A BRIEF REPORT ON THE SPECIES OF FISH OF THE HUNGARIAN SECTION OF THE DANUBE DAMAGED BY ANTHROPOGENEOUS EFFECTS

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In a comprehensive summary compiled in 1960, the author discussed the changes observed in the stock of fish in the Hungarian section of the Danube in the course of the ten years ended at that time (T ó t h, 1960). In 1970 he published a revised list of the fish in the said section of the Danube (T ó t h, 1970). Similarly concerning the said section of the river, – on the one between the distances of 1433 and 1850 km reckoned from the mouth – a brief account is given below with a summary on the species of fish living in that section and suffering most from the effects of anthropogeneous interference.

The two main forms of such interference: 1. water construction works, in the first place river regulation; 2. water pollution of industrial origin. Water pollution from households – also considering the synthetic detergents – produces no appreciable effects in this reach of the Danube as yet.

Cyclostomata are so infrequently found, that regarding them the anthropogeneous effects cannot be valuated yet.

Acipenseridae figure with 4 species in the list of fish of the said Danube section, however, practically only one species, *Acipenser ruthenus* L. is found regularly. In the course of their migration of anadromous origin, the individuals of this species come to the Hungarian section of the Danube from the lower course of the river. However, owing to the sewages from the industrial units concentrated around Budapest and from the Dunaújváros Iron Works, migration is stuck in the lower part of the discussed section of the river, and the species is met with but in insignificant quantities over Budapest. At approx. 80 km down the river from Budapest, its quantity is still appreciable in respect of large-scale fishery.

Anguilla anguilla L. gets into the Danube-basin for its most part through artificial introduction; it is found rather infrequently, anthropogeneous effects upon it cannot be assessed at present. Situation is the same with *Salmoniade*, owing to their scarcity.

An interesting endemic species of the Danube is *Umbra krameri* W a l d b a u m. However, with the disappearance of the lenitic waters of the flood-plain in consequence of water regulation, individuals of the species turn up more and more infrequently.

As to *Esox lucius* L. – apart from the fact that the decrease of the extent of the waters of the flood-plain (similarly to other species preferring that kind of biotope), reduces their absolute numbers –, no connection with anthropogeneous effects of the presence of this species can be found so far.

The family present in the river section with the greatest number of species is *Cyprinidae*. The narrowing of the flood-plains afflicts each of the species of its subfamily *Leuciscinae*. *Chondrostoma nasus* L., as it lives habitually in the bed of the main branch of the river, suffers more from pollution than the other species. Similar effects are to be observed with the subfamily *Cyprinianae*. From among them, *Cyprinus carpio* L., which represents considerable economic value in the said river section, is found in continuously decreasing numbers of individuals, in consequence of the effects of both river regulation and pollution of the water. In great quantities it is found nowhere upwards from Budapest, and even downwards from the city notable quantities are met with only in the waters of the meandering bends cut off in the last century, communicating with the main branch – only in reaches far from the polluted sections. – – *Pelecus cultratus* L., of the subfamily *Cultrinae*, is quite a rarity. The pollution of the water of industrial origin is adverse to the eggs of the subfamily, hatched pelagically and floating. The small-sized species of the family, those of the *Acheilognathinae* and *Gobioniae* subfamilies, are found for the present, in great quantities in the biotopes suiting them, it is at worst their local absence in certain places that refers to the sewages of damaging effect appearing there. The member of this family which suffers most, is *Barbus barbus* L., which, being a rheofilous species is subject to the effect of each contamination in the polluted main branch of the Danube.

What has been said above concerning the subfamily *Gobioninae* of the *Cyprinidae* can also be referred to the species of the family *Cobitidae*.

The number of individuals of *Silurus glanus* L. has become scarce in the whole section of Danube discussed here, and it would be difficult to find out if river regulation or the pollution of the water had the greater part in this.

In the presence of *Lota lota* L. the rock-filled dams built in the course of river regulation have brought certain local regularity. If any of them are found at all, then this is in every instance at the end of the dams, towards the main stream of the river. Obviously, also this species is afflicted by the pollution of the water, however, the stone structures are favourable to its manner of life.

Largely the same can be said about the presence of *Cottus gobio* L., the only species of the family *Cottidae* met with here. Sewages are, injurious to the species, therefore it is getting infrequent; on the other hand, the

pavings of the water constructional works afford it adequate protection, and that is why it is present so-to-say exclusively in such places.

The species of the family *Percidae* are relatively less disturbed by the circumstance that, in consequence of river regulation, the extent of the waters in the flood-plains has decreased. However, the ecological conditions of the main branch itself, and its changes basically determine the trend of development of the stock of the species belonging to this family. The appearance of the two most interesting ones, of endemic *Aspro streber* Siebold and *Aspro zingel* L. can be considered a rarity. It passed for such even twenty years ago; however, at that time the collection of an individual did not yet mean an insoluble problem. Today, however, it can be considered a most infrequent event if one specimen is caught in a net. – The stock of the species *Stizostedion luciperca* L. and *Stizostedion volgense* Gmelin are highly responsive to the pollution of water. In polluted sections their occurrence is minimal. From among the three species of the subfamily *Percinae*, indigenous here the presence of two: *Perca fluviatilis* L. and *Acerina cernua* L can be considered common even under the present circumstances. The stock of endemic *Acerina schraetser* L, however, is getting scarcer.

The species *Proterorhinus marmoratus* Pall. of the family *Gobiidae* is generally scarce, no anthropogeneous effects could be observed as regards its presence.

As a summary of what has been said above, the elimination of the waters in flood-plains and, especially, the pollution of the water of industrial origin generally diminish the stock of each species living here. However, certain species are more gravely damaged, and the density of their individuals is rapidly decreasing. The species *Acipenser ruthenus* L. *Chondrostoma nasus* L., *Pelecus cultratus* L., *Aspro streber* Siebold, *Aspro zingel* L., and *Acerina schraetser* L. are counted among such in the Hungarian section of the Danube. The number of the damaged species is probably higher, still there are no observations at disposal regarding those at present.

REFERENCES

Tóth, J. 1960. Kecsege a magyar Dunán (Sturgeons in the Hungarian Section of the Danube) Halászat (Fishery) **7:** 139 – 140.

Tóth, J. 1960. Einige Veränderungen in der Fischfauna der ungarischen Donaustrecke in der vergangenen Dekade. Ann. Univ. Scient. Budapestiensis, Sectio Biol. **3:** 401 – 414.

Tóth, J. 1970. Fish Fauna List from the Hungarian Section of the Danube. Ann. Univ. Scient. Budapestiensis, Sectio Biol. **12:** 277 – 280.