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Original Article

On the centipede genus *Thereuonema* Verhoeff, 1904 (Chilopoda: Scutigeromorpha: Scutigeridae) of Middle Asia, Kazakhstan, and Asian Russia

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ABSTRACT. New records of members of the genus *Thereuonema* Verhoeff, 1904 from Asian Russia, Kazakhstan, and Middle Asia are provided. *Thereuonema* sp. is new to the fauna of Middle Asia. *T. tuberculata* (Wood, 1862) is newly recorded from the Novosibirsk Oblast, Jewish Autonomous Oblast, and Khabarovsk krai in Russia, and from the Abay and Ulytau Oblasts of Kazakhstan; *T. turkestana* Verhoeff, 1905 is new to the fauna of the Jalal-Abad Oblast of Kyrgyzstan, Zhambyl Oblast of Kazakhstan, and Jizzakh Oblast of Uzbekistan. Moreover, *Scutigera coleoptrata* (Linnaeus, 1758) is excluded from the fauna of Kazakhstan. Morphology of the species mentioned is illustrated, and variability is shown. A history of the study of the Scutigeromorpha fauna of Kazakhstan and Middle Asia is also provided.

KEYWORDS: Biodiversity, Fauna, New records, *Thereuonema tuberculata*, *Thereuonema turkestana*, Variability

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INTRODUCTION

The genus *Thereuonema* was described by Verhoeff (1904). The last taxonomic scrutiny was published by Würmli (1975), who recognized three species in the genus: *T. syriaca* Verhoeff, 1905, *T. tuberculata* (Wood, 1862), and *T. turkestana* Verhoeff, 1905; another species, *T. erga* Chamberlin, 1959, was excluded from this revision because it does not belong to the genus, though no explanation or morphological data were provided. Later, Stoev & Geoffroy (2004) provided a new combination, *T. microstoma* (Meinert, 1886) for *Scutigera microstoma* Meinert, 1886 and regarded *Thereuonema syriaca* as a junior synonym of the latter species. At the same time, Würmli (2004) described a new species, *T. katharinae* Würmli, 2004, from Socotra Island. Thus, at present, five species are assigned to this genus (Bonato et al. 2016); the taxonomic status of *T. erga* is still uncertain (Bonato et al. 2016; Thöfern et al. 2021). Recent studies (Dyachkov 2022b; Reeves & Miller 2022; Nefediev 2025) showed the range of *T. tuberculata* to be wider than expected; the distribution of known other species also remains poorly understood.

The first data on Scutigeromorpha from Kazakhstan and Middle Asia were published by Sseliwanoff (1884), who described *Scutigera asiatica* Sseliwanoff, 1884 from "Chinas", the vicinity of Tashkent (Uzbekistan). Unfortunately, this species was briefly described; since its original description, no specimen has been assigned to this species, its taxonomic status has never been revised, and its generic placement remains uncertain (Bonato et al. 2016). Later, Verhoeff (1905) described *Thereuonema turkestana* Verhoeff, 1905 from "Buchara" (Uzbekistan). Some decades later, Lignau (1929a, 1929b) recorded *T. turkestana* from Tashkent city and described two new species, *T. oreiotes* Lignau, 1929 from Son-Kul (Kyrgyzstan), and *Allothereua kirgisorum* Lignau, 1929 from the vicinity of Lake Balkhash (Kazakhstan). The latter species was provisionally assigned to the genus *Allothereua* Verhoeff, 1905; since its original description, no specimen has been assigned to this species, and the taxonomic status of this species has never been

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revised. It is worth noting that the saxaul forests in the vicinity of Lake Balkhash, where this species was collected, no longer exist (Dyachkov 2020). Subsequently, Würmli (1975) revised the genus *Thereuonema* Verhoeff, 1904. In this paper, he synonymized *T. oreiotes* under *T. turkestana* and provided new data on the latter species' distribution in Middle Asia. This species has also been recently recorded from Kazakhstan (Edgecombe & Giribet 2009), Kyrgyzstan (Dyachkov 2020), and Tajikistan (Dyachkov 2023a). *Scutigera coleoptrata* was recorded from Turkmenistan (Krivokhatsky 1994) and from Eastern (Dyachkov et al. 2016; Dyachkov 2020) and Northern Kazakhstan (Bragina et al. 2020). Re-examination of material from Kazakhstan has shown that these specimens belong to *Thereuonema tuberculata*; the taxonomic status of specimens from Turkmenistan also requires confirmation.

The aims of this study are to provide new data on the distribution and morphology of three species, *T. tuberculata*, *T. turkestana*, and *Thereuonema* sp., in Middle Asia, Kazakhstan, and Asian Russia, as well as to re-examine specimens previously assigned to *Scutigera coleoptrata* (Linnaeus, 1758) from Kazakhstan (Dyachkov et al. 2016; Bragina et al. 2020; Dyachkov 2020).

MATERIAL AND METHODS

Materials from ASU, IBSS, ISEA, KSPI, and ZMMU (abbreviations below) were studied. Specimens previously assigned to *Scutigera coleoptrata* from Kazakhstan were also re-examined. Comparative material of *Thereuonema microstoma* (Meinert, 1886) from ASU (No. 419; see Dyachkov et al. 2023) was examined. The material was studied using Olympus® stereo microscopes: SZX16 and BX51; photographs were taken with Olympus digital cameras: DP74 and XC50 or with a Canon® EOS 6D Mark II camera with a Canon EF 100mm f/2.8L Macro IS USM lens.

