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Trichoptera collected by light trapping from the Hungarian section of the River Tisza

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Key words: light trap, the River Tisza, bioindicator Trichoptera, rhithron, potamon, Hungary

Abstract. Light traps operated at 4 sites along the longitudinal section of the River Tisza in 2004 and 2005 captured 21087 individuals of 51 caddisfly species comprising 18 species recorded from this river for the first time. As regards zonality, rhithron and potamon regions can be separated, which is proved by the diversity of the collected species. The Upper Tisza region (Tiszakóród), a rhithron area, was represented by (a relatively small number of) 1304 individuals of 38 species. In the Middle Tisza region (Tiszaszőlős, Tiszaroff), and the Lower Tisza region (Csongrád), both of them potamon areas, 19783 individuals of 31 species occurred. Caddisfly species that indicate biological water quality have prominent roles in marking the preferred and characteristic water type of each species. These data show that the biological water quality of the river ranged between I and III water quality categories.

Introduction

The River Tisza (Fig. 1.) is the second largest river (after the River Danube) of Hungary and the Carpathian basin. The Hungarian section of the River Tisza is 274 river kilometres. The Tisza valley is a special habitat, a particular ecological corridor; the Upper Tisza region for example, is one of the Ramsari areas in Hungary (TARDY, 2007). The Upper, Middle and Lower Tisza regions are traditional subject matters of research. Zoological investigations of the River Tisza has a 284-year-long history. The occurrence of the mayfly (*Palingenia longicauda* OLIV.) in the Tisza was first reported by LUIGI FERNANDO MARSILI in 1726, and is mentioned in the history of the zoological survey of the Tisza valley (BÁBA & GALLÉ, 1998).

UHERKOVICH and NÓGRÁDI (1997) recorded 49 caddisfly species from the Upper Tisza, and 22 caddisfly species from the Lower Tisza, based on sporadic collecting activites. Of these species, 30 only occurred in the upper reaches, 3 only in the lower reaches and 19 were common along the total length of river. Juhász *et al.* (1998) described the macroinvertebrate assemblages of the Upper Tisza region. Light trapping at Szolnok (Middle Tisza region) resulted in 3 species new to the River Tisza, increasing the number of recorded species to 55 from this river (KISS & ZSUGA, 2004). Cyanide pollution of the River Tisza in 2000 also made several specialists investigate the fauna of its aquatic habitats. KISS & ZSUGA (2004) describe the biological water quality and highlight the usability of caddisfly species as indicators of water quality. 22 of 31 caddisfly species are given the value points of water quality preference after MOOG (1995). MÓRA *et al.* (2005) collected macroinvertebrates in the River Tisza and its main tributaries. The small number (12) of Trichoptera species, which they reported without providing a detailed list of species, was accounted for by the phenological features. By 2010, based on the technical data and the current results, 73 caddisfly species are known from the River Tisza. This represents 34.27% of the Hungarian Trichoptera species

The Department of Zoology of the Plant Protection Institute at the Hungarian Academy of Sciences operated light traps on four sites near the embankments of the River Tisza for two years with the aims of collecting insects attracted to light and of insect monitoring, which inter alia would expand the faunistic list of the River Tisza with previously unreported caddisfly species. Thus, a more specified list of Trichoptera is provided and a comparison of the Trichoptera assemblages of the rhithron and potamon reaches is made, as well as the sex ratio distribution of the species. The indicator caddisfly species of biological water quality are also given.

Material and methods

Jermy type light traps were operated in 2004 and 2005 from the end of April to October at the following places:

–**Tiszakóród** (48°06'34"N, 22°42'49"E) 113 metres above sea level. The trap was located near the base of the embankment, 150 air metres from the river bank. The trap was bounded by sparse poplar and willow forest belt. On the flood-plain there was no forest, only grassland; insects were able to fly from the river bank to the trap without any obstacle.

–**Tiszaszőlős** (47°34'17"N, 20°41'53"E) 110 metres above sea level. The trap was at dike reeve's cottage No.10.04/7. In summer, without a rise of the water table, the water's edge was 80 metres from the light trap. Flood-plain forest: old poplar and willow stands, characterized by rich undergrowth and an abundance of high creeping lianes.

–**Tiszaroff** (47°23'40"N, 20°25'59"E) 111 metres above sea level. The trap was placed close to the base of the embankment, so inconvenient light-sources were blocked out. Water's edge in summer (without rise) was 25 metres from the light trap. The flood-plain was covered with straggling willowy growth and alluvial branch deposit on the riverside.

