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New records of millipedes (Diplopoda) from European Russia and the Caucasus

Новые находки двупарноногих многоножек (Diplopoda) из европейской России и Кавказа

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KEY WORDS: faunistics, distribution, iconography.
КЛЮЧЕВЫЕ СЛОВА: фаунистика, распространение, иконография.

ABSTRACT. Results are presented of a taxonomic treatment of Diplopoda collected, mainly recently, in European Russia and the Caucasus. These concern 52 species or subspecies from 31 genera, 12 families and seven orders. New faunistic information is provided, allowing for the distribution of a number of millipede species to be refined, as well as illustrations of several forms. *Strongylosoma lenkoranum* Attems, 1898 is formally new to the fauna of and introduced to the Volga region, eastern European Russia. Incidentally, *Brachyiulus lusitanus* Verhoeff, 1898 is formally new to the faunas of Israel and Ethiopia.

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РЕЗЮМЕ. Приведены результаты таксономической обработки Diplopoda, собранных, в основном, недавно в европейской России и на Кавказе. Они касаются 52 видов и подвидов из 31 рода, 12 семейств и семи отрядов. Представлены новая фаунистическая информация, позволяющая уточнить распространение нескольких видов диплопод, и иллюстрации некоторых форм. Вид *Strongylosoma lenkoranum* Attems, 1898 — интродуцент, формально новый для фауны Поволжья. Вид *Brachyiulus lusitanus* Verhoeff, 1898 — формально новый для фаун Израиля и Эфиопии.

Introduction

The latest faunistic studies on the Diplopoda of European Russia and the Caucasus have allowed for several regional lists and individual species distributions to become significantly enriched or refined (e.g., Evsyukov *et al.* [2022]; Golovatch [2023]; Golovatch, Antipova [2023]; Zuev *et al*. [2023]; Golovatch, Kurochkin [2024], Golovatch *et al.* [2024], etc.). The present contribution continues the publication of mostly very fresh records of millipedes across both European Russia and the Caucasus.

Material and methods

The fresh material underlying the present contribution is shared between the following collections: Zoological Museum of the Moscow University (ZMUM); Zoological Institute of the Russian Academy of Sciences, St. Petersburg (ZISP), Zoological Museum of the North Caucasian Federal University, Stavropol (ZMS); and Don State Technical University, Rostov-on-Don (DSTU).

The millipedes collected were taken manually, by sieving different substrates with a soil sieve or by sweeping vegetation at dusk and night with a butterfly net, and all subsequently preserved in 97% ethanol. Images of millipedes were taken *in situ* using a Canon EOS R7 mirrorless camera equipped with a Canon EF-S 35mm F/2.8 Macro IS STM lens and a set of Kenko Automatic Extension Tube Set DG to provide enhanced magnification as well as Yongnuo YN14 EX II Macro flash. The images were then edited and finalized using Adobe Photoshop ver. 25.3.1 (2024).

Material stored in the ZMS was examined with a LOMO MBS-10 stereo microscope and a LOMO Micmed-5 light microscope (JSC LOMO, Russia). Photographs were taken using a Levenhuk D800T digital camera (Levenhuk LLC, USA). The final image was compiled from multiple layers using Helicon Focus (ver. 8.3.0) and Adobe Photoshop (ver. CC 2018) software.

Taxonomy

Order Polyxenida
Family Polyxenidae

Polyxenus lagurus (Linnaeus, 1758)
Fig. 1A.

MATERIAL. 1 juv. (ZMUM), Russia, Saratov Region, Khvalynsk Distr., Khvalynsk National Park, slight NW slope, *Pinus* forest with *Acer* understorey, litter, 52°30′45.2″N 48°02′20.6″E, 30.IV.2024, O.L. Makarova leg.; 3 ex. (DSTU), same region, Saratov Distr., near Sinenkiye, sifting dry grass near entrance to marmot hole, 51°14′41.2″N 45°44′40.8″E, 3.V.2022, I.A. Zabaluev leg.; 1 juv. (ZISP), Samara Region, Sergievsk Distr., 1.27 km E of Chernovka, lower part of slope to Chernovka River, petrophytic steppe, 53°42′06.6″N 50°47′16.6″E, 26.VII.2024, A.S. Kurochkin leg.; 2 ex. (ZMS), Krasnodar Prov., Greater Sochi, Lazarevsky Distr., near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, under logs, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, R.V. Zuev leg.

REMARKS. A parthenogenetic population of this mainly Holarctic species has only very recently been recorded from the Zhiguli State Nature Biosphere Reserve, Samara Region, Russia [Golovatch, Kurochkin, 2024]. This latter is the locality that is geographically the closest to Khvalynsk, presently being the easternmost in the distribution range of this species. The species is formally new to the fauna of the Saratov Region (cf. Volkova [2014]), currently restricted to the Volga River's right-bank area.

Propolyxenus argentifer (Verhoeff, 1921)

MATERIAL. 1 ex. (DSTU), Russia, Krasnodar Prov., Anapa Distr., bank of Sukko River, forest litter, 44°47′20.8″N 37°28′45.8″E, 15.V.2023, I.S. Turbanov, S.V. Arefyev, I.A. Zabaluev leg.

REMARKS. This species has previously been recorded from Croatia, Romania, the entire Caucasus including the Hyrcanian part, and Iran. According to molecular data, there may be a complex of species involved, including cryptic ones in the Caucasus [Kokhia, Golovatch, 2018, 2020; Short *et al*., 2020; Zuev, 2021].

Family Lophoproctidae

Lophoproctus coecus Pocock, 1894

MATERIAL. 1 ex. (DSTU), Russia, Krasnodar Prov., Krym Distr., 1 km W of Akkermenka, forest litter, 45°00′47.9″N 37°39′58.0″E, 22.V.2023; 1 ex. (DSTU), same region, Novorossiysk Distr., near Glebovskoye, forest litter, 44°43′38.3″N 37°37′34.7″E, 15.V.2023; 1 ex. (DSTU), same region and district, 1.7 km N of Dyurso, bank of Dyurso River, forest litter, 44°42′32.0″N 37°33′44.6″E, 15.V.2023, all I.S. Turbanov, S.V. Arefyev, I.A. Zabaluev leg.; 1 ex. (ZMS), same region, Greater Sochi, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 31 ex. (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, in leaf litter and under logs, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, all R.V. Zuev leg.

REMARKS. This widespread Mediterranean species ranges from Europe to Central Asia [Short, 2015; Kokhia, Golovatch, 2018, 2020].

Order Glomerida
Family Glomeridae

Trachysphaera costata (Waga, 1857)

MATERIAL. 1 ex. (DSTU), Russia, Krasnodar Prov., Novorossiysk Distr., Vasilyevka, right bank of Ozereika River, forest litter, 44°43′29.3″N 37°39′29.2″E, 15.V.2023, I.S. Turbanov, S.V. Arefyev, I.A. Zabaluev leg.; 1 ♂, 2 ♀♀ (ZMS), same region, Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 2 ♀♀ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♀ (ZMS), same region and district, Nizhneye Uchdere, 135 m a.s.l., *Alnus* forest, 19.V.2021, all R.V. Zuev leg.; 1 ♀ (DSTU), Republic of Karachaevo-Cherkessia, Dzhalankol, 43°36′48.4″N 42°07′42.3″E, 1175 m a.s.l., right tributary of Kuban River, *Fagus orientalis* litter and stones, 13.VII.2024, M.D. Antipova leg.

REMARKS. This common species is widespread from Central Europe to the Near East, including the Caucasus region [Golovatch, 1990, 2008; Antić *et al*., 2021; Evsyukov *et al*., 2022; Golovatch *et al*., 2024].