The territory spreading from the Caspian Sea to China eastwards, and from the Aral Sea-Alakol Lake to Northern Iran and Afghanistan, is called Middle Asia in the Russian scientific literature since the 20th century. This territory includes mostly the following countries: Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, and south of Kazakhstan. Use of the term Middle Asia to refer to these countries avoids ambiguity between the names Central Asia and Middle Asia (Jashenko & Zyuzin 2000; Cowan 2007). Localities are provided verbatim to those in the original labels, with supplemental information provided in square brackets. Terminology follows Bonato et al. (2010). English translations of administrative divisions follow Kazantsev (2022). Maps (Fig. 1A–C) were generated using Simple Mappr software (Shorthouse 2010).

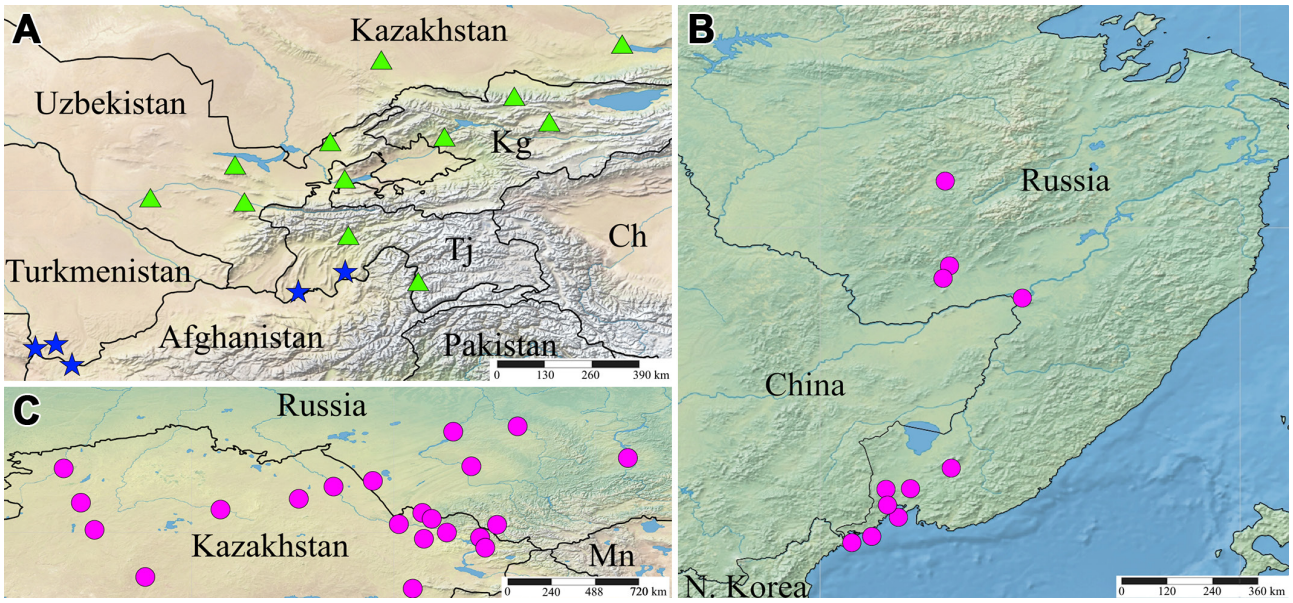

Figure 1. Distribution of the *Thereuonema* species. **A.** *Thereuonema* sp. (star) and *T. turkestana* Verhoeff, 1905 (triangle) in Middle Asia; **B.** *Thereuonema tuberculata* (Wood, 1862) (oval) in the Russian Far East; **C.** *Thereuonema tuberculata* (Wood, 1862) (oval) in Kazakhstan and Western Siberia. Abbreviations: Ch – China, Kg – Kyrgyzstan, Mn – Mongolia, Tj – Tajikistan.

The following abbreviations/acronyms are used for name of the institutes and museum where the specimens are deposited: **ASU** – Altai State University (Barnaul, Russia); **IBSS** – Institute of Biology and Soil Science (Vladivostok, Russia); **ISEA** – Institute of Systematics and Ecology of Animals (Novosibirsk, Russia); **KSPI** – Kostanay State Pedagogical Institute (Kostanay, Kazakhstan); **ZMHB** – Museum für Naturkunde der Humboldt-Universität, Germany, Berlin; **ZMMU** – Zoological Museum of the Moscow State University (Moscow, Russia), as well as **juv.**, for juvenile, and **coll.**, for the collector.

RESULTS

Genus *Thereuonema* Verhoeff, 1904

Type species. *Cermatia tuberculata* Wood, 1862 (by subsequent designation) (Bonato et al. 2016).

Thereuonema tuberculata (Wood, 1862).

Original combination. Cermatia tuberculata Wood, 1862:12. Type specimen: sex unknown (No. 254, United States National Museum (Smithsonian Institution) (Stoev & Geoffroy 2004)). – Type locality: Hong Kong [China].

[Figs 1–2]

