CONSERVATION OF THE FRESHWATER PEARL MUSSEL *MARGARITIFERA MARGARITIFERA* IN SWEDEN BY AN EU-LIFE PROJECT

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During 2004-2009 WWF Sweden conducted a project "The freshwater pearl mussel and its habitats in Sweden". The project was financed by the EU LIFE Fund, Swedish Environmental Protection Agency and partners involved.

The overall objective was to improve the habitats for juvenile freshwater pearl mussel *Margaritifera margaritifera* and its host fish Brown trout *Salmo trutta* in 21 streams. The actions were improvements of the biotopes, re-introduction of mussels, information to the stakeholders, development of planning methods. The results of the actions could not be documented during the project period due to the difficulty to detect the juveniles. However, monitoring programmes will give data in the coming years. One output of the project is a manual for managing freshwater pearl mussel streams, based on experiences from the LIFE-project but also other projects in other countries.

Key words: Sweden; *Margaritifera margaritifera*; freshwater pearl mussel; conservation; restoration; LIFE

INTRODUCTION

Scandinavia and Scotland are the core areas for the remaining populations of threatened freshwater pearl mussel (freshwater pearl mussel) *Margaritifera margaritifera*. In Sweden there are approx. 550 streams with freshwater pearl mussel. However, the species has gone extinct in 1/3 of the streams and there is no recruitment in 3/4 of the remaining streams. The Swedish freshwater pearl mussel conservation strategy is based on (1) habitat protection and (2) habitat improvement.

Many Swedish freshwater pearl mussel streams are Natura 2000 sites, the European Union (EU) network of protected areas. Some of these streams and their surroundings are also nature reserves. However, this habitat protection does not guarantee real protection. Most of the Natura 2000 sites just include the stream, but not the riparian zone, and the reserves hardly ever include the whole catchment. Legal protection is not enough to save freshwater pearl mussel in Sweden.

There is great need for habitat improvements to create biotopes especially for juvenile mussels but also for the host fish – the Brown trout *Salmo trutta*. During the last decade some restoration projects focused on freshwater pearl mussel have been implemented in Sweden. In 2004, WWF Sweden initiated a project "The freshwater pearl mussel and its habitats in Sweden" with grants from the EU LIFE Nature Fund, the Swedish Environmental Protection Agency and the partners involved[1]. The partners were three county administrative boards, one city, Swedish Forest Agency, and Karlstad University.

PROJECT ACTIONS

The actions were:

(1) Improvements of the biotopes: establishing new "mussel beds" consisting of gravel and stone material to counteract siltation and to get a clean substrate where small mussels can survive, eliminating migration obstacles for host fish, and restoring river bottoms that had been cleaned to facilitate floating of timber, plugging ditches to eliminate input of fine particulate matter and thus prevent siltation.

(2) Re-introduction in one stream with just a few freshwater pearl mussel specimens left.

[1] EU LIFE Nature project "The Freshwater Pearl Mussel and its habitats in Sweden" (LIFE04NAT/SE/000231)

(3) Information to actors/stakeholders: in public and personal meetings with the actors (landowners, forestry operators, etc.) information and advice are given to achieve improved care for water in e.g. forestry.

(4) Development of planning methods: development of action plan at two levels – drainage area and biotope.

A

B

Fig. 1. A – Restoration of the stream bed by adding stones which had been removed to facilitate timber floating. B –Restoration of the riparian zone by eliminating planted spruce trees
Photo by *Lennart Henrikson*

RESULTS AND EXPERIENCES

The overall experience was that the actions were successful, but it was not possible to document any improvements of the recruitment of juvenile freshwater pearl mussel in the project streams during the project

period. The reason is that it is very difficult to detect these small mussels. However, for each stream there is a monitoring programme, which will indicate whether the actions were successful.

One purpose was to decrease siltation, i.e. the clogging of the bottom substrate by fine particles. One action was to measure the degree of siltation. This was done by Martin Österling. Together with co-workers he found a correlation between the amount of fine particles and the occurrence of young mussels (Österling *et al.,* 2006). This study will be repeated and included in the monitoring programme.

The project is described in a "layman' report" (Anonymous, 2009). The practical experiences of the Swedish project, but also from other projects in Europe were summarized in the handbook "Restoration of freshwater pearl mussel Streams" (Degerman *et al.,* 2009). A travel report describing other European freshwater pearl mussel projects was published (Henrikson, 2009).

An international conference "Aquatic Conservation with Focus on the freshwater pearl mussel *Margaritifera margaritifera*" was held in Sundsvall on August 12–14, 2009. Proceedings from the conference will be published in spring 2010. More information and project publications are found at www.wwf.se/fpm.

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