Trachysphaera radiosa (Lignau, 1911)

MATERIAL. 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 1 ♀ (ZMS), same region and district, Khosta, vicinity of Yew-tree and Boxwood Grove, near old cemetery, *Fagus*, *Tilia* forest, under logs, 3.V.2018; 2 ♀♀ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♀ (ZMS), same region and district, Nizhneye Uchdere, 150 m a.s.l., forest, 18.V.2021, all R.V. Zuev leg.

REMARKS. Endemic to the Colchidan part of the Caucasus, previously recorded from the Krasnodar Province, Abkhazia, and Georgia [Talikadze, 1984; Golovatch, 1990; Chumachenko, 2016; Evsyukov *et al*., 2025a].

Hyleoglomeris awchasica (Brandt, 1840)

MATERIAL. 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018; 1 ♂ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♂, 1 ♀ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, under logs, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, all R.V. Zuev leg.

REMARKS. Endemic to the western Caucasus. Recorded from Georgia, Abkhazia, and Russia within the Krasnodar Province, Adygea, and Karachay-Cherkessia [Golovatch, 1989b, 2021; Golovatch *et al*., 2006; Korobushkin *et al*., 2013; Chumachenko, 2016; Evsyukov *et al*., 2022, 2025a].

Fig. 1. Images of millipedes (*in situ*) from European Russia: A — *Polyxenus lagurus* (Linnaeus, 1758), juv., 1.27 km E of Chernovka, Sergievsk Distr., Samara Region; B — *Archiboreoiulus pallidus* (Brade-Birks, 1920), Zubchaninovka, Samara City, Samara Region; C — *Nopoiulus kochii* (Gervais, 1847), Zubchaninovka, Samara City, Samara Region; D — *Brachyiulus jawlowskii* Lohmander, 1928, 3.73 km SSE of Krivoye Ozero, Krasnoyarsky Distr., Samara Region.

Рис. 1. Фотографии многоножек (*in situ*) из европейской России: A — *Polyxenus lagurus* (Linnaeus, 1758), ювенил, 1,27 км к востоку от с. Черновка (Сергиевский р-н, Самарская обл.); B — *Archiboreoiulus pallidus* (Brade-Birks, 1920), Зубчаниновка (г. Самара, Самарская обл.); C — *Nopoiulus kochii* (Gervais, 1847), Зубчаниновка (г. Самара, Самарская обл.); D — *Brachyiulus jawlowskii* Lohmander, 1928, 3,73 км к юго-юго-востоку от Кривого Озера (Красноярский р-н, Самарская обл.).

Family Glomeridellidae

Typhloglomeris caucasica Golovatch, 1975

MATERIAL. 1 ♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018, R.V. Zuev leg.

REMARK. This troglophilic species is narrowly endemic to the Sochi region, Krasnodar Province [Golovatch, 1975; Golovatch, 1989a; Golovatch, Chumachenko, 2013; Chumachenko, 2016].

Order Polyzoniida
Family Hirudisomatidae

Hirudisoma roseum (Victor, 1839)

MATERIAL. 1 ♂ (DSTU), Russia, Krasnodar Prov., Novorossiysk Distr., near Glebovskoye, forest litter, 44°43′38.3″N 37°37′34.7″E, 15.V.2023; 1 ♂ (DSTU), same region and district, 1.7 km N of Dyurso, left bank of Dyurso River, forest litter, 44°42′32.0″N 37°33′44.6″E, 15.V.2023; 1 ♂, 1 ♀ (DSTU), same region, Severskaya Distr., near Ubinskaya, left bank of Ubin River, forest litter, 44°42′49.0″N 38°31′32.5″E, 20.V.2023, all I.S. Turbanov, S.V. Arefyev, I.A. Zabaluev leg.; 1 ♂, 2 juv. (ZMUM), same region, Greater Sochi, Adler Distr., Caucasian Nature Reserve, right bank of Achipse River, 1210 m a.s.l., *Fagus* forest, litter, 43°42′27.0″N 40°15′43.7″E, 12.IV.2024, M.D. Antipova leg.; 1 juv. (ZMS), same region, Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 1500 m a.s.l., *Carpinus*, *Corylus* forest, 43°43′23.0″N 40°10′08.0″E, 30.IV.2018; 3 juv. (ZMS), same region and district, Estosadok, northern slope of Aibga Ridge, 1350 m a.s.l., *Fagus* forest, 43°39′08.0″N 40°19′09.0″E, 2.V.2018; 1 ♂, 3 ♀♀ (ZMS), same region, Lazarevsky Distr., near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, under logs, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, all R.V. Zuev leg.

REMARKS. This is the most common and widespread species of Colobognatha in the Caucasus and surrounding areas: Turkey, Georgia, Azerbaijan, and Russia: Krasnodar Province and the Adygea, Karachay-Cherkessia, Kabardino-Balkaria, North Ossetia – Alania, and Chechen republics (e.g., Golovatch *et al*. [2024]).

Family Polyzoniidae

Polyzonium germanicum Brandt, 1837

MATERIAL. 1 juv. (ZMUM), Russia, Moscow Region, Istra Distr., near Novorakovo, *Carex* swamp in forest, 1.II.2005, O.L. Makarova leg.

REMARKS. This pan-European species is very widespread in Russia as well, ranging from southern Karelia, the Arkhangelsk Region, and the Solovetskie Islands in the White Sea in the north to the Volga River basin (Pskov, Vologda, Yaroslavl, Tver, Moscow, and Nizhny Novgorod regions, as well as Mari-El, Tatarstan, and Baskortostan republics) and Tula Region in the south, and from the Kaliningrad and Leningrad regions in the west to the Chelyabinsk Region in the southern Urals in the east [Lokshina, 1969; Kime, Enghoff, 2011; Golovatch, 2023].

Order Siphonocryptida
Family Siphonocryptidae

Hirudicryptus abchasicus Golovatch, Evsyukov et Reip, 2015

MATERIAL. 1 ♀ (ZMUM), Abkhazia, Novyi Afon, moss on a well wall, 145 m a.s.l., 43°05′23.7″N 40°49′14.3″E, 31.XII.2023, M.D. Antipova leg.

REMARKS. This species is endemic to the western, Colchidan part of the Caucasus, including Abkhazia and the Krasnodar Province [Golovatch *et al.*, 2015; Zuev, 2017].

Order Julida
Family Blaniulidae

Archiboreoiulus pallidus (Brade-Birks, 1920)
Fig. 1B

MATERIAL. 4 ♀♀ (ZMUM), Russia, Samara Region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; 6 ♀♀ (ZMUM), same region, Bolshechernigovsky Distr., 5.45 km SSW of Koshkin, hollow bottom, *Bromus* community, 51°49′00.3″N 50°45′05.6″E, 3.V.2024; numerous ♀♀ and juv. (ZMUM), same region, Samara City, Kirovsky Distr., Zubchaninovka, orchard and garden, 53°14′59.9″N 50°18′39.0″E to 53°14′59.4″N 50°18′39.6″E, 18.VIII.2024, all A.S. Kurochkin leg.

REMARKS. A nearly pan-European species, also reported from the northern Caucasus and introduced to North America, largely clearly synathropic and parthenogeneric [Kime, Enghoff, 2017]. Prisnyi [2001] noted that all Russian populations appear to be male-free and largely anthropochoric. In European Russia, this species is mostly confined to the southern parts, south of the Moscow Region, its above encounters in the middle course areas of Volga River, apparently, being the easternmost.

Nopoiulus kochii (Gervais, 1847)
Fig. 1C.

