

Key to the species of *Megachernes* Beier (Pseudoscorpiones: Chernetidae), with notes on *M. afghanicus* and *M. pavlovskyi*

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Abstract: An identification key is presented for all described species of the pseudoscorpions belonging to the genus *Megachernes*. *Megachernes afghanicus* Beier, 1959 is also considered as a junior subjective synonym of *M. pavlovskyi* Redikorzev, 1949.

Key words: Arachnida, faunistic, morphology, morphometric characters, synonym, taxonomy

The genus *Megachernes* currently contains 23 valid species described from the Asian and Australian regions. They are mostly associated with mammals, e.g., *M. kanneliyensis*, which Harvey et al. collected from the dorsal fur of the Sri Lanka bicolored spiny mouse, *Mus mayori pococki* (Harvey et al., 2012); *M. grandis* (Beier, 1930) and *M. crinitus*, which Beier collected from nests of *Rattus bartelsi* (Beier, 1948); and *M. philippinus* Beier, 1966 and *M. monstrosus* Beier, 1966, collected from nests of *Rattus* species (Beier, 1966). A few species have been found in cave environments; *M. ryugadensis ryugadensis* Morikawa, 1954 and *M. ryugadensis naikaiensis* Morikawa, 1957 were collected from bat guano within caves in Japan (Morikawa, 1960). Surprisingly, *M. ryugadensis myophilus* Morikawa, 1960 was found in nests of bumblebees, *Bombus diversus* and *B. ardens* (Morikawa, 1960); *M. loebli* Schawaller, 1991 was found in forest litter; and *M. ochotona* Krumpál & Kiefer, 1982 was found under stone, as well as in a nest of *Passer* sp. These appear to be unusual microhabitats for species of *Megachernes* (summarized in Harvey et al., 2012).

Based on recent sampling of pseudoscorpions in southern Iran by the first author, a female belonging to the genus *Megachernes* was found under a stone in a cave in the Geno Protected Area of Hormozgan Province. The specimen was identified as *M. afghanicus* Beier, 1959, which was originally described from caves in Afghanistan by Beier (1959). Indeed, one of the original collections was also from bat guano (Beier, 1959). A related species, *M. pavlovskyi*, is widely distributed in Central Asia and the Middle East and was previously recorded from bat guano in the Karafto and Kila Sefid caves in the Kurdistan and

Kermanshah Provinces of western Iran by Mirmoayedi et al. (2000), and under stones and in the nest of the Indian porcupine, *Hystrix indica*, in Deh Sheikh cave in Kohgiluyeh and Boyer-Ahmad Province in western Iran by Christophoryová et al. (2013). It was originally described from Turkmenistan and Tajikistan by Redikorzev (1949) and subsequently recorded from Afghanistan, Azerbaijan, Kyrgyzstan, Pakistan, and Russia (Harvey, 2013). It is commonly found in different types of microhabitats, such as bat and pigeon guano in caves, in roots, in nests of rodents, under stones, in woods, and in cracks of a livestock barn (Harvey et al., 2012).

In this study, an identification key for all *Megachernes* species is presented, and *M. afghanicus* is considered to be a junior subjective synonym of *M. pavlovskyi*.

The sole specimen examined in this study was collected by hand from under a stone and preserved in 70% ethanol. The specimen was cleared in a 60% solution of lactic acid. Both chelicerae, pedipalps, and legs I and IV were dissected by using black enameled pins (sizes 0 to 2). The body and segments were mounted as permanent slide mounts using Swann mounting medium. The prepared material was studied and measured with a calibrated ocular micrometer and illustrated with a drawing tube attached to an Olympus BH-2 compound microscope. The morphological terminology and measurements follow Chamberlin (1931), Harvey (1992), Judson (2007), and Harvey et al. (2012). The specimen is deposited in the Collection of the Acarology Laboratory, Islamic Azad University of Arak (IAUA), Iran. The key was prepared based on all published papers dealing with species of *Megachernes*.

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The following abbreviations are used: L = length; W = width; D = depth; trichobothrial abbreviations: *eb* = external basal; *esb* = external subbasal; *est* = external subterminal; *et* = external terminal; *ib* = internal basal; *isb* = internal subbasal; *ist* = internal subterminal; *it* = internal terminal; *t* = terminal; *st* = subterminal; *b* = basal; *sb* = subbasal.

