

New records of centipedes from the Omsk Oblast, southwestern Siberia, Russia (Chilopoda: Geophilomorpha, Lithobiomorpha)

Новые находки губоногих многоножек из Омской области (юг Западной Сибири, Россия) (Chilopoda: Geophilomorpha, Lithobiomorpha)

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КЛЮЧЕВЫЕ СЛОВА: Geophilidae, Lithobiidae, фаунистика, карта, Омская область, Сибирь.

ABSTRACT. Based on new material from the Omsk Oblast, southwestern Siberia, Russia, the distributions of two geophilomorph and four lithobiomorph centipedes have been refined. Both the genus *Pachymerium* C.L. Koch, 1847 and the species *P. ferrugineum* (C.L. Koch, 1835) are recorded from the Omsk Oblast for the first time. Two more lithobiid species, *Lithobius vagabundus* Stuxberg, 1876 and *L. (Ezembius) ostiacorum* Stuxberg, 1876, are also new to the Omsk Oblast. The distributions of all species encountered are mapped within the study area.

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РЕЗЮМЕ. По результатам обработки нового материала из Омской области, юг Западной Сибири, Россия, уточнено распространение двух видов многоножек-землянок и четырех видов многоножек-костянок. Род *Pachymerium* C.L. Koch, 1847 и вид *P. ferrugineum* (C.L. Koch, 1835) впервые указываются для Омской области. Еще два вида многоножек-костянок, *Lithobius vagabundus* Stuxberg, 1876 и *L. (Ezembius) ostiacorum* Stuxberg, 1876, являются

также новыми для Омской области. Для всех видов выполнено картирование ареалов в пределах исследуемого региона.

Introduction

Studies on the centipede fauna of southwestern Siberia began in the second half of the XIX century [Gerstfeldt, 1859; Stuxberg, 1876a, b; Sselivanoff, 1880a, b; 1881a, b, 1884], continued in the second half of XX century [Byzova, Chadaeva, 1965; Kozlovskaya, 1965; Titova, 1969, 1972a, b; Kurcheva, 1977; Zalesskaja, 1978; Poryadina, 1991; Gerasko, Kolesnichenko, 1997], and have been successfully carried out to this day [Nefediev, 2001, 2002a–c, 2019; Striganova, Poryadina, 2005; Sergeeva, 2010a, b, 2013, 2014, 2015; Bukhhalo, Sergeeva, 2012; Nefediev, Aripov, 2013; Bukhhalo *et al.*, 2014; Nefediev *et al.*, 2016a–c, 2017a–d, 2018, 2020a, b, 2021; Dyachkov, 2017; Farzalieva, 2018; Farzalieva, Nefediev, 2018; Nefediev, Farzalieva, 2020, 2024; Dyachkov, Bonato, 2024]. Considering the vast area of southwestern Siberia, the data obtained are far from exhaustive, even at the level of individual administrative territories. According to Nefediev *et al.* [2017c], the myriapod fauna of the Omsk Oblast remains poorly studied and includes some 7 species: *Brachyiulus jawlowskii* Lohmander,

1928, *Geophilus proximus* C.L. Koch, 1847, *Hessebius* sp., *Lithobius (Monotarsobius) curtipes* C.L. Koch, 1847, *L. (M.) insolens* Dányi et Tuf, 2012, *L. (Ezembius) princeps* Stuxberg, 1876, *L. (E.) proximus* Sseliwanoff, 1878. These represent 4 genera, 3 families, 3 orders (Julida, Geophilomorpha and Lithobiomorpha), and two classes (Diplopoda and Chilopoda). The present paper is focused on new faunistic records of Chilopoda from the study area, increasing the species list by three species.

New material for this study were collected by SK and KB using standard soil zoological methods [Ghilarov, 1975, 1987], viz. soil samples from 30 experimental sites and treating them by hand.

The distribution maps were composed using MapInfo Pro 17.0.

The material treated below has been shared between the collections of the following institutions: Altai State University, Barnaul, Russia (ASU) and Perm State University, Perm, Russia (PSU), as indicated in the text. Literature references to the species concern the Omsk Oblast only. Abbreviation: s.s. — soil sample. All soil samples, if otherwise not indicated, are made in 0–10 cm depth.

