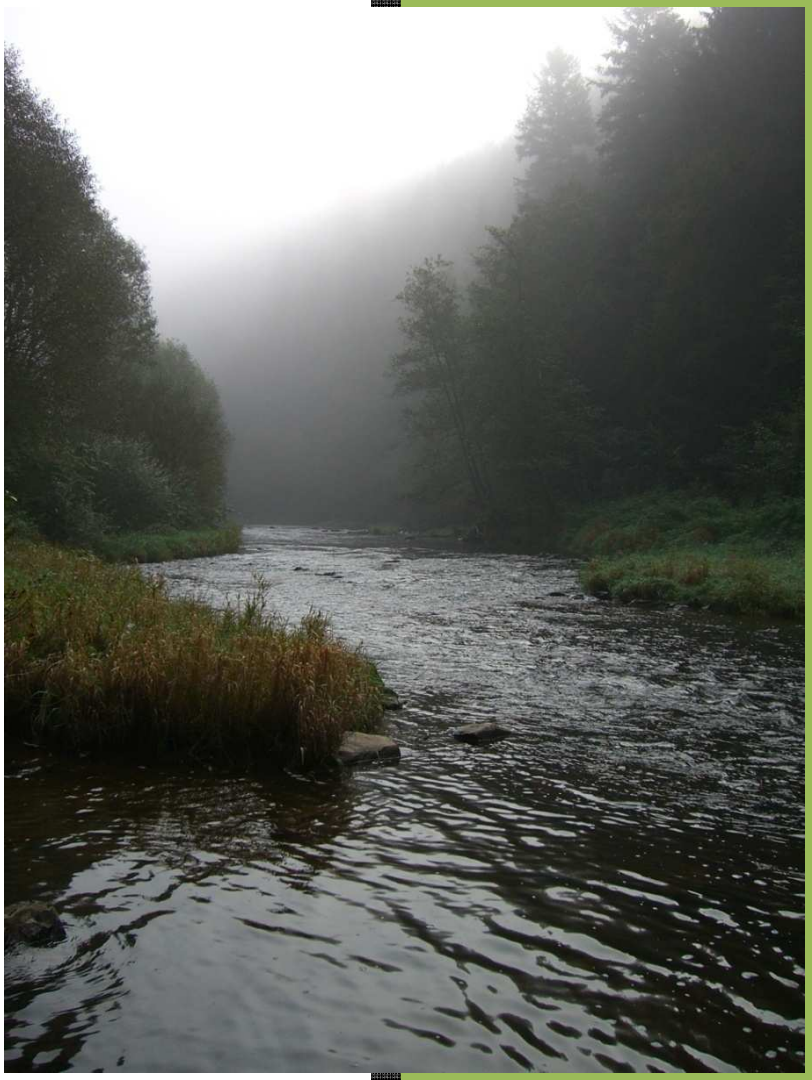
Projet LIFE-Nature « Restauration des populations de moules perlières en Ardennes »- Life05Nat/L/000116

International Seminar

Rearing of unionid mussels



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Ten years of experience with the rearing of young pearl mussels (*Margaritifera margaritifera*)

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In a number of projects for the conservation of the pearl mussel *Margaritifera margaritifera* the artificial reproduction and keeping of young mussels was carried out. We present data from experiments performed between 1997 and 2007, focussing on the growth and survival of juveniles.
Young mussels, artificially collected right after the parasitic stage, were exposed in different types of cages and keeping systems. Baskets and columns were used on-station with a permanent inflow of water from a pearl mussel stream and from a spring. All other types of cages were exposed in or on the sediment of current pearl mussel streams.
The following results were obtained:
1) Survival of juveniles ranged from 0 to 92% in the first 4 months, but the mean annual mortality was high in all experiments and with all keeping systems. In experiments with sheet cages and sediment boxes in three different brooks from an initial number of 1.440 to 1.660 only 1 to 8 mussels reached the age of four years.
2) Growth rates generally were in the range reported in the literature for juveniles in natural habitats.
3) Mussels kept in brooks and streams never showed any relation between growth and survival. Only mussels kept on-station in spring water showed a positive correlation, indicating severe food deficiency.
4) Low survival rates were obtained in sheet cages exposed to very oligotrophic and to highly eutrophic brook stretches. Natural sites charged moderately with fine sediments and nutrients showed the best results. However, the age structure of the mussel populations at these sites shows that the quality of sediment and water is too bad for natural recruitment of juveniles.
5) All cages and keeping systems show irregular variations of survival rates. Several experiments with pairs of sheet cages show no relation between the survival of mussels in cages exposed side by side. In contrast, growth rates of mussels in adjacent cages are related.
6) No relation could be found between the growth or survival in sheet cages at different sites and brooks and corresponding water chemistry data.

We conclude, that
1) the rearing success of young pearl mussels in cages in the water flow of mussel rivers gives no information about the suitability as a natural reproduction site. Thus, keeping of juveniles in cages seems not appropriate for biomonitoring aiming to find potential natural habitats for Margaritifera. For this, the survey of water quality, sediments and habitat structure is obligatory.
2) our efforts to establish a keeping for young mussels with little time and effort in the natural habitat have not been successful. Seemingly the artificial rearing of young pearl mussels needs labour-intensive supervision to obtain adequate survival rates.