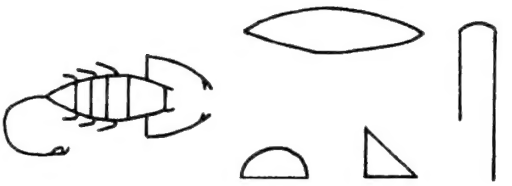

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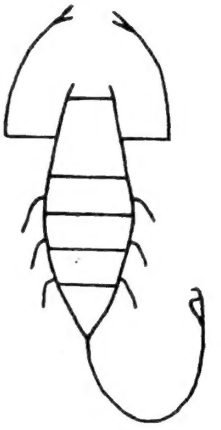

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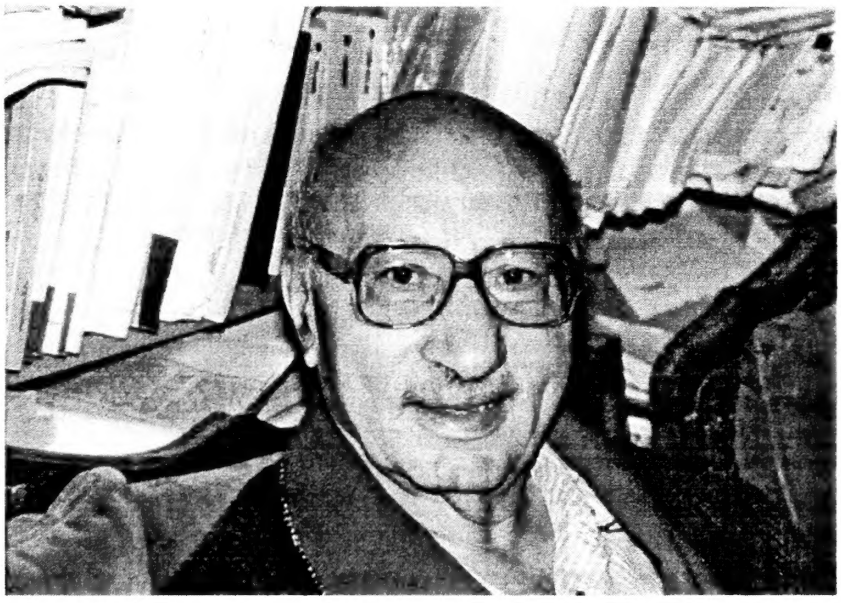
Between sorrow and happiness

On the 17th of April 2007, Kamal El-Din M. El-Hennawy departed our world. He was a poet, a defender, a revolutionist, and self-educated scientist. His English-Arabic "Medical terms dictionary" (1978) and "Biological terms dictionary" (1990) are still appreciated by Arab universities. He supported *SERKET* since the beginning of the idea. In August 2007, *SERKET* sadly celebrated its 20th anniversary without him.



Kamal El-Din M. El-Hennawy (1995)
12 January 1920 - 17 April 2007

Seek out—less often sought than found-
A soldier's grave, for thee the best;
Then look around, and choose thy ground,
And take thy rest.

(Lord Byron - On this day I complete my thirty-sixth year)

****

In February 2007, the Turkish Arachnological Society was founded. The first issue of its journal, *Turkish Journal of Arachnology*, is ready for publication these days. Tebrik - Congratulations !

Thus, arachnological activities continue between sorrow for those who departed and happiness for new born publications and more fruitful scientific activities in the field of arachnology.

The Editor

Serket (2008) vol. 11(1): 2-6.

Some harvestmen records (Arachnida: Opiliones) from Niğde Province of Turkey

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Abstract

Four species of order Opiliones, *Homolophus funestus* L. Koch, 1877, *Oligolophus hanseni* (Kraepelin, 1896), *Oligolophus tridens* (C.L. Koch, 1836) and *Opilio redikorzevi* Roewer, 1956 are recorded for the first time from Turkey. The characteristic body parts of these species, and *Phalangium punctipes* (L. Koch, 1878), are measured and illustrated, and data of their distribution are given. These records increase the number of opilionids in Turkey to 33 species.

Keywords: Arachnida, Opiliones, New records, Turkey.

Introduction

Opiliones are commonly called shepherd spiders, harvest spiders or harvestmen. They have round bulbous bodies and very long legs. Their cryptic colouration affords protection from predators. They are usually able to repel their attackers with a repugnant secretion from odiferous glands. They are normally active during the night. Harvestmen feed on a wide variety of creatures, including small insects and other invertebrates, dead animals and plants. They can be found in a wide variety of habitats, including forests, brushy areas, open grasslands and even disturbed areas. Both Turkish and foreign researches made some important contributions to the Turkish harvestmen fauna. Up to now, 6125 species of 1638 genera of Opiliones have been described in the world (Hallan, 2005). There are only 29 species known from Turkey (Kulczyński, 1903; Nosek, 1905; Roewer, 1959; Gruber, 1968, 1969, 1976, 1979, 1998; Chevrizov, 1979; Bayram, 1994; Snegovaya, 1999; Bayram *et al.*, 2005; Bayram & Çorak, 2007; Çorak & Bayram, 2007). In this study, four species of Family Phalangiidae Latreille, 1802 are recorded for the first time from Turkey. The characteristic body parts of these species, and *Phalangium punctipes* (L. Koch, 1878), are measured and illustrated, and data on their distribution are given. With these records, the number of opilionids in Turkey has increased to 33 species.

Material and Methods

This study was carried out in different periods between April and September 2002-2004 in Niğde. Examined specimens were preserved in 70% ethanol and deposited in the Arachnology Museum of Niğde University (NUAM). The identification was made with a ZX61 Olympus stereomicroscope. Identification references consulted are: Chevrizov (1979) and Babaşoğlu (1999). All measurements are in millimetres.

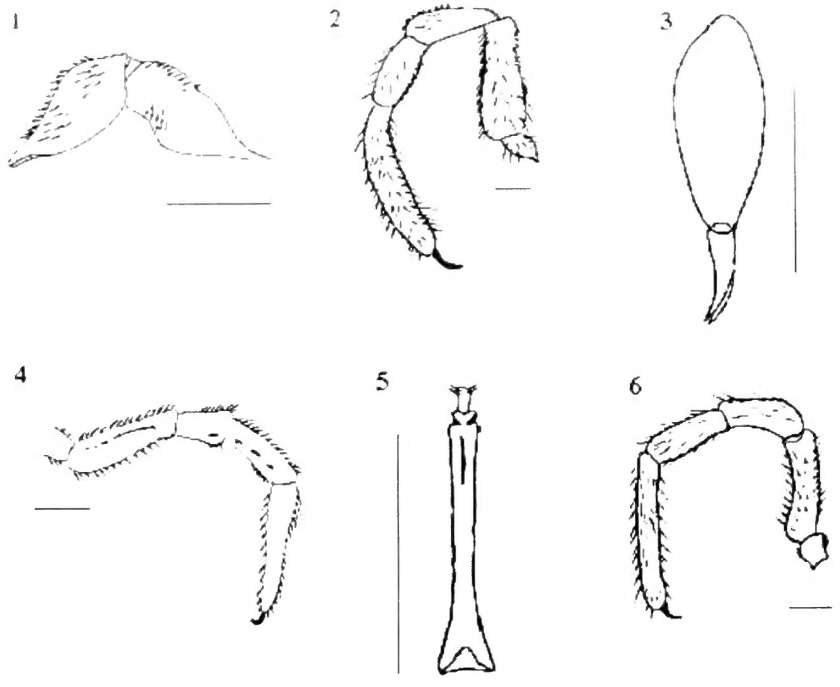
Abbreviations used: AL = abdominal portion length, Bs = basal segment, CL = carapace length, Ds = distal segment, F = femur, M = metatarsus, P = patella, Ti = tibia, TL = total length, Tr = tarsus.

Results

Homolophus funestus L. Koch, 1877 (Figs.1-2)
Material examined. Turkey: Niğde province: 1♀, Ulukışla, 37°33'N, 34°28'E, 25.08.2003; 1♀, Fertek, Özbelde, 37°58'N, 34°39'E, 06.06.2003; 3♀♀, Kemerhisar, 37°49'N, 34°34'E, 29.09.2003; 1♀, Çamardı, 34°49'N, 34°59'E, 23.05.2003; 1♀, Bor, 37°53'N, 34°33'E, 17.08.2003; 3♀♀, Altunhisar, 37°59'N, 34°22'E, 17.05.2003.
Measurements. Female. Dorsal scutum: CL 2.3, AL 3.7; Chelicera: Bs 0.8, Ds 2.2. Pedipalp [TL (F+P+Ti+Tr)]: 6.3 (1.7+0.8+1.1+2.7); Legs [TL (F+P+Ti+M+Tr)]: I 14.6 (3.0+1.0+2.4+2.3+5.9), II 19.3 (4.3+1.6+3.9+3.3+6.2), III 15.1 (2.5+1.1+2.3+3.0+6.2), IV 22.7 (4.0+1.5+3.3+5.4+8.5).
Habitat: The specimens were collected from stony and meadow places.
World distribution: Siberia, Mongolia (Hallan, 2005).

Oligolophus hanseni (Kraepelin, 1896) (Figs.3-4)
Material examined. Turkey: Niğde province: 1♀, Özbelde, 37°58'N, 34°39'E, 27.05.2004; 1♀, Fertek, 37°58'N, 34°37'E, 29.09.2004; 2♀♀, Gümüşler, 37°59'N, 34°46'E, 22.08.2003; 1♀, Uluağaç, 38°25'N, 34°50'E, 26.08.2004.
Measurements. Female. Dorsal scutum: CL 2.0, AL 4.0; Chelicera: Bs 0.8, Ds 2.0. Pedipalp [TL (F+P+Ti+Tr)]: 4.0 (1.2+0.5+0.7+1.6); Legs [TL (F+P+Ti+M+Tr)]: I 14.6 (2.2+0.9+2.5+2.6+6.4), II 23.8 (4.4+1.4+4.2+3.8+10.0), III 16.1 (3.6+1.0+2.5+3.2+5.8), IV 22.3 (4.5+1.2+3.7+4.9+8.0).
Habitat: The specimens were collected from tree trunks and meadows.
World distribution: Belgium, Netherlands, Sweden, Germany, Czech Republic, Poland, (Blick & Komposch, 2004; Hallan, 2005; Stol, 2007).

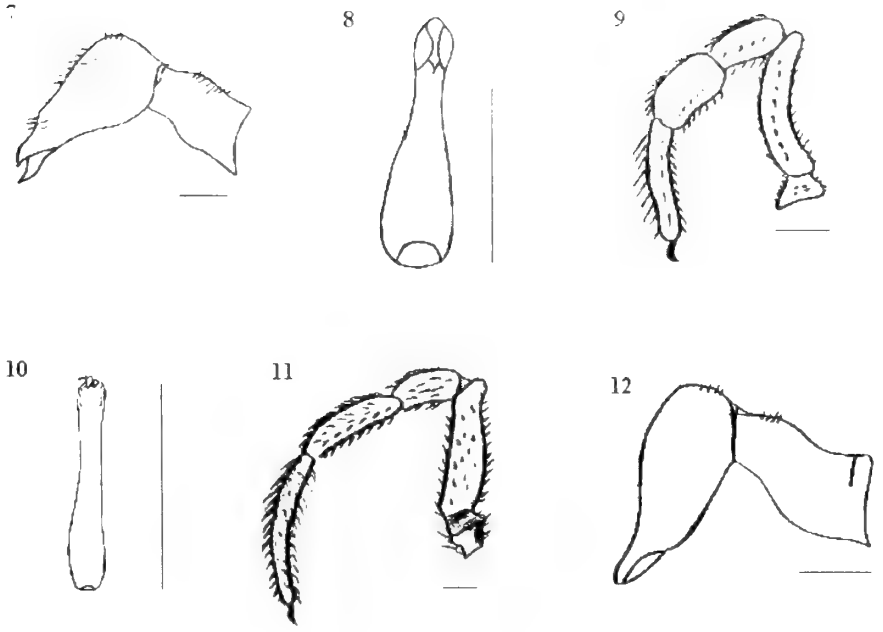
Oligolophus tridens (C.L. Koch, 1836) (Figs.5-6)
Material examined. Turkey: Niğde province: 1♂, Fertek, 37°58'N, 34°37'E, 27.05.2004; 2♂♂, Kayaardı, 37°58'N, 34°39'E, 13.03.1996; 1♂, Altunhisar, 37°59'N, 34°22'E, 25.06.2003; 2♂♂, Ulukışla, 37°33'N, 34°28'E, 07.06.2003.
Measurements. Female. Dorsal scutum: CL 2.1, AL 5.7; Chelicera: Bs 1.0, Ds 2.3. Pedipalp [TL (F+P+Ti+Tr)]: 5.5 (1.5+0.7+1.1+2.2); Legs [TL (F+P+Ti+M+Tr)]: I 13.0 (2.5+1.1+2.0+2.4+5.0), II 21.6 (4.4+1.4+3.3+2.9+9.6), III 12.9 (2.6+1.1+2.0+2.5+4.7), IV 20.5 (4.1+1.3+2.8+4.3+8.0).
Habitat: The specimens were collected from meadow places.
World distribution: Belgium, Netherlands, Denmark, Norway, Sweden, Germany, Switzerland, Austria, Czech Republic, Hungaria, Slovakia, Poland, Slovenia, Iceland, Finland (Blick & Komposch, 2004; Hallan, 2005; Stol, 2007).



Figs.1-6: *Homolophus funestus* (♀). 1. pedipalp, 2. chelicera.
Oligolophus hanseni (♀). 3. distal segment of chelicera, 4. pedipalp.
Oligolophus tridens (♂). 5. penis, 6. pedipalp. Scales: 0.5 mm.

Opilio redikorzevi Roewer, 1956 (Figs.7-9)
Material examined. Turkey: Niğde province: 2♂♂, Kayaardı, 37°58'N, 34°39'E, 13.03.1996; 1♂, Kemerhisar, 37°49'N, 34°34'E, 01.07.2003; 1♂, Altunhisar, 37°59'N, 34°22'E, 05.06.2003; 1♂, Çiftlik, 38°10'N, 34°29'E, 11.05.2003; 1♂, Gölcük, 38°13'N, 34°46'E, 13.08.2003; 1♂ Bor, 37°53'N, 34°33'E, 09.06.2003.
Measurements. Male. Dorsal scutum: CL 2.5, AL 3.8; Chelicera: Bs 1.0, Ds 2.3. Pedipalp [TL (F+P+Ti+Tr)]: 5.4 (1.4+0.5+1.1+2.4); Legs [TL (F+P+Ti+M+Tr)]: I 14.5 (2.7+0.9+2.7+3.0+5.2), II 24.9 (4.4+1.6+4.0+3.9+11.0), III 16.5 (2.6+1.0+2.5+3.7+6.7), IV 24.3 (4.3+1.5+3.6+5.9+9.0).
Habitat: The specimens were collected from stony places and bare soil zones.
World distribution: Caucasus (Hallan, 2005).

Phalangium punctipes (L. Koch, 1878) (Figs.10-12)
Material examined. Turkey: Niğde province: 2♂♂, Ulukışla, 37°33'N, 34°28'E, 11.06.2003; 1♂, Bor, 37°53'N, 34°33'E, 19.05.2004.
Measurements. Male. Dorsal scutum: CL 1.8, AL 3.0; Chelicera: Bs 1.1, Ds 1.6. Pedipalp [TL (F+P+Ti+Tr)]: 13.7 (4.0+1.1+2.6+6.0); Legs [TL (F+P+Ti+M+Tr)]: I 20.8 (4.1+1.0+3.9+4.3+7.5), II 30.8 (5.8+1.3+5.0+6.1+12.6), III 21.2 (3.1+0.9+3.4+5.4+8.4), IV 29.7 (5.4+1.0+4.6+7.7+11.0).
Habitat: The specimens were collected from meadow places.
World distribution: Armenia, Congo, Turkestan, Crimea, Syria, Cyprus, Caucasus, Cuba (Hallan, 2005).



Figs. 7-12: *Opilio redikorzevi* (♂). 7. chelicera. 8. penis. 9. pedipalp.
Phalangium punctipes (♂). 10. penis. 11. pedipalp. 12. chelicera. Scales: 0.5 mm.

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Serket (2008) vol. 11(1): 7-12.

An updated checklist of the Philodromidae (Araneae) of Turkey with zoogeographical remarks

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Abstract

This updated checklist of Philodromidae of Turkey is based on published and unpublished records available to the author. At present, 27 species belonging to 4 genera of family Philodromidae have been identified in Turkey.

