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New records of caddisflies of the genus *Plectrocnemia* Stephens, 1836 (Trichoptera: Polycentropodidae) from Siberia (Russia)

Новые находки ручейников рода *Plectrocnemia* Stephens, 1836 (Trichoptera: Polycentropodidae) из Сибири (Россия)

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Ключевые слова: Trichoptera, Polycentropodidae, *Plectrocnemia*, распространение, Хакасия, Сибирь.

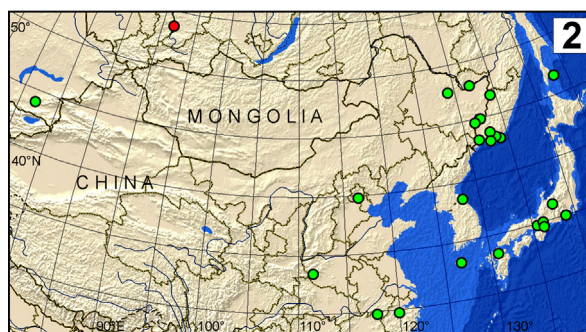
Abstract. Previously, caddisflies of the genus *Plectrocnemia* Stephens, 1836 were unknown in the fauna of Siberia. In May–October 2018 adult *P. kusnezovi* Martynov, 1934 and *P. wui* (Ulmer, 1932) were collected in the upper part of the Yenisei River basin (Republic of Khakassia, Abakan city, Abakan River valley) with a UV lamp. These records clarify the northern and western boundaries of their ranges. Distribution of *P. kusnezovi* and *P. wui* in Asia and flight periods in the region are given. A possible record of *P. conspersa* (Curtis, 1834) in Western Siberia is discussed; this species is known from the Ural Mountains, Southern Siberia (Salair Ridge) and Xinjiang-Uyghur Autonomous Region of China.

Резюме. Ранее ручейники из рода *Plectrocnemia* Stephens, 1836 не были известны в фауне Сибири. С мая по октябрь 2018 г. в верхнем участке бассейна Енисея (Республика Хакасия, окрестности Абакана, долина реки Абакан) собраны *P. kusnezovi* Мартынов, 1934 и *P. wui* (Ульмер, 1932) с помощью УФ-лампы. Настоящие находки уточняют северную и западную границы ареалов этих видов. Приведены распространение *P. kusnezovi* и *P. wui* в Азии и данные о периоде лёта в регионе. Обсуждается возможная находка *P. conspersa* (Кертис, 1834) в Западной Сибири, поскольку он известен с Урала, из Южной Сибири (Салаирский хребет) и Синьцзян-Уйгурского автономного округа Китая.

In the recent fauna of Russia 11 species of caddisflies of the genus *Plectrocnemia* Stephens, 1836 are known including seven species from the Russian Far East [Ivanov, Melnitsky, 2013; Oláh et al., 2018].

In the period of May 27 – October 13, 2018, the author collected *P. kusnezovi* Martynov, 1934 and *P. wui* (Ulmer, 1932) in the lower part of the Abakan River valley (upper part of the Yenisei River basin). Both species are recorded here for the fauna of Siberia for the first time. The records of *P. kusnezovi* are the most western, and of *P. wui* are the most northern localities of the genus. In addition, the widespread species *P. conspersa* (Curtis, 1834) could be found in Western Siberia, since this species is known in the

streams of the Ural Mountains [Pan'kov, Krasheninnikov, 2016]; in the Eastern Palaearctic this species is known only from the Xinjiang-Uyghur Autonomous Region of China [Huang et al., 2005]. Recently larvae of *P. conspersa* were found in some streams of the Salair Ridge (Southern Siberia) [Baturina, 2019]. But since *P. kusnezovi* and *P. wui* could be found in the streams of the Salair Ridge, and their larvae have not yet been described, the distribution of *P. conspersa* in Western Siberia requires further study.



Figs 1–2. Distribution of *Plectrocnemia kusnezovi* (1) and *P. wui* (2) in Asia. Red circles – the author's records, green circles – published data.

Рис. 1–2. Распространение *Plectrocnemia kusnezovi* (1) и *P. wui* (2) в Азии. Красные кружки – данные автора; зеленые кружки – опубликованные данные.



Figs 3–4. *Plectrocnemia* spp., male genital structures, lateral view. Scale bar 0.5 mm.

Рис. 3–4. *Plectrocnemia* spp., генитальные структуры самца, вид сбоку. Масштабная линейка 0.5 мм.
3 – *P. kusnezovi* Martynov, 1934; 4 – *P. wui* (Ulmer, 1932).

