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Presentation of BIORECONSTRUCT project, aims and activities

JPM

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Bioreconstruct : biodiversity reconstruction and himself reconstruction…

But why whe are here today ?

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- We have many years of experience (a good partnership with our French local partners) : we realised a fish passage and every year we dispose some fish hides in rivers.
- And because we took part in the international competition « Stockholm Junior Water Prize » last August 2009.
- We want to depose a LEONARDO DA VINCI project « Transfer Of Innovation » with you.

Design and production of river structures

Biodiversity restoration in rivers

Fish hides, fish passages

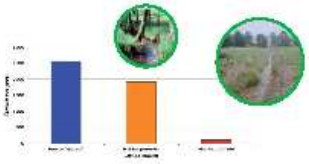
Presented by Damien MAURY and Léopold NOTO, students in the penultimate year of the baccalaureate in Civil Engineering at Souillac Technical High School

Souillac Technical High School is located in South-West France. Students are training in civil engineering. A project such as "river structures" is combining production (in the Civil Engineering workshop) and installation (on site training). The technical aspect goes hand in hand with sensitivity to environmental protection. To this end we are cooperating with organisations and institutions which can inform and guide us on matters of river equilibrium.

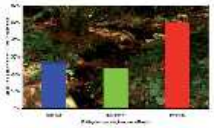
The problem: alteration of rivers could lead to biological depletion

The rivers serve multiple purposes, including water supply, power, evacuation of waste and food provision via fishing. This close relationship between rivers and humans led them to make profound changes to these ecosystems, modifying them according to their needs and to protect themselves from flooding. These modifications led to a loss of biological diversity. Major efforts have been made to decontaminate wastewater and attempt to restore some species of fish that had disappeared from our rivers, such as the Atlantic salmon in the river Dordogne whose passage was blocked by the construction of dams.

Fish density (nb fish/hectare) Before and after reprofiling of the river bed in order to improve hydraulic efficiency and prevent flooding



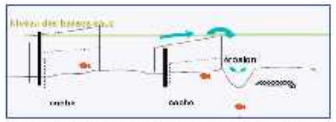
Present state of 600 km of rivers in a middle mountain catching basin. (Hydromorphologic characteristics: Bottom and banks of the river, number of fish hides)
More than 50% of the length is in a bad state (red bar)



Solution 1: Fish hides

Design, production and on-site installation

The aim of this project is to reconstruct resting habitats for fish, mainly trout which are the majority species in these rivers. These habitats consist of a fixed structure functioning as a hide. The hides are covered with a pebbled decoration in order to blend into their future environnement.



The current speeds up as it flows past the hides, which aids the oxygenation of the water and causes the formation of a small trench downstream.

Three sites were equipped with a total of 36 artificial hides

The Céou, Borrèze and Bave are rivers which mainly have trout along with sculpins, loach, minnows and chub. Hides restore good living conditions, they provide the fish with rest areas and bases for hunting.

Number of fish hides installed (2007-2009)
12 River Céou at Laborie - 12 River Borrèze in Souillac
12 River Bave at La Vierle

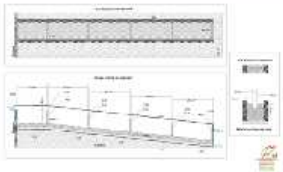
French selection for the Stockholm Junior Water Prize 2009: Souillac Technical High School

Solution 2: Fish passages

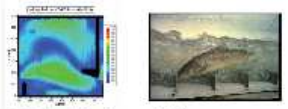
Research, design, on site construction

The purpose of this project is to build a structure allowing fish to pass at the location of a dam. This project complements the fish-hide structures installed on the same river. The fish passage consists of a concrete structure attached to a base and fixed into the dam. The objective being to restore the free movement of fish.

The first technological choice was for a macro-rugosity passage with concrete blocks intended to reduce the energy of the current and to raise the water line. Unfortunately due to the steep slope of the site, we had to opt for another technique: a sequence of pools separated by bulkheads fitted with saddles.



Experimental "Pool-type fish passage". Freshold "Laborie" on the Céou river. Document from the Lot Fishing Federation.



Gradient of speed in various areas of the fish passage

Our group had to overcome heavy constraints on a riverbed based construction site

Monitoring and Follow up

The actions undertaken have followed a scientific logic, associated with technical skills in Civil Engineering, resulting in practical constructions which can be an example to other areas and a reference in issues of fish management. To confirm the effect of the installations on the number of fish, monitoring has been undertaken by the Lot Fishing Federation. This is done through electric fishing before and after installation of the hides to observe the degree of colonisation of these habitats.
The initial inventory was carried out in 2007.
In 2009, a first verification is to be carried out as soon as flow conditions allow.

Electric fishing in the Céou river to establish the initial inventory before installing the hides

Sharing our knowledge

One of the most gratifying aspect of our project was without doubt the opportunity to pass on our newly-acquired knowledge to younger pupils in primary and middle schools along with taking part in Nature Days which, backed by our technical experience, saw us as embassadors to the general public for this great cause.

