Rearing and reinforcing Freshwater Pearl Mussel of the Armorican Massif

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AN ACTION COORDINATED BY

Bretagne Vivante SEPNB

Une voix pour la nature

IN PARTNERSHIP WITH

FEDE PECHE 29 — Fédération du Finistère pour la Pêche et la Protection du Milieu Aquatique

Parc naturel régional Normandie-Maine

CPIE COLLINES NORMANDES

SIAES

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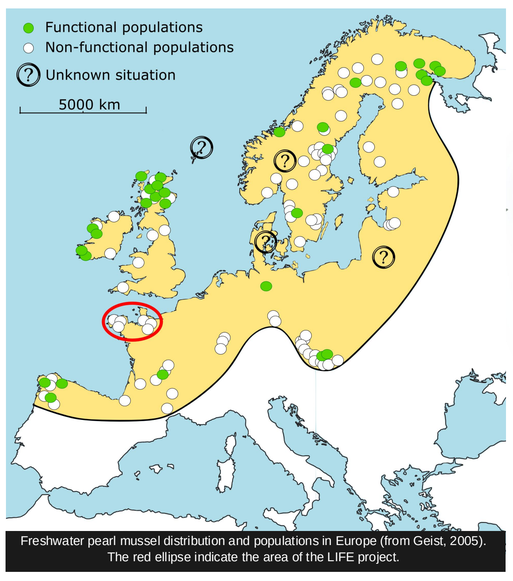
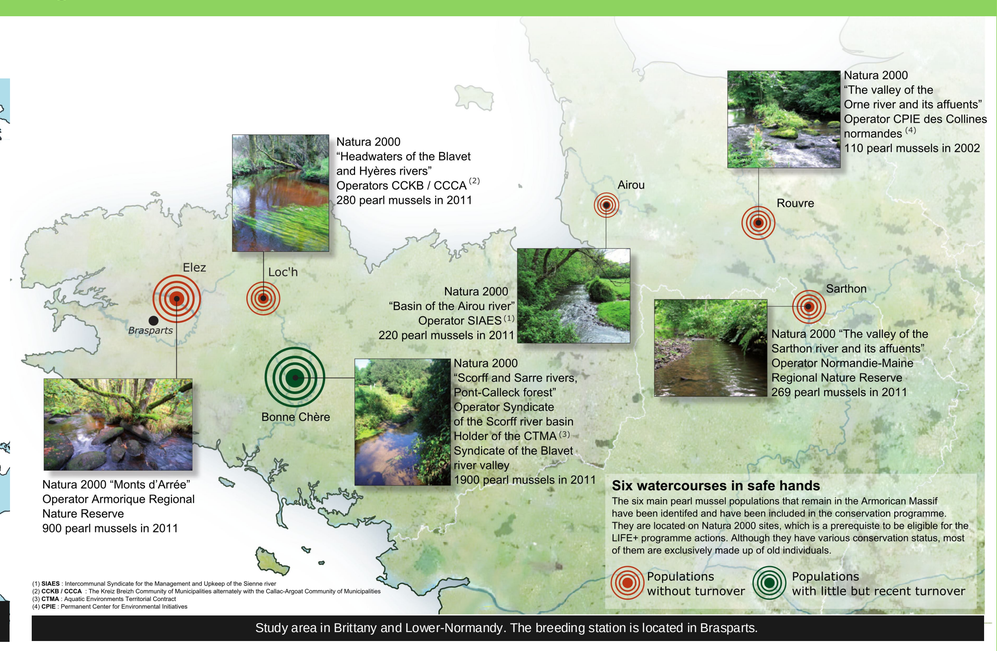
Meeting : Improving the environment for the freshwater pearl mussel

Kerfermarkt, Austria
13-14 November 2013

The LIFE programme « Conservation of the freshwater pearl mussel of the Massif armoricain » (2010-2016) aims to contribute to the restoration of the freshwater pearl mussel *Margaritifera margaritifera* populations in the west of France. It includes 6 sites, classified as Special Areas of Conservation (SACs), that are known to be a refuge for the main populations. All these six populations are still reproducing but are only potentially functional and will, without assistance, disappear in the near future. Therefore a rearing station was built in order to save these populations. To achieve this goal, actions are undertaken to unite and educate river stakeholders and environmental restoration managers, to improve our knowledge of the species and finally, to be able to ensure the continuity of the actions performed during the project.



