

**Some Thoughts on the Development of a Diatom Flora for
Freshwater Ecosystems in the Continental United States and
a Listing of Recent Taxa Described from U.S. Freshwaters**

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Although there has been over one hundred and fifty years of work (Ehrenberg 1854; Bailey 1851), we are far from an understanding of the freshwater, recent diatom flora of the United States. Previous efforts to catalogue the taxa occurring in the surface waters include a listing of approximately 525 taxa by Boyer (1927a, b) and illustrations of nearly 500 freshwater (and marine) taxa by Wolle (1890). The most widely utilized flora, produced by Patrick and Reimer (1966, 1975), included well over 800 taxa, but was incomplete on several levels. It included only araphid and naviculoid forms, dealt with taxa reported up to 1960, and was not exhaustive in its treatment of forms reported up to that time. Regional floras and summaries include the Laurentian Great Lakes by Stoermer and Kreis (1978) and Stoermer et al. (2000) (with over 2100 entries), Ohio (Collins and Kalinsky 1977, approximately 900 taxa), Montana (Prescott and Dillard 1979, with over 540 taxa), Kentucky (Camburn 1982, with just over 500 taxa), Illinois (Dodd 1987, with about 425 taxa), and Nebraska (Elmore 1922, with 234 taxa). Summaries from river systems include the work of Hohn and Hellerman (1963, who enumerated just over 475 taxa) and Patrick (1961, with 280 taxa), while Camburn et al. (1984–1986) and Camburn and Charles (2000) documented over 450 taxa from acid lakes in the eastern U.S. There are a large number of individual floristic works for individual systems or specific areas, such as Rushforth and Squires (1985) who reported 532 diatom taxa from Utah Lake and Kingston et al. (1983) who found 425 taxa from Grand Traverse Bay, Lake Michigan. Because many of these reports for individual localities were generated by ecologists who did not have a taxonomic perspective, it could be argued that the numbers of taxa would actually be more than those detailed in these reports.

Recently, discussions in a number of forums, including Diatom-L, have called for a comprehensive flora of Recent freshwater diatoms of the United States. This call has been especially strong from ecologists, many of whom are engaged in national, state, or local water quality monitoring programs that specify diatoms be used in estimating water quality. These programs are not currently supported by a comprehensive English-language flora (let alone one based on the flora of the country), and the disparate (and growing) literature in the field is becoming inaccessible to many of these workers. The call by ecologists for a flora in support of their work is refreshing, since a large number of previous and current studies lacked such a basic, but important tool. This goes back to major studies on U.S. rivers undertaken in the late 1950s through the early 1970s, (Williams and Scott 1962) as well as programs focused on lakes, for example the U.S. Environmental Protection Agency's country wide survey of lake phytoplankton in the 1970s (U.S. EPA 1975) and the EMAP program initiated in 1980s (e.g., Paulsen and Linthurst 1994; Dixit and Smol 1994) and the current U.S. Geological Survey's NAWQA program focused on rivers (Porter et al. 1993). Not only have these projects been carried out without a flora, but until the publication on the freshwater algae of

North America (Wehr and Sheath 2003), even the most recent key to *genera* in English dated from the late 1950s to the early 1980s (Patrick 1959; Vinyard 1979; Barber and Haworth 1981) and reflected the taxonomic approach of those times.

A flora, of course, not only supports applied research projects such as water quality monitoring, but a wide range of basic research questions are implicit in and supported by a flora, including taxonomic revisions and monographs, phylogeny reconstruction, biogeographic studies, as well as ecological, physiological, restoration and conservation biology research programs (Kociolek and Stoermer 2001). The linkage between the floras of central Europe (Krammer and Lange-Bertalot 1986, 1988, 1991a, b) and New Caledonia (Moser et al. 1998) and revisions of the genera *Cymbella* (Krammer 1997a, b, 2003), *Pinnularia* (Krammer 1992, 2000), *Navicula* (Lange-Bertalot 2001), *Gomphonema* (Reichardt 1995, 1999; Reichardt and Lange-Bertalot 1991), *Brachysira*, and *Nupela* (Lange-Bertalot and Moser 1994) is clear.

THE CHALLENGE OF A FLORA FOR THE UNITED STATES

Lack of a flora for the United States is probably due less to the tremendous flux in taxonomy, proliferation of taxonomic literature, or the fact that we are still in a discovery phase for the description of diatoms (Fourtanier and Kociolek 1999), but, rather, a number of other basic, practical considerations. These considerations include:

SIZE OF THE COUNTRY: The continental United States is approximately 9.8 million square kilometers, with the 48 contiguous states stretching a distance equivalent West to East from Portugal to the Ukraine, and North to South from the United Kingdom to North Africa (2005, *Times Atlas of the World*).

DIVERSITY OF HABITATS: Habitats range from subtropical to boreal, three marine coasts to numerous, substantial mountain ranges and major river systems of the Mississippi, Missouri, Columbia, Colorado and Potomac rivers. Potapova and Charles (2003) have discussed the variables effecting the distribution of riverine diatoms across the U.S., and noted that environment, geography and altitude factors help account for the biogeographic distributions of diatoms. Because many of the evaluations have been generated by goal-oriented ecological studies, many times diverse habitats have not been sampled. An example of such an ecosystem might be deep-living communities in lakes (Stoermer 1981).

STILL RELATIVELY UNEXPLORED: The size and diversity of habitats have contributed to the situation in that the country is relatively unexplored from a phycological perspective, and from the perspective of a diatomist. In addition to the 3 attempts to synthesize knowledge about the diatom flora of the United States (Boyer 1927a, b; Wolle 1890; Patrick and Reimer 1966, 1975), there have been regional floras and summaries (Kociolek and Spaulding 2003; see above). While the physical sample resources are probably already in place to undertake a flora (housed primarily at the Academy of Natural Sciences of Philadelphia, California Academy of Sciences, and the Botany Department of the Smithsonian Institution), most have not been “explored” to any great degree. There are still relatively few samples, however, from major parts of the country (see below).

NUMBER OF PEOPLE TO DO THE WORK: The number of formally trained freshwater diatom taxonomists in the United States is modest, relative to the size of the country. Though training programs at universities have existed for an extended period, both in terms of specialized summer courses and short-term training sessions as well as Master’s and Doctoral. programs, there are probably fewer of these today than even when I began my career in the early 1980s. In fact, we have seen only a single generation of expertise become resident at an institution; continuity has been lost after the founding professor/lab has been dismantled. A lack of continuity and sustainability of tax-

onomists and curators in universities and museums can also be argued, as long-term commitment has been replaced by short-term projects. Short-term projects may result in the deposition of slides into collections; however, systematic treatments and description of taxa new to science are rare or lacking. Overall, the intellectual infrastructure is diminishing, as the focus in many institutions of higher learning tends towards a more reductionist perspective. Kociolek and Stoermer (2001) discuss this issue and the continuing need to include a broader community of taxonomists, many trained outside the U.S. university system, to apply expertise in the identification of diatoms. This expertise will have to include people whose main interest has not been taxonomy, but who use taxonomy to help answer questions related to ecology, climatology and geology.

TOOLS TO CARRY OUT A MODERN FLORA

A modern flora is both a synthesis of existing data and discovery of new information, whether it results in descriptions of new species, new records, and/or new information on the distribution (expanded or more narrowly circumscribed than previously thought) of taxa. A basic approach is to understand first what has been reported previously, and confirm (or refute) the presence those taxa. Such a synthesis requires some basic tools. These tools include:

CHECKLIST: This is a complete listing of taxa reported from an area (in the context of this discussion, the 48 contiguous United States). Such a checklist does not currently exist. Stoermer and Kreis (1978) and Stoermer et al. (2002) have generated such a list for the Laurentian Great Lakes, and as indicated above, such lists have been generated for a few parts of the country. An effort is now underway to compile this list, reviewing the hundreds of reports of diatoms from the published literature. The list currently contains over 4500 names. This is not "THE Final Definitive" list of taxa, however; it will be reduced and also receive additions as it is applied in floristic research. This list, for example, contains synonyms of two sorts. The first kind of synonym in such a list will be names based on a single type (a nomenclatural synonym). For example, *Achnanthes lanceolata* (Brébisson) Grunow and *Planothidium lanceolatum* (Brébisson) Round & Bukht. would both be included in such a list, but the two names refer to a single entity, based on a type initially described by Brébisson. The second kind of synonym that would occur in a checklist of this kind is one where two (or more) taxa described from different types are considered a single entity (a taxonomic synonym). An example of this sort would be whether *Cymbella diluviana* (Kraske) Florin and *C. couleensis* Sovereign are the same (Patrick and Reimer 1975) or different (Sovereign 1963) species. Evaluation of these situations can be resolved by monographic or revisionary studies. The initial list of 4400+ names based on the published literature will certainly be reduced, due to synonymy, but also greatly expanded by additions.

NOMENCLATURE: One way to track the nomenclatural synonymies is with a database of names. The California Academy of Sciences is undertaking this mammoth effort and has developed a database of over 55,000 entries. The database includes the names included in all of the previously published catalogues (Habirshaw 1877; Chase 1885, 1907; Peragallo 1897–1903; Mills 1933–1935; Van Landingham 1967–1979), entries from two institutional card files (*New Species File* from ANSP and the *Index Nominum Algarum*, University of California, Berkeley) and additional entries from the primary literature. Discrepancies with respect to the information from these sources are tracked in the database (name, author, place, date and specifics of publication) and are being rectified by reviewing the original publications. This database has been demonstrated at a number of national (North American Diatom Symposium) and international (International Diatom Symposium) meetings. Publication of this work is expected to commence in 2006; it is expected ultimately to consist of 4–6 volumes.

ACCESS TO TYPES: For comparison and verification of taxon identities, it is preferable in floristic work to be able to access the type(s) of the taxa under consideration. This was the approach taken by Patrick and Reimer in their floristic work, and it continues to provide great added value to that work and subsequent works. Several publications can facilitate identifying the location of types of diatom taxa from freshwater environments, including those of Mahoney and Reimer (1997), Kociolek et al. (1999), Lange-Bertalot et al. (1996 on the collection of Krasske), Krammer (*Cymbella* 1997a, b, 2002; *Pinnularia* 1992, 2000), Williams (*Diatoma* 1985) and the excellent work by Simonsen (1987) on the collection of Friedrich Hustedt. From the preliminary list of 4400+ names in the checklist being developed, about 50% of the names are associated with types that can be traced to a specific institution and material (sample and/or slide). When the names attributed to Agardh, Bailey, Cholnoky, Ehrenberg, Gregory, Grunow, Kützing, Rabenhorst, W. Smith, and Van Heurck are included (since we know the institutions those collections are housed, though specific samples may not have been identified as the types for each taxon), the percentage of types accessible rises to nearly 85%. This suggests access to types for comparison could be accomplished for many of the names on the checklist and this critical tool could be in place to support a flora project. In fact, development of a research tool that indicates the range of morphological expression of the types would be one of the first steps in undertaking the flora for the U.S.

