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The leeches (Hirudinea) of the "Karas Lake" reserve in Poland

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With 3 figures and 1 table

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During research on the "Karas Lake" reserve, 16 species of leeches were found and described here, inclusive of the very rare taxa *Batrachobdelloides moogi*, *Boreobdella verrucata*, *Piscicola borowieci* and *Piscicola pojmanskae*.

1 Introduction

The studies began in 2002 in the "Karas Lake" reserve in Poland (Fig. 3). The aim of this investigation was to recognize the quantitative and qualitative communities of leeches in the reserve.

"Karas Lake" is the shallow and eutrophic basin in the ending stage of the land-forming process. Prevailing winds from the West and North cause organic matter deposition mainly on the windward side of the lake. There are intensive peat-forming processes on this side of the lake and, as a result, these have formed a wide peat bog. There is mineral-organic soil on the southeast side of the lake, where the floral zones are wide and surface water occurs only in the spring (Krupa & al. 2000).

2 Material and methods

The study was conducted between 20 April and 30 July 2002. The material was collected from plants, mainly from *Typha latifolia* and from the sticks driven into the bottom. In next part of the study, material was collected for conservation. Leech preservation is difficult, and for measurements and dissection the leeches should be extended and not twisted. In view of the strong contractility, their shape easily becomes distorted, hence fixation must be preceded by anaesthesia. The most practical anaesthetising liquid is 10 % ethyl alcohol. Depending on the species, the leeches must be left in alcohol for up to 12 hours. During anaesthesia in 10 % alcohol, some species secrete significant amounts of mucus. Then, following anaesthesia, the specimens should be washed from the mucus in 50 % alcohol, and placed in vials with 75 % alcohol or 3 % aqueous solution of

formalin. Specimens preserved with this method are stretched, moderately extended, do not change their color, and the annuli are clearly visible (Pawłowski 1936, Lukin 1976, Epshtein 1987, Bielecki 1994, 1997, Nesemann & Csányi 1995).

3 Results

During three scientific camps from 20-04 to 30-06-2002 268 samples were collected. The 16 species belong to three families: Erpobdellidae, Glossiphoniidae, Piscicolidae (Tab. 1). The largest representation was that of the family Erpobdellidae; it accounted for 43.3 % of individuals, whereas in terms of the number of species (8) the representation of the family Glossiphoniidae was the largest (Fig. 1). After the coefficient of dominance was calculated, the species were divided into five groups (Szujecki 1983): eudominants (> 10 % of the individuals in the gathering), dominants (5.1–10 % of the individuals), subdominants (2.1–5 % of the individuals), recedents (1.1–2 % of the individuals) and subrecedents (< 1 % of the individuals).

Tab. 1: The number of species, individuals and dominance of leeches in the "Lake Karas" reserve

		Number of individuals	Dominance (%)
1	<i>Erpobdella octoculata</i> (Linnaeus, 1758)	50	18,5
2	<i>Erpobdella nigricollis</i> (Brandes, 1899)	32	11,8
3	<i>Hemiclepsis marginata</i> (O. F. Müller, 1774)	29	10,7
4	<i>Piscicola borowieci</i> Bielecki, 1997	24	8,9
5	<i>Glossiphonia concolor</i> (Apáthy, 1888)	19	7,0
6	<i>Piscicola geometra</i> (Linnaeus, 1761)	19	7,0
7	<i>Erpobdella testacea</i> Savigny, 1820	18	6,6
8	<i>Erpobdella monostriata</i> Lindenfeld & Pietruszynski, 1890	16	5,9
9	<i>Glossiphonia complanata</i> (Linnaeus, 1758)	15	5,5
10	<i>Alboglossiphonia heteroclita</i> (Linnaeus, 1761)	15	5,5
11	<i>Theromyzon tessulatum</i> (O. F. Müller, 1774)	11	4,1
12	<i>Boreobdella verrucata</i> (Fr. Müller, 1844)	7	2,6
13	<i>Piscicola pojmanskae</i> Bielecki, 1994	7	2,6
14	<i>Alboglossiphonia hyalina</i> (O. F. Müller, 1774)	4	1,5
15	<i>Alboglossiphonia striata</i> (Apáthy, 1888)	3	1,1
16	<i>Batrachobdelloides moogi</i> Nesemann & Csányi, 1995	2	0,7
Total		271	100,0

Three species, *Erpobdella octoculata*, *E. nigricollis*, and *Hemiclepsis marginata*, were included in the largest group of eudominants of more than 10 %. The total share of these species was 41.4 % (Fig. 2).

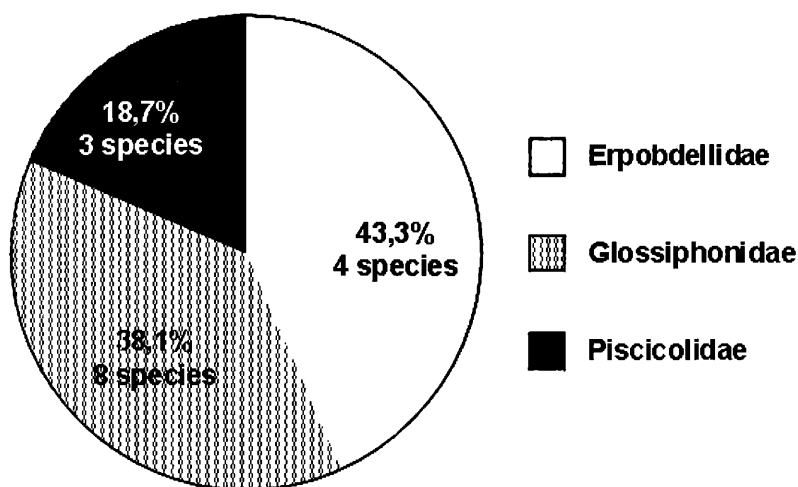


Fig. 1. Dominance and the number of leech species of the three families collected in the "Lake Karas" reserve

