



**INTERNATIONALE TAGUNG: DIE FLUSSPERLMUSCHEL  
IN EUROPA: BESTANDSSITUATIONEN UND SCHUTZMASSNAHMEN;  
THE FRESHWATER PEARL MUSSEL IN EUROPE:  
POPULATION STATUS AND CONSERVATION STRATEGIES,  
HOF, 16–18 OCTOBER 2000**

**CONFERENCE REPORT**

A very interesting meeting, devoted to problems of biology, ecology and protection of the pearl mussel (*Margaritifera margaritifera*), was held in hospitable Hof (ganz oben in Bayern!). The conference, organized by the Wasserwirtschaftsamt Hof and Albert-Ludwigs Universität Freiburg, evoked an enormous interest; the number of participants was 235(!) and they came from 13 European countries. The authorities of Bavaria and Upper Frankonia recognised the great importance of the meeting; this was manifest in the welcome address of the minister of environment protection of Bavaria, Dr. WERNER SCHNAPPAUF, and the speeches of Hof's Mayor, Mr. DIETER DÖHL and the Hof district Landrat, Mr. BERND HERING. On the part of the Czech Republic, a long-standing co-operator of Germany in pearl mussel protection, the guests were welcomed by the director, Mr. JAROSLAV KINKOR.

The first day of the conference was devoted to general problems, such as pearl mussel ecology, development biology, geographic distribution and protection. Lectures prepared by Prof. G. BAUER (Universität Freiburg), Dr M. YOUNG & Dr. L. HESTIE (Aberdeen University), E. MOORKENS (Dublin), Prof. K. WÄCHTLER (Tierärztliche Hochschule, Hannover), Dr. V. BUDDENSIECK (Stadthagen), J. HRUSKA (Nature Management, Volary), Dr. D. ROBERTS (School of Biology and Biochemistry, Belfast), Dr. K. O. NAGEL (Bad Krozingen) and Dr. R. ARAUJO & Dr. M. A. RAMOS (Museo Nacional de Ciencias Naturales, Madrid) were especially noteworthy.

In his lecture "Ecology of the freshwater pearl mussel and its relation to the habitat: which components are affected by threats?" Prof. BAUER presented the most recent results of the studies on habitat prefer-



ences of *M. margaritifera* and the current state of knowledge of its reproduction. The interesting points were the fecundity of females (up to 10 mln eggs!) and the sensitivity of the mussel to organic pollution (the threshold value of  $\text{NO}_3$  in the water is 15 ppm). The main hosts for the pearl mussel glochidia are

young salmonids (trout, salmon). The worst threats include regulation of streams, eutrophication, excessive acidification of water, accumulation of muddy bottom sediments, damage from feeding muskrat and... amateur-collectors.

The lecture of two Scottish specialists "What represents an 'ideal' population profile for *Margaritifera margaritifera*" was presented by Dr. YOUNGE. In his vivid and excellently illustrated talk, he described the results of comparative studies in the same rivers in 1984/85 and 1996/97. Contrary to most continental areas, clear rivers of north-western Scotland are still a refuge for abundant populations of the pearl mussel of diverse age structure. Populations in the best condition are found in the rivers Dee, Stac, Kerry, Badnaban and Spey where all the age classes are represented, with a considerable proportion of young (10–50 years) individuals.

Likewise, in Ireland the condition of populations of *M. margaritifera* can be estimated optimistically. This follows from what was said by E. MOORKENS in her lecture "Towards an understanding of the water quality requirements of *Margaritifera* in Ireland". The most abundant populations are found in streams in the western part of the island. The studies which included 149 water courses (526 localities) revealed that *M. margaritifera* was present on 20% area of each 10 km<sup>2</sup>. Among positive factors deciding about the presence of the pearl mussel, she mentioned the lack of silt in the bottom sediments, low conductivity and low orthophosphate level in the water. Negative factors include, among others, very low pH and the presence of dense branches overhanging the streams (shading).

Prof. WÄCHTLER's lecture "Comparative studies on host fish specificity of *Margaritifera margaritifera*" was also very interesting and well-presented. The author discussed, among others, types of larvae and life cycles of various representatives of Unionacea s. lat. He paid much attention to host fish species. In the case of pearl mussel the main hosts, depending on the region, are trout or salmon.

Dr. BUDDENSIECK discussed details of ecology of juvenile stages of the mussel. He pointed, among others, to an unfavourable effect of fine-grained bottom sediments on young mussels and the threat resulting from the presence of ammonium in interstitial waters. Among the factors responsible for the extinction of *M. margaritifera* he mentioned the absence of host fishes in the streams and the low numbers of gravid females.

The Czech specialist J. HRUSKA, famous for his success in re-introducing the pearl mussel, shared with us his experience of the mussel culture. He obtained the best results after infecting small trout (15–20 cm long) with glochidia. The young mussels were kept in special containers till the age of 10 years (4 cm long and more). In his opinion a complete introduction of

the pearl mussel is impossible, but the structure of existing populations can be improved by supplementing the deficit of mussels of the lowest age classes. Artificial infection of fish with glochidia and releasing the infected individuals into streams are equally important. Among factors deciding about the success J. HRUSKA mentioned the presence of riparian plants whose root systems are washed by water.

Historical data contained in Dr. ROBERTS's lecture "Conservation status of the freshwater pearl mussel in the North of Ireland" are noteworthy. It turns out that the oldest mentions of the mussel from that area date back to the 11th c. Later damage to the mussel beds started, and the abundance decreased progressively. The most important reasons for the pearl mussel extinction include increasing pollution and stream regulation, dredging bottom and overexploitation of the Atlantic salmon, the main host of glochidia.

