



Transformation of wetlands in the NE part of the Tuchola Pinewoods over the last 200 years on the basis of cartographic materials

Sebastian Tyszkowski and Halina Kaczmarek

Institute of Geography and Spatial Organization Polish Academy of Sciences, Department of Environmental Resources and Geohazards, Toruń, Poland (sebtys@wp.pl)

Transformation of wetlands is conditioned by climatic, geological, hydrological and biotic as well as anthropogenic factors. Dynamic changes in lake and river systems in Northern Poland occurred at the time of the dead ice blocks melting and permafrost decay. Over the following periods of time, these changes tended to be more evolutionary. The disappearance of lakes and formation of wetlands occurred in the process of slow shallowing by filling lake basins with biogenic sediments. Only in the last few hundred years the process has been disturbed and significantly remodelled by human activity. A particularly important role was played by reclamation which led to the drainage of many wetlands and disappearance of lakes. Draining of wetlands has led to an increase in the participation of birch, oak, maple and hornbeam in the stands which in turn might have led to a change in sedimentation in water bodies. Furthermore, due to mineralisation of peat some micro- and macroelements have become available to plants and incorporated back into circulation in the ecosystem. The goal of the research is to determine the direction and rate of change of wetlands over the last 200 years in the selected test area around Lake Czechowskie in the Tuchola Pinewoods. The study area is located in northern Poland, within the Weichselian glaciation. From earlier studies it is known that in this area over the last 200 years the biggest changes resulted from massive tree felling between the end of the eighteenth century and mid-nineteenth century. At the same time since the mid-eighteenth century, in this area very intensive reclamation works were carried out whose main objective was to convert peatlands into meadows. The biggest changes caused by land reclamation took place between mid-nineteenth and early twentieth century. At the same time, this area was abundant in dams and water mills. This study is based on historical and contemporary maps, including the following: Schrötter-Engelhart, Karte von Ost-Preussen nebst Preussisch Litthauen und West-Preussen nebst dem Netzdistrict, 1:50 000, 1796-1802; Messtischblatt, 1:25 000, (mapping conducted in 1874), the WIG map, 1:25 000 (Military Geographical Institute), 1931-33; topographic map from 1970; aerial photos at 1964, 1969; 1987; 1997; aerial orthophotomap, 1:5000, 2010. The obtained results can be used to correlate sedimentological changes in lacustrine sediments with the trends in landscape changes over the past 200 years. This study was supported by the Virtual Institute of Integrated Climate and Landscape Evolution (ICLEA) of the Helmholtz Association and the research project no. 2011/01/B/ST10/07367 of the Polish Ministry of Science and Higher Education.