

Lake and peat deposits are an archive recording changes taking place in the natural environment, including hum-environment relationships, in the past. Remains of different groups of plants and animals protected in organic deposits are the result of a response to such factors as climatic conditions, especially the sum of rainfall and variability of air temperature, as well as hydrological changes. Also, human activity has a strong impact on peat bogs and lakes, among others, through: agriculture, deforestation, forest fires, melioration, peat exploration, and the incorrect land use causing excessive erosion and air pollution.

The Serteya peat bog (55°40'N; 31°30' E) is located in the Western Dvina Lakeland part of the East European Plain. It lies in the temperate climate zone characterised by high dynamics of weather changes, which strongly impacts plants covering the area. Additionally, it is located near the boundary of biomes, which means that it constitutes a perfect site for tracking the plants succession in Eastern Europe. The researched object belongs to the kettle hole peat bog type, which is created in a small deep depression left after the melting of ice blocks of the last glaciation. The unique feature of this reservoir is the thickness of organic deposits filling, reaching a depth of 13.5 m. Preliminary absolute dating of the material indicates that the average rate of biogenic sediment accumulation in the reservoir was 1 m per 1000 years and the whole core bears 13 thousand years of the natural history of that area.

The main purpose of our research is a detailed reconstruction of the lake and later peat bog development during the Holocene with the use of subfossil invertebrate remains: testate amoebae, Cladocera, and Chironomidae. As well as the history of plant cover and human impact with the use of pollen, plant macro-remains, and Diatom analyses. In addition, the research will allow us to trace factors which have caused the transformation of a lake system into a bog system based on results from testate amoeba, palynological and geochemical analyses. The reconstruction of the fluctuations in the paleoclimatic parameters, mainly the year sum of precipitation, average air temperature and continental index, allows for the reconstruction of hydroclimatic conditions in the Western Dvina Lakeland.

Central and mostly Eastern Europe is the area where palaeoecology is still poorly explored. The obtained detailed results concerning the palaeoenvironmental evolution taking place due to climatic changes and human impact will allow us to contribute to the discussion on global climate change.