

S05-P-03 Human impact and eutrophication trends during the past 250 years recorded in varved sediments of Żabińskie Lake (the Masurian Lakeland, Northern Poland)

Witak Małgorzata

Institute of Oceanography, University of Gdańsk, Poland

E-mail: ocemaw@univ.gda.pl

The upper part of sediment core from Żabińskie Lake (the Masurian Lakeland, Northern Poland) covering the last 250 years was analysed for diatoms. Żabińskie Lake is a dimictic, highly eutrophic lake with low water transparency and pH of water in hypolimnion ranges from 6.9 to 8.0. The sediment samples for quantitative and qualitative 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. All identified taxa were classified according to their ecological preferences such as: habitat (benthic, planktic), pH of water (alkalibiontic, alkaliphilous, indifferent, acidophilous, acidobiontic), trophic (eutraphentic, eu-mesotraphentic, mesotraphentic, meso-oligotraphentic, oligotraphentic, dystraphentic), saprobity (polysaprobous, α -mesosaprobous, β -mesosaprobous, oligosaprobous, saproxenous). A total of 246 species, subspecies and forms belonging to 52 genera were observed in the core. Diatom taphocoenoses were dominated by planktic alkaliphilous, mostly eutraphentic forms. The major components were *Asterionella formosa*, *Aulacoseira ambigua*, *A. granulata*, *A. islandica*, *Cyclostephanosdubius*, *Cyclotella bodanica*, *C. radiosa*, *C. polymorpha*, *Stephanodiscus binderanus*, *S. medius*, *S. minutulus*, *S. neoastrea*, *S. parvus* and *Tabellaria flocculosa*. A characteristic feature of the diatom assemblage preserved in clayey sediments is the highly variable abundance of mentioned taxa, particularly *A. ambigua* (0-65%), *S. minutulus* (0-65%) and *T. flocculosa* (0-69%). These taxa achieved maxima in the '70s and '90s of the twentieth century, which is clearly connected with anthropogenic influence. The absolute abundance of diatom valves per gram dry sediment in this part of core ranging from 2 to 12 x 10⁸.

Keywords: Diatoms, Eutrophication, Human impact, Laminated lake sediments, Northern Poland