Hersiliola korbi sp. n., the first record of the family Hersiliidae (Arachnida: Araneae) from Tian Shan Mountains, Kyrgyzstan

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doi: 10.30963/aramit6902

Abstract. A new species of Hersiliidae, *Hersiliola korbi* **sp. n.**, is diagnosed, described and illustrated based on a male specimen. This represents the first record of the family for the Tian Shan Mountains, Kyrgyzstan. The new species seems to be related to *H. sternbergsi* Marusik & Fet, 2009, distributed from eastern Iran to western Uzbekistan, and *H. xinjiangensis* (Liang & Wang, 1989) from Xinjiang Province of China, but differs from them by the structure of the male palp.

Keywords: Aranei, biodiversity, Central Asia

Zusammenfassung. *Hersiliola korbi* sp. n., der erste Nachweis der Familie Hersiliidae (Arachnida: Araneae) aus dem Tian Shan, Kirgisistan. Eine neue Art der Hersiliidae, *Hersiliola korbi* **sp. n.**, wird anhand eines Männchens diagnostiziert, beschrieben und abgebildet. Dies stellt den ersten Nachweis der Familie für das Tian Shan in Kirgisistan dar. Die neue Art ist vermutlich verwandt mit *H. sternbergsi* Marusik & Fet, 2009, verbreitet im östlichen Iran bis ins westliche Usbekistan, und *H. xinjiangensis* (Liang & Wang, 1989) aus der Provinz Xinjiang in China, unterschiedet sich aber durch die Struktur des männlichen Pedipalpus.

Hersiliidae Thorell, 1869 is a moderate-sized spider family comprising 188 species in 16 genera (World Spider Catalog 2024). The family is widespread in subtropical and tropical regions of the world and, at the generic level, most diverse in the Afrotropical Realm and the Near East (World Spider Catalog 2024). Four hersiliid genera are known from Central Asia: *Deltshevia* Marusik & Fet, 2009, *Duninia* Marusik & Fet, 2009, *Hersiliola* Thorell, 1869 and *Ovtsharenkoia* Marusik & Fet, 2009 (Marusik & Fet 2009). All these genera, except *Hersiliola*, contain very few species and are limited in their distribution to Central Asia and Iran (World Spider Catalog 2024). *Hersiliola*, with 13 valid species, is distributed from Cape Verde to the Xinjiang Province of China and Sudan in the south (Blackwall 1865, Marusik 2009, El-Hennawy 2010). The most common species of the genus are the generotype, *H. macullulata* (Dufour, 1831) and *H. simoni* (O. Pickard-Cambridge, 1872). Both species are widespread from Spain to Iran (Marusik & Fet 2009, Mirshamsi et al. 2016, World Spider Catalog 2024). Most *Hersiliola* species occur in the Near East (World Spider Catalog 2024). Recently, two species from Turkmenistan and Uzbekistan were described as part of a review on Hersiliidae of the East Palaearctic (Marusik & Fet 2009). During a recent expedition to the Tian Shan Mountains in Kyrgyzstan, I collected one undescribed species of *Hersiliola*. The present paper aims to describe this new species.

Material and methods

The specimen was hand-collected and preserved in 75% ethanol. It was photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope at the Altai State University (Barnaul, Russia). Photographs were taken in a dish with white cotton at the bottom and filled with ethanol. Digital images were assembled using Zerene Stacker image stacking software. The distribution map was produced using the online mapping application SimpleMappr (Shorthouse 2010). All measurements are given in millimeters. Lengths of leg segments were measured on their dorsal sides. Leg measurements are shown as: femur, patella, tibia, metatarsus, and tarsus (total length). The terminology and the format of the description follow Marusik & Fet (2009) with modifications. The holotype is deposited in the Institute of Systematics and Ecology of Animals of the Siberian Branch of the Russian Academy of Sciences (ISEA, Novosibirsk, Russia; curator G. N. Azarkina).

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Academic editor: Petr Dolejš

submitted 25.9.2024, accepted 6.3.2025, online 1.6.2025

Abbreviations

ALE – anterior lateral eye, AME – anterior median eye, BT – blade of tegular apophysis, Em – embolus, PLE – posterior lateral eye, PME – posterior median eye, TA – tegular apophysis, Te – tegulum.

Result

Family Hersiliidae Thorell, 1869

Genus *Hersiliola* Thorell, 1869

***Hersiliola korbi* sp. n.** Figs 1, 2a-d, 3

Zoobank. 5F4429BC-B4D6-4CE4-887F-1EAD64D26F5B

Type. KYRGYZSTAN: Talas Region: holotype ♂ (ISEA, 001.9162, Fig. 1), Uzun-Akhmat Valley, S bank of Toktogul Reservoir, 12 km S of Toktogul Town (41.7484°N, 72.9303°E), in steppe, on an abandoned adobe building, c. 1000 m a.s.l., 21. Jul. 2024, A. A. Fomichev leg.