Taxonomic part

CLASS CHILOPODA

Order GEOPHILOMORPHA

Family GEOPHILIDAE

Geophilus proximus C.L. Koch, 1847

Map 1.

Geophilus proximus — Nefediev *et al.*, 2017c: 114, 115: map.

MATERIAL EXAMINED. (all from Russia, southwestern Siberia, Omsk Oblast). 1 ♀, 3 juv. (ASU), **Lyubinskii District**, 4.3 km NE of Lyubinskii, 55°07'55.0"N, 72°48'10.3"E, *Betula pendula* forest with *Calamagrostis*, ca. 115 m a.s.l., s.s., 28.VI.2018; 2 juv. (ASU), same District, 0.9 km E of Politotdel, 55°12'25.2"N, 73°10'58.3"E, small-grass *Betula pendula* forest, ca. 75 m a.s.l., s.s., 10.VII.2017; 2 juv. (ASU), same locality, s.s. (10–20 cm deep), 10.VII.2018; 1 ♀, 1 juv. (ASU), same District, 0.8 km NE of Politotdel, 55°12'26.0"N, 73°11'09.0"E, mixed herbaceous *Bromus inermis* meadow, ca. 70 m a.s.l., s.s., 10.VII.2018; 2 juv. (ASU), **Cherlak District**, 1.1 km N of Put Lenina, 54°14'02.1"N, 74°48'28.2"E, *Bromus inermis* grassland, ca. 125 m a.s.l., s.s., 3.VII.2018; 1 juv. (ASU), **Tavrisheskoye District**, 2.3 km N of Sosnovskoye, 54°37'42.1"N, 73°09'13.5"E, small-grass *Betula pendula* forest, ca. 100 m a.s.l., s.s., 5.VII.2018; 1 juv. (ASU), **Sargatskoye District**, 3.7 km SE of Bazhenovo, 55°37'42.1"N, 73°09'13.5"E, *Betula pendula* forest with *Calamagrostis*, ca. 100 m a.s.l., s.s. (litter), 12.VII.2018; 1 juv. (ASU), **Omsk City**, 0.6 km NW of Berlinka, 54°59'00.0"N, 73°30'21.4"E, small-grass *Betula pendula* forest, ca. 120 m a.s.l., s.s., 6.VII.2018; 1 juv. (ASU), **Muromtsevo District**, 4.5 km NW of Muromtsevo, 56°19'26.7"N, 75°11'13.9"E, *Betula pendula* forest with *Calamagrostis*, ca. 100 m a.s.l., s.s., 16.VII.2018; 2 ♀♀ (ASU), **Bolsherechie District**, 2.6 km NE of Bolsherechie, 56°06'35.5"N, 74°41'11.2"E, nemoral small-grass *Betula pendula* and *Populus tremula* forest with *Salix* shrubs, ca. 65 m a.s.l., s.s., 19.VII.2017; 1 juv. (ASU), same District, 2.8 km NE of Bolsherechie, 56°06'36.0"N, 74°41'13.0"E, mixed herbaceous floodplain grassland, ca. 70 m a.s.l., s.s., 19.VII.2018; 1 ♀ (ASU), **Ust-Ishim District**, 3.5 km W of Skorodum, 57°47'55.1"N, 71°00'05.0"E, small-grass *Populus tremula* and *Tilia cordata* forest, ca. 105 m a.s.l., s.s., 22.VII.2018; 1 ♀ (ASU), same District, ca. 0.2 km NW of Nikolsk, 57°44'37.0"N, 71°10'44.2"E, nemoral small-grass *Betula pendula* and *Picea obovata* forest, ca. 110 m a.s.l., s.s., 22.VII.2017, all S.Yu. Kniazev, K.A. Babiy leg.

DISTRIBUTION. This species is widespread in the Palearctic, ranging from Europe through the Urals, SW Siberia and Kazakhstan to Japan [Sseliwanoff, 1881a; Bonato *et al.*, 2005; Nefediev, 2019; Dyachkov, Tuf, 2019; Bragina *et al.*, 2020]. In Siberia, *G. proximus* has been found in the Tyumen, Omsk, Novosibirsk, Tomsk, and Kemerovo oblasts, the Republic of Khakassia, and the Altai Krai [Zalesskaja *et al.*, 1982; Poryadina, 1991; Striganova, Poryadina, 2005; Farzalieva, 2008; Bukhhalo, Sergeeva, 2012; Sergeeva, 2013, 2014; Bukhhalo *et al.*, 2014; Nefediev *et al.*, 2017c, d, 2021; Nefediev, 2019]. Surprisingly, Dyachkov and Bonato [2024] omitted several regions from the distribution range of *G. proximus*, viz. Kazakhstan and Japan.