MATERIAL. 5 ♂♂, 22 ♀♀ (ZMUM), Armenia, SW of Shnokh halfway between Alaverdi and Bagratashen, *Carpinus* forest, litter, 24.V.1987, S.I. Golovatch, K.Yu. Eskov leg.; 1 ♀ (DSTU), Russia, Krasnodar Prov., Gelendzhik Distr., 0.6 km N of Praskoveyevka, forest litter, 44°29′15.7″N 38°13′24.2″E, 16.V.2023, I.S. Turbanov S.V. Arefyev, I.A. Zabaluev leg.; 1 ♂, 1 ♀ (ZMS), same region, Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 3 ♂♂, 6 ♀♀ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018, all R.V. Zuev leg.; 2 ♂♂, 2 ♀♀ (ZMS), same region and district, Lazarevskoye, garden, under stones near pond, 23.X.2018, D.S. Stanovov leg.; 3 ♀♀ (ZMUM), Samara Region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; 4 ♀♀ (ZMUM), same region, Bolshechernigovsky Distr., 5.45 km SSW of Koshkin, hollow bottom, *Bromus* community, 51°49′00.3″N 50°45′05.6″E, 3.V.2024; 2 ♂♂, 3 ♀♀ (ZMUM), same region, Samara City, Kirovsky Distr., Zubchaninovka, orchard and garden, 53°14′59.9″N 50°18′39.0″E to 53°14′59.4″N 50°18′39.6″E, 18.VIII.2024, all A.S. Kurochkin leg.; 3 ♂♂, 21 ♀♀, 3 juv. (DSTU), Yaroslavl Region, Nekouz Distr., near Borok, near Barskiy Pond, sifting an anthill of *Formica truncorum*, 5.IV.2018, I.S. Turbanov leg.; 1 juv. (ZMUM), Moscow City, Sokolniki Park, *Fomitopsis pinicola* tree fungus, 28.IV.2025, O.L. Makarova leg.

REMARKS. A widespread subcosmopolitan species, recorded from the entire Caucasus [Golovatch, Enghoff, 1990], but clearly synanthropic across European Russia [Kime, Enghoff, 2017].

Family Julidae

Brachyiulus jawlowskii Lohmander, 1928
Fig. 1D.

MATERIAL. 1 ♀ (ZMUM), Russia, Saratov Region, Khvalynsk Distr., near Balalaika Pond, under *Alnus* tree at bank, litter, 52°29′25.7″N 48°04′30.1″E, 28.IV.2024, O.L. Makarova leg.; 1 ♂, 1 ♀ (ZMUM), Samara Region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; 3 ♀♀ (ZMUM), same region, Bolshechernigovsky Distr., 5.45 km SSW of Koshkin, hollow bottom, *Bromus* community, 51°49′00.3″N 50°45′05.6″E, 16.V.2024, all A.S. Kurochkin leg.; 3 ♀♀

(ZMUM), Voronezh Region, Khopersky Nature Reserve, Quercus grove with Lilium convallium on terrace, 3.V.2025. O.L. Makarova leg.

REMARKS. This widespread, partly synanthropic, Eastern European species ranges from eastern Poland in the west, across European Russia (including the northern Caucasus, down to Abkhazia in the south: Vagalinski, Golovatch [2021]), western Kazakhstan and western Siberia in the east [Nefediev *et al*., 2014]. This species is formally new to the fauna of the Saratov Region, Russia [Volkova, 2014].

Brachyiulus lusitanus Verhoeff, 1898

MATERIAL. 1 ♂, 1 ♀, 1 juv. (ZMS), Russia, Krasnodar Prov., Greater Sochi, Lazarevsky Distr., Nizhneye Uchdere, 150 m a.s.l., forest, 18.V.2021, R.V. Zuev leg.

REMARKS. A widespread subcosmopolitan species [Kime, Enghoff, 2017; Vagalinski, Lazányi, 2018]. In the Caucasus, previously recorded from Georgia and Hyrcania, southeastern Azerbaijan [Lohmander, 1936; Rakhmanov, 1972; Kokhia, Golovatch, 2018, 2020; Vagalinski, Golovatch, 2021; Evsyukov *et al*., 2025b].

This species is incidentally new to the faunas of both Israel and Ethiopia, as follows. 1 ♂, 6 ♀♀, 2 juv. (ZMUM), Israel, Tel Aviv (Ramagan) National Park, 25–30.IV.1995, A.P. Rasnitsyn leg.; 2 ♂♂, 8 ♀♀ (ZMUM), Ethiopia, Addis Ababa, Russian Embassy campus, 9°02′06.2″N 38°47′01.2″E, 2467 m a.s.l., *Eucalyptus* grove with *Juniperus* and *Acacia* bushes, sifted litter and in humus, 6.X–15.XI.2022, A.V. Tanasevitch leg.

Byzantorhopalum rossicum (Timotheew, 1897)

Fig. 2A.

MATERIAL. 3 ♂♂, 2 ♀♀ (ZMUM), Russia, Saratov Region, Khvalynsk Distr., near Balalaika Pond, under *Alnus* tree at bank, litter, 52°29′25.7″N 48°04′30.1″E, 28.IV.2024, O.L. Makarova leg.; 4 ♂♂, 2 ♀♀, 9 juv. (ZMUM), Samara Region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; 4 ♂♂, 15 ♀♀ (ZMUM), same region, Bolshechernigovsky Distr., 5.45 km SSW of Koshkin, hollow bottom, *Bromus* community, 51°49′00.3″N 50°45′05.6″E, 16.V.2024, all A.S. Kurochkin leg.; 25 ♂♂, ♀♀, juv. (ZISP), same region, Samara City, Zheleznodorozhnyi Distr., partly paved plot near city cemetery, 53°11′40.9″N 50°09′41.5″E, 18.VIII.2024, A.S. & S.P. Kurochkin leg.; 1 ♀ (DSTU), Volgograd Region, Dubovsk Distr., near Olenye, floodplain forest on bank of Olenya River bay, sifting litter, 49°10′57.2″N 44°52′56.8″E, 30.VIII.2024, I.S. Turbanov, A.S. Sazhnev leg.

REMARK. A widespread Eastern European and northern Caucasian species [Vagalinski, Golovatch, 2021], already recorded from the Saratov Region, in particular from near Khvalynsk [Volkova, 2014; referred to as *Megaphyllum rossicum*].

Colchiobrachyiulus dioscoriadis (Lignau, 1915)

MATERIAL. 2 ♂♂, 2 ♀♀ (DSTU), Abkhazia, Novyi Afon, moss on a well wall, 43°5′23.7″N 40°49′14.3″E, 31.XII.2023, M.D. Antipova leg.

REMARK. Endemic to the western Caucasus, previously recorded from Abkhazia and the Republic of Karachaevo-Cherkessia [Vagalinski, Golovatch, 2021].

Cylindroiulus bellus (Lignau, 1903)

MATERIAL. 2 ♂♂, 2 ♀♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018, R.V. Zuev leg.; 1 ♂, 1 ♀ (ZMS), same region, Greater Sochi, Lazarevsky Distr., Lazarevskoye, garden, under stones near pond, 23.X.2018, D.S. Stanovov leg.

REMARK. This species is subendemic to the Caucasus, occurring in the western Caucasus (Krasnodar Province), Turkey, and southeastern Bulgaria [Lignau, 1903; Korsós, Enghoff, 1990; Read, 1992; Chumachenko, 2016].

Cylindroiulus latestriatus (Curtis, 1845)

MATERIAL. 1 ♀ (DSTU), Yaroslavl Region, Nekouz Distr., near Andreyevskoe, bank of Ild River, 58°00′03.6″N 38°12′45.7″E, sifted litter, 3.V.2023, I.S. Turbanov leg.

