

Data to the fish fauna of River Tisa and its tributaries in Hungary and Romania

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Abstract

The fish fauna of River Tisza/Tisa¹ and its tributaries was investigated between 1992 and 1996 in Hungary and in Romania. During the five years of investigation more than 40 thousand fish individuals were caught and identified. The fish individuals belonged to 59 different species. The fish were collected with an electric fishing gear from a boat, but in rivers Săpânța, Iza and Mara we waded into the river. Among the species with small distribution areas and important faunistic and conservational value the following ones were present: *Eudontomyzon danfordi*, *Rutilus pigus virgo*, *Leuciscus souffia agassizi*, *Barbus pelopennesius petényi*, *Gobio uranoscopus*, *Gobio kessleri*, *Hucho hucho*, *Gymnocephalus schraetzer*, *Zingel zingel*, *Zingel streber*, *Cottus poecilopus*.

Keywords: Fish fauna; River Tisa basin;

Introduction

The present fish fauna of natural water bodies is insufficiently known in several regions. The unsatisfactory level of faunistic and taxonomic investigations is obvious in the detection of the rare fish species. Some endemic fish species, the decrease of which started at the time of river regulations at the end of the last century, have disappeared completely by now.

Within the framework of a five-year project, River Tisa and its tributaries were investigated. The 59 different species found also sustain the fact that the protection of the upper reach of River Tisa and its tributaries is reasonable from a nature conservational point of view. This species number is completed with other species on the lower reach.

During the investigation several rare and endemic fauna element were found, which will be described in the followings. *Hucho hucho*, being a very rare and strictly

¹ The Hungarian name of the river is Tisza

protected species in Hungary, was in the focus of our investigation. In Hungary its presence has been proved from the upper reach of River Tisza and the upper reach of River Danube. We wanted to find out about the size of the population of the endangered *Hucho hucho* outside the Hungarian border, and see which tributaries they use for spawning in the spawning period, which species they occur together with in the various habitats. To answer our questions we also investigated the Romanian reach of River Tisa.

Literature review

One of the earliest data on the fish fauna of River Tisa can be found in the description by Bél (1767), in which 6 species were mentioned. Later, 12 species were registered by name from the river by Reisinger (1830), and the presence of 16 further species can be assumed based on his descriptions. The first faunistical investigation is linked with the name of Heckel (1847), Heckel & Kner (1858). The presence of 10 species is mentioned in their work. Kriesch (1868) mentioned 26 species from River Tisa passing through the Hungarian fauna area of that time. 38 species were registered by Herman (1887) based on experiences of others. On the species list drawn up by Vutskits (1904) 39 species can be observed, and in his work in 1918 the presence of 40 species is mentioned. In his book Kolosváry (1928) described 36 species from the river. P. Szalai (1946) relied in his work on the catch of fishermen, and mentioned 18 species.

The presence of 56 species is mentioned in the work of Vásárhelyi (1960) dealing with River Tisa. In the illustrated fish identification book written by Vásárhelyi (1961), River Tisa is signed as the finding place of 45 different fish species. His species list is mostly similar to that of Kriesch (1868) and Herman (1887). Ferencz (1965) collected data from several points of the river. 28 species were found according to his investigations. The presence of 32 species in the river was proved by Harka (1972). Botta et al. (1984) made regular samplings on the natural waters of Hungary, and they described the presence of 18 fish species. Harka (1986b) registered 49 species in the publication dealing with the fishing-biology of the Kisköre-reservoir. The first recent data on *Hucho hucho* during the last decades were presented by Csikai & Végh (1991). Harka investigated the tributaries of River Tisa: in River Túr (1994) 38 species and in River Szamos (1995) 46 species were described. The presence of 45 species was detected by Györe et al. (1995) from the upper reach of River Tisa in Hungary. Harka (1997), when completing his findings with recent data of other researchers, described 56 species from River Tisa, in which pool data from the oxbow-lakes near the river were also included.

Materials and methods

In the Hungarian water-bodies we used an aggregate electric fishing gear for fishing, and in Romania we used a portable electric gear with little efficiency. Fish

were put back to the water after identification. Species numbers were written down on the spot with the following method. Species number below 10 individuals appeared as exact figures, below 100 individuals figures were rounded, and above 100 specimens numbers were estimated. On the Hungarian reach of the river samplings were made from boat, thus the data can not be connected to distinct sampling points; this is why only the reach where the sampling was carried out is mentioned. In cases when it was possible the finding places were narrowed down to administrative areas of the settlements.

The list of the fish species found follows the taxonomical order of Nelson (1984). The publication of data is done according to the formal requirements of faunistic data publication suggested by Dévai et al. (1987). After dates, numbers of individuals appear. The breaking up of the number of individuals inside the brackets in the case of *Eudontomyzon danfordi* means that one of the two caught fish was in larval stage while the other was fully developed (1+1). Pieces of data collected at the same place are separated with a semicolon.

Results

PETROMYZONTIDAE

1. *Eudontomyzon danfordi* Regan, 1911
Mara: 26.04.1996, 2 (1+1).

