

Collembola fauna from the shore of Lake Balaton, Hungary

By

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Abstract. 38 species of Collembola have been identified from the shore of Lake Balaton (Hungary). These animals were investigated in different habitats. The diversity was the highest in the undisturbed, natural places.

Lake Balaton is the largest lake in Central-Europe. Though the pollution of the water sometimes is very serious, there are a lot of areas with reeds and other willow trees grow. In these areas we can study the original fauna of the Balaton area or we can recognize the changes that have occurred. I am studying the collembolan fauna of the Balaton in different habitats. Though the first species of this insects was recognized in 1926, only 14 species were known by 1983. During the last research period 38 species were identified.

I investigated 3 large areas. Each of them was divided into smaller habitats. These smaller habitats are as follows:

I. Close to Balatonkenese. Large reeds that bordered a stone dam.

1. The 2 or 3 year old debris of reeds on top of the dam. This area is moderately wet and dry during most of the summer.
2. The fresh reed debris on lake side of the dam where it is always very wet.
3. Moss on the dam where it is dry during the summer.
4. Among the reeds where it is always wet.
5. Shore of a small swamp where it is always wet and rich in organic matter.
6. Large reedy area close to Alsóörs.

II. Area of large reeds and a patch of willow trees between Alsóörs and Palóznak.

7. Area with horsetails and sedges. A warm and dry place where bushes grow.
 8. An area of reeds and willow tree where with the exception of summer it is always wet.
 9. Areas of comparison.
- I collected samples from other parts of the lake too, for example from Ábrahámhegy, Szigliget, Kesztely, Siófok, etc.

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I collected samples from suitable places using mainly 2 different methods: (1) I collected samples of soil and litter from which the animals were isolated using the Berlese method. (2) Pitfall traps consisting ethylene-glykol were also used. Sometimes I used singling and sweeping techniques. Identification followed the work of Imre LOKSA.

The list of species observed is as follows:

Poduridae:

Podura aquatica L.

Hypogastruridae:

Hypogastrura denticulata (BAGN.)

Friesea mirabilis (TULLB.)

Pseudachorutes corticicola (SCAFF.)

Anurida tullbergi SCHÖTT.

Neanura conjuncta STACH

Onychiuridae:

Tullbergia quadrispina BÖRN.

Onychiurus campatus GISIN

Isotomidae:

Folsomia nana GISIN

Folsomia candida (WILLEM)

Isotomiella minor (SCAFF)

Proisotoma crassicauda (TULLB.)

Proisotoma minuta (TULLB.)

Isotoma notabilis SCAFF.

Isotoma viridis BOURL.

Isotoma olivacea TULLB

Isotomurus palustris (MÜLL.)

Tomoceridae:

Tomocerus vulgaris (TULLB.)

Entomobryidae:

Entomobrya hanschini STACH

Entomobrya lanuginosa (NIC.)

Entomobrya marginata (TULLB.)

Orchesella flavescens (BOURL.)

Orchesella cincta (L.)

Pseudosinella imparipunctata GISIN

Pseudosinella wahlgreni (BÖRN.)

Heteromurus major (MONIEZ)

Heteromurus nitidus (TEMPL.)

Lepidocyrtus lanuginosus (GMELIN)

Lepidocyrtus ruber (SCHÖTT)

Lepidocyrtus paradoxus UZEL

Lepidocyrtus curvicollis BOURL.

Sminthuridae:

Sminthurides aquaticus (BOURL.)

Sminthurides pumilis (KRAUSB.)

Sminthurides malmgreni (TULLB.)

Bourletiella insignis (REUT.)

Sminthurus lubbocki TULLB.

Dicyrtoma fusca LUC.

Dicyrtoma ornata (NIC.)

Isotomurus palustris (MÜLL.)

Table 1. Comparison of the dominant species in different habitats
(Data are not available for every species, only for those which are abundant in at least one habitat)

Species	Study area								
	1	2	3	4	5	6	7	8	9
PODURIDAE									
<i>Podura aquatica</i> L.	-	⊠	-	⊠	⊠	⊠	-	+	-
HYPOGASTRURIDAE									
<i>Pseudachorutes corticicola</i> (Schaff.)	+	-	+	+	⊠	+	+	-	+
<i>Hypogastrura denticulata</i> (Bagn.)	-	+	⊠	⊠	⊠	⊠	-	+	-
<i>Friesea mirabilis</i> (Tull.)	+	-	+	+	+	+	-	-	+
<i>Neanura conjuncta</i> Stach	+	-	-	-	-	+	-	+	+
ISOTOMIDAE									
<i>Folsomia nana</i> Gisin	⊠	+	+	+	+	⊠	⊠	⊠	⊠
<i>Folsomia candida</i> (Wilem)	+	-	-	-	-	+	+	-	+
<i>Folsomia multiseta</i> Stach	-	-	-	-	+	-	-	-	-
<i>Proisotoma minuta</i> (Tullb.)	⊠	-	+	⊠	⊠	⊠	+	⊠	⊠
<i>Isotoma notabilis</i> Scaff.	+	-	-	-	-	⊠	-	-	⊠
<i>Isotomurus palustris</i> (Müll.)	+	+	-	⊠	⊠	+	-	⊠	⊠
ENTOMOBRYIDAE									
<i>Entomobrya marginata</i> (Tullb.)	-	-	-	-	-	-	+	-	-
<i>Orchesella flavescens</i> (Bourl.)	-	-	-	+	+	⊠	-	+	-
<i>Lepidocyrtus lanuginosus</i> (Gmelin)	⊠	+	+	⊠	⊠	⊠	+	⊠	⊠
<i>Lepidocyrtus paradoxus</i> Uzel	⊠	-	-	+	+	⊠	⊠	⊠	⊠
<i>Tomocerus longicornis</i> (Müller)	-	-	+	-	-	-	+	-	+
SMINTHURIDAE									
<i>Sminthurides aquaticus</i> (Bourl.)	-	⊠	+	⊠	⊠	-	-	⊠	⊠
<i>Dicyrtoma ornata</i> (Nic.)	+	-	-	-	-	⊠	-	-	-

Explanation: - (-); non-existing species, - (+); existing but not abundant, - (⊠); abundant, dominant species, - (1-9); habitats, see those mentioned above

Only a few species (*Podura aquatica*, *Sminthurides aquaticus*) live in the fresh debris but they could be there in large numbers. The rate of the diversity is very high in the 2 or 3 year old debris. Species were most diverse in areas of swamp and reeds. There is the largest difference between study area 7 as compared to the other areas. A species (*Entomobrya marginata*) was found only in the area 7, it did not live in the other wet places. Study areas 4 and 6 are very similar. Area 4 was burned during winter in 1992. The next spring there was not any Collembola in this area. Later a lot of species of this insect immigrated from other places, so that, by autumn, in this area there were no differences between the areas.

REFERENCES

1. GISIN, H. (1960): Colleenbolenfauna Europas. - Mus. Hist. Nat. Genève 1-312.