

The survival of *Romanichthys valsanicola* (LIFE 99 NAT/RO/006429)

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Abstract. The main objectives of our project were to restore of the Vâlsan Valley ecosystem, to carry out the management plan we had designed and to run the monitoring system for the survival of *Romanichthys valsanicola* Dumitrescu M, Bănărescu P & Stoica N, 1957

This endemic species, which lives only in the Vâlsan River, is considered by scientists the most endangered European species of fish, since it has a very small habitat area and there are very few exemplars left.

The results of the project were the following: the restoration of the habitat through the introduction of stones in the affected areas, the improvement of the water flow speed, oxygenation. The depositing of household trash has been strictly forbidden and this law is being enforced by severe fines. Poaching has been entirely stopped and so was the removal of river stones. The river area is being closely supervised on permanent basis. We have achieved wide public awareness of the problem and brought our results to the stakeholders through billboards, lessons taught in the local schools, a movie, scientific articles in the international, national and local press, TV shows, radio broadcasts, flyers and brochures.

The project has been a real success, the fish effective is significantly higher; from just a few exemplars in 2000 it reached 200 exemplars in 2003.

Introduction

The Bucharest Institute of Biology, in Romania, was the contractor of the LIFE NAT project "The Survival of *Romanichthys valsanicola*", approved and financed by the European Commission of Science in October 1999.

Romanichthys valsanicola was considered the most endangered fish species in Europe (Maitland, 1991) due to its low population and its very small distribution area.

Romanichthys valsanicola, (Fig. 1) the only member of the *Romanichthys* genus (Percidae Family) was discovered in 1956 in the Vâlsan River, a tributary of the Argeş (Danube drainage), in Southern Romania (Fig. 2) and was described by Dumitrescu, Bănărescu and Stoica. It was subsequently found in the Argeş River as well, where it was even more abundant than in the Vâlsan.



Fig. 1: *Romanichthys valsanicola*

According to most ichthyologists it seems to be closest to the *Zingel* genus whose three species are also endangered. The evolution of the distribution and abundance of the endemic monospecific *Romanichthys* genus is very important in establishing the phyletic relations within the Percidae Family.

During intensive field investigations carried out by P Bănărescu in 1959, other specimens were collected in the Vâlsan and also in the larger river, Argeş. It turned out that the species was well known to locals who were using several vernacular names for it (such as "asprete", for example).

There were later rumors of a possible occurrence of *Romanichthys valsanicola* in Râul Doamnei, the largest tributary of the Argeş, but they were never confirmed.

During 1963-1965 *Romanichthys* was found both in the Vâlsan and in the Argeş. It was always more abundant in the latter, but still in a very low number compared to the other fish species present there (*Barbus peloponnesius petenyi*, *Cottus gobio*, *Gobio uranoscopus*, *G. kessleri*, *Leuciscus cephalus*, *Orthrias barbatulus*, *Alburnoides bipunctatus*, *Sabanejewia romanica*). The ratio of *Romanichthys* to the total number of captured specimens varied between 0.7% and 7.6% for the Argeş, and between 0.1 and 4% for the Vâlsan.