–**Csongrád** (46°39'14"N, 20°11'04"E) 100 metres above sea level. The trap was at dike reeve's cottage No.11.03/3, 6 km to the south of Csongrád. Water's edge in summer was 100 metres from the trap. The vegetation of the flood-plain was poplars (planted in 1998), maples and waterside willow grove.

I stored the collected caddisfly material in 70% ethyl alcohol and identified the species using Malicky's work (1983) and a stereomicroscope.

Result and discussion

The light trap at **Tiszakőrőd** (Table 1) captured 503 individuals of 33 species in 2004, 801 individuals of 24 species in 2005, i.e. a total of 1304 individuals of 38 species. The bulk of individuals was *Psychomyia pusilla*, 132 males and 57 females in 2004, 234 males, 326 females in 2005. 13 species of the Limnephilidae and 10 species of the Leptoceridae were dominant. *Goera pilosa,* with a small number of species, prefers mountain streams and clear, running waters, and occurs in oligosaprobic waters (o=2), in β-mesosaprobic waters, (β=5), and in α-mesosaprobic waters, (α=3). *Hydropsyche bulgaromanorum* (β=8, α=2) and *Hydropsyche pellucidula* (o=2, β=5, α=3), with preference for running waters, were caught in abundance. *Synagapetus moselyi,* caught in small numbers, likes slow streams and waters rich in oxygen, preferring xenosaprobic waters with 7 points and oligosaprobic waters with 3 points. This species has not been previously collected from the Tisza. The following species have also been identified from the Tisza for the first time: *Hydroptila angustata, Hydropsyche angustipennis* (o=1, β=5, α=4), *Tinodes* sp., *Limnephilus decipiens* (β=7, α=3), *Limnephilus politus, Micropterna lateralis, Micropterna testacea, Leptocerus interruptus* (β=5, α=5). Larvae of the net spinning *Neureclipsis bimaculata* are good indicators as they like running waters (o=1, β=7, α=2).

Thus, it can be stated that the saprobic values of the indicator caddisflies are of cold tolerant oxibiont organisms

living in running waters and sensitive to fluctuations of temperature referable to the rhithrobenthos character of the Upper-Tisza.

The light trap at **Tiszaszőlős** (Table 2) collected 5819 individuals of 15 species in 2004 and 2939 individuals of 22 species in 2005; altogether, 8758 individuals of 27 species were caught. The bulk of individuals was *Ecnomus tenellus* with 2500 males and 2485 females in 2004 and 790 males and 525 females in 2005. The catch of *Neureclipsis bimaculata* in the potamon region was significant: 434 males, 71 females in 2004, and 642 males, 811 females in 2005. 11 species of Limnephilidae, 6 species of Leptoceridae, and 5 species of Polycentropodidae were dominant, all of them with a small number of individuals. The net-spinners *Hydropsyche bulgaromanorum* and *Hydropsyche contubernalis* live in slow flowing waters.

To date, the substrate specialist and xylobiont species, *Lype reducta,* inhabiting the streams of mountains and rivers, is unknown from the Tisza. *Agraylea sexmaculata,* living along the littoral zone of rivers (β=5, α=5), was common among the micro caddisflies. The following species have been collected from the Tisza for the first time: *Holocentropus dubius* (β=5, α=5), *Cyrnus flavidus*, the ubiquitous *Limnephilus rhombicus* (o=2, β=6, α=2) which live along the littoral zone, *Limnephilus decipiens* (β=7, α=3), living in streams, rivers and lakes, *Agripnia pagetana*, *Phryganea grandis* and *Ylodes simulans,* which live along the littoral zone of slow streaming river reaches overgrown with plants. This reach can be classified as potamon.

The light trap at **Tiszaroff** (Table 3) collected 6899 individuals of 10 caddisfly species in 2004 and 2221 individuals of 10 species in 2005; altogether, 9120 individuals of 16 species were caught. *Neureclipsis bimaculata* was light trapped in great quantities; 2482 males, 1067 females in 2004, and 812 males, 222 females in 2005. Individuals of *Ecnomus tenellus* were lured by the light in similar quantities: 1169 males, 1409 females in 2004, 479 males, 306 females in 2005. *Oecetis ochracea* was caught in significantly small numbers, 39 males, 39 females in 2004, 66 males, 85 females in 2005, as was *Hydropsyche bulgaromanorum* with 676 males in 2004 and 40 males in 2005. The rest of the species was light trapped in small numbers (1-4 individuals). This reach belongs to the potamon region and the small number of species and individuals is attributable to the lack of diversified habitats, the adverse weather conditions and water pollution.