REMARKS. This species is herewith recorded from the Muromtsevo, Bolsherechie, and Ust-Ishim districts of the Omsk Oblast for the first time.

Pachymerium ferrugineum (C.L. Koch, 1835)

Map 1.

MATERIAL EXAMINED. 1 ♀ (ASU), Russia, southwestern Siberia, Omsk Oblast, **Bolsherechie District**, ca. 0.5 km S of Bolsherechie, 56°07'33.3"N, 74°37'00.1"E, nemoral small-grass *Betula pendula* and *Populus tremula* forest with *Salix* shrubs, ca. 85 m a.s.l., s.s., 19.VII.2017, S.Yu. Kniazev, K.A. Babiy leg.

DISTRIBUTION. *Pachymerium ferrugineum* is widespread from Macaronesia through Europe (including the Channel Islands, the Azores, the Canary Islands and Madeira) and Central Asia to Taiwan and Japan, as well as North Africa; also found introduced across North America as far as the USA (Alaska, the Pribilof Islands, the Hawaiian Islands) and Mexico, as well as South America, viz. Chile (the Juan Fernández Islands and Easter Island) [Bonato *et al.*, 2005; Nefediev *et al.*, 2017d; Barber *et al.*, 2020; Dyachkov, 2023]. In Asian Russia, this species has hitherto been reported from the Urals and Siberia (Chelyabinsk, Sverdlovsk, Tyumen and Tomsk oblasts, and the Altai Krai) [Farzalieva, 2008; Sergeeva, 2013; Bukhhalo *et al.*, 2014; Nefediev *et al.*, 2017d] to the Russian Far East (Amur and Jewish Autonomous oblasts and Primorskii Krai) [Zalesskaja *et al.*, 1982; Ganin, 1997; Dyachkov, 2023]. Surprisingly, Dyachkov & Bonato [2024] omitted several regions in the distribution range of *P. ferrugineum*, viz. Japan, Taiwan, as well as introductions to North Africa, North and South America.

REMARKS. Both the species and the genus *Pachymerium* C.L. Koch, 1847 are new to the fauna of the Omsk Oblast.

