range																			
	Oligosaprobic									X										
	Saprophilic																			
	Saproxenous																			
	Saprophobic																			
Current	Limnobiontic																			Indifferent
	Limnophilous																			
	Indifferent		X			X														
	Rheophilous																			
	Rheobiontic																			
General Habitat	Marine																			Lakes and Ponds
	Estuary																			
	Lake										X									
	Pond										X									
	River																			
	Spring and Stream																			
	Aerophilous																			
	Other																			
Specific Habitat	Euplanktonic																			Periphytic
	Tychoplanktonic																			
	Periphytic								X											
	epipelic																			
	epilithic																			
	epidendric																			
	epizooic																			
	epiphytic																			
	attached																			
	unattached																			
Seasonal Dist.	Winter																			
	Spring																			
	Summer																			
	Fall																			
Temperature	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Undesignated																			

Geographical distribution and additional comments:
Cosmopolitan (21).

Taxon Synedra tenera W.Sm. var. tenera

		References			Concensus & Notes
		4	11	38	
pH	Acidobiontic				
	Acidophilous	X			Acidophilous; optimum less than 7.
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
Nutrients	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				
	Mesohalobous				Indifferent
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent		X		
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				Rheophilous
	Rheophilous			X	
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:
Prefers water of low conductivity (38).

Taxon Synedra ulna var. impressa Hust.

		References		Concensus & Notes
		8	26	
pH	Acidobiontic			Alkaliphilous to Indifferent range 6.8-7.9 (8).
	Acidophilous			
	Indifferent		X	
	Alkaliphilous	X	X	
	Alkalibiontic			
Nutrient	Eutrophic		X	Eutrophic
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
Halobion	Polyhalobous			Indifferent; but avoiding brackish water (26).
	Euhalobous			
	Mesohalobous			
	alpha range			
	beta range			
	Oligohalobous			
	halophilous			
	indifferent	X	X	
	halophobous			
	Euryhalobous			
Saprobien	Polysaprobic			Beta-Mesosaprobic
	Mesosaprobic			
	alpha range			
	beta range		X	
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Saprophobic			
Current	Limnobiontic			Indifferent
	Limnophilous			
	Indifferent	X		
	Rheophilous			
	Rheobiontic			
General Habitat	Marine			
	Estuary			
	Lake			
	Pond			
	River			
	Spring and Stream			
	Aerophilous			
	Other			
Specific Habitat	Euplanktonic			
	Tychoplanktonic			
	Periphytic			
	epipelic			
	epilithic			
	epidendric			
	epizooic			
	epiphytic			
	attached			
	unattached			
Seasonal Dist.	Winter			
	Spring			
	Summer			
	Fall			
Temperature	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Undesignated			

Geographical distribution and additional comments:

Taxon Synedra ulna var. oxyrhynchus Kutz.

		References			Concensus & Notes
		8	17	34	
pH	Acidobiontic				
	Acidophilous				
	Indifferent				Alkaliphilous; range 6.6-7.9 (8).
	Alkaliphilous	X	X		
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				
	Mesohalobous				Indifferent
	alpha range				
	beta range				
	Oligohalobous				
	halophilous				
	indifferent	X	X		
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent	X	X		Indifferent
	Rheophilous				
	Rheobiontic				
General Habitat	Marine				
	Estuary				
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic			X	
	Tychoplanktonic				
	Periphytic				Euplanktonic
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:

Taxon Synedra ulna var. spathulifera (Grun.) V.H.

		References				Concensus & Notes
		14	21	34	38	
pH	Acidobiontic					Alkaliphilous
	Acidophilous					
	Indifferent					
	Alkaliphilous	X				
	Alkalibiontic					
Nutrient	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
Halobion	Polyhalobous					Indifferent
	Euhalobous					
	Mesohalobous					
	alpha range					
	beta range					
	Oligohalobous			X		
	halophilous					
	indifferent	X				
	halophobous					
	Euryhalobous					
Saprobien	Polysaprobic					
	Mesosaprobic					
	alpha range					
	beta range					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Saprophobic					
Current	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
General Habitat	Marine					
	Estuary					
	Lake					
	Pond					
	River					
	Spring and Stream					
	Aerophilous					
	Other					
Specific Habitat	Euplanktonic		X	X		Euplanktonic
	Tychoplanktonic					
	Periphytic					
	epipelic					
	epilithic					
	epidendric					
	epizooic					
	epiphytic					
	attached					
	unattached					
Seasonal Dist.	Winter					
	Spring					
	Summer					
	Fall					
Temperature	Euthermal					Oligothermal
	Mesothermal					
	Oligothermal				X	
	Stenothermal					
	Metathermal					
	Eurythermal					
	Undesignated					

Geographical distribution and additional comments:

