

ABOUT THE MOLLUSKS OF TISZA BEFORE THE RIVER CONTROL

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Tisza afforded, before regularization, vital conditions for the fauna, and of course, for the mollusk fauna, as well, differing from the present ones. The river ran much more slowly and very tortuously. His yearly level fluctuated but little because the water of inundations dispersed on a huge area. The banks were covered by reed, hair-weed and other floriferous water vegetation. The regularization cut through the bends of river and restrained strongly the river flats by dams and dikes. Since that time the water-course is faster, its level rises strongly at inundations. It inundates the river flats between dams and dikes. There isn't any more floriferous water vegetation at the brink of the river bed. The ancient river bends are at present backwaters.

The mollusk fauna that existed before the river control may be reconstructed on the basis of the remained empty shells only slowly and with arduous work. I am publishing below some characteristic data collected of Late.

In the summer of 1961 a canal was cut between the Dead and Living Tisza at Hattyas in the outskin of Szeged. The work unearthed a lot of fossil mollusk shells. Among them the species *Lithoglyphus naticoides* C. Pfeiffer, *Unio crassus* Retzius and *Sphaerium rivicola* Lamarck prove that the discovered fossil mollusk population was come from the ancient bed of Living Tisza. These three species that require oxygen-uptake can namely be found but in the river, they cannot survive in stagnant waters and inundation areas. In the population the gilled species residing on the bottom prevail. Among the *Prosobranchia* snails the number of *Lithoglyphus naticoides* C. Pfeiffer is limited although that species is highly common in Tisza. The old slower water-course was less favourable to that species which requires a higher oxygen-uptake. The *Viviparus hungaricus* Hazay lived under optimal conditions. The number of it individuals is extremely high, outnumbering far those of all the other species. On the other hang, *Viviparus viviparus* Linné could scarcely be found. Nowadays both *Viviparus* species are frequent in the inundation area and here and there also in backwaters; in Tisza, however, they are rare. The *Valvata piscinalis* O. F. Müller is frequent. It is much rarer in Tisza, after the regularization, but in the borrow-pits of the inundation area and in the backwaters on places of clear water there are to be found here and there even today lots of it.

Among the *Lamellibranchiata* the *Unio crassus* Retzius that at present occurs en masse in the Living Tisza, could be found in the fossil population but very rarely, as a consequence of the then slower water-course. According to my older examinations, however, there were also in the Tisza before regularization sectors of faster course where also this species requiring more oxygen-uptake felt well and lived in a considerable quantity. From the fossil population the *Unio pictorum balatonicus* K ü s t e r and the *Unio tumidus* Z e l e b o r are frequent. These two species prefer the stagnant waters and those with slow course, living at present first of all in backwaters. They aren't rare even in the Living Tisza; their amount, however, decreased there very highly since the river control, while the *crassus* species has become very numerous. I have found in the population a great number of *Anodonta* fragments, as well as a more exact determination wasn't, unfortunately, made possible by the state of shells. *Sphaerium rivicola* L a m a r c k was found in great number. Nevertheless, the species requiring higher oxygen-uptake may have been much more frequent in the Tisza before regularization than at present.

From the water pulmonated snails (*Basommatophora*) I have found but the species *Radix ovata* D r a p a r n a u d and *Gyraulus albus* O. F. M ü l l e r in the population, and even these occurred in a very low individual number. Before regularization river and inundation area were not separated as sharply as they are at present. The water pulmonated snails populated first of all the marshy inundation area. As a consequence of their way of life they were exposed to the danger of being swept away even in a water running slowly, although they could settle down even permanently here and there among the riparian water vegetation. At present they are living in the borrow-pits of the inundation areas and in backwaters. They get into the Living Tisza at inundations. Drifting with the stream, they get often into another stagnant water of the inundation area. In rare cases, in suitable places, they settle down, at least temporarily, in the Living Tisza, as well.

From the population we could find a few exemplars of the land snails *Helix pomatia* Linné and *Vallonia costata* O. F. M ü l l e r, too. They may have drifted here with the current from some nearby land snail population.