ORDER LITHOBIOMORPHA

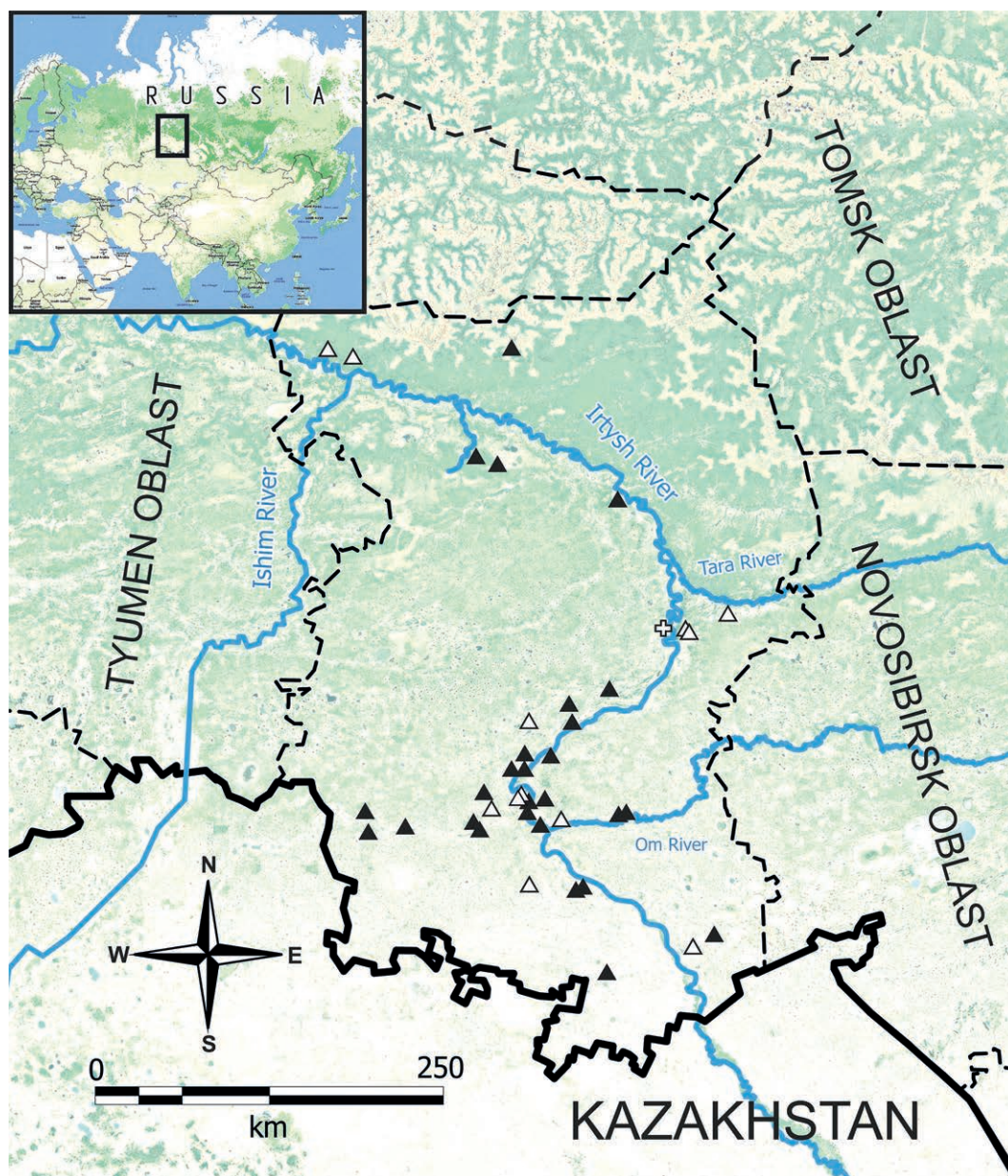
Family LITHOBIIDAE

Lithobius vagabundus Stuxberg, 1876

Map 2.

MATERIAL EXAMINED. 1 ♂ (PSU-1755), Russia, southwestern Siberia, Omsk Oblast, **Omsk City**, 0.6 km NW of Berlinka, 54°59'00.0"N, 73°30'21.4"E, small-grass *Betula pendula* forest, ca. 120 m a.s.l., s.s., 6.VII.2018, S.Yu. Kniazev, K.A. Babiy leg.

DISTRIBUTION. This species was originally described by Stuxberg [1876a, b] in the Yenisei River region (now Krasnoyarsk Krai, central Siberia, Russia). A century later, *Lithobius vagabundus* was redescribed from type material, with lectotype designation and the exclusion of the false record from the Kanin Peninsula [Eason, 1976]. In Siberia, this species has previously been found in the Altai Krai [Nefediev *et al.*, 2017b, 2018; Nefediev, Farzalieva, 2020], the Republic of Altai [Nefediev *et al.*, 2017a; Nefediev, Farzalieva, 2020], and the Republic of Khakassia [Nefediev, Farzalieva, 2024].



Map 1. Distributions of *Geophilus proximus* (triangle) and *Pachymerium ferrugineum* (cross) in the Omsk Oblast. Previously known localities marked in black, new records given in white.

Карта 1. Распространение *Geophilus proximus* (треугольник) и *Pachymerium ferrugineum* (крест) в Омской области. Черным отмечены ранее известные места находок, новые находки отмечены белым.