ACIPENSERIDAE

2. *Acipenser ruthenus* Linnaeus, 1758
Tisza (the mouth of River Túr): 03.07.1993, 1.

ANGUILLIDAE

3. *Anguilla anguilla* Linnaeus, 1758
Tisza (the mouth of River Túr): 03.07.1993, 1.

CYPRINIDAE

4. *Rutilus rutilus* Linnaeus, 1758
Little-Túr (Oxbow, Sonkád): 24.04.1993, 12. - Szamos (Vásárosnamény): 05.07.1994, 3. - Tisza (between Tiszabecs and Tizacsécse): 28.04.1994, 3. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tiszabecs and Tivadar): 23.10.1993, 1. - Tisza (between Tivadar and Vásárosnamény-Gergelyugornya): 03.07.1994, 1. - Tisza (Tivadar): 15.07.1996, 3. - Tisza (between Tokaj and Tizsalök): 14.07.1993, 100. - Tisza (the mouth of River Túr): 03.07.1993, 2.

- Tisza (Vásárosnamény): 17.07.1996, 2; 20.06.1995, 2. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 2. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 25. - Tisza-Lake (Kisköre): 01.12.1994, 15. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 60. - Túr (Sonkád): 24.11.1993, 10.

5. *Rutilus pigus virgo* Heckel, 1852

Tisza (between Tiszabecs and Tiszacsécse): 15.09.1995, 2; 29.04.1996, 2. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 3. - Tisza (Tivadar): 15.07.1996, 1. - Tisza (Vásárosnamény): 20.06.1995, 1. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 1. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 2.

6. *Ctenopharyngodon idella* Valenciennes, 1844

Little-Túr (Oxbow, Sonkád): 24.04.1993, 1; 15.09.1995, 1. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 1.

7. *Scardinius erythrophthalmus* Linnaeus, 1758

Little-Túr (Oxbow, Sonkád): 24.04.1993, 5. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 2. - Tisza-Lake (Kisköre): 01.12.1994, 2. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 1. - Túr (Sonkád): 24.11.1993, 40.

8. *Leuciscus leuciscus* Linnaeus, 1758

Tisza (between Tiszabecs and Tivadar): 11.05.1993 - Túr (between the Hungarian border and Sonkád): 16.03.1995, 1.

9. *Leuciscus cephalus* Linnaeus, 1758

Iza (Sighetu Marmăției): 25.04.1996, 70. - Little-Túr (Oxbow, Sonkád): 24.04.1993, 1; 15.09.1995, 2. - Szamos (Vásárosnamény): 06.07.1993, 25; 21.06.1994, 50; 05.07.1994, 30. - Tisza (between Lónya and Tuzsér): 07.07.1994, 200. - Tisza (Lónya): 10.07.1993, 20; 11.07.1993, 50; 06.07.1994, 30. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 200; 16.06.1995, 80. - Tisza (between Tiszabecs and Tiszacsécse): 30.09.1993, 200; 01.10.1993, 200; 21.10.1993, 150; 22.10.1993, 200; 15.03.1994, 50; 16.03.1994, 50; 17.03.1994, 10; 27.04.1994, 200; 28.04.1994, 150; 29.04.1994, 200; 25.06.1994, 150; 26.06.1994, 50; 15.03.1995, 120; 17.03.1995, 50; 23.04.1995, 120; 15.06.1995, 120; 14.09.1995, 120; 15.09.1995, 160; 16.09.1995, 120; 29.04.1996, 120. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 120. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 02.10.1993, 300; 11.05.1993; 23.10.1993, 200; 27.05.1994; 20.10.1994. - Tisza (Tiszabecs): 01.07.1993, 100. - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 500. - Tisza (Tivadar): 05.07.1993, 100; 14.07.1996, 30; 15.07.1996, 22. - Tisza (between Tokaj and Tizsalök): 14.07.1993, 5. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 30. - Tisza (the mouth of River Túr): 03.07.1993, 80; 30.06.1994, 2. - Tisza (Vásárosnamény): 20.06.1995, 50; 17.07.1996, 70. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 40; 05.07.1994,

600. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 12. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 120. - Túr (Sonkád): 24.11.1993, 20.

10. *Leuciscus souffia agassizi* Cuvier et Valenciennes, 1844
Iza (Sighetu Marmăției): 25.04.1996, 50.

11. *Leuciscus idus* Linnaeus, 1758
Tisza (between Tiszabecs and Tizsacsécse): 25.06.1994, 1. - Tisza (Between Tokaj and Tiszalök): 14.07.1993, 10.

12. *Phoxinus phoxinus* Linnaeus, 1758
Mara: 26.04.1996, 6. - Săpânța: 27.04.1996, 3.

