Continental diatom biodiversity discovery and description in China: 1848 through 2019

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Abstract

In this paper we inventory the continental diatom taxa described from inland waters in China, from the first species descriptions dating back to 1848 through 2019. China's geography and hydrography are complex, including the world's highest mountains, many large rivers, salty lakes, and large karst regions. From this area, a total of 1128 taxa have been described from China over this time period. We examine the number of taxa described in ca. 20-year intervals and note the periods of time of no to few descriptions, versus time intervals with many taxon descriptions. Early on, taxon descriptions of freshwater diatoms from China were done by mostly by Europeans working alone, and the time frame of 1948 to 1967 had few descriptions, as a devastating famine and the cultural revolution impacted scientific work and productivity. B.V. Skvortzov produced a large number of taxon descriptions, during his time in residence in Harbin, later while in Sao Paulo, Brazil, and even posthumously. More recently, a wide range of labs and collaborations across China, and with a diverse array of international partners, is ushering in a new, robust era of research on the biodiversity of continental diatoms. A few areas of research and work for the future are discussed.

Keywords

new taxa, diatoms, Bacillariophyta, Skvortzov, China, continental
Introduction

Asia has received considerable attention in the context of biodiversity discovery, biogeography and resolving the evolutionary history of a variety of lineages (Gower et al. 2012). It is an area harboring many endemic species and broader lineages (López-Pujol et al. 2011; Lu et al. 2018), relicts (Wu et al. 2007; López-Pujol and Ren 2009; Li et al. 2012a) as well as extinct taxa (Fu et al. 2019; Proust et al. 2020; Zhang 2020). Many diverse lineages have originated, radiated and gone extinct in China. This is true for many groups of organisms, including continental diatoms (see Skvortzov 1937; Hustedt 1938a, b, 1939; Williams 2004; Williams and Reid 2006; Kulikovskiy et al. 2012, 2015; Hamsher et al. 2014; Kociolek 2019).

Within China, there has been a long history and much recent attention on the description of many new species and even genera from continental ecosystems across the country. Interest in continental diatoms of China extends beyond biodiversity discovery to a rich array of work related to water quality and bioassessment (e.g. Ouyang et al. 2015), impacts of eutrophication and the creation of dams (Wang and Zhang 2004; Shen et al. 2018), paleoenvironmental reconstructions (Rioual and Wang 2009) and the development of many products with diatoms (Zhang et al. 2012; Wang and Seibert 2017; Zhang 2019).

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The work on biodiversity discovery, as well as ecological work and more applied studies, depends on a working knowledge of the flora that has already been documented. We have compiled and present here a listing of the continental diatoms described from China to provide these descriptive and practical projects with a historical context and a baseline against future work can be compared. This compilation of new taxa described from China, and the publications in which they were presented, can also help interpret the history and development of diatom studies in China, from the middle of the 19th century to the present.

Methods

In our work developing this compilation of names of the continental diatoms described from China, we used the current geo-political circumscription of the country recognized by the United Nations. Our definition of “continental” refers to a variety of inland waters bodies, including freshwaters as well as those with high conductivity and, to some extent, ‘salty’ waters. But we have excluded taxa described from estuaries and marine localities from our review.

The bases of this compilation are the major resources for diatom nomenclature, including Catalogue of Diatom Names (Fourtanier and Kociolek 2011), DiatomBase (Kociolek et al. 2020) and AlgaeBase (Guiry and Guiry 2020). In addition, we reviewed several of the compilations of diatoms of China (“Flora Algarum Sinicarum Aquae Dulcis”) and some primary literature that escaped the notice of these comprehensive works and summative projects. An important reference for this work is Jin
(1951), in which the knowledge of diatoms reported from China from 1848 to 1946, noting over 1000 taxa had been reported from marine and freshwater ecosystems, is summarized. The paper lists the taxa described from China (mostly by Skvortzov up to 1946). Although Jin (1951) did not document most of the other descriptions by European authors, both prior to and concurrent with Skvortzov, and his list obviously does not include post-1946 names, it is a great (but under cited) reference from which to develop a list of diatoms from China. The Skvortzov names were checked against the check list of his taxa compiled by Gololobova (2012). All of the names documented in this work have been included in DiatomBase.

Results

Continental diatoms described from China: An overview

In the 170-year history of continental diatom discovery in China, 1128 taxa have been described at the level of species and below (Table 1). This was not a smooth, equal accumulation of species over time, and if we examine the overall time period in groups of 20-year intervals, we can see there were times when significant numbers of taxa were described. For example, the time interval of 1928 to 1947 there were 355 taxa described in 16 publications, and between 1968 and 1987, 189 taxa were described in only 13 publications. In both instances, most of the publications were by a single author (See Appendices 1 and 2). On the other hand, in the more recent period of 2000 to 2019, the highest number of taxa were described (421), and published in 99 separate publications. Many of these papers were multi-authored. Periods of low publication of new species can be found in the earliest periods (1848–1887) and in the period 1948–1967 (Fig. 1).

In the next sections, we break down the work of continental diatom discovery in China into two periods, the initial period (1848–1999) and more recent period of continental diatom discovery (2000–2019). We examine the changes in approach and productivity during these time periods and compile a list of the taxa described and the references in which they were published.

The initial period: 1848–1999

Studies on the continental diatoms of China date back to the mid 1800’s, to the work of Ehrenberg. From these initial works through ¾ of the 20th century, there were many studies that documented continental diatom taxa in China, with a few genera and many species and subspecific taxa being proposed. The majority of taxa described was at the subspecific level. In Appendix 1 we document the new genera, species and subspecific continental diatoms described from China in this time period. This list, based on more than 50 publications only, shows that there were 2 genera described from continentals of China (Amphiraphia Chen and Zhu 1983 and Porosularia Skvortzov
1976b). Neither of these genera have been reported since they were first described, and neither of these names are in use today.

Table 1 and Appendix 1 show that from 1848 until 1999, a total of 707 taxa were described from continental in China. Of these, 218 were recognized as separate species, while 489 were described as varieties and forms. These taxa were included across 48 genera. Genera with the most taxa described include \textit{Pinnularia} (138), \textit{Navicula sensu lato} (98), \textit{Cymbella sensu lato} (56) and \textit{Nitzschia} (43) and \textit{Gomphonema} (39).

The data for this period were organized into 20-year intervals (except the last period) and show some interesting trends. The first works in which new taxa were described were penned by Europeans working alone. This included Ehrenberg being the first in 1848 and then again in 1854, but after that more than 50 years went by before another publication that included a new species described was produced. In 1906 Mereschkowsky studies diatoms from Tibet, and in 1922 Hustedt worked on diatoms from Tibet and the northwestern part of China. Starting in the late 1920’s, through the 1940’s, the description of continental diatom taxa was dominated by Boris V. Skvortzov. Williams et al. (2016) have provided insights into the life and work of Skvortzov, and Gololobova (2012) has created a checklist of the taxa described by him. Unlike his predecessors who described continental diatoms from China, Skvortzov actually lived and worked in China (though he studied from many parts of Asia, from the Philippines, Russia and to India, and further afield, and received samples from many individuals). His base was in Harbin, in Heilongjiang Province, in the northeastern part of the country. Thus, while species he described were from many areas and diverse ecosystems across China, many of the taxa described were from the northeastern part of the country. Skvortzov trained students in Harbin, and later work on diatom taxonomy in China has been carried out by three generations of scientists who can trace their academic lineages back to him. During the same time period as Skvortzov was describing many taxa, some Europeans also contributed to our knowledge of new continental diatoms, such as Skuja (1937) and Voigt (1942a, b).

In the period following Skvortzov’s large work published in 1946, only one other publication appeared (in which 8 taxa were described), until another large work on the continental diatoms of China was published by Skvortzov in 1976. From 1950 to 1976

### Table 1. Number of taxa described, cumulative number of described taxa and number of publications in which new taxa were described from freshwaters in China, 1848–2019.

| Period      | Number of Taxa | Cumulative   | Publications |
|-------------|----------------|--------------|--------------|
| 1848–1867   | 9              | 9            | 2            |
| 1868–1887   | 0              | 9            | 0            |
| 1888–1907   | 28             | 37           | 1            |
| 1908–1927   | 57             | 94           | 2            |
| 1928–1947   | 355            | 449          | 16           |
| 1948–1967   | 8              | 457          | 2            |
| 1968–1987   | 189            | 646          | 13           |
| 1988–1999   | 61             | 707          | 17           |
| 2000–2019   | 421            | 1128         | 99           |
was a period of dramatic challenges and cultural change in China. The first occurred with the severe famine that hit the country in 1950, lasting three years. The impacts of that famine led to the deaths of tens of millions of people, and this had lasting impacts on society for many years afterwards. In addition, the Cultural Revolution, in part a reaction to the great famine, also had negative impacts on life in China, and those impacts on academics are well-documented. Thus, with the few publications produced in this time period within the narrow discipline of diatom taxonomy and biodiversity discovery, we can see the impacts of natural disasters, economic decline and political and cultural change on the output and continuation of scientific research and training.

Skvortzov left China during the cultural revolution, and ended up in Sao Paulo, Brazil. While there, he published two large works in which nearly 140 taxa were described from Chinese continental (Skvortzov 1976a, b). These were to be his last works on the topic of continental diatoms from China while he was alive. His collections have never been found (See Williams et al. 2016).

Figure 1. Number of species, varieties and forms described from freshwaters China, 1848–2019. The blue line represents the number of taxa described for each time interval. The orange line represents the cumulative number of taxa described over the entire period.
Despite his death, and the uncertainty regarding his collections, Skvortzov's legacy lives on with the works of his students, especially Professor Bao (who is currently in Harbin) and Professor Qi (who is currently in Guangzhou), both of whom are officially retired, as well as Professor Zhang, previously of Jinan University in Guangzhou (now deceased). All of these scientists ended up forming collaborations with scientists in the USA, with C.W. Reimer at the Academy of Natural Sciences of Philadelphia (who visited Harbin and hosted Bao, Qi and Zhang in Philadelphia) and E.F. Stoermer at the University of Michigan. Professor Qi visited Reimer at the Academy in Philadelphia while attending the International Diatom Symposium there in 1982 and stayed with Stoermer at his home in Ann Arbor, while on an extended trip to the USA in 1984. These connections yielded published collaborative works (Qi et al. 1984; Stoermer et al. 1986; Bao and Reimer 1992).

In the latter part of the 20th century, we see important floristic works being published on the diatoms from Tibet, Yunnan and other localities, and some emphasis on freshwater fossil diatoms by Chinese researchers. In these books and papers, a new generation of scientists had come on the scene, and there was the initiation of an important series focused on documenting the freshwater diatom flora of the country (“Flora Algarum Sinicarum Aquae Dulcis” Qi 1995; Qi and Li 2004; Li and Qi 2010; Shi 2004, 2013; Wang and You 2018).

