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FATİH SEZEK

MUHLİS ÖZKAN

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A New Record For The Turkish Pseudoscorpion Fauna; *Lamprochernes savignyi* (Simon, 1881) (Arachnida, Pseudoscorpionida)

Fatih SEZEK[1,*], Muhlis ÖZKAN[2]

[1]Atatürk University, Kâzım Karabekir Education Faculty, Department of Primary Education, 25240 Erzurum - TURKEY

[2]Uludağ University, Education Faculty, Department of Primary Education, 16059 Bursa - TURKEY

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Abstract: The morphological features of species, and adult and developmental stages of *Lamprochernes savignyi* (Simon, 1881), newly recorded for the Turkish Pseudoscorpion fauna, are given.

Key Words: Pseudoscorpionida, new record, *Lamprochernes*, Turkey

Türkiye Yalancıakrep Faunası İçin Yeni Bir Kayıt; Lamprochernes savignyi (Simon, 1881) (Arachnida, Pseudoscorpionida)

Özet: Türkiye faunası için yeni bir kayıt olan, *Lamprochernes savignyi* (Simon, 1881)'nin tür özellikleri ve gelişim safhalarının morfolojik özellikleri verilmiştir.

Anahtar Sözcükler: Pseudoscorpionida, Yeni kayıt, *Lamprochernes*, Türkiye

Introduction

The genus *Lamprochernes* was given by Tömösváry in 1882, with the type species *Lamprochernes nodosus* (Schrank, 1803). Worldwide, 11 species of the genus *Lamprochernes* are known (Harvey, 1990). In Turkey, 2 species, *L. nodosus* (Schrank, 1803) and *L. chyzeri* (Tömösváry, 1882) have been reported by Beier (1949, 1963, and 1965). The third species, as a new record for the Turkish fauna, *L. savignyi* (Simon, 1881) is given in this paper, based on specimens collected from Erzincan. The structural features of the developmental stages of this species are provided.

Materials and Methods

Pseudoscorpions were collected from litter, dried dung hills, and straw with a Tullgren funnel. They were preserved in 70-80% ethanol and were then dissected, cleared in 50% lactic acid for 1 h, and mounted on microscope slides for detailed examination. Figures (1A-D, 2A-H, and 3A-D) have been drawn using a Nikon type 104 microscope. All measurements are given in millimeters (mm) as an average of 4 specimens. Figures in front of square brackets are length/width ratios. In square brackets, first figure is the mean length, the figure in parenthesis is the range of length, the figure following the slash is the mean width, and the last figure in parenthesis is the range of width.

Examined materials were deposited in the Zoological Museum of Atatürk University, Erzurum, Turkey.

Results

Lamprochernes savignyi (Simon, 1881)

Female

Body, red-brown, and length 2.380 (2.179-2.581). Carapace 1.1 [0.543 (0.516-0.569)/ 0.485 (0.474-