Freshwater pearl mussel distribution and populations in Europe (from Geist, 2005). The red ellipse indicate the area of the LIFE project.



Study area in Brittany and Lower-Normandy. The breeding station is located in Brasparts.

1. Recover a favourable environment

First, recover a favourable environment is the priority. Many actions are already undertaken on all sites and the LIFE program can't substitute to them (so, these actions are extra-LIFE). We are trying to federate all these actions together and we are trying to yield new projects for habitat conservation or restoration: e.g. to set up fences, riverbank stabilization, control of farms, land acquisition, etc. Different tools can be used: Natura 2000 contracts, river contracts, etc.

2. Assess and monitor the environment

Second, while guiding and federating project for restoration of habitat, the LIFE project provide some informations about environment quality for three objectives : first assess the environment in a long time period to characterize FWPM living areas, second to look for favourable habitats for reinforcement of populations and then in order to detect any problem. This survey is conducted in water but also in substrate. Global environment, fish population, black point list, etc. are also assessed and monitored all along the project.

3. Maintain and support existing populations

Finally, even if restorations actions are conducted and are trying to solve black points, the mussel population situation in the west of France is considered as critical. That is why a rearing station was built thanks to the LIFE programme. The bred mussels are re-introduced from different age classes (from 0 to 4-5 years) into their natural environment where and when the environment quality

One year young mussels reared by the Fédération de pêche du Finistère

A new breeding system

To face the large quantity of young mussels which have to be raised in the frame of the LIFE programme, a system of closed circuit was imagined (Fig. 1).

Tanks (200 L) usually used to breed trout eggs have been hijacked (D). Two centimeters of sand have been placed all along the tank (C) and a little aquarium pump keep water flow reproducing a little stream (A).

When young mussels are collected, they are dispersed in the sand. Then, we just need to feed them each day with algae pastes (1 mL Shellfish diet, 1mL nanochloropsis). Water is changed once a week or more depending on the nitrites controls (9/10). This system is still an experiment but it seems to be a very good compromise to keep alive large quantity of young mussels with not much work of maintenance. In 2013, six tanks have been installed with around 20 000 young mussels in each. One of them from river Elez is experiment with around 100 000 young mussels to see if there is a different survival rate and growth rate.

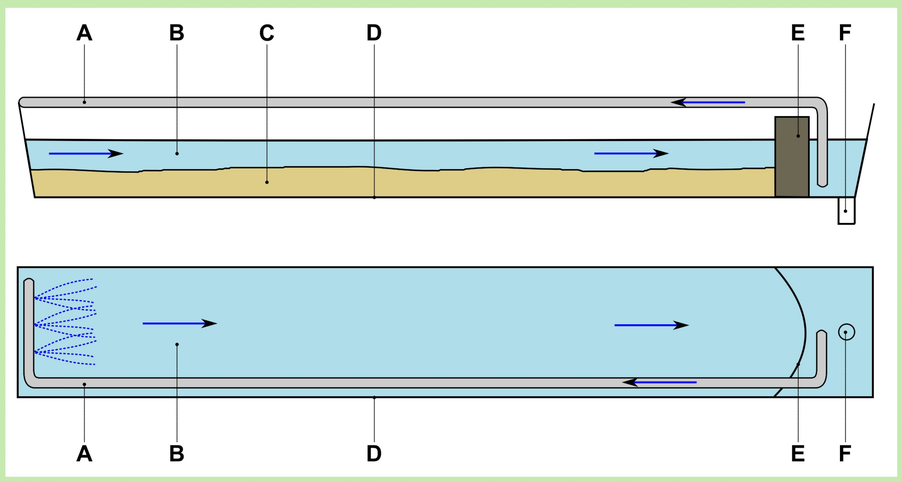


Fig. 1. Rearing tank (A : returning pipe supplied by a pump ; B : 36 µm filtered water ; C : sediment ; D : tank ; E : grid ; F : purge).