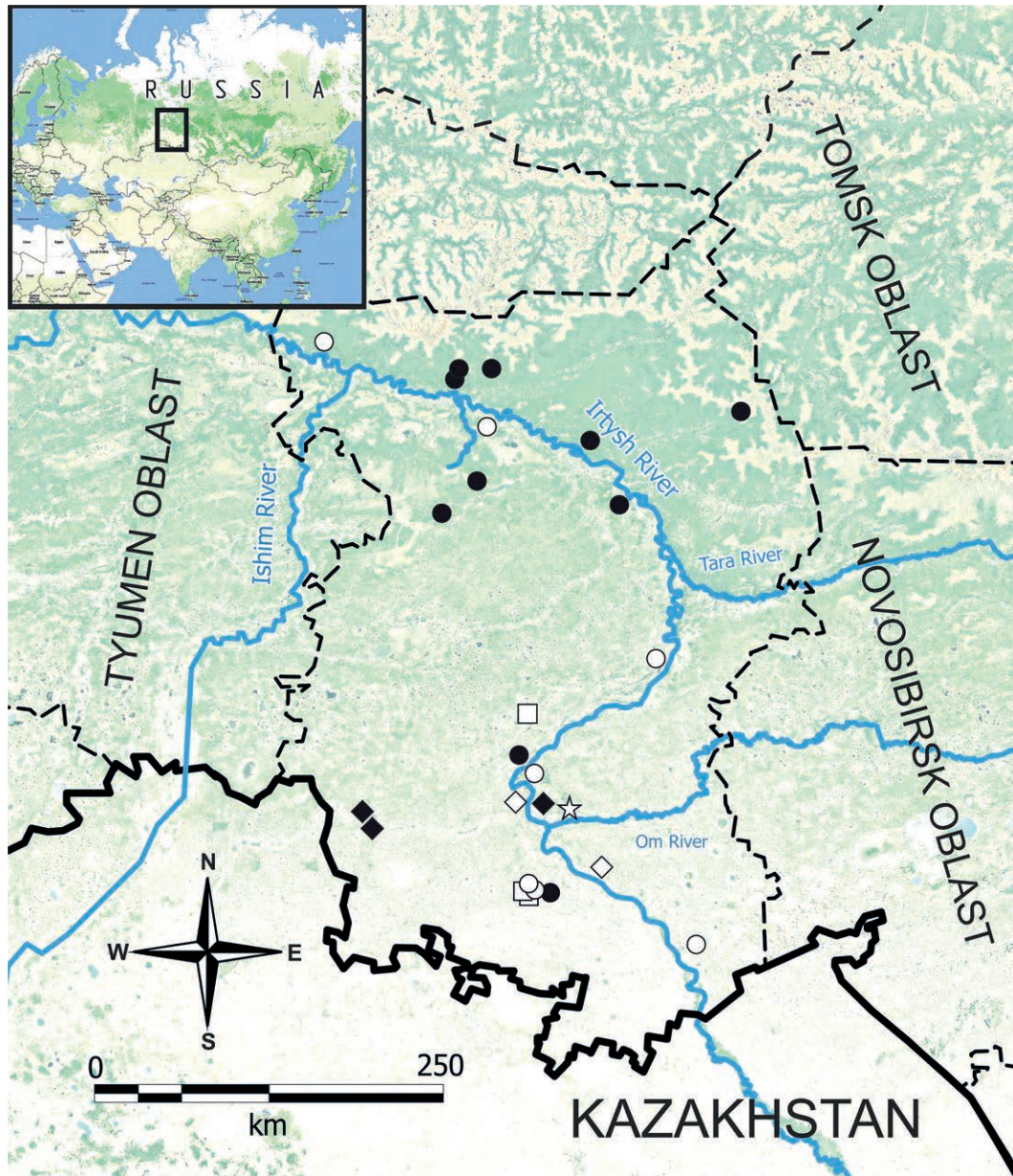
REMARKS. Above is the first record of this species from the Omsk Oblast, where it seems to be quite rare and has been found in a single locality. This is the westernmost record of this species, significantly expanding its range.

Lithobius (Ezembius) ostiacorum Stuxberg, 1876
Map 2.

MATERIAL EXAMINED. (all from Russia, southwestern Siberia, Omsk Oblast). 1 ♀ (PSU-1756), **Tavricheskoye District**, 4 km NE of Sosnovskoye, 54°37'59.8"N, 73°09'24.5"E, mixed herbaceous meadow, ca. 110 m a.s.l., s.s., 5.VII.2018; 1 ♀ cf. *ostiacorum* (PSU-1771), same District, 2.3 km N of Sosnovskoye, 54°37'42.1"N, 73°09'13.5"E, small-grass *Betula pendula* forest, ca. 100 m a.s.l., s.s., 5.VII.2018;

2 ♀♀ (PSU-1758), **Sargatskoye District**, 3.7 km SE of Bazhenovo, 55°37'42.1"N, 73°09'13.5"E, *Betula pendula* forest with *Calamagrostis*, ca. 100 m a.s.l., s.s. (litter), 12.VII.2018; 1 ♂, 1 ♀ (PSU-1758), same locality, s.s., 12.VII.2018, all S.Yu. Kniازهv, K.A. Babiy leg.