* E-mail: fsezek@yahoo.com

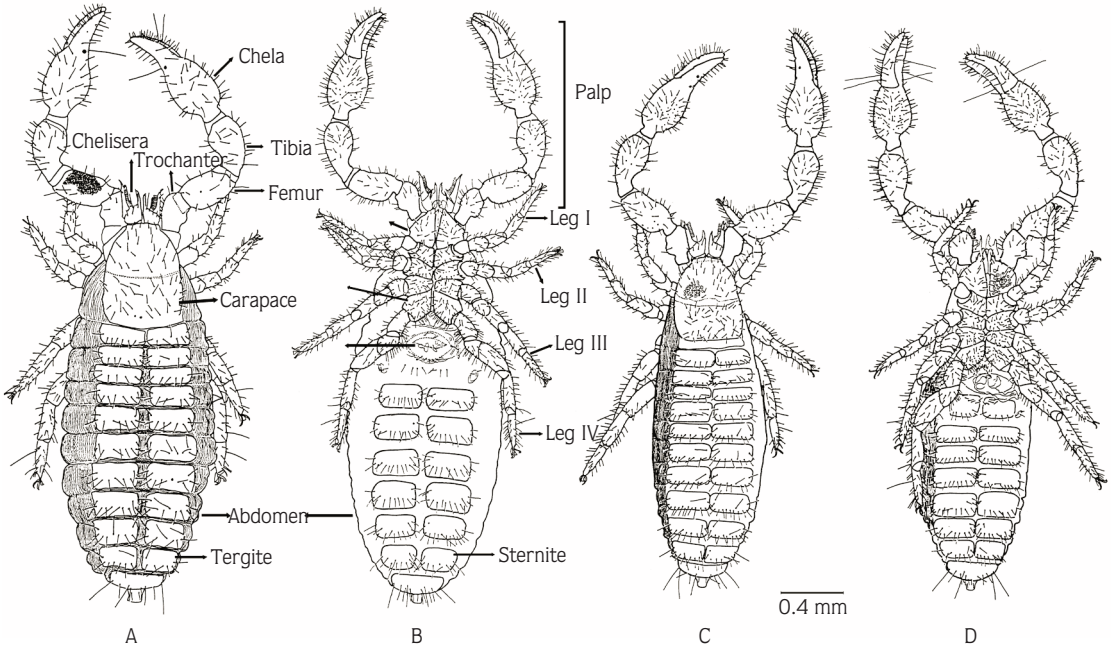

Figure 1. *Lamprochernes savignyi*: Female; A) Dorsal view, B) Ventral view. Male; C) Dorsal view, D) Ventral view.

0.495)]. No eyes or epistome. Carapacal chaetotaxy 6-4-8-6-4-2-6-2-4-6-6-4-10-4-8-12 (Figure 1A and B). Spinneret very well-developed. Serrula exterior on chelicera composed of 17 setae. Flagellum with 3 setae (Figure 2A and B).

Palp. Fixed finger with 31 or 32, and movable finger with 32-38 teeth (Figure 3A). Trochanter 1.67 [0.273 (0.270-0.275)/ 0.163 (0.158-0.168)]; femur 2.1 [0.381 (0.350-0.411)/ 0.183 (0.175-0.190)]; tibia 2 [0.411 (0.400-0.421)/ 0.206 (0.200-0.211)]; chela (without pedicel) 2.68 [0.722 (0.695-0.748)/ 0.269 (0.263-0.274)]; chelal depth 0.269 (0.253-0.284); hand 1.36 [0.367 (0.358-0.375)/ 0.269 (0.263-0.274)]; movable finger 0.370 (0.360-0.380). Tergal chaetotaxy 22-20-24-26-24-28-26-26-24-22-12-2. Maxilla 22-25, coxa I 12-15, coxa II 15-18, coxa III 18-19, coxa IV 33-42 setae.

Legs I. Trochanter 1.2 [0.118 (0.110-0.125)/ 0.098 (0.095-0.100)]; basifemur 0.97 [0.100 (0.090-0.110)/ 0.103 (0.100-0.105)]; telofemur 2.03 [0.193 (0.175-0.210)/ 0.095 (0.095)]; tibia 3.2 [0.208 (0.195-0.221)/ 0.065 (0.062-0.068)]; tarsus 4.57 [0.215 (0.205-0.225)/ 0.047 (0.045-0.048)]. *Leg IV.* Trochanter 1.77 [0.196 (0.170-0.221)/ 0.111 (0.105-0.116)]; basifemur 1.6 [0.173 (0.160-0.185)/ 0.108 (0.100-0.116)]; telofemur 2.5 [0.303 (0.285-0.320)/ 0.121 (0.115-0.126)]; tibia 3.7 [0.305 (0.285-0.325)/ 0.083 (0.080-0.085)]; tarsus 4.4 [0.260 (0.245-0.275)/ 0.059 (0.055-0.063)]. 28-30 setae on genital area. Sternal chaetotaxy (8-10): (25-28): (18-30): (20-32): (26-36): (18-28): (10-22): (10): (2).

Male

Body length 1.906 (1.758-2.054). Carapace 1.01 [0.537 (0.484-0.590)/ 0.527 (0.400-0.653)]. Carapacal chaetotaxy 6-2-4-6-2-2-2-4-6-6-2-5-8-6-10-4-4-4-2-10 (Figures 1 C and D). Serrula exterior on chelicera composed of 16 setae (Figure 2 C).