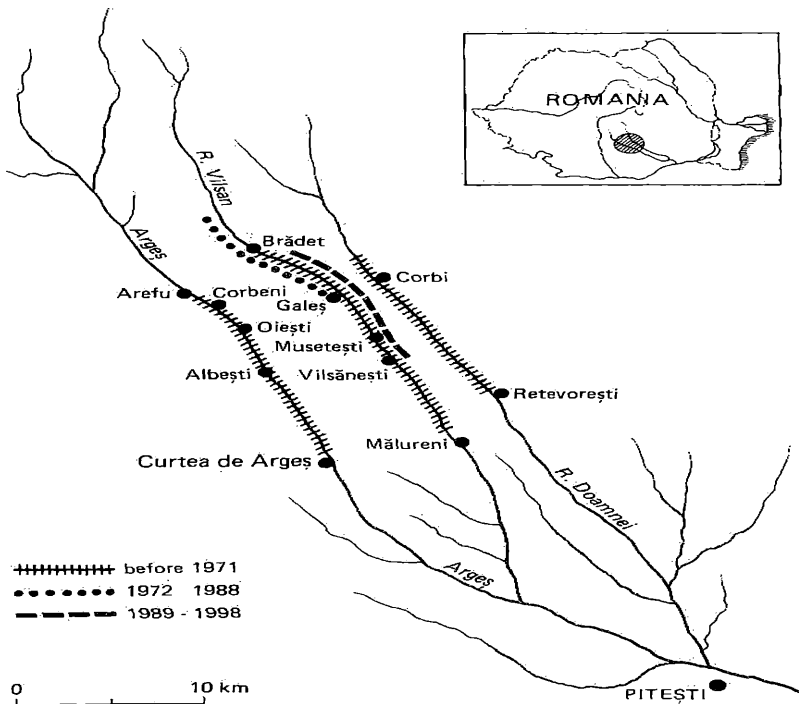


Fig. 2: The distribution in Romania of *Romanichthys valsanicola*

After 1965 and till 1971 no more *Romanichthys valsanicola* specimens could be captured in the Vâlșan and it was believed that the species became extinct. This was blamed on the competition with *Gobio uranoscopus*, a species which became more abundant than the former in 1964 and 1965.

In 1967 a large man-made lake was built for a hydroelectric plant on the Argeș River upstream of the stretch inhabited by *Romanichthys*. A huge quantity of stone and sand was removed from the bed of the river from the fish's habitat area and used for the construction work. Consequently, the river remained dried in the downstream of the lake for a long period of time and the species was driven to extinction in this habitat. An initiative to capture the last live specimens and to introduce them into another river failed.

In the same year, a similar but smaller man-made lake was built on the river Vâlșan as well, again upstream of the habitat of *Romanichthys*. Life conditions worsened after the construction of the lake and the average amount of water at in the downstream city of Brădet gradually diminished from 1.3 - 4 m³/sec during 1944-1965 to 0.6 – 1.2 m³/sec during 1966-1994.

A mine shaft has been opened very close to the river, within a short distance upstream from the habitat of *Romanichthys* and waste was deposited on the riverside or even fell into the water stream.

Life conditions of *Romanichthys* were still altered in 1988 when the lake was cleaned and a high quantity of mud was washed away downstream covering the rocks in its habitat. Another negative factor was the fact that locals had been widely using river stone from the Vâlsan for construction works.

In 1989, Romanian scientists captured four live specimens and brought them to an aquarium in the city of Ploiești. Only two of specimens survived, for about two years, but did not reproduce.

In 1992 an international expedition (Dr. Bless and Zsivanovits from the Institut für Naturschutz und Tierökologie, Bonn, Dr. Perrin from the Service Regional de l'Aménagement des Eaux, Lyon), organized by a Romanian NGO, captured eight *Romanichthys*. For captive breeding purposes the specimens were brought to Bonn to a running water aquarium, which was recreating the same life conditions as in the Vâlsan River. The four females and the three males were fed with *Tubifex*.

The females matured in the spring of 1993, while the males did at a later time. The females died soon after laying eggs and the males survived till 1998. The absence of a hormonal treatment and the inadequate food were most certainly the causes of this failure.

Understanding the ethology of *Romanichthys* is very important for any experimental breeding attempts. The species lives in mountainous rivers (Fig. 3). It is strictly territorial and nocturne. They hide under the river stones at day time, they are active at night when they search for food, and they return in the morning under the same stones.

The species feeds on aquatic insects, mainly the larvae of on the mayfly *Rhithrogena semicolorata* (Gâldean et al., 1997). Its spawning period lasts probably from May to the beginning July and they reproduce at the age of two years. It is essential to recreate in captivity its life conditions as faithfully as possible, in order to ensure the survival and reproduction of this species.

The goal of the LIFE-NATURE project was to restore favorable ecological conditions for *Romanichthys valsanicola* through the creation and implementation of a management plan and of a follow-up system designed to insure the survival of this species. We have also successfully engaged local and central authorities in supporting our objectives.

