

**OCCURRENCE AND DISTRIBUTION OF URNATELLA GRACILIS
Leidy (KAMPTOZOA) IN THE EASTERN MAIN CANAL (HUNGARY)**

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Urnatella gracilis has been known in the fauna of Hungary for nearly a decade, but, up to now no more than a few places of occurrence have been reported. Kolosváry and Abricossóv (1960) were the first to describe its occurrence in the river Tisza near Szeged, Szolnok and Tiszafüred. Recent investigations (Kolosváry, 1964a, b, 1966) have discovered further occurrences in the Tisza river-system at Gyála, in the estuary of the Maros river, at Szentés, Tiszalök and Gyomakiadány. Since 1962 *Urnatella gracilis* has been found in the Hungarian reaches of the Danube, too, although no colony has been collected as yet from the bed of the Danube. Sebestyén (1962) found it in a waterworks connected with the Danube (Dunaujváros), while quite recently (Lukacsóvics and Pécsi, 1967) it was found in great masses in a natural lake (Öreg Lake, Tatabánya) at a distance of 25 km from the Danube.

In the course of investigations on the Eastern Main Canal, on March 22, 1968, colonies of *Urnatella gracilis* were observed at an extremely low water-level (1—1.5 m lower than normal) on the water-side stonework, under the road bridge between Balmazújváros and Hajdúböszörmény (Fig. 1:14).

The Eastern Main Canal is a 98 km long artificial canal running roughly north-south. It takes its source from the Tisza between the villages of Tiszalök and Tiszadada, and ends at the outlet sluice near Bakonszeg (Fig. 1:31). The average width of the bed is 35 m, and the depth, at working water-level, gradually decreases from 4 m to 2 m between Tiszavasvári and Bakonszeg. The bottom of the bed is covered with clay and mud, and long stretches of the banks are covered with clumps of reeds 0.5—4 m wide. Apart from the paved sector of the bank near Tiszavasvári, there are no stoneworks, except under all but three bridges and in the vicinity of constructive works.

The Eastern Main Canal is slow moving, with a maximum speed of 30 cm/sec. From autumn till early spring the water intake into the Canal is negligible (2 cu.m/sec) or nothing. Volume of water let in from the Tisza through the lock-gate at Tiszavasvári.

Making use of the possibilities offered by the extremely low water-level, observations were made along the whole length of the Canal, particular attention being paid to the bridges, paved sectors of the banks, and constructive works.

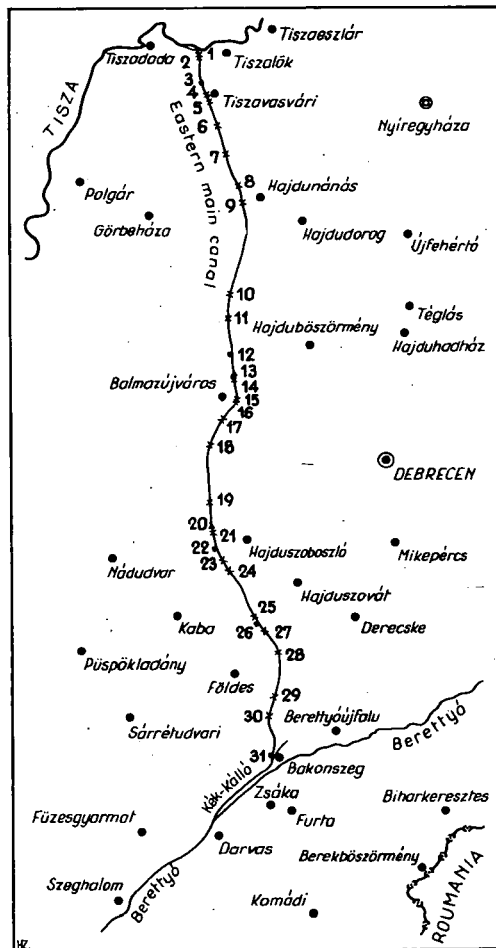
The greatest masses of *Urnatella gracilis* were found under the bridges between Balmazújváros and Hajdúböszörmény (Fig. 1:14), and Földes and Hajdúszovát (Fig. 1:27). The colonies appeared under both bridges with sharp borders and without any transition, while the banks immediately before the bridges were completely free of them. On the bridge between Földes and Hajdúszovát no colonies were found on either bank after the bridge, while after the bridge between Balmazújváros and Hajdúböszörmény, there were sharp differences between the two banks in the occurrence of colonies. On the bank nearer Balmazújváros (right bank) no more colonies were found on the reeds after the bridge, while on the Hajdúböszörmény bank (left bank) colonies were observed as far as 250 to 300 m after the bridge on reeds, stones and piles, their quantity gradually decreasing with the distance from the bridge. This was the only case along the whole length of the Canal that colonies of *Urnatella gracilis* had settled on unpaved sectors of the bank on reeds as well.

There were three further places where *Urnatella gracilis* occurred in considerable, though slighter, quantities than at the above-mentioned places (Fig. 1:15, 16, 18). On all these three bridges, colonies were detected only on stones under the bridge, the sectors before and after the bridge proving free of *Urnatella*. Below 10 other bridges (Fig. 1:4—9, 11, 21, 23, 24) the occurrence was quite insignificant, in many cases a few colonies being observed only on one stone or another.

Upstream from the road bridge between Debrecen and Budapest (Fig. 1:23), we found three bridges without stonework (Fig. 1:10, 17, 19), and two further bridges with stonework immediately after the inlet from the Tisza (Fig. 1:1, 2), while downstream from the road bridge there were four bridges with paved banks (Fig. 1:25, 28—30), where no *Urnatella* colonies were found. The lack of *Urnatella* colonies may be due to the fact that there is no suitable base for settlement (ie. the bank was unpaved) or the stonework was so thickly covered with mud and *Dreissena polymorpha* P all. masses that no appropriate base remained for *Urnatella* to settle.

