

Impact of dam reservoirs on fish parasites – preliminary studies

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Changes in river ecosystems or in their direct neighbourhood affect the occurrence and distribution of organisms and their parasites. Complex studies on the factors that affect the occurrence and geographical distribution of fish parasites along the course of the rivers have dealt only with the Tisa and Danube, and in Poland – with the Vistula and Odra. The results of this study clearly demonstrate that the problem of fish parasite distribution is complex and associated with natural and anthropogenic factors. The latter include hydrotechnical objects, e.g. dam reservoirs. Although artificial lakes disturb the river continuum, their impact on fish parasites has not been studied extensively. The main objective of the study was to trace differences in ichthyo-parasitofauna from above and below dam reservoir.

The studies were conducted from April 2017 to October 2018 in the Widawa River (right bank tributary of the Odra river, Poland). Six sampling sites were located along 32 km of the river: two above and four below of dam reservoir (Michalice Lake). Fish caught with electrofishing equipment and transported to laboratory in river water. Then, they were anesthetized in MS-222, measured (TL, mm), weighed (W, g) and subjected to full parasitological dissection. A total of 85 roach and 81 gudgeon were caught from above dam reservoir and 123 roach and 124 gudgeon from below.

Isolated parasites belonged to five higher taxa: Monogenea, Digenea, Cestoda, Nematoda and Acanthocephala. Results demonstrated statistically significant differences in the values of basic parasitological parameters of fish caught below and above the dam reservoir situated on the Widawa river. The overall prevalence of gudgeon and roach was higher below the dam reservoir (Tab. 1) (Chi2: gudgeons $p = 0.002$; roach $p = 0.005$). The average number of one of the most frequent taxa – ocular metacercariae (Diplostomum spp.) – in both species from downstream decreases with distance from the reservoir (Kruskal-Wallis: gudgeons $p<0.001$; roach $p<0.001$). Differences in the structure of ecto- and endoparasite assemblages as well as allo- and autogenic parasites in relation to the location of the dam reservoir were also discussed.

Table 1. Basic indices of infection for fish caught from above and below dam reservoir

	Prevalence (%)	Number of parasites	Mean intensity of infection	Abundance
Gobio gobio (n = 205)				
above	54.3	248	5.6	3.1
below	79.0	845	8.6	6.8
Rutilus rutilus (n = 208)				
above	89.4	891	11.4	10.5
below	98.4	1817	15.0	14.8