Etymology. The new species is dedicated to my friend, the lepidopterologist Stanislav K. Korb (Bishkek, Kyrgyzstan), who organized the expedition to Kyrgyzstan, during which the holotype was collected.

Diagnosis. The male of the new species is similar to *H. sternbergsi* Marusik & Fet, 2009 distributed from western Uzbekistan to eastern Iran, and *H. xinjiangensis* (Liang & Wang, 1989) from the Xinjiang Province of China. All three species have a hook-shaped TA bent proximally. The male of *H. korbi* **sp. n.** differs from that of *H. sternbergsi* by the apex of the cymbium being half the length of the bulb (vs. apex of cymbium as long as bulb) and by the TA bearing a single blade (vs. TA bearing two blades; cf. Fig. 2b, d and Fig. 2e). The male of the new species can be distinguished from that of *H. xinjiangensis* by a rounded apical part of Te (vs. flattened apical part of Te), by a more massive basal part of the TA, the latter having a convex apical margin (vs. TA with thinner base

Fig. 1: *Hersiliola korbi* **sp. n.**, male habitus. **a.** dorsal; **b.** ventral. Scale bars: 2 mm

having an almost straight apical margin; cf. Fig. 2b, d and Fig. 2f), and a smaller BT forming a shallow invagination in ventral view (vs. a massive blade forming a deep invagination in ventral view).

Description. Male. Total length 4.5. Carapace: 1.9 long, 2.0 wide. Opisthosoma: 2.6 long, 2.05 wide. Eye sizes: AME 0.11, ALE 0.06, PME 0.10, PLE 0.11. Clypeus height 0.39. Colouration. Carapace light yellow with dark gray edges and thin median stripe. Edges of cephalic part dark gray. Clypeus with longitudinal dark gray stripe. Eye field dark gray. Chelicerae, labium, endites, sternum and coxae light yellow. Palps light yellow without annulations. Legs light yellow with gray annulations. Opisthosoma light yellow with gray dorsal pattern. Spinnerets light yellow. Leg measurements: I: 3.8, 0.85, 3.8, 4.3, 1.25 (14.0); II: 4.3, 0.85, 4.5, 5.0, 1.3 (15.95); III: 2.8, 0.65, 2.2, 2.65, 0.8 (9.1); IV: 4.1, 0.65, 4.1, 4.8, 1.0 (14.65). Palp as shown in Figs 2a-d. Femur 2.2 times longer than patella. Patella as long as tibia. Cymbium twice the length of tibia. Cymbial apex 2.5 times shorter than cymbium. Te discoid, almost as long as wide. TA large, protruding at an angle of 45 degrees to the Te. BT hook-shaped. Em long, filiform, starts at ca. 11 o'clock, makes almost a complete turn, and terminates at ca. 10 o'clock. Basal part of Em rounded.

Female. Unknown.

Distribution. Known only from the type locality (Fig. 3).

Comments. Both Afghan *Hersiliola* species, *H. afghanica* Roewer, 1960 and *H. lindbergi* Marusik & Fet, 2009 were described based on females (Rower 1960, Marusik & Fet 2009).

