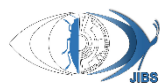


Original Article New data on *Opilio* Herbst, 1798 (Opiliones, Phalangiidae) from Russia and KyrgyzstanNataly Yu. Snegovaya^{1,2} 

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ABSTRACT. Two new species of *Opilio* Herbst, 1798 (Opiliones: Phalangiidae), *O. kyrgyzstanicus* sp. nov. from Kyrgyzstan and *O. zhiguli* sp. nov. from Russia, are described based on morphological characters of both sexes. Both species are diagnosed and illustrated in detail, including the structure of the penis, pedipalps, chelicerae, and body armature. The discovery of these new species indicates that the diversity of the genus in the Palearctic remains considerably underestimated, particularly in poorly studied regions of Central Asia and the Middle Volga.

KEYWORDS: Central Asia, Harvestmen, Middle Volga, Morphology, New species, Palearctic, Taxonomy

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INTRODUCTION

The harvestmen genus *Opilio* Herbst, 1798 (Opiliones: Phalangiidae) currently comprises about 39 species (Kury et al. 2023), exhibiting considerable morphological variability and difficulties in species diagnosis. Recent studies indicate that the diversity of this genus in the Palearctic has been significantly underestimated. In particular, several new species have been described from Azerbaijan in recent years, including *O. ordubadicus* Snegovaya, 2025 and *O. ilhamakerimovae* Snegovaya, 2025, which were also the first species from this country to be described using both morphological and molecular data (Snegovaya et al. 2025). In addition, further investigations of the country's fauna resulted in the discovery and description of *O. zangezuristicus* Snegovaya, 2026 and *O. zuvandicus* Snegovaya, 2026 (Snegovaya 2026). Similar results have been obtained elsewhere in the Caucasus, where additional new species have been described, including *O. bezengii* Snegovaya, 2025 from high-mountain ecosystems (Snegovaya & Makarova 2025).

Despite the considerable progress made in the study of harvestmen in the Caucasus, a number of regions remain insufficiently explored. In particular, data on representatives of *Opilio* from the Middle Volga region, including the Zhiguli State Nature Reserve, are limited and require further study. Even more fragmentary are the data from Central Asia, including Kyrgyzstan, where the harvestman fauna has been studied very unevenly. Given the high landscape and climatic heterogeneity of the region, a considerable amount of undocumented diversity, including potentially endemic species, may be expected. Thus, further studies of this genus in these regions are of great importance for refining the systematics of the group and revealing patterns of its distribution in the Palearctic. The aim of the present study is to describe two species of *Opilio* discovered in the Zhiguli Nature Reserve and in Kyrgyzstan, with an analysis of their morphological characters, diagnostic features, and distribution.

MATERIAL AND METHODS

Specimens were collected by hand and preserved in 75% ethanol. Examinations were carried out using a Nikon® SMZ1270 stereomicroscope. Photographs were taken with a Sony® DSC-P8 camera attached to the same microscope. Measurements are given in millimetres, and geographic coordinates are presented in decimal degrees. Morphological terminology follows Hillyard & Sankey (1990), except for the penis, for which the terminology of Martens (1978) is adopted. **BLI** (Body Leg Index) is the ratio of femur I length to carapace width, following Starega (1972, 2003). Lengths of palp and leg segments are presented as: femur + patella + tibia + metatarsus [absent in palp] + tarsus = total.

Abbreviations. Fe—femur; Pa—patella.

Depositories. RCNS—Reference Collection of Nataly Snegovaya, Baku; ZIN—Zoological Institute, Saint Petersburg; ZMMU—Zoological Museum of the Lomonosov Moscow State University, Moscow.

RESULTS

Phylum Arthropoda Gravenhorst, 1843

Subphylum Chelicerata Heymons, 1901

Class Arachnida Lamarck, 1801

Order Opiliones Sundevall, 1833

Suborder Eupnoi Hansen & Sørensen, 1904

Family Phalangiidae Latreille, 1802

Genus *Opilio* Herbst, 1798

Type species. *Opilio parietinus* (De Geer, 1778).