13. *Aspius aspius* Linnaeus, 1758
Szamos (Vásárosnamény): 05.07.1993, 1; 06.07.1993, 1; 21.06.1994, 15. - Tisza (between Lónya and Tuzsér): 07.07.1994, 1. - Tisza (Lónya): 06.07.1994, 1. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 3; 16.06.1995, 1. - Tisza (between Tiszabecs and Tizsacsécse): 21.10.1993, 2; 22.10.1993, 1; 16.03.1994, 3; 17.03.1994, 1; 27.04.1994, 10; 28.04.1994, 7; 29.04.1994, 4; 25.06.1994, 4; 23.04.1995, 9; 15.06.1995, 4; 14.09.1995, 6; 15.09.1995, 3; 16.09.1995, 3; 29.04.1996, 8. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 3; 23.10.1993, 1; 27.05.1994; 20.10.1994. - Tisza (Tivadar): 14.07.1996, 1. - Tisza (Vásárosnamény): 20.06.1995, 5. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 1. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 1.

14. *Leucaspis delineatus* Heckel, 1843
Tisza (between Tiszabecs and Tizsacsécse): 29.04.1996, 1. - Tisza (between Tiszabecs and Tivadar): 11.05.1993.

15. *Alburnus alburnus* Linnaeus, 1758
Little-Túr (Oxbow, Sonkád): 24.04.1993, 50. - Szamos (Vásárosnamény): 06.07.1993, 50; 21.06.1994, 600; 05.07.1994, 300. - Tisza (between Lónya and Tuzsér): 07.07.1994, 500. - Tisza (Lónya): 11.07.1993, 50. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 500; 16.06.1995, 2000. - Tisza (between Tiszabecs and Tizsacsécse): 30.09.1993, 500; 01.10.1993, 500; 21.10.1993, 2000; 22.10.1993, 500; 15.03.1994, 5; 16.03.1994, 20; 17.03.1994, 5; 27.04.1994, 2000; 28.04.1994, 1200; 29.04.1994, 1000; 25.06.1994, 500; 26.06.1994, 300; 15.03.1995, 100; 17.03.1995, 50; 23.04.1995, 200; 15.06.1995, 2000; 14.09.1995, 1500; 15.09.1995, 1000; 16.09.1995, 800; 29.04.1996, 800. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1500. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 600; 23.10.1993, 1000; 27.05.1994; 20.10.1994. - Tisza (Tiszabecs): 01.07.1993, 200. - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 400. - Tisza (Tivadar): 05.07.1993, 200; 14.07.1996, 300; 15.07.1996, 135. - Tisza (between Tokaj and Tiszalök): 14.07.1993, 20. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 500. - Tisza (the mouth of

River Túr): 03.07.1993, 100; 30.06.1994, 20. - Tisza (Vásárosnamény): 20.06.1995, 1000; 17.07.1996, 100. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 80; 05.07.1994, 1200. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 60. - Tisza-Lake (Kisköre): 01.12.1994, 50. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 80. - Túr (Sonkád): 24.11.1993, 3.

16. *Alburnoides bipunctatus* Bloch, 1782

Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 12; 16.06.1995, 10. - Tisza (between Tiszabecs and Tizacsécse): 30.09.1993, 200; 01.10.1993, 200; 21.10.1993, 100; 22.10.1993, 50; 23.11.1993, 40; 15.03.1994, 15; 16.03.1994, 20; 27.04.1994, 50; 28.04.1994, 80; 29.04.1994, 80; 26.06.1994, 15; 17.03.1995, 70; 23.04.1995, 6; 15.06.1995, 10; 14.09.1995, 300; 15.09.1995, 300; 16.09.1995, 200; 29.04.1996, 3. - Tisza (between Tiszabecs and Tizakóród): 18.10.1996, 200. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 300; 23.10.1993, 3; 27.05.1994; 20.10.1994 - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 120. - Tisza (Tivadar): 05.07.1993, 2; 14.07.1996, 20; 15.07.1996, 10. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 15. - Tisza (the mouth of River Túr): 03.07.1993, 5. - Tisza (Vásárosnamény): 20.06.1995, 2. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 35.

17. *Blicca bjoerkna* Linnaeus, 1758

Little-Túr (Oxbow, Sonkád): 24.04.1993, 2. - Szamos (Vásárosnamény): 05.07.1993, 2; 06.07.1993, 1; 05.07.1994, 4. - Tisza (Lónya): 10.07.1993, 5; 11.07.1993, 10. - Tisza (between Tiszabecs and Tivadar): 11.05.1993; 02.10.1993, 1; 23.10.1993, 1; 27.05.1994 - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 1. - Tisza (Tivadar): 15.07.1996, 1. - Tisza (the mouth of River Túr): 30.06.1994, 1. - Tisza (Vásárosnamény): 20.06.1995, 1. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 5; 05.07.1994, 40. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 20. - Tisza-Lake (Kisköre): 01.12.1994, 1. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 3. - Túr (Sonkád): 24.11.1993, 1.