SAMPLES: Access to samples for floristic work is important for a number of reasons. Verification of taxa reported in the literature many times requires access to material, that is the samples or slides used by the author who described the flora. Extant samples also allow those involved in the production of the flora to assess the areas under study that require additional sampling. Many workers in the U.S. have excelled in ensuring their collections are accessible in some fashion. A tragedy has been that the samples from several major national water quality monitoring/estimation efforts were not retained, thereby negating any way to leverage those samples for future research, including development of a flora, later comparative work, etc. The role museums play in storing, caring for and making accessible these important scientific research resources is hugely important. Collections of Patrick, Reimer, Boyer, Theriot, and many types of freshwater diatoms described from the United States and elsewhere are housed at ANSP, while the collections of Kociolek, Stoermer, Van Landingham, Elmore, Rushforth, Sovereign and G.W. Prescott are housed at CAS. Nearly 90% of the types for which we can identify a slide are housed at either ANSP or CAS (Table 1). Samples from the NAWQA project are housed at both institutions. The Botany Department of the Smithsonian Institution houses about 15,000 slides from one of EPA's water quality monitoring projects. It includes most of the major river systems in the continental U.S., which were sampled monthly over a period of time. In some cases the period of sampling was only for 2 years, but others the sampling period was continuous for a decade or more. While the collection resources currently available are impressive, and could support in large part an effort to document the freshwater diatom flora of the United States, it seems clear that some parts of the country are not well represented in these collections. These areas include, but are not limited to, the Rocky Mountains, the Sierra Nevada Mountains, the Deep South, southern Plains states, southern California, and the southwestern U.S.

PRELIMINARY LIST OF DIATOMS DESCRIBED FROM U.S. FRESHWATERS

One approach to establishing the flora of the U.S. would be to document those taxa that have been described as new from U.S. localities; a preliminary list of these taxa is presented in Table 1.

Nearly 600 taxa have been described as new from freshwater environments in the continental United States. Genera with the most taxa described from the U.S. include *Navicula* (148 taxa),

Pinnularia (66 taxa), *Gomphonema* (39 taxa), *Cymbella* (31 taxa), and *Eunotia* (31 taxa), *Nitzschia* (27 taxa), *Achnanthes* (24 taxa) and *Neidium* (23 taxa). There are several genera in which a single taxon has been described, including *Adlafia*, *Diploneis*, *Tetracyclus*, *Cymatopleura*, *Cyclostephanos*, *Mastogloia*, *Peronia*, and *Pleurosigma*; many of these genera are better represented in the brackish or marine environments, or part of relatively small genera.

It is somewhat surprising that the genera *Cyclotella* and *Stephanodiscus* have so few new taxa described from the U.S. Likewise, the number of species described from U.S. in the nitzschioid and surirelloid genera is remarkably low. In fact, there are almost as many new taxa of *Neidium* (23 taxa), a genus of relatively restricted ecological distribution, described from the U.S. as there are taxa of the more eurytolerant (at the level of genus) *Nitzschia* (24 taxa). These discrepancies must be attributable to the lack of monographs on these genera. Genera that are only known in the U.S. flora include *Playaensis* Spaulding & Kociolek, *Sarcophagodes* Morales and *Pseudostaurosiropsis*. Absence of reports from other areas may be due to their relatively recent discovery.

In terms of geography, the areas supporting the most new taxa are Oregon (83 taxa), Pennsylvania (52 taxa), Florida (51 taxa), South Carolina (49 taxa) and the state of Washington (36 taxa). While Oregon and Washington, as well as Florida might be seen as unique areas, somewhat surprising is the relatively large number of taxa described from the eastern coastal plain. Of course, these areas have received the greatest amount of attention from diatomists, especially South Carolina, and the Savannah River, which have been monitored heavily due to the presence of a nuclear power plant. The bottom line is areas that receive any detailed attention have been found to bear new taxa, and this is emphasized by the work on the Laurentian Great Lakes, Iowa, and the east coast of the U.S. also showing many taxa being described from those areas. Lack of new taxa from many parts of the U.S. is due probably more to lack of attention than lack of interesting species. It is still the situation that some of the lists developed by Ehrenberg (1854) for parts of the Deep South are in fact the only published information on freshwater recent diatoms from the area.

Table 1 also reminds us how many taxon names we do not see referenced in the current literature. While most taxonomists know of the works of Patrick and Reimer, it may be surprising that more species have been described from the continental United States by the late Matthew Hohn (72 taxa) than either Ruth Patrick (47 taxa) or Charles Reimer (40 taxa), yet few of the taxa authored by Hohn are noted in the U.S. flora. Likewise, species such as *Cocconeis patrickae* Reimer and *Navicula daileyi* Reimer, both known from Indiana, are rarely reported. This lack of reporting of these names is due to the fact that the work of Hohn and these names of Reimer were not included in the flora of Patrick and Reimer (1966, 1975). Descriptions of new taxa in the primary literature do not readily, if at all, get into the parlance of practicing taxonomists. Thus, the need for a new U.S. flora is underscored to summarize and make more accessible the vast data on the diatom flora of freshwaters in the U.S., especially that information in the primary literature that has accumulated for more than 40 years since Patrick and Reimer reviewed and incorporated the primary literature into a flora.

CONCLUSIONS

Although we have come a long way in our studies of the diatom flora of the U.S., we are far from achieving a complete understanding. The obstacles to gaining a fuller understanding are difficult, and the time, people, and financial resources to gain such knowledge are daunting. I must say, however, that the development of a U.S. flora will be modest in cost relative to the utility of the work and the amount being spent on projects that are operating without such a basic tool.

In addition to the taxonomic infrastructure that is being put into place that could be used to great benefit in the development of a U.S. freshwater diatom flora, there are also some advances in

other research tools that could facilitate a project of this scope. One example can be found dealing with the freshwater diatoms of south Florida (<http://serc.fiu.edu/periphyton>). These tools should include mature structures of complex databases that support the organization and sharing of information both internally and with collaborators across the country and the world. These are already used by ANSP and CAS to organize the material, slides and identifications for internal use, and for searching by external users, but also facilitate input from individuals outside the institutions (see the system in place at ANSP at <http://www.diatom.acnatsci.org/AlgaeImage>).

Perhaps one of the greatest leaps in the development of species descriptions, monographs, taxonomic revisions and floras in the last 20 years has been documentation of variability within a taxon. This has been done by incorporating many micrographs into the work (examples include Kociolek and Stoermer 1988, Krammer and Lange-Bertalot 1986–1991; Krammer 2003). This approach has been facilitated in more recent times by the development of digital imaging, where publication-quality images can be received directly from microscope to computer, without the time-consuming process of artists drawing the specimen or the processing of film and printing of prints. In the development of a modern flora, this is by far one of the best timesaving devices.

No one laboratory, probably no one institution, can alone do this work within a reasonable time frame. Such a task will require a team of taxonomic experts. It will involve accessing materials from numerous herbaria, and a complicated management plan so that the large task of evaluating and synthesizing past work can happen, but also allowing time for a “discovery” effort to occur.

A modern flora will of necessity be a flexible and up-datable system (for a similar view, see Wheeler et al. 2004) that is distributed, such that it can support a team of collaborators and be applied by an international body of users. A flora then is an information system, in this case for the freshwater diatoms of the U.S. It requires a well thought-out framework for information capture and management (i.e. database), which supports potentially a wide range of users. Though such an approach can require time to develop and populate with data, it can result in reproducible results (because data are tied to specimens that can be reviewed by future workers), and allow the basic information to be leveraged across a variety of fields for research and educational uses. It seems to me that we can build on the great body of work that has been accomplished over the last 150 years, including the floras that have been developed previously. With the legacy of previous workers whose collections have been maintained and are accessible for study by current (and future) generations, and the near completion of important research tools, we are well positioned to commence immediately and realize this important work.

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TABLE 1. Listing of taxa, type locality and types (type designation, institution, and slide number) of diatoms described as new to science for the United States. H=holotype; I=isotype; Icono=iconotype; L=lectotype; ANSP=Academy of Natural Sciences of Philadelphia; B=Botanical Museum, Berlin, Dahlem; BHUPM=Humboldt University Paleontological Museum, Berlin; BM=British Museum, London; BRM=Alfred Wegener Institute, Bremerhaven; CAS=California Academy of Sciences; NAU=Northern Arizona University, Flagstaff; NW=Naturhistorisches Museum, Wien; USNM=U.S. National Museum [National Museum of Natural History, Washington, D.C.]; IOK=Collection of K. Kramer; ILL= Iowa Lakeside Lab Collection; ISU=Herbarium of Iowa State University; Lange-Bertalot=Collection of H. Lange-Bertalot at G.W. Goethe-Institute, Frankfurt, Germany; VH=Van Heurek Collection, Antwerp;

<i>Taxa</i>	<i>Type locality</i> (<i>State:specific locality</i>)	<i>Types</i> (<i>Designation:Institution:Slide</i>)
<i>Achnanthes americana</i> Cleve 1895	[MA: Waltham]: Crane Pond	H:ANSP:44261a
<i>Achnanthes biporonia</i> Hohn & Hellerman 1963	GA/NC: Burke Co.-Barnwell Co., Savannah River	H:ANSP:4451a
<i>Achnanthes chilensis</i> var. <i>subaequalis</i> Reimer	FL: Santa Rosa Co., Escambia River	
<i>Achnanthes curvirostrum</i> Brun	CT: Mories Cove	
<i>Achnanthes decipiens</i> Reimer 1966	SC: Aiken Co., Upper Three Runs Creek	H:ANSP:44260a
<i>Achnanthes deflexa</i> Reimer in Patrick & Reimer 1966	IN: Marshall Co., Lake Maxinkuckee	H:ANSP:1931
<i>Achnanthes deflexa</i> var. <i>alpestris</i> Lowe & Kociolek 1984	Great Smoky Mountains National Park, Big Creek	H:ANSP:53918
<i>Achnanthes delta</i> Hohn & Hellerman 1963	GA/SC: Burke Co.-Aiken Co., Upper Three Runs	H:ANSP:44272a
<i>Achnanthes harveyi</i> Reimer 1966	SC: Aiken Co., Upper Three Runs	H:ANSP:44254a
<i>Achnanthes lanceolata</i> var. <i>abbreviata</i> Reimer 1966	SC: Allendale Co., Savannah River	H:ANSP:43857a
<i>Achnanthes lanceolata</i> var. <i>apiculata</i> Patrick	PA: Pike Co. Shohola Falls	H:ANSP:2190
<i>Achnanthes lanceolata</i> var. <i>omissa</i> Reimer in Patrick & Reimer 1966	IA: Dickinson Co. Lake West Okoboji	H:ANSP:8526
<i>Achnanthes lanceolatoidea</i> Sovereign	OR: Crater Lake	H:CAS:205076
<i>Achnanthes lewisiana</i> Patrick	PA: Pike Co. Shohola Falls	H:ANSP:2210
<i>Achnanthes linearis</i> f. <i>curta</i> H.L. Smith	NJ: Elm, sides of greenhouse tank	L:ANSP:Boyer A-II-21
<i>Achnanthes monela</i> Hohn & Hellerman 1963	PA: Ridley Creek	H:ANSP:44914
<i>Achnanthes ostrupii</i> var. <i>parvula</i> Patrick 1945	PA: Pike Co., Shohola Falls	H:ANSP:63786
<i>Achnanthes peragalli</i> var. <i>fossilis</i> Tempère & Peragallo	CT: Tamarack Swamp	I:CAS/ANSP:T & P (2) 211, 212
<i>Achnanthes prava</i> Sovereign	OR: Klamath Co., Crescent Lake	H:CAS:205088
<i>Achnanthes reimeri</i> Camburn	SC: York Co., Long Branch Creek	H:ANSP:53752
<i>Achnanthes ricula</i> Hohn & Hellerman 1963	MD: Potomac River	H:ANSP:44468
<i>Achnanthes rupestris</i> Hohn 1961	FL: Silver Springs	H:ANSP:44476
<i>Achnanthes stewartii</i> Patrick	PA: Pike Co., Lake Wallenpaupack tributary	H:ANSP:2194
<i>Achnanthes subrostrata</i> var. <i>appalachiana</i> Camburn & Lowe 1966	NJ: Mercer Co., Assumpink Creek	H:ANSP:44716a
<i>Achnanthes temperei</i> Peragallo in Tempère & Peragallo	SC: York Co., Long Branch Creek	H:ANSP:53753
<i>Achnanthes thermalis</i> var. <i>rumrichorum</i> Lange-Bertalot in Lange-Bertalot & Kramer 1989	CT: Quinnipac River, Davis Pit	I:CAS/ANSP:T & P (2) 187
	AZ: "Quitobaquito"	H:Lange-Bertalot. AM/N 16

