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The effect of flow on the macrozoobenthos structure in a re-opened oxbow lake: a case study of the Słupia River, northern Poland

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Abstract This study focuses on the assessment of relationships between flow and macrozoobenthos structure that was performed in a re-opened oxbow lake, Osokowy Staw, located near the Słupia River, northern Poland. Macrozoobenthos samples were taken between 1999 and 2005 at six sampling sites near the shore and four in the middle of the water body. In July 2000 the Osokowy Staw was re-opened and connected with the river through PVC pipes which enabled free water inflow and outflow. After re-opening, macrozoobenthos density increased from 99 to 659 individuals m^{-2} and the wet biomass from 0.03 to 73.1 g wet weight m^{-2}, although these increases were not statistically insignificant. In the closed Osokowy Staw the dominant species was *Asellus aquaticus*. After re-opening it was replaced by bivalves and Chironomidae larvae (during the first year) and then, in 2005, *A. aquaticus* became the most abundant again. The number of taxa increased from four in the closed water body to 17 during the first year after re-opening and 14 in the next year. The Shannon biodiversity index also increased from $H' = 0.35$ (in 1999) to $H' = 1.5$ (in 2005). Revitalization processes of the re-opened oxbow lake were connected with the qualitative and quantitative recolonization by riverine macrozoobenthos.

Key words oxbow lake; macrozoobenthos; reconnection; Słupia River, Poland