Taxon Synedra ulna (Nitz.) Ehr. var. ulna

		References																		Concensus & Notes
		1	7	8	11	13	14	16	19	21	26	27	29	30	31	34	35	38	41	43	45	
pH	Acidobiontic																					
	Acidophilous																					Alkaliphilous; range 5.7-9.0 (8, 11, 27).
	Indifferent					X					X											
	Alkaliphilous			X	X	X	X		X		X	X					X			X		
	Alkalibiontic																					
Nutrient	Eutrophic									X	X											Eutrophic
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
Halobion	Polyhalobous																					Indifferent
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous							X										X				
	halophilous																					
	indifferent			X	X		X				X		X			X				X	X	
	halophobous																					
	Euryhalobous									X			X								X	
Saprobien	Polysaprobic																					Oligosaprobic to Beta-Mesosaprobic
	Mesosaprobic			X																		
	alpha range																					
	beta range		X							X	X			X								
	Oligosaprobic	X	X											X	X	X						
	Saprophilic																					
	Saproxenous																					
	Saprophobic		X																			
Current	Limnobiontic																					Indifferent
	Limnophilous															X						
	Indifferent			X	X															X		
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					
	Estuary																					
	Lake																					
	Pond																					
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic															X						Euplanktonic
	Tychoplanktonic																					
	Periphytic																					
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached																					
	unattached																					
Seasonal Dist.	Winter																					Spring, Summer, and Fall
	Spring																		X			
	Summer	X																				
	Fall																		X		X	
Temperature	Euthermal																					Eurythermal and Oligothermal to Mesothermal
	Mesothermal																			X		
	Oligothermal																			X		
	Stenothermal																					
	Metathermal																					
	Eurythermal																			X		
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan (21, 24); great ecological span (45); prefers dirty water (16); calcium indifferent (36); it is unsuitable as an ecological indicator (21).

Taxon Tabellaria fenestrata (Lyngb.) Kütz. var. fenestrata

		References																				Concensus & Notes
		4	8	10	11	12	14	26	27	30	35	38	45	46								
pH	Acidobiontic																					Acidophilous; range 4.5-9.0 (8, 27), optimum 5.0-7.1 (4, 27, 45).
	Acidophilous	X	X	X	X	X	X	X	X		X											
	Indifferent											X										
	Alkaliphilous												X									
	Alkalibiontic																					
Nutrient	Eutrophic											X										Found in all nutrient conditions
	Mesotrophic											X										
	Oligotrophic								X													
	Dystrophic								X													
Halobion	Polyhalobous																					Halophobous
	Euhalobous																					
	Mesohalobous																					
	alpha range																					
	beta range																					
	Oligohalobous																					
	halophilous																					
	indifferent			X									X									
	halophobous		X		X		X	X						X								
	Euryhalobous																					
Saprobien	Polysaprobic																					Oligosaprobic to Saproxenous to Beta-Mesosaprobic
	Mesosaprobic																					
	alpha range																					
	beta range												X									
	Oligosaprobic									X			X									
	Saprophilic																					
	Saproxenous							X														
	Saprophobic																					
Current	Limnobiontic		X		X																	Limnobiontic
	Limnophilous																					
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
General Habitat	Marine																					Lakes and Ponds
	Estuary																					
	Lake											X										
	Pond											X										
	River																					
	Spring and Stream																					
	Aerophilous																					
	Other																					
Specific Habitat	Euplanktonic																					Periphytic and Attached
	Tychoplanktonic																					
	Periphytic											X										
	epipelic																					
	epilithic																					
	epidendric																					
	epizooic																					
	epiphytic																					
	attached											X										
	unattached																					
Seasonal Dist.	Winter																					Spring and Fall maxima
	Spring													X								
	Summer																					
	Fall													X								
Temperature	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Undesignated																					

Geographical distribution and additional comments:
Cosmopolitan, but seldom in the tropics (24); calcium indifferent (36).

Taxon Tabellaria flocculosa (Roth) Kütz. var. flocculosa

		References																			Concensus & Notes
		4	7	8	9	10	11	12	13	26	27	30	35	36	38	45					
pH	Acidobiontic	X			X																
	Acidophilous			X		X	X	X	X	X	X		X	X		X					Acidophilous; range 4.2-9.0 (8, 27), optimum 5.0-5.3 (4).
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic														X						Mesotrophic to Oligotrophic to Dystrophic
	Oligotrophic										X				X						
	Dystrophic										X										
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous																				Halophobous
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous			X	X	X	X		X	X						X					
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range		X																		Alpha-Mesosaprobic to Saproxenous
	beta range		X																		
	Oligosaprobic											X				X					
	Saprophilic																				
	Saproxenous									X											
	Saprophobic																				
Current	Limnobiontic			X			X														
	Limnophilous																				Limnobiontic
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake										X										Ponds
	Pond										X				X						
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other														X						
Specific Habitat	Euplanktonic																				
	Tychoplanktonic															X					Periphytic and Tychoplanktonic
	Periphytic															X					
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring															X					Spring and Fall maxima
	Summer																				
	Fall															X					
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:
Cosmopolitan (21, 36); calcium indifferent (36).