Keywords: Araneae, Philodromidae, Turkey.

Introduction

Arachnological studies of Turkey began towards the end of the 19th century. They were increased during the 20th century, specially faunistic and taxonomic works. Recently, they continue with an increased speed. In the fauna of Turkey, Philodromidae must be regarded as an insufficiently studied family. The first data about Turkish philodromids were published by Pavesi (1876), when he recorded *Thanatus lineatipes* Simon, 1870 from Kadifekale in İzmir. Later, several authors reported some further philodromids from Turkey (Kulczyński, 1903; Nosek, 1905; Roewer, 1959; Karol, 1967). A detailed study of this family was carried out by Muster & Thaler (2004), who described two new species from Turkey, viz. *Philodromus krausi* Muster & Thaler, 2004 and *Philodromus lunatus* Muster & Thaler, 2004. However, the previous works were densely made in central Anatolian region, Black Sea region, and Mediterranean region (Central parts) of Turkey. At present, the fauna of Turkey has not been completely investigated yet. The first list of Turkish spiders (Karol, 1967) included 12 species belonging to 4 genera of family Philodromidae. Thereafter, both Turkish and foreign researchers made important contributions to the Turkish philodromid fauna. They recorded 18 species from Turkey (Bayram, 2002). The most recent checklist by Topçu *et al.* (2005) included 22 philodromid species belonging to 4 genera, most of which are known from a single or just a few localities.

The present checklist is based on all available published and some unpublished records of the distribution of philodromid spiders in Turkey. A total of 27 species of 4 genera from family Philodromidae are recorded in this country.

Material and Methods

The present checklist is mainly based on the data included in "A Checklist of the spiders of Turkey" (Topçu *et al.*, 2005). The checklist of the philodromid fauna of Turkey was compiled using published records and original data. World distribution of all species follows Platnick (2008). Distribution of species in geographical regions of Turkey is summarized in remarks according to Topçu *et al.* (2005) [MR = Marmara, AR = Aegean, MBR = Middle Black Sea, CAR = Central Anatolia, EAR = East Anatolia, MER = Mediterranean, and SAR = Southeast Anatolia Regions]. The present zoogeographical characterization is based on the chorotype classification of Anatolian fauna, recently proposed by Vigna Taglianti *et al.* (1999). In this study, as possible as one chorotype description can be identified for each taxon. But this kind of description can not be possible for some taxa, so one or two chorotypes are used for them. The species which are recorded from only one locality in Turkey are characterised by an asterisk (*).

Results

Family Philodromidae Thorell, 1870

Genus Paratibellus Simon, 1932

Paratibellus oblongiusculus (Lucas, 1846)
Records in Turkey: Sivas, Kayseri, Konya (Nosek, 1905); Turkey (Caporiacco, 1935); Mersin (Topçu *et al.*, 2006; Demir *et al.*, 2008); Gaziantep (Özdemir *et al.*, 2006).
Distribution in Turkey: CAR, SAR and MER. **Chorotype:** European + Central Asiatic.
World Distribution: Europe to Central Asia.

Genus Philodromus Walckenaer, 1826

Philodromus albidus Kulczyński, 1911
Records in Turkey: Gaziantep (Özdemir *et al.*, 2006; Varol *et al.*, 2006).
Distribution in Turkey: SAR *. **Chorotype:** European.
World Distribution: Western, Central Europe.

Philodromus aureolus (Clerck, 1757)
Records in Turkey: Mersin (Topçu *et al.*, 2005).
Distribution in Turkey: MR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Philodromus bonneti Karol, 1968
Records in Turkey: Bursa (Karol, 1968).
Distribution in Turkey: MR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Philodromus buchari Kubcová, 2004
Records in Turkey: Mersin (Muster & Thaler, 2004).
Distribution in Turkey: MER *. **Chorotype:** European.
World Distribution: Europe.

Philodromus cespitum (Walckenaer, 1802)
Records in Turkey: Van (Bayram, 1996b); Bursa (Kaya & Uğurtaş, 2007); Kırıkkale (Bayram *et al.*, 2005).
Distribution in Turkey: CAR, MR, EAR and SAR. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Philodromus collinus C.L. Koch, 1835
Records in Turkey: Bursa, Hatay (Roewer, 1959).
Distribution in Turkey: MR and MER. **Chorotype:** Palearctic.
World Distribution: Europe, Russia.

Philodromus fallax Sundevall, 1833
Records in Turkey: Ankara (Szita & Logunov, 2008).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Philodromus fuscolimbatus Lucas, 1846
Records in Turkey: Bilecik (Muster & Thaler, 2004).
Distribution in Turkey: MR and MER. **Chorotype:** Turano-Europeo-Mediterranean.
World Distribution: Central Europe to Morocco, Azerbaijan.

Philodromus glaucinus Simon, 1870
Records in Turkey: Balıkesir (Karol, 1966a).
Distribution in Turkey: MR and AR. **Chorotype:** Turano – Mediterranean + North Africa.
World Distribution: Mediterranean to Azerbaijan.

Philodromus histrio (Latreille, 1819)
Records in Turkey: Bitlis (Roewer, 1959); Konya (Bayram & Allahverdi, 1994, 1999); Van (Bayram & Varol, 1996; Bayram *et al.*, 1999); Kırıkkale (Bayram *et al.*, 2005).
Distribution in Turkey: EAR and CAR. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Philodromus krausi Muster & Thaler, 2004
Records in Turkey: Amasya, Kütahya (Muster & Thaler, 2004).
Distribution in Turkey: MBR and AR. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Philodromus lividus Simon, 1875
Records in Turkey: Bursa (Kulczyński, 1903).
Distribution in Turkey: MR *. **Chorotype:** Europeo - Mediterranean.
World Distribution: Portugal, France, Morocco, Algeria, Italy, Croatia.

Philodromus longipalpis Simon, 1870
Records in Turkey: Balıkesir (Muster & Thaler, 2004).
Distribution in Turkey: MR *. **Chorotype:** European + Turanian.
World Distribution: Europe, Iran.

Philodromus lunatus Muster & Thaler, 2004
Records in Turkey: İzmir, Konya (Muster & Thaler, 2004).
Distribution in Turkey: AR and CAR. **Chorotype:** Balkano - Anatolian.
World Distribution: Croatia, Greece, Turkey.

Philodromus margaritatus (Clerck, 1757)
Records in Turkey: Gaziantep (Roewer, 1959).
Distribution in Turkey: SAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Philodromus poecilus (Thorell, 1872)
Records in Turkey: Niğde (Nosek, 1905); Ankara (Karol, 1966a).
Distribution in Turkey: CAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Philodromus rufus Walckenaer, 1826
Records in Turkey: Mersin (Demir *et al.*, 2008).
Distribution in Turkey: MER *. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Genus Thanatus C.L. Koch, 1837

Thanatus atratus Simon, 1875
Records in Turkey: Niğde, Mersin (Demir *et al.*, 2008).
Distribution in Turkey: CAR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Thanatus formicinus (Clerck, 1757)
Records in Turkey: Van (Bayram, 1996 a, b, c; Bayram & Varol, 1996; Bayram *et al.*, 1999); İzmir, Manisa, Aydın (Bayram *et al.*, 2000); Mersin, Niğde (Topçu *et al.*, 2006; Demir *et al.*, 2008); Kırıkkale (Bayram *et al.*, 2005); Gaziantep (Özdemir *et al.*, 2006; Varol *et al.*, 2006).
Distribution in Turkey: Widely distributed. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Thanatus lineatipes Simon, 1870
Records in Turkey: İzmir (Pavesi, 1876).
Distribution in Turkey: AR *. **Chorotype:** Mediterranean + Caucasian.
World Distribution: Mediterranean, Georgia.

Thanatus okayi Karol, 1966
Records in Turkey: Bursa (Karol, 1966b).
Distribution in Turkey: MR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Thanatus pictus L. Koch, 1881
Records in Turkey: Kayseri (Nosek, 1905); Turkey (Reimoser, 1919); Gaziantep (Varol *et al.*, 2006).
Distribution in Turkey: CAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Thanatus striatus C.L. Koch, 1845
Records in Turkey: Van (Bayram, 1996a); İzmir, Aydın, Manisa (Bayram *et al.*, 2000); Mersin, Niğde (Demir *et al.*, 2008); Kırıkkale (Bayram *et al.*, 2005).
Distribution in Turkey: Widely distributed. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Thanatus vulgaris Simon, 1870
Records in Turkey: Konya, Niğde, Kayseri (Nosek, 1905); Bursa (Giltay, 1932); Ankara (Karol, 1966a); Mersin, Niğde (Topçu *et al.*, 2006; Demir *et al.*, 2008); Gaziantep (Özdemir *et al.*, 2006; Varol *et al.*, 2006).
Distribution in Turkey: Widely distributed. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Genus Tibellus Simon, 1875

Tibellus macellus Simon, 1875
Records in Turkey: Mersin, Niğde (Demir *et al.*, 2008).
Distribution in Turkey: MER and CAR. **Chorotype:** European + Central Asiatic.
World Distribution: Europe to Central Asia.

Tibellus oblongus (Walckenaer, 1802)
Records in Turkey: Van (Bayram, 1996b; Bayram & Varol, 1996, 1999; Bayram *et al.*, 1999); Manisa, İzmir, Aydın (Bayram *et al.*, 2000); Denizli (Bayram *et al.*, 1998); Mersin, Niğde (Topçu *et al.*, 2006; Demir *et al.*, 2008).
Distribution in Turkey: Widely distributed. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Zoogeographical Remarks

The majority of philodromid species of Turkey can be classified under two chorotypes, the Palearctic (*Philodromus aureolus*, *P. collinus*, *P. fallax*, *P. margaritatus*, *P. poecilus*, *Thanatus atratus* and *T. pictus*) and the Holarctic (*Philodromus cespitum*, *P. histrio*, *P. rufus*, *Thanatus formicinus*, *T. striatus*, *T. vulgaris* and *Tibellus oblongus*). Three species are Anatolian endemic (*Philodromus bonneti*, *P. krausi* and *Thanatus okayi*). It is apparent that Turkey has continental properties. It has a rich biodiversity. With this study, the number of philodromid spiders in Turkey has increased to 27 species belonging to 4 genera.

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Distribution of *Androctonus crassicauda* (Olivier, 1807) and *Buthacus macrocentrus* (Ehrenberg, 1828) (Scorpiones: Buthidae) in Turkey

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Abstract

Previous and new distribution records of *Androctonus crassicauda* (Olivier, 1807) and *Buthacus macrocentrus* (Ehrenberg, 1828) in Turkey are presented and discussed. All distribution records of *A. crassicauda* are determined, especially disjunctive distribution records from Kars and Iğdır Province in the eastern part of Turkey. Besides, *B. macrocentrus* was recorded from Turkey for the second time.

Keywords: Distribution, Fauna, Arachnida, Scorpiones, *Androctonus crassicauda*, *Buthacus macrocentrus*, Turkey.

Introduction

Genus *Androctonus* Ehrenberg, 1828 has a widespread distribution in Africa and Asia (Afghanistan, Armenia, Azerbaijan, Bahrain, Egypt (Sinai), India, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Pakistan, Saudi Arabia, Syria, Turkey, United Arab Emirates, Uzbekistan?, Yemen) (Fet & Lowe, 2000; Hendrixson, 2006). There is 15 known species that belong to genus *Androctonus* in this region (Lourenço, 2005; Lourenço & Qi, 2006a, 2007). Genus *Buthacus* Birula, 1908 is also distributed in Africa (Algeria, Chad, Egypt, Eritrea, Libya, Mauritania, Morocco, Niger, Senegal, Sudan, Tunisia) and Asia (Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Pakistan, Saudi Arabia, Syria, Turkey, United Arab Emirates) (Fet & Lowe, 2000; Crucitti & Vignoli, 2002; Kovařík, 2005; Lourenço, 2006; Lourenço & Qi, 2006b). There is 19 species that belong to genus *Buthacus* in this region (Kovařík, 2005; Hendrixson, 2006; Lourenço, 2006; Lourenço & Qi, 2006b). In Turkey, there is only one species of each of the two genera, *Androctonus crassicauda* (Olivier, 1807) and *Buthacus macrocentrus* (Ehrenberg, 1828). The aim of this study is to discuss the distribution of these two species in Turkey, depending on new records in addition to literature records.

Material and Methods

Field studies were achieved during the period between 1st July 2002 and 17th August 2007. The 93 (46 ♀♀, 36 ♂♂, 11 juv.) specimens of *Androctonus crassicauda* (Olivier, 1807) were collected from 35 different localities and the 31 (17 ♀♀, 12 ♂♂, 2 juv.) specimens of *Buthacus macrocentrus* (Ehrenberg, 1828) were collected from 3 different localities. The specimens were found under stones in daytime and at night using UV lamp. The samples were preserved in 70% ethanol and have been deposited in the private collection of Ersen Aydın Yağmur (PCEAY). The specimens were examined by XTL-3400E stereomicroscope.

Results and Discussion

Androctonus crassicauda (Olivier, 1807)

Scorpio crassicauda Olivier, 1807
Type Locality: Kashan, Iran.
Androctonus crassicauda Vachon, 1948

Synonyms:
Buthus crassicauda Simon, 1872
Prionurus crassicauda Pocock, 1895
Buthus (Prionurus) crassicauda Birula, 1896
Buthus (Prionurus) crassicauda crassicauda Birula, 1896

Material examined: 1. Adıyaman: 1♀. Besni District, Sarıyaprak Village, 03.viii.2006, E.A. Yağmur, M. Yalçın. **2. Batman:** 3♀♀. Hasankeyf District, Suçeken Village, 13.v.2004, 37°44'18"N, 41°17'48"E, E.A. Yağmur, A. Akkaya. **3.** 1♀, 2♂♂. Hasankeyf District, 15 km south of Batman, 17.viii.2007, 37°48'04"N, 41°13'43"E, E.A. Yağmur, A. Kürşat. **4.** 2♀♀, 1♂. Central District, Oğuz Village, 01.ix.2007, E. Yağmur. **5. Diyarbakır:** Çınar District, Aşağı Konak Village 37°37'35"N, 40°29'35"E: 1♂, 14.viii.2007, E.A. Yağmur, 2♀♀, 1 Juv., Ayşebacı Hill, 16.viii.2007, E.A. Yağmur. **6.** 2♀♀, 2♂♂. Hani District, Gürbüz Village, 15.viii.2007, 38°22'46"N, 40°21'51"E, E.A. Yağmur. **7. Gaziantep:** Şahinbey District, Gaziantep University: 1♀, 01.vii.2002, S. Kesmezoğlu, C. Toprak, 1♂, 25.ix.2002, S. Kesmezoğlu, C. Toprak, 1♂, 23.iv.2003, E.A. Yağmur, 1♀, 09.vi.2003, E.A. Yağmur, 1 juv., 16.x.2003, E.A. Yağmur. **8.** 1♂. Oğuzeli District, Oğuzeli Shooting Area, 12.iv.2003, E.A. Yağmur, S. Kesmezoğlu, C. Toprak. **9.** 1♀. Şahinbey District, Şehreküstü Quarter, 09.vii.2003, E.A. Yağmur. **10.** Karkamış District, Gürçay Village: 1♀, 1 juv., 04.x.2003, E.A. Yağmur, C. Toprak, 1♀, 02.xi.2003, E.A. Yağmur, C. Toprak. **11.** 4♀♀, 2♂♂, 1 juv. Karkamış District, Gürçay Village, 3 km south (sand factory), 04.x.2003, E.A. Yağmur, C. Toprak. **12.** 1♀. Araban District, Hisar Village, 10.vi.2004, E.A. Yağmur, C. Toprak. **13.** 1♀. Araban District, Center of Araban, 19.vi.2004, E.A. Yağmur, C. Toprak. **14.** 3♀♀. Karkamış District, Örmetaş Village, 25.ix.2004, E.A. Yağmur, C. Toprak. **15.** 1♀, 1♂. Nizip District, Kıratlı Village, 10.x.2004, E.A. Yağmur, M. Özkörük. **16.** 1♂. Şahinbey District, Sarısalkım Village, 15.x.2006, E.A. Yağmur. **17.** 1 juv. Nizip District, Bozcadağ Hill, 06.vi.2007, 36°53'58"N, 37°42'18"E, E.A. Yağmur, H. Koç, A.V. Gromov. **18. Iğdır:** 1 juv. Central District, 12th km of Doğu Beyazıt Road, 04.vi.2004, M. Kesdek. **19.** 1♀. Central District, Melekli Village, 04.vi.2004, 39°55'58"N, 44°08'01"E, H. Koç, A.V. Gromov. **20. Kars:** 1♂. Digor District, Halıkışlak Village, 03.vi.2004, M. Kesdek. **21. Kilis:** 2♂♂, 1♀. Central District, Akıncı Village, 28.v.2006, 36°41'N 37°15'E, E.A. Yağmur, M. Özkörük. **22. Mardin:** 2♂♂. Central District, Eskikale Village, 04.viii.2007,