***Material examined*. Kazakhstan**, 1 ♀ (ASU No. 157) and 1 ♂ (ASU No. 158), Abay Oblast, Semey [City, 50°25'25"N, 80°15'5"E], 10.VI. and 19.IX.2018, coll. Yu. Loshkina and A. Dairbekova; 1 ♂, 8 ♀♀ (ASU No. 161), East Kazakhstan Oblast, Ulken-Naryn Village [*ca* N49°12', E84°30'], garden, *ca* 400 m, 24.VI.2016, coll. Yu.V. Dyachkov; 2 ♀♀ (ASU No. 162), 500 m N of Ulken-Naryn Village, [*ca* 49°13'19"N, 84°31'31"E], steppe, 25.VI.2016, coll. Yu.V. Dyachkov; 1 ♀ (ASU No. 163), Shemonaikha Town, *ca* 50°37N, 81°55"E, garden, 06.V.2017, coll. V.V. Rudoi; 1 ♀ (ASU No. 149), Akmola Oblast, Astana City, Chubary District [51°8'N, 71°25'E], 16.VI.2017, coll. I.I. Temreshev; 1 specimen (KSPI), Kostanay Oblast, Naurzum District, Naurzum [Nature] Reserve [51°31'N, 64°30'E], Naurzum site, inspector's house "Garden", 04.V.2014, coll. T.M. Bragina; 1 juv. (KSPI) and 1 ♀ (KSPI), Karamendy Village, 20.VI. and 30.VII.2017, coll. T.M. Bragina; 1 ♂, 1 ♀ (KSPI), Kostanay town [ca 53°12'N, 63°39'E], 17.V.2014, coll. T.M. Bragina; 1 ♀ (KSPI), Kostanay town, in the flat, 20.II.2017, coll. T.M. Bragina; 1 ♂, 2 ♀♀ (KSPI) and 1 ♂, 1 ♀ (KSPI), 1 ♂ (KSPI), and 1 ♂ (KSPI), Kostanay town, in the house, 15.V. and 31.III.2017, coll. T.M. Bragina; 1 ♀ (KSPI), Zarechnone Village, garden, soil trap, 26.VII.2018, coll. T.M. Bragina; 2 ♂♂, 1 ♀ (KSPI), Kamysty District, Kamysty Village [*ca* 51°57'N 61°47'E], 18.IV.2017, coll. T.M. Bragina; 1 juv. (KSPI), Denisovskyi District, Vyatsky Village, near Ayat River, 04.V.2014, coll. T.M. Bragina; 1 ♂ (KSPI), Amangeldy District, Amangeldy Village [50°10'47"N, 65°11'16"E], 16.V.2017, coll. T.M. Bragina. *New material*: **Russia**, 1 ♂, 1 ♀ (ASU No. 155), Altai Krai, Barnaul, Fomina Street, under rubbish, 01.VI.2018, coll. Yu.V. Dyachkov; 1 ♀ (ASU No. 239) and 1 ♂ (ASU No. 389), Barnaul, in house, 08–11.VI.2019 and 01.X.2021, coll. S. Kusnetzova and Yu.V. Dyachkov; 1 juv. ♂ (ASU No. 303), Barnaul, Shukshina street, in house, 16.VII.2020, coll. Yu. V. Dyachkov; 1 ♂ (ASU No. 528), 1 ♂ (ASU No. 529), 1 ♀ (ASU No. 530), and 1 ♀ (ASU No. 531), Barnaul, clay cliff on Ob River bank, 26.VIII. and 2.V.2020, coll. A.A. Fomichev; 1 juv. (ASU No. 304), Kulunda Village, Komsomolskaya Street [*ca* 52°33'47"N, 78°55'29"E], on a plant, 12.VI.2020, coll. K.V. Shernyshev; 1 ♀ (ISEA ch-001.225), Novosibirsk Oblast, Novosibirsk City, ISEA building [55°2'14"N, 82°55'16"E], on a wall, 10.VIII.2021, coll. S.A. Abramov; 1 ♀ (ISEA ch-001.226) and 1 ♂ (ISEA ch-001.227), Novosibirsk City, 10.X. and 25.X.2022, coll. G.N. Azarkina; 2 ♂♂, 1 ♀ (ASU No. 420), Jewish Autonomous Oblast, Obluchensky District, Bastak Nature Reserve, Kordon "39 km", 49°4'26"N, 133°4'13"E, VI.2019, coll. A.A. Averin; 1 ♀ (IBSS ch-41), Birobizshan [City, ca. 48°47'N, 132°55'E], on a wall of building, 14.VII.2005, coll. L. Kapitonova; 1 ♀ (ASU No. 516), 1 ♀ (ASU No. 517), 1 ♀ (ASU No. 519), and 4 ♀♀ (ASU No. 827), Primorskiy Krai, Ussury District, Gornotayezhnoye Village, 43°41'52"N, 132°09'29"E, wall of a house, 8.VII.2022, coll. Yu.V. Dyachkov; 2 ♂♂ (ASU No. 825), Krounovka River Valley, 43°40'45"N, 131°34'35"E, *Quercus* forest, scree on a hoot of rock, under stones, 190 m, 9–11.VII.2022, coll. Yu.V. Dyachkov; 1 ♀ (ASU No. 817), Gamova Cape [42°33'16"N, 131°13'2"E], 10–16.V.2024, coll. A.A. Fomichev, E.A. Nepaeva; 1 ♂ (IBSS ch-38), Coast of Ussuri Bay, on rocks, October 2015, coll. L.A. Prozorova; 1 ♂ (IBSS ch-39), Ostrovok Falshivy Cape [43°1'16"N, 131°52'7"E], 16.VI.2021, coll. M.E. Sergeev; 2 ♂♂, 1 ♀ (ASU No. 826) and 1 ♀ (ASU No. 514), Khasansky District, 8 km NE from Khasan (urban-type settlement), Golubiniy Utes Mt., 42°24'35"N, 130°44'59"E, 15–20 m, under stones, 14–17.VII.2022, coll. Yu.V. Dyachkov;