The light trap at **Csongrád** (Table 4) collected 768 individuals of 11 species in 2004 and 1137 individuals of 11 species in 2005; altogether, 1905 individuals of 16 species. The bulk of the individuals was *Ecnomus tenellus,* with 222 males and 329 females in 2004 and 149 males and 506 females in 2005. This was the only reach where one male individual of *Cheumatopsyche lepida* (o=1, β=6, α=3) was found. The list of species for the reach of the Lower Tisza at Csongrád partially overlaps the one at Tiszaroff (Middle Tisza); 75% of the caddisfly species are the same.

Conclusion

Light traps operated along the longitudinal section of the River Tisza captured 21087 individuals of 51 caddisfly species, with 11 common species in the rhithron and potamon regions. One species of both the Glossosomatidae and the Goeridae only occurred in the rhithron region, while 4 species of the Phryganeidae were only found in the potamon region. Remarkably, the Upper Tisza region (Tiszakóród), the rhithron area, was represented by 1304 individuals of 38 species. It is the first time that the following 18 Trichoptera species have been reported from the River Tisza: *Synagapetus moselyi, Hydroptila angustata, Hydropsyche angustipennis, Cyrnus flavidus, Holocentropus dubius, Lype reducta, Tinodes sp.* (female), *Limnephilus decipiens, Limnephilus politus, Limnephilus rhombicus, Micropterna lateralis, Micropterna testacea, Agripnia pagetana, Phryganea grandis, Trianodes bicolor, Ylodes simulans, Leptocerus interruptus,* and *Setodes viridis.* The hectic seasonal flight activity patterns of the various species were probably due to the adverse weather conditions and the negative effects of abrupt water contamination. As regards sex ratio, the bulk of the catches was male, attributable to their reproductive activity. Biological water quality of the examined reaches of the River Tisza ranges between I and III water quality classes. These data show that caddisflies as aquatic insects have a significant role in monitoring and environmental bioindication.

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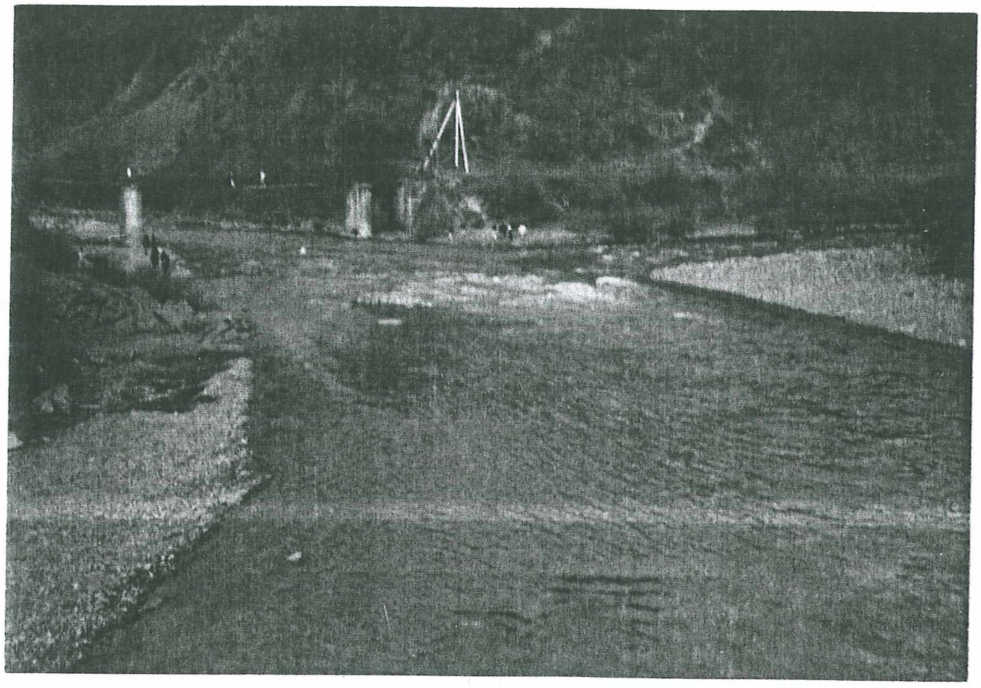
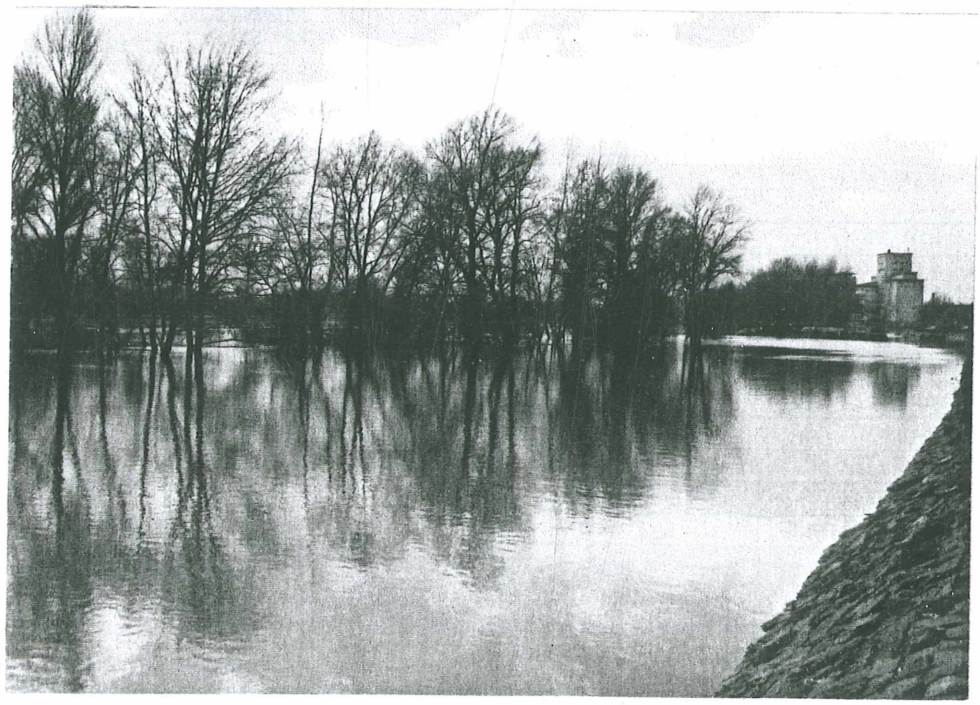


