The changes of the diatom assemblages structure recorded in the limnic sediments of Żabińskie Lake during the last century

DAMASZKE M., WITAK M.
Institute of Oceanography, University of Gdańsk, Poland, Piłsudskiego 46, 81-378 Gdynia, email: ocemda@ug.edu.pl, ocemaw@univ.gda.pl

The aim of study was investigate changes in the species composition of diatom flora preserved in the varved sediments from the last century including human impact. This study constitute a part of Polish – Swiss Project CLIMPOL (Climate of northern Poland during the last The age of sediments was calculated using varvochronology methods.

The study area (54°07'54.5" N; 21°59'01.1" E; 120 m a. s. l.) is situated in the NE Poland in the northern part of the Masurian Lakeland. As a dimictic lake during every summer (May-October) water are stratified and divides into three distinct vertical strata (epilimnion, metalimnion and hypolimnion). In winter months (January-March), the lake is covered by ice and inversely stratification appears. Spring and autumn water column mixes from the surface to the bottom. The Żabińskie Lake is highly eutrofic lake with low water transparency and pH of water in hypolimnion ranges from 6.9 to 8.0.

The sediment samples for diatom analysis were taken at each varve. The diatom samples were prepared according to the standard methods (Battarbee 1986) and performed using a NIKON microscope, using a 100x oil immersion objective. This method requires the identification of at least 500 diatom frustules in each sample and the calculation of their percentage. All identified taxa was classified according to their ecological preferences such as: habitat (benthic, planktonic), pH of water (alkalibiontic, alkaliphilous, indifferent, acidophilous, acidobiontic), trophy (eutrophentic, mesoeutrophentic, mesooligotrophentic, oligotrophentic, dystrophientic), saprobity (polysaprobous, α-mesosaprobous, β-mesosaprobous, oligosaprobous, saproxenous). The most interesting phenomenons is so-called "anthropogenic assemblage" represented

by benthic taxa (*Cyclotela menghiniana, Hipodonta capitata, Ulnaria ulna, Tabellaria flocculosa*) andplanktonic forms (*Cyclotela atomus, Stephanodiscus hantzschi, S.medius, S.parvus*). There aremainly represented eutrophent andα-mesosaprobous species.

Diatom assemblage preserved in the sediments of Żabińskie Lake is represented by oligohalobous halophobous and indifferent species. The human impact is well documented of Żabińskie Lake on a structure of diatom assemblage. Modern diatom assemblages prefer nutrient rich waters (eutraphentic, meso-eutraphentic), e.g. *Aulacoseiragranulate* and *A. islandica*, and pollution-tolerant taxa (α- β-mesosaprobous, polysaprobous) represented by *Amphora* spp., *Cocconeis* spp. In a sample (age based on varvochronology 1998), *Aulacoseira* spp. accounted about ecological groups is noticeable, which demonstrates significant limnological changes in the past.