The recent period (2000–2019)

In the 20-year time period, from 2000 to 2019, a total of 421 taxa, consisting of 252 species and 169 subspecific taxa across 67 genera have been described from continental waters in China (Appendix 2; Table 2). In addition, 6 new genera have been described. The breadth of lineages represented in these works during this period is remarkable, since several groups of “centric” and “araphid” diatoms have been described, as well as taxa among the major raphid lineages (Eunotiales, Bacillariales, Naviculales, Cymbellales, Rhopalodiod and Surirellales) are all included. For example, new genera of centric diatoms include *Edtheriotia* and the new genus of araphid diatoms is represented by *Tibetiella*. Raphid genera are included in the Eunotiales (*Sinoperonia*), Naviculales (*Sichuanella, Pseudofallacia*) and Cymbellales (*Gomphosinica*). New species can be found among the centrics (in the genera *Cyclotella, Edtheriotia, Urosolenia, Orthoseira, and Melosira*), araphids (*Fragilaria, Tabularia, Diatoma* and *Tetracyclus*) and across the raphid diatoms, including the Eunotiales (*Eunotia*), Bacillariales (*Simonsenia, Achnanthes*), Monoraphids (*Achnanthidium, Platessa*), Naviculoids (*Germainiella, Neidium, Pinularia, Muelleria*), Cymbelloids (*Cymbella, Delicata*), Rhopalodiods (*Epithemia*) and Surirelloid (*Cymatopleura, Surirella*). Please note that *Achnanthes*, though monoraphid, has been shown to be more closely related to members of the Bacillariales (Bruder and Medlin 2008); the monoraphid condition has evolved several times in the raphid diatom lineage (Kociolek et al. 2019a). Genera with the most species described in this period include *Pinularia* (76), *Gomphonema* (57), *Cymbella* (36), *Neidium* (22), *Amphora* (23).
There is also great geographic breadth represented in these studies, with taxa being described in the northwestern portion of the country, Tibet and Yunnan, across the biodiverse regions of the karst belt extending from Yunnan to Guizhou, the central part of China, and from Hainan to the extreme Northeast.

Since 2000, there have been floristic studies that have yielded description of new taxa, such as Zhu and Chen’s (2000) tome on the diatoms of Tibet, as well as revisionary work, such as Shi’s (2004) study on gomphonemoid diatoms. While these were published in Chinese, the trend has been in more recent years for works to be published in English-language journals, such as Phytotaxa, Phycologia, Fottea, Cryptogamie: Algologie, Nova Hedwigia, and Diatom Research. Some research continues to be published in several Chinese-language journals as well.

In 2012, Kulikovskiy et al. included a paper offered by Gololobova and Kulikovskiy where they traced a manuscript submitted in the 1960’s by Skvortzov to Dr. Proschkina-Lavrenko in Moscow for publication. but the paper was, for unknown reasons, never published. In this paper, which has been published in the 23rd volume of Iconographia Diatomologica, Skvortzov presents 445 taxa, that represent either new names, transfers or new taxon descriptions. This work includes taxa from India, China, Philippines, Japan, Korea, Australia and even Cuba. For the purposes of the current work, 208 of the taxa were newly described from China, and recorded for the year of publication (2012) even though the work was submitted 4 decades previously. These new taxon descriptions were not validly published (they lacked designation of type

Table 2. Number of taxa described, cumulative number of taxa, and number of publications in which taxa were described of freshwater diatoms in China, 2000–2019.

| Year | Number of taxa described | Cumulative number of described taxa | Number of Publications |
|------|--------------------------|-----------------------------------|-----------------------|
| 2000 | 2                        | 2                                 | 1                     |
| 2001 | 0                        | 2                                 | 0                     |
| 2002 | 1                        | 3                                 | 1                     |
| 2003 | 8                        | 11                                | 3                     |
| 2004 | 10                       | 21                                | 2                     |
| 2005 | 1                        | 22                                | 1                     |
| 2006 | 1                        | 23                                | 1                     |
| 2007 | 1                        | 24                                | 1                     |
| 2008 | 1                        | 25                                | 1                     |
| 2009 | 4                        | 29                                | 3                     |
| 2010 | 8                        | 37                                | 6                     |
| 2011 | 1                        | 38                                | 1                     |
| 2012 | 209                      | 247                               | 3                     |
| 2013 | 28                       | 275                               | 7                     |
| 2014 | 17                       | 292                               | 7                     |
| 2015 | 14                       | 306                               | 9                     |
| 2016 | 11                       | 317                               | 9                     |
| 2017 | 36                       | 353                               | 13                    |
| 2018 | 38                       | 391                               | 15                    |
| 2019 | 30                       | 421                               | 15                    |
| TOTAL| 421                      | 99                                | 99                    |
specimens) but are included here since they represent the identification and publication of new taxa in China.

In total, since 2000, the 421 described taxa were included in nearly 100 published books and papers (Table 2), nearly twice the number of publications than was published in the preceding 150 years. In some of the recent studies, observations have verified the continued presence of endemics described in earlier works (e.g. *Gomphonema eminens* Skuja in Yunnan; Liu et al. 2020; several species of *Pinnularia* from the Great A’er Mountains; Liu et al. 2018; and species of centric diatoms from Yunnan), though the population sizes of these endemic taxa are reported to be declining (Li et al. 2012b).

The degree of collaboration between Chinese researchers within and between institutions, and the inclusion of students in these works, are both striking and a demonstration that this area of research will have a fruitful period of work ahead. Amongst the senior and corresponding authors of these papers we see the impact of Skvortzov, whose academic grandchildren and great-grandchildren working on freshwater diatoms are now in Shanghai, Taiyuan, and Harbin. There are also well-established labs in Beijing, Shanghai, Kunming, Nanjing, and Jishou, whose focus may include the study of ecological and palaeoecological interpretation, as well as biodiversity discovery and description. Collaborations with non-Chinese scientists is also hallmark of this most recent era, with partners joining in these works from the U.K., Spain, Macedonia, Germany, Luxembourg, Belgium, Canada, and the USA.

**Discussion: A look ahead**

While there has been a tremendous amount of work done to document the freshwater diatom flora of China, there are still many areas across the country that await initial or additional in-depth study. Some of these areas include, Yunnan Province, the vast karst region across Yunnan/Guangxi/Guizhou provinces, the subtropical southern part of the country, Xinjiang Autonomous Region, and Tibet, to name a few. In these regions are the two biodiversity hotspots the are fully in China (Myers et al. 2000; CEPF 2019). Also, the two longest rivers in China, The Yangtze River and Yellow River, have had isolated studies, but not comprehensive analyses. There exist specialized habitats such as also high mountain ranges, waterfalls, and hot springs, to name a few, where more intensive studies are warranted.

Perhaps one of the most challenging projects, with the potential of having the least “impact” (in the way most universities or state labs would assess that notion), but the greatest impact on the discipline, would be the typification of the diatom taxa described by Skvortzov. With the location of his collection uncertain (several generations of curators have attempted to track the collection to universities and institutes in China, Russia, Brazil, and Scandinavia), it seems likely that the collection has been lost. The challenge would not only be the large number of taxa he described. There would be a huge challenge to find specimens to designate as neotypes for his taxa, or to designate illustrations of his as epitypes. If neotypification was chosen, it would present
many challenges, especially in situations where several varieties or forms were dissected from the same species, or for the large number of taxa described in his 1976 and 2012 papers, where the illustrations are of a quality that might not facilitate making positive identifications. It also appears that the collections of Chen and Zhu have been lost, and typification of their taxa will also be an important activity for taxonomists.

The loss of several important collections in China is not restricted to that country. Collections have been discarded by many universities and research institutes across the world. Currently, China does not have a national diatom collection. Such a repository might be useful in the future, as the significant, current activities of collection-building and biodiversity discovery and description, which appears to still be in a log growth phase (see Fig. 1). The fate of the collections that have been established and blossomed in a single generation in Shanghai, Harbin, Taiyuan, Beijing and other labs will always be tenuous. Having a national collection would potentially provide a repository for the country to serve future generations of scientists.

Although there is tremendous described diversity in the continental diatom flora of China, and it is likely that there is still much to do to achieve a more comprehensive knowledge of that flora, the number of strains of continental diatoms in GenBank traceable to a source in China is modest. In fact, this is all the more surprising since some groups of continental diatoms have a tremendous diversity in China, and some endemic genera in Asia have representatives in the Chinese flora (Kociolek 2019). Some of these groups include the Thalassiosiraceae and Cymbellales. In the latter group, the only endemic genera known for that lineage worldwide are from Asia and include species from China (e.g. Zhang et al. 2018). Workflows and resources will need to be developed so that the number of molecular sequences generated from Chinese taxa are commensurate with the diversity and unique nature of the flora.

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Appendix 1

Taxa of continental diatoms described from China, 1848–1999.