***Opilio kyrgyzstanicus* sp. nov.**

<https://zoobank.org/urn:lsid:zoobank.org:act:6266E47C-CF56-4153-8EC8-C307B1923642>

Figs 1–2

Type material. **Holotype** ♂ (ZMMU), Kyrgyzstan, Terskei-Alatoo, 2 km S Teploklyuchenka, 1915 m, 42°28'35"N 78°31.8'09"E, 07.09.2016, leg. D. Milko; **Paratypes** 1♂, 1♀ (RCNS), idem.

Diagnosis. The new species is most closely similar to *O. parietinus* De Geer, 1778, but differs in the male BLI (1.8 in the new species vs 2.8 in *O. parietinus*) and the shape and structure of the penis (wider truncus and longer and narrower wings; cf. Fig. 1H–L vs Martens (1978): figs 423–428).

Description. — **Holotype male.** Body square-shaped, densely covered with transverse rows of large black-tipped denticles (Fig. 1A). Body 5.8 long, prosoma 3.8 wide. Eye mound low, with 7–8 denticles on each side (Fig. 1B); group of high black-tipped denticles present anterior to eye mound. Chelicerae medium-sized, dorsally and laterally with several denticles (Fig. 1F–G). Cheliceral basal segment 1.5 long, distal segment 2.2. Pedipalps medium-sized, dorsally and laterally with several denticles (Fig. 1D–E). Lengths of pedipalp segments: 1.5 + 0.75 + 1.0 + - + 1.9 = 5.15. Fe of all legs with large denticles. Fe I cylindrical (Fig. 1C). BLI = 1.8. Lengths of leg segments: I: 7.0 + 1.5 + 5.0 + 6.6 + 10.4 = 30.5; II: 10.6 + 2.0 + 9.8 + 9.2 + 14.6 = 46.2; III: 6.0 + 1.6 + 5.0 + 7.5 + 10.0 = 30.1; IV: 7.2 + 1.8 + 6.4 [other segments missing]. Penis (Fig. 1H–L) with broad, rounded base, tapering toward glans; wings weakly expanded; head banana-shaped (3.0 long, glans 0.4, stylus 0.1).

Female. Body oval-shaped, 8.0 body length, prosoma width 4.0, has less armament on the body (Fig. 2A), chelicerae, palps, and legs (Fig. 2B–E). Cheliceral basal segment length 1.5, distal segment 2.0. Lengths of pedipalp segments: 1.4 + 0.6 + 2.3 + - + 2.0 = 6.3. Lengths of leg segments: I: 6.0 + 1.6 + 4.8 + 6.0 + 9.2 = 27.6; II: 10.8 + 2.0 + 8.6 + 7.0 + 17.0 = 45.4; III: 6.5 + 1.7 + 5.0 + 7.6 + 9.6 = 30.4; IV: 8.6 + 1.7 + 6.0 + 8.7 + 13.4 = 38.4.

Etymology. The specific epithet is derived from the name of the type locality; adjective.

Distribution. Known only from the type locality in the Terskei-Alatoo mountain range, Eastern Kyrgyzstan.

