Keeping fish away from turbines

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Fish ladders or naturally designed bypass channels allow common nase, barbel and other fish to bypass hydro-electric plants and migrate upstream. Unfortunately, such measures do not work downstream. The fish follow the direction of flow and end up in the turbines. Now a joint project with the Association of Aare and Rhine Power Stations (VAR), the ETH Research Institute for Hydraulic Engineering, Hydrology and Glaciology (VAW) and Eawag is to investigate what measures can be put in place to improve the downstream passage of fish where larger hydro-electric plants are concerned, if possible without compromising electricity production.

In tests with models at the VAW – some of which used real fish – research is currently underway to find a way of “diverting” the fish by means of special rakes. The initial results are promising. Similar but full-size solutions are already being implemented in the USA, although these cannot simply be transposed to the central European situation. Rivers there carry less driftwood and gravels, and some power plants are many times larger and their drop heights different. Above all, measures in the USA focus on economically significant migrating fish such as salmon; local, non-migratory species are somewhat overlooked. In contrast, in line with current water conservation legislation, Switzerland is pursuing a much more far-reaching agenda: “We are doing our utmost to enable downstream movement for all species. This is a far bigger challenge, as each fish species has its own individual behaviours”, explains fish biologist Dr Armin Peter from Eawag.

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Versuchskanal der ETH Hönggerberg

Schema der Versuchsanordnung

Related Links

The Association of Aare and Rhine Power Stations (VAR) has further information on the on-going project, as well as more pictures.

Film (Fish want to migrate)

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https://www.eawag.ch/en/info/portal/news/news-archive/archive-detail/keeping-fish-away-from-turbines