Source of the River Tisza at Raho, Ukraine



The River Tisza at Szolnok (Middle Tisza)

Table 1. Classification of the Trichoptera species of the Upper Tisza at **Tiszakóród** into saprobic categories described by Moog (1995): X=xenosaprobic, O=oligosaprobic, β=beta-mesosaprobic, α=alpha-mesosaprobic, p=polysaprobic, G=indicator weight, SI=saprobic index, +=occurrence, –=insufficient knowledge

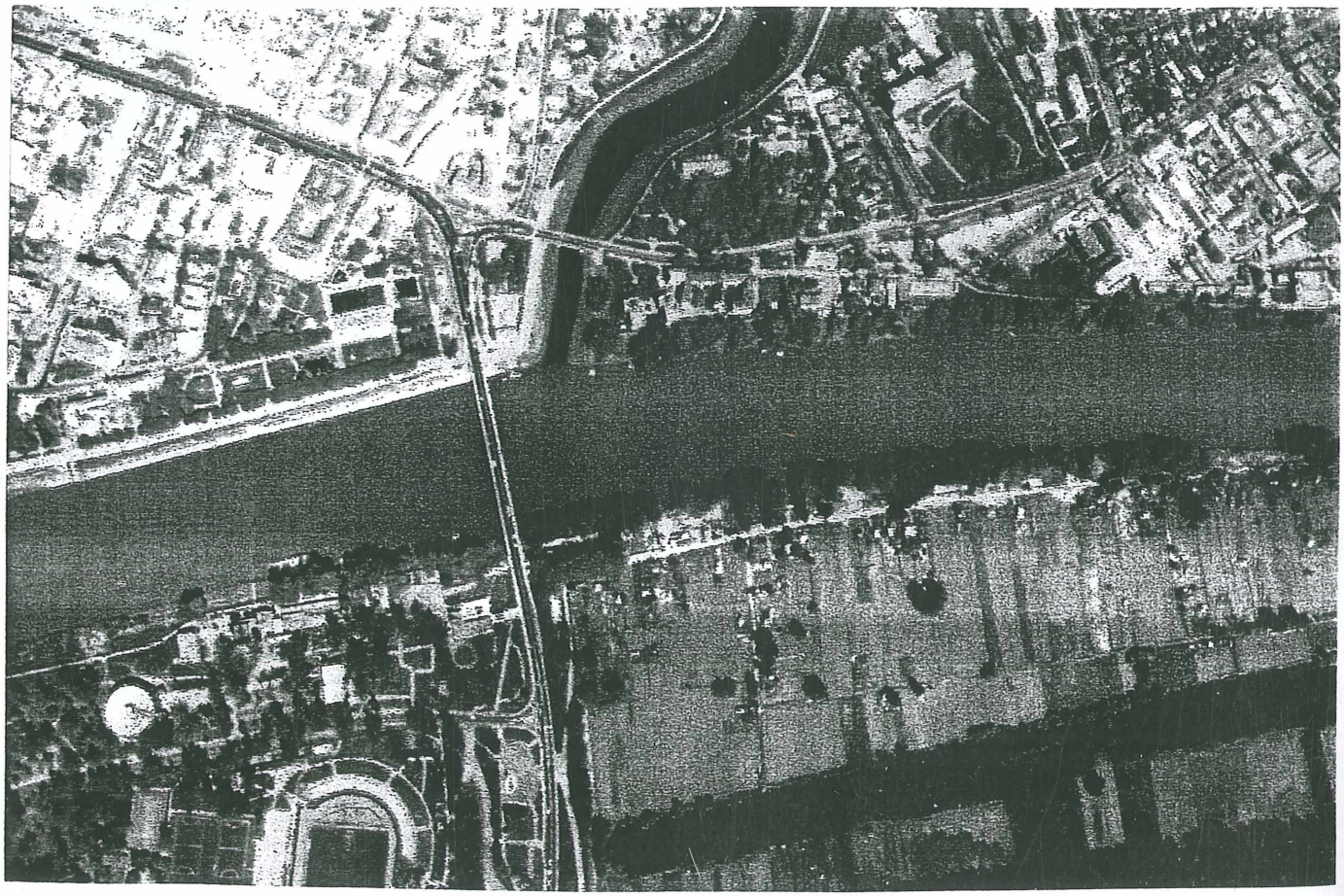
Tiszakóród			**Saprobic categories (Moog, 1995)**						
Species captured in a light trap	**2004**	**2005**	**X**	**O**	**β**	**α**	**p**	**G**	**SI**
Glossosomatidae									
1. *Synagapetus moselyi* U., 1938	2 ♂		7	3	-	-	-	4	0.3
Hydroptilidae									
2. *Agraylea sexmaculata* (C., 1834)	6 ♂ 2 ♀		-	-	5	5		3	2.5
3. *Hydroptila angustata* M., 1939	1 ♂		-	-	-	-	-	-	-
4. *Hydroptila cornuta* M., 1922	1 ♂		-	-	-	-	-	-	-
5. *Hydroptila lotensis* M., 1930	19 ♂ 2♀		-	-	-	-	-	-	-
6. *Hydroptila sparsa* (C., 1834)	1 ♂	4 ♂	-	-	6	4	-	3	2.4
Hydropsychidae									
7. *Hydropsyche angustipennis* (C., 1834		1 ♂	-	1	5	4	-	2	2.3
8. *Hydropsyche bulgaromanorum* M., 1997	36 ♂	5 ♂	-	-	8	2	-	4	2.2
9. *Hydropsyche pellucidula* (C., 1834)	7 ♂	3♂	-	2	5	3	-	2	2.1
Polycentropodidae									
10. *Neureclipsis bimaculata* (L., 1758)	9 ♂ 12 ♀	25 ♂ 18 ♀	-	1	7	2	-	3	2.1
11. *Cyrnus crenaticornis* K., 1859		5 ♂	-	-	-	-	-	-	-
Psychomyiidae									
12. *Psychomyia pusilla* (F., 1781)	132 ♂ 57♀	234 ♂ 326 ♀	-	2	5	3	-	2	2.1
13. *Tinodes sp.* (?)	1♀		-	-	-	-	-	-	-
Ecnomidae									
14. *Ecnomus tenellus* (R., 1842)	17 ♂ 21 ♀	21 ♂ 30♀	-	-	3	7	+	4	2.7
Limnephilidae									