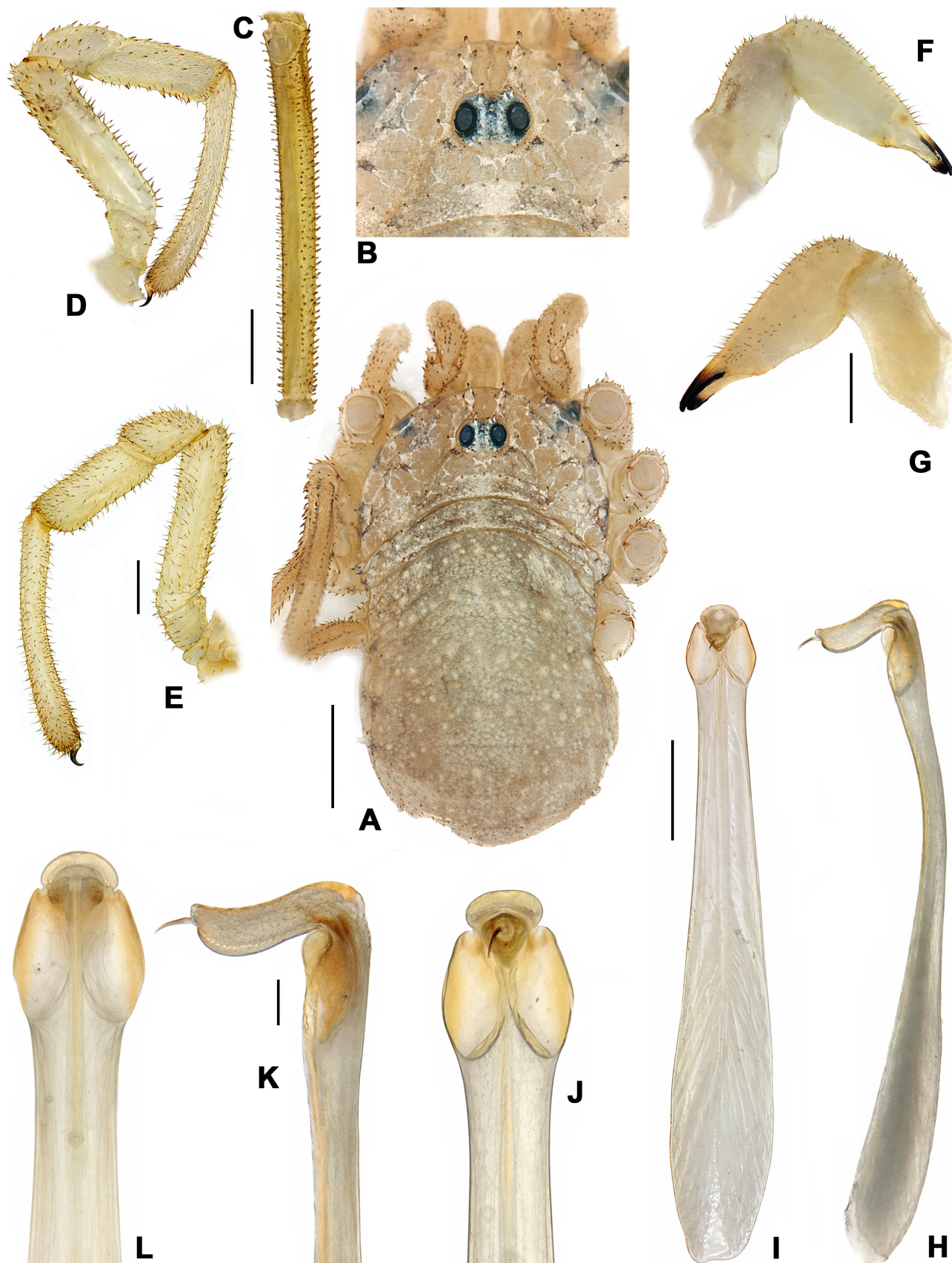


Figure 1. *Opilio kyrgyzstanicus* sp. nov., male (holotype). A. Habitus, dorsal view; B. Eye tubercle, dorsal view; C. Femur I, lateral view; D. Right pedipalp, lateral view; E. Idem, mesal view; F. Right chelicera, lateral view; G. Idem, mesal view; H. Penis, lateral view; I. Idem, dorsal view; J–L. Close-up of penile glans: J. Dorsal, K. Lateral, L. Ventral views. Scales: A, C–E: 1 mm, F–I: 0.5 mm, J–L: 0.1 mm.

