



New *Gomphoneis* Cleve (Bacillariophyceae: Gomphonemataceae) species from Xinjiang Province, China

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Abstract

Eight new species of the diatom genus *Gomphoneis* Cleve from Xinjiang Province of northwest China are described. Observations were made using light and scanning electron microscopy, documenting the morphological diversity of the taxa, all of which are part of the *G. elegans* lineage, and lack isolated stigmoids. Five of the new species (*Gomphoneis pseudosubtiloides*, *G. xinjiangiana*, *G. basiorobusta*, *G. stoermeri* and *G. distorta*) have porelli in the apical pore fields organized into two rows, similar to the organization of the striae areolae. Three species (*G. subtiloides*, *G. qii* and *G. rostratoides*) have porelli of similar size, shape and organization to the areolae, supporting the interpretation that the apical pore fields in this group are condensed striae. The species from Xinjiang Province appear morphologically similar to taxa from the Balkans of Europe, and may be part of a wide continuum of distribution between that region and western North America. This is only the second report on *Gomphoneis* from Xinjiang Province. A number of taxa similar to the new species described herein, and related to *Gomphoneis olivacea*, are also considered. As a consequence, the total number of *Gomphoneis* taxa from China is greater than previously recognized.

Key words: diatoms, Bacillariophyceae, *Gomphoneis*, China, new species, Xinjiang Province, taxonomy

Introduction

There has been a long history of the study of freshwater gomphonemoid diatoms *sensu* Kociolek and Stoermer (1988a) from China. Most effort has focused on the genus *Gomphonema* Ehrenberg (1832: 87) and reports from China date back to Ehrenberg (1854). Since that time, species of *Gomphonema* from China have been described and treated by many others, including researchers from within and outside of China. Some of the earliest accounts are by Mereschkowsky (1906), who described three taxa from Tibet, Skvortzow (1930a, b, 1935, 1937, 1938a, b, c, d), who examined a variety of different habitats and locations in the eastern part of the country (detailed in Williams & Reid 2001: 91–94), and Hustedt (1922) who described one species, *Gomphonema hedinii* Hust. (1922: 138). In the 1990s a spate of work occurred starting with studies by Bao & Reimer (1992), Bao *et al.* (1992), Kociolek (1992), Fan *et al.* (1997, 1998, 2004), Li *et al.* (1999), Li *et al.* (2003), culminating in an overview by Shi (2004). More recently, species have been described by Jüttner *et al.* (2004) from nearby in the Himalayas and by Reichardt (2009) from Siberia.

Understanding of the genus *Gomphoneis* Cleve (1894: 73) from China is less extensive. In his overview, Shi (2004) listed only two species: *G. olivaceoides* (Hust. 1950: 397) Carter (in Carter & Bailey-Watts 1981: 566) and *G. quadripunctata* (Østrup 1908: 85) Dawson (ex Ross & Sims 1978: 162): no other species have been reported from China. While several species of *Gomphoneis* have been illustrated from the region (Tuji 2005), others have referred them to *Gomphonema*, following Krammer & Lange-Bertalot (1986, 1991; e.g. Reichardt 2009, Li *et al.* 2007, Lange-Bertalot & Genkal 1999). Kociolek and Stoermer (1989, 1993) demonstrated in a formal phylogenetic analysis that *Gomphoneis* is monophyletic and distinguished from