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Dataset Paper

First Records of Potamic Leech Fauna of Eastern Siberia, Russia

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We studied the fauna of leech and leech-like species inhabiting main water streams of Eastern Siberia and its tributaries, which are attributed to Lake Baikal basin and Lena River basin. Here we present their list for the first time. This study was mainly aimed for free-living parasitic and carnivorous leeches whereas piscine parasites were not included specially. In total, the potamic leech fauna of Eastern Siberia includes 12 described species belonging to 10 genera. Representatives of three unidentified species of two genera *Erpobdella* and *Barbronia* have been also recorded.

1. Introduction

The fauna of Siberian leeches has never been object of a target study. Fragmentary data are presented in the papers of Lukin and Epstein [1, 2]. Recent paper of Kaygorodova [3] corrected the species list of fauna of the unique Siberian Lake Baikal. To date, 20 leech species are reported from there.

Victor Epstein studied piscine leeches in fresh waters of former USSR [2]. He indicated nine species in Siberia and the Far East; only four species of them were found in the rivers of Eastern Siberia. Thus, up to date three species belonging to family Piscicolidae in rivers near the Lake Baikal (source of Angara, delta of Selenga and Upper Angara) were known, namely, *Cystobranchus mammillatus* (Malm, 1863), *Baicalobdella torquata* (Grube 1871), *Acipenserobdella volgensis* (Zykoff, 1903) [2, 4], and one leech-like fish parasite *Acanthobdella peledina* inhabiting solely northern part of the region [2, 5–7].

Representatives of other leech families of Eastern Siberia have not been mentioned in the literature.

This study is aimed to fill the gap in our knowledge of species diversity of Siberian leeches.

2. Methodology

We used in this study the extensive biological material collected by the authors in the Chechuy River (September 2010, August 2011), the Kirenga River, the Lena River, and the Belaya River (August 2011), the Kudareyka River (August 2011–May 2012), and the Angara River (October 2011–May 2012).

Piscine leeches were collected by hand directly from infected fish and amphipods. Free-living leeches were washed from macrophytes and different substrates. Biological material was fixed in ethanol with gradually increasing the concentration from 10% to 80%.

Morphological analysis was conducted by Irina A. Kaygorodova with a stereomicroscope WILD M4C-61 149 and a binocular microscope Axiostar plus (Carl Zeiss Microimaging Gmb). Species definition was done with identification keys [1, 2, 8] and the original descriptions [9] according to the modern classification of the group. Natalya V. Sorokovikiva revealed differences in species of the genus *Erpobdella*.

Examined material of leech species collected by the authors is deposited in Limnological Institute, Siberian Branch of the Russian Academy of Sciences (LIN SB RAS, Irkutsk, Russia).

3. Dataset Description

The dataset associated with this Dataset Paper consists of one item which is described as follows.

Dataset Item 1 (Table). List of leech and leech-like species inhabiting main river basins of Eastern Siberia: Lena River

basin and Lake Baikal basin. Chechuj River, Chaya River, Chuja River, Kirenga River, and Lena River belong to Lena River basin. Upper Angara River, Kudarejka River, Belaja River, Selenga River, and Angara River belong to Lake Baikal basin. The dataset consists of a checklist composed of 15 taxa. The exact systematic position is stated for all leech species. Each involved species has a brief taxonomic characteristic (see Table 1).

(1) *Acanthobdella peledina* Grube, 1851. Archaic freshwater leech-like clitellates are semipermanent parasites, restricted exclusively to salmonoid fish. *A. peledina* has a wide area of habitat at high latitudes of the Northern Palearctic—from Norway on the west to the Kolyma Region on the east [2] and in North America [10, 11]. Therefore, despite a wide area, the species refers to rare species and listed as endangered in Eastern Siberia. Within Eastern Siberia, *A. peledina* is recorded from the Chechuj River, the Chaya River, the Chuja River, tributaries of the Lena River, and the Upper Angara River belonging to Lake Baikal basin. Eastern Siberian specimens have bright green coloration, and the ratio of body length to width is significantly less than the rest *A. peledina* from other water systems of Eurasia [7].