REMARKS. This anthropogenic subcosmopolitan species is rather widely, albeit patchily distributed in European Russia, including the Kaliningrad, Leningrad, and Moscow regions, and Karelia [Lokshina, 1969; Kime, Enghoff, 2017]. The above record is formally new to the fauna of the Yaroslavl Region, Russia.

Cylindroiulus placidus (Lignau, 1903)

MATERIAL. 1 ♂, 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 1500 m a.s.l., *Carpinus*, *Corylus* forest, 43°43′23.0″N 40°10′08.0″E, 30.IV.2018; 6 ♂♂, 6 ♀♀, 2 juv. (ZMS), same region, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 2 ♂♂, 2 ♀♀, 1 juv. (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♂ (ZMS), same region and district, Nizhneye Uchdere, 135 m a.s.l., *Alnus* forest, 19.V.2021; 1 ♂ (ZMS), same region and district, Loo, 20 m a.s.l., under logs and stones, 20.V.2021; 1 ♂ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, under logs, 43°40′38.0″N 39°36′32.0″E, 24.V.2021; 1 ♂, 3 ♀♀ (ZMS), same region and district, near Solokhaul, 400 m a.s.l., *Carpinus* forest, under logs, 23.V.2021, all R.V. Zuev leg.

REMARKS. This species is endemic to the western Caucasus, widely distributed from the Krasnodar Province in the north to Abkhazia and southern Georgia in the south, and from the Black Sea coast in the west to North Ossetia – Alania in the east [Lohmander, 1936; Read, 1992; Chumachenko, 2016; Golovatch, Antipova, 2022; Evsyukov *et al*., 2022, 2025a; Golovatch, 2023].

Cylindroiulus pterophylacum Read, 1992

MATERIAL. 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 1500 m a.s.l., *Carpinus*, *Corylus* forest, 43°43′23.0″N 40°10′08.0″E, 30.IV.2018; 6 ♂♂, 7 ♀♀, 2 juv. (ZMS), same locality, 24.V.2021; 1 ♂, 1 ♀ (ZMS), same region and district, Estosadok, northern slope of Aibga Ridge, 1350 m a.s.l., *Fagus* forest, 43°39′08.0″N 40°19′09.0″E, 2.V.2018; 2 juv. (ZMS), same region, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 1 ♀ (ZMS), same region and district, Khosta, vicinity of Yew-tree and Boxwood Grove, near old cemetery, *Fagus*, *Tilia* forest, under logs, 3.V.2018; 5 ♀♀ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♀ (ZMS), same region and district, Nizhneye Uchdere, 135 m a.s.l., *Alnus* forest, 19.V.2021; 1 ♀ (ZMS), same region and district, near Solokhaul, 400 m a.s.l., *Carpinus* forest, under logs, 23.V.2021; 1 ♂ (ZMS), same region and district, near Solokhaul, at Plachushchaya Skala Waterfall, in leaf litter, 43°48′17.0″N 39°41′23.9″E, 23.V.2021; 3 ♂♂ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, under logs and in leaf litter, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, all R.V. Zuev leg.

REMARKS. Endemic to the western Caucasus, previously recorded from the Krasnodar and Stavropol provinces, Adygea, Karachay-Cherkessia, Abkhazia, and Georgia [Read, 1992; Chumachenko, 2016; Evsyukov *et al*., 2022, 2025a; Zuev, 2014, 2021; Golovatch, 2021; Zuev *et al.*, 2023].

Cylindroiulus ruber (Lignau, 1903)

MATERIAL. 1 ♂, 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 1500 m a.s.l., *Carpinus*, *Corylus* forest, 43°43′23.0″N 40°10′08.0″E, 30.IV.2018; 1 ♂, 1 ♀, 2 juv. (ZMS), same locality, 21.V.2021; 1 ♂, 1 ♀, 2 juv. (ZMS), same region and district, Mount Achishkho, 930 m a.s.l., *Fagus*, *Castanea* forest, in leaf litter, 43°42′27.0″N 40°10′34.0″E, 21.V.2021, all R.V. Zuev leg.; 1 ♂, 3 juv. (ZMUM), Abkhazia, Gudauta Distr., near Lake Ritsa, left bank of Lashipse River, 1210 m a.s.l., *Fagus* and *Abies* forest, 43°29′41.6″N 40°35′38.9″E, 17.IV.2024, M.D. Antipova leg.

Fig. 2. Images of millipedes (*in situ*) from European Russia: A — *Byzantorhopalum rossicum* (Timotheew, 1897), 3.73 km SSE of Krivoye Ozero, Krasnoyarsky Distr., Samara Region; B — *Rossiulus kessleri* (Lohmander, 1927), 5.78 km SW of Ozinki, Ozinki Distr., Saratov Region; C — *Strongylosoma lenkoranum* Attems, 1898, ♀, Zubchaninovka, Samara City, Samara Region; D — *Polydesmus inconstans* Latzel, 1884, 3.73 km SSE of Krivoye Ozero, Krasnoyarsky Distr., Samara Region.

Рис. 2. Фотографии многоножек (*in situ*) из европейской России: A — *Byzantorhopalum rossicum* (Timotheew, 1897), 3,73 км к юго-юго-востоку от Кривого Озера (Красноярский р-н, Самарская обл.); B — *Rossiulus kessleri* (Lohmander, 1927), 5,78 км к юго-западу от пос. Озинки (Озинский р-н, Саратовская обл.); C — *Strongylosoma lenkoranum* Attems, 1898, ♀, Зубчаниновка (г. Самара, Самарская обл.); D — *Polydesmus inconstans* Latzel, 1884, 3,73 км к юго-юго-востоку от Кривого Озера (Красноярский р-н, Самарская обл.).

Fig. 3. *Julus khostensis* Evsyukov, Golovatch et Reip, 2018, Agura River Canyon, Greater Sochi, Krasnodar Prov., Russia: A — habitus, lateral view; B — gonopod, mesal view.

Fig. 3. *Julus khostensis* Evsyukov, Golovatch et Reip, 2018, каньон реки Агура (Большой Сочи, Краснодарский край, Россия): A — внешний вид, сбоку; B — гонопод, изнутри.

REMARKS. Endemic to the western Caucasus: Krasnodar and Stavropol provinces, as well as the Republics of Kabardino-Balkaria, Russia, and Abkhazia (e.g., Golovatch [2023]).

Julus colchicus Lohmander, 1936

MATERIAL. 1 ♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 1500 m a.s.l., *Carpinus*, *Corylus* forest, 43°43′23.0″N 40°10′08.0″E, 30.IV.2018; 3 ♂♂, 3 ♀♀, 1 juv. (ZMS), same region and district, Estosadok, northern slope of Aibga Ridge, 1350 m a.s.l., *Fagus* forest, 43°39′08.0″N 40°19′09.0″E, 2.V.2018; 1 ♂ (ZMS), same region, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 1 ♂ (ZMS), same region and district, Khosta, vicinity of Yew-tree and Boxwood Grove, near old cemetery, *Fagus*, *Tilia* forest, under logs, 3.V.2018; 1 ♂, 1 ♀ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018, all R.V. Zuev leg.; 2 ♂♂, 1 ♀ (DSTU), same region, Tuapse Distr., near Bzhid, forest litter, 44°20′34.1″N 38°39′41.0″E, 17.V.2023, I.S. Turbanov S.V. Arefyev, I.A. Zabaluev leg.

REMARKS. Subendemic to the Caucasus, recorded from the Krasnodar and Stavropol provinces, and the Adygea and Karachaevo-Cherkessia republics (Russia), Abkhazia, Georgia, and western Turkey [Evsyukov *et al*., 2018, 2022; Zuev, 2021].