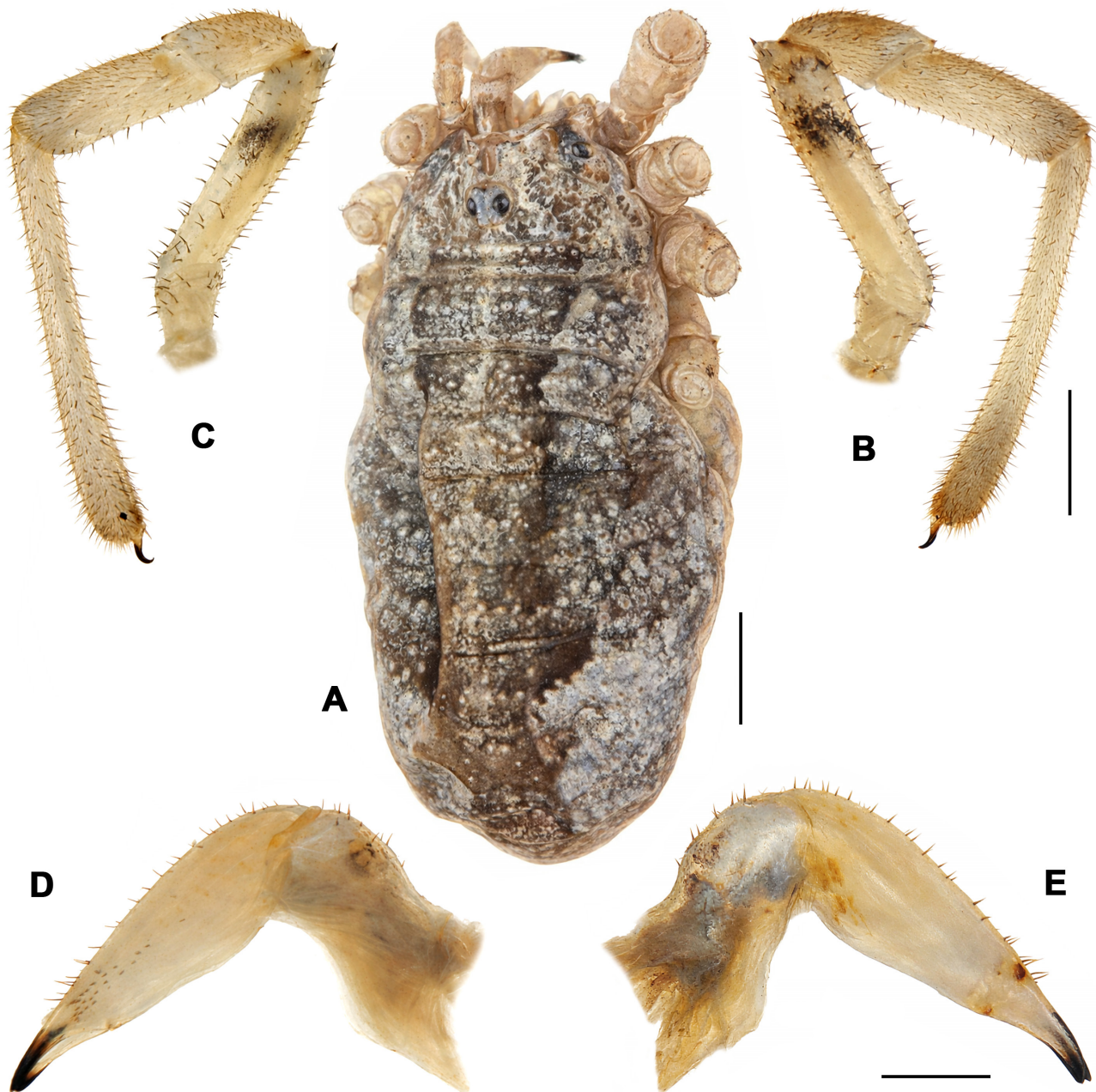


Figure 2. *Opilio kyrgyzstanicus* sp. nov., female (paratype). **A.** Habitus, dorsal view; **B.** Right pedipalp, lateral view; **C.** Idem, mesal view; **D.** Right chelicera, lateral view; **E.** Idem, mesal view. Scales: **A:** 1 mm, **B–E:** 0.5 mm.