(2) *Theromyzon maculosum* (Rathke, 1862). Rare Palaearctic species is known as parasite of waterfowl. *T. maculosum* is a boreal relict species for freshwaters of Northeast Europe (Russia, Sweden), Asia (Commander Islands, Loktak Lake in India), and both American continents [12]. Four adult animals were sampled from rotten sweep wood in the Kudarejka River. These specimens have typical body shape and body sizes (up to 40 mm), but not usual marking. Siberian individuals are transparent with a pale olive tint in contrast to the dark-colored European representatives.

(3) *Theromyzon tessulatum* (Müller, 1774). Palaearctic species was found only in two rivers of Lake Baikal basin—Angara and its right tributary Kudarejka. Individuals were located at underside of the stones at a depth of 0.5-1 m. The species is known as bloodsucker of birds. Specimens are 10–12 mm in length and about 2 mm in width and can stretch up to 15–17 mm, becoming 1 mm in width. There are five annuli between male and female genital pores.

(4) *Hemiclepsis marginata* (Müller, 1774). It is widespread Palaearctic species and bloodsucker of fishes, tadpoles, and amphipods. The species was found in both main river basins (the Kirenga River and the Angara River) on stones and macrophytes at a depth of 0.2–1.0 m. Living animals were greenish with length of 14–16 mm and width of 3 mm. Alcohol-fixed specimens rapidly lost a beautiful intravital colouring.

(5) *Helobdella stagnalis* (Linnaeus, 1758). This species is cosmopolite. It is considered one of the most common freshwater leeches in the world. Within Lake Baikal proper, *H. stagnalis* inhabits shallow bays and salinas [3]. Our collection has samples from the Chechuj River, the Kirenga River, the Lena River, the Kudarejka River, the Belaja River, and the Angara River.

(6) *Glossiphonia complanata* (Linnaeus, 1758). Holarctic species is widespread in Eastern Siberia. Specimens of our collection were caught in shallow zone of the Chechuj River, the Kirenga River, the Lena River, the Kudarejka River, and the Angara River. Life cycle of *G. complanata* is typical for the majority of the genus. It prefers to sit on the rocks or slowly crawling. This leech feeds almost exclusively on molluscs and sometimes oligochaetous worms or larvae of insects. The size is about 10–16 mm. On the dorsal side, there are three pairs of longitudinal rows of papillae. *G. complanata* like other glossiphoniids takes care of nurture.

(7) *Glossiphonia verrucata* (Müller, 1844). Up to now *G. verrucata* was known from northern Europe (Scandinavia, British Isles, and Germany) as boreo-alpine species. This species is for the first time recorded for Siberia. Representatives of the species were found in slowly running parts of the Lena River and some of its tributaries. In addition to the distinctive morphological features, this species is notable for larger body size, reaching in Siberian populations 30 mm in length.

(8) *Alboglossiphonia hyalina* (Müller, 1774). It is Palaearctic species. Its distribution over a vast area is irregularly. *A. hyalina* is a suctorial freshwater sit-and-wait predator, feeding on gastropods. It inhabits shallow and slowly running places of the Lena River on the North and peaceful backwater of the Belaja River on the South of the Eastern Siberia. It is very small translucent yellowish or amber-coloured leeches with maximal body length of 10 mm. There is no any dark pigmentation. As typical glossiphoniid, it shows touching parental care.

(9) *Acipenserobdella volgensis* (Zykoff, 1903) (synonym *Piscicola volgensis* (Zykoff, 1903)). It is a rare piscine species distributed in the Angara River and the Selenga River. It is parasitized solely by *Acipenser baeri*. *A. volgensis* is found on branchiae and body surface.