E.A. Yağmur, M. Yalçın, **23.** 1♀, Central District, Akıncı Village, 08.viii.2006, E.A. Yağmur, **24. Siirt:** 1♀, 1♂, Central District, Bostancık Village, 19.viii.2004, M. Kesdek, **25. Şanlıurfa:** Central District, Horoz Village: 1♀, 19.iii.2003, E.A. Yağmur, 2♀♀, 3♂♂, 15.x.2005, E.A. Yağmur, **26.** Harran District, Antique Harran University Ruins: 1♀, 1♂, 3 juv., 12.v.2004, E.A. Yağmur, A. Akkaya, 2♀♀, 1♂, 06.v.2006, E.A. Yağmur, M.Z. Yıldız, **27.** 3♀♀, 3♂♂, 1 juv, Central District, Sağlık Village, 15.v.2004, E.A. Yağmur, **28.** 2♂♂, Ceylanpınar District, Evren Paşa Village, 01.iv.2006, C. Öney, **29.** 1♂, Central District, Gazibey (Tekağaç) Village, 10.v.2006, E.A. Yağmur, M.Z. Yıldız, **30.** Suruç District, Aşağı Kendirci (Mürşitpınar) Village: 1♀, 07.ix.2006, İ. Yağmur, 2♀♀, 5♂♂, 15.viii.2006, İ. Yağmur, **31.** 1♀, Viranşehir District, 27 km West of Viranşehir, 23.v.2006, A. Avcı, **32.** 1♀, 1♂, Harran District, 2 km North-East of Şuayipşehir Village, 06.v.2006, E.A. Yağmur, M.Z. Yıldız, **33.** 1♀, Ceylanpınar District, Gellegöç Village, 20.v.2007, 36°58'24"N, 39°34'44"E, E.A. Yağmur, H. Koç, A.V. Gromov, **34.** 1 juv, Birecik District, 10 km East of Birecik, 09.vi.2007, 37°03'23"N, 38°07'09"E, H. Koç, A.V. Gromov, **35. Şırnak:** 1♀, İdil District, Yörük Village, 12.v.2007, E.A. Yağmur, H. Koç, M. Yalçın.

Literature records: 36. Adıyaman: Çukurtaş Village (20 km N of Kâhta), **37.** Arılı Village (between Kâhta and Adıyaman) (Crucitti & Cicuzza, 2000; Crucitti & Vignoli, 2002), **38. Batman:** Gercüş (Yeşilyurt, 2005), **39. Elazığ:** Palu (Vachon, 1951), **40. Mardin:** Deyrulzafaran Monastery (Eskikale Village), **41.** Güngören (Mar Gabriel Monastery, 21 km SE of Midyat) (Crucitti & Cicuzza, 2000; Crucitti & Vignoli, 2002), **42.** Nusaybin (Yeşilyurt, 2005), **43. Şanlıurfa:** Kısas, **44.** Harran (Crucitti & Cicuzza, 2000; Crucitti & Vignoli, 2002), **45.** Aralık (In the paper as Kuljp) (Birula, 1904).

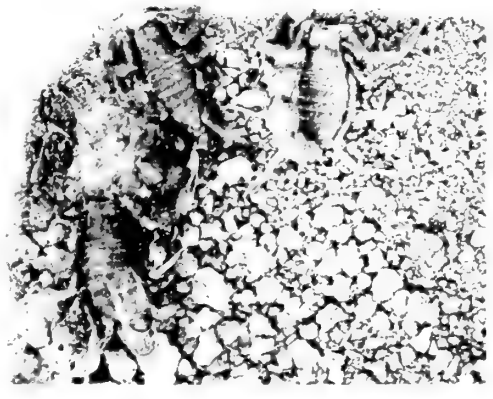

Fig. 1. *Androctonus crassicauda* from Turkey.

Fig. 2. *Buthacus macrocentrus* from Turkey.

Comments: *A. crassicauda* (Fig. 1) has been recorded from Armenia, Azerbaijan, Bahrain, Egypt (Sinai), Iran, Iraq, Israel, Jordan, Kuwait, Oman, Saudi Arabia, Syria, Turkey, United Arab Emirates and Yemen (Fet & Lowe, 2000; Hendrixson, 2006). In Turkey, it was previously recorded from Aralık (Iğdır) (Birula, 1904), Diyarbakır (Vachon, 1947), Elazığ (Palu), Malatya, Mardin, Şanlıurfa (Vachon, 1951), İçel (Tolunay, 1959), Adıyaman (Crucitti, 1999; Crucitti & Cicuzza, 2001), Kilis (Karataş, 2001; Yağmur *et al.*, 2007), Gaziantep (Yağmur, 2005), Batman (Yeşilyurt, 2005). In the present study, the distribution of *A. crassicauda* in Adıyaman, Batman, Diyarbakır, Gaziantep, Iğdır, Kilis, Mardin and Şanlıurfa Province is confirmed and it is recorded from Kars, Siirt, Şırnak for the first time (Fig. 3). But, we could not confirm the records in Elazığ (Palu), Malatya (Vachon, 1951), or İçel (Tolunay, 1959). All of our records show that *A. crassicauda* is generally recorded from arid and hot areas and is distributed in South-East Turkey, especially the south of South-East Anatolia Taurus. Furthermore,

we have not been able to find any specimen from Eastern Mediterranean Area. Hence, we think that the record of İçel (Tolunay, 1959) is doubtful. The sampling localities plotted on the map given by Vachon (1951) are not clear. All of our records, except Iğdır and Kars records, are from South-East Anatolia and we could not find any specimen from the north of the South-East Anatolia Taurus that includes Elazığ and Malatya. Except these records, our localities concur with those of Vachon (1951). Furthermore, the records of *A. crassicauda* from Iğdır and Kars, taking in consideration that it is already known from Armenia, Azerbaijan and Iran (Fet & Lowe, 2000), suggests that the distribution of *A. crassicauda* in East of Turkey is a continuation of other known distribution records.

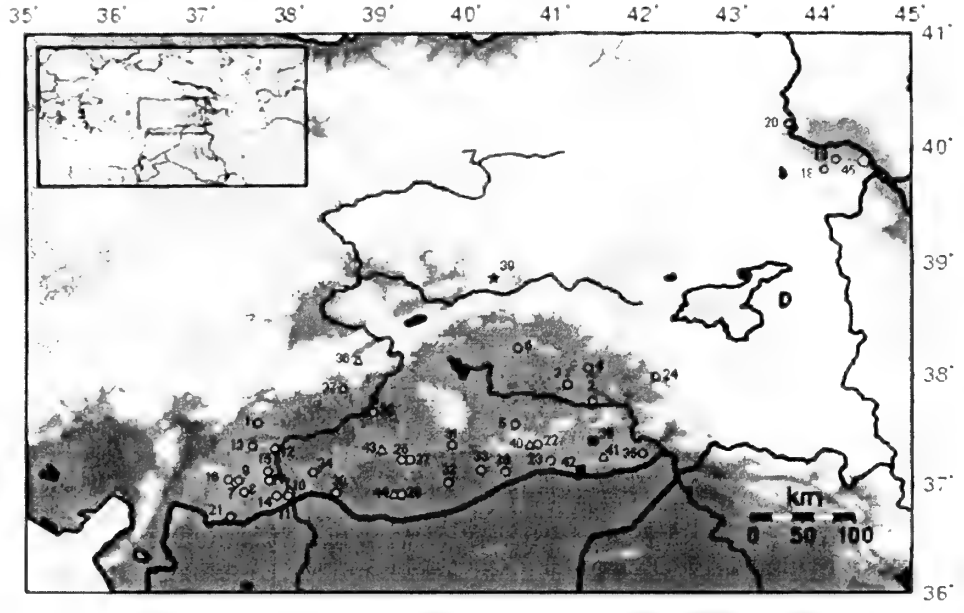

Fig. 3. Sampling localities of *Androctonus crassicauda* in Turkey. Circles [1-35]: new findings; Squares [38, 42] (Yeşilyurt, 2005); Triangles [36, 37, 40, 41, 43, 44] (Crucitti & Cicuzza, 2000; Crucitti & Vignoli, 2002); Star [39] (Vachon, 1951); Pentagon [45] (Birula, 1904).

Buthacus macrocentrus (Ehrenberg, 1828)

Androctonus (*Leiurus*) *macrocentrus* Ehrenberg, 1828
Type Locality: Sinai, Egypt.
Buthacus macrocentrus Kovařík, 2005

Synonyms:
Androctonus (Leiurus) macrocentrus Ehrenberg in Hemprich & Ehrenberg, 1828
Buthus pietschmanni Penther, 1912

Material examined: 1. Şanlıurfa: 11♀♀, 7♂♂, 2 juv. Harran District, Antique Harran University Ruins, 06.v.2006, E.A. Yağmur, M.Z. Yıldız. **2.** 6♀♀, 4♂♂. Birecik District, Çiçekalan Village, 11.v.2006, E.A. Yağmur, M.Z. Yıldız. **3.** 1♂. Birecik District, Körkün Village, 23.v.2007, E.A. Yağmur, H. Koç, A.V. Gromov.
Literature records: 4. Şanlıurfa: Harran (Crucitti & Vignoli, 2002).

Comments: *B. macrocentrus* (Fig. 2) has a widespread distribution in Bahrain, Egypt?, Iran, Iraq, Israel, Jordan, Oman, Qatar, Saudi Arabia, Syria and United Arab Emirates (Fet & Lowe, 2000; Kovařík, 2005; Lourenço, 2006). In Turkey, it was recorded by Crucitti & Vignoli (2002) from only one locality, Şanlıurfa Province (Antique Harran University Ruins in Harran district). In this study, it is recorded from three localities. It is

recorded from Harran District (the same locality of the first record) and two villages in Birecik District in Şanlıurfa Province (Fig. 4). These records show that *B. macrocentrus* is probably more abundant along the Turkish-Syrian Border.

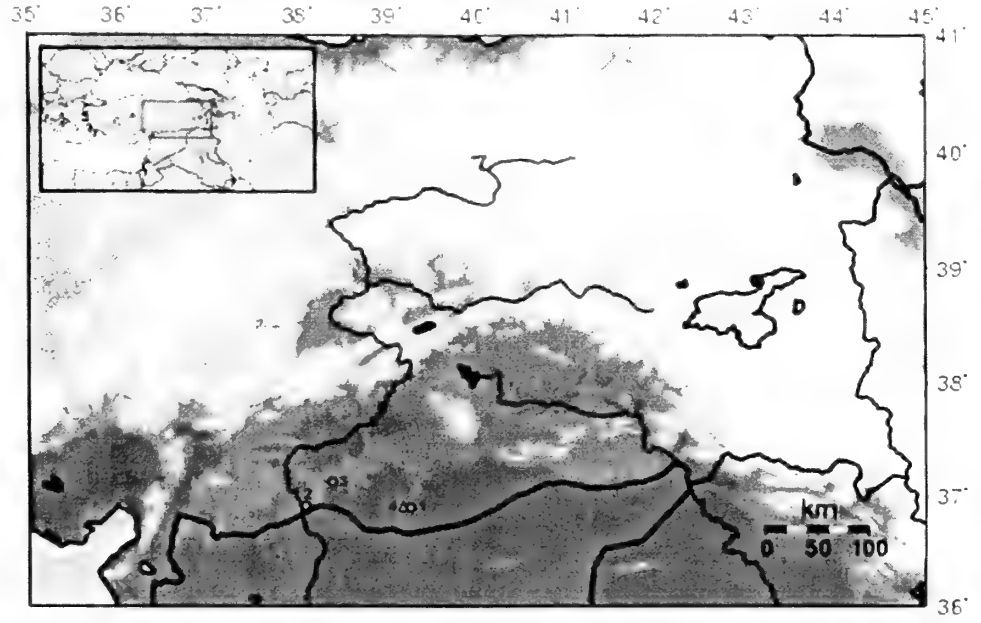

Fig. 4. Sampling localities of *Buthacus macrocentrus* in Turkey.
Circles [1-3]: new findings; Triangle [4] (Crucitti & Vignoli, 2002).

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Antistea elegans (Blackwall, 1841) (Araneae: Hahniidae), a new record of a comb-tailed spider from Turkey

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Abstract

Antistea elegans (Blackwall, 1841) is recorded for the first time from Turkey. The characteristic features and female genitalia drawing are presented, in addition to the geographical distribution of the species.

Keywords: Araneae, Hahniidae, *Antistea elegans*, Turkey.

Introduction

The comb-tailed spiders or dwarf sheet spiders (Family Hahniidae Bertkau, 1878) are small spiders; their bodies are about 2-3 mm in length. They build extremely delicate webs in the form of a sheet, and unlike many spiders, such as agelenids, the web does not lead to a retreat. The silk used in these webs is so fine that they are difficult to spot unless they are coated with dew. They greatly favour locations near water or near moss, and are often found in leaf litter and detritus or on the leaves of shrubs and trees (Murphy & Murphy, 2000).

The median pair of spinnerets is composed of one-segment, corresponding to the posterior median spinnerets of other spiders. While, both the intermediate and the lateral pairs of spinnerets are composed of two segments, corresponding to the anterior median and the posterior lateral spinnerets of other spiders, respectively (Opell & Beatty, 1976). The lateral spinnerets are the longest ones and the median spinnerets are the shortest ones. There are three serrate claws on each leg without claw tufts. Most comb-tailed spiders dwell under stones, in leaf litter, mosses, and soil crevices on the ground, or even under a moss-covered tree bark where they build delicate sheet webs and mainly feed on springtails (Collembola) (Barrion & Litsinger, 1995).

Until now, 236 comb-tailed spider species belong to 26 genera have been described in the world (Platnick, 2008). However, only four species of the same genus were recorded from Turkey by some European arachnologists (Topçu *et al.*, 2005):

Cryphoeca brignolii Thaler, 1980, *C. pirini* (Drensky, 1921), *C. silvicola* (C.L. Koch, 1834) and *C. thaleri* Wunderlich, 1995.

In this brief paper, we report *Antistea elegans* (Blackwall, 1841) as a new spider record for the Turkish araneofauna.

Material and Methods

Two females of *Antistea elegans* were examined in this study. The specimens were preserved in 70% ethanol and deposited in the museum of the Turkish Arachnological Society (MTAS-TURKEY). The identification was made by means of a SMZ10A Nikon stereo microscope with camera lucida using the key of Heimer & Nentwig (1991). All measurements are in millimetres.

Results

***Antistea elegans* (Blackwall, 1841)**

Material examined: 1♀ (MTAS/Hah: 0001), Oğuz Village, (37°48'47.16"N, 41°23'1.68"E, Batman province), 01.IX.2007, found under a stone, in detritus; 1♀ (MTAS/Hah: 0002), Polateli road, (36°46'06.0"N, 37°04'17.1"E, Kilis province), 01.III.2008, found under a stone, in detritus (Fig. 1).

Fig. 1: Sampling localities of *Antistea elegans* (Blackwall, 1841) in Turkey (circle ●: Batman Province, square ■: Kilis Province).

Description: Body length, 2.76 (2.52-3.01). Prosoma yellowish brown, with faint blackish radiating lines; cephalic region obviously narrower. There are 9-11 conspicuous black bristles with fovea in the midst of the ocular area. Sternum yellowish, heart-shaped, with marginal black spots. Labium and maxillae colour as prosoma. Ocular region with numerous bristles. Opisthosoma greyish-brown, with black bristles. Legs yellowish-brown. Legs measurements as in Table (1). Epigynum heart-shaped with large copulatory openings (Fig. 2).

Table 1: Legs measurements of ♀ *Antistea elegans* collected in Turkey.