***Opilio zhiguli* sp. nov.**

<https://zoobank.org/urn:lsid:zoobank.org:act:62AC4377-2C1D-4B8E-B954-7CE7596F3A9D>

Figs 3–4

Type material. **Holotype** ♂ (ZIN), Zhiguli Natural State Reserve, forest edge, under boards and stones, [53°24'N 49°49'E], Russia, 1.08.1977, leg. B. Chevrizov; **Paratypes** 2♂♂, 2♀♀ (RCNS), same place and data; 1♂, 3 juv. (ZIN), a ravine in the forest, under the rocks, 7–8.08.1977, leg. B. Chevrizov.

Diagnosis. The new species is most closely similar to *O. lederi* Roewer, 1911, but differs from it in its smaller body size (4.0 vs 6.2), the shape and structure of the glans (broadened in the distal part and shorter [0.2], vs banana-shaped and longer [0.38]; cf. Fig. 3H–L vs Snegovaya (2010): figs 1–9); Snegovaya et al. (2024): fig. 5.

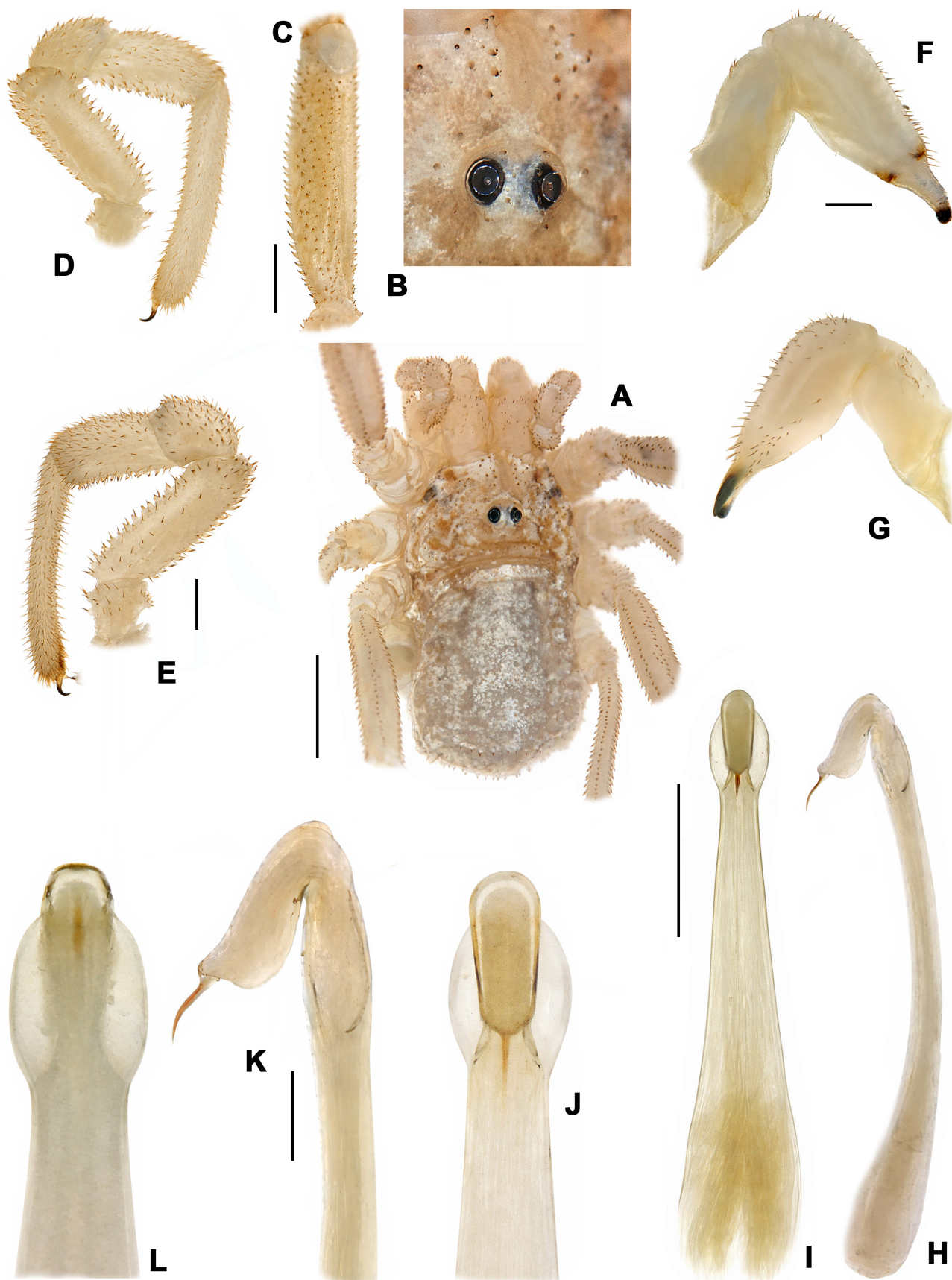


Figure 3. *Opilio zhiguli* sp. nov., male (holotype). **A.** Habitus, dorsal view; **B.** Eye tubercle, dorsal view; **C.** Femur I, lateral view; **D.** Right pedipalp, lateral view; **E.** Idem, mesal view; **F.** Right chelicera, lateral view; **G.** Idem, mesal view; **H.** Penis, lateral view; **I.** Idem, dorsal view; **J–L.** Close-up of penile glans: **J.** Dorsal, **K.** Lateral, **L.** Ventral views. Scales: **A:** 1 mm, **C–I:** 0.5 mm, **J–L:** 0.1 mm.

