Use of an acoustic telemetry system on the Rhone River (France) for the understanding of fish microhabitat selection : Method and first observations.

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Abstract

The Rhone is one of the major rivers in Europe and the most useful river for energy production and transport in France. Mainly, electricity is produced thanks to a series of 19 hydro-electric power plants and four nuclear power plants established along the river. These dams modify the hydrological regime of the river (flow variations) and power plants reject warm water into it. In this physically disrupted context, we suggest that fauna and especially fish, are compelled to adapt their behaviour and habitat selection to continue to take advantage of the environment.

To understand habitat selection, a specific acoustic telemetric system manufactured by HTI[®], was set in front of the Bugey nuclear power plant which is situated between two dams. 32 hydrophones and 16 km of hydro-acoustic cables were installed and a 1.8 km section was monitored during 82 days. 94 fishes of 8 species were collected and acoustic tags (sounds frequency: 307 kHz, period: 3 seconds) were surgically implanted in each animal.

First observations show good efficiency of the acoustic system used here in a hydrologically complex river, and the quantity of movement records available is encouraging for a forthcoming behaviour study.