

## MELOSIRA VARIANS – A TRUE COSMOPOLITAN FRESHWATER DIATOM SPECIES OF LOW MOLECULAR AND MORPHOLOGICAL DIVERSITY?

Holger Zetzsche<sup>1</sup>, Nélida Abarca<sup>1</sup>, Evgeny Gusev<sup>2</sup>, Maxim S. Kulikovskiy<sup>2</sup> & Regine Jahn<sup>1</sup>

<sup>1</sup>Botanic Garden und Botanical Museum Berlin-Dahlem, Freie Universität Berlin

<sup>2</sup>Department of Algology, Papanin's Institute for Biology of Inland Waters, Russian Academy of Sciences

Knowledge about cosmopolitanism versus endemism of widespread diatom species remains rather limited, due to a lack of analyses of the intraspecific morphological and genetic variation as well as biogeographical patterns of single species. Here we studied the molecular and morphological variation of the 'radial centric' freshwater diatom *Melosira varians* C.AGARDH (Bacillariophyceae) based on 13 strains from its global distribution range. Colonies of *M. varians* have been isolated of lakes and rivers from Faroe Islands, Spain, Germany, European and Asian Russia, Vietnam, Korea, and South Africa. Genetic differentiation among strains was investigated using the *rbcl* pp, the 18S V4 marker and the ITS1-5.8S-ITS2 rDNA region. Quantitative and qualitative morphological characters among strains were compared statistically. It was furthermore determined whether the populations of the taxon demonstrate any correlation between geographic, morphological or genetic distance. The data support some nuclear genetic diversity and a high conformity on the chloroplast level. The findings furthermore indicate that *M. varians* is a true cosmopolitan freshwater species with a stronger biogeographic separation between eastern and western populations in Eurasia and lesser North-South variation among populations from Faroe Islands, Europe and South Africa. Furthermore, a recognized morphodeme or DNA barcode (18S V4, resp. *rbcl* pp) of *M. varians* can be used as a proxy for the species in phylogenetic and biodiversity assessments as well as in biomonitoring of freshwater quality.