*Achnanthes affinis* var. *biseriata* Skvortzov 1938c
*Achnanthes cucurbita* Skvortzov 1935
*Achnanthes fragilis* Skvortzov 1938b
*Achnanthes fukiensis* Skvortzov 1929a
*Achnanthes girinensis* Skvortzov 1935
*Achnanthes guizhouensis* Chen and Zhu 1994
*Achnanthes hedini* Hustedt 1922
*Achnanthes bankensis* Skvortzov 1929c
*Achnanthes himalayensis* Jao and Zhu in Jao, Zhu and Lee 1974
*Achnanthes inflata* var. *sinica* Skvortzov 1929a
*Achnanthes kansouensis* Skvortzov 1935
*Achnanthes linearis* var. *kankouensis* Skvortzov 1935
*Achnanthes linearis* f. *minuta* Skvortzov 1935
*Achnanthes medioconvexa* Zhu and Chen 1996
*Achnanthes mesoconstricta* Zhu and Chen 1996
*Achnanthes minutissima* var. *constricta* Skvortzov 1935
*Achnanthes pamirensis* Hustedt 1922
*Achnanthes pinnata* Hustedt 1922
*Achnanthes schmidtiana* var. *tibetica* Jao and Zhu in Jao, Zhu and Lee 1974
*Achnanthes sublinearis* Skvortzov 1938c
*Achnanthes sublinearis* var. *complexa* Skvortzov 1938c
*Achnanthes sublinearis* var. *elliptica* Skvortzov 1938c
*Achnanthes tibetica* Jao 1964
*Actinella brasiliensis* var. *curta* Skvortzov 1929c
*Actinella miocenica* Li 1988
*Amphiprora medulica* var. *sinensis* Skvortzov 1927
*Amphiraphia* Chen and Zhu 1983
*Amphiraphia xizangensis* Chen and Zhu 1983
*Amphiraphia xizangensis* var. *major* Chen and Zhu 1983
*Amphora angusta* var. *sinensis* Skvortzov 1927
*Amphora asiatica* Skvortzov 1935
*Amphora dalaica* var. *hinganica* Skvortzov 1976b
*Amphora dalaica* var. *oculata* Skvortzov 1976b
*Amphora delicatissima* f. *sinica* Skvortzov 1935
*Amphora geniculata* Hustedt 1922
*Amphora ostenfeldii* Hustedt 1922
*Amphora ovalis* f. *mongolica* Skvortzov 1930
*Amphora reniformis* Guo, Xie and Li 1997
Anomoeoneis polygramma var. rhomboides Jao 1964
Anomoeoneis polygramma var. tibetica Jao 1964
Aulacoseira dianchiensis Yang, Stoermer and Kociolek 1994
Caloneis bacillum f. latilanceolatum Zhu and Chen 1995
Caloneis chansiensis Skvortzov 1935
Caloneis fasciata var. pekinensis Skvortzov 1928a
Caloneis holstii var. tibetica Jao 1964
Caloneis bunanensis Chen and Zhu 1989
Caloneis lepidula var. angustata Skvortzov 1976a
Caloneis patagonica var. sinica Skvortzov 1938c
Caloneis schroderi var. densestriata Skvortzov 1976a
Caloneis schumanniana var. biconstricta f. minor Zhu and Chen 1995
Caloneis silicula var. bankensis Skvortzov 1929c
Caloneis schumanniana f. gracilis Skvortzov 1935
Caloneis silicula var. hinganica Skvortzov 1976a
Caloneis sphagnicola Skvortzov 1938b
Ceratoneis arcus var. orientalis Skuja 1937
Cocconeis placentula var. rotunda Skvortow 1928a
Coscinodiscus sinicus Skvortzov 1946
Cyclotella asterocostata Lin, Xie & Cai in Xie et al. 1985
Cyclotella asterocostata var. borealis Xie and Cai 1985
Cyclotella asterocostata var. striata Chen 1987
Cyclotella curvistriata Chen and Zhu 1985
Cyclotella florida Voigt 1942
Cyclotella hinganica Skvortzov 1976a
Cyclotella hubeiana Chen and Zhu 1985
Cyclotella kuetzingiana var. bankensis Skvortzov 1929b
Cyclotella lacunarum Hustedt 1922
Cyclotella meneghiniana var. bankiensis Skvortzov 1929b
Cyclotella meneghiniana var. hinganica Skvortzov 1976a
Cyclotella miyiensis Qi and Yang 1985
Cyclotella obliquata Qi and Yang 1985
Cyclotella rhomboideo-elliptica Skuja, 1937
Cyclotella rhomboideo-elliptica var. rounda Qi and Yang 1985
Cyclotella shanxiensis Xie and Qi 1984
Cyclotella tibetana Hustedt 1922
Cymatopleura sinensis Skvortzov 1927
Cymatopleura solea var. bankensis Skvortzov 1929c
Cymbella affinis var. elegans Mereschkowsky 1906
Cymbella amphioxys var. asiatica Skvortzov 1938e
Cymbella amoyensis Voigt 1942
Cymbella angustata var. hinganica Skvortzov 1976b
Cymbella aspera var. elongata Skvortzov 1928b
Cymbella aspera var. fossilis Skvortzov 1937
Cymbella aspera var. intermedia Skvortzov 1929c
Cymbella aspera var. manschurica Skvortzov 1928b
Cymbella aspera var. shantungensis Voigt 1942
Cymbella australica var. hankensis Skvortzov 1929c
Cymbella austriaca var. hankensis Skvortzov 1929c
Cymbella cantonensis Voigt 1942
Cymbella cantonensis var. obtusa Voigt 1942
Cymbella cesatii var. asiatica Skvortzov 1938b
Cymbella cistula var. asiatica Mereschkowsky 1906
Cymbella cistula var. heterostriata Mereschkowsky 1906
Cymbella cistula var. hinganensis Skvortzov 1928b
Cymbella cistula var. manschurica Skvortzov 1928b
Cymbella cistula var. recta Shi 1991
Cymbella cistula var. rotundata Voigt 1942
Cymbella cistula var. woosungensis Voigt 1942
Cymbella delicatula var. capitata Skvortzov 1935
Cymbella delicatula var. fasciata Voigt 1942
Cymbella delicatula var. magna Chen & Zhu in Zhu & Chen, 1994
Cymbella ehrenbergii var. apiculata Skvortzov 1976b
Cymbella ehrenbergii var. hankensis Skvortzov 1929c
Cymbella globosa Voigt 1942
Cymbella gracilis var. arcuata Voigt 1942
Cymbella gracilis var. arcuata Skvortzov 1976b
Cymbella gracilis f. crassiostriata Skvortzov 1976b
Cymbella gracilis var. kansouensis Skvortzov 1935
Cymbella gracilis f. sphagnicola Skvortzov 1938e
Cymbella heteropleura var. hinganensis Skvortzov 1976b
Cymbella lanceolata var. grossepunctata Skvortzov 1976b
Cymbella jianghanensis Shi 1991
Cymbella jilinensis Huang in Huang et al, 1983
Cymbella jobmolungensis C.C. Jao & Y.Y. Lee in C.C. Zao, H.Z. Zhu & Y.Y. Lee 1974
Cymbella lacustris var. subtropica Voigt 1942
Cymbella lata var. sinica Skvortzov 1935
Cymbella muralis Skvortzov 1937
Cymbella naviculiformis f. constricta Skvortzov 1938d
Cymbella naviculiformis var. stauroptera Voigt 1942
Cymbella pavlovi Skvortzov 1938b
Cymbella perpusilla f. elongata Skvortzov 1938e
Cymbella ruttneri var. liaotungensis Skvortzov 1946
Cymbella signata var. chinensis Skvortzov 1929a
Cymbella sinica Skvortzov 1938c
Cymbella sinica var. miyiensis Qi and Yang 1985
Cymbella stuxbergii var. tumida Skvortzov 1938c
Cymbella tenuistriata Shi 1991
Cymbella tibetana Hustedt 1922
Cymbella tumidula f. recta Skvortzov 1938c
Cymbella turgida var. hinganica Skvortzov 1976b
Cymbella ventricosa var. major Skvortzov 1929c
Cymbella ventricosa var. pekinensis Skvortzov 1929a
Cymbella ventricosa f. major Mereschkowsky 1906
Denticula elegans var. hinganica Skvortzov 1976b
Diatoma shenonngia Zhang and Qi 1994
Diploneis elliptica var. hankae Skvortzov 1929b
Diploneis elliptica var. mongolica Mereschkowsky 1906
Diploneis finnica var. sinica Skvortzov 1929a
Diploneis lijingensis Huang in Huang et al. 1998
Diploneis rupestris Skvortzov 1938a
Discoplea atmosphaerica Ehrenberg 1848
Discoplea sinensis Ehrenberg 1848
Epithemia hyndmanii var. chinensis Skvortzov 1929a
Epithemia zebra var. hankensis Skvortzov 1929c
Eucocconeis hinganica Skvortzov 1976a
Eunotia anhuiensis J.Yang 1995
Eunotia arcus var. bindulata Skvortzov 1976a
Eunotia arcus var. crassistriata Skvortzov 1976a
Eunotia arcus var. hinganica Skvortzov 1976a
Eunotia arcus var. triundulata Skvortzov 1976a
Eunotia asiatica Skvortzov 1938e
Eunotia asiatica var. interrupta Skvortzov 1938e
Eunotia bigibba var. rupestris Skvortzov 1938a
Eunotia clevei var. sinica Skvortzov 1929a
Eunotia faba var. lunata Skvortzov 1976a
Eunotia faba var. minor Skvortzov 1976a
Eunotia formica var. elongata Skvortzov 1929c
Eunotia fragilariodes var. elongata Skvortzov 1929b
Eunotia gracilis var. densusstriata Skvortzov 1976a
Eunotia hainanensis Zhang et Qi 1993
Eunotia hinganica Skvortzov 1976a
Eunotia lunaris var. undulata Skvortzov 1976a
Eunotia major var. asiatica Skvortzov 1929a
Eunotia major var. hankensis Skvortzov 1929b
Eunotia monodon var. asiatica Skvortzov 1936
Eunotia asiatica var. interrupta Skvortzov 1938e
Eunotia parallela f. asiatica Skvortzov 1938b
Eunotia parallela var. hinganica Skvortzov 1976a
Eunotia pectinalis var. chinensis Skvortzov 1929b
Eunotia plicata Jao 1964
Eunotia praerupta var. tibetica Mereschkowsky 1906
Eunotia sudetica var. hankensis Skvortzov 1929b
Eunotia suecica f. hankensis Skvortzov 1929c
Eunotia suecica var. hinganica Skvortzov 1976a
Eunotia suecica var. simplex Skvortzov 1976a
Eunotia tautoniensis var. hankensis Skvortzov 1929b
Eunotia tautoniensis var. undulata Skvortzov 1929c
Fragilaria asiatica Hustedt 1922
Fragilaria brevistriata var. bigibba Jao 1964
Fragilaria brevistriata var. tibetica Mereschkowsky 1906
Fragilaria curvata Skvortzov 1935
Fragilaria bainanensis Zhang et Qi 1994
Fragilaria hinganensis Skvortzov 1928b
Fragilaria hinganensis var. longissima Skvortzov 1928b
Fragilaria indigema Skvortzov 1976a
Fragilaria lapponica var. lanceolata Zhang and Qi 1994
Fragilaria leptostauron var. hainanensis Zhang in Zhang and Qi 1994
Fragilaria mesotyla Ehrenberg 1848
Fragilaria shangdongensis Li 1982
Fragilaria subtriundulata Li 1999
Fragilaria virescens var. acicularis Skvortzov 1976a
Fragilaria virescens var. obtusa Skvortzov 1976a
Fragilaria virescens var. restratus Skvortzov 1976a
Frustulia chinensis Skvortzov 1929b
Frustulia vulgaris var. asiatica Skvortzov 1928b
Frustulia vulgaris var. constricta Skvortzov 1929b
Frustulia vulgaris var. muscosa Skvortzov 1937
Frustulia vulgaris var. rupestris Skvortzov 1938a
Gloeonema sinense Ehrenberg 1848
Gomphonema acuminatum f. elongatum Skvortzov 1929c
Gomphonema acuminatum var. sinica Skvortzov 1935
Gomphonema acuminatum var. tibeticum Jao 1964
Gomphonema augur f. hankensis Skvortzov 1929c
Gomphonema augur f. orientalis Skvortzov 1929c
Gomphonema augur var. sinica Skvortzov 1946
Gomphonema changyangicum Li et al 1999
Gomphonema clevei f. heterovalvata Voigt 1942
Gomphonema clevei var. sinensis Voigt 1942
Gomphonema constrictum var. amphipectula Mereschkowsky 1906
Gomphonema constrictum var. elongata Skvortzov 1929c
Gomphonema constrictum var. hankensis Skvortzov 1929c
Gomphonema eminens Skuja 1937
Gomphonema hinganicum Skvortzov 1976b
Gomphonema hinganicum var. apiculatum Skvortzov 1976b
Gomphonema heideni Hustedt 1922
Gomphonema heideni var. sinica Skvortzov 1938c
Gomphonema hubeicum Li et al. 1999
Gomphonema instabilis f. wangii Bao and Reimer 1992
Gomphonema interruptum Chen and Zhu 1994
Gomphonema kasnakowi Mereschkowsky 1906
Gomphonema kasnakowi var. distincta Skvortzov 1938c
Gomphonema laojunshanensis Li, Kociolek and Metzeltin 2010b
Gomphonema licenti Skvortzov 1935
Gomphonema licenti var. curta Skvortzov 1935
Gomphonema longiceps var. australica Skvortzov 1976b
Gomphonema longiceps f. minuta Skvortzov 1938e
Gomphonema montanum f. hankensis Skvortzov 1929c
Gomphonema olivaceum var. tibetica Mereschkowsky 1906
Gomphonema parvulum var. deserta Skvortzov 1935
Gomphonema parvulum var. sinica Skvortzov 1935
Gomphonema puiggarianum var. sinica Skvortzov 1929b
Gomphonema ruttneri var. liaotungensis Skvortzov 1946
Gomphonema sinica Skvortzov 1929b
Gomphonema sphaerophorum var. asiatica Skvortzov 1929a
Gomphonema sphaerophorum var. densestriatum Zhu & Chen, 1994
Gomphonema subclavatum var. hankensis Skvortzov 1929c
Gomphonema tergestinum var. shantungensis Skvortzov 1937
Gomphonema tropicale var. nonpunctatum Shi 1991
Gomphonema xiphoidea Skvortzov 1976b
Gyrosigma attenuatum var. asiatica Skvortzov 1938c
Gyrosigma hankensis Skvortzov 1929c
Gyrosigma spencerii var. sinica Skvortzov 1929b
Hantzschia amphioxys var. compacta Hustedt 1922
Hantzschia amphioxys f. hankensis Skvortzov 1929c
Hantzschia amphioxys var. hinganensis Skvortzov 1928b
