

Summary

This study undertakes a range of issues associated with the importance of water in rural landscape, small water retention, Framework Water Directive, hydromorphological conditions of reservoirs, water quality assessment and monitoring as well as reclamation of water reservoirs.

The scientific objective of the dissertation was to evaluate the hydromorphological condition and ecological potentials of the water reservoir in Nienawiszcz situated in the commune of Rogoźno in Wielkopolska Voivodeship and to ascertain its significance for the development of biological and landscape biodiversity. The assessment included identification of aqueous and coastal plants dominant during the initial years of succession. The practical aim of the study was to demonstrate legitimacy for the construction of a reservoir in place of a eutrophicated post-glacial lake and possibilities of assuring good hydromorphological conditions of this reservoir.

Investigations were conducted in years 2000-2015 in three phases: prior to the construction of the water reservoir, during the construction of the reservoir and peat recovery as well as after completion of the reservoir construction. Field studies comprised: area and peat deposit inventory, measurements of atmospheric precipitation and temperature (Oregon Scientific WMR 200 weather station), macrophyte inventory (phytosociological method of BRAUN-BLANQUET 1964), measurements of water transparency (Secchi disk), peat exploitation, recording of pumped out water, measurement of water level (on water-level gauges), carrying out morphometric measurements of the reservoir, assessment of hydromorphological condition (LHS) and collection of the diatomaceous phytobenthos. Laboratory analyses included: peat and phytobenthos analysis as well as water physicochemical assays. The following indices were examined: soluble oxygen, BZT₅, ChZT, temperature, electrolytic conductivity, reaction, total phosphorus, phosphates, total nitrogen, ammonium ion, nitrates, nitrites, *a* chlorophyll, seston, zinc, copper, TOC, bacteria from the coli group and *Escherichia coli*. Water quality indices were obtained using standard methods in Aquanet S.A. laboratory in Poznań. Within the framework of small-scale work, the following jobs were undertaken: map analyses, preparation of documentation necessary to secure required

permissions and administrative decisions, preparation of the legal documents, water quality assessment for purposes of fish breeding (Ministry of Environment Decree of 2002) and suitability for bathing (Decree of the Ministry of Health 2011), degradation sensitivity (KUDELSKA et al. 1994), trophic state (Dz. U. 2002 No. 241, pos. 2093, OECD 1982, CARLSON 1997, ELLENBERG et al. 1992, TWARDY et al. 2003) ecological potentials (RDW(2000/60/WE), Ministry of Environment Decree of 2011), valorisation of natural environment (modified method of ILNICKI 1996) and landscape visual evaluation (with the assistance of Wejchert sensation curve CYMERMAN et al. 1988).

The obtained research results confirmed that advantageous morphological conditions of the constructed reservoir were ensured allowing achievement of the hydromorphological status corresponding to natural conditions. Ecological potentials of the water reservoir are good and it can be classified into class II. Water quality in the reservoir meets the criteria required in cyprinid fish breeding and human bathing. The investment contributed significantly to the diversification of rural landscape. The construction of the water reservoir in Nienawiszcz as well as the undertaken wide-ranging landscape operations constituted proper recultivation measures of this area. The investment project was realised in a place where once a post-glacial lake had existed and it fits perfectly into the assumptions of the Framework Water Directive, which emphasises the importance of small retention for water management improvement of EU member states.