- Achnanthydium rivulare* Potapova & Ponader
Actinella punctata Lewis
Actinocyclus niagarae H.L. Smith 1878
Adlafia multinomalii Morales & Lee 2004
Amphipleura lindheimeri Grunow
Amphiprorra ornata J.W. Bailey
Amphora biragula Hohn 1961
Amphora bullatoides Hohn & Helleman 1963
Amphora calumetica (Thomas) M. Peragallo
Amphora cruciferoides Stoermer & Yang 1971
Amphora hemicycla Stoermer & Yang 1971
Amphora huronensis Stoermer & Yang 1971
Amphora menisca Hohn & Helleman 1963
Amphora michiganensis Stoermer & Yang 1971
Amphora neglecta Stoermer & Yang 1971
Amphora sabiniana Reimer in Patrick & Reimer 1975
Amphora subcostulata Stoermer & Yang 1971
Anomoeoneis fogedii Reimer 1982
Anomoeoneis foliis var. *hannae* Reimer in Patrick & Reimer 1966
Anomoeoneis foliis var. *fossilis* Reimer in Patrick & Reimer 1966
Anomoeoneis sericans (Brébisson) Cleve
Anomoeoneis sericans f. *undulata* Hustedt 1959
Anomoeoneis sericans var. *apiculata* Boyer
Anomoeoneis sphaerophora var. *minor* Kociolek & Herbst
Aulacoseira distans var. *septentrionalis* Camburn & Charles 2000
Caloneis columbiensis Cleve 1894
Caloneis lewisii Patrick
Caloneis lewisii var. *inflata* (Schultze) Patrick
Caloneis oregonica (Ehrenberg) Patrick
Caloneis permagna (Bailey) Cleve
Caloneis pseudochumanniana (Hustedt) Simonsen 1987
Caloneis salebrastrata Hohn 1961
 NH: Pennichuck Brook
 NH: Saco Pond
 OH: Lake Erie, Clevelans
 OR: Multnomah Co., Willamette River
 TX: Comale Creek
 FL: Withlacoochee River
 FL: Silver Springs
 PA: Riddle Creek
 Lake Michigan
 Lake Michigan
 Lake Michigan
 Lake Michigan
 MD: Potomac River
 MI: Cheboygan Co., Douglas Lake
 Between Lake Michigan and Lake Macatawa
 TX: Orange Co., Sabine River
 Lake Michigan
 IA: Dickinson Co., Excelsior Fen
 NJ: Ocean Co., Toms River
 FL: Santa Rosa Co., 1½ miles NE of Milton
 Several localities including NY and MA
 AL: Mobile
 NH: Carroll Co., Bemis Lake
 CA: Mono Lake
 MI: Schoolcraft Co., Cusino Lake
 OR: Columbia River
 RI: Newport, Northam's Pond
 NY: Staten Island, Clifton
 OR
 NY: Hudson River at West Point
 WA: Tacoma
 FL: Silver Springs
 H:ANSP:57579; I:CAS:221075
 L:ANSP:Febiger 2372
 H:ANSP:105793a
 H:ANSP:44483 (Hohn says "44484")
 H:ANSP:44469
 H:CAS:Stoermer 1545
 H:CAS:Stoermer 1574
 H:CAS:Stoermer 1258
 H:ANSP:44466
 H:CAS:Stoermer 1165
 H:CAS:Stoermer 1520
 H:ANSP:8027
 H:CAS:Stoermer 1565
 H:ILL.:SP33
 H:ANSP:Boyer 818
 H:ANSP:45101
 H:BRM:Ng/83
 N:ANSP:Boyer 392
 H:CAS:216060
 H:ANSP:57551
 H:ANSP:2018
 H:BRM:Ng/92
 H:ANSP:44484

- Caloneis speciosa* (Husted) Boyer
WA: Tacoma
H:BRM:N6/92
- Capartogramma crucicula* (Grunow) Ross
New England; Merrimac River; on Chara
OR: Lower Klamath Lake, Lost River
- Cestodiscus baileyi* H.L. Smith 1878
ND: Devil's Lake
MI: Ttrabawassee R. at Midland
L:ANSP:Boyer X-V-1
H:ANSP:53766
- Chaetoceros elmorei* Boyer 1914
Chaetoceros holmii Graebner & Wujek
FL: Silver Springs
FL: Silver Springs
H:ANSP:44474
H:ANSP:44489
- Cocconeis delatinea* Hohn 1961
Cocconeis delapunctata Hohn 1961
Cocconeis flaviatilis Wallace
SC: Allendale Co., Savannah River
FL: Silver Springs
H:ANSP:3872b
H:ANSP:44474
- Cocconeis inusitatus* Hohn 1961
OR: Upper Klamath Lake
IN: Randolph Co., Cabin Creek bog
H:CAS:205074
H:ANSP:45669
- Cocconeis klamathensis* Sovereign 1958
Cocconeis placentalis var. *euglypta* (Ehrenberg) Cleve
FL
OR
H:CAS:205075
- Cocconeis rugosa* Sovereign 1958
- Coscinodiscus subtilis* var. *radiatus* Hohn 1952
NY: Genesee Co., Bergen Swamp
H:Wiegand Herb. Cornell:162
- Cyclostephanos tholiformis* Stoermer et al. 1987
IA: Dickinson Co., W. Lake Okoboji, Lazy Lagoon
H:ANSP:63787
- Cyclotella alioquantula* Hohn & Hellerman 1963
Cyclotella americana Frické
TX: Hardin Co., Neches River
America
Lake Michigan
H:ANSP:8024
- Cyclotella bodanica* var. *michiganensis* Skvortzow 1937
Cyclotella bodanica var. *stellata* Skvortzow 1937
Lake Michigan
TX: Hardin Co., Neches River
H:ANSP:8102
- Cyclotella faceta* Hohn & Hellerman 1963
Cyclotella gamma Sovereign
WA: San Juan Co., Orcas Island, Lake Killebrew
Lake Michigan
H:CAS:205087
- Cyclotella michiganiana* Skvortzow 1937
- Cyclotubicolistius undatus* Stoermer et al. 1990
SC: Barnwell Co. L Lake
H:ANSP:55688
- Cymatopleura mannii* M. Peragallo in Tempère & Peragallo 1909
OR: Klamath Co., Swan Lake
I:CAS/ANSP: T & P (2) 365, 366
- Cymbella acutiuscula* Cleve 1894
Cymbella americana A.Schmidt 1885
MA: Waltham, Crane Pond
RI: North Providence
ID: Oreana, Pickett Creek
H:IOK:808B
- Cymbella buechleri* Krammer 2002
Cymbella cesatii var. *linearis* Reimer 1961
IN: Randolph Co., Cabin Creek bog
H:ANSP:45669
- Cymbella cistula* var. *crassa* Tempère & Peragallo 1909
OR: Klamath Co., Swan Lake
I:CAS/ANSP: T & P (2) 365, 366
- Cymbella coulteensis* Sovereign
WA: King Co., Shadow Lake
H:CAS:206006
- Cymbella cucumis* var. *delicata* Tempère & Peragallo 1909
OR: Klamath Co., Swan Lake
I:CAS/ANSP: T & P (2) 365, 366

- Cymbella curta* A. Schmidt 1885
Cymbella dissimilis M. Peragallo in Tempère & Peragallo 1909
Cymbella dorstirostrata Krammer 2002
Cymbella duplopunctata Krammer 2002
Cymbella elizabethana Krammer 2002
Cymbella formosa Hustedt 1955
Cymbella gibba J.W. Bailey
Cymbella gibberula Hustedt
Cymbella heteropleura var. *subrostrata* Cleve
Cymbella janischii A. Schmidt
Cymbella lanceolata var. *cornuta* (Ehrenberg) Grunow
Cymbella langii MacLaughlin & Andrews
Cymbella mexicana var. *janischii* (A. Schmidt) Reimer
Cymbella microcephala var. *crassa* Reimer
Cymbella muelleri f. *ventricosa* (Tempère & Peragallo) Reimer
Cymbella ornata Hustedt Hustedt 1931
Cymbella perfoissilis Krammer 2002
Cymbella procerata Hustedt 1931
Cymbella proxima f. *gravida* Reimer in Patrick & Reimer 1975
Cymbella rainierensis Sovereign
Cymbella robertii Krammer 2002
Cymbella schubartoides Camburn & Charles 2000
Cymbella triangulum (Ehrenberg) Cleve
- Denticula lauta* J.W. Bailey
Denticula rainierensis Sovereign
- Diatoma anceps* (Ehrenberg) Kirchner
Diatoma anceps var. *constricta* Tempère & Peragallo 1912
Diatoma anceps var. *linearis* M. Peragallo
- Diploneis smithii* var. *dilatata* (M. Peragallo) Boyer
- Encyonema evergladianum* Krammer 1997b
Encyonema formosum (Hustedt) D.G. Mann
Encyonema gibbum (J.W. Bailey) Krammer 1997a
Encyonema hohnii (Van Landingham) Krammer 1997b
Encyonema inelegans (Cleve) Mills
Encyonema parallelum M. Peragallo in Tempère & Peragallo 1909
Encyonema silestacum var. *elegans* Krammer 1997a
Encyonema temperetii Krammer 1997b
- [WA]: Fort Ludlow
OR: Klamath Co., Swan Lake
UT: Zion National Park
ID: Oreana, Pickett Creek
ID: Oreana, Pickett Creek
OR: Pitt River
CA: Honey Lake Valley
OR: Oregon River
ME: Cherryfield
CA: San Francisco
CT: New Haven
NM: Rio Arriba Co.
CA: San Francisco
TX: Guadalupe Co., Guadalupe River
NJ: Weequahick Lake
OR: Columbia River
OR: Terrebone
OR: Columbia River
IN: Marshall Co., Lake Maxinkuckee
WA: Mt. Rainier National Park, Mowich Lake
ID: Oreana, Pickett Creek
NY: Franklin Co., Grass Pond
NY: "Vivum in Niagara"
- CA: Suisun Bay
WA: Mt. Rainier National Park,
MA: Pellham
CT: Plymouth, Todd Hollow
CT: Hartford Co., Bristol, Fall Mountain
CT: Bristol, Fall Mountain
- FL: Everglades
OR: Pitt River
CA: Honey Lake Valley
KY: Mammoth Cave National Park
OR: Pitt River, Fall River
OR: Klamath Co., Swan Lake
FL: Everglades
NJ: Weequahick Lake
- I:CAS/ANSP: T & P (2) 365, 366
H:IOK:799
H:IOK:808B
H:IOK:808B
L:BRM:T2/24
L:ANSP H.L. Smith 72-641
H:BRM:T1/72
H:USNM:20560
H:ANSP:6590a
L:ANSP T & P 524
H:BRM:T2/4
H:IOK:812
H:BRM:T2/17
H:ANSP:1909
H:CAS:206007
H:IOK:808B
H:ANSP:57555
I:ANSP:H.L. Smith B-85
H:CAS:206008
I:CAS/ANSP: T & P (2) 728, 729
L:ANSP T & P (2) 104
I(?):ANSP: T & P (1) 104
H:IOK:1068C
L:BRM:T2/24
L:ANSP:H.L. Smith 72-641
I:BRM:T1/51(?)
I:CAS/ANSP: T & P (2): 365, 366
H:IOK:1042C
L:ANSP:T & P (1): 524