One of our most important achievements was to have the river flow increased to 0.126 m³/sec in summer and 0.0613 m³/sec in winter. However, this flow is still smaller than in natural conditions, namely 1-1.5 m³/sec, but it was dictated by economic reasons.



Fig. 3: Location of *Romanichthys* fishing points

We have achieved a constant monitoring of the life conditions of *Romanichthys valsanicola*. The researchers analyzed the pH of Vâlsan River's water, its microbiology and quality as to polluting chemicals, heavy metals and radioactivity, at various locations (Fig. 4). The conclusion of this comprehensive study was that there was no pollution risk for *Romanichthys*. A study of the vegetation along the Vâlsan established the critical role of the trees sustaining the river banks. As samples were collected periodically between 2000 and 2003, we put together an extensive data base on the benthic invertebrate fauna (Fig. 4). The reason for the richness of the data was the diet of *Romanichthys*, which relies exclusively on aquatic invertebrates, rheophilic and oxyphylic insect species, while the mayfly, *Rhithrogena semicolorata*, accounts for more than half of its stomach content. These species were very abundant in 2002 and 2003, offering *Romanichthys* large meals.

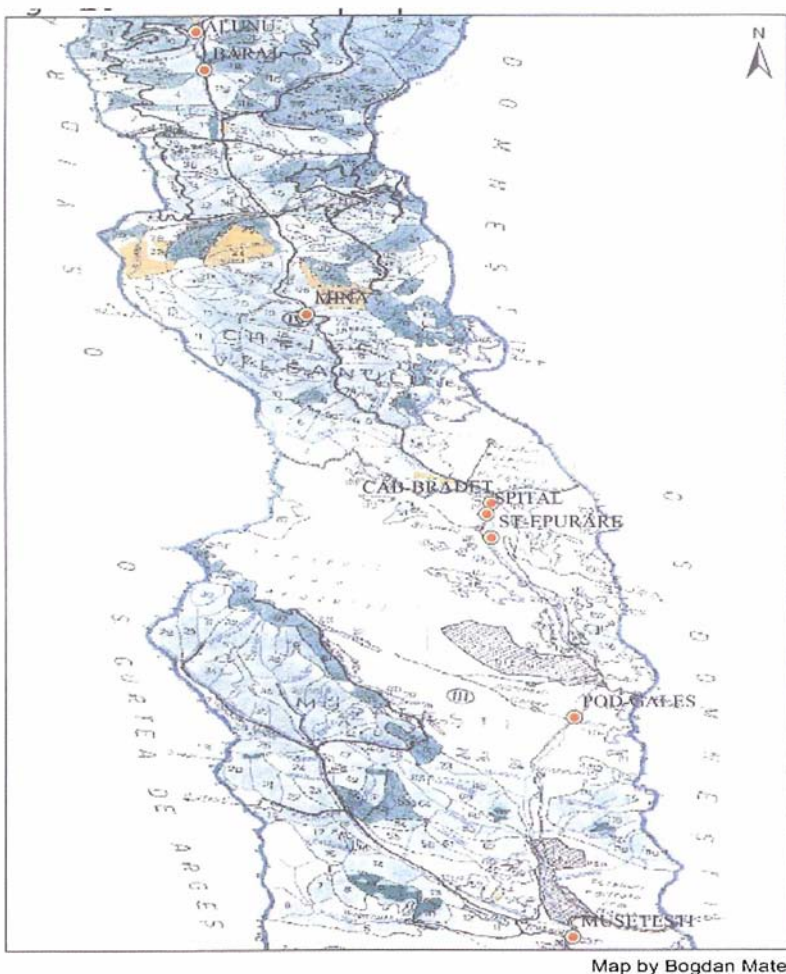
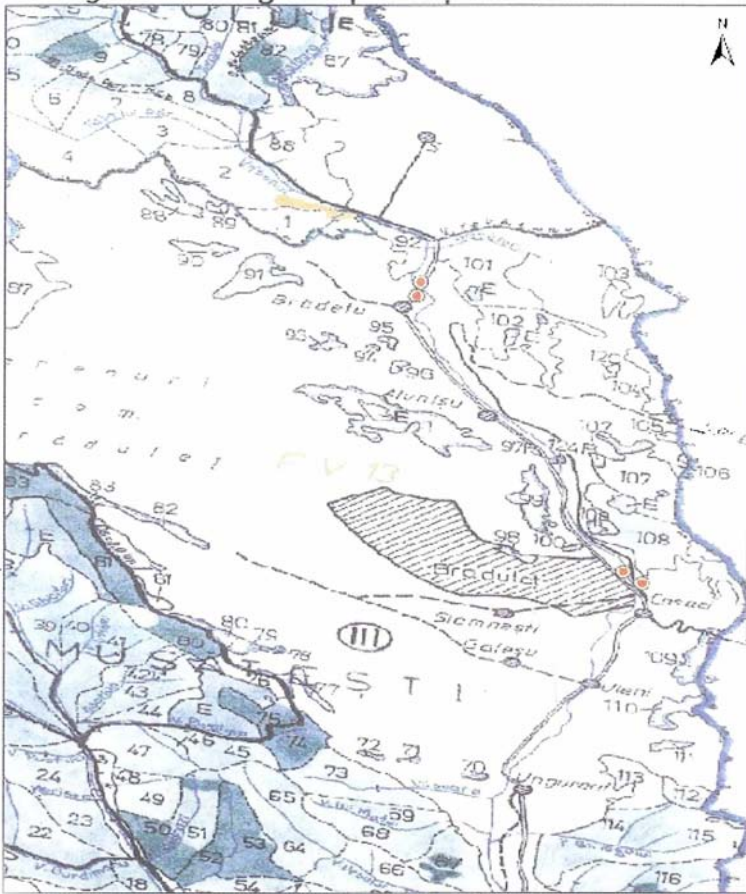