Leg (n=2)	Femur	Patella + Tibia	Metatarsus	Tarsus	Total
I	0.84	0.99	0.60	0.46	2.89
II	0.84	0.98	0.60	0.46	2.88
III	0.76	0.90	0.72	0.48	2.86
IV	0.79	1.15	0.93	0.57	3.44

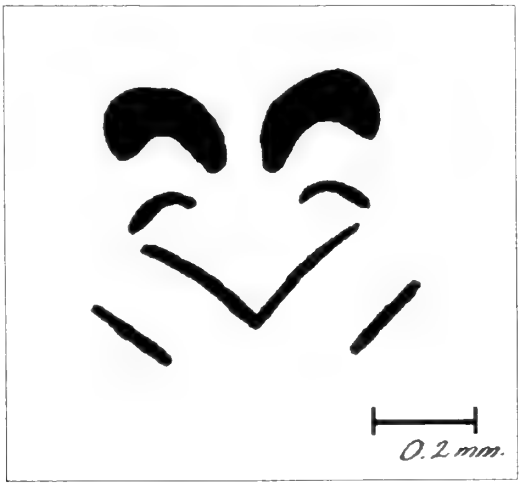

Fig. 2: Female epigynum, ventral view.

Distribution: Hungary (Chyzer & Kulczyński, 1897), France (Simon, 1937), Bulgaria (Drensky, 1942), Germany (Harm, 1966), Norway (Waaler, 1971), Central Europe (Heimer & Nentwig, 1991), Northern England (Downie *et al.*, 1995), Russia (Mikhailov, 1996), Romania (Weiss & Petrisor, 1999), Portugal (Cardoso, 2000), Spain (Melic, 2000), Eastern Poland (Stańska *et al.*, 2000), Macedonia (Blagoev, 2002), Czech Republic (Buchar & Růžička, 2002), Finland (Koponen, 2002), Sweden (Almquist, 2005), Latvia (Spuògis *et al.*, 2005), Italy (Trotta, 2005), Netherland and Belgium (Vanuytven, 2006), Denmark (Scharff & Gudik-Sorensen, 2008), Japan (Tanikawa, 2008).

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Review of the Oonopidae of Egypt (Arachnida: Araneae)

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Abstract

Eight species of seven genera of family Oonopidae are recorded from Egypt. A key to genera and species and a distribution map of the species in Egypt are included. *Ischnothyreus velox* Jackson, 1908 is recorded from Egypt for the first time. *Gamasomorpha margaritae* is transferred to *Opopaea margaritae* (Denis, 1947) comb. n.

Keywords: Araneae, Spiders, Oonopidae, Egypt.

Introduction

Family Oonopidae Simon, 1890 (Goblin or dwarf hunting/armoured spiders) is a family of tiny (total length mostly <4 mm) haplogyne spiders which are free-living and mostly ground dwelling creatures. Simon (1893a) divided Oonopidae into two sections, Oonopidae molles (7 genera) and Oonopidae loricatae (11 genera). The most recent catalogue of spiders reports more than four times of that number of genera. Now, Oonopidae includes 491 worldwide distributed species of 73 genera, i.e. 1.23% of all described spider species and 1.98% of spider genera (Platnick, 2008). The number of described oonopid species and genera is considerably enlarged during the twentieth century. But, during the last ten years (1998-2007), only 28 taxonomical references dealt with Oonopidae out of more than 1900 references dealt with all spider families (Platnick, 2008). Seven of these references carried the name of Saaristo who studied and described several new species of this family. His works elucidate that "only a small fraction of the species of this family has been discovered and described" (Saaristo, 2007). It is necessary to review the oonopid fauna of every country to put the base line before the start of larger studies in this country and in the world, such as the Planetary Biodiversity Inventory (PBI) of the goblin spider family Oonopidae (http://research.amnh.org/oonopidae/index.php).

"For about eleven weeks between the middle of January and the middle of April 1864", the Reverend Octavius Pickard-Cambridge visited Egypt and collected spiders during his travel from Alexandria on the Mediterranean Sea to Aswan in the south of Egypt (Parker, 1991). Among the specimens collected by Cambridge, there were a few oonopid spiders. He described *Oonops scutatus* and *Oonops pauper* as two new species

from Alexandria (Cambridge, 1876). This record was the first one of oonopid spiders from Egypt. In 1882, Eugène Simon described *Salsula longipes* as a new genus and species from Alexandria (Simon, 1882). It became a synonym of Cambridge's *Oonops pauper*. Talking about *Orchestina pavesii*, Simon (1890) said: "I discovered this species in Corsica and I found it again later in Algeria and in Egypt". A few years later, Simon (1893b) described *Gamasomorpha arabica* from Aïn Mouça near Suez. Also, in his Catalogue of North African arachnids, he recorded *Opopaea punctata* (O. P.-Cambridge, 1872) from Alexandria and Ain Musa (Simon, 1910). After 37 years, Jacques Denis (1947) described *Gamasomorpha margaritae* from Siwa in the western desert of Egypt. *Ovobulbus bokerella*, the most recent oonopid species was described 60 years later by Saaristo (2007) from Sinai. The most recent list of Egyptian spiders included only 5 species of 4 genera of Oonopidae (El-Hennawy, 2006).

In the present work, an old neglected record is noticed with the record of another species and genus for the first time from Egypt. Now, the known oonopids of Egypt are 8 species of 7 genera. A key to differentiate among the genera and species of Oonopidae recorded from Egypt is prepared. The photographs of four species and a distribution map of the oonopids recorded from Egypt are included (Map 1).

Methods

The examined material is mentioned in detail with the note about or the description of the related species. The examined specimens are deposited in the Arachnid Collection of Egypt (ACE). The used abbreviations and measurements order are according to Saaristo (2007). All measurements are in millimetres.

Abbreviations used: ACE = Arachnid Collection of Egypt, Cairo, Egypt; AL = Length of abdomen; AW = Width of abdomen; CH = Carapace height; CHI = Ratio of carapace height to length; CI = Ratio of carapace width to length; CL = Carapace length; CW = Carapace width; D = Description; FeI = Ratio of femur IV length to carapace length; FeIV = Femur IV length; LLI = Ratio of tibia I length to carapace length; N = Note; TiI = Tibia I length; TL = Total length.

The Oonopidae of Egypt

Genus ***Dysderina*** Simon, 1891

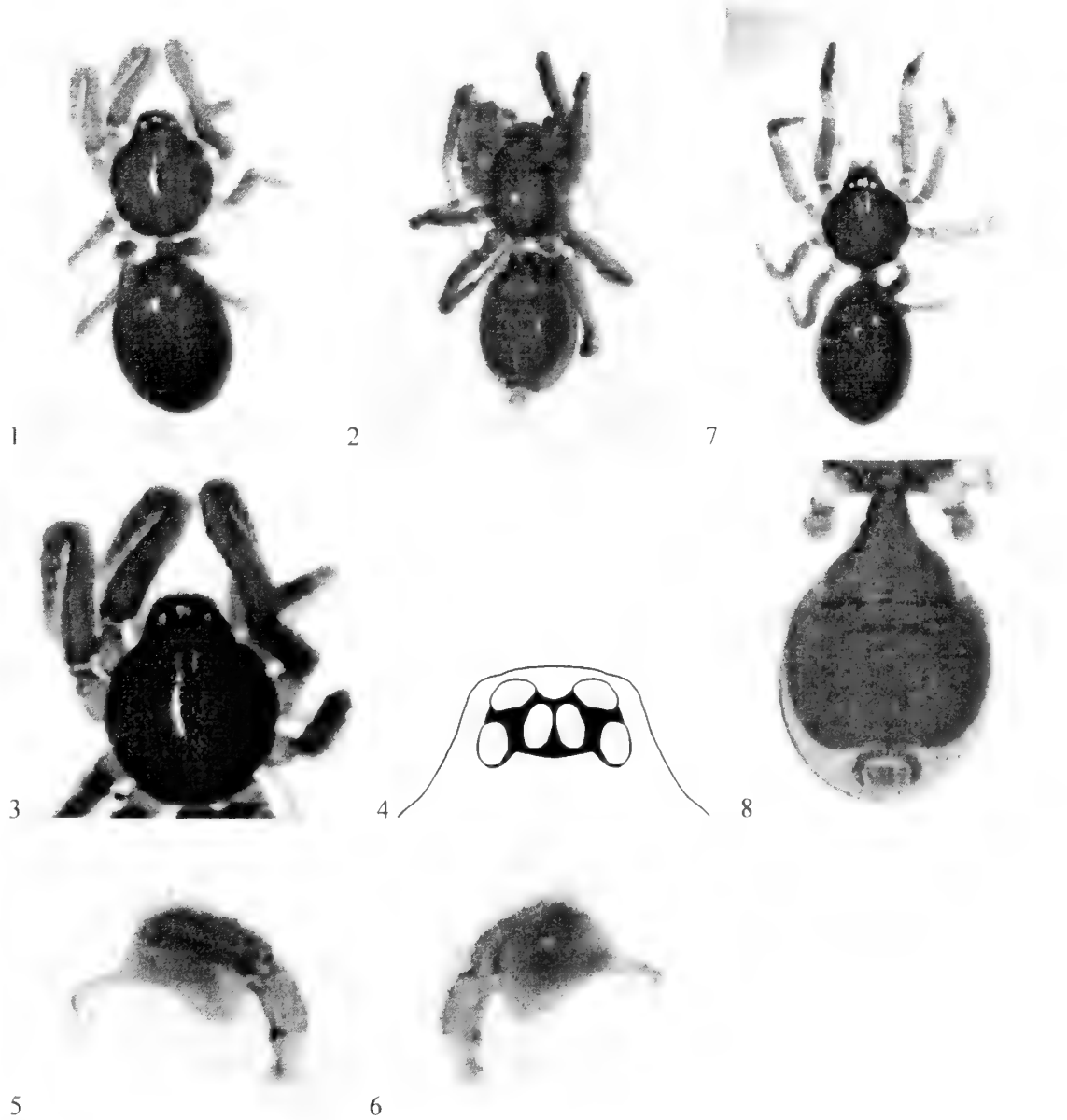
• 44 species, from: Central and South America, Africa, and Philippines (Platnick, 2008).

In 1891, Simon established genus *Dysderina* and described *Dysderina princeps* Simon, 1891 as new species from St. Vincent. Two years later, he transferred 7 species from *Oonops* to *Dysderina* (Simon, 1893a); i.e. *D. scutata* (O. P.-Cambridge, 1876) from Egypt, *D. globosa* (Keyserling, 1877), *D. desultrix* (Keyserling, 1881), *D. machinator* (Keyserling, 1881), *D. principalis* (Keyserling, 1881) [Type species], *D. propinqua* (Keyserling, 1881), and *D. similis* (Keyserling, 1881) from Colombia and Peru. He also divided the genus into two groups according to eyes arrangement and male palpal organ structure (Simon, 1893a: p.304). In the same year, he described two new species, *D. bimucronata* and *D. purpurea*, from Philippines (Simon, 1893c). The same author described 4 new species, i.e. *D. capensis*, *D. keyserlingi*, *D. speculifera*, and *D. sublaevis*, from South Africa, Brazil, and Algeria (Simon, 1907). He and Fage (Simon & Fage, 1922, Fage & Simon, 1936) described 3 other new species from Kenya and East Africa, i.e. *D. granulosa* Simon & Fage, 1922, *D. perarmata* Fage & Simon, 1936, and *D. straba* Fage, 1936. The other 27 described species of this genus were mostly found in the New World

(Platnick, 2008). The majority of these species, 21, were described by Chickering (1951, 1968) from Panama and Central America. Hence, the distribution of the known *Dysderina* species extends from Central and South America to Africa (North, East, and South), and Philippines.

Dysderina scutata (O. P.-Cambridge, 1876)
Figs. 1-8.

Oonops scutatus O. P.-Cambridge, 1876: 547-549, pl. 58, f. 2A (D♂). Under stones, near Alexandria (31°12'N 29°54'E), 1♂ 2♀♀, April 1864, by O. P.-Cambridge (Deposited in Oxford University Museum of Natural History, U.K. (OUMNH)).
D. s. Simon, 1893a: 304.
D. s. Simon, 1910: 310 (N) Alexandria.



Figs. 1-8. *Dysderina scutata* (O. P.-Cambridge, 1876)
Figs. 1-6. ♂. 1. dorsal view. 2. ventral view. 3. dorsal view of cephalothorax and first legs showing their spination. 4. eyes. 5. right palp, prolateral view. 6. right palp, retrolateral view. Figs. 7-8. ♀. 7. dorsal view. 8. abdomen ventral view, showing epigynal area.

World distribution: Egypt.

Material examined. Egypt. El-Faiyum (29°31'N 30°84'E), 1♀, February 2002, Citrus orchard and Sohag (26°55'N 31°69'E), 2♂♂1♀, March 2002, Mango orchard, by M. Mohafez (ACE 20020200.01, 20020300.01-03).

Description (Extracted, with modifications, from Cambridge, 1876).

♀ TL 1¼ line [= 2.65 mm]. The *cephalothorax* is oval, strongly constricted laterally at the caput [cephalic part]; the thoracic junctional point is (looked at in profile) of an angular form, and elevated above the level of the rest of the cephalothorax, the hinder slope being abrupt; it is of a bright orange-brown colour; and the sides and hinder part are thickly covered with minute tubercles or granulosities, which in some positions assume the appearance of punctures. The *eyes* are large, six in number, closely grouped together, and occupy nearly the whole of the upperside of the fore extremity of the caput, where they form a quadrilateral figure whose foremost side is considerably shorter than the hinder one; they do not differ much in size, and are all of a more or less oval shape; those of the hind central pair are closely contiguous to each other, their sides of contact being flattened and so closely joined as almost to conceal the junction. The eyes of each lateral pair are very near together, but not quite contiguous to each other, each fore lateral eye being also equally close to the hind central eye on its side, and each hind lateral eye still closer (almost contiguous) to the hind central nearest to it; the interval between those of the front row (or the fore laterals) is about equal to their longest diameter; the height of the clypeus, which projects a little at its lower margin, is rather less than half that of the facial space. The *legs* are moderately long and strong, of a lightish orange-yellow colour; and their relative length appeared to be 4, 1, 2, 3; the femora are the strongest, especially at their posterior extremities, which are abruptly enlarged on the upperside close to the articulation, but run evenly thence to the anterior extremities; they are furnished, but not very thickly, with hairs; the tibiae and metatarsi of the first and second pairs are armed beneath with a double series of long and strong sessile spines; the other two pairs of legs have bristles (or very slender spines) in a similar situation; each tarsus terminates with two curved claws springing from a distinct supernumerary claw- (or heel) joint. The *palpi* are short and not very strong; their colour is yellow, paler than that of the legs; and they are furnished with hairs and bristles; the cubital and radial joints are short, the former is bent downwards, the latter is rather the longest and strongest; the digital joint is narrow, tapering from the middle to the fore extremity, and no broader than, but almost double as long as, the radial; the palpal organs consist of a very large and prominent oval yellowish lobe with a largish curved, pale brownish yellow, pointed process at its anterior extremity. The *falces* [chelicerae] are moderately long, but not very strong, directed backwards towards the labium, furnished in front with bristly hairs, and similar in colour to the cephalothorax. The *maxillae* and *labium* are of normal form, the latter being rather large; these parts, with the *sternum*, are similar to the legs in colour. The *abdomen* is of an oval form, moderately convex above, and covered both above and below with a bright reddish yellow-brown somewhat corneous scutum, the approximate edges, according as they are more or less separated, showing a greater or less interval of pale yellowish membranous integument; the spiracular plates are continuous with each other, and, extending forwards, cover the pedicle by which the abdomen is connected with the cephalothorax; this pedicle is longer and more distinctly developed than in most other spiders; the upper scutum is very highly polished and glossy, and it is thinly but evenly covered with minute tubercles, each of which supports a fine bristly hair; the spinners are short and inconspicuous; they are enclosed below by a narrow reddish yellow-brown semicircular band of a similar nature to the scutum with which the abdomen is covered.

When the edges of the upper and lower scutum are brought together, they enclose and conceal the spinners. The spiracular openings are four in number, the two extra ones being smaller than the others and situated one close behind each of the two ordinary openings.

Note. The description, in detail, of Cambridge (1876) is enough. Only, measurements of male and female are added, in addition to pictures of them and their genitalia (Figs 1-8.)

Measurements. ♂: TL 1.80, CL 0.79, CW 0.64, CH 0.53, AL 1.01, AW 0.69, TiI 0.64, FeIV 0.74, CI 0.8, CHI 0.67, LLI 0.8, FeI 0.93; ♀: TL 2.07, CL 0.85, CW 0.69, CH 0.53, AL 1.22, AW 0.79, TiI 0.53, FeIV 0.69, CI 0.81, CHI 0.62, LLI 0.62, FeI 0.81.