Key for the species of *Megachernes* Beier, 1932

- 1. Pedipalpal femur mostly covered with long setae (see Beier, 1948: figs. 6, 12; Beier, 1951: fig. 30; Beier, 1959: fig. 17; Beier, 1965: figs. 13, 14; Beier, 1966: fig. 3; Beier, 1967: figs. 17–18; Mahnert, 2009: figs. 16, 21; Schawaller and Dashdamirov, 1988: fig. 62; Schawaller, 1991: fig. 20; Schawaller, 1994: fig. 65) 2
 - Pedipalpal femur mostly covered with short setae (see Beier, 1932: figs. 144–145; Beier, 1948: figs. 8, 10, 14, 16; Beier, 1951: fig. 28; Beier, 1959: fig. 17; Beier, 1965: fig. 13; Beier, 1966: fig. 2; Beier, 1967: fig. 16; Beier, 1974: fig. 6; Dashdamirov, 2005: fig. 188; Harvey et al., 2012: figs. 4C–4D; Hoff and Parrack, 1958: fig. 1; Krumpál and Kiefer, 1982: fig. 2; Morikawa, 1954: fig. 4; Schawaller, 1991: fig. 21; Schawaller, 1994: fig. 64) 13
- 2(1). Pedipalpal chela very narrow and concave on dorsal view (see Beier, 1966: fig. 3); chelal (with pedicel) ratio 5.40–6.20× *monstrosus* Beier, 1966 (♀♂)
 - Pedipalpal chela normal and relatively stout; chelal (with pedicel) ratio less than 5.00× 3
- 3(2). Pedipalpal patella sparsely covered with shorter setae than those on femur (see Beier, 1948: fig. 6; Beier, 1959: fig. 17; Christophoryová et al., 2013: fig. 3B; Schawaller and Dashdamirov, 1988: fig. 62) 4
 - Pedipalpal patella densely covered with long setae as well as femur (see Beier, 1948: fig. 12; Beier, 1951: fig. 30; Beier, 1965: figs. 13–14; Beier, 1967: figs. 17–18; Mahnert, 2009: figs. 16–21; Schawaller, 1991: fig. 20; Schawaller, 94: fig. 65) 5
- 4(3). Posterolateral corner of coxa IV slightly elongate, rounded and blunt (see Beier, 1948: fig. 7); prolateral margin of femur densely covered with long setae (see Beier, 1948: fig. 6); pedipalpal femur ratio 2.30–2.40× *M. penicillatus* Beier, 1948 (♀) [from Australia]
 - Posterolateral corner of coxa IV distinctly elongate and dominant; both margins of pedipalpal femur densely covered with long setae (see Beier, 1959: fig. 17; Christophoryová et al., 2013: fig. 3B; Schawaller and Dashdamirov, 1988: fig. 62); pedipalpal femur ratio 2.50–3.00× *M. pavlovskyi* Redikorzev, 1949 (♂) [from Afghanistan, Azerbaijan, Iran, Kyrgyzstan, Pakistan, Russia, Tajikistan, and Turkmenistan]
- 5(3). Pedipalpal chela covered with relatively long setae as well as femur (see Beier, 1948: fig. 12; Beier, 1967: fig. 18; Schawaller, 1991: fig. 20) 6
 - Pedipalpal chela covered with markedly shorter setae than those on femur (see Beier, 1951: fig. 30; Beier, 1965: figs. 13–14; Beier, 1967: fig. 17; Mahnert, 2009: figs. 16–17, 21–22; Schawaller, 1994: fig. 65) 8
- 6(5). Trichobothrium *est* on fixed chelal finger located distinctly distal to *isb*; *ist* located closer to *isb* than to *ib* (see Beier, 1967: fig. 18; Schawaller, 1991: fig. 20) 7
 - Trichobothrium *est* on fixed chelal finger located slightly distal to *isb*; *ist* located in midway between *isb* and *ib* (see Beier, 1948: fig. 12) *M. crinitus* Beier, 1948 (♀) [from Indonesia]
- 7(6). Prolateral margin of pedipalpal patella distinctly curved distally (see Schawaller, 1991: fig. 20); pedipalpal femur size 1.43/0.57 mm, and patella 1.39/0.70 mm *M. loebli* Schawaller, 1991 (♂) [from Nepal]
 - Prolateral margin of pedipalpal patella normally curved distally (see Beier, 1967: fig. 18); pedipalpal femur size 1.72–1.90/0.79–0.80 mm, and patella 1.80–2.00/0.78–0.79 mm *M. barbatus* Beier, 1951 (♀) [from Vietnam]
- 8(5). Trichobothrium *est* located at same level as *t*, *t* located close to middle of movable chelal finger (see Schawaller, 1994: fig. 66) *M. trautneri* Schawaller, 1994 (♂) [from Thailand]
 - Trichobothrium *est* located distinctly proximal to *t*, *t* located in distal third of movable chelal finger 9
- 9(8). Pedipalpal chela distinctly plump (chelal hand (with pedicel) ratio = 1.06×) and visually transfigured (see Mahnert, 2009: fig. 17); pedipalpal patella with a prominent median hump; femur and patella of legs III and IV with numerous glandular microsetae; pedal tibia IV with a slightly long seta situated distally *M. glandulosus* Mahnert, 2009 (♂) [from China]

