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EFFECTS OF STRESS CONTROLLED LOADING OF A RESERVOIR ON DOWNSTREAM FISH POPULATIONS IN A PYRENEAN RIVER

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Abstract

Construction and management of dams and reservoirs may cause substantial alterations to aquatic habitats. A large dam was constructed in a Pyrenean river (North of Iberian Peninsula) in 2002 and its stress controlled loading (SCL) took place between 2005 and 2009. In this study, hydrochemistry, macroinvertebrate biotic index and fish fauna are compared during the controlled loading preparation process and until 2011 in three stretches along a 40-km downstream section of the river. The most important changes in the hydrochemical parameters were the decrease of temperature and the increase of dissolved oxygen in the first and second sampled stretches. Changes in the fish fauna were also more important in the stretches closer to the dam. Fish fauna was strongly modified into a simplified community dominated by brown trout in the two upper stretches, where cyprinid and nemacheilid species decreased noticeably, especially smallest size classes. These negative effects in the fish fauna should be considered in the design and construction of a reservoir.

Key words: flow regime, freshwater, macroinvertebrates, Irati River, Itoiz reservoir

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