Genus ***Gamasomorpha*** Karsch, 1881

• 57 species, from: USA, Central and South America, Africa, Middle East, Asia, and Australia (Platnick, 2008).

Gamasomorpha arabica Simon, 1893

G. a. Simon, 1893b: 302-303 (D♂). Aïn Mouça, near Suez (28°33'N 33°55'E).
G. a. Simon, 1910: 309 (N). Aïn Mouça, near Suez.
World distribution: Middle East.
Description (Translation of Simon, 1893b).
♂ TL 2 mm. – Cephalothorax oval, slightly convex, dark red, longitudinally diluted in middle, with subtle but thick skin-shrivelled and sparse thick white hairs on both sides. Posterior eyes row strongly recurved, medians distinctly separated from laterals. Anterior eyes with at least eye diameter distance between them. Abdominal scuta and sternum dark red, with dense and thin skin-shrivelled and greyish-white slanting slightly lanceolate hairs. Legs short, robust, yellowish-red. Pedipalps yellow, femur robust, patella and tibia subequally short, tarsus narrowly oval, bulb insignificantly cylindrical, lobe about equal length, fortified by a bended spine.

Genus ***Ischnothyreus*** Simon, 1893

• 19 species, from: Yemen, Seychelles, South East Asia, Pacific islands, USA, Central America, St. Helena, and Europe (introduced) (Platnick, 2008).

Ischnothyreus velox Jackson, 1908
Figs. 9-16.

I. v. Jackson, 1908: 51, pl. 4, f. 9-13 (D♂♀). [Not seen]
I. v. Bristowe, 1948: 890, f. 1, 15-20 (♂♀).
I. v. Locket & Millidge, 1951: 76, f. 33C, 35A, 37A, 38C, E (♂).
I. v. Saaristo, 2001: 347, f. 146B, 151, 155B (♂♀). [Not seen]
World distribution: Seychelles, Europe (introduced), Egypt [NEW RECORD].
Material examined. Egypt, Cairo, Bab El-Khalq (30°02'44"N 31°15'09"E), 1♂1♀, 22 July 1999, 10:15 pm, jumping on the floor, inside the building of the Criminal Investigation Laboratory, by H. El-Hennawy (ACE 19990722.01-02).
Description. ♂ Colour yellowish-brown. Cephalothorax darker than abdomen and legs (yellow). A few hairs on clypeus and in the middle of carapace. Cephalothorax oval with cephalic area forwards protruding, with two oblong, pear-shaped, figures behind the ocular area until the middle of the cephalothorax. Abdomen covered by sparse hairs. Dorsal scutum greyish brown covers 88% of the abdomen. Ventral scutum small, light

yellow, covering only 69% of the area. Palps dark brown. Spination of legs: Femur I with 1 prolateral row of 2 spines. Femur II with 1 prolateral spine. Tibiae I, II with 1 prolateral + 1 ventral rows each of 4 spines. Metatarsi I, II with 1 prolateral + 1 ventral rows each of 2 spines. Other legs only with sparse hairs.

. Similar to male, without the two oblong, pear-shaped, figures of the cephalic area. Dorsal scutum only covers 78% of the median area of the abdomen and ventral scutum covers only 39% of the ventral side.

Measurements. ♂: TL 1.59, CL 0.79, CW 0.64, CH 0.48, AL 0.79, AW 0.42, TiI 0.53, FeIV 0.66, CI 0.8, CHI 0.6, LLI 0.33, FeI 0.83; ♀: TL 1.75, CL 0.79, CW 0.58, CH 0.37, AL 0.95, AW 0.58, TiI 0.58, FeIV 0.79, CI 0.73, CHI 0.47, LLI 0.73, FeI 1.0.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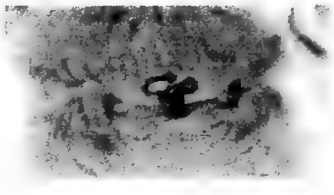
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Figs. 9-16. *Ischnothyreus velox* Jackson, 1908
Figs. 9-13. ♂. 9. dorsal view. 10. ventral view. 11. right palp, prolateral view. 12. right palp, retrolateral view. 13. eyes. Figs. 14-16. ♀. 14. dorsal view. 15. ventral view. 16. epigynal area.

Genus ***Opopaea*** Simon, 1891

• 45 species, from: Americas, Africa, Middle East, Asia, and Australia (Platnick, 2008).

Opopaea margaritae (Denis, 1947) [NEW COMBINATION]
Fig. 17.

Gamasomorpha m. Denis, 1947: 83, pl. IV, f. 13-15 (D♀). Siwa (29°20'N 25°52'E), 1♀, 27 August 1935. (Deposited in the Natural History Museum of London, U.K. (BMNH)).
World distribution: Egypt.
Description (Extracted, with modifications, from Denis, 1947).

♀ TL 1.3 mm. Cephalothorax orange-yellow, very slightly striated on its sides: wider behind than in front: wider at the level of coxae II and towards coxae III: rather thick and flat, but abruptly sloping behind (as in *G. kulczynskii* Berland): clypeus very narrow, equalling the third part of an anterior eye, anterior eyes not quite their radius apart, slightly larger than the median ones: the postero-lateral ones the smallest. Sternum rather like *G. kulczynskii*, but its hind part more square, less lengthened; yellow with sunk points; maxillae more rounded than in *kulczynskii*. Palp and legs yellow with red articulations. Abdominal scuta orange-yellow, the posterior one annular, very pale, scarcely visible.

Note. The description of *Gamasomorpha margaritae* by Denis (1947) is very brief. His drawing of its cephalothorax (pl. IV, f. 13) (Fig. 17), its width and the ocular arrangement, suggests that it belongs to genus *Opopaea* instead of *Gamasomorpha*. This concurs with the discussions of Brignoli (1974 and 1975) who transferred *Gamasomorpha kulczynskii* to genus *Opopaea* (Brignoli, 1975).

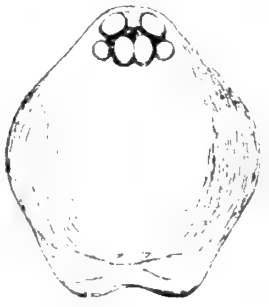


Fig. 17. *Opopaea margaritae* (Denis, 1947) ♀ cephalothorax, dorsal view. (After Denis, 1947: pl. IV, f. 13)

Opopaea punctata (O. P.-Cambridge, 1872)
Fig. 18.

Oonops punctatus O. P.-Cambridge, 1872: 223-224, pl. 14, f. 3A (D♂). 1♂, "was found under a stone on a wall close to Hasbeiya" (Hassbaya, south of Lebanon (Assi, 1982)).
O. p. Simon, 1910: 309. (N) Alexandria (31°12'N 29°54'E), Aïn Mouça (28°33'N 33°55'E).
O. p. Brignoli, 1975: 224, f. 1-4 (♂).
O. p. Assi, 1982: 87, f. 1 (♀).
O. p. Saaristo, 2007: 133, f. 70-78 (♂♀).
World distribution: Egypt, Lebanon, Israel, doubtfully pantropical.

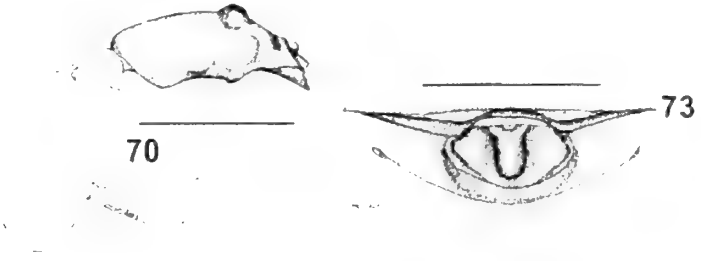


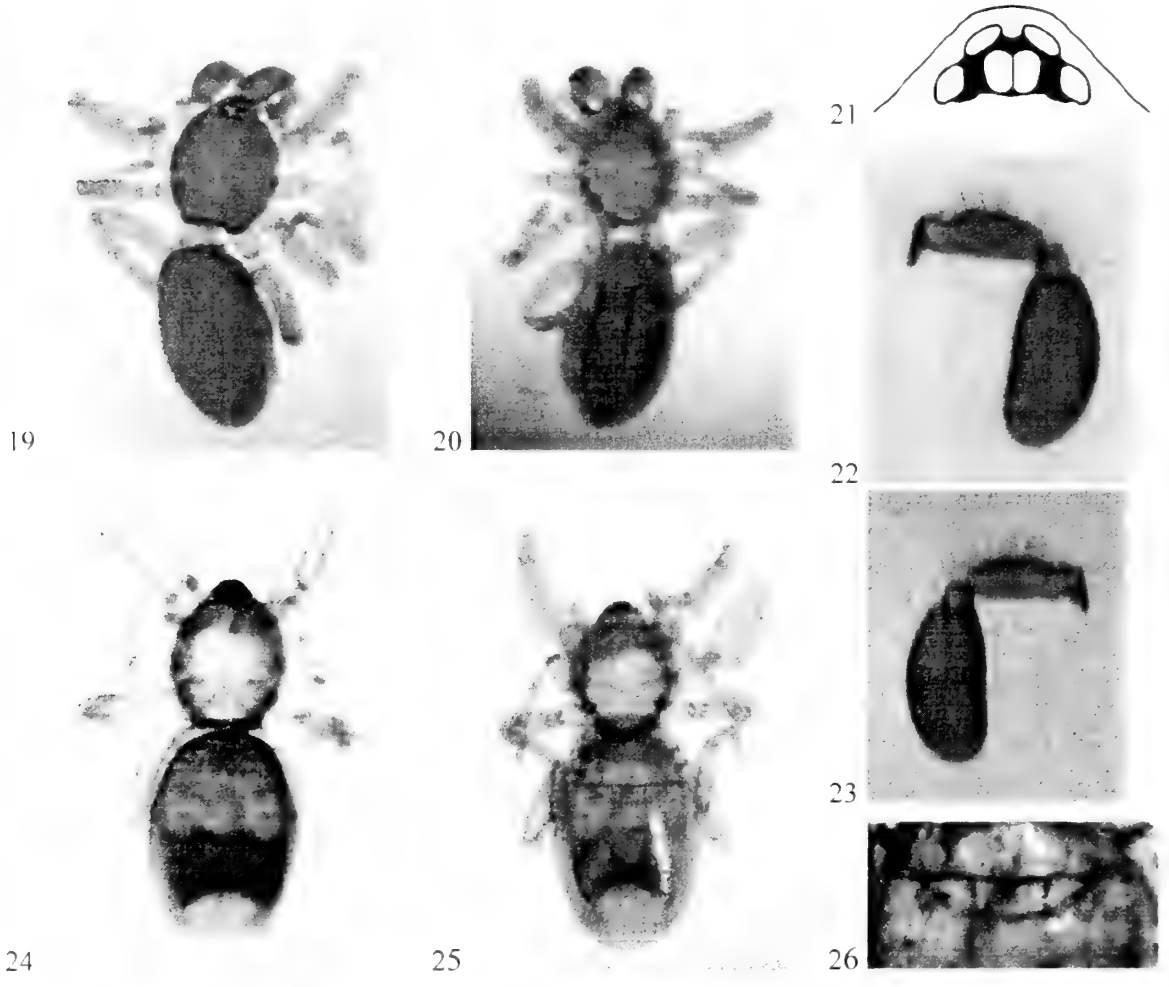
Fig. 18. *Opopaea punctata* (O. P.-Cambridge, 1872)
[70. ♂, right palp laterally. 73. ♀, epigastric area.] (After Saaristo, 2007)

Opopaea sp.
Figs. 19-26.

Material examined. Egypt, Cairo, Bab El-Khalq (30°02'44"N 31°15'09"E), 1♀, 2 October 1997, inside the building of the Criminal Investigation Laboratory, by H. El-Hennawy (ACE 19971002.01). Egypt, Sallant near El-Mansura (31°10'N 31°35'E), 1♂, 28 March 2003, in a cultivated field, by H. El-Hennawy (ACE 20030328.01).
Note. Despite of the fact that descriptions of Cambridge (1872), Brignoli (1975), Assi (1982), and Saaristo (2007) are sufficient for the identification of *Opopaea punctata*, the

two studied Egyptian specimens may belong to this species or not, but at least they belong to genus *Opopaea*. The measurements of the studied male and female specimen are included for comparison with other material.

Measurements. ♂ (Sallant): TL 1.43, CL 0.58, CW 0.48, CH 0.37, AL 0.85, AW 0.53, Til 0.21, FelV 0.42, CI 0.82, CHI 0.64, LLI 0.36, Fel 0.73; ♀ (Cairo): TL 1.32, CL 0.53, CW 0.40, CH 0.26, AL 0.79, AW 0.53, Til 0.18, FelV 0.37, CI 0.75, CHI 0.5, LLI 0.35, Fel 0.7.



Figs. 19-26. *Opopaea* sp. Figs. 19-23. ♂ (Sallant). 19. dorsal view. 20. ventral view. 21. eyes. 22. right palp, prolateral view. 23. right palp, retrolateral view. Figs. 24-26. ♀ (Cairo). 24. dorsal view. 25. ventral view. 26. epigynal area.

Genus ***Orchestina*** Simon, 1882

• 43 species, from Africa, Israel, Yemen, Socotra, Seychelles, South East Asia, Philippines, Tasmania, Samoa, USA, Venezuela, Europe, and Canary Is. (Platnick, 2008).

Orchestina pavesii (Simon, 1873)

Fig. 27.

Schoenobates p. Simon, 1873: 45, pl. 1, f. 29-31 (D♂♀). [Not seen]
O. p. Simon, 1882: 237 (N) Egypt [*Orchestina* = *Schaenobates*].
O. p. Simon, 1890: 87 (N).
O. p. Simon, 1893a: 291, f. 251-253, 259, 265 (♂).

O. p. Melic, 1994: 114-116, f. 9-11 (♂♀).
O. p. Pekár & Gajdoš, 2001: 51, f. 1-4 (♂♀).
O. p. Saaristo & Marusik, 2004: 52, f. 10-15 (♂♀).
O. p. Saaristo, 2007: 125, f. 17, 19 (♂♀).

World distribution: Algeria, Egypt, Canary Is., Yemen, Europe: Spain to Slovakia, Bulgaria.

Note. This species is widely distributed in the world. It was recently recorded for the first time from the Iberian Peninsula by Melic (1994) and from Slovakia by Pekár & Gajdoš (2001). Despite of the fact that Simon (1890) said: "I discovered this species in Corsica and I found it again later in Algeria and in Egypt", *Orchestina pavesii* was not recorded from Egypt in his catalogue of North African arachnids (Simon, 1910) nor in subsequent catalogues.

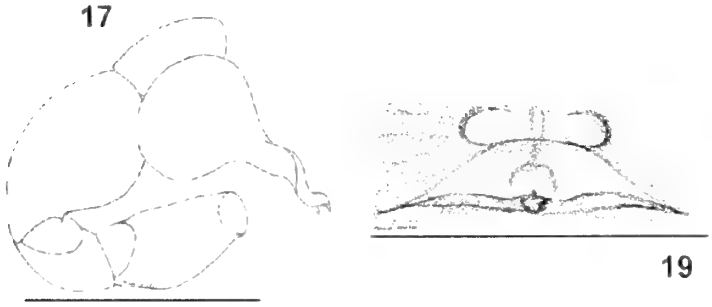
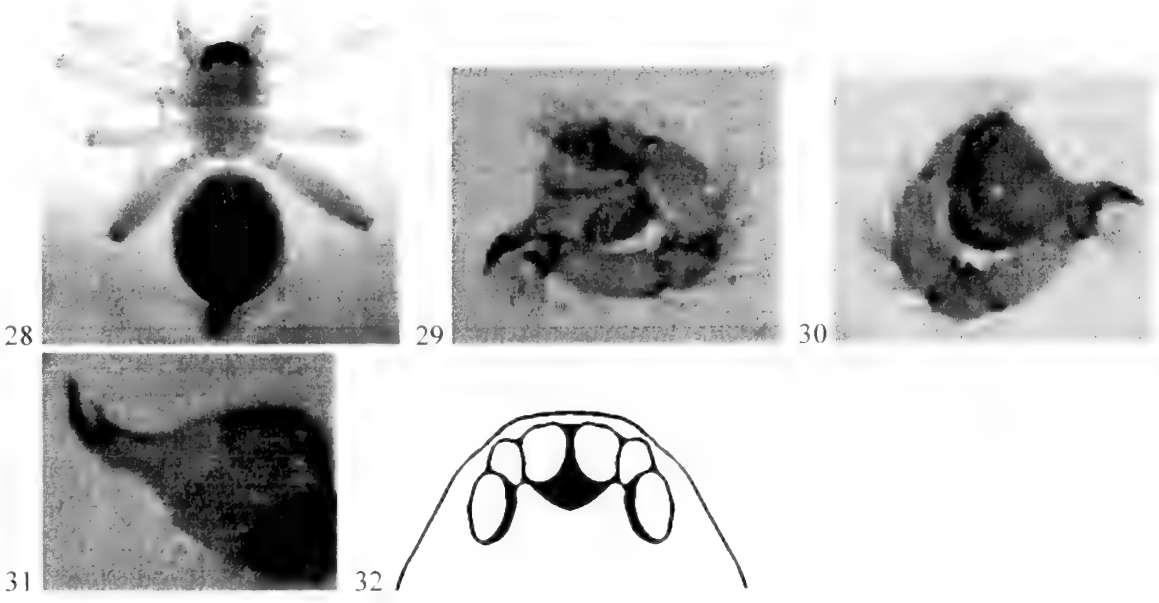


Fig. 27. *Orchestina pavesii* (Simon, 1873)
[17. ♂, right palp laterally. 19. ♀, copulatory organ ventrally.] (After Saaristo, 2007)

Orchestina sp.
Figs. 28-32.