Hantzschia amphioxys var. sinica Skvortzov 1946
Hantzschia elongata var. curta Skvortzov 1976b
Hantzschia elongata var. densestriata Skvortzov 1976b
Hantzschia elongata var. obtusa Skvortzov 1976b
Hantzschia elongata var. tenua Skvortzov 1976b
Mastogloia braunii var. sinensis Skvortzov 1927
Mastogloia grevillei var. sinica Skvortzov 1927
Mastogloia bruni var. sinensis Skvortzov 1927
Melosira bruni var. sinensis Skvortzov 1927
Melosira cucullata Chen 1980
Melosira hunanica Chen & Zhu in Huang et al. 1998
Melosira irregularis var. hankensis Skvortzov 1929b
Melosira italica var. hankensis Skvortzov 1929b
Melosira radiato-sinuata Chen 1980
Melosira radiato-sinuata var. yunnanica Chen 1980
Melosoria roseana var. asiatica Skvortzov 1938a
Melosira roeseana var. epidendron f. spinosa Skvortzov 1938a
Melosira roeseana f. spinosa Skvortzov 1938a
Melosira roeseana var. xizangensis Chen in Chen and Zhu 1995
Melosira sinensis Chen 1980
Melosira soochowensis Skvortzov 1946
Melosira youngi var. tenuissima Skvortzov 1937
Meridion circulare var. subcapitatum Skvortzov 1976a
Navicula aktinoides Skuja 1937
Navicula americana f. hankensis Skvortzov 1929c
Navicula amphibola var. manschurica Skvortzov 1928b
Navicula anhuiensis Yang 1994
Navicula argunensis Skvortzov 1938d
Navicula bacillum var. elongata Skvortzov 1929c
Navicula bacillum var. hankensis Skvortzov 1929c
Navicula bacillum var. parallela Skvortzov 1938d
Navicula barentsii var. capitata Bao and Reimer 1992
Navicula bigibba Chen and Zhu 1994
Navicula brockmannii var. undulata Zhu and Chen 1996
Navicula bryophila var. paucistriata Zhu and Chen 1996
Navicula cantonensis Ehrenberg 1848
Navicula cari var. rostrata Skvortzov 1935
Navicula chansiensis Skvortzov 1935
Navicula chinensis Skvortow 1929b
Navicula cincta var. kansouensis Skvortzov 1935
Navicula cincta var. minuta Skvortzov 1937
Navicula cincta var. sphagnicola Skvortzov 1938e
Navicula cryptocephala var. australis Skuja 1937
Navicula cryptocephala var. hankensis Skvortzov 1929c
Navicula cuspidata f. craticularis Skvortzov 1929c
Navicula cuspidata var. hankae Skvortzov 1929c
Navicula cuspidata var. tibetica Jao 1964
Navicula exigua var. signata Skvortzov 1935
Navicula exigua var. sinica Skvortzov 1935
Navicula fukiensis Skvortzov 1929b
Navicula gastrum var. hankensis Skvortzov 1929c
Navicula gastrum var. limnetica Skvortzov 1929c
Navicula gastrum var. mongolica Skvortzov 1928c
Navicula hangchowensis Skvortzov 1937
Navicula hankae Skvortzov 1929c
Navicula bedini Hustedt 1922
Navicula hunanensis Chen and Zhu 1994
Navicula incerta f. asiatica Skvortzov 1935
Navicula jkarii Skvortzov 1929c
Naviculaa kalganica Skvortzov 1935
Navicula kotschyi f. hinganica Skvortzov 1976a
Navicula kotschyi var. rupestris Skvortzov 1938a
Navicula kovalchookiana Skvortzov 1937
Navicula laevissima var. lanceolata Skvortzov 1938a
Navicula laevissima var. ovata Skvortzov 1937
Navicula laevissima var. robusta Skvortzov 1938a
Navicula lagerheimii var. capitata Skvortzov 1937
Navicula lagerheimii var. lanceolata Skvortzov 1938a
Navicula lagerheimii var. ovata Skvortzov 1937
Navicula lagerheimii var. robusta Skvortzov 1938a
Navicula lambda var. recta Skvortzov 1929b
Navicula lambda var. sinica Skvortzov 1935
Navicula licenti Skvortzov 1935
Navicula menisculus var. sinica Skvortzov 1935
Navicula mongolica Skvortzov 1935
Navicula multipunctata Chen and Zhu 1994
Navicula muscosa Skvortzov 1938e
Navicula mutica var. rhombica Skvortzov 1938a
Navicula mutica var. sinica Yang 1994
Navicula nivalis var. chinensis Skvortzov 1929b
Navicula oblonga var. linearis Mereschkowsky 1906
Navicula ocellata Skvortzov 1938a
Navicula ocellata var. polymorpha Skvortzov 1938a
Navicula parva Skvortzov 1935
Navicula peregrina var. asiatica Skvortzov 1929c
Navicula peregrina f. curta Skvortzov 1929c
Navicula peregrina var. hankensis Skvortzov 1929c
Navicula peregrina var. lanceolata Skvortzov 1929c
Navicula peregrina var. minuta Skvortzov 1929c
Navicula peregrina var. sinica Skvortzov 1938c
Navicula perpusilloides Chen and Zhu 1994
Navicula praegnans Skuja 1937
Navicula pseudolinearis Hustedt 1922
Navicula pseudoseminulum Skvortzov 1935
Navicula puncticulata Skvortzov 1976a
Navicula pupula var. elongata Skvortzov 1976a
Navicula pupula var. sinica Skvortzov 1935
Navicula radiosia var. hankensis Skvortzov 1929c
Navicula radiosia var. manschurica Skvortzov 1928b
Navicula rhynchocephala var. hankensis Skvortzov 1929c
Navicula rhynchocephala f. hankensis Skvortzov 1929c
Navicula rhynchocephala var. tenua Skvortzov 1938c
Navicula semen var. lineata Skvortzov 1976a
Navicula seminuda C. Jao & Y.Y.Lee in Jao, Zhu and Lee 1974
Navicula seposita var. major Zhu and Chen 1994
Navicula setchwanensis Skuja 1937
Navicula siberica Skvortzov 1929c
Navicula sinensis Ehrenberg 1848
Navicula soebrensis var. parallela Skvortzov 1938e
Navicula soochowensis Skvortzov 1946
Navicula soodensis var. mongolica Skvortzov 1935
Navicula stagna Chen and Zhu 1994
Navicula subrhombica Hustedt 1922
Navicula subvitrea var. maxima Skvortzov 1938c
Navicula tientsinensis Skvortzov 1927
Navicula tytthocephala Skvortzov 1976a
Navicula viridula var. alisoviana Skvortzov 1929c
Navicula viridula var. hankensis Skvortzov 1929c
Navicula viridula var. pamirensis Hustedt 1922
Navicula viridula var. rostrata Skvortzov 1938d
Navicula viridula var. pamirensis Hustedt 1922
Neidium affine f. manschurica Skvortzov 1928b
Neidium affine var. amphirhynchus f. manchuria Skvortzov 1928b
Neidium affine f. hankensis Skvortzov 1929
Neidium bigibborum Zhu and Chen 1995c
Neidium bisulcatum f. hankensis Skvortzov 1929c
Neidium bisulcatum f. latior Skvortzov 1976a
Neidium bisulcatum f. longissima Skvortzov 1976a
Neidium bisulcatum var. notata Mereschkowsky 1906
Neidium bisulcatum f. subcapitatum Skvortzov 1976a
Neidium constrictum Zhu and Chen 1995
Neidium didelta Hustedt 1922
Neidium dilatatum var. angustatum Skvortzov 1976a
Neidium ellipticis Zhu and Chen 1995
Neidium ellipticum Voigt 1942
Neidium hankensis Skvortzov 1929
Neidium hitchcockii f. hankensis Skvortzov 1929c
Neidium hitchcockii var. obliquestriatum Skvortzov 1935
Neidium iridis var. dissimilia Jao & Zhu in Jao, Zhu and Lee 1974
Neidium iridis f. hanganica Skvortzov 1976a
Neidium iridis var. orochenicum Skvortzov 1976a
Neidium kozlowi var. amphicephala Mereschkowsky 1906
Neidium kozlowi var. elliptica Mereschkowsky 1906
Neidium kozlowi var. elpatievskyi f. majus Zhu and Chen 1995
Neidium kozlowi var. bankensis Skvortzov 1929c
Neidium kozlowi var. parva Mereschkowsky 1906
Neidium kozlowii Mereschkowsky 1906
Neidium manshuricum Skvortzov 1946
Neidium maximum var. bankensis Skvortzov 1929c
Neidium mirabile Hustedt 1922
Neidium oblongum Zhu and Chen 1995
Neidium punctulatum Hustedt 1922
Neidium radiosum Voigt 1942
Neidium rectum Hustedt 1922
Nitzschia acuta var. hanganica Skvortzov 1976b
Nitzschia amoyensis Skvortzov 1929a
Nitzschia amphibia var. curta Skvortzov 1928a
Nitzschia bacillariaeformis Hustedt 1922
Nitzschia bacilliformis Hustedt 1922
Nitzschia bacilliformis var. elongata Skvortzov 1935
Nitzschia bacillum Hustedt 1922
Nitzschia bremensis var. sinica Skvortzov 1935
Nitzschia capitellata var. mongolica Skvortzov 1935
Nitzschia capitellata var. montana Skvortzov 1938b
Nitzschia chinensis Hustedt 1922
Nitzschia denticula var. elongata Mereschkowsky 1906
Nitzschia denticulata Skvortzov 1935
Nitzschia denticulata var. undulata Skvortzov 1935
Nitzschia filia Skvortzov 1976b
Nitzschia filia var. apiculata Skvortzov 1976b
Nitzschia frustulum var. asiatica Hustedt 1922
Nitzschia frustulum var. mongolica Skvortzov 1935
Nitzschia gradifera Hustedt 1922
Nitzschia grigoriewi Mereschkowsky 1906
Nitzschia hankensis Skvortzov 1929c
Nitzschia heusleriana var. asiatica Skvortzov 1929c
Nitzschia ignovata var. asiatica Skvortzov 1938b
Nitzschia heidenii var. pamirensis Boye Peterson 1930
Nitzschia iugiformis Hustedt 1922
Nitzschia jugiformis Hustedt 1922
Nitzschia mongolica Skvortzov 1935
Nitzschia ostenfeldi Hustedt 1922
Nitzschia palea var. gracilis Skvortzov 1935
Nitzschia palea var. hinganica Skvortzov 1976b
Nitzschia pamirensis Hustedt 1922
Nitzschia pekinensis Skvortzov 1928a
Nitzschia pseudolinearis Hustedt 1922
Nitzschia regula Hustedt 1922
Nitzschia regula f. pekinensis Skvortzov 1928a
Nitzschia rigida var. sinensis Skvortzov 1927
Nitzschia sigma var. serpentina Skvortzov 1927
Nitzschia sinuata var. constricta Chen and Zhu 1989
Nitzschia subvitrea Hustedt 1922
Nitzschia tibetana Hustedt 1922
Nitzschia tingrica Jao & Lee in Jao, Zhu and Lee 1974
Nitzschia yunchengensis Xie and Li 1994
Nitzschia zabelini var. hinganica Skvortzov 1976b
Pliocaenicus cathay anus G.Wang 1999
Pliocaenicus jilinensis G.Wang 1999
Pinnularia acrosphaeria f. bankensis Skvortzov 1929c
Pinnularia aestuari var. hinganica Skvortzov 1976b
Pinnularia alpina f. symmetrica Mereschkowsky 1906
Pinnularia archaica Skvortzov 1976a
Pinnularia bogotensis var. asiatica Skvortzov 1938b
Pinnularia bogotensis var. bankensis Skvortzov 1929a
Pinnularia brebisonii f. curta Skvortzov 1929a
Pinnularia cardinalis var. constricta Skvortzov 1976b
Pinnularia cardinalis var. fenestrata Skvortzov 1976b
Pinnularia cardinalis f. angustior Skvortzov 1976b
Pinnularia cardinalis f. bankensis Skvortzov 1929c
Pinnularia cardinalis var. hinganica Skvortzov 1976b
Pinnularia cardinalis f. minuta Skvortzov 1976b
Pinnularia centropuncta Skvortzov 1976a
Pinnularia centropuncta var. lineata Skvortzov 1976a
Pinnularia cheng Skvortzov 1946
Pinnularia chinensis Skvortzov 1929a
Pinnularia chonokyi Skvortzov 1976b
Pinnularia chonokyi var. unilateralis Skvortzov 1976b
Pinnularia congeri Skvortzov 1976b
Pinnularia distinguenda var. asiatica Skvortzov 1938b
Pinnularia distinguenda f. striolata Skvortzov 1938b
Pinnularia distinguenda var. sphagnalis Skvortzov 1938e
Pinnularia divergens var. continua Mereschkowsky 1906
Pinnularia divergens var. tumida Skvortzov 1976a
Pinnularia divergentissima var. capitata Hustedt 1922
Pinnularia divergentissima var. lata Skvortzow 1938e
Pinnularia dorgogostaiskii var. latior Skvortzov 1976b
Pinnularia episcopalis var. hankensis Skvortzov 1929c
Pinnularia episcopallis var. lineata Skvortzov 1976a
Pinnularia episcopalis var. manschurica Skvortzov 1928b
Pinnularia esox var. hinganica Skvortzov 1976b
Pinnularia essentialis Skvortzov 1976a
Pinnularia fonticola Hustedt 1922
Pinnularia fritschiana Skvortzov 1976b
Pinnularia gibba f. constricta Skvortzov 1938b
Pinnularia gibba f. polymorpha Skvortzow 1938e
Pinnularia gracillima var. hinganica Skvortzov 1976a
Pinnularia hartleyana f. minor Skvortzov 1946
Pinnularia hedini Hustedt 1922
Pinnularia hinganica Skvortzov 1976b
Pinnularia interrupta f. hankensis Skvortzov 1929c
Pinnularia interrupta var. sinica Skvortzov 1935
Pinnularia isostauron var. orientalis Skvortzov 1938e
Pinnularia karelica var. subcapitata Skvortzov 1938e
Pinnularia kisselewii Skvortzov 1976b
Pinnularia kisselewii var. hinganica Skvortzov 1976b
Pinnularia kisselewii var. intermedia Skvortzov 1976b
Pinnularia kisselewii var. parallelata Skvortzov 1976b
Pinnularia kisselewii var. subacuta Skvortzov 1976b
Pinnularia lacushankae Skvortzov 1946
