

Hydromorphological assessment and catchment characterisation in the headwaters of the Volga River

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The Volga River and its watershed represent the largest river system in Europe. The river is considered as the Russian lifeline, and various anthropogenic activities influenced the river. Nevertheless, its headwaters remained in least disturbed conditions. We present an assessment as well as an evaluation of hydromorphological conditions in the headwaters of the Volga River regarding (1) channel, (2) banks/riparian zone and (3) floodplain. The assessment follows European standards (CEN 2004) and also includes the Habitat Quality Survey (HQA). Historical flows from five gauging stations along the studied reach were analysed to determine the hydrological characteristics. The highest flows are observed during March and April, followed by summer low flows, higher flows during October and November and low flows again during winter. A decreasing tendency of the mean annual discharge is noted throughout the observation time as it accentuates in the downstream direction when comparing the stations. Based on the specific discharge (volume of water per unit time per unit area) from these gauging stations, a flow reconstruction for the Tudovka River was carried out. These analyses contribute to the REFCOND_VOLGA project, a long-term ecological monitoring programme in the headwaters of the Volga River. The research area is characterised by large forests and low population densities, thus the results provide data about reference or least impacted sites. Due to the hydromorphological characteristics the headwaters of the Volga River, i.e. the free-flowing section between the Upper Volga Lakes and Tver represents an intact lowland river and comprises a refugial system for potamallic flora and fauna.