- Pedipalpal chela normal in size and shape (chelal hand (with pedicel) = 1.30–1.60×); pedipalpal patella without a prominent median hump (if present, more or less distinct); femur and patella of legs III and IV generally without glandular microsetae; pedal tibia IV without a slightly long seta situated distally 10
- 10(9). Trichobothrium *ist* on fixed chelal finger located closer to *ib* than to *isb*; *ib* located distinctly distal to *eb* (see Beier, 1965: figs. 13–14; Mahnert, 2009: fig. 22) 11
- Trichobothrium *ist* on fixed chelal finger located closer to *isb* than to *ib*; *ib* located at same level as *eb* (see Beier, 1951: fig. 30; Beier, 1967: fig. 17); pedipalpal femur size 1.72–1.90/0.79–0.80 mm (♀), and 2.15/0.90 mm (♂) ... *M. barbatus* Beier, 1951 (♀♂)
- 11(10). Males with a more or less distinct protuberance on pedipalpal patella; trichobothrium *ist* on fixed chelal finger located very close to *ib*, at same level as *esb* (see Mahnert, 2009: fig. 22) *M. tuberosus* Mahnert, 2009 (♀♂) [from China]
- Males without a protuberance on pedipalpal patella; trichobothrium *ist* on fixed chelal finger located slightly closer to *ib* than to *isb*, distal to *eb* (see Beier, 1965: figs. 13–14).... 12
- 12(11). Pedipalpal size: femur 0.91–1.43/0.44–0.72 mm, patella 0.92–1.50/0.43–0.81 mm, hand (with pedicel) 0.85–1.37/0.53–1.05 mm *M. limatus* Hoff and Parrack, 1958 (♂) [from Papua New Guinea]
- Pedipalpal size: femur 1.60/0.76 mm, patella 1.73/0.78 mm, hand (with pedicel) 1.60/1.19 mm *M. limatus crassus* Beier, 1965 (♂) [from Indonesia]
- 13(1). Pedipalpal patella and chela covered with long setae (see Harvey et al., 2012: fig. 4C) *M. kanneliyensis* Harvey et al., 2012 (♂) [from Sri Lanka]
- Pedipalpal patella and chela covered with short setae 14
- 14(13). Pedipalpal femur distinctly narrow (ratio = 3.90–4.15×) *M. ochotona* Krumpál and Kiefer, 1982 (♀♂) [from Mongolia]
- Pedipalpal femur more or less stout (ratio = 1.90–3.50× ♀♂) 15
- 15(14). Prolateral margin of chelal hand distinctly curved basally, apparently rounded on dorsal view (see Beier, 1932: figs. 144–145; Beier, 1948: figs. 8, 10, 14, 16; Beier, 1951: fig. 28; Beier, 1959: fig. 17; Beier, 1965: fig. 13; Beier, 1967: fig. 15; Beier, 1974: fig. 6; Dashdamirov, 2005: fig. 188; Harvey et al., 2012: fig. 4D; Hoff and Parrack, 1958: fig. 1; Morikawa, 1954: fig. 4; Redikorzev, 1934: fig. 1; Schawaller, 1991: fig. 21; Schawaller, 1994: fig. 64) 16
- Prolateral margin of chelal hand slightly curved basally, not rounded on dorsal view (see Beier, 1966: fig. 2; Beier, 1967: fig. 16) 31
- 16(15). Length of pedipalpal femur more than 1.35 mm 17
- Length of pedipalpal femur less than 1.35 mm ... 22
- 17(16). Chelal hand apparently rounded on dorsal view (see Beier, 1951: fig. 28; Morikawa, 1954: fig. 4) 18
- Chelal hand not rounded on dorsal view (see Beier, 1948: fig. 14; Harvey et al., 2012: fig. 4D) 21
- 18(17). Trichobothrium *est* on fixed chelal finger located distinctly distal to *isb* (see Beier, 1951: fig. 28; Beier, 1967: fig. 15); posterolateral corner of pedal coxa IV with a prominent elongated lobe (see Beier, 1951: fig. 29) *M. titanius* Beier, 1951 (♀♂) [from China and Vietnam]
- Trichobothrium *est* on fixed chelal finger located very close to *isb*, approximately at same level as *isb* (see Morikawa, 1954: figs. 3A, 4); posterolateral corner of pedal coxa IV without a prominent enlarged lobe (see Morikawa, 1954: fig. 3C) *M. ryugadensis* Morikawa, 1954 (♀) [from Japan] 19
- 19(18). Dark brown; pedipalpal femur ratio 2.10–2.60× *M. ryugadensis myophilus* Morikawa, 1954
- Brown; pedipalpal femur ratio 2.50–3.20×..... 20
- 20(19). Pedipalpal femur ratio 2.50–2.90×, chelal (with pedicel) ratio 2.60–2.90×..... *M. ryugadensis naikaiensis* Morikawa, 1957
- Pedipalpal femur ratio 2.90–3.20×, chelal (with pedicel) ratio 3.10–3.40× *M. ryugadensis ryugadensis* Morikawa, 1954
- 21(17). Pedipalpal femur size 1.44/0.55 mm, and patella 1.36/0.53 mm; chela (with pedicel) 3.41× longer than width; movable chelal finger slightly longer than hand (with pedicel) (1.08×); trichobothrium *st* on movable chelal finger distinctly closer to *t* than to *sb* (see Harvey et al., 2012: fig. 4D) *M. kanneliyensis* Harvey et al., 2012 (♀)