Figs. 28-32. *Orchestina* sp. ♂. 28. dorsal view. 29-31. right palp. 29. prolateral view. 30. retrolateral view. 31. ventral view. 32. eyes.

Material examined. Egypt, El-Faiyum, Ebshowai (29°37'N 30°68'E), 1 ♂, 19 January 2003, Mango orchard, by G. Sallam (ACE 20030119.01).

Note. This male of Ebshowai confirms the presence of, at least, genus *Orchestina* in Egypt.

Measurements. ♂: TL 1.17, CL 0.53, CW 0.42, CH 0.26, AL 0.64, AW 0.53, TiI 0.42, FeIV 0.58, CI 0.8, CHI 0.5, LI:I 0.8, FeI 1.1.

Genus ***Ovobulbus*** Saaristo, 2007

• Only 3 species from the Middle East (Egypt and Israel) (Saaristo, 2007).

Ovobulbus bokerella Saaristo, 2007
Fig. 33.

O. b. Saaristo, 2007: 126, f. 34-38 (D♂♀).

World distribution: Egypt, Israel.

Note. Genus *Ovobulbus* is distinguished by the large, more or less egg-shaped bulbus of the male palp bearing a long and narrow psembolus (= trunk-like, sometimes even filamentous, outgrowth of the bulbus) on its lateral face; cymbium and bulbus separate. Only 1♂ was collected from Egypt, Sinai, Wadi Ara'am, 23 January 1969, by S. Reichenstein (Deposited in the Hebrew University of Jerusalem, HUJ 15311) (Saaristo, 2007).

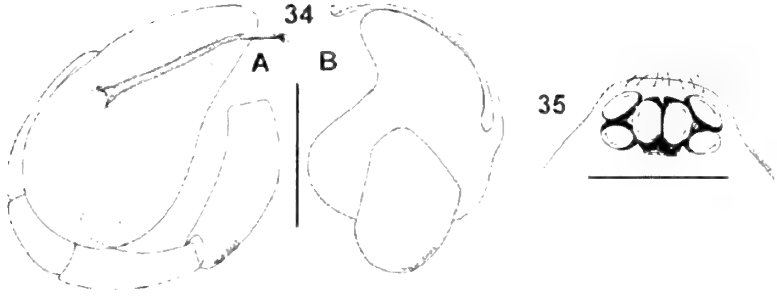


Fig. 33. *Ovobulbus bokerella* Saaristo, 2007
[♂. 34. right palp laterally (A) and mesially (B). 35. eyes dorsally.] (After Saaristo, 2007)

Genus ***Sulsula*** Simon, 1882

• Only 2 species, *S. pauper* (O. P.-Cambridge, 1876) from Algeria and Egypt and *S. parvimana* (Simon, 1910) from Namibia (Platnick, 2008).

Sulsula pauper (O. P.-Cambridge, 1876)

Oonops p. O. P.-Cambridge, 1876: 549-550 (D♀). Alexandria (31°12'N 29°54'E), under a stone, 1♀, April 1864, by O. P.-Cambridge (Deposited in Oxford University Museum of Natural History, U.K. (OUMNH)).

S. longipes Simon, 1882: 237, 1♂ Ramleh, near Alexandria (31°14'N 29°58'E), by M.A. Letourneux.

Salsula longipes Simon, 1893a: 291.

Salsula pauper Simon, 1910: 308 (N) Egypt: Alexandria. Algeria: Biskra! On sand, in the dunes.

World distribution: Algeria, Egypt.

Description (Extracted, with modifications, from Cambridge, 1876).

♀ TL 1⅓ line [= 2.82 mm]. The cephalothorax, falces, maxillae, labium, and sternum of this spider are of a dull orange-yellow colour, the legs and palpi being pale straw-yellow, and the abdomen dull whity brown. The *cephalothorax* is short, broad behind, and strongly constricted laterally at the caput: the normal indentations are tolerably strongly marked: and the height of the clypeus is equal to half that of the facial space: the highest point (looked at sideways) is at the (thoracic junction, whence it runs by an evenly curved slope to the clypeus, the hinder slope not being very abrupt: the clypeus is furnished with some minute tubercles, each of which was probably furnished with a bristly hair: but if so, these had been rubbed off before this description was made. The *eyes* are large, seated on black tubercular spots, and occupy the whole width of the fore part of the caput: the hind lateral and central eyes form a slightly curved row, whose convexity is directed forwards: those of the central pair are as nearly as possible contiguous to each other: and each is separated by rather less than its diameter's distance from the hind lateral nearest to it: the hind laterals have a strong sideway and backward direction, and each is very near, but not quite contiguous to its fore lateral eye: the interval between the fore laterals is equal to very nearly two diameters: those of each lateral pair are placed obliquely, and are rather smaller than those of the central pair. The *legs* are rather long and slender, except the femoral joints: their relative length appears to be 4, 1, 2, 3. Whatever their armature may have been, it was entirely rubbed off before this description was prepared. The *palpi* are rather long, slender, and similar in colour to the legs: the digital joint is cylindrical and exceeds in length the radial and cubital joints together. The *falces* are long, tolerably strong and straight, but strongly directed backwards to the labium: and their front surface is thinly covered with minute, and probably pilose, reddish brown tubercles. The *maxillae* and *labium* are forced backwards into a direction perpendicular to the sternum, owing to the strong backward direction of the falces. Their form is thus very difficult to be ascertained, but it appears to be similar to that of the other species of this genus. The *abdomen*, is short, oval in form, considerably convex above, and does not project over the base of the cephalothorax: the connecting pedicle being distinct. Four spiracular springs are plainly visible, the two extra ones being placed not far behind the ordinary pair. The spinners are short those of the inferior are much the strongest.

Description (Translation of Simon, 1882: 236-237).

Genus *Sulsula* : Cephalothorax wide in rear, greatly attenuated forward, nevertheless wide and obtuse at front: flat above, greatly inclined in rear in the posterior third part. – Eyes, six, arranged in a transverse group at least twice wider than long and occupying nearly all the width of the front, two connivent lateral eyes on each side, two medians fairly placed in rear, at the level of the posterior laterals. – Clypeus wider than the anterior eyes and slightly inclined forwards. – Legs lengths, 4, 2, 1, 3, slender: femurs slightly robust, similar and cylindrical: femurs and tibias armed by thin spines: distance between coxae of the 4th pair greatly narrower than their length: two thin tarsal claws carried by a tarsal segment. - Tegument delicate, furnished with isolated bristles. This genus belongs to the group of the *Oonopides* and is especially neighbor of the genus *Orchestina* E. S. (= *Schaenobates* E. S., not Bl.), of which it defers by the shape of the cephalothorax, the legs of the four pairs equally slender, the median eyes much distant, being placed at the level of the posterior laterals. – The *S. longipes* is the biggest species of the group of the *Oonopides*; its aspect recalls that of a small *Loxosceles*.

Sulsula longipes : ♂. TL 2.7 mm. – Cephalothorax and legs very light testaceous tawny. Abdomen testaceous white, furnished with isolated bristles. - Femur I provided with 2 spines on the anterior side and 2 dorsals: femur II, by only one dorsal: femurs III and IV, by 2 or 3 dorsals: tibias I and II provided with 3 long lateral spines internal and external. – Pedipalps short: patella wide and convex: tibia longer than the patella, attenuated: small

tarsus, obtuse; bulb wide pyriform, subglobular, prolonged at tip, fairly wide and cylindrical in the first half, very slim and arched in the second.

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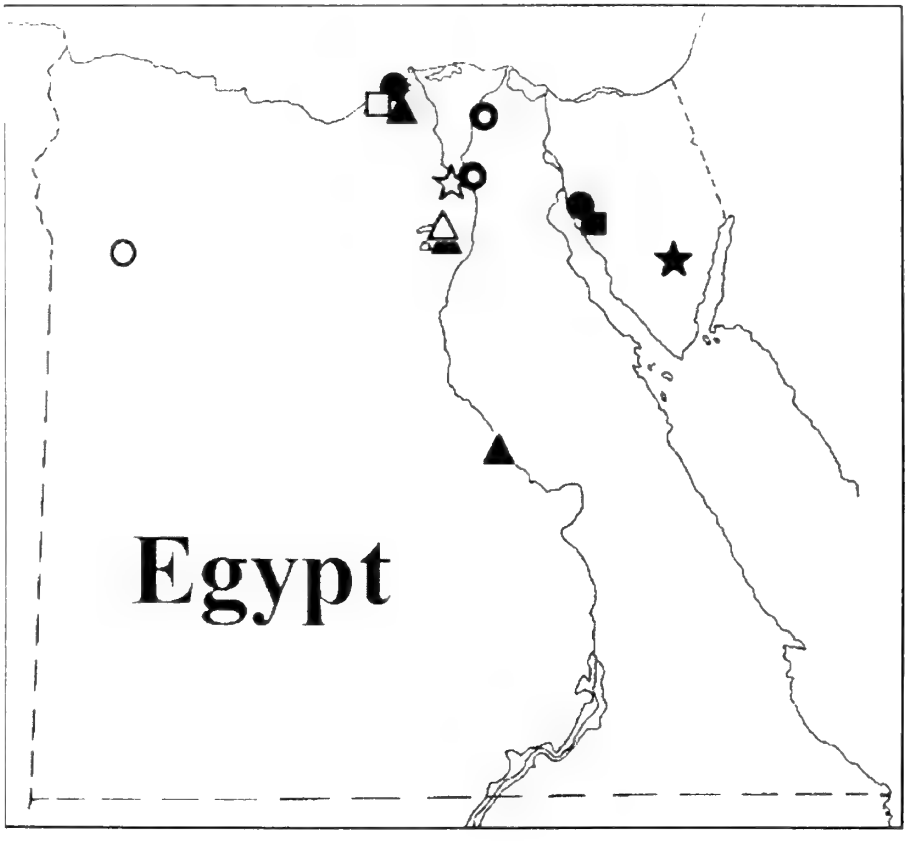

Map 1. Distribution of recorded oonopid species in Egypt.

▲ - *Dysderina scutata* (O. P.-Cambridge, 1876) - Alexandria, El-Faiyum, Sohag.
■ - *Gamasomorpha arabica* Simon, 1893 - Ain Musa.
☆ - *Ischnothyreus velox* Jackson, 1908 - Cairo.
○ - *Opopaea margaritae* (Denis, 1947) - Siwa.
● - *Opopaea punctata* (O. P.-Cambridge, 1872) - Alexandria, Ain Musa.
○ - *Opopaea* sp. - Cairo, Sallant.
△ - *Orchestina* sp. - Ebshowai
★ - *Ovobulbus bokerella* Saaristo, 2007 - Sinai.
□ - *Sulsula pauper* (O. P.-Cambridge, 1876) - Alexandria.

Key to Genera and Species of Oonopidae recorded from Egypt

Oonopidae is roughly divided into two groups called Oonopidae loricati and Oonopidae molles (In Latin: loricatus = clothed in mail, harnessed; mollis = soft) according to the chitinization level of their bodies. The members of the loricati group have their cephalothorax closed inside a casing, which has a large frontal opening to allow insertion of the chelicerae and endites bearing the palps as well as lateral openings for the legs while their abdomen is enclosed between dorsal and ventral shields and also spinnerets are partially surrounded by a chitin ring. The members of the second group have no dorsal scutum on abdomen (In Latin: scutum = shield; pl. scuta) and the ventral scutum is much reduced but apparently never totally absent (Saaristo, 2007).

1. Abdomen without dorsal scutum and the ventral scutum is much reduced but apparently never totally absent ..... Oonopidae molles ... 2
-. Abdomen enclosed between dorsal and ventral shields (scuta) and spinnerets are partially surrounded by a chitin ring ..... Oonopidae loricati ... 4

2. Femur IV enlarged. Posterior median eyes located between anterior laterals forming a straight or a slightly procurved line (Fig. 27). Legs without spines ... *Orchestina pavesii*
-. Femur IV not enlarged, similar to other femora. Posterior row of eyes recurved, including posterior median eyes 3

3. Legs, especially posteriors, sparingly spiny ..... *Sulsula pauper*
-. Legs without spines, claws conspicuously large. Male palp with large, more or less egg-shaped bulbus. Eyes (Fig. 28) ..... *Ovobulbus bokerella*

4. Dorsal scutum covers less than 89% abdominal length ..... *Ischnothyreus velox*
-. Dorsal scutum covers entire abdominal length 5

5. Anterior tibiae and metatarsi ventrally fortified by two rows of long slanting spines ..... *Dysderina scutata*
-. Legs entirely without spines 6

6. Cephalothorax short, convex, posteriorly abruptly declined. Sternum wide, heart-shaped. Male palp with bulbus separate from cymbium ..... *Gamasomorpha arabica*
-. Cephalothorax long, low and flat. Clypeus narrow. Sternum long and oval. Male palp with bulbus fused to cymbium to form cymbiobulbus ..... *Opopaea* ... 7

7. Cephalothorax orange-yellow, ♀ TL 1.3 mm, CI 0.9 (from Fig. 13, Denis, 1947) ..... *Opopaea margaritae*
-. Cephalothorax brownish orange, ♀ TL 1.46 (Israel specimen, Saaristo, 2007), 1.66 (Lebanon specimen, Assi, 1982), CI 0.76 (Israel), 0.88 (Lebanon) ..... *Opopaea punctata*

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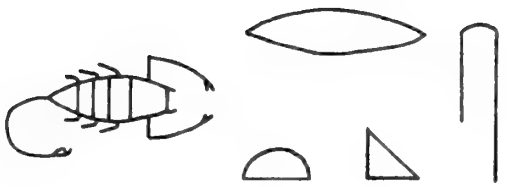

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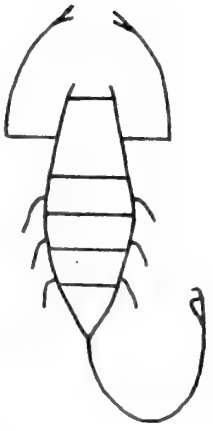

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An updated checklist of the Thomisidae (Araneae) of Turkey with zoogeographical remarks

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Abstract

This updated checklist of Thomisidae of Turkey is based on published and unpublished records available to the author. At present, 79 species belonging to 14 genera of family Thomisidae have been identified in Turkey.

Keywords: Araneae, Thomisidae, Turkey.

Introduction

Arachnological studies of Turkey began towards the end of the 19th century. They were increased during the 20th century, specially faunistic and taxonomic works. Recently, they continued with an increased speed. In the fauna of Turkey, Thomisidae must be regarded as an insufficiently studied family. The most important papers dealing with the thomisid fauna of the country are those of Kulczyński (1903), Nosek (1905), Roewer (1959), and Simon (1875, 1879, 1884, 1914). Early studies on this family were carried out by Karol (1966a, 1966b, 1966c, 1966d, 1968), who described four new *Xysticus* species from Turkey. However, *X. sislii* Karol, 1966, *X. turcicus* Karol, 1966 and *X. pelini* Karol, 1968 are now synonyms of *X. thessalicus* Simon, 1916 (Wunderlich, 1995), and *X. jezequeli* Karol, 1966 is a synonym of *X. gymnocephalus* Strand, 1915 (Assi, 1986). The previous works were densely concentrated on central Anatolian region, Black Sea region, and the Mediterranean region, i.e. central parts of Turkey.