Another fossil population lies about 20 km north, in the environment of community Algyó, on the right steep bankside of Tisza, circa 5 m below the present surface. There prevails here the huge amount of *Viviparus hungaricus* H a z a y, with lots of *Unio pictorum balatonicus* K ü s t e r but a very little *Planorbis corneus* Linné. As to the three species, they could be also members, of a stagnant water population, as well. However, the strongly subordinate role of the water pulmonated snails besides the high individual number of the other two species proves a river population. Apart of these, the population lies in the running water sediment of Tisza.

The third population gives an insight into the fauna of the inundation water of the Tisza before regularization. The locality is a brickmaker, in the environments of the community Tápé, adjacent to Szeged, about 1,5 km from Tisza. It is a meadow at present dry. Before the regularization, however, it was a moor-land belonging to the inundation area of

Tisza. Immediately below the humus of surface, in the clay, the mollusk shells make a layer. The humus took its origin from the disintegration of the old marsh-vegetation, and the clay was the ancient bottom of marsh. In the population the water pulmonated snails prevail with great superiority. The highest is the individual number of *Stagnicola palustris* O. F. Müller, and also the *Planorbis corneus* Linné and *Anisus planorbis* Linné may be found in great mass. The quantity of *Bathyomphalus contortus* Linné and *Anisus vorticulus* Troschel is much smaller. The gilled water snails are represented by some *Bithynia leachi* Sheppard and by the very sporadically occurring *Viviparus hungaricus* Hazay. The mussel of population is the *Unio pictorum balatonicus* Küster, its individual number being, however, very small.

In the mollusk layer I have found, sporadically also the shells of some land snails. These do not belong to the population, living only in the neighbourhood of it, at the bank of water. The species are as follows, *Succinea pfeifferi* Rossmässler. It has a way of life at water bank. The *Trichia hispida* Linné and *Perforatella bidens* Chemnitz prefer wet, shady places, liking to live at water banks. *Cepaea vindobonensis* C. Pfeiffer and *Helicella hungarica* Soós et H. Wagner are helio- and thermophilic species.

The area is at present an open arid field, in the neighbourhood there are living a great number of *Helicella obvia* Hartmann and a few *Imparietula tridens* O. F. Müller, thermophilic land snails.

Since the regularization, the *Stagnicola palustris* O. F. Müller, *Bathyomphalus contortus* Linné, *Anisus vorticulus* Troschel and *Bithynia leachi* Sheppard became much less frequent in the inundation area of Tisza. The *Limnaea stagnalis* Linné took the lead from the *Stagnicola palustris* O. F. Müller, being now widespread and common. The *Bithynia tentaculata* Linné is much more frequent than the *Bithynia leachi* Sheppard. After regularization the *Viviparus hungaricus* Hazay became in the Living Tisza much less frequent, it became, however, more numerous in the inundation area, and the bottom of borrow areas are covered, here and there, en masse by it. The main cause of changes is, that the fauna of the inundation water lived in the natural marshes along the river before the regularization, finding an abode in the borrow pits dug at building the dams, after the regularization, having got then into changed living conditions.

The river control and the drainage of inland waters dried up the environment of Tisza in a high degree, having an unfavourable effect also on the land mollusk fauna. The *Trichia hispida* Linné and *Perforatella bidens* Chemnitz pressed close to the North. The only known recent locality of the *Perforatella bidens* Chemnitz in the Hungarian sector of Tisza is at present Sárkánykert, at the mouth of Szamos where in 1958 I found its living exemplars en masse. The *Helicella hungarica* Soós et H. Wagner is native in the sand areas of the Hungarian Plain, The inundation area of Tisza stretched in ancient ages till there. The memory of that is preserved by the inundation humus soil accompanying Tisza in a broad strife, separating this snail from the bank of Tisza.

After all, the river controll of Tisza changed significantly the living

conditions of mollusk fauna, and accordingly also the quantitative and qualitative composition of the fauna has changed.

This short paper deals only with a small part of species living in the Tisza district, nevertheless it gives a survey over the nature of changes.

References

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