- Pedipalpal femur size 1.40/0.59 mm, and patella 1.43/0.65 mm; chela (with pedicel) 3.20× longer than width; movable chelal finger distinctly longer than hand (with pedicel) (1.23×); trichobothrium *st* on movable chelal finger slightly closer to *t* than to *sb* (see Beier, 1948: fig. 14) *M. grandis* (Beier, 1930) [♀ from Java]
- 22(16). Chelal hand (with pedicel) 1.38–1.90× longer than broad 23
- Chelal hand (with pedicel) 2.05× longer than broad *M. mongolicus* (Redikorzev, 1934) (♂) [from Mongolia]
- 23(22). Prolateral face of pedipalpal chela with numerous short setae aggregated on base of fixed chelal finger (see Beier, 1959: fig. 17; Dashdamirov, 2005: fig. 188) *M. pavlovskiyi* Redikorzev, 1949 (♀)
- Grouped setae absent on base of fixed chelal finger (see Beier, 1932: figs. 144–145; Beier, 1948: figs. 8, 10, 14, 16; Beier, 1965: fig. 13; Beier, 1974: fig. 6; Hoff and Parrack, 1958: fig. 1; Schawaller, 1991: fig. 20; Schawaller, 1994: fig. 64) 24
- 24(23). Trichobothrium *ib* on fixed chelal finger located basally (see Beier, 1974: fig. 6; Schawaller, 1994: fig. 65) 25
- Trichobothrium *ib* on fixed chelal finger located subbasally (see Beier, 1932: figs. 144–145; Beier, 1948: figs. 8, 10, 16; Beier, 1965: fig. 13; Hoff and Parrack, 1958: fig. 1; Schawaller, 1991: fig. 21) 26
- 25(24). Cheliceral hand with 5 setae; pedipalpal femur ratio 2.70–2.90× (1.15–1.20/0.40–0.45 mm) *M. soricicola* Beier, 1974 (♀) [from Nepal]
- Cheliceral hand with 7 setae; pedipalpal femur ratio 2.24× (1.30/0.58 mm) *M. trautneri* Schawaller, 1994 (♀)
- 26(25). Trichobothrium *isb* located distinctly proximal to *st*, *est* at same level as *st* (see Beier, 1932: fig. 144; Beier, 1965: fig. 13; Hoff and Parrack, 1958: fig. 1) 27
- Trichobothrium *isb* located approximately at same level as *st*, *est* distal to *st* (see Beier, 1932: fig. 145; Beier, 1948: figs. 8, 10, 16; Schawaller, 1991: fig. 21) 28
- 27(26). Pedipalpal femur ratio 2.30× (1.10–1.18/0.48–0.52 mm); pedal tarsus IV with a long tactile seta situated medially *M. limatus* Hoff & Parrack, 1958 (♀)
- Pedipalpal femur ratio 2.50× (1.29/0.52 mm); pedal tarsus IV with a long tactile seta situated distal to middle *M. grandis* (Beier, 1930) [♀ from Sumatra]
- 28(26). Trichobothrium *ist* on fixed chelal finger approximately located midway between *ib* and *isb* (see Beier, 1948: fig. 8; Schawaller, 1991: fig. 21) 29
- Trichobothrium *ist* on fixed chelal finger distinctly located closer to *ib* than to *isb* (see Beier, 1948: figs. 10, 16; Beier, 1967: fig. 15) 30
- 29(28). Posterolateral corner of pedal coxa IV with an enlarged lobe, looks like a protuberance (see Beier, 1948: fig. 9).....*M. queenslandicus* Beier, 1948 (♀) [from Australia]
- Posterolateral corner of pedal coxa IV without an enlarged lobe, triangular (see Schawaller, 1991: fig. 25) *M. loebli* Schawaller, 1991 (♀)
- 30(28). Pedipalp narrow: femur 0.95/0.36 mm, chelal hand (with pedicel) 0.90/0.48 mm; movable finger 0.92× shorter than hand (with pedicel) *M. papuanus* Beier, 1948 (♀) [from Indonesia]
- Pedipalp stout: femur 0.90–1.30/0.41–0.46 mm, chelal hand (with pedicel) 0.85–1.27/0.62–1.03 mm (♀♂); movable finger as long as or longer than hand (with pedicel) 31
- 31(30). Prolateral margin of pedipalpal femur with a small rounded projection situated basally (see Beier, 1967: fig. 15); movable chelal finger length 1.28–1.40 mm; trichobothrium *est* on fixed chelal finger distinctly distal to *isb* (see Beier, 1967: fig. 15) *M. titanius* Beier, 1951 [♀ from Vietnam]
- Basal margin of pedipalpal femur straight (see Beier, 1948: fig. 16); movable chelal finger length 0.85–1.30 mm; trichobothrium *est* on fixed chelal finger slightly distal to *isb* (see Beier, 1948: fig. 16) *M. himalayensis* (Ellingsen, 1914) (♀♂) [from China, India, and Nepal]
- 31(15). Pedipalpal femur ratio 2.90× (1.38/0.48 mm), and patella 3.10× (1.43/0.46 mm); trichobothrium *est* on fixed chelal finger located slightly distal to *isb* (see Beier, 1966: fig. 2); pedal tarsus IV with a long tactile seta situated distal to middle *M. philippinus* Beier, 1966 (♀) [from Philippines]