Turkey has significant ecological properties. It may be the origin country of many spider taxa and it may also be a refugium (an area where conditions have enabled a species or a community of species to survive after extinction in surrounding areas) for living creatures affected by geological and climatic changes more than many countries in the World.

A list of 44 species belonging to 10 genera of family Thomisidae from Turkey was firstly published by Karol (1967). Afterwards, both Turkish and foreign researches made important contributions to the Turkish thomisid fauna. They recorded 55 species belonging to 12 genera from Turkey (Bayram, 2002). According to the checklist of Topçu *et al.* (2005), the Turkish thomisid fauna comprises 56 valid species belonging to 10 genera, most of which were known from a single or just a few localities.

The present checklist is based on all available published and some unpublished records of the distribution of thomisid spiders in Turkey. A total of 79 species from family Thomisidae are recorded in this country. The principal paper is that of Topçu *et al.* (2005), which was based on 41 publications. Now, 21 species are added from recently published 14 papers (i.e. Marusik *et al.*, 2005; Topçu *et al.*, 2006; Logunov, 2006; Logunov & Demir, 2006; Özdemir *et al.*, 2006; Varol *et al.*, 2006; Demir *et al.*, 2006, 2007a, 2007b, 2008, 2008a, 2008b, In press; Bayram *et al.*, 2007).

Material and Methods

The present checklist of the thomisid spesies of Turkey is mainly based on the data included in "A Checklist of the spiders of Turkey" (Topçu *et al.*, 2005). It is compiled using published records and original data. World distribution of all species follows Platnick (2008). Distribution of species in geographical regions of Turkey is summarized in remarks according to Topçu *et al.* (2005) [MR = Marmara, AR = Aegean, CAR = Central Anatolia, BSR = Black Sea Region, EAR = East Anatolia, SAR = Southeastern Anatolia Region and MER = Mediterranean Regions]. The present zoogeographical characterization is based on the chorotype classification of Anatolian fauna, recently proposed by Vigna Taglianti *et al.* (2000). In this study, as possible as one chorotype description can be identified for each taxon. But this kind of description can not be possible for some taxa, so one or two chorotypes are used for them. The species which are recorded from only one locality in Turkey are characterised by an asterisk (*).

Taxonomy

Family Thomisidae Sundevall, 1833

Genus *Coriarachne* Thorell, 1870

Coriarachne depressa (C.L. Koch, 1837)
Records in Turkey: Aegean and Mediterranean region in Turkey (Bayram, 2002).
Distribution in Turkey: AR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Genus *Cozyptila* Lehtinen & Marusik, 2005

Cozyptila blackwalli (Simon, 1875)
Records in Turkey: Ankara (Logunov & Demir, 2006).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Cozyptila guseinovorum Marusik & Kovblyuk, 2005
Records in Turkey: Sakarya, İzmir (Marusik *et al.*, 2005).
Distribution in Turkey: MR and AR. **Chorotype:** Central Asiatic + East European.
World Distribution: Central Asia, Russia, Turkey.

Cozyptila thaleri Marusik & Kovblyuk, 2005
Records in Turkey: Sakarya, Bolu, Konya, Ankara (Logunov & Demir, 2006).
Distribution in Turkey: MR and CAR. **Chorotype:** Eastern European.
World Distribution: Turkey, Ukraine.

Genus *Diaea* Thorell, 1869

Diaea livens Simon, 1876
Records in Turkey: Bursa (Bayram *et al.*, 2002); Gaziantep (Özdemir *et al.*, 2006).
Distribution in Turkey: MR, MER and SAR. **Chorotype:** Holarctic.
World Distribution: USA, Central Europe to Azerbaijan.

Genus *Ebrechtella* Dahl, 1907

Ebrechtella tricuspidata (Fabricius, 1775)
Records in Turkey: Çankırı, Ankara, Yozgat (Demir *et al.*, 2007a).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Genus *Heriaeus* Simon, 1875

Heriaeus buffoni (Audouin, 1825)
Records in Turkey: İstanbul (Kulczyński, 1903).
Distribution in Turkey: MR *. **Chorotype:** North African + South West Asiatic.
World Distribution: North Africa, Israel.

Heriaeus graminicola (Doleschall, 1852)
Records in Turkey: Niğde, Mersin (Topçu *et al.*, 2006).
Distribution in Turkey: MER *. **Chorotype:** European + Central Asiatic.
World Distribution: Europe to Central Asia.

Heriaeus hirtus (Latreille, 1819)
Records in Turkey: İstanbul (Simon, 1875; Pavesi, 1876).
Distribution in Turkey: MR *. **Chorotype:** European.
World Distribution: Europe to Georgia.

Heriaeus melloteei Simon, 1886
Records in Turkey: Niğde, Mersin, Adana (Topçu *et al.*, 2006); İstanbul (Kulczyński, 1903).
Distribution in Turkey: MR, CAR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Heriaeus orientalis Simon, 1918
Records in Turkey: İstanbul (Kulczyński, 1903).
Distribution in Turkey: MR *. **Chorotype:** Balkano – Anatolian.
World Distribution: Greece, Turkey, Ukraine.

Heriaeus pilosus Nosek, 1905
Records in Turkey: Sivas, Nevşehir, Kayseri (Nosek, 1905); Erzurum, Tokat (Loerbroks, 1983); Turkey (Reimoser, 1919).
Distribution in Turkey: CAR, EAR and BSR. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Heriaeus setiger (O.P.-Cambridge, 1872)
Records in Turkey: Muğla (Dalmas, 1920).
Distribution in Turkey: AR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Heriaeus simoni Kulczyński, 1903
Records in Turkey: Hatay, İstanbul (Kulczyński, 1903); İzmir, Bursa, Aydın (Loerbroks, 1983); Turkey (Reimoser, 1919).
Distribution in Turkey: MR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Heriaeus spinipalpus Loerbroks, 1983
Records in Turkey: Adana, Bitlis, Erzurum, Van (Loerbroks, 1983).
Distribution in Turkey: MER and EAR. **Chorotype:** Mediterranean.
World Distribution: Eastern Mediterranean.

Genus *Misumena* Latreille, 1804

Misumena vatia (Clerck, 1757)
Records in Turkey: İstanbul (Simon, 1875; Pavesi, 1876); Sakarya (Nosek, 1905); Turkey (Reimoser, 1919); Niğde, Mersin (Topçu *et al.*, 2006).
Distribution in Turkey: MER, CAR and MR. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Genus *Monaeses* Thorell, 1869

Monaeses israeliensis Levy, 1973
Records in Turkey: Antalya (Bayram *et al.*, 2007).
Distribution in Turkey: MER *. **Chorotype:** West Asiatic + Central Asiatic.
World Distribution: Greece, Turkey, Israel, Lebanon, Central Asia.

Genus *Ozyptila* Simon, 1864

Ozyptila ankarensis Karol, 1966
Records in Turkey: Ankara (Karol, 1966c).
Distribution in Turkey: CAR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Ozyptila atomaria (Panzer, 1801)
Records in Turkey: Van (Bayram, 1996a, b), Kırıkkale (Bayram *et al.*, 2005).
Distribution in Turkey: EAR and SAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Ozyptila claveata (Walckenaer, 1837)
Records in Turkey: İzmir (Lehtinen, 2002); Gaziantep (Özdemir *et al.*, 2006; Varol *et al.*, 2006); Niğde (Topçu *et al.*, 2006).
Distribution in Turkey: AR and SAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Ozyptila clavidorsa Roewer, 1959
Records in Turkey: Gaziantep (Roewer, 1959).
Distribution in Turkey: SAR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Ozyptila conostyla Hippa, Koponen & Oksala, 1986
Records in Turkey: Yozgat (Hippa *et al.*, 1986).
Distribution in Turkey: CAR *. **Chorotype:** Caucasian.
World Distribution: Turkey to Turkmenistan.

Ozyptila praticola (C.L. Koch, 1837)
Records in Turkey: İstanbul (Roewer, 1959); Van (Bayram, 1996a; Bayram & Varol, 1996); Denizli (Bayram *et al.*, 1998); Kırıkkale (Bayram *et al.*, 2005); Adana (Topçu *et al.*, 2006).
Distribution in Turkey: MR, EAR, AR, CAR and MER. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Ozyptila rauda Simon, 1875
Records in Turkey: Zonguldak (Roewer, 1959).
Distribution in Turkey: BSR (WBR) *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Ozyptila sanctuaria (O.P.-Cambridge, 1871)
Records in Turkey: Van (Bayram, 1996a); Kırıkkale (Bayram *et al.*, 2005).
Distribution in Turkey: EAR and CAR. **Chorotype:** European.
World Distribution: Europe.

Ozyptila simplex (O.P.-Cambridge, 1862)
Records in Turkey: Turkey (Caporiacco, 1935); Gaziantep (Özdemir *et al.*, 2006); Adana (Topçu *et al.*, 2006).
Distribution in Turkey: EAR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Ozyptila spirembola Wunderlich, 1995
Records in Turkey: Bolu (Wunderlich, 1995).
Distribution in Turkey: MR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Ozyptila tricoloripes Strand, 1913
Records in Turkey: Kahramanmaraş, Hatay, (Demir *et al.*, 2008a).
Distribution in Turkey: MER *. **Chorotype:** Turanian.
World Distribution: Israel, Azerbaijan, Turkmenistan.

Genus *Pistius* Simon, 1875

Pistius truncatus (Pallas, 1772)
Records in Turkey: Niğde, Mersin (Topçu *et al.*, 2006); İstanbul (Simon, 1879); Turkey (Karol, 1967).
Distribution in Turkey: CAR, MER and MR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Genus *Runcinia* Simon, 1875

Runcinia grammica (C.L. Koch, 1837)
Records in Turkey: Sakarya (Nosek, 1905); Mersin, Adana (Topçu *et al.*, 2006); Balıkesir (Karol, 1966d); İstanbul, Hatay (Kulczyński, 1903); Turkey (Karol, 1967; Caporiacco, 1935); Bursa (Kaya & Uğurtaş, 2007).
Distribution in Turkey: MR, MER and AR. **Chorotype:** Palearctic + Ethiopian.
World Distribution: Palearctic, St. Helena, South Africa.

Genus *Synema* Simon, 1864

Synema globosum (Fabricius, 1775)
Records in Turkey: Kocaeli, Sakarya (Nosek, 1905); Hatay, Kilis, Adana, Osmaniye (Demir *et al.*, 2007b); Gaziantep (Özdemir *et al.*, 2006); Niğde, Mersin, Adana (Topçu *et al.*, 2006); Bursa (Karol, 1966d); İstanbul (Simon, 1875; Pavesi, 1876); Hatay, İstanbul (Kulczyński, 1903); Turkey (Strand, 1917; Caporiacco, 1935); Aydın (Giltay, 1932); Osmaniye (Roewer, 1959); Bursa (Kaya & Uğurtaş, 2007).
Distribution in Turkey: MR, MER, SAR, AR and CAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Synema plorator (O.P.-Cambridge, 1872)
Records in Turkey: Osmaniye, Kahramanmaraş (Demir *et al.*, 2007b); Bursa (Karol, 1966d).
Distribution in Turkey: MER and MR. **Chorotype:** South West Asiatic + Central Asiatic.
World Distribution: Slovakia to Israel, Central Asia.

Synema utotchkini Marusik & Logunov, 1995
Records in Turkey: Kahramanmaraş (Demir *et al.*, 2007b).
Distribution in Turkey: MER *. **Chorotype:** Caucasian.
World Distribution: Kazakhstan, Kyrgyzstan, Turkey.

Genus *Thomisus* Walckenaer, 1805

Thomisus citrinellus Simon, 1875
Records in Turkey: Black Sea Region (Topçu *et al.*, 2005).
Distribution in Turkey: BSR (MBR) *. **Chorotype:** Afrotropico - Mediterranean.
World Distribution: Mediterranean, Africa, Yemen, Socotra, Seychelles.

Thomisus onustus Walckenaer, 1805
Records in Turkey: Van (Bayram, 1996b; Bayram & Varol, 1996); Denizli (Bayram *et al.*, 1998); Manisa, İzmir, Aydın (Bayram *et al.*, 2000); Sakarya, Sivas, Konya, Kayseri (Nosek, 1905); Kırıkkale (Bayram *et al.*, 2005); Gaziantep (Özdemir *et al.*, 2006); Niğde, Mersin, Adana (Topçu *et al.*, 2006); Ankara (Karol, 1966d); Turkey (Caporiacco, 1935; Ono & Martens, 2005); İstanbul (Simon, 1875; Pavesi, 1876; Kulczyński, 1903; Giltay, 1932); İzmir (Kulczyński, 1903); Hatay, Gaziantep (Roewer, 1959); Bursa (Kaya & Uğurtaş, 2007).
Distribution in Turkey: EAR, AR, MR, SAR, MER and CAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Thomisus zyuzini Marusik & Logunov, 1990
Records in Turkey: Osmaniye (Demir *et al.*, 2008a).
Distribution in Turkey: MER *. **Chorotype:** South West Asiatic + Central Asiatic.
World Distribution: Saudi Arabia to Central Asia.

Genus *Tmarus* Simon, 1875

Tmarus piochardi (Simon, 1866)
Records in Turkey: Diyarbakır, Muğla (Bayram *et al.*, 2007).
Distribution in Turkey: SAR and MER. **Chorotype:** Mediterranean.
World Distribution: Mediterranean.

Tmarus stellio Simon, 1875
Records in Turkey: Ankara (Demir *et al.*, 2007a).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Genus *Xysticus* C.L. Koch, 1835

Xysticus abditus Logunov, 2006
Records in Turkey: Niğde (Logunov, 2006).
Distribution in Turkey: CAR *. **Chorotype:** Balkano – Anatolian.
World Distribution: Bulgaria, Turkey.

Xysticus acerbus Thorell, 1872
Records in Turkey: Turkey (Simon, 1914); İstanbul (Simon, 1875; Pavesi, 1876); Gaziantep (Roewer, 1959).
Distribution in Turkey: MR and SAR. **Chorotype:** European + Central Asiatic.
World Distribution: Europe to Central Asia.

Xysticus anatolicus Demir, Aktaş & Topçu, 2008
Records in Turkey: Kayseri (Demir *et al.*, 2008b).
Distribution in Turkey: CAR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Xysticus audax (Schrank, 1803)
Records in Turkey: İstanbul, Adana, Osmaniye, Hatay (Roewer, 1959); Turkey (Simon, 1914).
Distribution in Turkey: MR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus bacurianensis Mcheidze, 1971
Records in Turkey: Trabzon (Logunov & Demir, 2006).
Distribution in Turkey: BSR *. **Chorotype:** Turanian + East European.
World Distribution: Turkey, Russia, Georgia, Azerbaijan.

Xysticus bifasciatus C.L. Koch, 1837
Records in Turkey: Konya (Bayram & Allahverdi, 1994, 1999); Manisa, İzmir, Aydın (Bayram *et al.*, 2000); Kırıkkale (Bayram *et al.*, 2005); Niğde (Topçu & Demir, 2004; Topçu *et al.*, 2006).
Distribution in Turkey: CAR and AR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus bufo (Dufour, 1820)
Records in Turkey: İstanbul (Simon, 1875; Pavesi, 1876); İzmir (Pavesi, 1876).
Distribution in Turkey: MR and AR. **Chorotype:** Mediterranean.
World Distribution: Mediterranean.

Xysticus caperatus Simon, 1875
Records in Turkey: Osmaniye (Demir, *et al.*, In press).
Distribution in Turkey: MER *. **Chorotype:** Mediterranean + East European.
World Distribution: Mediterranean, Russia.

Xysticus cribratus Simon, 1885
Records in Turkey: Turkey (Lehtinen, 2002); Ankara (Karol, 1966d).
Distribution in Turkey: CAR *. **Chorotype:** Mediterranean + Asiatic.
World Distribution: Mediterranean to China, Sudan.

Xysticus cristatus (Clerck, 1757)
Records in Turkey: Van (Bayram, 1994, 1996b, c; Bayram *et al.*, 1999; Bayram & Varol, 1999); Manisa, İzmir, Aydın (Bayram *et al.*, 2000); Denizli (Bayram *et al.*, 1998); Konya (Bayram & Allahverdi, 1999); Kırıkkale (Bayram *et al.*, 2005); Niğde, Mersin (Topçu *et al.*, 2006); Trabzon (Logunov & Demir, 2006).
Distribution in Turkey: EAR, SAR, AR, CAR, MER and BSR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus demirsoyi Demir, Topçu & Türkes, 2006
Records in Turkey: Niğde (Demir, *et al.*, 2006).
Distribution in Turkey: CAR *. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Xysticus edax (O. P.-Cambridge, 1872)
Records in Turkey: Osmaniye, Kilis, Kahramanmaraş, Hatay (Demir, *et al.*, In press).
Distribution in Turkey: MER *. **Chorotype:** South West Asiatic.
World Distribution: Israel.