Rearing tanks

The quarantine area

In the frame of the LIFE programme, different origin of glochidia are collected and have to be in contact with fish. Some of them come from Lower-Normandy and the mussel breeding station is in Brittany.

Fish diseases could cross from a region to the other when we put glochidia from Normandy to the Brittany breeding station, that is why a quarantine area had to be built.

Six tanks of around 3 m^3 can be used to maintain infested trouts from Sarthon, Airou and Rouvre rivers connected on two closed circuits. Around 6 000 fish can be maintain in the system. During two months from the reception of the lastest Normandy sample, infected fishes will be in quarantine. They can't go out from this area without the agreement of sanitary authorities. All the water which has to be evacuated must be sterilized with an ozone generator and a UV before going back to the river. A flow of around 6 m^3/h must be respected for a perfect sterilization. A control of redox potential is also done (minimum 800 mV).

The quarantine area

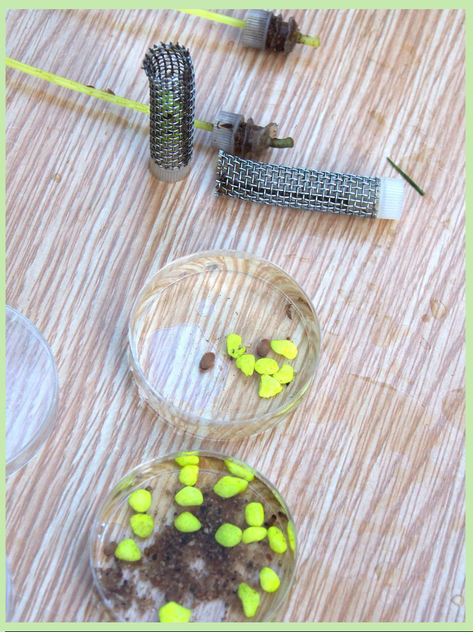
Reinforcing populations

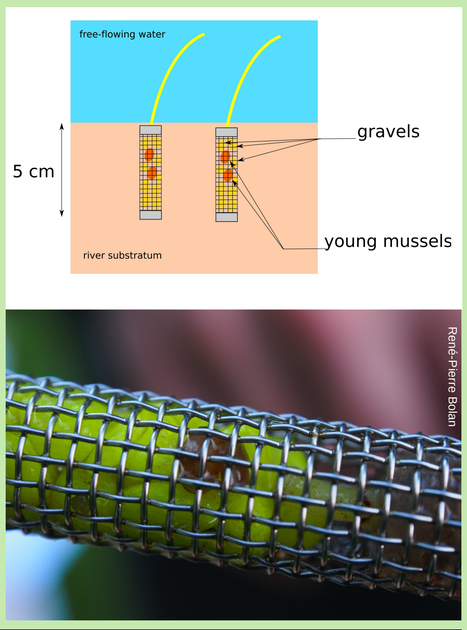
We started to reinforce pearl mussel populations with young mussels from the breeding station.

To test the survival of mussels in running water, we used Buddensiek plates with which we have had technical problems.

We also try to test the survival of mussels in the river sediments. For this, we used capsules. They consist of a wire mesh tube, with a mesh size adapted to the size of mussels and two plugs for closing the tube.

For now, we tested the survival of a batch of mussels on the river Elez: the capsules were put at 5 cm deep into the sediment. Survival rate, one month after, was 100%.





5-7 mm reinforced young mussel in capsules

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