15. *Grammotaulius nigropunctatus* (R., 1783)	6 ♂		-	1	7	2	-	3	2.1
16. *Halesus digitatus* (S., 1781)	1 ♂ 1 ♀		-	5	4	1	-	2	1.6
17. *Limnephilus affinis* (C., 1834)	13 ♂ 5 ♀		-	-	-	-	-	-	-
18. *Limnephilus auricula* (C., 1824)	3 ♂ 1 ♀	1 ♀	-	-	-	-	-	-	-
19. *Limnephilus bipunctatus* (C., 1834)	1 ♂ 1♀		-	-	-	-	-	-	-
20. *Limnephilus decipiens* K., 1848	1♂		-	+	7	3	-	4	2.3
21. *Limnephilus flavicornis* (F., 1787)	4 ♂ 2♀	1 ♂	-	-	-	-	-	-	-
22. *Limnephilus griseus* (L., 1758)	1 ♂		-	-	-	-	-	-	-
23. *Limnephilus politus* (McL., 1865)	2♀		-	-	-	-	-	-	-
24. *Limnephilus vittatus* (F., 1798)	3♂ 5♀	1 ♂	-	-	-	-	-	-	-
25. *Micropterna lateralis* (S., 1834)	1 ♂	1 ♂	-	-	-	-	-	-	-
26. *Micropterna testacea* (G., 1789)	1 ♂	-	-	-	-	-	-	-	-
27. *Stenophylax permistus* McL. 1895	1 ♂	1 ♂	-	-	-	-	-	-	-
Goeridae									
28. *Goera pilosa* (F., 1775)	3 ♂ 3 ♀	9 ♂ 1♀	-	2	5	3	-	2	2.1
Leptoceridae									
29. *Ceraclea dissimilis* (S., 1826)	11 ♂ 3 ♀	2 ♂	-	1	7	2	-	3	2.1
30. *Ceraclea riparia* (A., 1874)	3 ♂ 1 ♀	6 ♂	-	-	-	-	-	-	-
31. *Oecetis lacustris* (R., 1834)	32 ♂ 5 ♀	1 ♂ 1♀	-	-	7	3	-	4	2.3
32. *Oecetis notata* (R., 1842)	4 ♂ 4 ♀	8 ♂ 16 ♀	-	+	+	+	-	-	-
33. *Oecetis ochracea* (C., 1825)	19 ♂ 10 ♀	13 ♀	-	-	6	4	-	3	2.4
34. *Oecetis tripunctatus* (F., 1793)		13 ♂ 5 ♀	-	-	-	-	-	-	-
35. *Leptocerus interruptus* (F., 1775)		1 ♀	-	-	5	5	-	3	2.5
36. *Leptocerus tineiformis* (C., 1834)	1 ♂ 1 ♀	3 ♂ 11 ♀	-	-	5	5	-	3	2.5
37. *Setodes punctatus* (F., 1793)	21 ♂ 3 ♀	30 ♂ 3 ♀	-	-	-	-	-	-	-
38. *Athripsodes cinereus* (F., 1793)		1 ♂	-	1	7	2	-	3	2.1
Total number of individuals	**503**	**801**							