Palp. fixed finger with 30-35 and movable finger with 32 or 33 teeth. Trochanter 1.7 [0.260 (0.245-0.274)/ 0.152 (0.133-0.170)]; femur 1.94 [0.345 (0.320-0.369)/ 0.178 (0.165-0.190)]; tibia 2 [0.385 (0.360-0.410)/ 0.188 (0.175-0.200)]; chela (without pedicel) 2.7 [0.648 (0.600-0.695)/ 0.242 (0.221-0.263)]; chelal depth 0.237 (0.215-0.258); hand 1.41 [0.342 (0.326-0.358)/ 0.242 (0.221-0.263)]; movable finger 0.350 (0.325-0.375). Tergal chaetotaxy 20-18-16-22-22-20-24-22-18-16-6-2. Maxilla 19-24, coxa I 12-16, coxa II 14-19, coxa III 15-18, and coxa IV 25-35 setae.

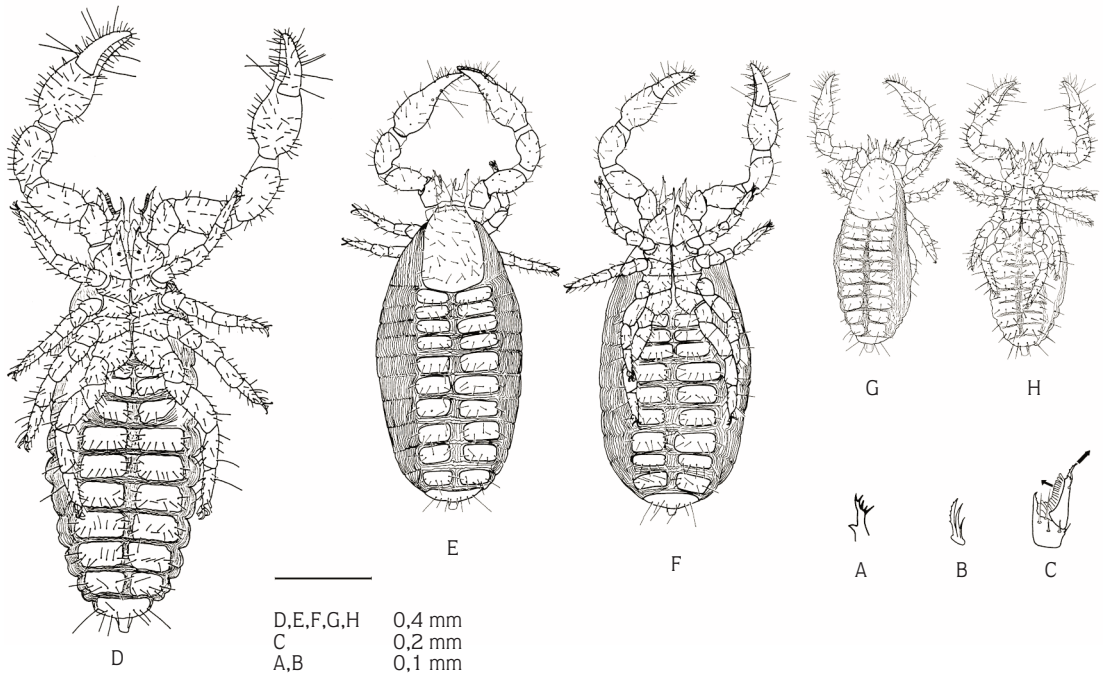

Figure 2. *Lamprochernes savignyi*: Female; A) Spinneret, B) Flagellum of cheliser. Male; C) Dorsal view of chelicer. Tritonymph; D) Ventral view. Deutonymph; E) Dorsal view, F) Ventral view. Protonymph; G) Dorsal view, G) Ventral view.