Pinnularia lata var. hinganica Skvortzov 1976a
Pinnularia lata var. intermedia Skvortzov 1976a
Pinnularia latofasciata Skvortzov 1946
Pinnularia legumen var. hinganica Skvortzov 1976a
Pinnularia leptosoma var. hinganica Skvortzov 1976a
Pinnularia liouana var. hinganica Skvortzov 1976a
Pinnularia major Skvortzov 1928b
Pinnularia major f. hankensis Skvortzov 1929c
Pinnularia major f. hinganica Skvortzov 1976a
Pinnularia major var. shantungensis Skvortzov 1937
Pinnularia mesolepta var. angusta f. sinica Skvortzov 1929a
Pinnularia mesolepta f. hankensis Skvortzov 1929c
Pinnularia mesolepta f. hinganica Skvortzov 1976a
Pinnularia mesolepta f. sinica Skvortzov 1929a
Pinnularia mesolepta f. subundulata Skvortzov 1929c
Pinnularia meyerii var. hinganica Skvortzov 1976b
Pinnularia microstauron f. curta Skvortzov 1929c
Pinnularia molaris var. asiatica Skvortzov 1938b
Pinnularia molaris var. constricta Skvortzov 1976a
Pinnularia molaris var. hinganica Skvortzov 1976a
Pinnularia mongolica Skvortzov 1935
Pinnularia mongolica var. lanceolata Skvortzov 1946
Pinnularia montana var. sinica Skvortzov 1929a
Pinnularia nobilis var. constricta Skvortzov 1976b
Pinnularia nobilis var. densetriata Skvortzov 1976b
Pinnularia nobilis var. distincta Skvortzow 1938e
Pinnularia nobilis var. gracillima Skvortzov 1976b
Pinnularia nobilis var. manschurica Skvortzov 1928
Pinnularia nobilis f. minor Skvortzov 1976b
Pinnularia nobilis var. obesa Skvortzov 1976b
Pinnularia nobilis var. soochowensis Skvortzov 1946
Pinnularia nobilis var. triundulata Skvortzov 1946
Pinnularia nodosa var. hankensis Skvortzov 1929c
Pinnularia nodosa var. maakii Skvortzov 1929c
Pinnularia patrickii Skvortzov 1976b
Pinnularia patrickii var. angustata Skvortzov 1976b
Pinnularia patrickii var. interrupta Skvortzov 1976b
Pinnularia patrickii var. panduriniformis Skvortzov 1976b
Pinnularia polyonca var. hinganica Skvortzov 1976a
Pinnularia polyonca var. major Skvortzov 1929c
Pinnularia polyonca var. sublinearis Skvortzov 1976a
Pinnularia prima Skvortzov 1976a
Pinnularia prima var. subcapitata Skvortzov 1976b
Pinnularia reimerii Skvortzov 1976b
Pinnularia reimerii var. interrupta Skvortzov 1976b
Pinnularia savanensis var. hinganica Skvortzov 1976a
Pinnularia savanensis var. ignota Skvortzov 1976a
Pinnularia secunda Skvortzov 1976b
Pinnularia selengensis var. hinganica Skvortzov 1976a
Pinnularia sinomongolica Skvortzov 1976a
Pinnularia sinomongolica var. angustior Skvortzov 1976a
Pinnularia sphagnicola Skvortzov 1938e
Pinnularia spitzbergensis var. hinganica Skvortzov 1976a
Pinnularia stauroptera var. chinensis Skvortzov 1929a
Pinnularia stauroptera f. hankensis Skvortzov 1929c
Pinnularia stauroptera var. recta Skvortzov 1929c
Pinnularia stauroptera f. subcapitata Skvortzov 1929c
Pinnularia stomatophora var. hinganica Skvortzov 1976a
Pinnularia streptoraphe var. asiatica Skvortzov 1938b
Pinnularia streptoraphe var. muscicola Skvortzov 1976b
Pinnularia subborealis Hustedt 1922
Pinnularia subcapitata f. constricta Skvortzov 1938b
Pinnularia subcapitata var. sinica Skvortzov 1935
Pinnularia subcapitata f. tenua Skvortzov 1938e
Pinnularia subsolaris var. asiatica Skvortzov 1938e
Pinnularia subsolaris var. interrupta Skvortzov 1935
Pinnularia tibetana Hustedt 1922
Pinnularia tibetana var. argunensis Skvortzov 1938d
Pinnularia tibetana var. stauroneiformis Skvortzov 1946
Pinnularia tibetana var. truncata Skvortzov 1946
Pinnularia tibetica Mereschkowsky 1906
Pinnularia turizaninow Skvortzov 1976b
Pinnularia viridis f. argunensis Skvortzov 1938d
Pinnularia viridis var. fasoiata Skvortzov 1976b
Pinnularia viridis f. bankensis Skvortzov 1929c
Pinnularia viridis var. hinganica Skvortzov 1976b
Pinnularia viridis f. hinganica Skvortzov 1976b
Pinnularia viridis var. genisseyensis Skvortzov 1976b
Pinnularia viridis f. muscicola Skvortzov 1976b
Pinnularia viridis var. orientalis Skvortzov 1938e
Pinnularia viridis var. sinica Skvortzov 1946
Pinnularia viridis var. ussuriensis Skvortzov 1929c
Pinnularia zabelini Skvortzov 1976b
Pinnularia zabelini var. amurenensis Skvortzov 1976b
Pinnularia zabelini var. dimidia Skvortzov 1976b
Pinnularia zabelini var. zeaana Skvortzov 1976b
Pinnularia zabelini var. interrupta Skvortzov 1976b
Pleurosigma spenceri var. sinensis Skvortzov 1927
Pleurosigma spenceri var. tientsinensis Skvortzov 1927
Porosularia Skvortzov 1976b
Porosularia amoyensis Skvortzov 1976b
Porosularia borgei Skvortzov 1976b
Porosularia calawayi Skvortzov 1976b
Porosularia calawayi var. undulata Skvortzov 1976b
Porosularia chowyiliangi Skvortzov 1976b
Porosularia handel-mazzetti Skvortzov 1976b
Porosularia jurilyi Skvortzov 1976b
Porosularia jurilyi var. striata Skvortzov 1976b
Porosularia kolbei Skvortzov 1976b
Porosularia lackeyi Skvortzov 1976b
Porosularia liouningyanii Skvortzov 1976b
Porosularia meisteri Skvortzov 1976b
Porosularia merrilli Skvortzov 1976b
| Scientific Name                        | Author              | Year   |
|--------------------------------------|---------------------|--------|
| Porosularia poretskyi                | Skvortzov 1976b     |        |
| Porosularia poroidea                 | Skvortzov 1976b     |        |
| Porosularia pseudoviridis            | Skvortzov 1976b     |        |
| Porosularia pulchra                   | Skvortzov 1976b     |        |
| Porosularia scheschukewii            | Skvortzov 1976b     |        |
| Porosularia skujae                   | Skvortzov 1976b     |        |
| Porosularia skujae var. unilateralis | Skvortzov 1976b     |        |
| Porosularia striata                  | Skvortzov 1976b     |        |
| Porosularia subsalsa                 | Skvortzov 1976b     |        |
| Porosularia wislouchi                | Skvortzov 1976b     |        |
| Rhopalodia gibba var. gracilis       | Skvortzov 1976b     |        |
| Rhopalodia gibba var. major          | Skvortzov 1928b     |        |
| Rhopalodia gibberula f. mongolica    | Mereschkowsky 1906  |        |
| Rhopalodia gibberula f. tibetica     | Mereschkowsky 1906  |        |
| Rhopalodia pseudogibba               | Skvortzov 1976b     |        |
| Rhopalodia tibetica                  | Mereschkowsky 1906  |        |
| Schizostauron sorokninii             | Mereschkowsky 1906  |        |
| Scoliopleura pavlovi                 | Skvortzov 1930       |        |
| Stauroneis anceps var. hankensis     | Skvortzov 1929c     |        |
| Stauroneis anceps var. oblonga       | Skvortzov 1929c     |        |
| Stauroneis anceps var. orientalis    | Skvortzov 1929c     |        |
| Stauroneis anceps var. hinganica     | Skvortzov 1976a     |        |
| Stauroneis anceps var. kansouensis   | Skvortzov 1935       |        |
| Stauroneis anceps var. usuriensis    | Skvortzov 1929c     |        |
| Stauroneis chinensis                 | Skvortzov 1929b     |        |
| Stauropenia gregori var. hankensis   | Skvortzov 1929c     |        |
| Stauropenia jimeiensis               | Lin 1989            |        |
| Stauropenia laticeps                 | Hustedt 1922        |        |
| Stauropenia okamurae                 | Skvortzov 1929c     |        |
| Stauropenia parvula var. rupestris   | Skvortzov 1937       |        |
| Stauropenia phoenicenteron f. curta  | Skvortzov 1929c     |        |
| Stauropenia phoenicenteron var. genuina | Skvortzov 1928b   |        |
| Stauropenia phoenicenteron var. hankensis | Skvortzov 1929c |        |
| Stauropenia phoenicenteron f. hankensis | Skvortzov 1929c  |        |
| Stauropenia phoenicenteron var. oblongella | Skvortzov 1929c |        |
| Stauropenia rupestris                | Skvortzov 1938a     |        |
| Stauropenia tibetica                 | Mereschkowsky 1906  |        |
| Staurooptera granulata                | Ehrenberg 1848      |        |
| Stenopterobia sigmoidea               | Skvortzov 1976       |        |
| Stephanodiscus sinensis              | Ehrenberg 1854      |        |
| Stephanodiscus soochowensis          | Skvortzov 1946      |        |
| Surirella alisoviana                 | Skvortzov 1929c     |        |
| Surirella angusta var. amoyensis     | Skvortzov 1929b     |        |
Surirella angusta var. constricta Skvortzov 1929c
Surirella angusta var. curta Skvortzov 1929c
Surirella angusta var. elongata Skvortzov 1929c
Surirella angusta var. hankensis Skvortzov 1929b
Surirella angusta f. ovata Skvortzov 1929c
Surirella biseriata var. orientalis Skvortzov 1929c
Surirella biseriata var. ussuriensis Skvortzov 1929c
Surirella borscowi Mereschkowsky 1906
Surirella capronii var. hankensis Skvortzov 1929c
Surirella chachinae Skvortzov 1929c
Surirella didyma var. hinganica Skvortzov 1976b
Surirella elegans var. hankensis Skvortzov 1929c
Surirella elliptica Ehrenberg 1848
Surirella engleri var. hankensis Skvortzov 1929c
Surirella fukiensis Skvortzov 1929a
Surirella hinganica Skvortzov 1976b
Surirella linearis var. vermifera Skvortzov 1938c
Surirella ovalis var. hankensis Skvortzov 1929c
Surirella ovalis f. tientsinensis Skvortzov 1927
Surirella ovata f. curta Skvortzov 1930
Surirella ovata f. mongolica Skvortzov 1930
Surirella patella var. hankensis Skvortzov 1929c
Surirella robusta var. hankensis Skvortzov 1929c
Surirella robusta var. manschurica Skvortzov 1928b
Surirella saxonica var. sinica Skvortzov 1929a
Surirella splendidia var. hankensis Skvortzov 1929c
Surirella tenera var. hinganica Skvortzov 1976b
Surirella tibetica Mereschkowsky 1906
Surirella tientsinensis Skvortzov 1927
Surirella ussuriensis Skvortzov 1929c
Surirella ussuriensis var. elegans Skvortzov 1929c
Surirella ussuriensis var. elongata Skvortzov 1929c
Synedra affinis var. sinica Skvortzov 1935
Synedra amphicephala var. asiatica Skvortzov 1935
Synedra licenti Skvortzov 1935
Synedra mazamaensis var. changbaiensis Bao and Reimer 1992
Synedra rumpens var. sinica Skvortzov 1935
Synedra tenera var. sinica Skvortzov 1935
Synedra ulna f. constricta Skvortzov 1938c
Synedra ulna f. curta Skvortzov 1928c
Synedra ulna var. anhuiensis Yang 1990
Synedra ulna var. intermedia Mereschkowsky 1906
Synedra ulna var. lanceolata f. constricta Skvortzov 1938c
Synedra ulna var. mongolica Skvortzov 1928c
Synedra ulna var. tenuirostris Skvortzov 1938c
Synedra vaucheriae var. capitata Skvortzov 1938c
Tetracyclus celatom var. minor Li 1999
Tetracyclus dunhuanensis Li 1984
Tetracyclus ellipticus var. austrochinensis Zhang 1994
Tetracyclus ellipticus var. ovaliformis Li 1984
Tetracyclus ellipticus var. rostrata Li 1984
Tetracyclus jaoi Li 1984
Tetracyclus minutus Li 1999
Tetracyclus mucronatus Li 1999
Tetracyclus navicularis Li 1984
Tetracyclus ovaliformis Li 1984
Tetracyclus radiatus Li 1999
Tetracyclus rupestris var. subclypeatus Li 1999
Tetracyclus shangduensis Li 1984
Tetracyclus sinensis Li 1984
Tetracyclus subclypeus Li and Williams 1990
Tetracyclus subdivisium Williams and Li 1990
Tetracyclus subdivisium var. ellipticus Li 1999
Thalassiosira lacustris var. crassiospinua Cai et Xie in Xie and Cai 1981
Tropidoneis maxima var. sinensis Skvortzov 1927
Tryblionella debilis var. sinensis Skvortzov 1927
Tryblionella hantzschiana f. sinensis Skvortzov 1927
Tryblionella tryblionella Skvortzov 1929c
Tryblionella tryblionella f. hankensis Skvortzov 1929c