It is precisely the mud and the *Dreissena* along the bank and on the stones which considerably influences the distribution of *Urnatella gracilis* along the whole Eastern Main Canal. For a dividing line we may take the road bridge between Debrecen and Budapest (Fig. 1:23), which we assume divides the Canal into two, the northern and southern sectors. Above this line, the quantity of muddy, aqueous deposit being relatively small,

Fig. 1. The diagram of the places examined in the Eastern Main Canal. 1 = single-track railway bridge on the Nyiregyháza — Ohatpuszta line; 2 = road bridge between Tiszalök and Tiszadada; 3 = lock-gate at Tiszavasvári; 4 = road bridge between Tiszavasvári and Tiszadob; 5 = road bridge between Tiszavasvári and Polgár; 6 = 5th road bridge; 7 = road bridge between Hajdúnánás and Polgár; 8 = road bridge between Hajdúnánás and Polgár; 9 = road bridge between Hajdúnánás and Tiszacsege; 10 = road bridge between Debrecen and Polgár; 11 = road bridge between Hajdúböszörmény and Pród; 12 = reservoir K-V; 13 = water-level regulator sluice gate near Balmazújváros; 14 = road bridge between Haj-



düböszörmény and Balmazújváros; 15 = single-track railway bridge on the Debrecen — Füzesabony line; 16 = road bridge between Debrecen and Tiszacsege; 17 = road bridge between Balmazújváros and Hajdúszoboszló; 18 = road bridge between Debrecen and Tiszafüred; 19 = road bridge between Hajdúszoboszló and Angyalháza; 20 = water-level regulator sluice gate near Hajdúszoboszló; 21 = road bridge between Hajdúszoboszló and Nádudvar; 22 = intake sluice K-VIII; 23 = road bridge between Debrecen and Budapest; 24 = double-track railway bridge on the Debrecen — Budapest line; 25 = road bridge between Kaba and Hajdúszovát; 26 = intake sluice K-IX; 27 = road bridge between Földes and Hajdúszovát; 28 = road bridge between Földes and Debrecen; 29 = road bridge between Földes and Berettyóújfalú; 30 = single-track railway bridge on the Püspökladány — Biharkeresztes line; 31 = outlet sluice near Bakonszeg.

Urnatella is not prevented from settling, whereas below this bridge the surface of submerged stones, piles and constructive works is covered with a 0,5—1 cm thick layer of mud, thus making the base unfavourable for *Urnatella* to settle. This dividing line is also apparent in the mass-occurrence of *Dreissena polymorpha*, too, which in the reach above the line is found only in extremely slight quantities, clinging to shells (*Anodonta*, *Unio*), piles and constructive works. In the reach below the bridge its occurrence becomes large-scale, covering all submerged bases with a continuous coating. The only exception in the southern reach is the bridge between Földes and Hajdúszovát (Fig. 1:27), where the stonework of the banks are less muddy and the occurrence of *Dreissena* is again relatively slight, resulting in the settlement of considerable masses of *Urnatella gracilis* on the stones.

Investigations on the stones of the constructive works (sluice gates, water intake sluices) and the two bridges near the Tisza (Fig. 1:1, 2), no colonies of *Urnatella* being found. The reason is as yet unknown, since they would serve as suitable bases for settlement. At the same time, directly beside the water-level regulator sluice near Hajdúszoboszló (Fig. 1:20), colonies were found on the stones in the middle of the bed and in the initial paved sector of the outlet of the intake work K-IX (Fig. 1:25).

Since in the course of previous investigation (Kolosváry, 1966), *Urnatella* was discovered in the Tisza, near Tiszalök, it can be assumed that the species was brought into the Eastern Main Canal from the river Tisza. The most probable means of propagation seems to be navigation, since during the summer period there are boats (chiefly tugs and barges) from the Tisza plying on the Eastern Main Canal.

In view of the present investigations, it can be stated that *Urnatella gracilis* occurs over almost the whole length of the Eastern Main Canal. Taking into consideration its more and more frequent occurrence, in the river-system of the Tisza and along the Danube, we may conclude that *Urnatella gracilis* will become within a relatively short period of time a constant component of the fauna of our rivers and the other waters adjoining them.

References

- Kolosváry, G. (1964a): Répartition de l'*Urnatella gracilis* dans le bassin Pannonien (Hongrie) (Kamptozoaire). — Bull. Soc. Hist. Nat. Toulouse 99, 309.
- Kolosváry, G. (1964b): Über Bryozoen des Wassersystem der Tisza. — Zool. Meded. 39, 409—413.
- Kolosváry, G. (1966): Enumeration des Spongiaires, Camptozoaires et Briozoaires de la Nord-Tisza (km 506—576) Hongrie. — Bull. Mens. Soc. Linn. Lyon 35, 248.
- Kolosváry, G. & Abricossov, G. G. (1960): Finding a representative of the class Kamptozoa in fresh waters of Hungary. — Zool. Zhurn. 39, 1735—1737 (in Russian).
- Lukacsovics, F. & Pécsi, T. (1967): A new occurrence of *Urnatella gracilis* Leidy (Kamptozoa) in Hungary. — Opusc. Zool. Budapest 7, 221—225.
- Sebestyén, O. (1962): On *Urnatella gracilis* Leidy (Kamptozoa Cori) and its occurrence in an industrial water-works fed by Danube water in Hungary. — Acta Zool. Hung. 8, 435—448.