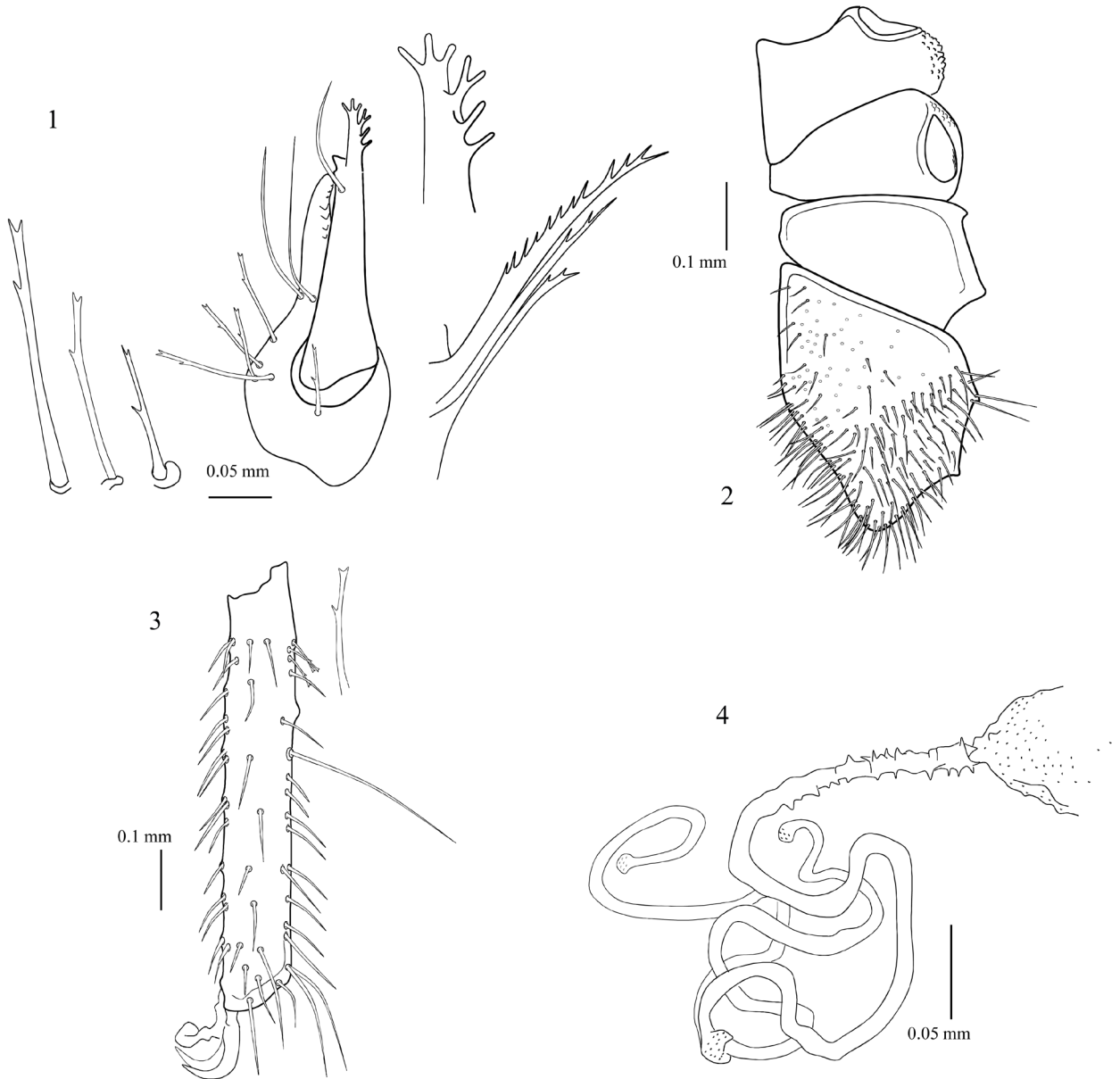
- Pedipalpal femur ratio $3.10\times$ ($\sigma^1.40-1.60/0.45-0.52$ mm)- $3.50\times$ ($\sigma^1.27-1.45/0.36-0.41$ mm), and patella $2.30-2.60\times$ ($\sigma^1.40-1.50/0.54-0.65$ mm)- $2.60-2.80\times$ ($\sigma^1.18-1.27/0.42-0.48$ mm); trichobothrium *est* on fixed chelal finger situated distinctly distal to *isb* (see Beier, 1967: fig. 16); pedal tarsus IV with a long tactile seta situated close to middle *M. vietnamensis* Beier, 1967 ($\sigma^1\sigma^2$) [from China and Vietnam]