18. *Abramis brama* Linnaeus, 1758

Szamos (Vásárosnamény): 05.07.1994, 1. - Tisza (between Tiszabecs and Tizacsécse): 15.03.1994, 10; 16.03.1994, 20; 17.03.1994, 4; 27.04.1994, 5; 28.04.1994, 3; 29.04.1994, 2; 23.04.1995, 7; 14.09.1995, 1; 29.04.1996, 3. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 23.10.1993, 1; 27.05.1994 - Tisza (Vásárosnamény): 17.07.1996, 1. - Tisza-Lake (Kisköre): 01.12.1994, 5. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 1. - Túr (Sonkád): 24.11.1993, 4.

19. *Abramis ballerus* Linnaeus, 1758

Tisza (between Tiszabecs and Tizacsécse): 23.04.1995, 9.

20. *Abramis sapa* PALLAS, 1811

Szamos (Vásárosnamény): 05.07.1993, 5; 06.07.1993, 5; 05.07.1994, 3. - Tisza (Lónya): 10.07.1993, 5; 11.07.1993, 8. - Tisza (between Tiszabecs and the mouth of River Túr): 16.06.1995, 10. - Tisza (between Tiszabecs and Tiszacsécsé): 27.04.1994, 1000; 28.04.1994, 600; 29.04.1994, 600; 25.06.1994, 1; 23.04.1995, 50; 15.06.1995, 80; 29.04.1996, 120. - Tisza (between Tiszabecs and Tivadar): 11.05.1993; 02.10.1993, 1; 27.05.1994 - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 20. - Tisza (Tivadar): 05.07.1993, 3; 15.07.1996, 15. - Tisza (the mouth of River Túr): 03.07.1993, 2. - Tisza (Vásárosnamény): 17.07.1996, 5. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 6; 05.07.1994, 100. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 1.

21. *Vimba vimba* Linnaeus, 1758

Tisza (between Tiszabecs and Tiszacsécsé): 16.03.1994, 1; 14.09.1995, 1; 15.09.1995, 4; 16.09.1995, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tiszabecs and Tivadar): 27.05.1994.

22. *Pelecus cultratus* Linnaeus, 1758

Tisza (between Tiszabecs and Tiszacsécsé): 28.04.1994, 1.

23. *Chondrostoma nasus* Linnaeus, 1758

Szamos (Vásárosnamény): 06.07.1993, 5; 21.06.1994, 30; 05.07.1994, 50. - Tisza (between Lónya and Tuzsér): 07.07.1994, 70. - Tisza (Lónya): 10.07.1993, 5; 11.07.1993, 15. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 150; 16.06.1995, 150. - Tisza (between Tiszabecs and Tiszacsécsé): 30.09.1993, 300; 01.10.1993, 150; 21.10.1993, 500; 22.10.1993, 300; 23.11.1993, 1. - 15.03.1994, 1000; 16.03.1994, 300; 17.03.1994, 50; 27.04.1994, 1000; 28.04.1994, 500; 29.04.1994, 500; 25.06.1994, 200; 26.06.1994, 70. - 15.03.1995, 150; 17.03.1995, 300; 23.04.1995, 90; 15.06.1995, 220; 14.09.1995, 500; 15.09.1995, 370; 16.09.1995, 350; 29.04.1996, 150. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 380. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 200; 23.10.1993, 250; 27.05.1994; 20.10.1994 - Tisza (Tiszabecs): 01.07.1993, 60. - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 50. - Tisza (Tivadar): 05.07.1993, 15; 14.07.1996, 3; 15.07.1996, 40. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 20. - Tisza (the mouth of River Túr): 03.07.1993, 15. - Tisza (Vásárosnamény): 20.06.1995, 30; 17.07.1996, 30. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 20; 05.07.1994, 400. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 3. - Túr (Sonkád): 24.11.1993, 1.

24. *Tinca tinca* Linnaeus, 1758

Little-Túr (Oxbow, Sonkád): 24.04.1993, 20.

25. *Barbus barbus* Linnaeus, 1758

Iza (Sighetu Marmăției): 25.04.1996, 15. - Szamos (Vásárosnamény): 06.07.1993, 15; 21.06.1994, 2; 05.07.1994, 25. - Tisza (between Lónya and Tuzsér): 07.07.1994, 15. - Tisza (Lónya): 11.07.1993, 25. - Tisza (between Tiszabecs and the

mouth of River Túr): 27.06.1994, 30; 16.06.1995, 10. - Tisza (between Tiszabecs and Tizacsécse): 30.09.1993, 15; 01.10.1993, 15; 21.10.1993, 10; 22.10.1993, 10; 15.03.1994, 3; 17.03.1994, 2; 27.04.1994, 50; 28.04.1994, 50; 29.04.1994, 30; 25.06.1994, 20; 26.06.1994, 10; 15.03.1995, 4; 17.03.1995, 1; 15.06.1995, 10; 14.09.1995, 110; 15.09.1995, 160; 16.09.1995, 100; 29.04.1996, 2. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 20. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 10; 23.10.1993, 20; 27.05.1994; 20.10.1994 - Tisza (Tiszabecs): 01.07.1993, 13. - Tisza (between Tivadar and Vásárosnamény-Gergelyugornya): 03.07.1994, 100. - Tisza (Tivadar): 05.07.1993, 15; 14.07.1996, 3; 15.07.1996, 5. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 1. - Tisza (the mouth of River Túr): 03.07.1993, 10. - Tisza (Vásárosnamény): 20.06.1995, 1; 17.07.1996, 2. - Tisza (between Vásárosnamény-Gergelyugornya and Lónya): 09.07.1993, 30; 05.07.1994, 150.