- Eucyonema thermale* Krammer 1997b
Eucyonema trianguliforme Krammer 1997a
Eucyonema triangulum Kützing
Eucyonema turgidum var. *ventricosa* Tempère & Peragallo
Eucyonema yellowstonianum Krammer 1997a
Eucyonopsis floridaana Krammer 1997b
Eucyonopsis kriegeri var. *fossilis* Krammer 1997b
Eucyonopsis radialis Krammer 1997b
Eucyonopsis stodderi (Cleve) Krammer 1997b
Eucyonopsis subspicula Krammer 1997b
Eucyonopsis substodderi Krammer 1997b
Eucyonopsis symmetrica Krammer 1997b
- Entomoneis ornata* (J.W. Bailey) Reimer
Entomoneis pulchra (J. W. Bailey) Reimer
- Epithemia emarginata* Andrews
Epithemia lynchmanii var. *capitata* M. Peragallo
Epithemia truncata M. Peragallo
Epithemia truncata var. *debilis* M. Peragallo
Epithemia westermanni var. *stricta* Tempère & Peragallo 1909
- Eunotia arcus* var. *uncinata* (Ehrenberg) Grunow
Eunotia bilii Lowe & Kociolek 1984
Eunotia carolina Patrick 1958
Eunotia clavata Hustedt 1913
Eunotia collinsii Kalinsky 1984
Eunotia compacta Hustedt Hustedt 1913
Eunotia didyma var. *inflata* Hustedt 1913
Eunotia incurvata Hustedt 1913
Eunotia hinziae Simonsen 1987
Eunotia hinziae var. *diodon* Simonsen 1987
Eunotia lata Hustedt 1933
Eunotia luna Ehrenberg
Eunotia luna var. *intermedia* Hustedt ex Simonsen 1987
Eunotia luna var. *elongata* Hustedt ex Simonsen 1987
Eunotia luna var. *aequalis* Hustedt ex Simonsen 1987
Eunotia luna var. *globosa* Hustedt ex Simonsen 1987
Eunotia luna var. *trapezica* Hustedt
Eunotia obesa var. *wardii* Patrick 1958
Eunotia parallela Ehrenberg
- [WY]: Yellowstone National Park, Geyser 2
OR: Terre Bone
[NY]: "Vivum in Niagara"
NI: Weequahick Lake
[WY]: Yellowstone National Park, Firehole River
FL: Clermont
[NH]: Bemis Lake, White Mountains
[WY]: Yellowstone National Park
NH: Bemis Lake, White Mountains
NH: Bemis Lake, White Mountains
NH: Bemis Lake, White Mountains
ME: Cherryfield
FL: Withlacoochee River
FL: at Enterprise
WI: Jackson Co., Trempealeau Valley
OR: Klamath Co., Swan Lake
OR: Klamath Co., Swan Lake
OR: Klamath Co., Swan Lake
OR: Klamath Co., Swan Lake
ME: Blue Hill Pond
Great Smoky Mountains National Park
GA: Mouth of Upper Three Runs
OR: Columbia River
LA: Bossier Parish, Cypress Bayou Res.
OR: Columbia River
NV: Kings River
OR: Columbia River
OR: Columbia River
OR: Columbia River
OR: Columbia River
NJ: Atlantic City
OR
OR: Columbia River
OR: Columbia River
OR: Columbia River
OR: Columbia River
OR: Columbia River
AL: Mobile, Spring Hill
USA
- H:BRM:T3/100
H:IOK:833
L:ANSP:T & P (1): 524
H:IOK:1032; I:IOK:1033
H:IOK:804
H:VH:544
H:IOK:1044
L:VH:Cleve & Moller 274
H:IOK:1173F
L:VH:Cleve & Moller 274
H:VH:Cleve & Moller 168
L:ANSP:T & P (2) 366
L:ANSP:T & P (2) 366
L:ANSP:T & P (2) 366
I:CAS/ANSP: T & P (2) 365, 366
H:ANSP:539J7
H:ANSP:44254a
L:BRM:X11/37
H:ANSP:53901
L:BRM:X11/33
L:BRM:239/63
L:BRM:X11/37
L:BRM:L3/12
L:BRM:X11/37
H:BRM:L2/26
L:BRM:X11/37
L:BRM:X11/33
L:BRM:X11/37
L:BRM:X11/37
L:BRM:X11/37
H:CAS:NY Ward C-7-17-N

- Eunotia pectinalis* var. *ventricosa* Grunow
Eunotia pocosinensis Gaiser & Johansen 2000
Eunotia praeurupta Ehrenberg
Eunotia praeurupta var. *bidens* (Ehrenberg) Grunow
Eunotia punctastriatum Camburn & Charles 2000
Eunotia reicta Hustedt 1913
Eunotia rostellata Hustedt ex Patrick 1945
Eunotia serraceniae Gaiser & Johansen 2000
Eunotia submonodon Hustedt 1913
Eunotia tauntoniensis Hustedt
Eunotia torula Hohn 1961
Eunotia zasuminensis var. *minor* Kalinsky 1984
- Fragilaria aequalis* var. *major* Tempère & Peragallo 1090
Fragilaria crotonensis Kitton
Fragilaria crotonensis var. *oregona* Sovereign
Fragilaria dibolos Hohn & Hellerman 1963
Fragilaria floridana Hanna
Fragilaria glebula Hohn & Hellerman 1963
Fragilaria gnathostoma Hohn 1961
Fragilaria interstincta Hohn & Hellerman 1963
Fragilaria marina var. *parva* Tempère & Peragallo 1908
Fragilaria rhodana Hohn & Hellerman 1963
Fragilaria robusta Hustedt
Fragilaria sinuata M. Peragallo
Fragilaria suboldenburgiana Camburn & Charles 2000
Fragilaria syngetresca Lange-Bertalot 1993
Fragilaria vaucheriae f. *contorta* Lowe 1972
- Frustulia asymmetrica* (Cleve) Hustedt
Frustulia bahsii Edlund & Brant 1997
Frustulia pseudomagalesmontana Camburn & Charles 2000
Frustulia rhomboides f. *occidentalis* Sovereign
- Gomphonis elegans* (Grunow) Cleve
Gomphonis eriose (Grunow) Skvortzow in Skvortzow & Meyer
Gomphonis eriose var. *angularis* Kociolek & Stoermer 1988
Gomphonis eriose var. *apiculata* Stoermer in Reimer 1982
Gomphonis eriose var. *rostrata* (M. Schmidt) Skvortzow in Skvortzow & Meyer
Gomphonis eriose var. *variabilis* Kociolek & Stoermer 1988
- NY: West Point
 SC: Barnwell Co., shallow Carolina Bay
 USA
 USA
 NY: Hamilton Co., Queer Lake
 L:BRM:L3/5
 L:BRM:239/63
 H:ANSP:57543a
 L:BRM:L3/60
 H:BRM:L1/15
 H:ANSP:44474
 H:ANSP:53902
 I:CAS/ANSP: T & P (2) 365, 366
 H:CAS:205072
 H:ANSP:44458
 H:ANSP:44467
 H:ANSP:44474
 H:ANSP:44469
 I:CAS/ANSP: T & P (2) 107, 108
 H:ANSP:44471
 L:BRM:Ka/7
 L:ANSP:T & P (2) 366
 H:ANSP:57552
 H:Lange-Bertalot, BIUFaM:Am-N 66
 H:ISU:7-4-69 #2
 H:ANSP:56842
 H:ANSP:57556
 H:CAS:205089
 H:CAS:Sovereign 488-1
 H:IL.L.:L-2-12
 H:ANSP:64382
 NY: West Point
 SC: Barnwell Co., shallow Carolina Bay
 USA
 USA
 NY: Hamilton Co., Queer Lake
 OR: Columbia River
 NV: Kings River
 SC: Barnwell Co, shallow Carolina bay
 OR: Columbia River
 MA: Taunton
 FL: Silver Springs
 LA: Bossier Parish, Cypress Bayou Res.
 OR: Klamath Co., Swan Lake
 NY: Croton River
 OR: Diamond Lake
 PA: Ridley Creek
 FL
 MD: Potomac River
 FL: Silver Springs
 PA: Ridley Creek
 WA: Tacoma
 PA: Ridley Creek
 FL: Pensacola
 OR: Klamath Co., Swan Lake
 NY: Herkimer Co., Buck Pond
 FL: Everglades
 IA
 NJ
 NC: Hayward Co., Flat Laurel Gap Bog
 NY: Herkimer Co., Fourth Lake (Bisby Lakes)
 OR: Crater Lake National Park, Water Supply Spring
 CA: Shasta
 Lake Erie
 OR: Emerald Pool, Crater Lake
 IA: Dickinson Co., Lake W. Okoboji
 CA: Pitt River
 MT: Bitterroot River