French selection for the Stockholm Junior Water Prize 2009: Souillac Technical High School

Organised in France by the Fee, Fondation pour l'éducation à l'environnement en Europe; by agreement with SIWI, under the aegis of the Ministry for Ecology and Sustainable Development. Contact France: waterprize@f3e.org - Tel. +33 (0)6 84 84 87 22

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Context :

- The European water framework directive, the Water law, the European regulation and, more recently, the Grenelle environmental meetings have made mandatory the restoration of ecological continuity to encourage the return of rivers to good ecological status and the preservation of biodiversity.
- The social context in Europe and France.

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The project objectives and carrying out are the following :

1) Inventory obstacles adjustments of civil engineering on small rivers in each country locally by experts ; classify them into families, study their effectiveness, and see the possibilities of transfer between countries depending on various parameters,
2) Study their opportunities to improve or to make new.

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3) Explore the possibilities of integration in this sector, before training,

4) Explore training opportunities for a public with professional integration needs (insertion site on river facilities) with our social partner APIE in France, and explore European future trainers training during the construction of an innovative fish passage near Souillac,

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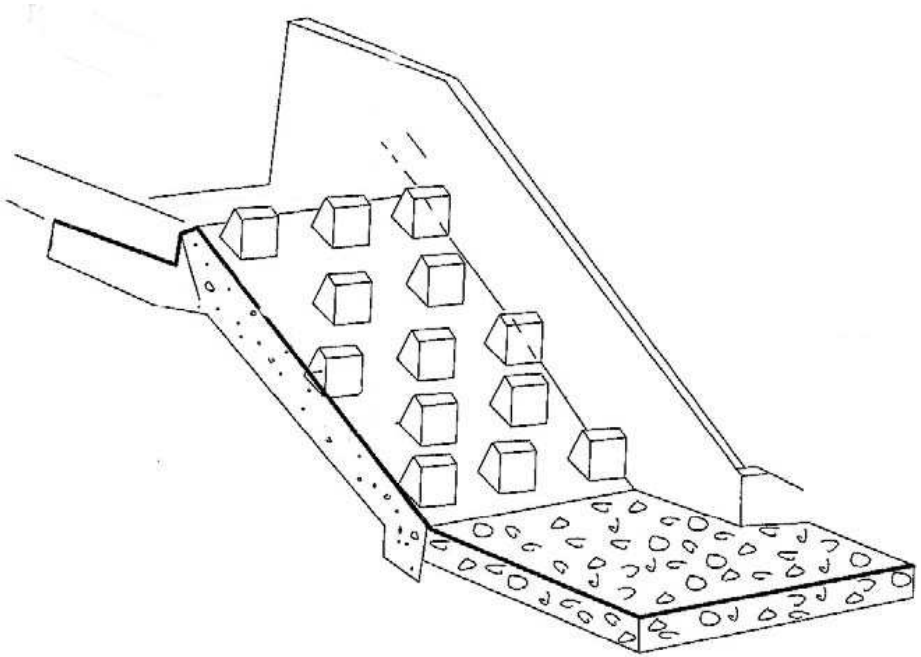

Model for our project : he will be build near Souillac : the ONEMA IMF Toulouse will calculate our fish passage project.

(MMrs BARAN and LARINIER).

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5) Explore continuing vocational education and training opportunities as well as certification for an audience already inserted in the civil engineering company,

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6) Examine the issue of recognition of training, at least locally (label ? and ECVET)

7) The training will be acknowledged in public market for main contractors process in the vicinity of local wetlands and rivers (lasting change).

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Some precisions about our French obstacles inventory :

A list of more than 35 000 obstacles, including dams, locks, weirs, mills no longer in operation, etc., on French rivers has been drawn up to date.

They are the cause of major transformations in the morphology and hydrology of aquatic environments and have a profound negative impact on the operation of ecosystems.

The scientific community is of the opinion that ecological fragmentation is one of the main causes of the reduction in biodiversity…

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We will consult the French national database of obstacles to river flows from ONEMA (for the first level with national code, precise geographical coordinates, essential characteristics),

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and with a second level reserved for stakeholders in restoration and policing activities, will include technical information required to determine the risks of ecological fragmentation (passage by fish, modifications to and continuity of habitats, sediment flow).

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About our partners :

Mr Dominique PREUX represents the International Office for Water (OIEAU) in Limoges

Chantal MARY represents my Educational Authority, Rectorat Toulouse (DAREIC, European projects)

Josiane GUITOU represents our social partner APIE, Souillac

Guy PUSTELNIK, Frédéric EHRHARDT represents EPIDOR, Castelnaud La Chapelle

Nicolas TEFFO represents our local Water Agency Adour Garonne, Rodez

Agathe KÜHNEL represents the « Natural Regional Park of Causses du Quercy » in Labastide Murat

Patrice JAUBERT, Laurent FRIDRICK represents the Fish Federation of Associations in Cahors

Philippe D'AGIER, Bertrand BOUSQUET represents the private company IMERYS, in Thédirac

« Think global and act local ! »

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Enjoy life!

Thank you for your attention.

Thank a lot Ulla, Barbara, Mohamed.

Thanks in advance dear partners.

Action that gives satisfaction !

LEONARDO, What else ?

« Boost my knowledge,
boost my network,
understand my past,

find my future. »