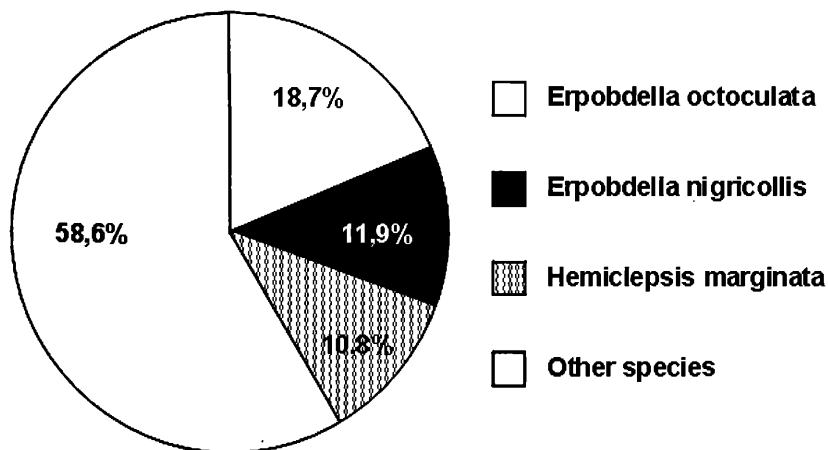


Fig. 2. The share of eudominants (>10 %) in the leeches gathered from the "Lake Karas" reserve

The following seven species, *Piscicola borowieci*, *Glossosiphonia concolor*, *G. complanata*, *Piscicola geometra*, *Erpocystis testacea*, *E. monostriata*, and *Alboglossosiphonia heteroclita*, were included in the group of dominants (5.1-10 %). The total share of these species was 47.1 %.

Three species, *T. tessulatum*, *Boreobdella verrucata*, and *Piscicola pojmanskae*, were classified as subdominants (2.1-5 %).

The two species *A. hyalina* and *A. striata*, were classified as recedents.

Only one leech, *Batrachobdelloides moogi*, was included in the group of subrecedents (<1%) (Tab. 1).

4 Discussion

16 species of leeches were found in the "Karas Lake" reserve, which accounts for 37.5 % of all the species found in Poland. Some leech species were found which are rare both in the Polish and in the European fauna. These include *Boreobdella verrucata*, which has been found only in several sites in the north and in the north-east of Poland (Pawlowski 1936, 1968, Bielecki 1986, Bielecki & al. 1999, Sawyer 1986) (Fig. 3).

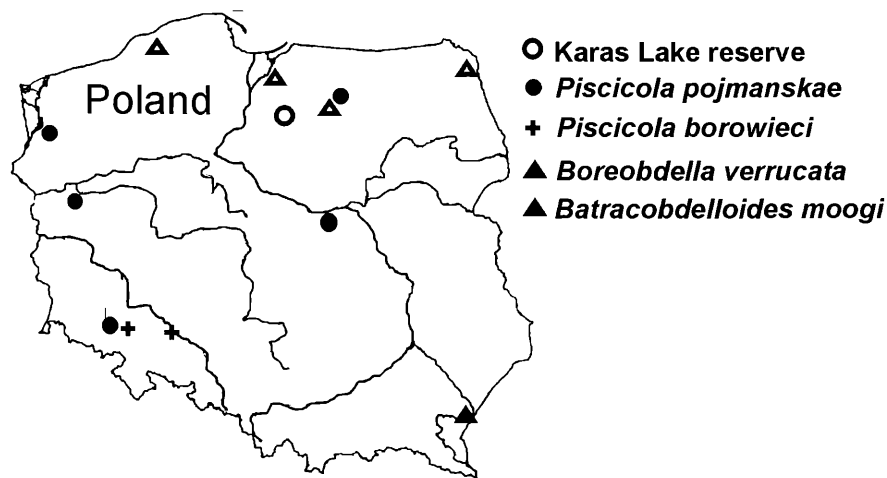


Fig. 3. *Boreobdella verrucata*, *Piscicola borowieci*, *P. pojmanskae* and *Batrachobdelloides moogi*. Sites in Poland

Another distinguished species was *Piscicola borowieci*. This species, described relatively recently, has been found at two sites to date: in water bodies near Legnica and Wrocław and in the north-east of Poland (Fig. 3) (Bielecki 1997, Koszalka & Bielecki 2003).

Among the leeches collected in the "Karas Lake" reserve, the species *Piscicola pojmanskae* (Fig. 3) is remarkable. To date, it has only been found in few waters at a few sites: at three sites in the west of Poland, one in Central Poland and one in the north-east of the country (Bielecki 1994, 1997, Bielecki & Dzika 2000, Jablonska-Barna & Bielecki 2002, 2003).

An very rare species, found in the "Karas Lake" reserve, is *Batractobdelloides moogi*. To date, this species has only been found near Przemyśl (Bielecki & al. 2000) (Fig. 3).

The research conducted in the "Lake Karas" nature reserve indicates that it is a rich reservoir of biodiversity of various animal groups (avifauna, teriofauna, herpetofauna and lepidopterofauna), including freshwater Hirudinea.

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