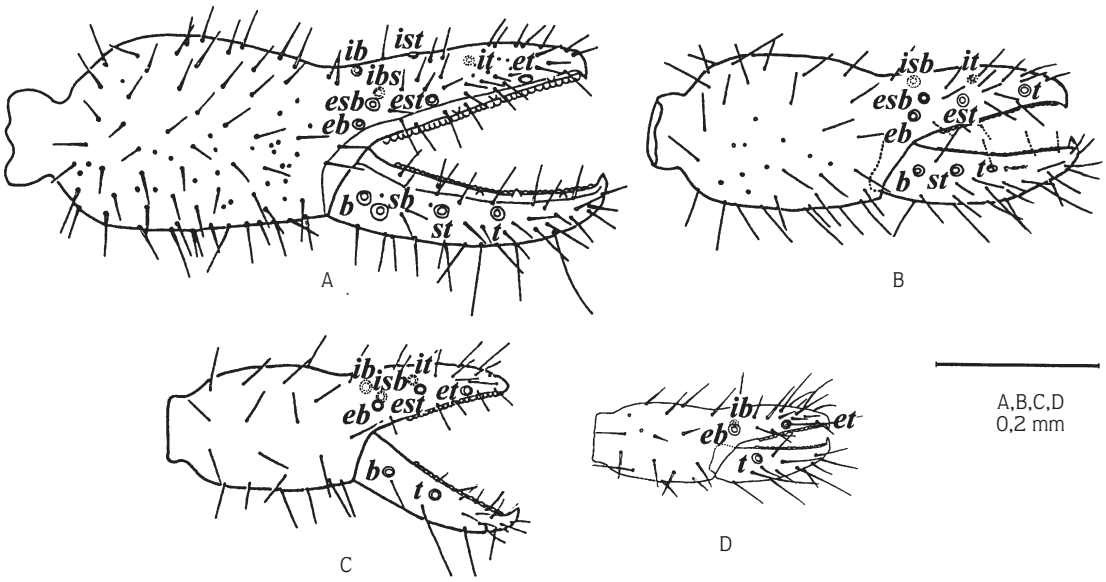

Figure 3. *Lamprochernes savignyi*: Lateral view of palpal chela; A) Female, B) Tritonymph, C) Deutonymph, D) Protonymph. Tactile setae on movable finger; (*b*) basal, (*sb*) subbasal, (*st*) subterminal, (*t*) terminal. Tactile setae on fixed finger; (*eb*) exterior basal, (*esb*) exterior subbasal, (*est*) exterior subterminal, (*et*) exterior terminal, (*ib*) interior basal, (*isb*) interior subbasal, (*ist*) interior subterminal, (*it*) interior terminal.

Leg I. Trochanter 1.17 [0.108 (0.100-0.116)/ 0.092 (0.084-0.100)]; basifemur 1 [0.098 (0.090-0.105)/ 0.098 (0.090-0.105)]; telofemur 2.16 [0.190 (0.175-0.205)/ 0.088 (0.080-0.095)]; tibia 2.98 [0.188 (0.170-0.205)/ 0.063 (0.057-0.068)]; tarsus 4.5 [0.200 (0.185-0.215)/ 0.044 (0.040-0.048)]; *Leg IV.* trochanter 1.05 [0.110 (0.130-0.190)/ 0.105 (0.095-0.115)]; basifemur 1.54 [0.154 (0.140-0.168)/ 0.100 (0.095-0.105)]; telofemur 2.22 [0.273 (0.255-0.290)/ 0.123 (0.115-0.130)]; tibia 3.4 [0.270 (0.250-0.290)/ 0.080 (0.075-0.084)]; tarsus 4.2 [0.238 (0.215-0.260)/ 0.057 (0.050-0.063)]. 34-40 setae on genital area. Sternal chaetotaxy 10-24-26-24-24-24-22-12-2.

Tritonymph

Body length 1.716 (1.558-1.874). Carapace 1.32 [0.467 (0.450-0.484)/0.353 (0.337-0.369)]. Carapacal chaetotaxy 6-4-4-4-4-4-4-6-8-2-9-3-5-9 (Figure 2D). Serrula exterior on chelicera composed of 15-17 setae.

Palp. Fixed finger with 21-23 and movable finger with 20-26 teeth (Figure 3B). Trochanter 1.5 [0.180 (0.165-0.195)/ 0.119 (0.110-0.137)]; femur 1.8 [0.252 (0.220-0.284)/ 0.139 (0.130-0.147)]; tibia [0.272 (0.263-0.280)/ 0.149 (0.140-0.157)]; chela (excluding pedicel) 2.55 [0.493 (0.470-0.516)/ 0.193 (0.175-0.210)]; depth 0.200 (0.190-0.210); hand 1.31 [0.253 (0.231-0.274)/ 0.193 (0.175-0.210)]; movable finger 0.265 (0.245-0.285). Tergal chaetotaxy 16-16-14-16-18-18-20-20-17-15-8-2. Maxilla 17, coxa I 9-11, coxa II 10-12, coxa III 10 or 11, and coxa IV 14-16 setae.