Table 2. Classification of the Trichoptera species of the Middle Tisza at **Tiszaszőlős** into saprobic categories described by Moog (1995): X=xenosaprobic, O=oligosaprobic, β=beta-mesosaprobic, α=alfa-mesosaprobic, p=polysaprobic, G=indicator weight, SI=saprobic index, +=occurrence, –=insufficient knowledge

Tiszaszőlős			**Saprobic categories (Moog, 1995)**						
Species captured in a light trap	**2004**	**2005**	**X**	**O**	**β**	**α**	**p**	**G**	**SI**
Hydroptilidae									
1. *Agraylea sexmaculata* (C., 1834)	130 ♂ 51 ♀	4 ♂	-	-	5	5		3	2.5
2. *Hydroptila lotensis* M., 1930	1 ♂	-	-	-	-	-	-	-	-
Hydropsychidae									
3. *Hydropsyche bulgaromanorum* M. 1977	8 ♂	-	-	-	8	2	-	4	2.2
4. *Hydropsyche contubernalis* McL., 1865		34♂	-	-	2	8	-	3	2.1
Polycentropodidae									
5. *Cyrnus crenaticornis* (K., 1859)	-	12 ♂	-	-	-	-	-	-	-
6. *Cyrnus flavidus* McL., 1864	4 ♂	-	-	-	-	-	-	-	-
7. *Neureclipsis bimaculata* (L., 1758)	434 ♂ 71 ♀	642 ♂ 811 ♀	-	1	7	2	-	3	2.1
8. *Holocentropus dubius* (R., 1842)	1 ♂	-	-	-	5	5	-	3	2.5
Psychomyiidae									
9. *Lype reducta* (S., 1836)									
Ecnomidae									
10. *Ecnomus tenellus* (R. 1842)	2500 ♂ 2485♀	790 ♂ 525 ♀	-	-	3	7	+	4	2.7
Limnephilidae									
11. *Limnephilus affinis* (C. 1834)	1 ♂ 1♀	1 ♂ 1♀	-	-	-	-	-	-	-
12. *Limnephilus auricula* (C., 1834)	1 ♂	-	-	-	-	-	-	-	-
13. *Limnephilus decipiens* (K., 1848)	-	2 ♂ 1 ♀	-	+	7	3	-	4	2.3
14. *Limnephilus flavicornis* (F., 1787)	1 ♂ 1 ♀	4 ♂	+	+	-	-	-	-	-
16. *Limnephilus griseus* (L., 1758)	3 ♂ 1 ♀	2 ♂	-	-	-	-	-	-	-
17. *Limnephilus rhombicus* (L., 1758)	-	1 ♀	-	2	6	2	-	3	2.0
18. *Limnephilus vittatus* (F., 1798)	-	6 ♂ 3 ♀	-	-	-	-	-	-	-
Phryganeidae									
1.9 *Agripnia pagetana* (C., 1835)	-	1 ♂	-	-	-	-	-	-	-
20. *Phryganea grandis* (L., 1758)	-	1 ♂	-	-	-	-	-	-	-
21. *Triaenodes bicolor* (C., 1834)	-	1 ♀	-	-	5	5	-	3	2.5
22. *Ylodes simulans* T., 1929	-	13 ♂ 10 ♀	-	-	-	-	-	-	-
Leptoceridae									
22. *Oecetis furva* (R., 1842)	-	1 ♂ 1♀	-	-	5	5	-	3	2.5
23. *Oecetis lacustris* (R., 1834)	10 ♂ 26 ♀	1 ♂	-	-	7	3	-	4	2.3
24. *Oecetis notata* (R.., 1842)	1 ♂ 6 ♀	2 ♂ 13 ♀	-	+	+	+	-	-	-
25. *Oecetis ochracea* (C., 1825)	4 ♂ 17 ♀	5 ♂ 14 ♀	-	-	6	4	-	3	2.
26. *Leptocerus tineiformis* (C., 1834)	10 ♂ 51 ♀	12 ♂ 13♀	-	-	5	5	-	3	2.5
27. *Setodes viridis* (F., 1785)	-	8 ♂ 3 ♀	-	-	-	-	-	-	-
Total number of individuals	**5819**	**2939**							

