Life4Fish programme resume

Thanks to a co-funding of the European Commission via the Life Programmme, EDF Luminus is setting up an ambitious project to facilitate the fish downstream migration in the Belgian Lower Meuse. The "**LIFE4FISH**" project runs for 4.5 years from October 2017 to March 2022, with a budget of €3.9 million.

The Meuse River flows in an environment of great ecological value but has suffered much damage due to high industrialization. Ambitious species restoration programs are in progress, targeting Atlantic salmon and European eel. Other species such as bullhead, barbel and sea trouts are of great value. However, the hydraulic works impact is easier to measure and more widely documented for salmon and eel. The focus will thus be put on these two species.

The project includes a characterization of populations and downstream migration routes along the Lower Meuse River. It includes installation, implementation and monitoring of innovative solutions designed to facilitate passage through the hydropower facilities. The solutions consist of specific technologies (repulsive barriers and fish passes) and new hydropower control strategies accounting for the downstream migrating process.

UNamur researcher

Prof. Patrick Kestemont.

Project objectives

- **Increase the survival rate of silver eels and salmon smolts** to respectively 80% and 90% in downstream migration along the Lower Meuse River.
- **Increase operation management capabilities of hydropower plants** through control strategies integrating fish migration intensity forecasts. Benefitting from modeling work, new control strategies will reconcile contradictory targets (fish conservation vs. renewable energy produced).
- **Demonstrate the performance and transferability of the deployed solutions** combining methods, tools and technologies allowing an integrated approach of downstream migration accounting for local characteristics.
- **Identify migratory periods, downstream migration routes and influential parameters** for target species, enabling dynamic forecasting of migration intensities.
- **Validate and disseminate tools for monitoring downstream migration**, including the characterization of passages along hydraulic works.
- **Establish and demonstrate the value of a River Meuse stakeholder committee**, involving public and private actors, enabling coordinated approaches and more effective actions for the future.
- **Establish a benchmark** in terms of technical solutions, management and stakeholders involvement, fostering large-scale replicability and transferability across the European Union.

Expected results:

- **An integrated Lower Meuse River basin approach** allowing reaching survival rate objectives, favoring eel and salmon conservation and protection.
- **Demonstration of a cumulated escapement rate exceeding 80% for eels and 90% for salmon**, in line with conservation objectives. The results of measurement campaigns taken together with modelling results will make it possible to establish the overall cumulative mortality rate in the Lower Meuse basin.
- **A powerful migration modeling and monitoring tool** to understand and anticipate migration periods of *Anguilla anguilla* & *Salmo salar* for the Meuse.
- **An automated hydropower generation control & monitoring system** making use of the migration model to adapt power plant operation to the migration periods. This is not only a technical innovation but also a dramatic organizational evolution showing a change of paradigm in stakeholders' engagement.
- **Effective behavioural barriers** preventing fishes passing through dangerous routes during migration.
- **A methodology to account for local characteristics in operating hydropower plants**. Improve both the operating practices of plant operators and the provisions related to operating authorizations and permits, allowing important local features to be accounted for.
- **Commitment of the stakeholders from the Meuse river basin**, ensuring broad and open dissemination of the project results. The related Committees will meet regularly.
- **A Transfer Plan**, enabling the innovative solutions to be replicated among key European actors. This Plan will suggest pragmatic actions to implement solutions on identified sites along the main rivers across Europe.