DISTRIBUTION. This species was originally described by Stuxberg [1876a, b] from the Yenisei River region (now Krasnoyarsk Krai, Siberia, Russia), and then, based on type material, the species was redescribed by Eason [1976]. Being widely distributed in Siberia, *L. (E.) ostiacorum* has hitherto been known from the Irkutsk and Kemerovo oblasts, the Altai and Krasnoyarsk krajs, and the Altai and Khakassian republics [Zalesskaja, 1978; Nefediev *et al.*, 2017a, 2018, 2020a, 2021; Nefediev, Farzalieva, 2020]. The southernmost records of this species are known from northern Mongolia [Poloczec *et al.*, 2016, 2017, 2021; Dyachkov, Farzalieva, 2023].



Map 2. Distributions of *Lithobius vagabundus* (star), *L. (Ezembius) ostiacorum* (square), *L. (Monotarsobius) insolens* (diamond) and *L. (M.) curtipes* (circle) in the Omsk Oblast. Previously known localities marked in black, new records given in white.

Карта 2. Распространение *Lithobius vagabundus* (звезда), *L. (Ezembius) ostiacorum* (квадрат), *L. (Monotarsobius) insolens* (ромб) и *L. (M.) curtipes* (круг) в Омской области. Черным отмечены ранее известные места находок, новые находки отмечены белым.

REMARKS. This species has been found in the Omsk Oblast for the first time. The above records extend the distribution area of *L. (E.) ostiacorum* to the west.

Lithobius (Monotarsobius) insolens Dányi et Tuf, 2012
Map 2.

Lithobius (Monotarsobius) insolens — Nefediev *et al.*, 2017c: 116, 117: map.

MATERIAL EXAMINED. 1 ♂, 1 ♀ (PSU-1757), Russia, south-western Siberia, Omsk Oblast, **Omsk District**, 0.5 km NE of Achairskii, 54°38'48.4"N, 73°54'23.6"E, tall-grass floodplain *Populus tremula* forest, ca. 95 m a.s.l., s.s., 5.VII.2018; 3 juv. cf. *insolens* (PSU-1763, PSU-1768), **Lyubinskii District**, 0.8 km NE of Politotdel, 55°12'25.2"N,

73°10'58.3"E, small-grass *Betula pendula* forest, ca. 70 m a.s.l., s.s., 10.VII.2018, all S.Yu. Kniazev, K.A. Babiy leg.

DISTRIBUTION. *Lithobius (Monotarsobius) insolens* was originally described from eastern Kazakhstan [as *L. (M.) insolitus*: Farzaliyeva, 2006], and then renamed to avoid homonymy [Dányi, Tuf, 2012]. This species has hitherto been reported from Siberia, viz. the Omsk Oblast [Nefediev *et al.*, 2017c], the Altai Krai, and the Republic of Altai [Dyachkov, 2017; Nefediev *et al.*, 2017a, 2018, Nefediev, Farzaliyeva, 2020], as well as from some new localities in the East Kazakhstan Oblast, Kazakhstan [Dyachkov, 2019].

REMARKS. The above record of *L. (M.) insolens* is the southernmost one in the Omsk Oblast.

Lithobius (Monotarsobius) curtipes C.L. Koch, 1847
Map 2.

Lithobius (Monotarsobius) curtipes — Nefediev *et al.*, 2017c: 116, 117: map.