Megachernes pavlovskiyi Redikorzev, 1949
Megachernes pavlovskiyi Redikorzev, 1949: 651-652, figs. 13-15.

Megachernes caucasicus Krumpál, 1986: 170-171, figs. 16-22 (synonymized by Schawaller and Dashdamirov, 1988: 43)

Megachernes afghanicus Beier, 1959: 274-275, fig. 17. Syn. nov.

Material examined. IRAN: Hormozgan Province: 1 σ^2 , Geno Protected Area [27°24'35"N, 56°07'16"E, altitude



Figures 1-4. *Megachernes pavlovskiyi* Redikorzev, 1949, σ^2 : 1- chelicera, lateral aspect (showing rallum, galea, and setae on hand); 2- left pedal coxae, ventral aspect (showing posterolateral corner of coxa IV); 3- pedal tarsus IV; 4- spermatheca.

1800 m], Bandar-e-Abbass, Kurdbasto cave, under stone, 14 April 2015, leg. M. Nassirkhani (IAUA).

Measurements in mm (length/width): Carapace: 1.32/1.55. Pedipalp: trochanter 0.76/0.42; femur 1.32/0.44; patella 1.27/0.51; chela (with pedicel) 2.15/0.70; chela (without pedicel) 2.05; hand (with pedicel) L.1.17; movable finger L. 1.05. Leg I: trochanter: 0.29/0.22; femur 0.40/0.23; patella 0.66/0.19; tibia 0.74/0.13; tarsus 0.56/0.11. Leg IV: trochanter 0.59/0.27; femur 0.40/0.21; patella 0.98/0.24; femur + patella 1.27; tibia 1.15/0.15; tarsus 0.76/0.12.

The present key serves for identification of the described species belonging to the genus *Megachernes*. The key can be used for the identification of females, as well as many males, except those that belong to *M. crinitus* Beier, 1948, *M. papuanus* Beier, 1948, *M. penicillatus* Beier, 1948, and *M. queenslandicus* Beier, 1948, which are still unknown. Some species, e.g., *M. grandis* (Beier, 1930), *M. titanius* Beier, 1951, and *M. barbatus* Beier, 1951 may be identified through different key couplets, because there are differences between the types and the subsequently described material. For example, in *M. grandis*, the specimen collected from Java (Indonesia) (Beier, 1948) is distinctly larger than the holotype (Beier, 1930).