Leg I. Trochanter 1.04 [0.073 (0.060-0.085)/ 0.070 (0.065-0.075)]; basifemur 1.14 [0.083 (0.075-0.090)/ 0.073 (0.070-0.075)]; telofemur 2.05 [0.133 (0.115-0.150)/ 0.065 (0.065)]; tibia 2.51[0.133 (0.120-0.145)/ 0.053 (0.050-0.055)]; tarsus 3.45 [0.145 (0.135-0.155)/ 0.042 (0.040-0.044)]. *Leg IV.* Trochanter 1.45 [0.133 (0.125-0.140)/ 0.092 (0.088-0.095)]; basifemur 1.45 [0.123 (0.115-0.130)/ 0.085 (0.080-0.090)]; telofemur 2.14 [0.193 (0.180-0.205)/ 0.090 (0.085-0.095)]; tibia 2.4 [0.188 (0.175-0.200)/ 0.078 (0.065-0.090)]; tarsus 3.3 [0.175 (0.160-0.190)/ 0.053 (0.050-0.055)]. Genital area with 4 or 5 setae. Sternal chaetotaxy 6-8-18-18-18-20-20-14-8-2.

Deutonymph

Body length 1.288 (1.216-1.359). Carapace 1.3 [0.385 (0.369-0.400)/0.295 (0.284-0.305)]. Carapacal chaetotaxy 6-4-4-2-2-2-2-2-4-4-2-8-2-8 (Figure 2E and F). Serrula exterior on chelicera composed of 13 setae.

Palp. Fixed finger with 19-23 and movable finger with 20 or 21 teeth (Figure 3C). Trochanter 1.47 [0.140 (0.130-0.150)/0.095 (0.090-0.100)]; femur 1.7 [0.180 (0.175-0.185)/0.105 (0.100-0.110)]; tibia 1.8 [0.208 (0.200-0.215)/0.116 (0.105-0.118)]; chela (excluding pedicel) 2.77 [0.388 (0.380-0.395)/ 0.140 (0.135-0.145)]; depth 0.148 (0.145-0.150); hand 1.34 [0.188 (0.180-0.195)/ 0.140 (0.135-0.145)]; movable finger 0.205 (0.200-0.210). Tergal chaetotaxy 11-12-12-12-12-12-12-12-12-12-6-2. Maxilla 12 or 13, coxa I 6, coxa II 7, coxa III 7 or 8, and coxa IV 7 or 8 setae.

Leg I. Trochanter 1.1 [0.070 (0.065-0.075)/ 0.063 (0.55-0.70)]; basifemur 1.1 [0.073 (0.065-0.080)/ 0.066 (0.065-0.067)]; telofemur 1.7 [0.090 (0.080-0.100)/ 0.054 (0.050-0.057)]; tibia 2.04 [0.098 (0.095-0.100)/ 0.048 (0.045-0.050)]; tarsus [0.119 (0.115-0.123)/ 0.039 (0.038-0.040)]. *Leg IV.* Trochanter 1.3 [0.100 (0.085-0.115)/ 0.075 (0.070-0.080)]; basifemur 1.44 [0.098 (0.095-0.100)/ 0.068 (0.065-0.070)]; telofemur 2.05 [0.150 (0.145-0.155)/ 0.073 (0.070-0.075)]; tibia 2.55 [0.148 (0.145-0.150)/ 0.058 (0.055-0.060)]; tarsus 3.09 [0.145 (0.140-0.150)/ 0.047 (0.044-0.050)]. Genital area without setae. Sternal chaetotaxy 4-10-14-14-14-14-14-12-8-2.

Protonymph

Body length 0.948 (0.906-0.989). Carapace 1.1 [0.295 (0.280-0.310)/ 0.270 (0.240-0.300)]. Carapacal chaetotaxy 6-2-2-4-2-2-2-2-2 (Figure 2G, H). Serrula exterior on chelicera composed of 11 or 12 setae.