Julus khostensis Evsyukov, Golovatch et Reip, 2018
Fig. 3.

MATERIAL. 1 ♂, 3 ♀♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018, R.V. Zuev leg.

REMARK. Local endemic to the Khosta District, Krasnodar Province [Evsyukov *et al.*, 2018].

Julus kubanus Verhoeff, 1921

MATERIAL. 1 ♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018, R.V. Zuev leg.; 1 subadult ♂ (DSTU), Republic of Karachaevo-Cherkessia, Dzhalankol, right tributary of Kuban River, 43°36′48.4″N 42°07′42.3″E, 1175 m a.s.l., *Fagus orientalis* litter and under stones, 13.VII.2024, M.D. Antipova leg.

REMARKS. Endemic to the western Caucasus: Krasnodar Province, Adygea, Karachay-Cherkessia and North Ossetia – Alania republics, and Abkhazia [Evsyukov *et al*., 2018; Zuev *et al*., 2023; Golovatch, 2023].

Julus subalpinus Lohmander, 1936

MATERIAL. 1 ♂, 3 ♀♀ (ZMUM), Russia, Republic of Kabardino-Balkaria, Elbrus Distr., Baksan Valley, environs of Neitrino, 1685–1690 m a.s.l., *Betula* grove on stony bank of Baksan River, with *Pinus* undergrowth, sifting leaf litter, 43°16′42.2″N 42°41′48.9″E, 13.VI.2024; 3 ♂♂, 5 ♀♀ (ZMUM), same region and district, between Elbrus and Tegenekli villages, 2 km upstream of Adylsu River from Baksan River confluence, 1930–1945 m a.s.l., mixed forest on steep rocky slope with *Pinus*, *Betula*, sparse *Acer*, etc., fern, green mosses, sedges, sifting leaf litter and moss, 43°13′58.0″N 42°38′55.0″E, 14 & 20.VI.2024; 3 ♀♀ (ZMUM), same region and district, between Verkhniy Baksan and Neitrino, right bank of Baksan River, 1675–1680 m a.s.l., *Pinus* forest with *Betula*, wet stony bank of spring, among stones and vegetation, 43°17′48.3″N 42°44′12.8″E, 17.VI.2024; 2 ♂♂, 4 ♀♀ (ZMUM), same region and district, 5.6 km SE of Bylym, 1520–1525 m a.s.l., *Betula* forest in wet bed of Djigiat River (right tributary of Baksan River), sifting leaf litter, 43°25′02.6″N 43°04′05.6″E, 19.VI.2024; 2 ♀♀ (ZMUM), same region and district, between Baidaevo and Terskol, right bank of Baksan River, 1970–1975 m a.s.l., mixed forest with *Pinus*, *Betula*, *Sorbus*, etc., ferns, sedges, *Vaccinium myrtillus*, green mosses, etc., sifting leaf litter, pine needles and moss, 43°14′49.0″N 42°33′31.8″E, 21.VI.2024, all A.V. Tanasevitch leg.

REMARKS. This Caucasian endemic species has previously been recorded from both Krasnodar Province and Republic of North Ossetia – Alania [Evsyukov *et al*., 2018]. The above records are new to the fauna of the Republic of Kabardino-Balkaria, Russia.

Kubaniulus lativelatus Evsyukov, Golovatch, Reip et VandenSpiegel, 2020

MATERIAL. 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Lazarevsky Distr., Nizhneye Uchdere, 150 m a.s.l., forest, 18.V.2021; 1 ♂ (ZMS), same region and district, Loo, 20 m a.s.l., under logs and stones, 20.V.2021; 1 ♂ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, in leaf litter, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, all R.V. Zuev leg.; 1 ♂, 2 ♀♀ (DSTU), same region, Novorossiysk Distr., near Glebovskoye, forest litter, 44°43′38.3″N 37°37′34.7″E, 15.V.2023; 1 ♂, 3 ♀♀ (DSTU), same region, Krym Distr., 1 km W of Akkermenka, forest litter, 45°00′47.9″N 37°39′58.0″E, 22.V.2023, all I.S. Turbanov, S.V. Arefyev, I.A. Zabaluev leg.

REMARKS. Endemic to the Colchidan part of the Caucasus, including the Krasnodar Province and Karachaevo-Cherkessia (Russia), Abkhazia, and Georgia [Evsyukov *et al*., 2020, 2022].

Leptoiulus hastatus Lohmander, 1932

MATERIAL. 1 ♂, 1 ♀ (ZMUM), Armenia, Khosrov Nature Reserve, 2000–2200 m a.s.l., under stones, 11.V.1984, V. Yanushev leg.

REMARKS. A species subendemic to the Caucasus, recorded from Georgia, Armenia, Azerbaijan, and northwestern Iran [Evsyukov *et al*., 2020, 2022].

Leptoiulus tanymorphus (Attems, 1901)

MATERIAL. 2 ♀♀, 1 juv. (ZMUM), Russia, Republic of Dagestan, Dokuzparinsky Distr., near Kurush, 2380 m a.s.l., moss clumps on boulders, 41°18′11.6″N 47°50′53.1″E, 19.VIII.2024, M.D. Antipova leg.

REMARKS. Endemic to the eastern half of the Caucasus within Georgia, Armenia, Azerbaijan, and Dagestan, Russia [Evsyukov *et al*., 2020].

Megaphyllum spathulatum (Lohmander, 1936)

MATERIAL. 1 ♀ (ZMUM), Georgia, Guria, near Gomi, right bank of Bzhuzhi River, 41°53′40.6″N 42°05′38.5″E, 26.VII.2023, A.R. Saifutdinov leg.

REMARKS. Endemic to the western Caucasus, previously recorded from the Republic of Adygea, Russia, and Georgia [Kokhia, Golovatch, 2018; Vagalinski, Golovatch, 2021].

Omobrachyiulus caucasicus (Karsch, 1881)

MATERIAL. 1 ♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018, R.V. Zuev leg.; 2 ♀♀ (ZMUM), Russia, Republic of Dagestan, Dokuzparinsky Distr., near Kurush, 2380 m a.s.l., moss clumps on boulders, 41°18′11.6″N 47°50′53.1″E, 19.VIII.2024, M.D. Antipova leg.

REMARKS. Subendemic to the Caucasus, a widespread species ranging from Ciscaucasia (Republic of Kalmykia and Stavropol Province) to northern and northwestern Iran and northeastern Turkey [Vagalinski, Golovatch, 2021; Evsyukov *et al*., 2022; Golovatch *et al*., 2024].

Omobrachyiulus curvocaudatus (Lignau, 1903)

MATERIAL. 1 ♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018, R.V. Zuev leg.

REMARKS. Endemic to the western Caucasus, previously recorded from the Krasnodar Province, Adygea, Karachay-Cherkessia, Abkhazia, and Georgia [Lohmander, 1936; Vagalinski, Golovatch, 2021; Zuev *et al*., 2023].

Omobrachyiulus fasciatus Vagalinski, 2021

MATERIAL. 2 ♂♂, 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018, R.V. Zuev leg.

REMARKS. Endemic to the northwestern Caucasus. Previously known from the mountainous regions of Adygea and the Krasnodar Province [Vagalinski, Golovatch, 2021; Evsyukov *et al*., 2022].

Omobrachyiulus implicitus (Lohmander, 1936)

MATERIAL. 2 ♂♂, 2 ♀♀, 2 juv. (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018; 1 ♂, 2 ♀♀ (ZMS), same locality, 21.V.2021; 1 ♂, 1 ♀ (ZMS), same region, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018, all R.V. Zuev leg.