Material and methods

The caddisflies were collected with a UV lamp BLB-T5/4W operated daily from 21:00 to 24:00, except for days with rain. In total, 88 samples were collected. The material is stored in 95% ethanol in the author's collection (DC, Abakan, Russia) and the collection of the Zoological Museum of Khakass State University (ZM KhSU, Abakan, Russia). The material was identified using keys and descriptions [Martynov, 1934; Hwang, 1958; Schmid, 1959; Kachalova, 1987; Arefina, 1997; Arefina et al., 2003; Malicky, 2004, 2008; Ohkawa, Ito, 2007; Tobias, Tobias, 2010; Oláh, Johanson, 2010; Morse et al., 2012; Zhong et al., 2012; Nozaki, Shimura, 2013; Pandher, 2018; Oláh et al., 2018]. Species names are given according to the Trichoptera World Checklist [Morse, 2019].

The genital structures of caddisflies were photographed using a TouPCam 9.0 MP camera and Helicon Focus 7.02 image stacking software for combining 105 frames in one focused image.

The distribution maps are based on published data [Martynov, 1934; Levanidova, 1964; Botoșăneanu, 1970; Spuris, 1989; Vshivkova, 1991, 2016; Kumanski, 1992; Levanidova et al., 1995; Arefina, 1997, 2005; Tiunova et al., 2003; Arefina, Armitage, 2005; Yang et al., 2005; Hwang, Chun, 2006; Arefina-Armitage, 2007; Ohkawa, Ito, 2007; Nozaki, Tanida, 2007; Chuluunbat, Morse, 2007; Tiunova, Arefina-Armitage, 2010; Oláh, 2010; Ivanov, 2011; Zhong et al., 2012; Ivanov, Melnitsky, 2013; Vshivkova et al., 2013; Potikha, Vshivkova, 2016; Vshivkova, Akatkina, 2016; Vshivkova et al., 2016; Yang et al., 2016; Tanida, 2016; Chuluunbat et al., 2016; Smirnova et al., 2016; Oláh et al., 2018]. The borders of Siberia are based on the zoning scheme used in the report on the caddisfly fauna of Russia [Ivanov, 2011]. In distribution parts the following abbreviations are used: S – Siberia (KK – Republic of Khakassia); FE – Russian Far East (AMU – Amur Region; YEY – Jewish Autonomous Region; KHA – Khabarovsk Region; PRI – Primorsky Region; SAK – Sakhalin Region). Flight periods for species are indicated in the studied area and based on author's data.

Plectrocnemia kusnezovi Martynov, 1934 (Figs 1, 3)

Material. Republic of Khakassia, Abakan city, Abakan River valley: 53°41'59.6"N / 91°29'47.4"E, ~250 m a.s.l., 1♂, 11.08.2018, 2♂, 19.08.2018; 53°42'49.5"N / 91°30'19.6"E, ~245 m a.s.l., 1♂, 2.07.2018, 1♂, 9.07.2018, 1♂, 8.08.2018, 1♂, 11.08.2018, 1♂, 15.08.2018 (DC), 5♂, 19.08.2018 (ZM KhSU), 1♂, 8.09.2018 (DC).

Distribution. Russia (S: KK; FE: AMU, KHA, PRI), Mongolia, China, Democratic People's Republic of Korea, Republic of Korea. *Plectrocnemia kusnezovi* has not yet been recorded in Japan, as evidenced by the results of many years of research [Tanida, 2016; Inaba et al., 2019].

Flight period. July–September.

Plectrocnemia wui (Ulmer, 1932) (Figs 2, 4)

Material. Republic of Khakassia, Abakan city, Abakan River valley, 53°42'49.5"N / 91°30'19.6"E, ~245 m a.s.l., 1♂, 22.06.2018, 1♂, 28.06.2018 (DC), 1♂, 1.07.2018 (ZM KhSU).

Distribution. Russia (S: KK; FE: YEY, KHA, PRI, SAK), Kazakhstan, China, Democratic People's Republic of Korea, Republic of Korea, Japan.

Flight period. June–July.

Plectrocnemia spp.

Material. Republic of Khakassia, Abakan city, Abakan River valley: 53°41'59.6"N / 91°29'47.4"E, ~250 m a.s.l., 1♀, 11.08.2018, 3♀, 19.08.2018; 53°42'49.5"N / 91°30'19.6"E, ~245 m a.s.l., 1♀, 24.06.2018, 1♀, 28.06.2018, 1♀, 29.06.2018, 2♀, 2.07.2018, 1♀, 12.07.2018, 1♀, 13.07.2018, 1♀, 21.07.2018, 2♀, 7.08.2018, 2♀, 10.08.2018, 2♀, 11.08.2018, 4♀, 16.08.2018, 3♀, 17.08.2018, 10♀, 19.08.2018, 1♀, 21.08.2018, 2♀, 23.08.2018, 1♀, 24.08.2018, 1♀, 25.08.2018 (DC).

Note. In total 40 specimens were studied, but identification of female caddisflies of the genus *Plectrocnemia* to species level is not yet possible.

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