Palp. Fixed finger with 16-20 and movable finger with 15-17 teeth (Figure 3D). Palp: trochanter 1.44 [0.105 (0.100-0.110)/ 0.073 (0.070-0.075)]; femur [0.140 (0.125-0.155)/ 0.084 (0.073-0.095)]; tibia 1.83 [0.143 (0.140-0.145)/ 0.078 (0.075-0.080)]; chela (without pedicel) 2.9 [0.285 (0.270-0.300)/ 0.098 (0.95-0.100)]; depth 0.100 (0.095-0.105); hand 1.4 [0.138 (0.135-0.140)/ 0.098 (0.095-0.100)]; movable finger 0.158 (0.155-0.160). Tergal chaetotaxy 6-6-6-6-6-6-6-6-6-4-2. Maxilla 7 or 8, coxa I 4, coxa II 5, coxa III 5, coxa IV 5 or 6 setae.

Leg I. Trochanter 0.94 [0.050 (0.045-0.055)/ 0.053 (0.050-0.055)]; basifemur 1.08 [0.053 (0.040-0.065)/ 0.049 (0.048-0.050)]; telofemur 1.6 [0.070 (0.65-0.075)/ 0.045 (0.045)]; tibia 1.8 [0.073 (0.070-

0.075)/ 0.040 (0.040)]; tarsus 2.8 [0.103 (0.100-0.105)/ 0.037 (0.035-0.038)]. *Leg IV.* Trochanter 1.2 [0.075 (0.065-0.085)/ 0.062 (0.058-0.065)]; basifemur 1.5 [0.075 (0.070-0.080)/ 0.050 (0.045-0.055)]; telofemur 1.7 [0.100 (0.100)/ 0.058 (0.055-0.060)]; tibia 2.23 [0.105 (0.100-0.110)/ 0.047 (0.045-0.048)]; tarsus 3.24 [0.120 (0.115-0.125)/ 0.037 (0.035-0.038)]. Genital area without seta. Sternal chaetotaxy 2-4-6-6-6-6-6-4-2.

Material examined: 55♀♀, 60♂♂, 27 tritonymphs, 26 deutonymphs, and 89 protonymphs from dried dung hill and straw, Çukurkuyu, Erzincan, 22.10.2000; 1♀♀, from the litter of *Rubus fruticosus* and an unidentified shrub, Otlukbeli, Erzincan.

Distribution: Australia (Australian Capital Territory, New South Wales, Queensland, and Victoria), Brazil (Mato Grosso), Chad, China, Denmark, Ecuador, Egypt, Great Britain, Grenada, India, Ireland, Israel, Japan, Kenya, Mauritius, New Zealand, Paraguay, Réunion, Seychelles, South Africa, Sudan, Uruguay, U.S.A (California, Indiana, and Kansas), Nepal, The Canary Islands (Harvey 1990, Mahnert 1997, Schawaller 1991), and Turkey (current paper).

Discussion

L. savignyi (Simon, 1881) is known to be quite widespread and Harvey (1990) summarized the known records. Mahnert (1997) and Schawaller (1991) added localities from Nepal, China, The Canary Islands, and New Zealand. Schawaller (1991) stated that it should be determined if *L. savignyi* (Simon, 1881) really concerns only one bio species. This cosmopolitan synanthropic species is frequently found in compost heaps (Mahnert, 1997) and may be colonized.

L. chyzeri is known throughout Europe and in Asia (Georgia, Kazakhstan, and Latvia) and *L. nodosus* has been reported all over Europe and in Africa (Tunusia and Zaire) and Asia (Armenia, Azerbaijan, Georgia, Kırghizia, and R.S.F.S.R), but *L. savignyi* is the most widespread of the 3 species (Harvey, 1990).

These 3 species' palpal femurs and tibias differ in size. The palpal femur and tibia of *L. nodosus* are both 0.5, whereas in *L. chyzeri*, they are both 0.6 (Beier 1932, 1949). In *L. savignyi*, the palpal femur is 0.363 and the tibia is 0.398. *L. savignyi* closely resembles *L. nodosus* and *L. chyzeri* regarding all features given by Beier (1932), but is slightly smaller and has more slender palps.

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