- Gomphonéis geitleri* Kociolek & Stoermer
Gomphonéis herculeana (Ehrenberg) Cleve
Gomphonéis herculeana var. *abundans* Kociolek & Stoermer 1988
Gomphonéis herculeana var. *clavata* Cleve
Gomphonéis herculeana var. *loweii* Kociolek & Stoermer 1988
Gomphonéis herculeana var. *robusta* (Grunow) Cleve
Gomphonéis herculeana var. *rostrata* Tempère & Peragallo
Gomphonéis linearis Kociolek & Stoermer 1986
Gomphonéis mamilla (Ehrenberg) Cleve
Gomphonéis quadripunctata var. *cochleariformis* Kociolek & Stoermer
- Gomphonéis rostrata* (Tempère & Peragallo) Kociolek & Stoermer 1988
Gomphonéis rostrata var. *valida* Kociolek & Stoermer 1988
Gomphonéis subherculeana Kociolek & Stoermer 1988
Gomphonéis trullata Kociolek & Stoermer 1986
- Gomphonema affine* var. *rhombicum* Reichardt 1999
Gomphonema angustatum var. *elongata* M. Peragallo in Tempère & Peragallo 1908
Gomphonema apicatum Ehrenberg
Gomphonema apuncto Wallace
Gomphonema christensenii Lowe & Kociolek 1984
Gomphonema citra Hohn & Hellerman 1963
Gomphonema conscriptor Hohn & Hellerman 1963
Gomphonema constrictum var. *cuneata* A. Schmidt 1904
Gomphonema cumrlis Hohn & Hellerman 1963
Gomphonema freesei Lowe & Kociolek 1984
Gomphonema germanii Kociolek & Stoermer 1990
Gomphonema gibba Wallace
Gomphonema grovei M. Schmidt 1999
Gomphonema herculeanum Ehrenberg 1845
Gomphonema instabilis Hohn & Hellerman 1963
Gomphonema kobayashii Kociolek & Kingston 1999
Gomphonema leptocampum Kociolek & Stoermer 1991
Gomphonema louisiananum Kalinsky 1984
Gomphonema macLaughlinii Reichardt 1999
Gomphonema manubrium Fricke
Gomphonema mehleri Camburn 1978
Gomphonema patricki Kociolek & Stoermer
Gomphonema pseudopusillum Reichardt 1999
Gomphonema pygmaeum Kociolek & Stoermer 1991
- MN: Cook Co., Lake Superior
Lake Huron: Mackinaw Island
CA/NV: Lake Tahoe, Sunnyside
OR: Pitt River (probably CA)
OR: Emerald Pool, Crater Lake
NY
OR: Klamath Co., Swan Lake
OR: Jefferson Co., Metolius River
OR: Fall River
Lake Superior
- OR: Swan Lake
OR: Swan Lake
OR: Lane Co., W. Odell Lake
OR: Lane Co., Linton Lake
- UT: Washington Co., Spring at Zion National Park
- CT: Bristol, Fall Mountain
NY
GA: Worth Co., Flint River
Great Smoky Mountains National Park, Big Creek
PA: Ridley Creek
PA: Ridley Creek
MA: Waltham; RI: Pawtucket
PA: Ridley Creek
Great Smoky Mountains National Park, Bower Creek
Lake Superior
FL: Santa Rosa County, Escambia River
OR: Pitt River
Lake Huron: Mackinaw Island
OH
NY: Westchester Co., Saw Mill River at Yonkers
Lake Superior
LA: Bossier Parish, Cypress Bayou Res.
UT: Washington Co., Spring at Zion National Park
ME: Orono River
SC: York Co., Long Branch Creek
CA: Fresno Co., Sequoia Lake
CA: Lassen National Park, Manzanita Lake
MI: Chippewa Co., Lake Superior
- H:CAS:216020
H:Humboldt-Berlin 1754; I:Farlow 1967
H:ANSP:64380
H:CAS:Sovereign 488-1
S:ANSP:Cl. & Moll. 40
I:CAS?ANSP: T & P (2) 365, 366
H:ANSP:64162
H:CAS:216019;Kociolek & Stoermer 1991
H:ANSP:T & P (2) 3666
H:ANSP:64381
H:ANSP:64161
H:B:S1838-T01
I:CAS/ANSP:T & P (2): 103, 104
H:ANSP:4242b
H:ANSP:53920
H:ANSP:44458
H:ANSP:44458
H:ANSP:44458
H:ANSP:53921
H:CAS:216008
H:ANSP:4356a
H:Humboldt-Berlin 1754; I:Farlow 1967
H:CAS:Ward F-188-1
H: CAS: 218005
H:CAS:216016
H:ANSP:53900
H:B:S1838-T01
I:ANSP:T&P 887
H:ANSP:54754
H:CAS:217015
H:B:S1131 H2-N
H:CAS:216015

- Gomphonema semiapertura* Grunow
Gomphonema septum Moghadam
Gomphonema sinus Hohn & Hellerman 1963
Gomphonema sphaerophorum Ehrenberg
Gomphonema stonetii Reichardt 1999
Gomphonema submehreri Kociolek & Stoermer 1991
Gomphonema subtile Ehrenberg
Gomphonema superiorenensis Kociolek & Stoermer 1991
Gomphonema tackei var. *brevistriatum* Camburn 1978
Gomphonema truncatum var. *macilentum* Kociolek & Stoermer 1991
Gomphonema truncatum var. *turgidum* (Ehrenberg) Patrick
Gomphonema tumens Kociolek & Stoermer 1991
Gomphonema turgidum Grunow
- CA: Shasta
 MT: Flathead Lake
 MD: Potomac River
 SC: York Co., Long Branch Creek
 NY: "Vivum in Niagara"
 NC: Cape Hatteras lighthouse, pond
 Lake Superior
 NY: West Point
 MI: Houghton Co., Lake Superior
 SC: York Co., Long Branch Creek
 Lake Michigan
 NY
 Lake Superior
 RI: Smithfield
- CA: Shasta 1867
 Icono: Ehrenberg, Miktrogeologie, p. 15,
 pl. IV/2, fig. 34;
 BHUPM: Kasten 26, Buch 5, Mica--
 Streifen 8, Mica
 NR 2
- NY: West Point
 MI: Schoolcraft Co., Cusino Lake
- OR: Crater Lake
- OH: Columbus
 OH: Columbus
 NY: Croton River
 CT: "Eaux saumâtres"
 FL: Green Spring
 OH: Columbus
- CT: Bristol, Fall Mountain
- CT: Morris Cove
- WI: Oneida Co., Dorothy Lake
 MI: Alger Co., Sand Lake
 MI: Chippewa Co., McNearney Lake
 MI: Schoolcraft Co., Cusino Lake
- NC: Avery Co., Sugar Mountain Bog
- Gomphonema turris* Ehrenberg
Gomphonema variostriatum Camburn & Charles 200
Gomphonitzschia exigua Sovereign 1958
- Gyrosigma obtusatum* (Sullivan & Wormley) Boyer
Gyrosigma sciotense (Sullivan & Wormley) Cleve
Gyrosigma spencerii (Quekett) Griffen & Henfrey
Gyrosigma temperlei Cleve
Gyrosigma terryanum f. *fontanum* Reimer
Gyrosigma wormleyi (Sullivant) Boyer
- Hantzschia vivax* var. *granulata* M. Peragallo
 in Tempère & Peragallo 1908
- Mastogloia angusta* Hustedt 1933
- Melosira distans* var. *nivaloides* Camburn 1986
Melosira nygaardii Camburn 1986
Melosira perglabra var. *florintae* Camburn 1986
Melosira pseudoamericana Camburn 986
- Meridion alansmithii* Brant 2003
- H: ANSP: 62242
 H: ANSP: 44468
 H: ANSP: 53755
 H: B: S1840-T01
 H: CAS: 216018
 H: CAS: 216017
 H: ANSP: 53756
 H: CAS: 216014
 H: CAS: Stoermer 1867
 Icono: Ehrenberg, Miktrogeologie, p. 15,
 pl. IV/2, fig. 34;
 BHUPM: Kasten 26, Buch 5, Mica--
 Streifen 8, Mica
 NR 2
 H: ANSP: 57551
 H: CAS: 205086
 L: ANSP: Boyer W-VI-20
 L: ANSP: Boyer W-VI-17
 L: ANSP: 3174
 H: ANSP: 2861
 L: ANSP: Boyer W-VI-14
 I: CAS/ANSP: T & P (2) 103, 104
 H: BRM: R1/89
 H: ANSP: 54241
 H: ANSP: 54240
 H: ANSP: 54239
 H: ANSP: 54238
 H: ANSP: 57560

- Meridion anceps* (Ehrenberg) Williams
Meridion hohii Rhode 2001
Meridion intermedium H.L. Smith 1878
Meridion lineare (H.L. Smith) D.M. Williams
- Microsiphonia potamos* Weber
- Navicula achthera* Hohn & Hellerman 1963
Navicula acrosphaeria var. *dilatata* Tempère & Peragallo 1908
Navicula alkeniensis Patrick
Navicula alea Hohn & Hellerman 1963
Navicula alpina var. *elongata* M. Peragallo in Tempère & Peragallo 1908
Navicula americana Ehrenberg
Navicula americana var. *moesta* Tempère & Peragallo
Navicula amnicola Hohn & Hellerman 1963
Navicula anatis Hohn & Hellerman 1963
Navicula antinitescens M. Peragallo in Tempère & Peragallo 1908
Navicula argutiola Hohn & Hellerman 1963
Navicula aurora Sovereign
Navicula bastianii M. Peragallo in Tempère & Peragallo 1909
Navicula bdesma Hohn 1961
Navicula bergenensis Hohn 1952
Navicula biconica Patrick 1959
Navicula bievexa Hohn 1961
Navicula birhis Hohn 1961
Navicula bita Hohn 1961
Navicula bogotensis var. *ininterrupta* M. Peragallo in Tempère & Peragallo 1908
Navicula bogotensis var. *undulata* M. Peragallo in Tempère & Peragallo 1908
Navicula canoris Hohn & Hellerman 1963
Navicula capsa Hohn 1961
Navicula caractacus Hohn & Hellerman 1963
Navicula caroliniana Patrick
Navicula cascadenis Sovereign
Navicula caterva Hohn & Hellerman 1963
Navicula cernautia Hohn 1961
Navicula cincta var. *rostrata* Reimer 1961
Navicula cinna Hohn & Hellerman 1963
Navicula columbiana Hustedt 1966
Navicula complanatulata Hustedt 1962
- MA: Pelham
WA: Olympic National Forest, Hoh River
TN: Knoxville
OH: Gambier
- H:CAS:221016
I:CAS/ANSP: H.L. Smith 238
L:BM:25798 (H.L. Smith 237)
- P:ANSP:51571
- H:ANSP:44467
I:CAS/ANSP: T & P (2) 36, 37
H:ANSP:4737a
H:ANSP:44466
- I:CAS/ANSP: T & P (2) 107, 108
- L:ANSP:T & P (2) 159
H:ANSP:44458
H:ANSP:44467
I:CAS/ANSP: T & P (2) 107, 108
H:ANSP:44458
H:CAS:205078
I:CAS/ANSP: T & P (2) 340, 341
H:ANSP:44489
H:Wiegand Herb., Cornell
H:ANSP:44492
H:ANSP:44489
H:ANSP:44484
H:ANSP:44474
- I:CAS/ANSP: T & P (2) 103, 104
I:CAS/ANSP: T & P (2) 103, 104
H:ANSP:44469
H:ANSP:44474
H:ANSP:44469
H:ANSP:44496
H:CAS:205077
H:ANSP:44466
H:ANSP:44484
H:ANSP:45669
H:ANSP:44470
H:BRM:N14/32
L:BRM:N14/5
- MD: Potomac River
CT: Birge's Pond
SC: Aiken Co., Savannah River
MD: Potomac River
- WA: Tacoma
NY: West Point
MA: Essex Co., Georgetown, Boldpatte Pond
PA: Ridley Creek
MD: Potomac River
WA: Tacoma
PA: Ridley Creek
OR
- CT: Plainville, Hamlin's Pond
FL: Silver Springs
NY: Genesee Co., Bergen Swamp
SC: Aiken Co., Savannah River
FL: Silver Springs
FL: Silver Springs
FL: Silver Springs
- CT: Bristol, Fall Mountain
OR: CT: Bristol, Fall Mountain
PA: Ridley Creek
FL: Silver Springs
PA: Ridley Creek
SC: Aiken Co., Savannah River
OR: Diamond Lake
MD: Potomac River
FL: Silver Springs
IN: Randolph Co., Cabin Creek bog
PA: Ridley Creek
OR: Columbia River
OR: Charleston