REMARKS. Endemic to the western Caucasus within the Krasnodar Province, Adygea, and Abkhazia [Vagalinski, Golovatch, 2021]. Our recent record of *O. implicitus* from Karachay-Cherkessia [Zuev *et al*., 2023] is a misidentification, actually to be referred to as *Omobrachyiulus faxifer* Vagalinski, 2021 (personal communication of B. Vagalinski).

Pachyiulus krivolutskyi Golovatch, 1977

MATERIAL. 1 ♀ (DSTU), Russia, Krasnodar Prov., Anapa Distr., Utrish Nature Reserve, 44°42′19.7″N 37°28′14.1″E, VI.2013, K.B. Gongalsky leg.; 1 ♂ (ZMS), same region, Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018, R.V. Zuev leg.

REMARKS. This is the largest millipede species in and endemic to the western Caucasus within Russia, Abkhazia, and Georgia [Evsyukov, 2016; Chumachenko, 2016; Korobushkin *et al*., 2016; Kokhia, Golovatch, 2018, 2020; Evsyukov *et al*., 2022, 2025a].

Rossiulus kessleri (Lohmander, 1927)
Fig. 2B.

MATERIAL. 1 juv. (ZMUM), Russia, Saratov Region, Khvalynsk Distr., near Khvalynsk City, slopes of Mount Kalancha, 52°28′56.9″N 48°04′28.2″E, 28.IV.2024, E. Makarova, O.L. Makarova leg.; 2 juv. (ZMUM), same locality, under old *Ulmus* tree, litter, 28.IV.2024; 1 juv. (ZMUM), same region and district, near Khvalynsk City, ski resort, *Tilia* and *Acer* grove with *Betula* in ravine, litter, 52°31′31.4″N 48°04′01.7″E, 29.IV.2024; 1 juv. (ZMUM), same region, Khvalynsk National Park, steep SE slope, mixed *Pinus, Quercus* & *Acer* forest, limestone quarry, in moss, 52°31′16.0″N 48°02′37.1″E, 30.IV.2024; 1 ♀ (ZMUM), same region, Khvalynsk National Park, bottom of a slight N slope, *Acer* forest with admixture of *Quercus* and abundant *Aegopodium*, litter, 52°31′44.4″N 48°03′07.2″E, 30.IV.2024, all O.L. Makarova leg.; 1 ♀ and numerous juv. (ZMUM), Saratov Region, Ozinki Distr., 5.78 km SW of Ozinki, a strongly dry *Ulmus* field-protecting strip, multiherbaceous grassland and steppe, litter, 51°14′04.9″N 49°40′00.8″E, 26.V.2024, A.S. Kurochkin leg.; 1 ♀ (ZMUM), Samara Region, Bolshechernigovsky Distr., near Tarakhovka, rocky bottom of a temporary stream, 51°46′46.9″N 50°45′19.5″E, 2.V.2024; 11 juv. (ZMUM), same region and district, 5.45 km SSW of Koshkin, hollow bottom, *Bromus* community, 51°49′00.3″N 50°45′05.6″E, 3.V.2024; 2 ♀♀ (ZMUM), Samara Region, Elkhovka Distr., 0.84 km SSE of Znamenka, right bank of Kandabulak River, abandoned limestone quarry, under stones, 53°59′39.2″N 50°33′42.3″E, 26.VII.2024; 1 ♀, 2 juv. (ZMUM), same region and district, 0.96 km S of Zelenogorsky, *Quercus* field-protecting strip, under bark of a *Quercus robur* rotting stump, 53°53′49.6″N 50°28′58.3″E, 25.VII.2024; 3 ♂♂, 8 ♀♀, 4 juv. (ZMUM), same region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; few ♀♀ and numerous juv. (ZMUM, ZISP), Orenburg Region, Pervomaysky Distr., Orenburg State Nature Reserve, 6.39–7.92 km SWW of Kurlin, "Talovskaya Steppe" Site, various steppe habitats, ca. 51°46′N 50°52′E, 7.VI–4.VII.2024, all A.S. Kurochkin leg.

REMARKS. A widespread Eastern European and northern Caucasian species ranging from the delta of the Severnaya Dvina River (Arkhangelsk) in the north, through the forest, forested steppe and northern steppe belts, to the foothills and high mountains of the northern Caucasus (North Ossetia – Alania and Dagestan) in the south, and from near Minsk, Belarus in the west to about Ufa, Samara, Saratov and Orenburg, Russia in the east [Lokshina, 1969; Golovatch, 2021].

It seems noteworthy that, in the "Talovskaya Steppe" Site of the Orenburg Nature Reserve, this species was mostly swept by an insect net from vegetation during dusk and nocturnal hours. This behaviour appears to be characteristic not only of this particular millipede, but also of some other members of the order Julida.

Unciger kubanus Lohmander, 1936

MATERIAL. 1 ♀ (ZMS), Russia, Rostov-on-Don Region, Kagalnitsky Distr., near Kagalnitskaya, *Pinus* forest, under burnt logs, 9.IV.2016, R.V. Zuev leg.

REMARKS. This species is probably endemic to the northwestern Caucasus and Ciscaucasia [Evsyukov *et al*., in preparation].

Xestoiulus laeticollis mierzeyewskii (Jawłowski, 1925)

MATERIAL. 1 juv. (ZMUM), Russia, Moscow Region, Istra Distr., near Novorakovo, *Carex* swamp in forest, 1.II.2005; 3 ♂♂, 1 ♀, 5 juv. (ZMUM), Moscow Region, Naro-Fominsk Distr., Burtsevo, 55.996245°N 35.611425°E, "ice" swamp in *Picea* + *Betula* forest, *Typha–Angelica* zone, 26.III.2025, all O.L. Makarova leg.

REMARKS. This Central to Eastern European species/subspecies is highly hygrophilous, recorded from Russia from the Kaliningrad, Pskov, Novgorod, and Bryansk regions in the west and southwest, the Yaroslavl Region in the north, the Moscow Region in the east, and the Belgorod Region in the south [Lokshina, 1969; Prisnyi, 2001; Kime, Enghoff, 2017; Golovatch, 2023].

Family Nemasomatidae

Nemasoma caucasicum (Lohmander, 1932)

MATERIAL. 6 ♂♂, 2 ♀♀, 1 juv. (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 10 ♀♀ (ZMS), same region, Adler Distr., Estosadok, northern slope of Aibga Ridge, 1350 m a.s.l., *Fagus* forest, 43°39′08.0″N 40°19′09.0″E, 2.V.2018; 2 juv. (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Pinus*, *Fagus*, *Larix* forest, 4.V.2018; 1 ♂, 1 ♀, 2 juv. (ZMS), same locality and date, *Quercus*, *Fagus*, *Tilia* forest, under logs; 1 ♂, 3 ♀♀ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, 43°40′38.0″N 39°36′32.0″E, 24.V.2021, all R.V. Zuev leg.; 1 ♀ (ZMUM), Abkhazia, Gudauta Distr., near Lake Ritsa, grotto near waterfall, 1040 m a.s.l., 43°28′43.5″N 40°34′06.4″E, 16.IV.2024; 1 ♂ (DSTU), Republic of Karachaevo-Cherkessia, Dombay, 43°17′35.5″N 41°35′20.9″E, 1720 m a.s.l., *Abies nordmanniana*, *Fagus orientalis* forest, dead fallen wood, 23.VII.2024, all M.D. Antipova leg.

REMARKS. This Caucasian subendemic, common and mostly forest-dwelling species is widespread across the Caucasus and northern Turkey (e.g., Golovatch, Antipova [2023]).