Fig. 4: Location of sample prelevation station

We have cooperated well with local authorities in the process of removing the waste from the Vâlsan River and its surroundings and in creating special places for waste disposal (Fig. 5). They have also banned stone removal and wood harvesting from the river area. As the locals had been using river stone from the Vâlsan for their housing needs for a long time, we had restored the habitat by having 510 tones of stone brought into the most affected areas (Fig. 6).



Map by Jogan Matei

Fig. 5: Garbage disposal points

Through the monitoring process we could witness how the *Romanichthys* population expanded from a few specimens in 2000 to some 200 specimens in 2003 as a result of the management plan. We found three generations of the fish, among which juveniles, which means the species is reproducing every year.

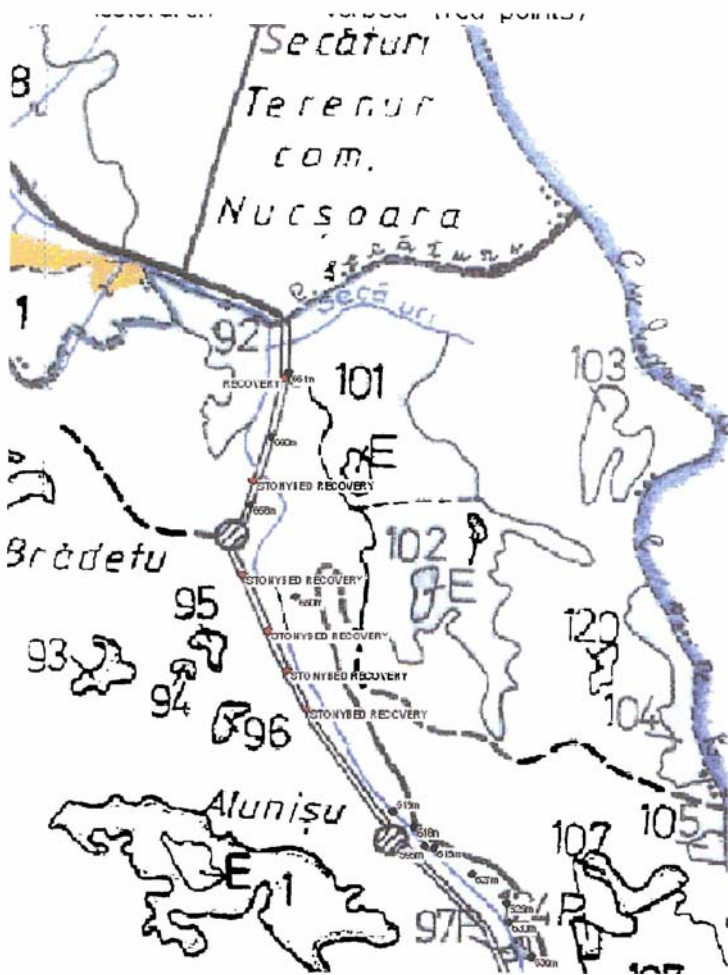
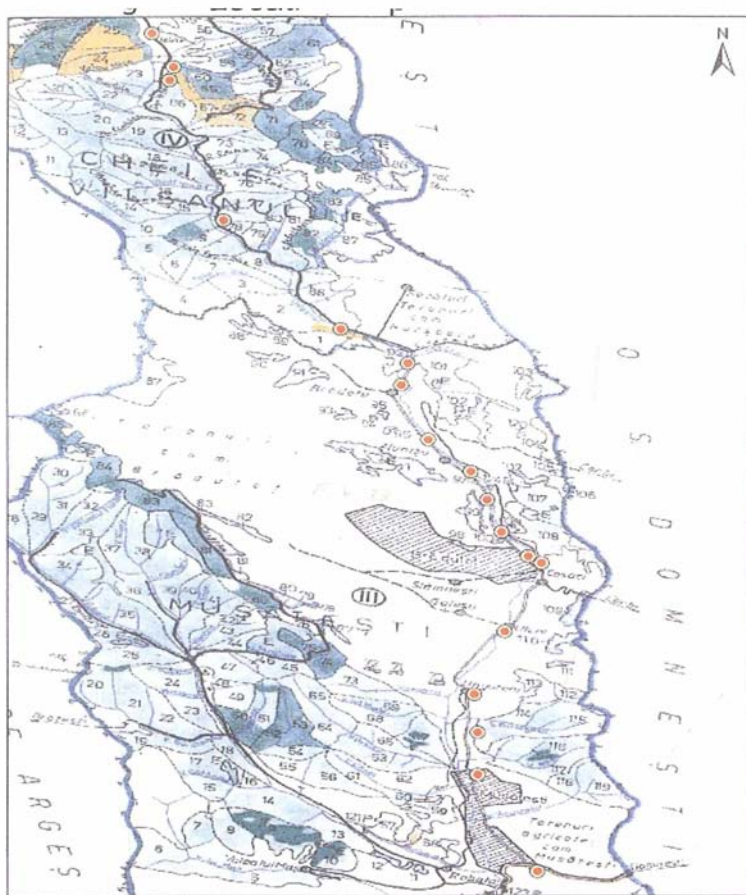


Fig. 6: Restoration of the river bed (red points)

We have achieved wide public awareness of the problem and brought our results to the stakeholders through billboards (Fig. 7) lessons taught in the local schools, a movie, and scientific articles in the international, national and local press, TV shows, radio broadcasts, flyers and brochures.

In June 2003 six adult specimens of *Romanichthys valsanicola* were taken to the fluvarium of the "Maison de Ramiers", in France for breeding purposes. Specialists from this institution had already been credited with the successful reproduction of *Zingel asper*, a percid species related to *Romanichthys* and with a similar ecology.

In 2005 the nature reserve "Vâlsan Valley" will be extended into the surroundings of the neighbouring city of Brădet where *Romanichthys valsanicola* is most abundant.



Map by Bogdan Matei

Fig. 7: Location of panels

The entire work carried out during this project has significantly contributed to the improvement of life conditions on the Vâlsan River, to a significant increase in the *Romanichthys valsanicola* population and to reversing its trend towards extinction.

The project results can be accessed at:
<http://www.ibiol.ro/romanichthys/index.htm>.

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