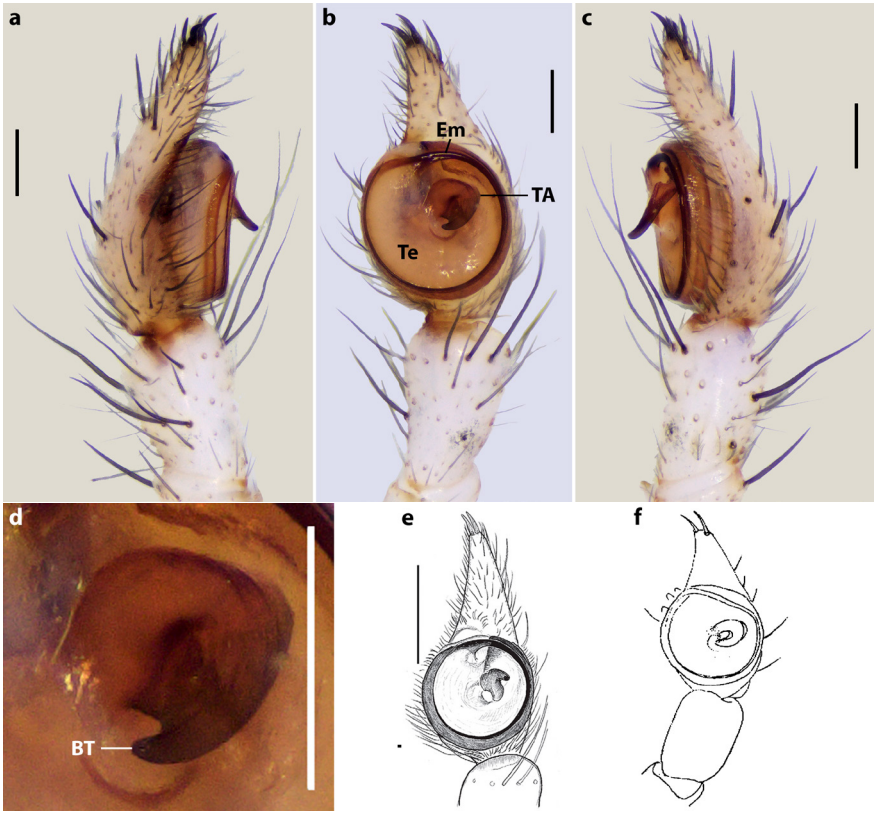

Fig. 2: Male palp (a-c, e-f) and tegular apophysis (d) of *Hersiliola korbi* **sp. n.** (a-d), *H. sternbergsi* (e) and *H. xinjiangensis* (f). **a.** prolateral; **b, d, e, f.** ventral; **c.** retrolateral. **e.** after Marusik & Fet (2009); **f.** after Liang & Wang (1989). Scale bars: a-d = 0.2 mm; e = 0.5 mm. Abbreviations: BT – blade of tegular apophysis, Em – embolus, TA – tegular apophysis, Te – tegulum

Fig. 3: Collecting localities of Hersiliidae in Central Asia north of 40°N. Star – *Deltshevia danovi*, inverted triangle – *D. gromovi*, triangle – *Hersiliola esyunini*, circle – *H. korbi* **sp. n.**, pentagon – *H. sternbergsi*, square – *H. xinjiangensis*, diamond – *Ovtsharenkoia pallida*

Hersiliola afghanica is known from Kabul Province, while the precise locality of the second species is unknown. The distance between the northern borders of Afghanistan and the type locality of *H. korbi* **sp. n.** is about 500 km. These areas are separated by the high Hindu Kush Mts, Hisar Mts, and Pamir Mts., while hersiliids spread poorly in mountainous areas (see discussion below). Therefore, the possibility that *H. korbi* **sp. n.** would be conspecific with *H. afghanica* or *H. lindbergi* is very low. All records of *H. afghanica* from Turkmenistan are misidentifications and based on other genera of Hersiliidae (Marusik & Fet 2009).

Discussion

Most species of Hersiliidae inhabit subtropical and tropical regions (World Spider Catalog 2024). The ranges of only a few species go beyond 40°N (Marusik & Fet 2009) (Fig. 3). The Hersiliidae in Central Asia are mainly represented by the genus *Hersiliola*. Marusik & Fet (2009) noted that species of this genus are widespread in deserts and dry mountains. Despite this, no species of *Hersiliola* in particular, or Hersiliidae in general were hitherto known from the vast Tian Shan Mountain system. However, several hersiliid species have been recorded in the foothills of the Tian Shan Mountains. The northernmost species of the entire family, *Hersiliola xinjiangensis*, was described from Urumqi City, located at the northern foothills of the Eastern (Chinese) Tian Shan (Marusik 2009). *Ovtsharenkoia pallida* (Kroneberg, 1875), which is endemic to Central Asia, was recorded from Bishkek City (Kyrgyzstan) and Taraz City (Kazakhstan) in the northern foothills of the Tian Shan range and from Fergana Valley located southwest of the Tian Shan. Finally, *Hersiliola esyunini* Marusik & Fet, 2009 is also known from the Fergana Valley (Marusik & Fet 2009). Hersiliid species found north of 40°N live at a narrow range of altitudes: from sea level on the Ustyurt Plateau (*Deltshevia danovi* Marusik & Fet, 2009) to 1000 m a.s.l. on the S bank of the Toktogul Reservoir in Tian Shan (*Hersiliola korbi* **sp. n.**) (Marusik & Fet 2009, present data). It can be assumed that such narrow altitudinal confinement effectively limits the distribution of hersiliids in Central Asia, preventing them from penetrating mountainous areas such as the Tian Shan. The type locality of *H. korbi* **sp. n.**, Uzun-Akhmat Valley, is located deep inside the Tian Shan. This is the only large valley in the Tian Shan located at such low altitudes (ca. 1000 m). The Naryn River Canyon, cutting through high mountains, connects the Uzun-Akhmat Valley with the Fergana Valley and serves as a corridor for dispersing desert fauna. It is important to note that spiders from groups confined to low desert mountains are known to have been found in the Naryn River Canyon (viz., the lycosid *Zyuzicosa nessovi* Logunov, 2012) (Logunov 2012). Such conditions probably determine the possibility of Hersiliidae penetrating the inner region of the Tian Shan. The discovery of additional hersiliids in other intermountain valleys, at least in the Kyrgyz part of Tian Shan, is unlikely.

Acknowledgements

I thank Roman V. Yakovlev (Barnaul, Russia) and Stanislav K. Korb for organizing and undertaking the expedition to Kyrgyzstan, during which the material treated in this paper was collected. Alireza Zamani (Turku, Finland) reviewed an earlier draft of the manuscript. Finally, I thank the subject editor, K.B. Kunt (Kyrenia, Cyprus) and an anonymous reviewer for their critical comments, which helped to improve the manuscript.

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