The newly collected female from Iran was attributed to *M. afghanicus* based on its morphometric and morphological characters (Figures 1–8), especially the pedipalpal femur length. The possibility of synonymy between *M. pavlovskyi* and *M. afghanicus* was first mentioned by Dashdamirov (2005).

The original description of *M. afghanicus* and the published descriptions of *M. pavlovskyi* show no significant morphometric differences; they can be considered within the variation range of the species; for example, the pedipalpal femur size is 1.01/0.40 mm for the Pakistani female (Dashdamirov, 2005), 0.90–1.20/0.28–0.39 mm for the type and the females of *M. pavlovskyi* reported from Iran (Redikorzev, 1949; Christophoryová et al., 2013), 1.26/0.40 mm for the female type of *M. afghanicus* (Beier 1959), and 1.32/0.44 mm for the newly collected female from Iran.

There were no obvious differences between the cheliceral morphology (Figure 1) of *M. pavlovskyi* and *M. afghanicus*; the cheliceral hand bears 7 setae (♀), the rallum contains 3 blades, and the serrula exterior consisted of 23–24 blades in *M. pavlovskyi* and 21 blades in *M. afghanicus* (Redikorzev, 1949; Beier, 1959; Dashdamirov, 2005; Christophoryová et al., 2013). The serrula exterior of the newly collected specimen from Iran consisted of 24 blades.

The posterolateral corner of pedal coxae IV (Figure 2) was described as an enlarged and rounded lobe for both species (Redikorzev, 1949; Beier, 1959; Christophoryová et al., 2013), as is the case for all species of the genus. The position of the tactile seta on pedal tarsus IV has

been reported as occurring in the middle of the segment in *M. pavlovskyi* (Christophoryová et al., 2013) and *M. afghanicus* (Beier, 1959), but it is situated slightly proximal to the middle in the new specimen from Iran (Figure 3).

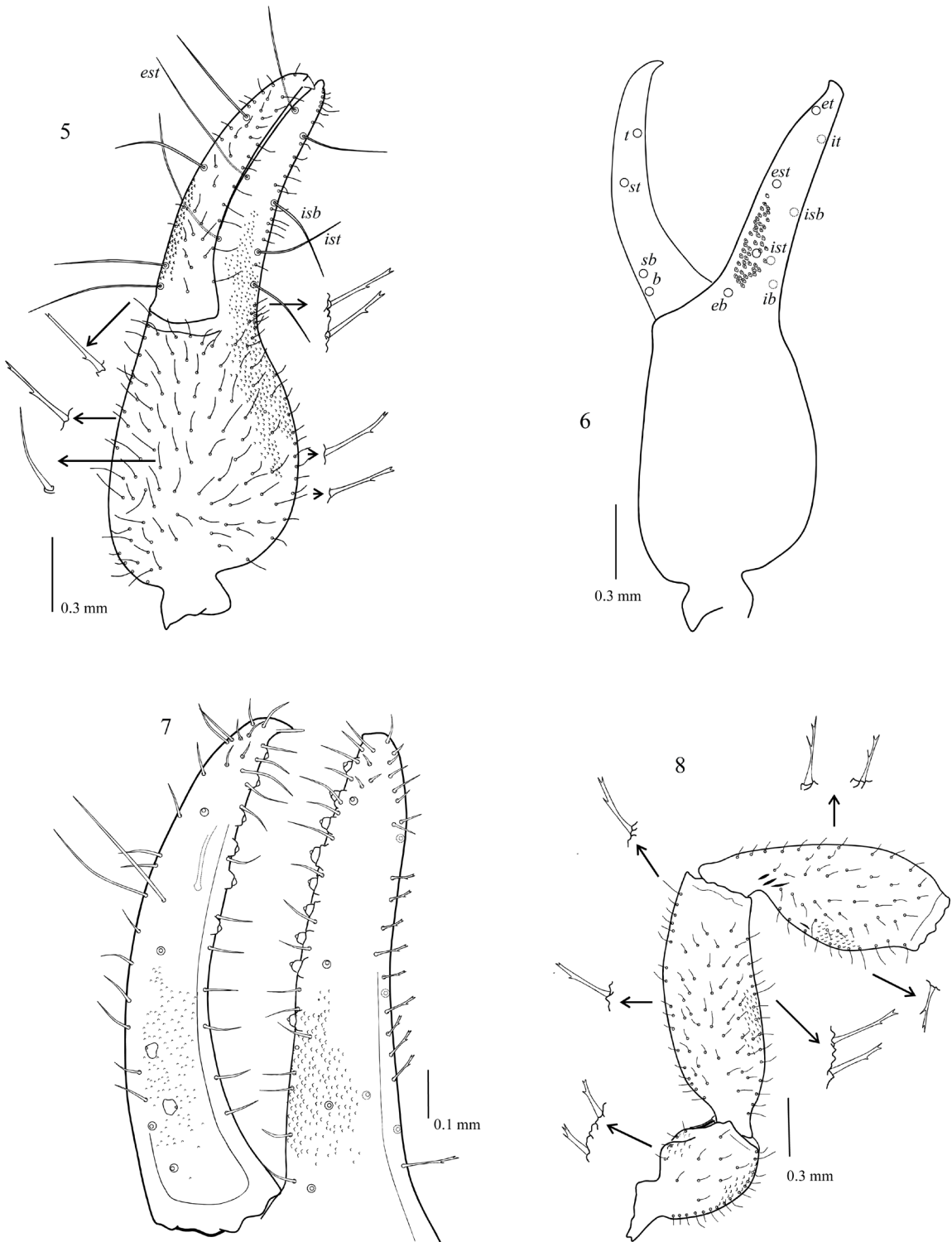
The shape of the spermatheca is an important generic characteristic for this genus, but was not described for *M. afghanicus* by Beier (1959). Based on the newly collected female from Iran, it is T-shaped, extremely elongated, and slightly expanded terminally (Figure 4), as described for *M. pavlovskyi* by Christophoryová et al. (2013).