MATERIAL EXAMINED. (all from Russia, southwestern Siberia, Omsk Oblast). 1 ♂ sad. cf. *curtipes* (PSU-1759), **Azovo German National District**, 3 km E of Azovo, 54°42'11.9"N, 73°05'36.5"E, *Betula pendula* forest with *Calamagrostis*, ca. 115 m a.s.l., s.s., 1.VII.2017; 1 ♂ (PSU-1760), **Cherlak District**, 5.5 km NW of Put Lenina, 54°13'55.2"N, 74°53'32.9"E, small-grass *Populus tremula* and *Betula pendula* forest with *Rosa acicularis* shrubs, ca. 120 m a.s.l., s.s. (litter), 3.VII.2018; 1 ♀ sad. (PSU-1766), same locality, s.s., 3.VII.2018; 1 ♂ (PSU-1769), 1 juv. (PSU-1767), **Tavricheskoye District**, 2.3 km N of Sosnovskoye, 54°37'42.1"N, 73°09'13.5"E, small-grass *Betula pendula* forest, ca. 100 m a.s.l., s.s., 5.VII.2018; 1 ♂, 1 adult fragm. (PSU-1761), **Omsk District**, 0.5 km E of Chernoluchinskii, 55°17'14.5"N, 73°02'18.0"E, *Betula pendula* forest with *Equisetum hyemale*, ca. 80 m a.s.l., s.s., 7.VII.2018; 1 ♀ (PSU-1772), **Bolsherechie District**, 1.4 km NW of Shipitsyno, 56°00'29.6"N, 74°32'10.3"E, *Betula pendula* forest with *Calamagrostis*, ca. 95 m a.s.l., s.s., 16.VII.2018; 1 ♂ (PSU-1764), **Ust-Ishim District**, 3.5 km W of Skorodum, 57°47'55.1"N, 71°00'05.0"E, small-grass *Populus tremula* and *Tilia cordata* forest, ca. 105 m a.s.l., s.s., 22.VII.2018; 1 ♂ (PSU-1770), **TeVriz District**, 3.4 km SE of Petelino, 57°23'57.4"N, 72°43'18.4"E, *Tilia cordata* forest with *Equisetum sylvaticum* and ferns, ca. 75 m a.s.l., s.s., 24.VII.2018, all S.Yu. Kniazev, K.A. Babiy leg.

DISTRIBUTION. This species inhabits a vast area ranging from European Russia, including the Caucasus, through the Urals and Kazakhstan to Siberia and northern Mongolia [Zalesskaja, 1978; Farzalieva, Esyunin, 2008; Bonato *et al.*, 2016; Poloczec *et al.*, 2016, 2017, 2021; Zuev, 2016; Bragina *et al.*, 2020; Barber, 2022; Dyachkov *et al.*, 2022; Dyachkov, Farzalieva, 2023; Dyachkov, 2024]. In Siberia, it has hitherto been recorded from the Altai and Krasnoyarsk kraises, the Novosibirsk, Omsk, Tyumen, Tomsk and Kemerovo oblasts, Khanty-Mansi Autonomous and Yamalo-Nenets Autonomous okrugs, and the Altai and Khakassian republics [Zalesskaja, 1978; Vorobiova, 1999; Rybalov, 2002; Vorobiova *et al.*, 2002; Striganova, Poryadina, 2005; Sergeeva, 2010b, 2013; Bukhhalo, Sergeeva, 2012; Nefediev *et al.*, 2016a, 2017a–c, 2018, 2020a, 2021; Nefediev, Farzalieva, 2020].

REMARKS. This species has previously been found neither the Azovo German National nor Cherlak, nor Omsk, nor Bolsherechie, nor Ust-Ishim districts of the Omsk Oblast. In the study area, *L. (M.) curtipes* tends to dwell in small-leaved forests. The ♀ (PSU-1772) is gynandromorphic.

Conclusions

The distributions of 2 geophilomorph and 4 lithobiomorph centipedes have been refined. To date, the myriapod fauna of the Omsk Oblast comprises at least 10 species from 5 genera, 3 families and 3 orders: *Brachyulus jawlowskii* Lohmander, 1928, *Geophilus proximus* C.L. Koch, 1847, *Pachymerium ferrugineum* (C.L. Koch, 1835)*, *Hessebius* sp., *Lithobius vagabundus* Stuxberg, 1876*, *L. (Ezembius) princeps* Stuxberg, 1876, *L. (E.) ostiacorum* Stuxberg, 1876*, *L. (E.) proximus* Sselivanoff, 1878, *L. (Monotarsobius) curtipes* C.L. Koch, 1847, *L. (M.) insolens* Dányi et Tuf, 2012. The first records from the Omsk Oblast are marked above with an asterisk (*). The genus *Pachymerium* C.L. Koch, 1847 is formally new to the Omsk Oblast.

Compliance with ethical standards

CONFLICT OF INTEREST: The authors declare that they have no conflict of interest.

Ethical approval: No ethical issues were raised during our research.

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