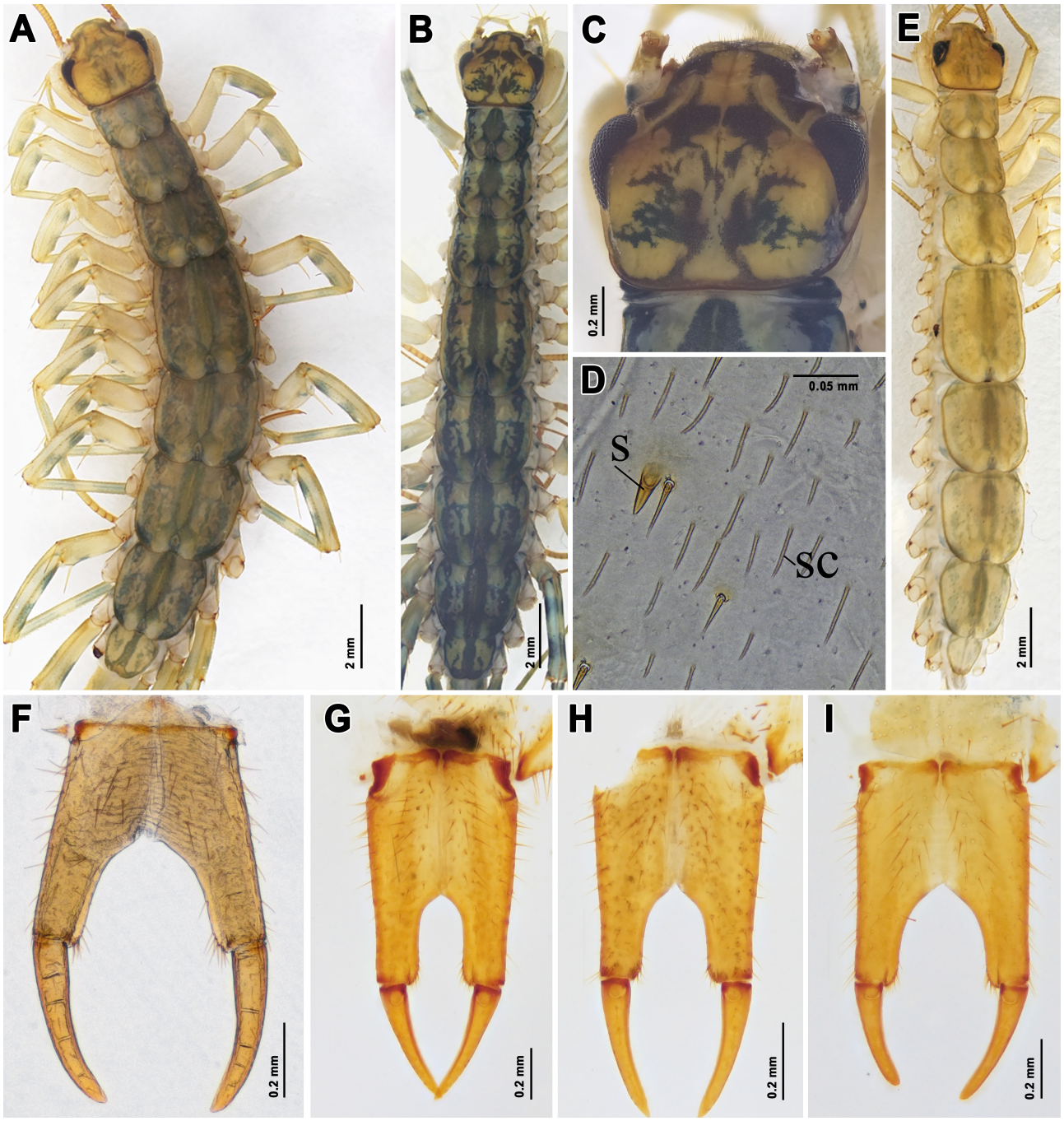

Figure 2. *Thereuonema tuberculata* (Wood, 1862) (A, ASU No. 239; B, C, ASU No. 817; D, ASU No. 834; E, ASU No. 239; F, ASU No. 514; G, ASU No. 517; H, ASU No. 516; I, ASU No. 519), female: **A–B, E.** Habitus, dorsally; **C.** Head, dorsally; **D.** Surface of tergite, dorsally; **F–I.** Gonopods, ventrally. Abbreviations: **s**, spine; **sc**, spiculum.

1 ♂ (ISEA ch-001.195), 7 km N of Zanadvorovka [43°18'2"N, 131°36'35"E], 12.IX.1985, coll. V.V. Dubatolov; 1 ♀ (ISEA ch-001.173), Anuchinsky District, N of Chernyshevsk [Village, 44°11'55"N, 133°7'40"E], 5.VII.1995, coll. V.V. Dubatolov; 1 juv. (IBSS ch-40), Partizanskiy District, Frolovka River bank, 21.VI.2021, coll. E.A. Makarchenko; 1 ♂, 1 ♀ (ISEA ch-001.165), Khabarovsk krai, Bolshoy Khehtsir Mt. Range, Byshikha [48°18'4"N, 134°49'32"E], on a wall, 10–11.X.2024, coll. V.V. Dubatolov; 1 ♂ (IBSS ch-42), Chegdomyn Village [51°7'N, 132°59'E], October 2002, coll. L.A. Tlilikauskas; **Kazakhstan**, 1 ♂, 5 ♀♀ (ASU No. 230) and 1 ♂, 1 ♀ (ASU No. 837), Abai Oblast, Urzhar District, Ushbulak Mt., 47°11'54"N, 80°56'36"E, stony mountain steppe with rocks and bushes, 690 and 700–800 m, 02–03.V.2019, coll. A.A. Fomichev; 1 ♀ (ASU No. 834), Shalabay [Village, 49°41'N, 81°30'E], 2024,