Table 3. Classification of the Trichoptera species of the Middle Tisza at **Tiszaroff** into saprobic categories described by Moog (1995): X=xenosaprobic, O=oligosaprobic, β=beta-mesosaprobic, α=alfa-mesosaprobic, p=polysaprobic, G=indicator weight, SI=saprobic index, +=occurrence, –=insufficient knowledge

Tiszaroff			**Saprobic categories (Moog, 1995)**						
Species captured in a light trap	**2004**	**2005**	**X**	**O**	**β**	**α**	**P**	**G**	**SI**
Hydroptilidae									
1. *Agraylea sexmaculata* (C., 1834)	3 ♂ 4 ♀	-	-	-	5	5		3	2.5
Hydropsychidae									
2. *Hydropsyche bulgaromanorum* M., 1977	676 ♂	40 ♂	-	-	8	2	-	4	2.2
3. *Hydropsyche contubernalis* McL., 1865	-	203 ♂	-	-	2	8	-	3	2.1
Polycentropodidae									
4. *Neureclipsis bimaculata* (L., 1758)	2482 ♂ 1067 ♀	812 ♂ 222 ♀	-	1	7	2	-	3	2.1
5. *Cyrnus crenaticornis* (K., 1859)	-	1 ♂	-	-	-	-	-	-	-
Psychomyiidae									
6. *Psychomyia pusilla* (F., 1781)	1 ♂	-	-	2	5	3	-	2	2.1
Ecnomidae									
7. *Ecnomus tenellus* (R., 1842)	1169 ♂ 1409 ♀	479 ♂ 306 ♀	-	-	3	7	+	4	2.7
Limnephilidae									
8. *Limnephilus affinis* (C., 1834)	1 ♂ 1 ♀	-	-	-	-	-	-	-	-
9. *Limnephilus auricula* (C., 1834)	1 ♂ 1♀	-	-	-	-	-	-	-	
10. *Limnephilus decipiens* (K., 1848)	-	1 ♂ 1 ♀	-	+	7	3	-	4	2.3
11. *Limnephilus griseus* (L., 1758)	1 ♂	-	-	-	-	-	-	-	-
12. *Limnephilus vittatus* (F., 1798)	-	1 ♂ 1♀	-	-	-	-	-	-	-
Leptoceridae									
13. *Ceraclea alboguttata* H., 1860	-	1 ♂	-	1	7	2	-	3	2.1
14. *Oecetis lacustris* (R., 1834)	3 ♂ 2 ♀	-	-	-	7	3	-	4	2.3
15. *Oecetis notata* (R., 1842)	-	2 ♀	-	+	+	+	-	-	-
16. *Oecetis ochracea* (C., 1825)	39 ♂ 39 ♀	66 ♂ 85 ♀	-	-	6	4	-	3	2.4
Total number of individuals	**6899**	**2221**							



Airview of the River Tisza at Szolnok

Table 4. Classification of the Trichoptera species of the Lower Tisza at **Csongrád** into saprobic categories described by Moog (1995): X=xenosaprobic, O=oligosaprobic, β=beta-mesosaprobic, α=alfa-mesosaprobic, p=polysaprobic, G=indicator weight, SI=saprobic index, +=occurrence, –=insufficient knowledge

