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A new species of the genus *Mallomonas* (Chrysophyceae: Synurales), *Mallomonas kuzminii sp. nov.*, from lake Frolikha (Russia, Baikal region)

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Abstract

Mallomonas kuzminii sp. nov. is described from an oligotrophic lake located in Russia, East Siberia, Northern Baikal region. The description is based on silica-scale morphology studied by means of transmission and scanning electron microscopy. This new species belongs to the section *Mallomonas* and has several types of scales with or without dome. The form of the scales, the strongly hooded V-rib, and a dome with ribs surrounded by the extensions of the anterior rib, are the main features which distinguish this new taxon from the other species of the section.

Introduction

The genus *Mallomonas* Perty (1852: 170) currently comprises about 180 species and infraspecific taxa (Kristiansen & Preisig 2007). Recently, few more taxa have been described including species from Asia (Kim & Kim 2008, 2010, Voloshko 2009, Gusev 2012, Ma & Wei 2013, Jo *et al.* 2013). However, the flora of synurophycean algae in this huge region is still poorly studied. In Asian Russia investigations have been conducted in Polar Urals (Voloshko 2009, 2010), Taymyr Peninsula (Kristiansen *et al.* 1997), Enisey River basin (Balonov & Kuzmina 1986), Magadanskaya Oblast (Kuzmin & Kuzmina 1986, 1987), and Lake Baikal (Vorobyova *et al*. 1992). As a result, several new taxa have been described like *Mallomonas striata* var. *getseniae* Voloshko (2009: 1073), *Mallomonas striata* var. *balonovii* Voloshko (2009: 1071) and *Synura petersenii* f. *taymyrensis* Kristiansen in Kristiansen *et al.* (1997: 347). Lake Baikal is a unique region with a very diverse algal flora, including many endemic species (Kulikovskiy *et al.* 2012, 2013, Genkal *et al.* 2008). Surrounding area is full of mountain lakes and one of them, Lake Frolikha, has been studied in this paper. It is situated in the Northern Baikal region, 8 km to the east from Lake Baikal. The lake is located in the Severo-Baikal'skiy Rayon of the Republic of Buryatiya, at the north-eastern shore of Lake Baikal, 40 km from the settlement Nizhneangarsk and 45 km from the city Severobaikal'sk. Lake Frolikha is oligotrophic, has a glacial origin and it is joined to Lake Baikal by river Frolikha (Kozhov, 1950).Three major rivers (streams), Left Frolikha, Davatchanda and Right Frolikha, inflow into the lake from mountains. Lake water surface area is 16.5 km^2 and the maximal depth is about 78 m. Water mineralization is quite low (13.1–14.3 mg/l) and pH varies from 6.5 to 7.1. Lake Frolikha and its surrounding area belong to the Barguzinskiy State Biosphere Reserve. Previously, only a few investigations on algae have been conducted, focused mainly on diatom flora (Kozhov 1950, Skabitschevsky 1953, Kuzmina *et al.* 2004). During our investigations of synurophycean algae in the lake, one new species for science was found and its description given below.

Materials and methods

Samples were collected in July 2012 from the surface sediment layer using a microbenthometer C-1 at depths from 3 to 5 m in Okunyoviy Bay (from 55° 26' 31" N, 109° 59' 56" to 55° 26' 10" N, 110° 0' 35" E), from 15 to 30 m in the central part of Frolikha Lake (from 55° 26' 14" N, 110° 1' 14" to 55° 26' 15" N, 110° 1' 16" E) and near the outlet (55° 27' 2" N, 109° 58' 37" E), river Frolikha. Plankton samples were taken using a plankton net (mesh size: 24 µm) and fixed with Lugol solution. For electron microscopy studies, an aliquot of each sample was cleaned by repeated centrifugations in

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