26. *Barbus peloponnesius petényi* Heckel, 1847

Iza (Sighetu Marmăției): 25.04.1996, 2. - Mara: 26.04.1996, 10. - Săpânța: 27.04.1996, 1. - Tisza (between Tiszabecs and the mouth of River Túr): 16.06.1995, 1. - Tisza (between Tiszabecs and Tizacsécse): 30.09.1993, 3; 01.10.1993, 1; 28.04.1994, 3; 29.04.1994, 2; 17.03.1995, 1; 23.04.1995, 1; 15.09.1995, 1; 16.09.1995, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 2. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993 - 23.10.1993, 1; 27.05.1994; 20.10.1994 - Tisza (Tiszabecs): 01.07.1993, 2. - Tisza (Tivadar): 15.07.1996, 1.

27. *Gobio gobio* Linnaeus, 1758

Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 2. - Tisza (the mouth of River Túr): 03.07.1993, 5.

28. *Gobio albipinnatus* Lukasz, 1933

Szamos (Vásárosnamény): 06.07.1993, 1; 21.06.1994, 1. - Tisza (Lónya): 11.07.1993, 5. - Tisza (between Tiszabecs and Tizacsécse): 30.09.1993, 6; 01.10.1993, 2; 21.10.1993, 1; 22.10.1993, 6; 29.04.1994, 3; 15.03.1995, 2; 17.03.1995, 2; 14.09.1995, 3; 15.09.1995, 6; 16.09.1995, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 3. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 1; 23.10.1993, 1; 27.05.1994; 20.10.1994 - Tisza (Tiszabecs): 01.07.1993, 3. - Tisza (between Tivadar and Vásárosnamény-Gergelyugornya): 03.07.1994, 5. - Tisza (Tivadar): 05.07.1993, 3; 14.07.1996, 1; 15.07.1996, 2. - Tisza (the mouth of River Túr): 03.07.1993, 3.

29. *Gobio uranoscopus* Agassiz, 1828

Iza (Sighetu Marmăției): 25.04.1996, 3.

30. *Gobio kessleri* Dybowski, 1862

Tisza (between Tiszabecs and Tizacsécse): 30.09.1993, 4; 27.04.1994, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 3. - Tisza (between Tiszabecs and Tivadar): 20.10.1994 - Tisza (the mouth of River Túr): 03.07.1993, 1.

31. *Pseudorasbora parva* Schlegel, 1842

Tisza (Tivadar): 15.07.1996, 1. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 30.

32. *Rhodeus sericeus amarus* Bloch, 1782

Little-Túr (Oxbow, Sonkád): 24.04.1993, 4. - Szamos (Vásárosnamény): 06.07.1993, 3. - Tisza (between Lónya and Tuzsér): 07.07.1994, 3. - Tisza (Lónya): 06.07.1994, 1. - Tisza (between Tiszabecs and Tiszacsécse): 16.03.1994, 1. - 27.04.1994, 2. - 29.04.1994, 2. - 15.09.1995, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tiszabecs and Tivadar): 20.10.1994 - Tisza (Tivadar): 05.07.1993, 10. - Tisza (between Tokaj and Tiszalök): 14.07.1993, 10. - Tisza (the mouth of River Túr): 03.07.1993, 4. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 2. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 15. - Tisza-Lake (Kisköre): 01.12.1994, 1.

33. *Carassius carassius* Linnaeus, 1758

Little-Túr (Oxbow, Sonkád): 24.04.1993, 1; 15.09.1995, 2.

34. *Carassius auratus* Linnaeus, 1758

Little-Túr (Oxbow, Sonkád): 24.04.1993, 15. - Szamos (Vásárosnamény): 21.06.1994, 2. - Tisza (between Lónya and Tuzsér): 07.07.1994, 1. - Tisza (Lónya): 11.07.1993, 8. - Tisza (between Tiszabecs and Tiszacsécse): 27.04.1994, 1. - 28.04.1994, 3. - 29.04.1994, 1. - Tisza (the mouth of River Túr): 30.06.1994, 4. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 3. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 250. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 20. - Túr (Sonkád): 24.11.1993, 1.

35. *Cyprinus carpio* Linnaeus, 1758

C. carpio m. *acuminatus*

Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 3.

C. carpio m. *hungaricus*

Tisza (Tiszabecs): 01.07.1993, 1. - Tisza (between Tokaj and Tiszalök): 14.07.1993, 1. -

C. carpio m. *nobilis*

Little-Túr (Oxbow, Sonkád): 24.04.1993, 20; 15.09.1995, 10. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 40.