Appendix 2
Listing of New Taxa Described from continental waters of China, 2000–2019. Genera are in bold.

Achnanthes chinii Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes coarctata subsp. fukinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes drepanocladoïdes Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes drepanocladoïdes var. fukinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes gracillima var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes hankiana var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes kansouensis var. septentrionalis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes kryophila subsp. distincta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes kryophila var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes lanceolata var. argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes lanceolata var. elliptica f. asiatica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes linearis var. szechwanica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes minutissima var. bistriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes maolanensis P.Yu, Kociolek, & Q-M.You in Q-M.You et al. 2019b
Achnanthes montana var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes pseudoexigua Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes pseudoexigua var. unilateralis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes radiata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthes rarissima Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Achnanthidium epilithica P.Yu, Q-M.You & Q-X Wang in Yu et al. 2019c
Achnanthidium guizhouensis P.Yu, You & Kociolek in You et al. 2019a
Achnanthidium jiuzhaigouensis P.Yu, Q-M.You & Q-X Wang in Yu et al. 2019c
Achnanthidium lacustre P.Yu, Q-M. You et Kociolek in Yu et al. 2019b
Achnanthidium limosum P.Yu, Q-M. You & Q-X Wang in Yu et al. 2019c
Achnanthidium longissimum P.Yu, Q-M.You & Kociolek in Yu et al. 2019a
Achnanthidium mediolanceolatum P.Yu, Q-M.You & Kociolek in You et al. 2019a
Achnanthidium parvulum You, Q-M.You & Kociolek in You et al. 2019a
Achnanthidium sinense B.Liu & S.Blanco in B. Liu et al. 2016
Achnanthidium sublanceolatum P.Yu, Q-M.You et Kociolek in Yu et al. 2019b
Achnanthidium subtilissimum P.Yu, Q-M.You & Q-X Wang in Yu et al. 2019c
Achnanthidium taipingensis P.Yu, Q-M.You et Kociolek in Yu et al. 2019b
Adlafia sinensis B.Liu & D.M.Williams in B.Liu et al. 2017
Amphora chu-yin-changii Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora dalaica var. bistriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
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Amphora dalaica var. latostriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora dalaica var. oculata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora delicatissima var. dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora delicatissima var. pekinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora epithemiformis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora jao Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora liouiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora meyeri Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora normanii var. alkalina Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora normanii var. curta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora normanii var. curta f. mongolica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora normanii var. interrupta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora normanii var. pekinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora normanii var. payangi Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora perpusilla var. mongolica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora perpusilla var. pekinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora perpusilla var. subelliptica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora subsalina Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora wangchanii Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Amphora wang-wei Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Aneumastus yamdrokensis Q.Liu & S.L. Xie in Q.Liu et al. 2018
Caloneis clevei var. parallenla Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Clipeoparvus tibeticus Q.Liu, Kociolek & Xie in Q.Liu et al. 2019b
Cocconeis pediculus var. cruciata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cocconeis pediculus var. emarginata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Coscinodiscus rothii var. sibirica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
**Coscinodiscus sinicus** var. *sinica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cyclotella changhai** J.-X. Xu & J.P. Kociolek in Xu et al. 2017