Noticeably, the trichobothrial positions on the fixed chelal finger showed slight variation in the 2 species, with the trichobothrium *isb* located distinctly proximal to *est* (judging from Schawaller and Dashdamirov, 1988: fig. 62), or slightly distal to *isb* (judging from Dashdamirov and Schawaller, 1992: fig. 12; Dashdamirov, 2005: fig. 188) in *M. pavlovskyi*, while in *M. afghanicus*, trichobothrium *isb* is located at the same level as *est* in the male and slightly proximal to *est* in the female (judging from Beier, 1959: fig. 17; Figures 5 and 6).

The movable chelal finger of the types of *M. afghanicus* possesses 4–5 prolateral accessory teeth (Beier, 1959), whereas the newly collected specimen from Iran has 6 such teeth (Figure 7). In *M. pavlovskyi*, there were 8–11 such teeth in the adults from Iran (Christophoryová et al., 2013), and 5 on the female from Pakistan (Dashdamirov, 2005). It appears that the chelal accessory teeth may vary within a species and thus cannot be considered as an important character for distinguishing the species.

The pedipalpal setation (Figures 5 and 8) differs slightly between the 2 species; e.g., in the male type of *M. afghanicus*, the pedipalpal femur is covered by long setae, and the patella and chelal hand are covered with shorter setae than those on the femur (judging from Beier, 1959: fig. 17). A similar setae pattern was reported on the male of *M. pavlovskyi* (judging from Schawaller and Dashdamirov, 1988: fig. 62; Christophoryová et al., 2013: fig. 3B). In the females of both species, all pedipalpal segments are covered by short dentate setae (judging from Beier, 1959: fig. 17; Dashdamirov, 2005: fig. 188; Figures 5 and 8). The presence of grouped short setae at the base of the fixed chelal finger in dorsal view (judging from Beier, 1959: fig. 17; Dashdamirov, 2005: fig. 188; Figure 5) is another similarity between the species.

Due to the absence of distinct morphological differences especially with respect to the chelal shape, the pedipalpal setation, the structure of the chelicerae and spermatheca, and the shape of the posterolateral corner of leg IV, the presence of small and undetermined differences in size, and also the possibility of trichobothrial pattern variation within the species, *M. afghanicus* is here considered as a new junior subjective synonym of *M. pavlovskyi*.



Figures 5–8. *Megachernes pavlovskyi* Redikorzev, 1949, ♀: 5- right pedipalpal chela, retrolateral dorsal aspect (granulation pattern not shown completely); 6- left pedipalpal chela, ventral aspect; 7- chelal fingers, ventral aspect (showing internal accessory teeth); 8- basal segments of pedipalp, dorsal aspect (granulation pattern not shown completely).

Nomenclatural acts

This work and the nomenclatural acts it contains have been registered in ZooBank. The ZooBank Life Science Identifier (LSID) for this publication is: <http://zoobank.org/lcid:zoobank.org:pub:242300E6-9DCD-4462-A9F8-24786EC1DAEB>.

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