36. *Hypophthalmichthys molitrix* Valenciennes, 1844

Tisza (between Tiszabecs and Tiszacsécse): 15.03.1994, 1. - Tisza (between Tiszabecs and Tivadar): 23.10.1993, 1; 27.05.1994 - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 1. - Tisza-Lake (Kisköre): 01.12.1994, 5. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 1.

37. *Aristichthys nobilis* Richardson, 1836

Tisza (Tarpa): 07.07.1994, 1.

COBITIDAE

38. *Barbatula barbatula* Linnaeus, 1758
Iza (Sighetu Marmăției): 25.04.1996, 5. - Mara: 26.04.1996, 25. - Săpânța: 27.04.1996, 15.
39. *Misgurnus fossilis* Linnaeus, 1758
Little-Túr (Oxbow, Sonkád): 15.09.1995, 1.
40. *Cobitis taenia* Linnaeus, 1758
Tisza (Tivadar): 05.07.1993, 1.
41. *Sabanejewia aurata* Filippi, 1865
Iza (Sighetu Marmăției): 25.04.1996, 2. - Tisza (between Tiszabecs and Tiszacsécse): 30.09.1993, 1. - Tisza (Tivadar): 14.07.1996, 1. - Tisza (Between Tokaj and Tiszalök): 14.07.1993, 1.

SILURIDAE

42. *Silurus glanis* Linnaeus, 1758
Szamos (Vásárosnamény): 05.07.1993, 30; 06.07.1993, 20; 21.06.1994, 20; 05.07.1994, 12. - Tisza (between Lónya and Tuzsér): 07.07.1994, 12. - Tisza (Lónya): 10.07.1993, 3; 11.07.1993, 3; 06.07.1994, 1. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 1; 16.06.1995, 1. - Tisza (between Tiszabecs and Tiszacsécse): 14.09.1995, 1; 15.09.1995, 3; 16.09.1995, 2. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 2. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 1. - Tisza (Tivadar): 15.07.1996, 2. - Tisza (the mouth of River Túr): 03.07.1993, 1. - Tisza (Vásárosnamény): 20.06.1995, 1; 17.07.1996, 20. - Tisza (between Vásárosnamény-Gergelyugornya and Lónya): 09.07.1993, 2; 05.07.1994, 30.

ICTALURUDAE

43. *Ictalurus nebulosus* Lesueur, 1819
Tisza (the mouth of River Túr): 30.06.1994, 15.

THYMALLIDAE

44. *Thymallus thymallus* Linnaeus, 1758
Tisza (Tiszabecs): 16.03.1994, 1.

SALMONIDAE

45. *Hucho hucho* Linnaeus, 1758
Tisza (Milota): 15.03.1994, 1. - Tisza (between Tiszabecs and Tiszacsécse): 11.05.1993, 1; 27.04.1994, 1. - Tisza (Tiszabecs): 16.03.1994, 1; 23.04.1995, 1.

46. *Salmo trutta m. fario* Linnaeus, 1758
Iza (Sighetu Marmăției): 25.04.1996, 7. - Săpânța: 27.04.1996, 12. - Tisza (between Tiszabecs and Tiszacsécsé): 04.11.1992, 1.

ESOCIDAE

47. *Esox lucius* Linnaeus, 1758
Little-Túr (Oxbow, Sonkád): 24.04.1993, 10; 15.09.1995, 5. - Tisza (between Tiszabecs and Tiszacsécsé): 01.10.1993, 1; 21.10.1993, 3; 22.10.1993, 1; 15.03.1994, 1; 27.04.1994, 1; 28.04.1994, 1; 25.06.1994, 1; 26.06.1994, 1; 14.09.1995, 1; 15.09.1995, 1; 29.04.1996, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 5. - Tisza (between Tiszabecs and Tivadar): 02.10.1993, 2. - Tisza (between Tiszabecs and Tivadar): 11.05.1993; 23.10.1993, 2; 27.05.1994; 20.10.1994 - Tisza (between Tokaj and Tiszalök): 14.07.1993, 1. - Tisza (the mouth of River Túr): 03.07.1993, 3. - Tisza (Vásárosnamény): 20.06.1995, 1. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 3. - Tisza-Lake (Kisköre): 01.12.1994, 50. - Túr (between the Hungarian border and Sonkád): 16.03.1995, 25. - Túr (Sonkád): 24.11.1993, 30.

GADIDAE

48. *Lota lota* Linnaeus, 1758
Szamos (Vásárosnamény): 05.07.1993, 2; 06.07.1993, 3. - Tisza (Lónya): 10.07.1993, 1; 06.07.1994, 1. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 1. - Tisza (between Tiszabecs and Tiszacsécsé): 30.09.1993, 5; 01.10.1993, 3; 21.10.1993, 3; 22.10.1993, 1; 15.03.1994, 2; 16.03.1994, 1; 27.04.1994, 1; 25.06.1994, 4; 23.04.1995, 1; 15.06.1995, 1; 14.09.1995, 17; 15.09.1995, 14; 16.09.1995, 10. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 6. - Tisza (between Tiszabecs and Tivadar): 02.10.1993, 1; 04.11.1992; 11.05.1993; 27.05.1994 - Tisza (Tiszabecs): 01.07.1993, 4. - Tisza (between Tivadar and Vásárosnamény-Gergelyugornya): 03.07.1994, 1. - Tisza (Tivadar): 05.07.1993, 8; 14.07.1996, 3; 15.07.1996, 5. - Tisza (the mouth of River Túr): 03.07.1993, 3. - Tisza (Vásárosnamény): 20.06.1995, 3; 17.07.1996, 20. - Tisza (between Vásárosnamény-Gergelyugornya and Lónya): 09.07.1993, 1; 05.07.1994, 15.