Dr. NAGEL's interest focuses on strategies of protection of very small populations of *M. margaritifera* (100–1 individuals). The observations on streams flowing from the hills of Vogelsberg and Hessische Rhön indicate that the reasons for the pearl mussel extinction are similar to those in other areas. One of the most important among them is an increasing proportion of fine-grained fractions of the bottom sediments. Most young mussels were found in tributaries of the streams, which was associated with a weaker anthropopressure. Deteriorating habitat conditions result in a decrease in growth rate of *M. margaritifera*. The author observed also a very low incidence of trout infection with glochidia; it seems thus that to save disappearing populations of the pearl mussel, artificially infected fish should be released in the streams.

"European action plans for *Margaritifera* spp." was prepared by Dr. ARAUJO & Dr. RAMOS. They had an opportunity to study a species currently under extinction – *Margaritifera auricularia* – whose last refuges are Spanish waters: the river Ebro and the Imperial Canal. This interesting and excellently illustrated lecture made the audience acquainted with the biology and ecology of the species. The authors proposed including *M. auricularia* in the group of the highest protection status in Europe. They devoted much attention also to *M. margaritifera* and characterized very rich populations from the Kola peninsula. The Spanish malacologists showed an interesting film about the two mussel species; it was presented in the reception hall of the Conference.

The list of lectures of the first day included also presentations by B. SCHÄFFLER, Dr. G. POMMER & Dr. H. KOCH (Situation of freshwater pearl mussel protection in Bavaria), Dr. J. H. JUNGBLUTH (Recent distribution of river pearl mussel population in Germany) and Dr. L. HENRIKSON (The freshwater pearl mussel in Sweden – status and trends).



In the evening the Conference members were welcomed by the president of Upper Frankonia, Mr. HANS ANGERER. The day ended with a formal dinner in a restaurant Hofer Stuben.

The second day of the Conference (12 lectures, 19 authors) was devoted mainly to programmes of protection of local pearl mussel populations. The list of speakers included, among others, Dr. I. VALOVRTA (Finland; "Restoration of rivers for *Margaritifera margaritifera*"); W. HEINISCH and co-workers (Austria; "The freshwater pearl mussel project in Austria: history, troubles, success and future"), K. GROH (Germany; "River pearl mussel conservation programme at the Luxemburg-German border – lessons, successes and future action").

In the lecture of the Austrian authors it was noteworthy that at present *M. margaritifera* lives only in the north-western part of the country, in an area of only 7,500 km<sup>2</sup> and inhabits 30–40 streams. The whole population is estimated at 20–50 thousand individuals. It was found that one of the main threats was an increasing sand drift in the streams, resulting in a high mortality of young mussels.

The lecture prepared by K. WEISS, M. GRAMBOW and S. SCHMIDT (Wasserwirtschaftsamt Hof) "Agenda 21, Czech-German Border Commission at the 'Südliche Regnitz Project', 20 years monitoring programme" was extremely interesting, also for historical-political reasons. It appears that nature conservancy enthusiasts on the Czech and German side of the border already in the 70s were able to outwit the well-armed border patrols in order to implement a joint programme of protection of a threatened species. The work is now continued widely, with participation of such specialists as Prof. G. BAUER (Freiburg) and J. HRUSKA (Volary).

K. FROBEL's ("Protection of river pearl mussel – the Bund Naturschutz's point of view") and H. TRÖGER's ("Agriculture and nature preservation from the standpoint of Bauernverband") presentations were very important from the viewpoint of organization of conservation programmes and costs of restitution of *M. margaritifera*. They confirmed the commonly known truth that success in nature conservancy depends mainly on the funds and participation of local authorities in implementing programmes designed by specialists. On the other hand, it is very important to popularize the knowledge of protected animals due to which land owners more easily resign intense methods of farming in favour of recultivation of areas inhabited by threatened species.

Concluding lectures by J. HRUSKA ("Strategies of the Czech survival programme for oligotrophic river basins of the freshwater pearl mussel and the bilateral cooperation with Germany") and T. FINDEIS ("Planning and realisation of measures for restoring a pearl mussel river and its basin") were devoted to plans for further Czech-German cooperation in protection of the pearl mussel.

The route of the Conference trip led to the streams of the Südliche Regnitz catchment area which are till now inhabited by fairly dense populations of *M. margaritifera*. Near the village of Timpermühle (Germany) we could see the beds of living mussels and, regrettably, fairly numerous empty shells. Later, we crossed the "green border" to the Czech Republic, and the Great Guru of the *Margaritifera* programme – J. HRUSKA – showed us a field station of mussel culture.

The Hof Conference was a great success of its initiators – Prof. G. BAUER from Albert-Ludwigs Universität in Freiburg and the local board for water management – Wasserwirtschaftsamt Hof. It shows that the programme of active protection of threatened species is quite realistic. The condition for its success is cooperation of specialists – for example malacologists, hydrobiologists, ichthyologists – with authorities responsible for water and forest management. On the other hand, international cooperation may be an important part of such initiatives. German and Czech enthusiasts of the pearl mussel protection proved that in areas located on two sides of the border, the same actions can be executed successfully. The result is the still very good condition of the population of *M. margaritifera* in the Südliche Regnitz catchment area, in the western Czech Republic and Upper Bavaria.

It should be added that the town of Hof, with its good network of access roads, numerous hotels and an exemplary conference centre – Freiheitshalle – was an ideal place for the Conference. Equally important was the excellent organization of the sessions which was mainly due to the Conference secretary, Mrs ELISABETH BÖTTING from the Wasserwirtschaftsamt in Hof.

ANDRZEJ PIECHOCKI

Department of Invertebrate Zoology and Hydrobiology, University of Łódź, Banacha 12/16, 90-237 Łódź, Poland (e-mail: piech@biol.uni.lodz.pl)