**Cyclotella glomerata** var. *argunensis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cyclotella kutzingiana** subsp. *densestriata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cyclotella kutzingiana** var. *dalaica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cyclotella meneghiniana** var. *pumila* fo. *sibirica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymatopleura elliptica** var. *sinica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymatopleura aquastudia** Kociolek & You in You et al. 2017b

**Cymatopleura xinjiangiana** You & Kociolek in You et al. 2017b

**Cymbella chow-yi-liangii** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella cistuloides** var. *angulata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella cistuloides** var. *angulata* f. *corni-caprae* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella cistuloides** var. *angulata* f. *minor* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella cistuloides** var. *bilateralis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella cistuloides** var. *truncata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella cistuloides** var. *undulata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella dalaica** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella gracilis** var. *sinica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella distalebiseriata** B.Liu & D.M. Williams in B.Liu et al. 2018d

**Cymbella fuxianensis** Y.Li & Gong in Gong and Li 2011

**Cymbella hechiensis** Y.Li & W.Zhang in Zhang et al. 2019

**Cymbella heihainensis** Y.Li & Gong in Hu et al. 2013

**Cymbella hubeiensis** Y.Li Y. in Gong et al. 2013

**Cymbella jianghanensis** Y.Li in Gong et al. 2013 (nomen nudum)

**Cymbella khokhensis** Metzeltin, Lange-Bertalot & Li in Metzeltin et al. 2009

**Cymbella liyangensis** Zhang, Jüttner & E.J. Cox, 2018

**Cymbella moelleriana** var. *argunica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Cymbella pekinensis** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella paenetruncata Y Li & Z Gong in Gong et al. 2013
Cymbella pamirensis Z Zhang & Rioual in Z Zhang et al. 2017
Cymbella pseudotumida Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella pseudotumida var. pseudoborealis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella rupicola var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella semicircularis var. dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella sinica var. rostrata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella sinuata var. argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella tumida var. convergentistriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella tungtingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Cymbella pulchra Y Li & Lange-Bertalot in Gong et al. 2013
Cymbella shii Y Li in Gong et al. 2013
Cymbella shudunensis Y Li & Metzeltin in Hu et al. 2013
Cymbella sinensis Metzeltin & Krammer in Krammer 2002
Cymbella xingyunnensis Y Li & Gong in Hu et al. 2013
Cymbella yabe var. punctata Y Li & Shi in Li et al. 2003
Cymbella yangtzensis Y Li & D Metzeltin in Gong et al. 2013
Cymbopleura pseudokuelbsii Shi 2013
Delicata changqingensis W Zhang, S Q Yang & S Blanco in Zhang et al. 2019
Delicata sinensis Krammer and Metzeltin 2003
Delicata williamsii B Liu & S Blanco in Bing Liu et al. 2018b
Diatoma kalakulensis Peng, Rioual & D M Williams, 2017
Diatoma rupestris Y Liu & Wang in Y Liu et al. 2010
Diploneis barbatula Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Diploneis parma var. sinoborealis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Diploneis pseudoovalis var. tiensisinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Diploneis smithii var. denseareolata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Edtheriotia Kociolek, Q You, Stepanek, R L Lowe & Q-X Wang, 2016a

Edtheriotia guizhoiana Kociolek, You, Stepanek, R L Lowe & Q-X Wang 2016a
Entomoneis triundulata B Liu & D M Williams in B Liu et al. 2018c
Epithemia arguiformis Q-M. You & Q-X. Wang, 2009
Eucocconeis lichunhaii Y. Li in Y. Li and Gong, 2013
Eunotia arcus var. undulata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia bigibba var. subcapitata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia diodon var. fukinensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia filiformis Luo et al., 2019
Eunotia monodon var. amoyensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia pectinalis var. amoyensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia pectinalis var. curta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia pectinalis var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia praerupta var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia shantungensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia shantungensis var. linealata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia sudeticiformis Kociolek et al., 2016b
Eunotia tauntoniensis var. amoyensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia tridentula var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia valida var. densistriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Eunotia valida var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al., 2012
Fragilaria crenophila var. sinensis Rioual in Rioual et al., 2017a
Geissleria jianghanensis Y. Li in Y. Li et al., 2005
Germainiella guizhouiana Kociolek et al., 2019b
Germainiella maolaniana Kociolek et al., 2019b
Germainiella sinica Kociolek et al., 2019b
Gomphocymbella asymmetrica Shi & Y. Li in Shi et al., 2003
Gomphocymbella laxistriata Shi & Y. Li in Shi et al., 2003
Gomphoneis distorta Q-M. You & Kociolek in Q-M. You et al., 2013
Gomphoneis pseudosubtiloides Q-M.You & Kociolek in Q-M. You et al. 2013
Gomphoneis qii Q-M.You & Kociolek in Q-M. You et al. 2013
Gomphoneis rostratoides Q-M.You & Kociolek in Q-M. You et al. 2013
Gomphoneis stoermeri Q-M.You & Kociolek in Q-M. You et al. 2013
Gomphoneis subtiloides Q-M.You & Kociolek in Q-M. You et al. 2013
Gomphoneis xinjiangiana Q-M.You & Kociolek in Q-M. You et al. 2013
Gomphonema acuminatum var. obtusum Y.Fan & Bao in Fan et al. 2004
Gomphonema argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema asiaticum Y.Liu & Kociolek in Y.Liu et al. 2013
Gomphonema augur var. poyangiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema clevei var. oryzae Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema constrictum var. tumidum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema gordejevi Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema heideni var. mingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema intricatum var. curvatum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema jao Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema kaznakowi var. mingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema bicepiformis Zhang & Kociolek, 2018b
Gomphonema bigutianchensis Y.Li in Liao and Y.Li 2018
Gomphonema chinense Y.Liu & Kociolek in Y.Liu et al. 2013
Gomphonema constrictum var. ellipticum Z.X.Shi & J.Y.Chen in Shi 2004
Gomphonema dichotiforme Z.X.Shi, 2004
Gomphonema genestoermeri Y.Li & Kociolek in Y.Liu et al. 2013
Gomphonema heilongtanensis Y.Li, Kociolek & D.Metzeltin, 2010
Gomphonema instabilis var. rhombicum S.Q.Xie & Z.H.Shi in Shi 2004
Gomphonema intricatooides Q-M.You & Kociolek, 2015
Gomphonema intricatum var. mirum Z.X.Shi & H.Z.Zhu, 2004
Gomphonema jianghanense Y.Li, Z.J.Gong, P.Xie & J.Shen, 2007
Gomphonema kaznakowi var. cruciatum Z.X.Shi & Y.Li in Shi 2014
Gomphonema lanceolatum var. amuricum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema lanceolatum var. curtum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema longiceps var. rupestris Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema mediocris Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema mediocris var. capitatum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema mereschkowskyii Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema mereschkowskyii subsp. lancetulum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema olivaceum var. argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema metzeltinii Q-M.You & Kociolek, 2015
Gomphonema microlanceolatum Q-M.You & Kociolek, 2015
Gomphonema montanum var. multipunctatum Z.X.Shi & H.Z.Zhu in Shi 2004
Gomphonema olivaceum var. brevistriatum Li & Shi in Y.Li et al. 2003
Gomphonema olivaceum var. brevistriatum Y.Li & Shi in Li et al. 2003
Gomphonema olivaceum var. densostriatum Z.X.Shi & H.Z.Zhu, 2004
Gomphonema olivaceum var. punctatum Z.X.Shi & N. Li in Shi 2004
Gomphonema pygmaeoides Q-M.You & Kociolek, 2015
Gomphonema rexlowei Y.Liu & Kociolek in Y.Liu et al. 2013
Gomphonema shanghaiensis Zhang & Kociolek, 2016b
Gomphonema shangtungensis var. rostratum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema sichuanensis Y.Li & Kociolek in Li et al. 2010b
Gomphonema staurophorum var. oblongum Li & Shi in Li et al. 2003
Gomphonema subclavatum var. elongatum Z.X.Shi, 2014
Gomphonema subinsigniforme L.Ge, Y.Liu & Kociolek, 2014
Gomphonema turris var. elongatum Z.X. Shi & H.Z. Zhu in Shi 2004
Gomphonema turris var. latum Y.Fan & Q-X.Wang in Fan et al. 2004
Gomphonema wangii Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Gomphonema williamsii Kociolek & Y.Liu in Y.Liu et al. 2013
Gomphonema wuyiensis W.Zhang & Kociolek in Zhang et al. 2018
Gomphonema xiantaoicum Z.X.Shi & N.Li in Z.X.Shi 2014
Gomphonema xiantaoicum Z.X.Shi & N.Li in Z.X.Shi 2014
Gomphonema xinjiangianum Q-M.You & Kociolek, 2015
Gomphonema yangtzensis Y.Li in Y.Li et al. 2006
Gomphonema yaominae Y.Li, in Gong and Li 2012
Gomphosinica Kociolek et al. 2015
Gomphosinica capitata Kociolek, Q-M.You & Q-X. Wang in Kociolek et al. 2015
Gomphosinica lugunsis Y.Liu et al. in Cheng et al. 2018
Gomphosinica robusta Kociolek, Q-M.You & Q-X. Wang in Kociolek et al. 2015
Gomphosinica selincuoensis Z.Zhang, Q-M.You & Kociolek in Yang et al. 2019
Gomphosinica simsiae Kociolek, Q-M.You & Q-X.Wang in Kociolek et al. 2015
**Gomphosinica subtilis** Kociolek, Q-M.You & Q-X.Wang in Kociolek et al. 2015

**Gyrosigma peisonis** var. *major* Peng, Rioual & Sterrenburg, 2016

**Halamphora daochengensis** Zhang, Jüttner & Levkov in Zhang et al. 2019

**Halamphora hezhangii** Q-M.You & Kociolek in Q-M. You et al. 2015c

**Halamphora subfontinalis** Q-M.You & Kociolek in Q-M. You et al. 2015c

**Hannaea tibetiana** Q.Liu, Glushchenko, Kulikovskiy & Kociolek in Q.Liu et al. 2019a

**Hantzschia lineolata** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Hantzschia virgata** var. *dalaica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Hippodonta qinghainensis** Peng & Rioual, 2014