coll. S.V. Titov; 4 ♂♂, 3 ♀♀ (ASU No. 839), East Kazakhstan Oblast, Ulken-Naryn Village [*ca* 49°12'N, 84°30'E], garden, *ca* 400 m, 14.VIII.2024, coll. Yu.V. Dyachkov; 1 ♂, 1 ♀ (ASU No. 390), Shemonaikha Town, *ca* 50°37N, 81°55"E, 26.IX.2021, coll. V.V. Rudoi; 1 ♂ (ISEA ch-001.212), near Ust-Kamenogorsk City [49°58'N, 82°36'E], 16.IX.1990, coll. V.K. Zinchenko; 1 ♀ (ASU No. 833), Altai City, 49°43'12"N, 84°14'55"E, wall of a garage, 500 m, 12.VIII.2024, coll. Yu.V. Dyachkov; 1 ♂, 1 ♀ (ASU No. 818) and 1 ♀, 1 juv. ♀ (ASU No. 835), Pavlodar Oblast, Pavlodar [City, *ca* 52°17'N, 76°59'E], IV, 1.VII. and 21.V.II.2024, coll. S.V. Titov; 1 ♂ (ISEA ch-001.213), Ulytau Oblast, Ulytau District, near Korgasyn Village [*ca* 47°47'N, 67°42'E], under *Betula* trunk, 24.VIII.2023, coll. I.I. Temreshev.

Distribution. East Asia (China, Korean Peninsula, Japan) (Würmli 1975; Stoev 2002; Stoev & Geoffroy 2004; Hirakizawa et al. 2023); introduced to the United Kingdom (Barber 2011) and North America (Reeves & Miller 2022). Russia: Primorskii krai, Republic of Khakassia, Kemerovskaya oblast, Altai Krai, Republic of Altai, and Krasnodarskii krai (Dyachkov 2022b, 2023b; Nefediev & Farzalieva 2024; Nefediev 2025), as well as Novosibirsk Oblast, Jewish autonomous oblast, and Khabarovsk krai (present data). Kazakhstan: Pavlodar (Nefediev 2025), East Kazakhstan, Abay, Almola, and Ulytau oblasts (present data).

Remarks. The pigmentation (Fig. 2A–E) varies in intensity among specimens. According to Würmli (1975), the pigment can be partly or completely lost (see also Fig. 4A). The gonopods show slight variation (Fig. 2F–I). For additional photos, see Dyachkov (2022b). *Scutigera coleoptrata* is excluded from the fauna of Kazakhstan (Dyachkov et al. 2016; Bragina et al. 2020; Dyachkov 2020) because specimens previously assigned to this species (ASU No. 149, 157, 158, 161, 162, and 163; materials from KSPI) belong to *Thereuonema tuberculata*. *Scutigera coleoptrata* was not included in a recent list of the Chilopoda of Kazakhstan (Dyachkov 2024), whereas *Thereuonema tuberculata* was listed as *Thereuonema* sp. *T. tuberculata* is newly recorded from the Novosibirsk Oblast, the Jewish Autonomous Oblast, and Khabarovsk Krai in Russia, and from the Abay and Ulytau Oblasts in Kazakhstan.

Thereuonema turkestana Verhoeff, 1905

Original combination. Thereuonema turkestana Verhoeff, 1905: 88. Type specimen: sex unknown (ZMB 87 / 87 a–c; slides No. 1615, 2982–2983, ZMHB (Dunlop et al. 2017)). – Type locality: Buchara [Uzbekistan].

(Figs 1, 3)

Material examined. **Tajikistan**, 1 ♀ (ASU No. 578), Gorno-Badakhshan Oblast, Khorog botanical garden, 37°28'27"N, 71°36'5"E, 2260 m, 10.VII.2023, coll. Yu.V. Dyachkov, A.A. Fomichev; 1 ♂, 2 ♀♀ (ZMMU Rc 7957), Districts of Republican Subordination, left side of Obikandar River (left inflow off Obigarm River), Obigarm kishlak [Village], 38°43'16"N, 69°43'51"E, 1250–1540 m, 23.IV.2019, coll. A.A. Fomichev; **Kazakhstan**, 1 ♀ (ASU No. 836), [Zhambyl Oblast], Karatau [Mt. Range], Ashikol [lake, 43°29'36"N, 70°37'23"E], 5.IV.2024, coll. S.V. Titov; **Kyrgyzstan**, 3 ♂♂, 2 ♀♀ (ASU No. 838), Jalal-Abad Oblast, Fergana Mountain Range, Sary-Bel' River valley, 7 km ENE of Tash-Kumyr Town, 41°25'16"N, 72°18'57"E, stony shiblyak scrubland with rocks, 900 m, 8–9.VII.2024, coll. A.A. Fomichev; **Uzbekistan**, 1 ♂, 1 ♀ (ASU No. 842), Jizzakh Oblast, Sentop Village, Nurata Mt., 40°38'56"N, 66°41'32"E, 500 m, 14–15.V.2023, coll. F. Shodmonov.

Distribution. India (Stoev, 2002); Afghanistan (Stoev 2002; Dyachkov 2022a); Uzbekistan: Tashkent, Samarqand, Bukhara (Verhoeff 1905; Würmli 1975; Lignau 1929a, 1929b; Stoev, 2002; Edgecombe & Giribet, 2006), and Jizzakh Oblast (present data); Tajikistan: Sughd ("Chodschent" is Khudzhand City; Würmli 1975), Gorno-Badakhshan (Dyachkov 2023a) oblasts, and Districts of Republican Subordination (present data); Kyrgyzstan: Kyrgyz Ala-Too Mt. Range (Dyachkov 2020), Naryn (Lignau 1929a, 1929b) and Jalal-Abad (present data) oblasts; Kazakhstan: Almaty (Edgecombe & Giribet 2009) and Zhambyl (present data) oblasts. This species is newly recorded from the Jalal-Abad Oblast of Kyrgyzstan, Zhambyl Oblast of Kazakhstan, Jizzakh Oblast of Uzbekistan, and the Districts of Republican Subordination of Tajikistan.

