Geophysical Research Abstracts
Vol. 12, EGU2010-1753, 2010
EGU General Assembly 2010

Long-term affects of experimental flows on riverine biota below a reservoir

Chris Robinson (1) and Johannes Ortlepp (2)

(1) Eawag - ETHZ, Aquatic Ecology, Duebendorf, Switzerland (robinson@eawag.ch), (2) Hydra Büro für Gewässerökologie, Öschellbronn, Germany (jo.ortlepp@t-online.de)

Large dams have altered the flow regime of most rivers on the globe with consequent effects on riverine biota. Experimental flows (multiple floods per year) have been used on the regulated Spöl River below Livigno Reservoir for over 9 years to enhance the ecological condition of the river. The flow program has improved the brown trout fishery in the river as indicated by an increased number of redds. Floods have reset periphyton assemblages from a moss-dominated streambed to one dominated by diatoms and patches of filamentous algae. Zoobenthic assemblages have shown dramatic shifts in benthic structure in line with predictions from altered state models. Ecosystem regime shifts have been characterized with increases in parameter variances followed by periods of stable states. The system appears to be entering a second zoobenthic regime shift after year 8, perhaps in response to biotic interactions due to changes in the fishery. The response patterns clearly show that a long-term perspective must be in place when assessing biotic responses to changes in physical habitat properties resulting from flow experiments.