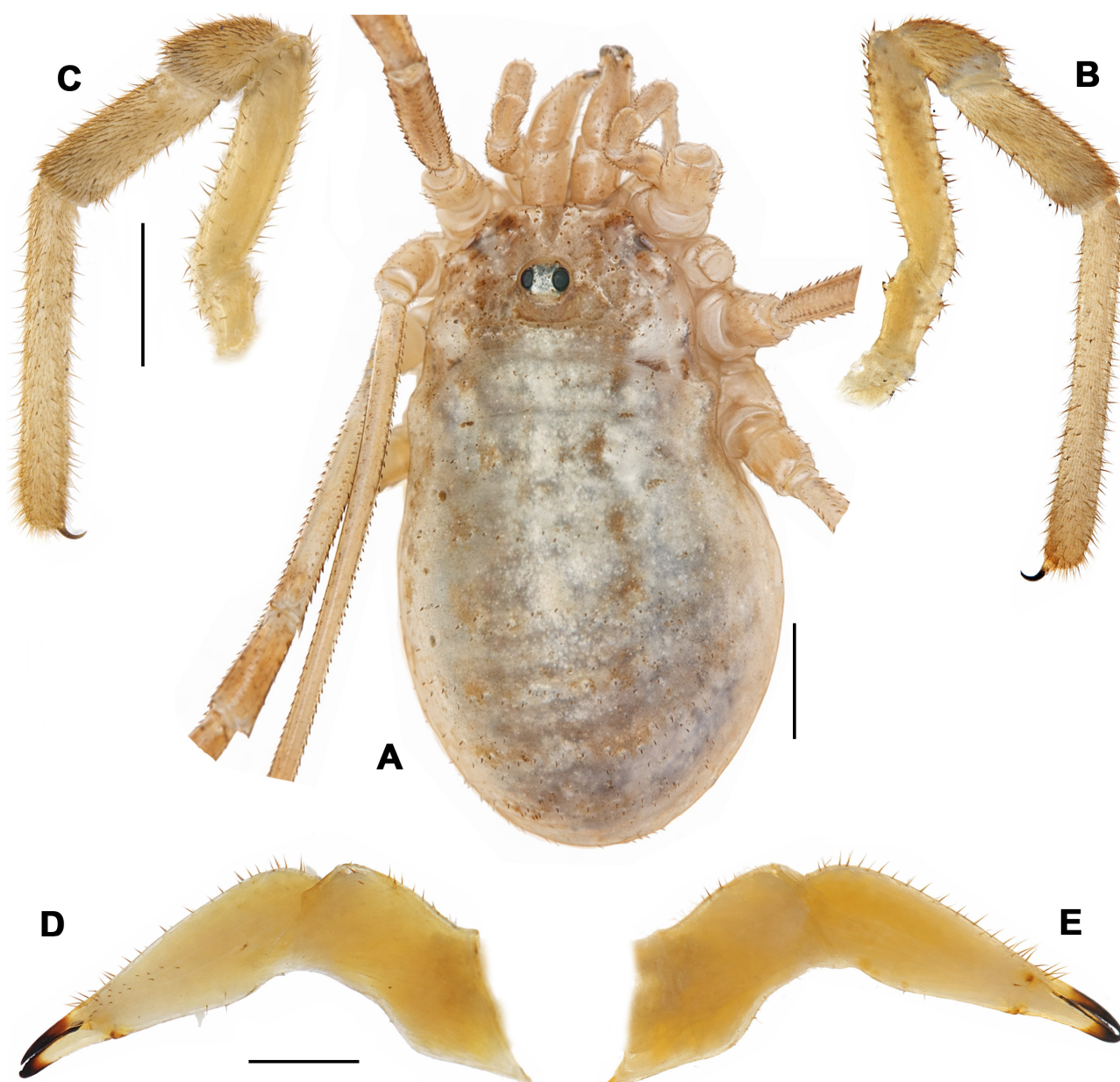


Figure 4. *Opilio zhiguli* sp. nov., female (paratype). **A.** Habitus, dorsal view; **B.** Right pedipalp, lateral view; **C.** Idem, mesal view; **D.** Right chelicera, lateral view; **E.** Idem, mesal view. Scales: **A:** 1 mm, **B–E:** 0.5 mm.

Description. — **Holotype male.** Body square-shaped, sand-coloured, with light spots of varying size, and transverse rows of relatively large denticles (Fig. 3A). Body 4.0 long, prosoma 2.0 wide. Eye mound low, with 5 pairs of denticles on each side; group of large black-tipped denticles present anterior and lateral to eye mound (Fig. 3B). Chelicerae large; basal segment dorsally with denticles, other areas with setae (Fig. 3F–G). Cheliceral basal segment 2.2, distal segment 2.1. Pedipalp large; Fe dorsally and laterally, and Pa dorsally, with denticles; remaining