

SUMMARY

Active protection of threatened lake ecosystems of Północnopodlaska Lowland: the Wiejki Lake study case

The aim of the work was to illustrate characteristics of the natural resources and the evaluation of the small mesotrophic Wiejki Lake situated in Gródecko-Michałowska Basin (Północnopodlaska Lowland, north-eastern Poland). The lake is one of only four such objects located in this part of the Polish Lowland. In this article, influence of lowering of groundwater levels and anthropogenic use on the lake vegetation in the period between 1953 and 2003 are also presented. Changes in natural environment surrounding the Wiejki Lake are described on the basis of aerial photographs and phytosociological records.

In the past the lake occupied a considerably larger area, what is reflected in a mineral and organic gyttja layer a few metres thick occurring in the bottom of organic deposits (Fig. 2). Low birch-willow thickets (*Betula humilis*-*Salix rosmarinifolia* community) and moss-sedge associations mostly determined the earlier vegetation of the lake. At present in the surroundings of the Wiejki Lake, seven plant communities are distinguished: *Equisetetum fluviatilis*, *Caricetum rostratae*, *Caricetum diandrae*, *Salicetum pentandro-cinereae*, *Thelypterido-Betuletum*, *Ribeso nigri-Alnetum* and dominant *Festuca rubra* communities. They create distinct zones around the water level mark (Fig. 4). Sites of shrubby birch *Betula humilis* listed in *Polish Red Data Book of Plants* and additionally three plant species strictly protected in Poland (*Drosera rotundifolia*, *Dactylorhiza maculata*, *Dactylorhiza incarnata*) were found in vicinity of the lake.

In the natural environment of the Wiejki Lake, significant changes of vegetation were affirmed in the course of last 50 years. They are: forming of reed-mace *Typha latifolia* concentrations in littoral zone, narrowing of sedge and moss-sedge communities zones as well as encroaching of grey willow *Salix cinerea* to rush and sedge phytocoenoses (Fig. 3, 4). Birch-willow tickets were replaced by birch-alder forests *Thelypterido-Betuletum* and cultivated wet meadows. The overall water surface area has not changed in this period, however deepness of the lake has decreased to about 1,5 m. These changes are directly connected with thorough drainage made in the middle of the 1980s.

The outcome of the work is to define a protection plan of the Wiejki Lake in which indispensable methods of nature conservation were specified. It provides for: rising of ground water level, elimination of drainage ditches, reintroduction of Lapland willow (*Salix lapponum*) and the removal of shrubs and trees in order to preserve sites of *Betula humilis* (Fig. 3). Finally, a change of the protection status of the object from ecological area to nature reserve is suggested