Remarks. Habitus, the surface of tergites, and female gonopods are shown in Figure 3A–E.

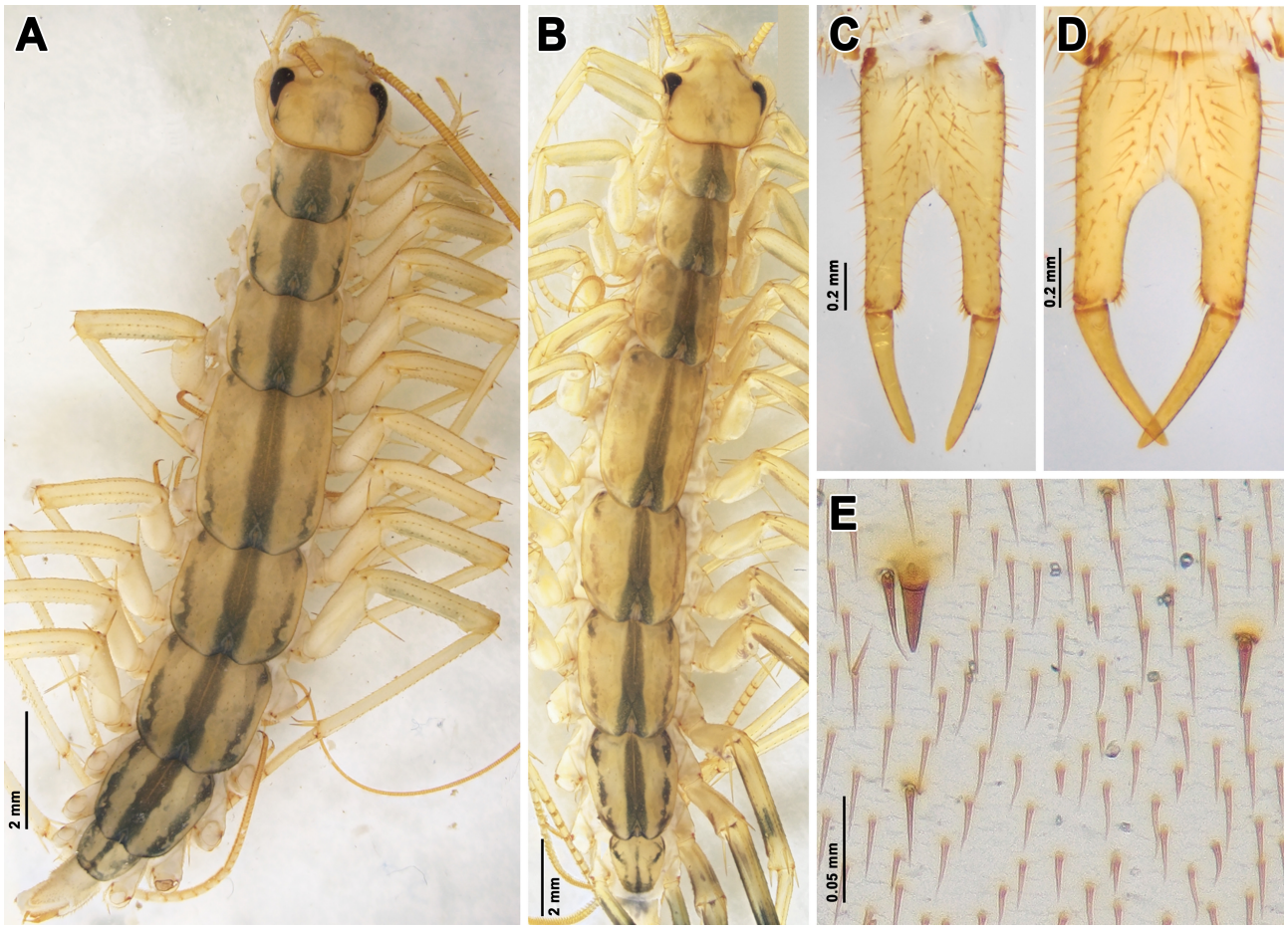

Figure 3. *Thereuonema turkestana* Verhoeff, 1905 (A, C, ASU No. 838; B, D, ASU No. 838; E, ASU No. 578), female. **A–B**. Habitus, dorsally; **C–D**. Gonopods, ventrally; **E.** Surface of tergite, dorsally.

Thereuonema sp.

(Figs 1, 5)

***Material examined*.** **Tajikistan**, 1 ♀ (ASU No. 247), Khatlon Oblast, NE foot of Khodzhamumin Mt., 3 km SE of Vose Kishlak, 37°45'52"N, 69°39'4"E, on a wall of a loess cliff, 490 m, 11.IV.2019, coll. A.A. Fomichev; 1 ♂ (ASU No. 841), near Imeni Vose Village, 37°45'46"N, 69°38'50"E, 500–700 m, 30.IV.2024, coll. R.Yu. Dudko, S.V. Reshetnikov; 1 ♀ (ASU No. 840), Vakhsh River valley, Tigrovaya Balka Nature Reserve (=Beshai Palangon), 37°14'0"N, 68°24'0"E, 300 m, 25–26.IV.2024, coll. A.A. Fomichev, R.Yu. Dudko, A.E. Naydenov, S.V. Reshetnikov; **Turkmenistan**, 1 ♀ (ISEA ch-001.237), [Mary Velayaty], Badhyz State Nature Reserve, Kyzyl-Dzhar [*ca* 35°47'37"N, 61°53'52"E], semi-desert, 6.V.1977, coll. A. Gulikov; 2 ♀♀ (ISEA ch-001.238), Badkhyz Reservation, 30–40 km NW of Guzhgy (=Kushka [now Serhetabat, *ca* 35°16'N, 62°19'E]), kepelya stand, 12.IV.1993, coll. D.V. Logunov; 1 ♀ (ISEA ch-001.239), 37–37 km SE of Pulikhatum, foothills of Zu'lfagarsky Mt. Range [*ca* 35°43'21"N, 61°20'20"E], *ca* 1000 m, 13–14.IV.1993, coll. D.V. Logunov.