Order Chordeumatida
Family Athroleucosomatidae

Caucaseuma lohmanderi Strasser, 1970

MATERIAL. 1 ♂ (DSTU), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., NW slope of Mount Akhun, Akhunskaya (= Bolshaya Akhunskaya) Cave, 28–29.VII.2024, O.Y. Chervyatsova leg.

REMARKS. A troglobiont and narrow local endemic to the Western Caucasus, living in the caves of Greater Sochi, Russia [Antić, Makarov, 2016, 2022; Turbanov *et al*., 2016].

Heterocaucaseuma longicorne Antić et Makarov, 2016

MATERIAL. 1 ♂ (DSTU), Abkhazia, right tributary of Gumista River, Cave Uaz-Abaa (= Adzaba), 43°03′59.9″N 40°59′32.9″E, 7.I.2024, M.D. Antipova leg.

REMARKS. Endemic to a few caves near Sukhumi, Abkhazia. Above is a topotype recorded from the type locality [Antić, Makarov, 2016]. Apparently, a troglobiont.

Metamastigophorophyllon giljarovi (Lang, 1959)

MATERIAL. 4 ♂♂, 3 ♀♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018; 2 ♂♂, 1 ♀ (ZMS), same region, district and date, Mount Achishkho, 1500 m a.s.l., *Carpinus*, *Corylus* forest, 43°43′23.0″N 40°10′08.0″E; 1 ♂ (ZMS), same region and district, Estosadok, northern slope of Aibga Ridge, 1350 m a.s.l., *Fagus* forest, 43°39′08.0″N 40°19′09.0″E, 2.V.2018; 1 ♂ (ZMS), same region, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 1 ♂ (ZMS), same region, Lazarevsky Distr., near Solokhaul, 400 m a.s.l., *Carpinus* forest, under logs, 23.V.2021, all R.V. Zuev leg.

REMARKS. Endemic to the western Caucasus within the Krasnodar Province, Adygea, and Abkhazia [Antić, Makarov, 2016].

Order Polydesmida
Family Paradoxosomatidae

Oxidus gracilis (C.L. Koch, 1847)

MATERIAL. 11 ♀♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Khosta Distr., Khosta, near the *Taxus* and *Buxus* Grove, near old cemetery, *Fagus*, *Tilia* forest, under logs, 3.V.2018; 1 juv. (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♂, 2 juv. (ZMS), same region and district, Loo, 20 m a.s.l., under logs and stones, 20.V.2021; 2 ♀♀ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, 43°40′38.0″N 39°36′32.0″E, 24.V.2021; 5 ♀♀ (ZMS), same region and district, near Solokhaul, 400 m a.s.l., *Carpinus* forest, under logs, 23.V.2021, all R.V. Zuev leg.; 3 juv. (ZMS), same region and district, Lazarevskoye, garden, under stones near pond, 23.X.2018, D.S. Stanovov leg.; 2 ♂♂, 5 ♀♀ (ZMUM), Georgia, Autonomous Republic of Adjara, Batumi City, Batumi Botanical Garden, under leaf litter, 41°41′46.7″N 41°42′50.4″E, 21.VII.2023, A.R. Saifutdinov leg.

REMARKS. This ubiquitous cosmopolitan species has been introduced to synanthropic habitats all over the world (e.g., Kime, Enghoff [2011]). In the Caucasus, recorded from botanical gardens, as well as from natural habitats.

Strongylosoma kordylamythrum Attems, 1898

MATERIAL. 1 ♀ (ZMUM), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., right bank of Chvizhepse River, at spring near road, 250 m a.s.l., 43°38′28.5″N 40°04′37.8″E, 14.IV.2024, M.D. Antipova leg.; 2 ♀♀ (ZMS), same region and district, Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018; 1 ♀ (ZMS), same region, Khosta Distr., near Matsesta, Agura River Canyon, *Quercus*, *Carpinus*, *Platanus* forest, under logs, 1.V.2018; 1 ♂, 1 ♀ (ZMS), same region and district, Khosta, vicinity of Yew-tree and Boxwood Grove, near old cemetery, *Fagus*, *Tilia* forest, under logs, 3.V.2018; 1 ♂, 1 ♀ (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 4 ♂♂ (ZMS), same region and district, Loo, 20 m a.s.l., under logs and stones, 20.V.2021; 1 ♂ (ZMS), same region and district, near Loo, 70 m a.s.l., *Quercus* and *Carpinus* forest, 43°40′38.0″N 39°36′32.0″E, 24.V.2021; 1 ♀ (ZMS), same region and district, near Solokhaul, 400 m a.s.l., *Carpinus* forest, under logs, 23.V.2021, all R.V. Zuev leg.; 3 subadult ♂♂, 3 ♀♀ (DSTU), Republic of Karachaevo-Cherkessia, Dzhalankol, right tributary of Kuban River, 43°36′48.4″N 42°07′42.3″E, 1175 m a.s.l., *Fagus orientalis* litter and under stones, 13.VII.2024, M.D. Antipova leg.

REMARKS. A widespread Caucasian subendemic species recorded from Turkey, Russia, Georgia, Armenia, Azerbaijan, and Iran [Evsyukov *et al*., 2016].

Strongylosoma lenkoranum Attems, 1898
Fig. 2C.

MATERIAL. 1 ♀ (ZMUM), Russia, Samara Region, Samara City, Kirovsky Distr., Zubchaninovka, orchard and garden, 53°14′59.9″N 50°18′39.0″E to 53°14′59.4″N 50°18′39.6″E, 18.VIII.2024; 1 ♀ (ZISP), same region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; 1 ♀ (ZMUM), same locality, 30.V.2024, all A.S. Kurochkin leg.

REMARKS. A widespread Caucasian subendemic species recorded from Russia, Georgia, Armenia, Azerbaijan, and Iran [Evsyukov *et al*., 2016], apparently, introduced to Kaboul, Afghanistan [Golovatch, 1994]. The same must certainly concern the above very remote new records from the middle-course areas of the Volga River, east-central European Russia.

Finding this species in the Samara Region, so far away from its natural distribution area, can almost certainly be considered as an unintentional introduction. Both collecting localities are represented by garden plots, where active gardening is practiced.

Strongylosoma stigmatosum (Eichwald, 1830)

MATERIAL. 2 ♂♂, 2 ♀♀ (DSTU), Russia, Yaroslavl Region, Borisoglebsky Distr., near Zvenyachevo, 57°28′45.6″N 39°04′19.3″E, 14.V.2024, I.S. Turbanov leg.

REMARKS. This species is common and widespread across Eastern Europe [Lokshina, 1969; Kime, Enghoff, 2011; Nguyen, Sierwald, 2013].

Family Polydesmidae

Brachydesmus furcatus Lohmander, 1936

MATERIAL. 1 ♂, 1 ♀ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018; 1 ♂ (ZMS), same region, Khosta Distr., Khosta, vicinity of Yew-tree and Boxwood Grove, near old cemetery, *Fagus*, *Tilia* forest, under logs, 3.V.2018; 2 ♂♂, 2 juv. (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018; 1 ♂ (ZMS), same region and district, Loo, 20 m a.s.l., under logs and stones, 20.V.2021, all R.V. Zuev leg.; 1 ♂, 1 ♀, 2 juv. (ZMS), same region and district, Lazarevskoye, garden, under stones near pond, 23.X.2018, D.S. Stanovov leg.

REMARKS. This species is endemic to the western Caucasus and it has been recorded form both Krasnodar Province and Abkhazia [Golovatch *et al*., 2016].

Brachydesmus assimilis Lohmander, 1936

MATERIAL. 7 ♂♂, 10 ♀♀ (ZMUM), Russia, Republic of Dagestan, Dokuzparinsky Distr., near Kurush, 2380 m a.s.l., moss clumps on boulders, 41°18′11.6″N 47°50′53.1″E, 19.VIII.2024, M.D. Antipova leg.