segments with setae (Fig. 3D–E). Lengths of pedipalp segments: $1.4 + 0.7 + 1.3 + - + 1.5 = 4.9$. Legs short; Fe I spindle-shaped, and all Fe with large denticles. BLI – 1.0. Lengths of leg segments: I: $2.0 + 1.0 + 2.2 + 2.4 + 3.8 = 11.4$; II: $5.0 + 1.0 + 4.6 + 5.0 + 12.6 = 28.2$; III: $2.6 + 1.0 + 2.2 + 3.0 + 5.0 = 13.8$; IV: $3.6 + 1.2 + 3.0 + 4.0 + 7.6 = 19.4$. Penis (Fig. 3H–L) with wide base; distal part with wide wings (2.4 long, glans 0.2, stylus 0.1).

Female. Body 5.6 long, prosoma 3.0 wide (Fig. 4A). Cheliceral basal segment 1.3, distal segment 1.6. Lengths of pedipalp segments: $1.1 + 0.5 + 0.8 + - + 1.4 = 3.8$ (Fig. 4D–E). Lengths of leg segments: I: $2.6 + 1.0 + 2.0 + 2.5 + 4.2 = 12.3$; II: $5.0 + 1.6 + 5.0 + 3.0 + 11.2 = 25.8$; III: $2.6 + 1.0 + 3.5 + 3.6 + 7.6 = 18.3$; IV: $3.7 + 1.0 + 3.5 + 3.6 + 7.6 = 19.4$ (Fig. 4B–C).