- Navicula contortula* Sovereign WA: Pend Oreille Co., Bead Lake
Navicula contraria Patrick SC: Aiken Co., Savannah River
Navicula convergens Patrick 1959 SC: Aiken Co., Savannah River
Navicula cremorne Hohn & Helleman 1963 MD: Potomac River
Navicula creutzburgensis var. *multistriata* Patrick 1959 TX: Orange Co., Sabine River
Navicula cryptogaster Lowe 1972 IA
Navicula cuspidata var. *obtusata* Patrick CO: Radford Peak
Navicula dailyi Reimer 1961 IN: Randolph Co., Cabin Creek bog
Navicula dicephala var. *lata* M. Peragallo in Tempère & Peragallo 1908 CT: Bristol, Fall Mountain
Navicula dibola Hohn 1961 FL: Silver Springs
Navicula distincta Patrick SC: Aiken Co., Savannah River
*Navicula distincta*striata Hohn & Helleman 1963 PA: Ridley Creek
Navicula dubia var. *acuminata* Tempère & Peragallo 1911 ME: Crane Pond
Navicula dulcis Patrick TX: Orange Co., Sabine River
Navicula duomedica Patrick 1959 SC: Aiken Co., slough of Savannah River
Navicula dysmorphica Patrick 1959 SC: Aiken Co., near mouth of Upper Three Runs
Navicula ebor Hohn & Helleman 1963 PA: Ridley Creek
Navicula elegantissima M. Peragallo in Tempère & Peragallo 1908 CT: Bristol, Fall Mountain
Navicula elgimensis var. *lata* (M. Peragallo) Patrick NE: pool, 1 mile W of Fremont
Navicula elmorei Patrick FL: Silver Springs
Navicula eponka Hohn 1961 WA: Pend Oreille Co., Bead Lake
Navicula evexa Sovereign PA: Pike Co., Shohola Falls
Navicula exigua var. *cuneata* Patrick WA: Puget Sound, Orca Island
Navicula flexuosa var. *cuneata* Tempère & Peragallo SC: York Co., Long Branch Creek
Navicula fluminica Camburn IN: Randolph Co., Cabin Creek bog
Navicula friesneri Reimer OR: Klamath Co., Swan Lake
Navicula gastrum f. *maxima* Tempère & Peragallo PA: Lancaster Co., Little Muddy Creek
Navicula geminaii Wallace MT
Navicula goersii Bahls 1983 TX: Orange Co., Sabine River
Navicula gravistriata Patrick 1959 FL: St. Petersburg, Pass-a-Grille
Navicula hyalostrella Hustedt 1962 PA: Ridley Creek
Navicula imbellis Hohn & Helleman 1963 IA: Dickinson Co., Excelsior Fen
Navicula incompacta var. *incurva* Reimer 1990 IN: Randolph Co., Cabin Creek bog
Navicula indianensis Reimer PA: Ridley Creek
Navicula infrenis Hohn & Helleman 1963 FL: Silver Springs
Navicula karsia Hohn PA: Pike Co., Shohola Falls
Navicula keeleyi Patrick OR: Crater Lake National Park, Vidae Fall
Navicula kineaidii Sovereign MD: Potomac River
Navicula lalia Hohn & Helleman 1963 SC: Aiken Co., slough of Savannah River
Navicula latelongitudinalis Patrick 1959 H:ANSP:44258a
Navicula lateropunctata Wallace H:ANSP:4072a

H:CAS:205092
 H:ANSP:4737a
 H:ANSP:3954a
 H:ANSP:44467
 H:ANSP:6679a
 H:ISU:11-14-69 #3
 H:ANSP:Boyer A-6-15
 H:ANSP:45669
 I:CAS/ANSP: T & P (2) 103, 104
 H:ANSP:44487
 H:ANSP:44496
 H:ANSP:44468
 I:CAS/ANSP: T & P (2) 586-588
 H:ANSP:8035
 H:ANSP:4426a
 H:ANSP:44254a
 H:ANSP:44470
 I:CAS/ANSP: T & P (2) 103, 104
 L:ANSPT & P (2) 104?
 H:CAS:NY Elmore 704
 H:ANSP:44491
 H:CAS:205093
 H:ANSP:2200
 I:CAS/ANSP: 302, 303
 H:ANSP:53748
 H:ANSP:45669
 I:CAS/ANSP: T & P (2) 365, 366
 H:ANSP:42397a
 H:ANSP:63245
 H:ANSP:8031
 H:BRM:N18/22
 H:ANSP:44460
 H:ILL.L.:L-6-46
 H:ANSP:45669
 H:ANSP:44470
 H:ANSP:44491
 H:ANSP:2197
 H:CAS:205094
 H:ANSP:44468
 H:ANSP:44258a
 H:ANSP:4072a

- Navicula litos* Hohn & Hellerman 1963
Navicula ludloviana A. Schmidt
Navicula maculata var. *orbiculata* Patrick
Navicula meandrinoidea Hustedt 1930
Navicula mediocris var. *intermedia* Reimer
Navicula microstauron var. *stauroneiformis* Tempère & Peragallo 1908
Navicula migma Hohn & Hellerman 1963
Navicula minnewaukonensis Elmore
Navicula minthe Hohn & Hellerman 1963
Navicula minuscula f. *linearis* Reimer 1970
Navicula mobilensis Boyer
Navicula mobilensis var. *minor* Patrick 1959
Navicula monmouthiana-stodderi Yermeloff
Navicula montana Moghadam
Navicula multigramme Hohn & Hellerman 1963
Navicula muscerda Hohn
Navicula mutica var. *sigma* Patrick 1959
Navicula narinosa Hohn
Navicula nemoris Hohn & Hellerman 1963
Navicula nimbus Hohn & Hellerman 1963
Navicula notha Wallace
Navicula nugaldis Hohn & Hellerman 1963
Navicula obdurata Hohn & Hellerman 1963
Navicula oblongiformis Hustedt 1934
Navicula obtuseprotracta Hustedt 1966
Navicula ocellii Hohn 1961
Navicula odiosa Wallace
Navicula orangiana Patrick 1959
Navicula orbiculata Patrick 1959
Navicula paludosa f. *rhomboidea* Reimer 1970
Navicula parabitis Hohn & Hellerman 1963
Navicula parodia Hohn 1961
Navicula paucivittata Patrick 1959
Navicula pennsylvanica Patrick
Navicula peregrina var. *truncata* M. Peragallo in Tempère & Peragallo 1908
Navicula peticolasii M. Peragallo
Navicula placenta Ehrenberg
Navicula pletura Hohn 1961
Navicula poconoensis Patrick 1945
Navicula potzgeri Reimer 1961
Navicula potzgeri var. *quadriripunctata* Reimer 1961
- MD: Potomac River
 WA: Fort Ludlow
 AL: Mobile
 OR: Columbia River
 SC: Aiken Co., Upper Three Runs Creek
 OR: Klamath Co., Swan Lake
 PA: Ridley Creek
 ND: Devil's Lake
 PA: Ridley Creek
 IA: Dickinson Co., Cayler Prairie
 AL: Mobile Co., Mobile
 PA: Chester Co., Ridley Creek
 NY: Mohawk River
 MT: Flathead Lake
 PA: Ridley Creek
 FL: Silver Springs
 SC: Barnwell Co., Savannah River
 FL: Silver Springs
 PA: Ridley Creek
 MD: Potomac River
 VA: Louisa Co., North Anna River
 PA: Ridley Creek
 PA: Lancaster Co., Littitz Run
 OR: Columbia River
 OR: Columbia River
 FL: Silver Springs
 TX: Calhoun Co., Mission Lake
 TX: Orange Co., Sabine River
 TX: Orange Co., Sabine River
 IA: Dickinson Co., Cayler Prairie
 PA: Ridley Creek
 FL: Silver Springs
 SC: Aiken Co., Savannah River
 PA: Pike Co., Greeley
 WA: Tacoma
 OR: Klamath Co., Swan Lake
 OR: Columbia River
 FL: Silver Springs
 PA: Pike Co., Greeley
 IN: Randolph Co., Cabin Creek bog
 IN: Randolph Co., Cabin Creek bog
- H:ANSP:44466
 H:CAS: NY, Ward B-36-16
 H:BRM:IN5/57
 H:ANSP:44260a
 I:CAS/ANSP: T & P (2) 365, 366
 H:ANSP:44460
 I:CAS:NY Elmore 634
 H:ANSP:44469
 H:ANSP:61083
 L:ANSP:Boyer 747
 H:ANSP:44497
 H:ANSP:62310d
 H:ANSP:44469
 H:ANSP:44489
 H:ANSP:3568a
 H:ANSP:44489
 H:ANSP:44469
 H:ANSP:44467
 H:ANSP:4613b
 H:ANSP:44458
 H:ANSP:4695a
 L:BRM:NI0/7
 H:ANSP:NI4/31
 H:ANSP:44484
 H:ANSP:6853a
 H:ANSP:6535a
 H:ANSP:8030
 H:ANSP:61083
 H:ANSP:44466
 H:ANSP:44489
 H:ANSP:44274g
 H:ANSP:2188
 I:CAS/ANSP: T & P (2) 107, 108
 L:ANSP:T & P (2) 365
 H:ANSP:44474
 H:ANSP:2188
 H:ANSP:45669
 H:ANSP:45669

- Navicula pragma* Hohn & Helleman 1963
Navicula pseudofrickia Patrick
Navicula pseudoreinhardtii Patrick
Navicula pseudosilicula var. *olympica* Sovereign
Navicula pupula var. *lineare* Tempère & Pergallo 1908
Navicula radiosa var. *parva* Wallace
Navicula radiosa var. *subrostrata* Cleve
Navicula rainierensis Sovereign
Navicula recava Hohn & Helleman 1963
Navicula rivalis Hohn & Helleman 1963
Navicula rugula Hohn & Helleman 1963
Navicula sabiniana Patrick
Navicula sagitta Hohn & Helleman 1963
Navicula savannahiana Patrick
Navicula schroeteri var. *escambia* Patrick
Navicula secreta var. *apiculata* Patrick
Navicula seminulum var. *hustedtii* Patrick
Navicula simula Patrick 1959
Navicula skalenastriata Hohn 1961
Navicula smithii var. *dilatata* M. Pergallo in Tempère & Pergallo 1908
Navicula subfasciata Patrick 1959
Navicula subhexagona Hustedt 1934
Navicula swaniana Moghadam
Navicula texana Patrick
Navicula typografica Hustedt 1930
Navicula umbra Hohn & Helleman 1963
Navicula venerabilis Hohn & Helleman 1963
Navicula vitabunda var. *montana* Moghadam
Navicula walkerii Sovereign
Navicula wallacei Reimer 1966
Navicula wardii Patrick 1959
Navicula yorkensis Camburn 1987
- Neidium affine* (Ehrenberg) Pfleger
Neidium affine var. *humerus* Reimer
Neidium apiculatum Reimer
Neidium apiculatum var. *constrictum* Reimer
Neidium bisulcatum var. *subundulatum* (Grunow) Reimer
Neidium boyeri Reimer
Neidium cape-codii Siver & Hamilton in Siver et al.
- MD: Potomac River
 NJ: Passaic Co., Newfoundland
 SC: Aiken Co., Savannah River
 WA: Olympic National Park, Waterhole Camp
 CT: New Britain, Ice Pond
 FL: Santa Rosa Co., Escambia River
 [MA]: Crane Pond
 WA: Mt. Rainier National Park,
 PA: Ridley Creek
 PA: Ridley Creek
 GA: Four Mile Run
 TX: Orange Co., Sabine River
 PA: Ridley Creek
 SC: Aiken Co., Savannah River at Mile 134
 FL: Santa Rosa Co., Escambia River
 SC: Aiken Co., near mouth of Upper Three Runs
 TX: Victoria Co., Guadalupe River
 SC: Aiken Co., near mouth of Upper Three Runs
 SC: Aiken Co., Savannah River
 FL: Silver Springs
 CT: Bristol Fall Mountain
 SC: Aiken Co., Savannah River
 OR: Columbia River
 MT: Flathead Lake
 TX: Guadalupe Co., near Seguin
 OR: Columbia River
 PA: Ridley Creek
 PA: Ridley Creek
 MT: Flathead Lake
 OR: Crater Lake
 SC: Aiken Co., Savannah River
 AL: Spring Hill
 SC: York Co., Long Branch Creek
- Several NY, MA
 MD: Montgomery Co., Potomac River
 SC: Aiken Co., Upper Three Runs Creek
 SC: Aiken Co., Upper Three Runs Creek
 NY: Hudson River, Sing Sing
 NH: Sullivan Co., near Sunapee Perkins Pond
 MA: Cape Cod, Little Cliff Pond
- H:ANSP:44466
 H:CAS:NY J Grant 16 Nov 1928
 H:ANSP:4737a
 H:CAS:205095
 I:CAS/ANSP: T & P (2) 78
 H:ANSP:4373b
 H:CAS:205096
 H:ANSP:44469
 H:ANSP:44458
 H:ANSP:44472
 H:ANSP:8030
 H:ANSP:44470
 H:ANSP:4737a
 H:ANSP:6564a
 H:ANSP:44254a
 H:ANSP:6604a
 H:ANSP:4425a
 H:ANSP:44259a
 H:ANSP:44474
 I:CAS/ANSP: T & P (2) 103, 104
 H:ANSP:44259a
 L:BRM:N10/2
 H:ANSP:62306a
 H:ANSP:6587a
 L:BRM:N8/80
 H:ANSP:44469
 H:ANSP:44458
 H:ANSP:62304b
 H:CAS:205079
 H:ANSP:4628a
 H:CAS:NY Ward D-4-21
 H:ANSP:53747
 H:ANSP:44285a
 H:ANSP:44266c
 H:ANSP:44266b
 H:ANSP:Boyer 778
 H:CAS:221031

