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The diatom genus *Gomphonema* Ehrenberg in Lake Baikal. II. Revision of taxa from *Gomphonema acuminatum* and *Gomphonema truncatum-capitatum* complexes

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Abstract

We document the diversity of diatom taxa from the *G. acuminatum* and *truncatum-capitatum* species complexes in Lake Baikal using light and scanning electron microscopy. This investigation revealed four species new to Science, namely *G. pseudacuminatum sp. nov.*, *G. microlaticollum sp. nov.*, *G. paracapitatum sp. nov.*, and *G. microcapitatum sp. nov*. In addition, we consider seven previously described species that are part of these 'typical *Gomphonema'* complexes. Some of the taxa treated here were previously observed from other regions, especially from Mongolia. These data show a wide distribution of species from these complexes in waterbodies of Central Asia, and confirm the presence of some cosmopolitan taxa within Lake Baikal.

Key words: Bacillariophyceae, new species, *Gomphonema*, *Gomphonema acuminatum*, *Gomphonema capitatum*, morphology, systematics, taxonomy, Lake Baikal

Introduction

In early treatments of the diatoms from Lake Baikal, Skvortzow & Meyer (1928), Skvortzow (1937) and Meyer (1930) reported about 40 specific and infraspecific taxa from the genus *Gomphonema* Ehrenberg (1832: 87). Some of the discussed taxa have been shown to belong to the genus *Gomphoneis* Cleve (Kociolek *et al*. 2013). About twenty specific and infraspecific *Gomphonema* taxa were described as new for Science from Lake Baikal, and some of them considered as endemics (Skvortzow & Meyer 1928, Skvortzow 1937, Kulikovskiy & Kociolek 2014). Skvortzow & Meyer (1928) also reported some very common taxa from the genus *Gomphonema* in Lake Baikal that also have a wide distribution in the Holarctic, such as *Gomphonema acuminatum* Ehrenberg (1832: 88), *G. acuminatum* f. *pusillum* ('*pusilla*') Grunow in Van Heurck (1880: 23), f. *coronatum* ('*coronata*') (Ehrenberg 1840: 211) Cleve (1894: 184) and f. *brebissonii* (Kützing 1849: 66) Cleve (1984: 184). Meyer (1930) had reported from Lake Baikal *G. acuminatum*, *G. acuminatum* var. *pusillum* (Grunow in Van Heurck 1880: 23) Cleve (1894: 184), var. *coronatum* (Ehrenberg 1840: 211) Rabenhorst (1864: 260), f. *brebissonii*, and var. *elongatum* (W. Smith) Rabenhorst (1864: 290), *G. constrictum* var. *capitatum* (Ehrenberg) Grunow (1880: 23), taxa with wide distributions. These reports of common *Gomphonema* species in Lake Baikal were presented without illustrative documentation.

Taxonomic instability of some groups of *Gomphonema* species, including *G. acuminatum* and *G. truncatum-capitatum* complexes, was noted in Krammer & Lange-Bertalot (1986). Later on, Reichardt (1999, 2001) published revisions of species from these interesting groups.

Taxa from the *G. acuminatum* complex are characterized by valves being gibbous in the center and biconstricted, presence of an apiculate apex at the headpole, footpole narrow and rounded, striae uniseriate with areolae externally closed by characteristic reniform flaps (foriculae *sensu* Cox), and the presence of one stigma (Reichardt 1999, Cox 2004). According to Reichardt (1999) this complex includes *G. coronatum* Ehrenberg (1840: 211), *G. acuminatum*, *G. acuminatum* var. *pusillum*, *G. brebissonii* Kützing (1849: 66), *G. interpositum* Reichardt (1999: 47), *G. pseudopusillum* Reichardt (1999: 48) and *G. angusticephalum* Reichardt & Lange-Bertalot in Reichardt (1999: 49). Taxa from the *G.*

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