CENTRARCHIDAE

49. *Lepomis gibbosus* Linnaeus, 1758
Tisza-Lake (Kisköre): 01.12.1994, 1.

PERCIDAE

50. *Perca fluviatilis* Linnaeus, 1758
Little-Túr (Oxbow, Sonkád): 24.04.1993, 8. - Szamos (Vásárosnamény): 06.07.1993, 3. - Tisza (Lónya): 10.07.1993, 5; 11.07.1993, 1. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 2. - Tisza (between Tiszabecs and Tiszacsécsé): 30.09.1993, 1; 01.10.1993, 1; 21.10.1993, 3; 22.10.1993, 2; 15.03.1994, 1; 16.03.1994, 1; 25.06.1994, 5;

26.06.1994, 3; 14.09.1995, 1; 15.09.1995, 3; 16.09.1995, 2. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 6. - Tisza (between Tiszabecs and Tivadar): 11.05.1993; 02.10.1993, 2; 27.05.1994; 20.10.1994 - Tisza (between Tokaj and Tizsalók): 14.07.1993, 3. - Tisza (the mouth of River Túr): 03.07.1993, 5. - Tisza (Vásárosnamény): 20.06.1995, 1; 17.07.1996, 2. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 3; 05.07.1994, 1. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 10. - Tisza-Lake (Kisköre): 01.12.1994, 1. - Túr (Sonkád): 24.11.1993, 1.

51. *Gymnocephalus cernuus* Linnaeus, 1758

Tisza (Tarpa): 07.07.1994, 1.

52. *Gymnocephalus baloni* Holeik & Hensel, 1974

Szamos (Vásárosnamény): 06.07.1993, 1. - Tisza (Lónya): 10.07.1993, 1; 11.07.1993, 1. - Tisza (between Tiszabecs and Tivadar): 11.05.1993 - Tisza (between Tokaj and Tizsalók): 14.07.1993, 2.

53. *Gymnocephalus schraetzer* Linnaeus, 1758

Szamos (Vásárosnamény): 06.07.1993, 1; 21.06.1994, 1. - Tisza (between Tiszabecs and the mouth of River Túr): 16.06.1995, 5. - Tisza (between Tiszabecs and Tizsacsécse): 30.09.1993, 2; 01.10.1993, 1; 21.10.1993, 1; 22.10.1993, 1; 15.03.1994, 5; 16.03.1994, 1; 27.04.1994, 10; 28.04.1994, 3; 29.04.1994, 14; 15.03.1995, 1; 17.03.1995, 1; 23.04.1995, 7; 15.06.1995, 10; 14.09.1995, 2; 15.09.1995, 6; 16.09.1995, 3; 29.04.1996, 1. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 2. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 2; 23.10.1993, 1; 27.05.1994; 20.10.1994 - Tisza (Between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 4. - Tisza (Tivadar): 05.07.1993, 3. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 1. - Tisza (the mouth of River Túr): 03.07.1993, 1. - Tisza (Vásárosnamény): 20.06.1995, 10. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 05.07.1994, 4.

54. *Stizostedion lucioperca* Linnaeus, 1758

Szamos (Vásárosnamény): 06.07.1993, 1; 21.06.1994, 1; 05.07.1994, 1. - Tisza (between Lónya and Tuzsér): 07.07.1994, 1. - Tisza (Lónya): 10.07.1993, 1; 11.07.1993, 4. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 4. - Tisza (between Tiszabecs and Tizsacsécse): 30.09.1993, 3; 01.10.1993, 1; 21.10.1993, 3; 22.10.1993, 3; 23.11.1993, 1; 15.03.1994, 1; 16.03.1994, 7; 17.03.1994, 1; 27.04.1994, 7; 28.04.1994, 8; 29.04.1994, 5; 25.06.1994, 3; 17.03.1995, 2; 23.04.1995, 3; 15.06.1995, 2; 14.09.1995, 1; 29.04.1996, 7; Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 23.10.1993, 2; 27.05.1994; 20.10.1994 - Tisza (Tiszabecs): 01.07.1993, 5. - Tisza (between Tivadar and Vásárosnamény-Gergelyiugornya): 03.07.1994, 2. - Tisza (Vásárosnamény): 20.06.1995, 1. - Tisza (between Vásárosnamény-Gergelyiugornya and Lónya): 09.07.1993, 1; 05.07.1994, 7. - Tisza-Gravel-pit pond (Milota): 15.09.1995, 60. - Tisza-Lake (Kisköre): 01.12.1994, 5.