- Neidium floridanum* Reimer
Neidium herynicum f. *subrostratum* Wallace
Neidium hitchockii (Ehrenberg) Cleve
Neidium hitchockii f. *teres* Sovereign
Neidium tumescens (Grunow) Cleve
Neidium inconstans Sovereign
Neidium iridis (Ehrenberg) Cleve
Neidium iridis var. *amphigomphus* (Ehrenberg) A. Mayer
Neidium kozolvi var. *baicalensis* f. *robusta* Stoermer 1963
Neidium kozolvi var. *undulata* Stoermer 1963
Neidium ladogensis var. *densestratum* f. *peribryum* Lowe & Kociolek 1984
Neidium maximum (Cleve) Meister
Neidium rudimentarium Reimer
Neidium saecoense Reimer
Neidium temperi Reimer
Neidium tumescens (Grunow) Cleve
- Nitzschia abridia* Camburn 1978
Nitzschia asynbasia Hohn 1961
Nitzschia bella Sovereign
Nitzschia biacrula Hohn & Hellerman 1963
Nitzschia bicrena Hohn & Hellerman 1963
Nitzschia bita Hohn & Hellerman 1963
Nitzschia bulnheimiana var. *capitata* Reimer 1966
Nitzschia columbiana Sovereign 1958
Nitzschia congolensis var. *mooreae* Reimer 1982
Nitzschia dissipata f. *undulata* Sovereign
Nitzschia exilis Sovereign 1958
Nitzschia fonticoloides Sovereign
Nitzschia incomptus Hohn & Hellerman 1963
Nitzschia innominata Sovereign
Nitzschia monoensis Kociolek & Herbst 1992
Nitzschia montanensis Camburn 1978
Nitzschia oregana Sovereign
Nitzschia perspicillata Camburn 1978
Nitzschia perspicua Sovereign
Nitzschia peritica Hohn & Hellerman 1963
Nitzschia plana var. *americana* Hustedt 1924
Nitzschia reimerii Kociolek & Herbst 1992
Nitzschia semidesum Hohn & Hellerman 1963
Nitzschia sentiformis Hohn & Hellerman 1963
- FL: Taylor/Lafayette Co. line
 SC: Aiken Co., Upper Three Runs Creek
 MA: Bridgewater
 WA: Callam Co., Ozette Lake
 ME: Cherryfield
 WA: Adams Co., Fimmel Lake
 NY: West Point
 Several, NY, CT, MA, ME
 IA: Dickinson Co., W. Lake Okoboji
 IA: Dickinson Co., W. Lake Okoboji
 Great Smoky Mountains National Park
 NY: Sullivan Co., Monticello
 NJ: Winslow, Blue Hole, Inskip River
 ME: York Co. (?), Saco Pond
 CT: Hartford Co., Bristol, Tamarack Swamp
 ME: Cherryfield
- SC: York Co., Long Branch Creek
 FL: Silver Springs
 WA: Pend Oreille Co., Bead Lake
 MD: Potomac River
 PA: Ridley Creek
 TX: Guadalupe Co. Guadalupe River
 SC: Barnwell Co., Savannah River
 OR: Diamond Lake
 IA: Kossuth Co., Union Slough
 WA: Mt. Rainier National Park, Lake Louise
 OR: Crater Lake
 OR: Crater Lake
 PA: Ridley Creek
 OR
 CA: Mono Lake
 SC: York Co., Long Branch Creek
 OR: Diamond Lake
 SC: York Co., Long Branch Creek
 WA: Pend Oreille Co., Bead Lake
 MD: Potomac River
 NY: Lake Champlain
 CA: Mono Lake
 MD: Potomac River
 PA: Ridley Creek
- H:ANSP:44155b
 H:ANSP:3984a
 H:CAS:205091
 H:CAS:205090
 H:ANSP:8301
 H:ANSP:8299a
 H:ANSP:53919
 H:ANSP:Boyer W-6-23
 H:ANSP:Schulze 367
 H:ANSP:T & P (2) 211
 H:ANSP:53750
 H:ANSP:44474
 H:CAS:206009
 H:ANSP:44466
 H:ANSP:44460
 H:ANSP:3628a
 H:ANSP:44264a
 H:CAS:205084
 H:LL.L.:L-2-90
 H:CAS:206010
 H:CAS:205085
 H:CAS:205081
 H:ANSP:44469
 H:CAS:205082
 H:CAS:216061
 H:ANSP:53749
 H:CAS:205083
 H:ANSP:53751
 H:CAS:206011
 H:ANSP:44467
 L:BRM:W/125
 H:CAS:216060
 H:ANSP:44468
 H:ANSP:44469

- Nitzschia serpentinraphe* Lange-Bertalot 1993
Nitzschia silicula var. *commutata* Reimer 1966
Nitzschia volcanica Sovereign 1958
- Nupela carolina* Potapova & Clason 2003
Nupela neglecta Ponader, Lowe & Potapova 2003
Opephora americana M. Peragallo
Opephora ansata Hohn & Hellerman 1963
- Peronia intermedium* (H.L. Smith) Patrick
- Pinnularia abajuiensis* var. *lacustris* Camburn & Charles 2000
Pinnularia abajuiensis var. *rostrata* (Patrick) Patrick
Pinnularia acrosphaeria var. *turgidula* Grunow ex Cleve
Pinnularia alabamiae Krammer 2000
Pinnularia amblyps Hohn & Hellerman 1963
Pinnularia biceps var. *pusilla* Camburn & Charles 2000
Pinnularia bigibba Gaiser & Johansen 2000
Pinnularia bihasitata (A. Mann) Patrick
Pinnularia bogotensis var. *undulata* (Peragallo)
Pinnularia boyeri Patrick
Pinnularia burkii Patrick
Pinnularia cardinaliculis Cleve
Pinnularia caudata (Boyer) Patrick
Pinnularia cheryfieldiana Krammer 2000
Pinnularia clevei Patrick 1945
Pinnularia convexa Sovereign
Pinnularia cumvibia Hohn & Hellerman 1963
Pinnularia cunecephala (Mann) Patrick
Pinnularia dactylus var. *dariana* (A. Schmidt) Cleve
Pinnularia divergens var. *bacillaris* (M. Peragallo) Mills
Pinnularia elongata Hustedt 1934
Pinnularia erratica var. *fossilis* Krammer
Pinnularia ferroindulgentissima Czarniecki & Cawley 1997
Pinnularia flexuosa Cleve
Pinnularia flexuosa var. *gibbosa* Hustedt 1934
Pinnularia formica (Ehrenberg) Patrick
Pinnularia fossilis Krammer 2000
Pinnularia gibba var. *gibba* Hustedt 1934
Pinnularia gibbiformis var. *floralensis* Dute & Sullivan 2000
Pinnularia gigas Ehrenberg
- FL: Everglades
 SC: Barnwell Co., Savannah River
 OR: Crater Lake
- NC: Contentnea Creek
 NJ: Coles Brook
 OR: Klamath Co., Swan Lake
 MD: Potomac River
- TN: Knoxville
- NY: Herkimer Co., Merriam Lake
 PA: Monroe Co., Pocono Lake Reserve
 MA: Waltham, Crane Pond
 AL: Montgomery
 PA: Ridley Creek
 NY: Herkimer Co., Merriam Lake
 SC: Barnwell Co., shallow Carolina bay
 CA: Big Lake
 CT: Bristol, Fall Mountain
 NH
- PA: Pike Co., Greeley
 MA: Waltham, Crane Pond
 PA: Newtown Square
 ME: Cherryfield
 PA: Monroe Co., Jaggie's Bog
 WA: Skamania Co., Lake Olallie ("Sheep lake")
 PA: Ridley Creek
 MA: Crane Pond, Waltham
 USA
- CT: Bristol, Bunnel's Pond
 OR: Columbia River
 MA: Waltham
 IA: Marion Co., Abandoned Coal Mineland Site
 ME: Cherryfield, Crane Pond
 NJ: Hatfield Swamp
 ME: Blue Hill Pond
 AL: Montgomery
 AL: Montgomery
 AL: Taxodium ascendens swamp near Florala
 NY
- H: Lange-Bertalot, BIUFaM:Am-N 69
 H:ANSP:44268a
 H:CAS:205080
- H:ANSP:57568
 H:ANSP:57569
 I:ANSP: T & P (2) 365 366
- L:ANSP:H.L. Smith 238
- H:ANSP:57554
 H:ANSP:2213
 L:ANSP:2009
 H:BRM:P2/69
 H:ANSP:44469
 H:ANSP:57554
 H:ANSP:57545a
- H:ANSP:Boyer V-5-5
 H:ANSP:2189
 I:BRM:P1/50
 L:ANSP:Boyer V-5-2
 H:1049A
 H:ANSP:2225
 H:CAS:205097
 H:ANSP:44458
- L:ANSP: T & P (2) 106
 L:BRM:P1/89
 H:NW:2009
 H:ANSP:61660a
- H:BRM:P2/3
 H:BRM:P4/5
 H:BRM:P2/12
 H:ANSP:57550
 Icono:Ehrenberg 1854: Fig. 2/III, 1