***Remarks*.** The examined specimens are morphologically similar to *T. microstoma* (Meinert, 1886) in the features of the ♀ gonopods (Fig. 5D–F) but differ in their pigmentation, the number of tergal spiculae, and their shorter length (Fig. 5C; *vs* Fig. 4B in *T. microstoma*). According to Würmli (1974, 1975), pigmentation, the number and form of tergal spiculae are more diagnostically important characters than the shape of the ♀ gonopods. As noted by Würmli (1974), the exoskeletal prominences of the tergal plates may be poorly developed in specimens smaller than 20 mm. The specimens examined have a body length of up to 32 mm. For the precise identification of these specimens, which possibly belong to a new, as yet undescribed species, additional materials and molecular studies are needed.

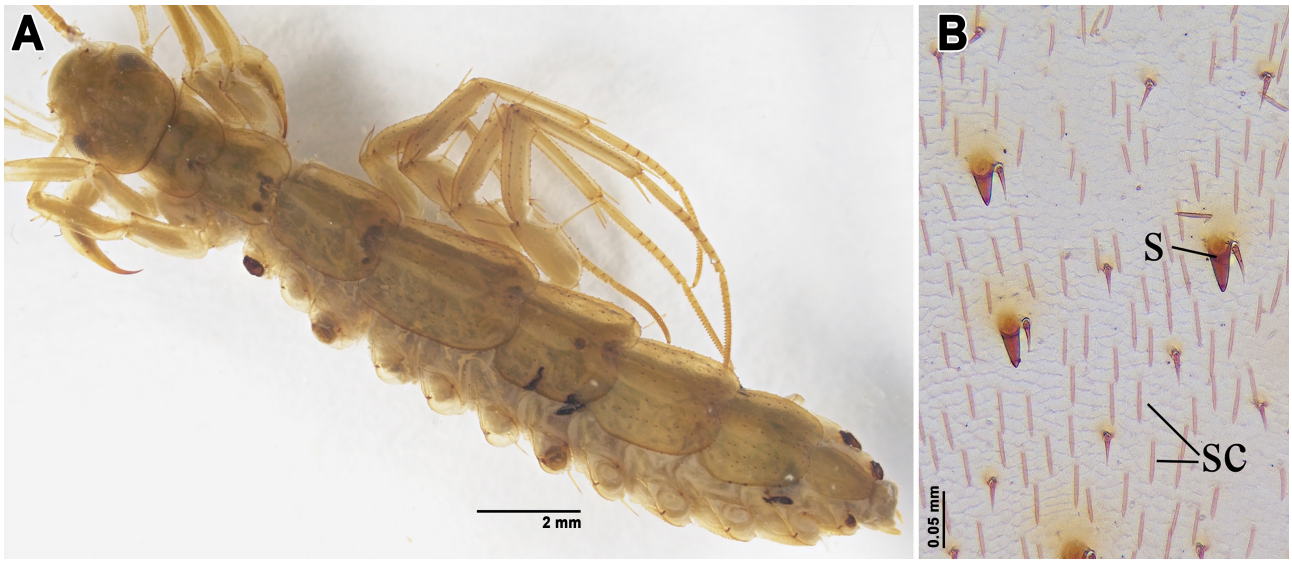

Figure 4. *Thereuonema microstoma* (Meinert, 1886) (ASU No. 419), male, dorsally. **A.** Habitus; **B.** Surface of tergite. Abbreviations: **s**, spine; **sc**, spiculum.