**Humidophila cavernaphila** Lowe, Kociolek & Q-M.You in Lowe et al. 2017

**Humidophila minuta** Lowe, Kociolek & Q-M.You in Lowe et al. 2017

**Humidophila panduriformis** Lowe, Kociolek & Q-M.You in Lowe et al. 2017

**Humidophila potapovae** Lowe, Kociolek & Q-M.You in Lowe et al. 2017

**Humidophila undulocententa** Lowe, Kociolek & Q-M.You in Lowe et al. 2017

**Kolbesia sichuanensis** P. Yu, Q-M. You & Q-X. Wang in Yu et al. 2019a

**Lindavia khinganensis** Rioual in Rioual et al. 2017

**Luticola hunanensis** B.Liu & D.M.Williams in B.Liu et al. 2017a

**Luticola wulingensis** B.Liu & S.Blanco in B.Liu et al. 2017a

**Melosira asiatica** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Muelleria pseudogibbula** Q.Liu & Q-X.Wang in Liu et al. 2018

**Navicula craticuloides** Li & Metzeltin in Gong et al. 2015

**Navicula gongii** Metzeltin & Li in Gong et al. 2015

**Navicula ignorata** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula salinarum** f. *gracilis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula subocculata** var. *parallelistriata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula wangii** Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula wangii** f. *constricta* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula wangii** var. *obtusa* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula wangii** var. *subcapitata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

**Navicula seposita** var. *major* Chen & Zhu in Zhu and Chen 2000

**Navicula subtilissima** var. *paucistriata* Chen & Zhu in Zhu and Chen 2000

**Navicula yunnanensis** Li & Metzeltin in Gong et al. 2015

**Neidiomorpha sichuaniana** Q.Liu, Q-X.Wang & Kociolek, in Q.Liu et al. 2014a

**Neidium angustatum** Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017

**Neidium apiculatooides** Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017

**Neidium avenaceum** Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017

**Neidium bacillum** Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium chenii Y.Liu & Kociolek in Y.Liu et al. 2014a
Neidium convexum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium dicephalum Q.Liu, Q.X.Wang & Kociolek in Liu et al. 2017
Neidium hitchcockii var. obliquestriatum f. densestriatum Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Neidium lacusflorum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium ligulatum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium limuae Y.Liu & Kociolek, 2014 in Y.Liu et al. 2014a
Neidium qia Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium rostellatum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium rostratum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium suboblongum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium suoxiyuae* Y.Liu & Kociolek in Y.Liu et al. 2014a
Neidium tibetianum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium tibeticum* Y.Liu & J.P.Kociolek in Y.Liu et al. 2014a
Neidium tortum Q.Liu, Q-X.Wang & Kociolek in Q. Liu et al. 2017
Neidium triundulatum Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Neidium zhiui* Y.Liu & J.P.Kociolek in Y.Liu et al. 2014a
Neidium zoigeaem Q.Liu, Q-X.Wang & Kociolek in Q.Liu et al. 2017
Nitzschia acuta var. argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia angustata var. dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia apiculata var. latostriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia fonticola var. acuta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia gracilis var. minuta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia hastata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia hastata var. obtusa Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia hastata var. parallelistriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia intermedia var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia kalganica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia linearis var. robustior Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia obtusa var. minuta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia parvula var. recta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia recta var. lanceolata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia recta var. tenuirostris Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia sheshukowae Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia sinuata var. undulata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia tryblionella f. obtusiuscula mongolica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia tryblionella var. tungtingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia tungtingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nitzschia wangtzianii Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Nupela major P.Yu, Q-M.You & Kociolek in Yu et al. 2017
Oricymba rhynchocephala Zhang & Kociolek in Zhang et al. 2018c
Oricymba tianmuensis Zhang & Li in Zhang et al. 2015
Oricymba xianjuensis Zhang & Kociolek in Zhang et al. 2016a
Pinnularia amurensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia appendiculata var. densestriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia balfouriana var. brevicostata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia aquaedulcis Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018
Pinnularia borealis var. densestriata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia braunii var. angustata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia braunii var. curta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia ceylonica var. costulata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia ceylanica var. gigantea Skvortzov, 2012 (original description)
Pinnularia composita Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia composita var. acuta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia composita var. distincta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia composita var. linearis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia dactylus var. convergentissima Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia dactylus var. mingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia dactylus var. semitropica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia clavata Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia crater-lapis Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia daerbinsis Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia dicephala Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia distans Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia elliptica Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a, accepted as Pinnularia palidis Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018
Pinnularia episcopalis var. mingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia gibba var. mingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia gibba var. lata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia gigantea Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia gigantea var. interrupta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia gigantea var. minor Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia hartleyana var. amurensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia gracile Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia hemiptera var. longilineata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia interrupta var. tungtingiana Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia jao Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia kolbei Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia kraskei Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia kraskei var. latior Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia lacushankae var. convergenda Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
Pinnularia lata var. amurensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012
*Pinnularia* *lata* var. *linearis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *legumen* var. *sinica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *liouniata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *major* var. *sinica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *meisteriana* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *montium* Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018a

*Pinnularia* *palidis* Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018a

*Pinnularia* *paliobducta* Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018a

*Pinnularia* *paludosa* Y.Liu & Q-X.Wang, 2010 in Y.Liu et al. 2010b

*Pinnularia* *parallela* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a, accepted as

*Pinnularia* *shii* Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018a

*Pinnularia* *parvulum* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a

*Pinnularia* *platycephala* var. *nipponica* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *polyonca* var. *nipponica* f. *australis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *pseudosinistra* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a

*Pinnularia* *qii* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a

*Pinnularia* *rectangularis* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a

*Pinnularia* *shii* Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018a

*Pinnularia* *sinicorum* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *stauroptera* var. *mingiana* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *stauroptera* var. *rostrata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *streptoraphe* var. *argunensis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *streptoraphe* var. *tumida* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *subcapitata* var. *mingiana* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Pinnularia* *subaldenii* Q-X.Wang & Y.Liu, 2010 in Y. Liu et al. 2010b

*Pinnularia* *subbrebissonii* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a

*Pinnularia* *submicrostauron* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a, accepted as

*Pinnularia* *aquaedulcis* Y.Liu, Kociolek & Q-X.Wang in Kociolek et al. 2018

*Pinnularia* *subnotabilis* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a

*Pinnularia* *subobserva* Y.Liu, Kociolek & Q-X.Wang in Y.Liu et al. 2018a
Pinnularia subsalaris var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Pinnularia tabellaria var. sinica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Pinnularia tschangbaishanica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Pinnularia subsinistra Y.Liu, Kociolek & Q.X.Wang in Y.Liu et al. 2018a, accepted as Pinnularia paliobducta Y.Liu, Kociolek & Q.X.Wang in Kociolek et al. 2018

Pinnularia wuyiensis Zhang et al. 2016

Pinnularia xianhensis Y.Liu, Kociolek & Q.X.Wang in Y.Liu et al. 2018a

Pinnularia zebra Y.Liu, Kociolek & Q.X.Wang in Y.Liu et al. 2018a

Placoneis sinensis Y.Li & D.Metzeltin in Gong et al. 2013

Platesa guangzhouae Y.Li & Kociolek in Y.Liu et al. 2014b

Pliocenaenia changbaianensis Stachura-Suchoples and Jahn 2009

Prestauroneis lowei Liu, Wang & Kociolek, 2014

Prestauroneis nenwai Liu, Wang & Kociolek, 2014

Psammothidium hainanii Kociolek & Y.Liu, in Liu et al. 2014

Rhopalodia gibba var. dalaica Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Rhopalodia pseudogibba Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Rhopalodia pseudogibba var. arcuata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Rhopalodia pseudogibba var. pseudoventricosa Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Stauroneis javanica var. truncata Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Stenopterobia recta Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Stephanodiscus argunensis Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Stephanodiscus argunensis var. simple Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Stephanodiscus hustedti Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

Sellaphora constrictum Kociolek & Q-M.You in Q-M.You et al. 2017a

Sellaphora sinensis Y.Li & Metzeltin in Y.Li et al. 2013

Sellaphora yunnanensis Y.Li & Metzeltin in Y.Li et al. 2013

Sellaphora yunnanensis Y.Li in Y.Li et al. 2010c

Sellaphora fuxianensis Y.Li in Y.Li et al. 2010a

Sichuania Y.Li, H. Lange-Bertalot & D. Metzeltin, 2009 accepted as Sichuaniella Li Yanling, Lange-Bertalot & Metzeltin, 2013

Sichuania lacustris Y.Li, H.Lange-Bertalot & D.Metzelin, 2009
**Sichuaniella** Y.Li, Lange-Bertalot & Metzeltin, 2013

*Sichuaniella lacustris* (Y.Li, Lange-Bertalot & Metzeltin) Y.Li, Lange-Bertalot & Metzeltin, 2013

*Simonsenia maolaniana* Q-M.You & Kociolek, in Q-M.You et al. 2016

**Sinoperonia** Kociolek, Y.Liu, Glushchenko & Kulikovskiy in Y.Liu et al. 2018b

*Sinoperonia polyraphiamorpha* Kociolek, Y.Liu, Glushchenko & Kulikovskiy in Y.Liu et al. 2018b

*Staurosira lacusvulcani* P.Rioual, 2013

*Staurosira longwanensis* P.Rioual, Morales & Ector, 2014

*Surirella angustata var. apiculata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Surirella tientsinensis var. striolata* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Surirella wulingensis* B.Liu & Ector in B.Liu et al. 2019c

*Synedra amoyensis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Synedra arguinensis* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Synedra chungii* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Synedra sinica var. recta* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Synedra tenera var. subtenera* Skvortzov ex Gololobov & Kulikovskiy in Kulikovskiy et al. 2012

*Synedra ulna var. repanda* Wang & You in You et al. 2008

*Tabularia sinensis* Cao et al. 2018

**Tibetiella** Y.Li, D.M.Williams & D.Metzeltin, 2010d

*Tibetiella pulchra* Y.Li, D.M.Williams & D.Metzeltin, 2010d

*Ulnaria dongtingensis* B.Liu in B.Liu et al. 2019b

*Ulnaria gaowangjiensis* B.Liu & D.M.Williams in B.Liu et al. 2017

*Ulnaria jinbianensis* S.Blanco & B.Liu in B.Liu et al. 2019b

*Ulnaria oxybiseriata* D.M.Williams & B.Liu in B.Liu et al. 2019b

*Ulnaria rhombus* D.M.Williams in B.Liu et al. 2019a

*Ulnaria sinensis* B.Liu & D.M.Williams in B.Liu et al. 2017

*Ulnaria ulnabiseriata* D.M.Williams & B.Liu in B.Liu et al. 2017

*Ulnaria wulingensis* B.Liu in B.Liu et al. 2019a

*Urosolenia subtenuis* Kociolek & Y.Liu in Y.Liu et al. 2016

*Urosolenia truncata* Y.Liu & Kociolek in Y.Liu et al. 2016

*Urosolenia yalongii* Kociolek & Y. Liu in Y.Liu et al. 2016