

## REVISION OF THE GENUS *MASTOGLOIA*, SECTION SULCATAE THROUGH ELECTRON MICROSCOPY

Chiara Pennesi<sup>1</sup>, Michel Poulin<sup>2</sup>, Mario De Stefano<sup>3</sup>, Tiziana Romagnoli<sup>1</sup> & Cecilia Totti<sup>1</sup>

<sup>1</sup>Department of Life and Environmental Sciences, Università Politecnica delle Marche

<sup>2</sup>Research & Collections, Canadian Museum of Nature

<sup>3</sup>Department of Environmental Sciences, 2<sup>nd</sup> University of Naples

The genus *Mastogloia* Thwaites ex Smith includes a number of species living as epiphytes on seaweeds and seagrasses. The genus is highly speciose and quantitatively significant in benthic communities. It has a tropical to temperate worldwide distribution and is one of the largest diatom genera.

*Mastogloia* is the only diatom genus characterized by a specialized valvocopula that develops into a series of hollow chambers or partecta attached to each other to form a well-developed partectal ring running along the inner side of the girdle band. Hustedt (1933) has divided this genus into 11 sections of which one comprising the freshwater species.

The section Sulcatae has distinct external valve features including a variously shaped, elongated median depression between the raphe-sternum and the valve margin, siliceous outgrowths (i.e., conopeum, pseudoconopeum, ribs and ridges) and deflected or sinuous raphe branches. Internally, the valve face shows a lateral sterna and partecta with different size and shape.

In this study, we present new ultrastructural details on the frustules of 11 species of *Mastogloia*, section Sulcatae: *M. baldjikianae* Grunow, *M. borneensis* Hustedt, *M. hustedtii* Meister, *M. mediterranea* Hustedt, *M. umbra* Paddock & Kemp, *M. cannii* Kemp & Paddock, *M. depressa* Hustedt, *M. exilis* Hustedt, *M. jelineckii* (Grunow) Grunow, *M. macdonaldii* Greville, *M. pisciculus* Cleve, including three new taxa (*M. neoborneensis* Pennesi & Totti, *M. oculoides* Pennesi & Poulin and *M. sergiana* Pennesi & Poulin). Specimens were collected from seagrasses and seaweeds in tropical (Siladen Island, Celebes Sea, Indonesia and Phú Bài, China Sea, Vietnam), subtropical (Sharm el-Sheikh, Red Sea, Egypt) and temperate (Patmos Island, Aegean Sea, Greece) regions. We propose a revision of the Hustedt's Sulcatae section by dividing it in two subgroups: (1) one with a median depressions on the external valve surface between the raphe-sternum and the margin, and variably developed siliceous outgrowths (i.e., conopeum and pseudoconopeum) covering the depressions to various degrees; (2) the other lacking a developed conopeum or pseudoconopeum which covers the median depression.