Etymology. The specific epithet refers to the Zhiguli Nature Reserve, the type locality of the new species; noun in apposition.

Distribution. Known only from the type locality in the Zhiguli Nature Reserve, Samara Region, Western Russia.

DISCUSSION

The discovery of two new species of *Opilio* in geographically distant regions of the Palearctic demonstrates that the diversity of the genus remains insufficiently studied even in relatively well-investigated areas, particularly those with complex landscapes and heterogeneous climatic conditions.

According to the checklist of Kury et al. (2024), 87 species of harvestmen are known from Russia and 12 species from Kyrgyzstan. *Opilio* is represented by eight species in Russia, whereas in the available literature there is no data on representatives of this genus in Kyrgyzstan. Therefore, the present record constitutes the first record of this genus from Kyrgyzstan and considerably extends the known distribution of the genus in Central Asia. The discovery of additional representatives of *Opilio* in the region may contribute to a better understanding of the biogeography and distribution patterns of the still poorly studied harvestman fauna of Central Asia, where further investigations are likely to reveal additional species of the genus. The new species from Kyrgyzstan, *Opilio kyrgyzstanicus* **sp. nov.**, probably represents a Central Asian montane lineage associated with high-altitude ecosystems of the Terskei-Alatau Range. The mountain systems of Central Asia constitute a major biodiversity hotspot characterized by high levels of faunal endemism, providing centres of diversification for numerous animal groups, including Opiliones (Myers et al. 2000; CEPF 2017). The isolated nature of these habitats may promote morphological divergence and speciation. In contrast, *Opilio zhiguli* **sp. nov.** was discovered in the Zhiguli region, an important refugial area in the Middle Volga, characterised by a mosaic of forest and steppe habitats. The occurrence of a distinct, apparently endemic species in this region supports the role of the Zhiguli uplands as a centre for the persistence of relict invertebrate faunas. Further integrative studies combining morphology, molecular data, and biogeographic analysis are necessary for a better understanding of species diversity and evolutionary relationships within *Opilio* across the Palearctic.

AUTHOR'S CONTRIBUTION

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

FUNDING

This research received no specific grant from any funding agencies.

AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in RCNS, ZIN, and ZMMU 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.

GENERATIVE AI STATEMENT

AI tools (ChatGPT) were used for language editing and minor figure processing during manuscript preparation. All scientific content, taxonomic conclusions, and final illustrations were checked and approved by the author.

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یافته‌های جدید از جنس *Opilio* Herbst, 1798 (Opiliones: Phalangidae) در روسیه و قرقیزستان

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چکیده: دو گونه جدید از جنس *Opilio* Herbst, 1798 (Opiliones: Phalangidae)، شامل *O. kyrgyzstanicus* **sp. nov.** از قرقیزستان و *O. zhiguli* **sp. nov.** از روسیه، بر اساس ویژگی‌های ریخت‌شناسی هر دو جنس نر و ماده توصیف شده‌اند. خصوصیات افتراقی و تصایر هر دو گونه شامل اندام زادآوری نر، پدی‌پالپ‌ها، کلیسرها و زره بدن ارایه شد. کشف این گونه‌های جدید نشان می‌دهد که تنوع این جنس در منطقه پالتارکتیک، به ویژه مناطق کمتر بررسی شده مطالعه در آسیای مرکزی و ولگای میانه به طور قابل توجهی، کمتر از واقعیت برآورد شده است.

ویراستار علمی

علیرضا زمانی

دریافت: ۰۱ خرداد ۱۴۰۵

ویرایش: ۲۸ تیر ۱۴۰۵

پذیرش: ۰۱ مرداد ۱۴۰۵

انتشار: ۱۰ مرداد ۱۴۰۵

واژگان کلیدی: آسیای مرکزی، پادرازاها، ولگای میانه، ریخت‌شناسی، گونه‌های جدید، پالتارکتیک، تاکسونومی