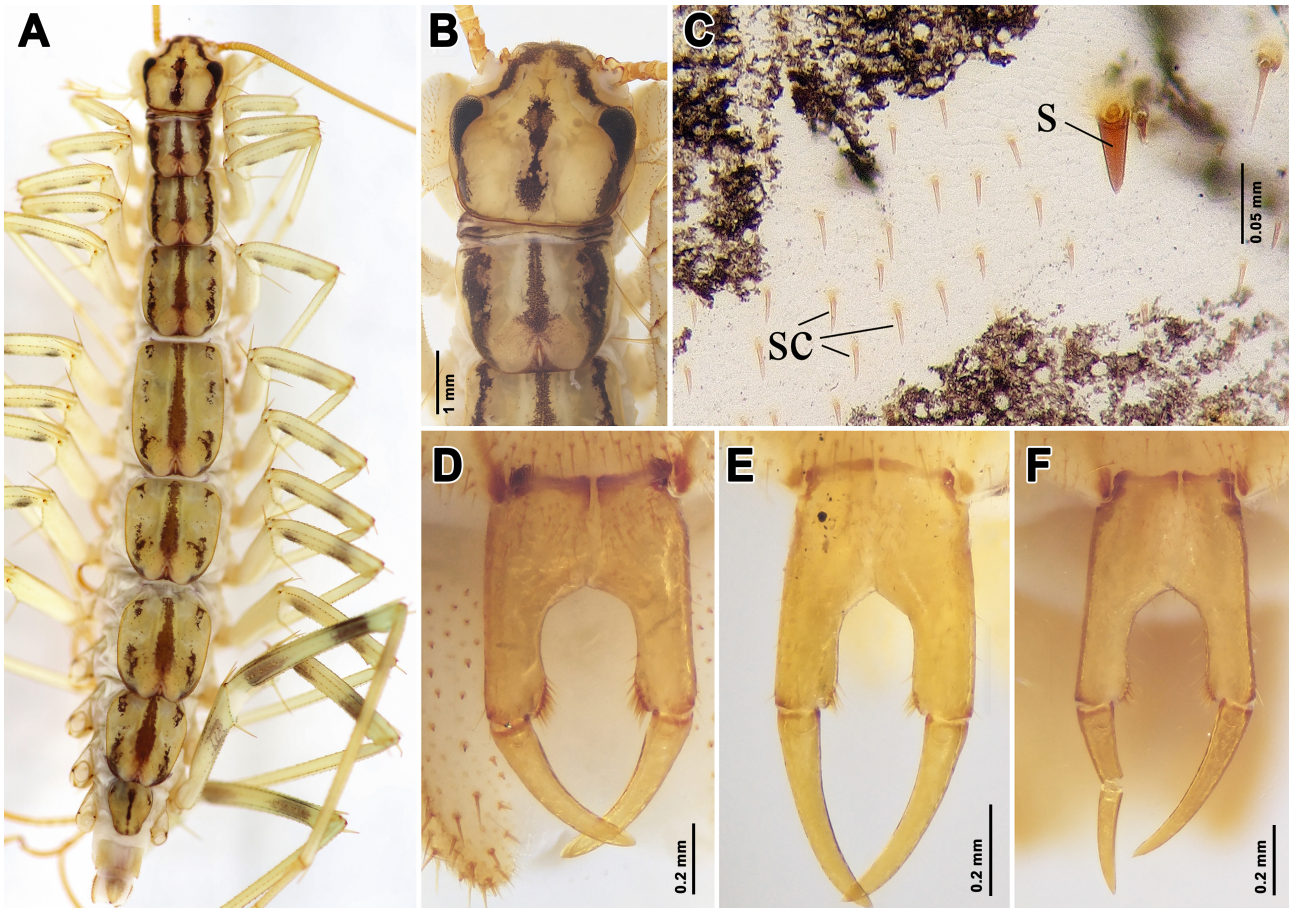

Figure 5. *Thereuonema* sp. (A, B, D, ASU No. 840; C, ASU No. 247; E, ISEA ch-001.237; F, ISEA ch-001.238), female. **A.** Habitus, dorsally; **B.** Front body fragment, dorsally; **C.** Surface of tergite, dorsally; **D–F.** Gonopods, ventrally. Abbreviations: **s**, spine; **sc**, spiculum.

DISCUSSION

The Scutigeromorpha fauna of Kazakhstan and Middle Asia consists of at least six species from three genera: *Allothereua kirgisorum* (Kazakhstan), *Scutigera asiatica* (Uzbekistan), *S. coleoptrata* (Turkmenistan), *Thereuonema tuberculata* (Kazakhstan), *T. turkestana* (Kazakhstan, Uzbekistan, Kyrgyzstan, and Tajikistan), and *Thereuonema* sp. (Turkmenistan and Tajikistan).

Two species of Scutigeromorpha are known from Russia: *Scutigera coleoptrata* (European Russia) (Zuev 2016; Zuev & Evsyukov 2016; Dyachkov et al. 2022; Farzalieva et al. 2023) and *Thereuonema tuberculata* (mostly Asian Russia, two specimens are recorded from the Krasnodarskii krai, European Russia) (Dyachkov 2022b; Nefediev 2025). The taxonomic status of both *Allothereua kirgisorum* and *Scutigera asiatica* requires revision; records of *S. coleoptrata* from Turkmenistan require confirmation. The new distribution data for *Thereuonema tuberculata* show that this species has a wide distribution in Asian Russia and northern, eastern, and central Kazakhstan. Yang et al. (2022) hypothesized the presence of two cryptic species within *T. tuberculata* in China based on mitogenomics. *Thereuonema* sp. is new to the fauna of Middle Asia. Additional materials and molecular studies are needed to make a precise identification of these specimens.

AUTHOR'S CONTRIBUTION

The author confirms his contribution to the whole processing steps in the research, examination of the specimens, illustrations, and preparation of the manuscript, and He read and approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the institutes mentioned in the Materials and Methods section and are available from the curator upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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گونه‌های صدپایان جنس *Thereuonema* Verhoeff, 1904 (Chilopoda: Scutigeromorpha: Scutigeridae) در آسیای میانه، قزاقستان و روسیه آسیایی

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چکیـده: گزارش‌های جدیدی از گونه‌های جنس *Thereuonema* Verhoeff, 1904 از روسیه آسیایی، قزاقستان و آسیای میانه ارائه شد. آرایهٔ *Thereuonema* sp. برای فون آسیای میانه جدید است. گونهٔ *T. tuberculata* (Wood, 1862) برای اولین بار از ناحیه نووسیبیرسک، ناحیه خودمختار یهودی و ناحیه خاباروفسک در روسیه و از نواحی آبا و اولی‌تاو در قزاقستان ثبت شد؛ گونهٔ *T. turkestana* Verhoeff, 1905 برای فون منطقهٔ جلال‌آباد در قرقیزستان، ناحیه زامبویل در قزاقستان و ناحیه جیزاک در ازبکستان جدید است. علاوه بر این، *Scutigera coleoptrata* (Linnaeus, 1758) از فون کشور قزاقستان حذف شد. ریخت‌شناسی گونه‌های ذکر شده به تصویر کشیده شد و تنوع خصوصیات ظاهری در آن‌ها نیز نشان داده شد. تاریخچه‌ای مطالعات فونستیک بر گروه Scutigeromorpha در قزاقستان و آسیای میانه نیز ارایه شد.

واژگـان کلیدی: تنوع زیستی، فون، گزارش جدید، *Thereuonema tuberculata*، *Thereuonema turkestana*، تنوع ریختی