

Influence of a Multi-Year Artificial Aeration of a Lake Using Destratification Method on the Sediment-Water Phosphorus Exchange – Renata Brzozowska, Helena Gawrońska

Summary

The research was conducted in a relatively small (26.8 ha) but quite deep (17.3 m) Lake Długie in Olsztyn, Poland. For over 20 years the lake was collecting sewage which eventually caused its complete degradation. In 1987–2000 the lake was restored using the artificial aeration method with destratification of water. The results showed that the artificial aeration effectively limited the internal loading. Application of this restoration method resulted in reduction of phosphorus compounds concentrations in the analyzed water strata. The decrease of TP in bottom sediments (to the level of 3–4 mg P g⁻¹ DW) was probably associated with the fact that a new layer of sediments was created, reflecting a change in the aquatic conditions caused by the restoration. The investigations conducted in the reference years showed that the changes were not permanent. A high concentration of phosphorus compounds in bottom sediments, low sorptive capacity and a tendency to oxygen deficiency, indicate that further possibility to decrease the amount of phosphorus compounds in the lake by this restoration method is limited.