Csongrád			Saprobic categories (Moog, 1995)						
Species captured in a light trap	**2004**	**2005**	**X**	**O**	**β**	**α**	**p**	**GT**	**SI**
Hydroptilidae									
1. *Agraylea sexmaculata* (C., 1834)	13 ♂ 3 ♀	3 ♂	-	-	5	5		3	2.5
Hydropsychidae									
2. *Cheumatopsyche lepida* (P., 1834)	-	1 ♂	-	1	6	3	-	3	2.2
3. *Hydropsyche bulgaromanorum* M., 1977	74 ♂	247 ♂	-	-	8	2	-	4	2.2
4. *Hydropsyche contubernalis* McL., 1865	-	101 ♂	-	-	2	8	-	3	2.1
Polycentropodidae									
5. *Neureclipsis bimaculata* (L., 1758)	60 ♂ 44 ♀	67 ♂ 51 ♀	-	1	7	2	-	3	2.1
6. *Cyrnus crenaticornis* (K., 1859)	1 ♂	-	-	-	-	-	-	-	-
7. *Cyrnus flavidus* McL., 1864	1 ♂	-	-	-	-	-	-	-	-
Ecnomidae									
8. *Ecnomus tenellus* (R., 1842)	222 ♂ 329 ♀	149 ♂ 506 ♀	-	-	3	7	+	4	2.7
Limnephilidae									
9. *Limnephilus affinis* (C., 1834)	7 ♂ 5 ♀	1 ♂ 1 ♀	-	-	-	-	-	-	-
10. *Limnephius auricula* (C., 1834)	2 ♂	1 ♀	-	-	-	-	-	-	-
11. *Limnephilus flavicornis* (F.,1787)	1 ♂	-	+	+	-	-	-	-	-
12. *Limnephilus griseus* (L., 1758)	1 ♂	-	-	-	-	-	-	-	-
13. *Limnephilus vittatus* (F. 1798)	-	1 ♂	-	-	-	-	-	-	-
Leptoceridae									
14. *Oecetis notata* (R., 1842)	-	3 ♂	-	-	-	-	-	-	-
15. *Oecetis ochracea* (C., 1825)	3 ♂ 2 ♀	-	-	-	6	4	-	3	2.4
16. *Setodes punctatus* (F., 1793)	-	1 ♂ 4 ♀	-	-	-	-	-	-	-
Total number of individuals	**768**	**1137**							

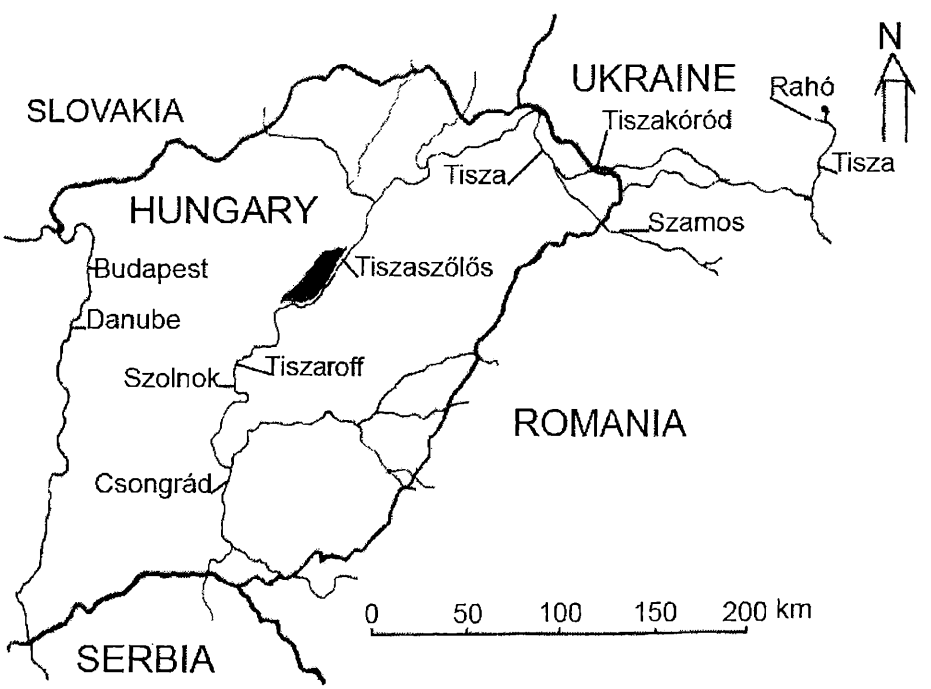


Fig. 1. Map of the River Tisza with the light trap stations at Tiszakóród, Tiszaszőlős, Tiszaroff, and Csongrád