- Pinnularia insitita* Hohn & Hellerman 1963
 PA: Ridley Creek
 H:ANSP:44458
- Pinnularia integra* Grunow in Cleve 1895
 MA: Waltham, Crane Pond; French Pond
- Pinnularia kwacksii* Camburn & Charles 2000
 NY: Herkimer Co., Merriam Lake
- Pinnularia legumen* (Ehrenberg) Ehrenberg
 NY: West Point
- Pinnularia major* var. *capitata* Hustedt 1934
 NH: Bonkerville
- Pinnularia major* var. *pulchella* Boyer
 NJ: Hammonont Pond
- Pinnularia maior* var. *transversa* (A. Schmidt) Cleve
 "Monticello"
- Pinnularia makahana* Sovereign
 WA: King Co., Shadow Lake
- Pinnularia mesogonglya* Ehrenberg
 MA: "Andover" Boston
- Pinnularia microstauron* var. *aditrondackensis* Camburn & Charles 2000
 NY: Herkimer Co., Merriam Lake
- Pinnularia microstauron* var. *lunaticus* Camburn & Charles 2000
 MN: Lake Co., Dumtigan Lake
- Pinnularia mormonorum* (Grunow) Boyer
 UT: Salt Lake
- Pinnularia nobilis* (Ehrenberg) W. Smith
 "America"
- Pinnularia nubila* Sovereign
 WA: Skamania Co., Lake Olallie
- Pinnularia obtusa* Sovereign
 WA: King Co., Stevens Pass, boggy meadow
- Pinnularia paloussiana* Sovereign
 WA: Grant Co., Vantage (fossil)
- Pinnularia platycephala* f. *ornata* Sovereign
 WA: Skamania Co., Lake Olallie
- Pinnularia pluviana* Sovereign
 WA: Adams Co., Finnel Lake
- Pinnularia podzorski* Krammer 2000
 FL: Clermont
- Pinnularia pulchella* (Boyer) Krammer
 NJ: Hammonont Pond
- Pinnularia secemenda* (A. Schmidt) Cleve
 USA: Laconia
- Pinnularia sillimanorum* Ehrenberg
 [MA]: Crane Pond
- Pinnularia socialis* (T.C. Palmer) Hustedt
 PA: Media, Swampy pools
- Pinnularia subgibba* var. *gracilis* Gaiser & Johansen 2000
 SC: Barnwell Co., oxbow lake
- Pinnularia subgibba* var. *lanceolata* Gaiser & Johansen 2000
 SC: Aiken Co., shallow Carolina bay
- Pinnularia subgibba* var. *sublinearis* Krammer 2000
 MA: Waltham
- Pinnularia subnodosa* Hustedt 1934
 OR: Columbia River
- Pinnularia subpaloussiana* Sovereign Patrick & Reimer 1966
 WA: Kittitas Co., Haney Meadow
- Pinnularia trigonocephala* Cleve
 MA: Waltham; Hudson River;
- Pinnularia turfosiphila* Gaiser & Johansen 2000
 SC: Berkeley Co., Lime Sink
- Pinnularia turnerae* Camburn & Charles 2000
 MI: Luce Co., Kelly Lake
- Pinnularia umbrosa* Sovereign
 WA: King County, Shadow Lake
- Pinnularia undula* var. *major* (A. Schmidt) Krammer 2000
 USA: French's Pond
- Pinnularia undula* var. *mesoleptiformis* Krammer 2000
 AL: Montgomery
- Pinnularia ventricosa* Hustedt 1934
 OR: Columbia River
- Pinnularia wisconsinensis* Camburn & Charles 2000
 NY: Herkimer Co., Merriam Lake
- Plagiotropis arizonica* Czamecki & Blinn 1978
 AZ: Navajo Co., Cholla Lake
- Playaensis circumfimbriata* Spaulding & Kociolek 2002
 NM: Harding Co., Payton Lake
- Playaensis furtiva* Spaulding & Kociolek 2002
 NM: Harding Co., Payton Lake

<i>Pleurosigma salinarum</i> var. <i>boyeri</i> (Keeley) Reimer	FL: DeLeon Spring	L:ANSP:Boyer M-7-19
<i>Pseudostaurosira clavatum</i> Morales 2002	FL: Caloosahatchee River	H:ANSP:103590a
<i>Pseudostaurosira trainorii</i> Morales 2001	CT: Avery Pond	H:ANSP:4198
<i>Pseudostaurosiropsis connecticutensis</i> Morales 2001	CT: Avery Pond	H:ANSP:4198
<i>Pseudostaurosiropsis geocolegarum</i> f. <i>tridactata</i> Morales 2005	FL: De Soto Co., Peace River	H:ANSP:103605b
<i>Punctastriata mimetica</i> Morales 2005	NE: Thomas Co., Dismal River	H:ANSP:106157a
<i>Rhizosolenia eriensis</i> H.L. Smith 1878	OH: Lake Erie at Cleveland	I:CAS/ANSP:H.L. Smith 447
<i>Rhizosolenia gracilis</i> H.L. Smith 1882	NY: Niagara River at Buffalo	
<i>Rhoicosphenia curvata</i> var. <i>major</i> Cleve	OR: Pitt River	
<i>Sarcophagodes delicatula</i> Morales 2002	FL: Caloosahatchee River	H:ANSP:103590a
<i>Stauroneis acuta</i> var. <i>terryana</i> Tempère ex Cleve	CT: Bristol, Fall Mountain	
<i>Stauroneis alabamiae</i> Heiden 1903	AL: Montgomery	
<i>Stauroneis alabamiae</i> var. <i>rostrata</i> Heiden 1903	AL: Montgomery	
<i>Stauroneis anceps</i> var. <i>americana</i> Reimer	SC: Aiken County, Upper Three Runs Creek	H:ANSP:44254a
<i>Stauroneis anceps</i> var. <i>capitata</i> M. Peragallo 1908	CT: Bristol, Fall Mountain	I:CAS/ANSP: T & P (2) 103, 104
<i>Stauroneis anceps</i> var. <i>subrostrata</i> Gaiser & Johansen 2000	SC: Aiken Co., shallow Carolina bay	H:ANSP:57544a
<i>Stauroneis bovjergii</i> Reimer 1990	IA: Dickinson Co., Excelsior Fen	H:ILL.:SP7
<i>Stauroneis fluminea</i> Patrick & Freese	AK: Nunivak Lake, Barrow, pool	H:ANSP:8193
<i>Stauroneis frickei</i> var. <i>angusta</i> Boyer	PA: Delaware Co., Newtown Square	H:ANSP:Boyer V-V-3
<i>Stauroneis livingstonii</i> Reimer	SC: Aiken Co., Upper Three Runs Creek	H:ANSP:44272a
<i>Stauroneis nobilis</i> var. <i>baconiana</i> (Stodder) Reimer	MA: Suffolk Co., West Roxbury, near Boston	H:ANSP:H.L. Smith 502
<i>Stauroneis staurolineata</i> Reimer	NH: Carroll County, Wolfboro	S:ANSP:Febiger 4466, GC45953,
<i>Stauroneis stodderti</i> Greenleaf in Lewis	NH: Exact locality not known	H.L. Smith F-56
<i>Staurosira stevensonii</i> Manoylov, Morales & Stoermer 2003	FL: Lee Co., Pacific Tomato Wetland	H:ANSP:57564
<i>Staurosirella confusa</i> Morales 2005	CA: Merced Co., Merced River	H:ANSP:106584a
<i>Stenopterobia anceps</i> f. <i>subacuta</i> Fricke in Hustedt 1912	NH	
<i>Stenopterobia intermedia</i> f. <i>undulata</i> Sovereign	WA: Skamania Co., Lake Olallie	H:CAS:206012
<i>Stephanodiscus conspicueporus</i> Stoermer, Hakansson & Theriot 1988	Lake Michigan	H:ANSP:55143a

- Stephanodiscus invisitatus* Hohn & Hellerman 1963
Stephanodiscus niagarae Ehrenberg 1845
Stephanodiscus reimerii Theriot & Stoermer 1992
Stephanodiscus superiorensis Stoermer & Theriot
Stephanodiscus vestibulis Håkansson, Theriot & Stoermer 1986
Stephanodiscus yellowstonensis Theriot & Stoermer 1984
- Surirella acedula* Hohn & Hellerman 1963
Surirella adumbratus Hohn & Hellerman 1963
Surirella agmatilis Camburn 1978
Surirella alicula Hohn & Hellerman 1963
Surirella barca Hohn & Hellerman 1963
Surirella beadensis Sovereign
Surirella carolinicola Camburn 1978
Surirella gracilis var. *gigantea* Tempère & Peragallo 1909
Surirella iowensis Lowe 1972-3
Surirella kittonii var. *asperula* M. Peragallo
in Tempère & Peragallo 1908
Surirella oregonica f. *minor* Tempère & Peragallo 1909
Surirella palmeri Boyer
Surirella parma Sovereign
Surirella stalagma Hohn & Hellerman 1963
Surirella stoermerii Lowe 1972-3
Surirella terryi Ward
- Synedra cyclopus* var. *robustum* Schulz
Synedra homostriata Hohn 1961
Synedra incisa Boyer
Synedra longiceps Ehrenberg 1845
Synedra mazamaensis Sovereign
Synedra recava Hohn 1961
Synedra socia Wallace
Synedra ulna var. *chaseana* Thomas
- Tetracyclus rhombus* var. *maxima* Tempère & Peragallo 1909
- OH: Putnam Co., Auglaize River
NY: Niagara Falls
IA: Dickinson Co., W. Lake Okoboji
Lake Superior
IA: Dickinson Co., Lazy Lagoon
WY: Yellowstone Lake
- PA: Ridley Creek
GA/NC: Screven Co.-Barnwell Co., Savannah River
SC: York Co., Long Branch Creek
PA: Ridley Creek
MD: Potomac River
WA: Pend Oreille Co., Bead Lake
SC: York Co., Long Branch Creek
OR: Klamath Co., Swan Lake
IA
- WA: Tacoma
WA: Puget Sound, Orca Island
PA: Media
OR: Crater Lake National Park,
PA: Ridley Creek
IA
CT: New Britain, Ice Pond
- WI: Delavan Lake
FL: Silver Springs
NE: Central City
Lake Huron: Mackinaw Island
OR
FL: Silver Springs
GA: Screven Co., Savannah River
Lake Michigan
- OR: Klamath Co., Swan Lake
- H:ANSP:7059a
I:ANSP:42768
H:ANSP:64474a
H:ANSP:53949
H:ANSP:63786
H:ANSP:63257
- H:ANSP:44460
H:ANSP:44257a
H:ANSP:53758
H:ANSP:44458
H:ANSP:44468
H:CAS:206013
H:ANSP:53757
I:CAS/ANSP: T & P (2) 365, 366
H:ISU:5-3-68 #1
- I:CAS/ANSP: T & P (2) 107, 108
I:CAS/ANSP: T & P (2) 302, 303
L:ANSP:Boyer C-VI-1
H:CAS:206014
H:ANSP:44471
H:ISU:11-5-67 #4
I:CAS/ANSP: T & P (2) 78
- H:ANSP:44474
L:ANSP:Boyer A-6-5
I:ANSP: H.L. Smith 563
H:CAS:205073
H:ANSP:44474
H:ANSP:4036a
- I:CAS/ANSP: T & P (2) 365, 366