55. *Stizostedion volgensis* Gmelin, 1788

Tisza-Lake (Kisköre): 01.12.1994, 1.

56. Zingel zingel Linnaeus, 1758

Szamos (Vásárosnamény): 06.07.1993, 1; 21.06.1994, 10; 05.07.1994, 1. - Tisza (between Lónya and Tuzsér): 07.07.1994, 1. - Tisza (Lónya): 10.07.1993, 1; 11.07.1993, 2. - Tisza (between Tiszabecs and the mouth of River Túr): 27.06.1994, 4; 16.06.1995, 8. - Tisza (between Tiszabecs and Tiszacsécsé): 30.09.1993, 25; 01.10.1993, 15; 21.10.1993, 5; 22.10.1993, 4; 23.11.1993, 1; 15.03.1994, 7; 17.03.1994, 1; 27.04.1994, 15; 28.04.1994, 10; 29.04.1994, 7; 25.06.1994, 20; 26.06.1994, 6; 15.03.1995, 2; 23.04.1995, 4; 15.06.1995, 15; 14.09.1995, 17; 15.09.1995, 13; 16.09.1995, 12; 29.04.1996, 5. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 25. - Tisza (between Tiszabecs and Tivadar): 04.11.1992; 11.05.1993; 02.10.1993, 20; 23.10.1993, 15; 27.05.1994; 20.10.1994; Tisza (Tiszabecs): 01.07.1993, 7. - Tisza (between Tivadar and Vásárosnamény- Gergelyugornya): 03.07.1994, 5. - Tisza (Tivadar): 05.07.1993, 2; 14.07.1996, 3; 15.07.1996, 10. - Tisza (Between Tokaj and Tizsalök): 14.07.1993, 1. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 1. - Tisza (the mouth of River Túr): 03.07.1993, 5. - Tisza (Vásárosnamény): 20.06.1995, 20; 17.07.1996, 1. - Tisza (between Vásárosnamény-Gergelyugornya and Lónya): 09.07.1993, 1; 05.07.1994, 20.

57. Zingel streber Siebold, 1863

Tisza (between Tiszabecs and the mouth of River Túr): 16.06.1995, 1. - Tisza (between Tiszabecs and Tiszacsécsé): 28.04.1994, 1; 25.06.1994, 1; 15.03.1995, 1; 17.03.1995, 1; 15.06.1995, 3; 14.09.1995, 3; 15.09.1995, 1; 16.09.1995, 2. - Tisza (between Tiszabecs and Tizsakóród): 18.10.1996, 1. - Tisza (between Tiszabecs and Tivadar): 11.05.1993; 27.05.1994; 20.10.1994 - Tisza (Tiszabecs): 01.07.1993, 1. - Tisza (between the mouth of River Túr and Tivadar): 01.07.1994, 1.

COTTIDAE

58. Cottus gobio Linnaeus, 1758

Mara: 26.04.1996, 10.

59. Cottus poecilopus Heckel, 1836

Mara: 26.04.1996, 1. - Săpânța: 27.04.1996, 10.

Conclusions

The most common species were *Leuciscus cephalus*, *Alburnus alburnus* and *Chondrostoma nasus*. The populations of some rare species are also stable: *Alburnoides bipunctatus*, *Barbus peloponnesius petényi*, *Gymnocephalus schraetzer*, *Zingel zingel*. However, the population of some species that are not protected, can be considered to be vulnerable: *Rutilus pigus virgo*, *Carassius carassius*, *Gymnocephalus cernuus*. The protection of our rare, endemic fauna element *Rutilus pigus virgo* would be reasonable. A few decades ago *Carassius carassius* was a common species in Hungarian water bodies, but during the last decade it became very rare. We have

received information about its vulnerability and disappearance also from the bordering countries (conveyed by Bănărescu, P.).

Being a disappearing fauna element, its protection is also reasonable. *Gymnocephalus cernuus* has become the rarest *Gymnocephalus* species according to Hungarian experiences. We must pay attention to the changes of its population size. Mainly young individuals of the strictly protected *Hucho hucho* were found in Hungary. Five individuals were found during the samplings, and we suppose that it has a stable population beyond the Hungarian border, on the upper reach of the river. This is proved by the fact that the individuals were found mainly during floods. During late autumn they look for feeding places on the lower reach and this is why they arrive in Hungary. 21 of the 59 species caught are protected in Hungary. 15 of them were found in the river and its tributaries inside Hungary.

29 species are protected according to the Bern Convention. The upper reach of River Tisa and its tributaries provide feeding and spawning places for many fauna elements that are valuable from the point of view of nature conservation and the fish fauna. The protection of only the species themselves is not sufficient for the maintenance of the populations; what is reasonable is the protection of their habitats from water pollution.

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Acknowledgements

We would like to say thank you to József Béres, zoologist of the Natural History Museum (Sighetu Marmáției, Romania), who helped our work with his local knowledge and with administration. We also express our thanks to László Medvegy who helped us in fishing.

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