Taxon Thalassiosira fluviatilis Hust. var. fluviatilis

		References																			Concensus & Notes
		3	8	9	11	26	43														
pH	Acidobiontic																				
	Acidophilous																				Alkaliphilous; range 6.6-8.0 (8).
	Indifferent																				
	Alkaliphilous		X			X															
	Alkalibiontic																				
Nutrient	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous																				
	Mesohalobous	X	X	X	X		X														Mesohalobous
	alpha range																				
	beta range					X															
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous																				
Saprobien	Polysaprobic																				
	Mesosaprobic					X															Mesosaprobic to Oligosaprobic
	alpha range																				
	beta range																				
	Oligosaprobic					X															
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous		X																		Limnophilous
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic																				
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon Thalassiosira pseudonana (Hust.) Hasle and Heimdal var. pseudonana

		References			Concensus & Notes
		17	26	44	
pH	Acidobiontic				
	Acidophilous				
	Indifferent		X		Indifferent
	Alkaliphilous				
	Alkalibiontic				
Nutrient	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
Halobion	Polyhalobous				
	Euhalobous				
	Mesohalobous				Mesohalobous
	alpha range			X	
	beta range		X		
	Oligohalobous				
	halophilous				
	indifferent				
	halophobous				
	Euryhalobous				
Saprobien	Polysaprobic				
	Mesosaprobic				
	alpha range				
	beta range				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Saprophobic				
Current	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
General Habitat	Marine	X			
	Estuary	X			Marine or Estuary
	Lake				
	Pond				
	River				
	Spring and Stream				
	Aerophilous				
	Other				
Specific Habitat	Euplanktonic				
	Tychoplanktonic				
	Periphytic				
	epipelic				
	epilithic				
	epidendric				
	epizooic				
	epiphytic				
	attached				
	unattached				
Seasonal Dist.	Winter				
	Spring				
	Summer				
	Fall				
Temperature	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Undesignated				

Geographical distribution and additional comments:

Taxon Tropidoneis lepidoptera (Greg.) Cl. var. lepidoptera

		References																			Concensus & Notes
		4	6	22	46																
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
Nutrients	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
Halobion	Polyhalobous																				
	Euhalobous	X		X	X																Euhalobous
	Mesohalobous	X																			
	alpha range																				
	beta range																				
	Oligohalobous																				
	halophilous																				
	indifferent																				
	halophobous																				
	Euryhalobous				X																
Saprobien	Polysaprobic																				
	Mesosaprobic																				
	alpha range																				
	beta range																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Saprophobic																				
Current	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
General Habitat	Marine																				
	Estuary																				
	Lake																				
	Pond																				
	River																				
	Spring and Stream																				
	Aerophilous																				
	Other																				
Specific Habitat	Euplanktonic																				
	Tychoplanktonic		X																		
	Periphytic	X	X																		Periphytic to Tychoplanktonic
	epipelic																				
	epilithic																				
	epidendric																				
	epizooic																				
	epiphytic																				
	attached																				
	unattached																				
Seasonal Dist.	Winter																				
	Spring																				
	Summer																				
	Fall																				
Temperature	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Undesignated																				

Geographical distribution and additional comments:

Taxon _____

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrients	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

Taxon _____

		References	Concensus & Notes
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
Nutrients	Eutrophic		
	Mesotrophic		
	Oligotrophic		
	Dystrophic		
Halobion	Polyhalobous		
	Euhalobous		
	Mesohalobous		
	alpha range		
	beta range		
	Oligohalobous		
	halophilous		
	indifferent		
	halophobous		
	Euryhalobous		
Saprobien	Polysaprobic		
	Mesosaprobic		
	alpha range		
	beta range		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Saprophobic		
Current	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
General Habitat	Marine		
	Estuary		
	Lake		
	Pond		
	River		
	Spring and Stream		
	Aerophilous		
	Other		
Specific Habitat	Euplanktonic		
	Tychoplanktonic		
	Periphytic		
	epipelic		
	epilithic		
	epidendric		
	epizooic		
	epiphytic		
	attached		
	unattached		
Seasonal Dist.	Winter		
	Spring		
	Summer		
	Fall		
Temperature	Euthermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Undesignated		

Geographical distribution and additional comments:

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Supplement to "A Guide to the Common Diatoms at Water Pollution Surveillance System Stations," C. I. Weber, U.S. Environmental Protection Agency, Cincinnati, Ohio, 1966. 98 p.

16. ABSTRACT

Data on the environmental requirements and pollution tolerance of 300 common species and varieties of fresh water diatoms was compiled from 48 references. The following parameters were considered: pH, nutrients, salinity, organic pollution tolerance (saprobien system), current, general habitat, specific habitat, seasonal distribution, temperature and geographical distribution. A consensus of opinions for each parameter was established for most taxa. It is suggested that this compilation be employed to evaluate data from plankton and periphyton samples collected for the assessment of water quality.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
*Indicator species Aquatic biology Plankton *Diatoms Plant ecology Algae Water quality Phytoplankton	Periphyton *Pollution tolerance Algal ecology	6F

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