REMARKS. Endemic to the Caucasus within Georgia, northern Armenia, northern Azerbaijan, and Russia: Stavropol Province, Dagestan, Adygea, Kabardino-Balkaria, North Ossetia – Alania, Ingushetia, and Chechen republics [Golovatch *et al*., 2016].

Brachydesmus kalischewskyi Lignau, 1915

MATERIAL. 1 ♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018, R.V. Zuev leg.; 7 ♀♀ (ZMUM), Russia, Republic of Kabardino-Balkaria, Elbrus Distr., Baksan Valley, environs of Neitrino, 1685–1690 m a.s.l., *Betula* grove on stony bank of Baksan River, with *Pinus* undergrowth, sifting leaf litter, 43°16′42.2″N 42°41′48.9″E, 13.VI.2024; 3 ♂♂, 3 juv. ♂♂, 9 ♀♀ (ZMUM), same region and district, between Elbrus and Tegenekli villages, 2 km upstream of Adylsu River from Baksan River confluence, 1930–1945 m a.s.l., mixed forest on steep rocky slope with *Pinus*, *Betula*, rare *Acer*, etc., fern, green mosses, sedges, sifting leaf litter and moss, 43°13′58.0″N 42°38′55.0″E, 14 & 20.VI.2024; 3 ♂♂, 4 ♀♀ (ZMUM), same region and district, between Varshney Baksan and Neitrino, right bank of Baksan River, 1675–1680 m a.s.l., *Pinus* forest with *Betula*, wet stony bank of spring, among stones and vegetation, 43°17′48.3″N 42°44′12.8″E, 17.VI.2024, all A.V. Tanasevitch leg; 2 ♂♂ (ZMUM), Republic of Dagestan, Dokuzparinsky Distr., near Kurush, 2380 m a.s.l., moss clumps on boulders, 41°18′11.6″N 47°50′53.1″E, 19.VIII.2024, M.D. Antipova leg.; 1 ♂, Republic of Karachaevo-Cherkessia, Dzhalankol, right tributary of Kuban River, 43°36′48.4″N 42°07′42.3″E, 1175 m a.s.l., *Fagus orientalis* litter and under stones, 13.VII.2024, all M.D. Antipova leg.

REMARKS. This polymorphous species is subendemic to the Caucasus: Russia, Abkhazia, Georgia, Armenia, Azerbaijan, northern Turkey, and northwestern Iran [Golovatch *et al.*, 2016; Golovatch, 2021; Evsyukov *et al*., 2022; Golovatch, Antipova, 2023]. Only the most widespread morph B has been recorded from the Republic of Kabardino-Balkaria.

Polydesmus abchasius Attems, 1898

MATERIAL. 4 ♀♀, 1 ♀ subad. (ZMUM), Russia, Krasnodar Prov., Greater Sochi, Adler Distr., Sochi National Park, right bank of Chvizhepse River, 290 m a.s.l., swampy forest, 43°39′06.7″N 40°04′00.2″E, 14.IV.2024, M.D. Antipova leg.; 1 ♀ (ZMS), same region and district, Caucasian Nature Reserve, Mount Achishkho, 850 m a.s.l., *Fagus*, *Carpinus*, *Castanea* forest, 43°42′05.0″N 40°11′33.0″E, 30.IV.2018; 1 ♂, 1 ♀, 3 juv. (ZMS), same region and district, Estosadok, northern slope of Aibga Ridge, 1350 m a.s.l., *Fagus* forest, 43°39′08.0″N 40°19′09.0″E, 2.V.2018; 2 ♀♀, 1 ♀, 2 juv. (ZMS), same region, Lazarevsky Distr., Yakornaya Shchel, *Quercus*, *Fagus*, *Tilia* forest, under logs, 4.V.2018, all R.V. Zuev leg.

REMARKS. Endemic to the northwestern and western Caucasus within Russia, Abkhazia, and Georgia [Golovatch *et al.*, 2016].

Polydesmus complanatus (Linnaeus, 1761)

MATERIAL. 1 juv. ♂ (ZMUM), Russia, Moscow Region, Istra Distr., Novorakovo, *Picea* forest edge, under stump, 14.XI.2021, O.L. Makarova leg.

REMARKS. This species is widespread across Eastern Europe, very common in European Russia [Lokshina, 1969; Kime, Enghoff, 2011], apparently, introduced to a town park in the northern Caucasus [Zuev *et al.*, 2023].

Polydesmus denticulatus C.L. Koch, 1847

MATERIAL. 3 ♂♂ (DSTU), Yaroslavl Region, Nekouz Distr., near Andreyevskoe, left bank of Ild River, 58°00′06.1″N 38°12′45.0″E, sifted litter, 4.VI.2023, I.S. Turbanov leg.

REMARKS. This species is common throughout Europe, introduced to western Siberia and North America. In European Russia, it is very common in broadleaved forests and parklands south of the taiga belt, often synanthropic [Lokshina, 1969; Kime, Enghoff, 2011; Golovatch, 2021].

Polydesmus inconstans Latzel, 1884
Fig. 2D.

MATERIAL. 2 juv. (ZMUM), Russia, Samara Region, Samara City, Kirovsky Distr., Zubchaninovka, orchard and garden, 53°14′59.9″N 50°18′39.0″E to 53°14′59.4″N 50°18′39.6″E, 18.VIII.2024; 8 ♂♂, 8 ♀♀, 2 juv. (ZMUM), same region, Krasnoyarsky Distr., 3.73 km SSE of Krivoye Ozero, horticultural non-profit partnership, hill top with partly retained multiherbaceous grassland and steppe, a fenced cottage plot, 53°31′56.3″N 50°31′02.4″E, 20.VI.2024; 1 ♂ (ZMUM), same locality, 30.V.2024, all A.S. Kurochkin leg.

REMARKS. Widespread across Europe, in the European part of Russia ranging from the Kaliningrad Region in the north and west to the Saratov Region in the south, and to the Republic of Bashkortostan in the east; inclined to synanthropization [Lokshina, 1969; Farzalieva, 2008]. The species is also known

as introduced to the Nearctic and Australian regions. Apparently, new to the fauna of the Samara Region, Russia. As to the possible pathways of invasion of this species into the Samara Region, see remarks under *Strongylosoma lenkoranum*.

Polydesmus lignaui Lohmander, 1936

MATERIAL. 2 ♂♂ (DSTU), Russia, Republic of Kabardino-Balkaria, near Terskol, Mount Cheget, 2110 m a.s.l., 43°14′39.3″N 42°31′21.0″E, 27.IX.2024, A.P. Evsyukov leg.

REMARKS. Endemic to the Colchidan part of the Caucasus within western Georgia, Abkhazia, and Russia: Krasnodar Province, Adygea, Karachaevo-Cherkessia, and Kabardino-Balkaria republics [Golovatch *et al*., 2016].

Polydesmus mediterraneus Daday, 1889

MATERIAL. 21 ♂♂ (ZMS), Russia, Krasnodar Prov., Greater Sochi, Lazarevsky Distr., Lazarevskoye, garden, under stones near pond, 23.X.2018, D.S. Stanovov leg.

REMARKS. A Mediterranean species, probably introduced to the Caucasus. Previously recorded from both Krasnodar Province and Abkhazia [Golovatch *et al*., 2016; Evsyukov *et al.*, 2025b].

Conclusion

The ongoing collecting efforts and faunistic research in the regions concerned will undoubtedly reveal many more novelties in terms of both regional lists and distribution of Diplopoda.

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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