(10) *Baicalobdella torquata* (Grube, 1871). It is endemic to Lake Baikal. It is a typical component of the littoral zone of open Baikal [3]. *B. torquata* is the only Baikal endemic leech, which penetrated beyond this unique lake—in the upper part of the Angara River, from its source up to 220 km downstream. The small leeches are 5–8 mm in length and 2-3 mm in width. Body colour varies from light green to pale rusty retaining a characteristic mosaic pattern on the dorsal side of urosome. *B. torquata* sucks the blood of endemic amphipods *Eulimnogammarus verrucosus* (Gerstfeldt, 1858) (Crustacea, Amphipoda).

(11) *Cystobranchus mammillatus* (Malm, 1863). It is a rare Palaearctic species and a specific parasite of burbot (*Lota lota*). These leeches are located in the branchial cavity and branchiae. Its body length is up to 35 mm. Distribution of *C. mammillatus* is confined to northern waters including large tributaries of Lake Baikal such as the Selenga River (found in 1.5 km from the confluence of Lake Baikal) and the Upper Angara River as well as the Yenisey River.

(12) *Haemopis sanguisuga* (Linnaeus, 1758). It inhabits only Palaearctic waters, where it is widespread and can be attributed even to trans-Palearctic group. It is a predator of small vertebrates and invertebrates. *H. sanguisuga* belongs to very voracious predators, which ingest their prey completely or tear to big pieces. These leeches were collected from the Kirenga River and the Lena River (Lena River basin) and the Kudarejka River and the Angara River (Lake Baikal basin).

Table 1: A list of leech-like and true leech species inhabiting Eastern Siberian water streams, containing 15 species with their taxonomic hierarchy data.

Species	Genus	Subfamily	Family	Suborder	Order	Subclass	Class	Phylum
Acanthobdella peledina Grube, 1851	*Acanthobdella* Grube, 1851	—	Acanthobdellidae Livanow, 1905	—	—	Acanthobdellida (synonym Acanthobdellea Livanow, 1905)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Theromyzon maculosum (Rathke, 1862)	*Theromyzon* Philippi, 1867	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Theromyzon tessulatum (Müller, 1774)	*Theromyzon* Philippi, 1867	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Hemiclepsis marginata (Müller, 1774)	*Hemiclepsis* Vejdowsky, 1884	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Helobdella stagnalis (Linnaeus, 1758)	*Helobdella* Blanchard, 1876	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Glossiphonia complanata (Linnaeus, 1758)	*Glossiphonia* Johnson, 1816	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Glossiphonia verrucata (Müller, 1844)	*Glossiphonia* Johnson, 1816	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Alboglossiphonia hyaline (Müller, 1774)	*Alboglossiphonia* Lukin, 1976	Glossiphoniinae Autrum, 1936	Glossiphoniidae Vaillant, 1890	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Acipencerobdella volgensis (Zykoff, 1903)	*Acipenserobdella* Epshtein, 1969	—	Piscicolidae Johnston, 1865 (synonym Icthyobdellidae Leuckart, 1863)	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809

Table 1: Continued.

Species	Genus	Subfamily	Family	Suborder	Order	Subclass	Class	Phylum
Baicalobdella torquata (Grube, 1871)	*Baicalobdella* Dogel et Bogolepova, 1957	—	Piscicolidae Johnston, 1865 (synonym Icthyobdellidae Leuckart, 1863)	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Cystobranchus mammillatus (Malm, 1863)	*Cystobranchus*	—	Piscicolidae Johnston, 1865 (synonym Icthyobdellidae Leuckart, 1863)	—	Rhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Haemopis sanguisuga (Linnaeus, 1758)	*Haemopis* Sovigny, 1822	—	Haemopidae Richardson, 1969	Hirudiniformes Caballero, 1952	Arhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Erpobdella sp. 1	*Erpobdella* de Blainville, 1818	—	Erpobdellidae Blanchard, 1894	Erpobdelliformes Sawyer, 1986	Arhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Erpobdella sp. 2	*Erpobdella* de Blainville, 1818	—	Erpobdellidae Blanchard, 1894	Erpobdelliformes Sawyer, 1986	Arhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809
Barbronia sp.	*Barbronia* Blanchard, 1897	—	Salifidae Johansson, 1910 (synonym Trematobdellidae Johansson, 1913)	Erpobdelliformes Sawyer, 1986	Arhynchobdellea Blanchard, 1894	Hirudinida (synonym Hirudinea Lamarck, 1818)	Clitellata Michaelsen, 1919	Annelida Lamarck, 1809

(13) *Erpobdella* sp. 1. This species was found so far in the Angara River and its tributary Belaja River. With a powerful pharynx, the *Erpobdella* ingests completely or partially different aquatic animals, small annelids, crustaceans, insect larvae, molluscs, and spawn and even young fishes and does not refuse dead animals and smaller specimens of own species. The big-sized leeches are about 35 mm in length and 3-4 mm in width. The leeches have little pigmentation.

(14) *Erpobdella* sp. 2. These leeches are common in the Eastern Siberian rivers. We found them in Lena and Kirenga (Lena River basin) and in Kudarejka, Selenga, and Angara (Lake Baikal basin). Worms have relatively large sizes; the length of their body is up to 70 mm. There is a dark pigmentation on the dorsal side. The species has the same lifestyle as the *Erpobdella* sp. 1.

(15) *Barbronia* sp. One specimen of the species was found in slough of the Angara River within urban area of Irkutsk city. Ethanol-fixed leech is 34 mm in length, without visible colouring and pigmentation. There is accessory copulatory organ that is typical for representatives of genus *Barbronia*.

The table consists of the names of the rivers and species' names inhibiting these rivers.

Column 1: Species
Column 2: Chechuj River
Column 3: Chaya River
Column 4: Chuja River
Column 5: Kirenga River
Column 6: Lena River
Column 7: Upper Angara River
Column 8: Kudarejka River
Column 9: Belaja River
Column 10: Selenga River
Column 11: Angara River

4. Concluding Remarks

Nowadays, a list of 15 species rank taxa in Eastern Siberia is documented. This species diversity includes both widespread Holarctic and Palaearctic species as well as rare and endemic species from 6 families and 12 genera. Five species of the checklist were identified for the first time in Eastern Siberia, namely, *A. hyalina*, *G. verrucata*, *Erpobdella* sp. 1, *Erpobdella* sp. 2, and *Barbronia* sp.

Two species of the genus *Theromyzon* are indicated here as conventional in current systematics, *T. maculosum* and *T. tessulatum*, although both species have morphological features that do not fit well within the type species description. Local variety of *T. tessulatum* probably corresponds better to *T. tesselatoides* (Livanow, 1902) by a smaller body size and, more importantly, by a position of genital pores [13]. However, Lukin [14] expressed his doubt about the independence of the species status of *T. tesselatoides* and reduced it to *T. tessulatum*. Until it has not yet been revised, we should use this species name.

As to our Siberian representatives of *T. maculosum*, their morphology also deviates from the species description. Since an intravital colouring and pigmentation are taxonomically important species-specific features in Hirudinea, the species status of these leeches has to be checked by the revision of this group.

The widespread Palaearctic species *Piscicola geometra* (Linnaeus, 1761) was deliberately excluded from this list. First of all, we did not study piscine leeches ad hoc. Second, we have never met this species on Eastern Siberian fish. Third, analysis of the literature revealed that the hypothesis of a possible wide distribution of *P. geometra* in Siberia is not supported by direct evidence.

Dataset Availability

The dataset associated with this Dataset Paper is dedicated to the public domain using the CC0 waiver and is available at http://dx.doi.org/10.7167/2013/362683/dataset.

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