Xysticus erraticus (Blackwall, 1834)
Records in Turkey: Van (Bayram, 1996a).
Distribution in Turkey: EAR *. **Chorotype:** West Palearctic.
World Distribution: Europe, Russia.

Xysticus ferrugineus Menge, 1876
Records in Turkey: Niğde (Topçu & Demir, 2004; Topçu *et al.*, 2006).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus ferus O.P.-Cambridge, 1876
Records in Turkey: Muğla (Dalmas, 1920).

Distribution in Turkey: MER *. **Chorotype:** East Mediterranean.
World Distribution: Cyprus, Egypt, Israel.

Xysticus gallicus Simon, 1875
Records in Turkey: Turkey (Simon, 1914, Karol, 1967; Ono & Martens, 2005); Kayseri (Nosek, 1905).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus graecus C.L. Koch, 1837
Records in Turkey: Ankara (Karol, 1966d), Bursa, İstanbul (Kulczyński, 1903).
Distribution in Turkey: CAR and MR. **Chorotype:** East Mediterranean + East European.
World Distribution: Eastern Mediterranean, Russia.

Xysticus gymnocephalus Strand, 1915
Records in Turkey: Ankara (Karol, 1966a, 1966d).
Distribution in Turkey: CAR *. **Chorotype:** South West Asiatic.
World Distribution: Turkey, Lebanon, Israel.

Xysticus kaznakovi Utochkin, 1968
Records in Turkey: Kahramanmaraş, Osmaniye (Demir, *et al.*, In press).
Distribution in Turkey: MER *. **Chorotype:** Central Asiatic.
World Distribution: Central Asia.

Xysticus kochi Thorell, 1872
Records in Turkey: Sakarya, Kayseri (Nosek, 1905); Turkey (Reimoser, 1919); Konya (Bayram & Allahverdi, 1994, 1999); Denizli (Bayram *et al.*, 1998); Van (Bayram & Varol, 2000); Kırıkkale (Bayram *et al.*, 2005); Niğde, Mersin (Topçu *et al.*, 2006); Ankara, Bursa (Karol, 1966d); İstanbul (Simon, 1875; Pavesi, 1876); Turkey (Caporiacco, 1935); Çankırı, Konya, Yozgat, Isparta, Bolu, Adana, Kayseri, Sinop, Zonguldak, Nevşehir (Logunov & Demir, 2006).
Distribution in Turkey: MR, CAR, AR, SAR, MER and BSR. **Chorotype:** Palearctic.
World Distribution: Europe, Mediterranean to Central Asia.

Xysticus laetus Thorell, 1875
Records in Turkey: Konya (Nosek, 1905); Turkey (Reimoser, 1919); Mersin (Topçu *et al.*, 2006); Nevşehir, Çankırı, Konya, Kırıkkale, Bolu, Yozgat, Niğde, Antalya (Logunov, 2006); Bursa (Kaya & Uğurtaş, 2007).
Distribution in Turkey: CAR, MER and MR. **Chorotype:** East Mediterranean + South West Asiatic.
World Distribution: Italy to Central Asia.
Comment: All records of *Xysticus kempeleni* Thorell, 1872 from Turkey belong to *X. laetus* (Logunov, 2006).

Xysticus lalandei (Audouin, 1825)
Records in Turkey: Ankara (Karol, 1966d); Konya, Niğde, Kayseri (Nosek, 1905); Turkey (Strand, 1917); Muğla (Dalmas, 1920).
Distribution in Turkey: CAR and MER. **Chorotype:** North East African - Sindian.
World Distribution: Egypt, Israel.

Xysticus lanio C.L. Koch, 1835
Records in Turkey: İstanbul (Pavesi, 1876); Hatay (Roewer, 1959); Niğde, Mersin (Topçu *et al.*, 2006).
Distribution in Turkey: MR, MER and SAR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus lineatus (Westring, 1851)
Records in Turkey: Mersin (Topçu & Demir, 2004; Topçu *et al.*, 2006).
Distribution in Turkey: MER *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus luctator L. Koch, 1870
Records in Turkey: Niğde (Nosek, 1905).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus luctuosus (Blackwall, 1836)
Records in Turkey: Van (Bayram & Varol, 1999, 2000; Bayram *et al.*, 1999); Konya (Bayram & Allahverdi, 1994); Gaziantep (Özdemir *et al.*, 2006).
Distribution in Turkey: SAR, CAR and EAR. **Chorotype:** Holarctic.
World Distribution: Holarctic.

Xysticus macedonicus Silhavy, 1944
Records in Turkey: Gaziantep (Özdemir *et al.*, 2006).
Distribution in Turkey: SAR *. **Chorotype:** Central European.
World Distribution: Germany, Switzerland, Austria, Macedonia, Turkey.

Xysticus ninnii fusciventris Crome, 1965
Records in Turkey: Sivas (Nosek, 1905); Turkey (Reimoser, 1919); Van (Bayram *et al.*, 1999; Bayram & Varol, 2000); Mersin (Topçu *et al.*, 2006); Sivas, Çankırı, Kayseri, Konya (Logunov & Demir, 2006).
Distribution in Turkey: SAR, MER and CAR. **Chorotype:** Eastern Europe+Central Asiatic.
World Distribution: Eastern Europe to Mongolia.

Xysticus nubilus Simon, 1875
Records in Turkey: İzmir (Simon, 1914).
Distribution in Turkey: AR *. **Chorotype:** Mediterranean.
World Distribution: Mediterranean, Azores, Macronesia.

Xysticus pseudolanio Wunderlich, 1995
Records in Turkey: Bolu, Artvin (Wunderlich, 1995).
Distribution in Turkey: MR and BSR. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Xysticus pseudorectilineus (Wunderlich, 1995)
Records in Turkey: Adana (Wunderlich, 1995); Adana, Niğde, Adana, Nevşehir, Osmaniye, Antalya, Kayseri, Mersin, Şanlıurfa, Gaziantep (Demir *et al.*, 2008).
Distribution in Turkey: MER, CAR and EAR. **Chorotype:** Anatolian endemic.
World Distribution: Turkey.

Xysticus rectilineus (O.P.-Cambridge, 1872)
Records in Turkey: Ankara (Karol, 1966d).
Distribution in Turkey: CAR *. **Chorotype:** South West Asiatic.
World Distribution: Syria, Lebanon, Israel.

Xysticus robustus (Hahn, 1832)
Records in Turkey: Van (Bayram, 1996a; Bayram & Varol, 1996; Bayram *et al.*, 1999); Konya (Bayram & Allahverdi, 1994, 1999); Manisa, İzmir, Aydın (Bayram *et al.*, 2000); Kırıkkale (Bayram *et al.*, 2005); Gaziantep (Özdemir *et al.*, 2006); Niğde, Mersin (Topçu *et al.*, 2006).
Distribution in Turkey: SAR, CAR, AR, EAR and MER. **Chorotype:** European + Central Asiatic.
World Distribution: Europe to Central Asia.

Xysticus sabulosus (Hahn, 1832)
Records in Turkey: Van (Bayram *et al.*, 1999); Niğde, Mersin (Topçu *et al.*, 2006); İstanbul (Simon, 1875; Pavesi, 1876).
Distribution in Turkey: SAR, CAR and MR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus striatipes L. Koch, 1870
Records in Turkey: Ankara (Karol, 1966d); Mersin (Topçu *et al.*, 2006); Bursa (Kaya & Uğurtaş, 2007).
Distribution in Turkey: CAR, MER and MR. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus thessalicoides Wunderlich, 1995
Records in Turkey: Antalya, Kastamonu, Bolu, Trabzon (Logunov & Demir, 2006).
Distribution in Turkey: MER, BSR and MR. **Chorotype:** Balkano – Anatolian.
World Distribution: Greece, Crete, Turkey.

Xysticus thessalicus Simon, 1916
Records in Turkey: Ankara (Karol, 1966d); Konya (Karol, 1966b, 1966d, 1968); Manisa (Azarkina & Logunov, 2000); Konya, Mersin, Yozgat (Logunov & Demir, 2006).
Distribution in Turkey: CAR, AR and MER. **Chorotype:** North East Mediterranean.
World Distribution: Balkans, Greece, Turkey, Israel.

Xysticus tristrami (O.P.-Cambridge, 1872)
Records in Turkey: Konya, Niğde, Kayseri (Nosek, 1905); Hatay (Simon, 1884).
Distribution in Turkey: CAR and MER. **Chorotype:** South West Asiatic+Central Asiatic.
World Distribution: Saudi Arabia to Central Asia.

Xysticus ulmi (Hahn, 1831)
Records in Turkey: Konya (Karol, 1966d); Van (Bayram, 1996c; Bayram *et al.*, 1999); Kırıkkale (Bayram *et al.*, 2005); Gaziantep (Özdemir *et al.*, 2006); Mersin (Topçu *et al.*, 2006).
Distribution in Turkey: CAR, SAR, EAR and MER. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus viduus Kulczyński, 1898
Records in Turkey: Niğde (Topçu & Demir, 2004; Topçu *et al.*, 2006).
Distribution in Turkey: CAR *. **Chorotype:** Palearctic.
World Distribution: Palearctic.

Xysticus xerodermus Strand, 1913
Records in Turkey: Konya, Yozgat (Logunov & Demir, 2006).
Distribution in Turkey: CAR *. **Chorotype:** South West Asiatic.
World Distribution: Turkey, Israel.

Discussion

Turkey is a bridge between Asia and Europe. Its geographical location is very important in Palearctic region. Turkey consists of two general parts as Trace and Anatolia. The European section of Turkey is eastern Thrace. It forms the borders of Turkey with Greece and Bulgaria. The Asian part of the country, Anatolia, consists of a high central plateau with narrow coastal plains. Turkey has a great variability in topography and climate. The fact that Anatolia is surrounded from three sides by sea, its situation in the temperate climatic zone, its geological and geomorphic structure, and topography are main contributing factors affecting diversity of species in terrestrial

ecosystems. This study has increased the number of thomisid spiders in Turkey to 79 species belonging to 14 genera.

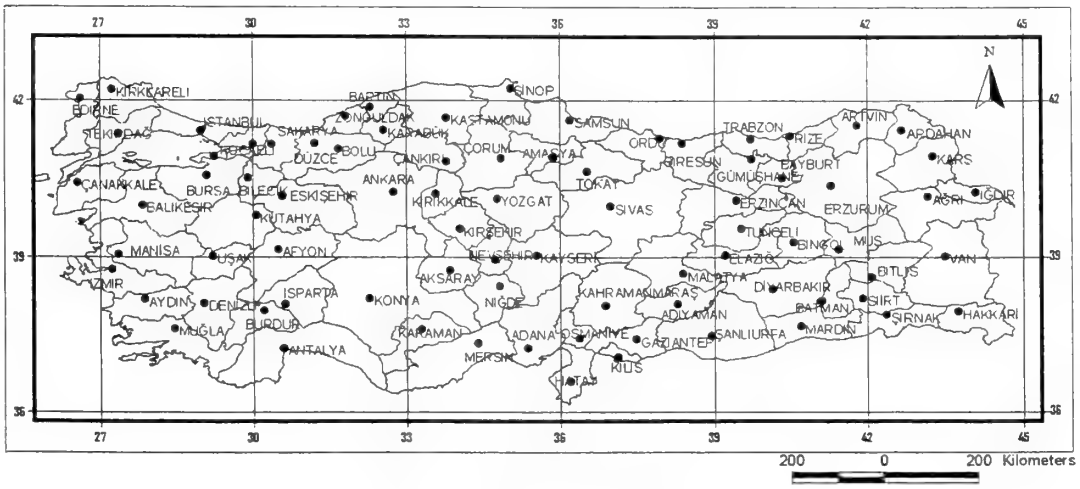

Fig. 1. Provinces of Turkey.

Zoogeographically, *Coriarachne depressa*, *Cozyptila blackwalli*, *Ebrechtella tricuspidata*, *Heriaeus melloteei*, *H. setiger*, *H. simoni*, *Ozyptila atomaria*, *O. claveata*, *O. rauda*, *O. simplex*, *Pistius truncatus*, *Runcinia grammica*, *Synema globosum*, *Thomisus onustus*, *Tmarus stellio*, *Xysticus audax*, *X. bifasciatus*, *X. cristatus*, *X. ferrugineus*, *X. gallicus*, *X. kochi*, *X. lanio*, *X. lineatus*, *X. luctator*, *X. sabulosus*, *X. striatipes*, *X. ulmi* and *X. viduus* have the Palearctic chorotype. *Cozyptila guseinovorum* has the Central Asiatic + East European chorotypes. *Cozyptila thaleri* has the Eastern European chorotype. *Diaea livens*, *Misumena vatia*, *Ozyptila praticola* and *Xysticus luctuosus* have the Holarctic chorotype. *Heriaeus buffoni* has the North African + South West Asiatic chorotypes. *Heriaeus graminicola*, *Xysticus acerbus* and *X. robustus* have the European + Central Asiatic chorotypes. *Heriaeus hirtus* and *Ozyptila sanctuaria* have the European chorotype. *Heriaeus orientalis*, *Xysticus abditus* and *X. thessalicoides* have the Balkano – Anatolian chorotype. *Monaeses israeliensis*, *Synema plorator*, *Thomisus zyuzini* and *Xysticus tristrami* have the South West Asiatic + Central Asiatic chorotypes. *Ozyptila conostyla* and *Synema utotchkini* have the Caucasian chorotype. *Ozyptila tricoloripes* has the Turanian chorotype. *Thomisus citrinellus* has the Afrotropico - Mediterranean chorotype. *Heriaeus spinipalpus*, *Tmarus piochardi*, *Xysticus bufo* and *X. nubilus* have the Mediterranean chorotype. *Xysticus bacurianensis* has the Turanian + East European chorotypes. *Xysticus cribratus* has the Mediterranean + Asiatic chorotypes. *Xysticus edax*, *X. gymnocephalus*, *X. rectilineus* and *X. xerodermus* has the South West Asiatic chorotype. *Xysticus erraticus* has the West Palearctic chorotype. *Xysticus ferus* has the East Mediterranean chorotype. *Xysticus graecus* has the East Mediterranean + East European chorotypes. *Xysticus caperatus* has the Mediterranean + East European chorotypes. *Xysticus kaznakovi* has the Central Asiatic chorotype. *Xysticus laetus* has the East Mediterranean + South West Asiatic chorotypes. *Xysticus lalandei* has the North East African - Sindian chorotype. *Xysticus macedonicus* has the Central European chorotype. *X. ninnii fusciventris* has the Eastern Europe + Central Asiatic chorotypes. *Xysticus thessalicus* has the North East Mediterranean chorotype. *Heriaeus pilosus*, *Ozyptila ankarensis*, *O. clavidorsa*, *O. spirembola*, *Xysticus anatolicus*, *X. demirsoyi X. pseudolanio* and *X. pseudorectilineus* have the Anatolian endemic chorotype.

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The first record of genus *Pax* (Araneae: Zodariidae) in Turkey

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Abstract

The spider species *Pax islamita* (Simon, 1873) was found in Turkey for the first time. This represents a new record of both the species and genus *Pax* Levy, 1990 from Turkey. Its description, characteristic features, drawings and photographs of genitalia and general habitus of both sexes are presented.

Keywords: Araneae, Zodariidae, Turkey.

Introduction

Family Zodariidae includes small to large araneomorph spiders with an enormous variation of shapes. They are ecribellate entelegyne spiders. They are diagnosed by having three tarsal claws with teeth on paired tarsal claws implanted on lateral side facing opposing claw, six or eight eyes, very short cheliceral fangs, long anterior lateral spinnerets, reduced posterior spinnerets and by the absence of serrula (Jocqué & Dippenaar-Schoeman, 2006).

Family Zodariidae is a big spider family which includes 868 species in 74 genera with worldwide distribution (Platnick, 2008). Although this family is represented in the eastern Mediterranean region, Turkish zodariids are poorly known. Only 33 species of 3 genera have so far recorded in the country (Topçu *et al.*, 2005).

Genus *Pax* [*Type-species. Habronestes libani* Simon, 1873, from Lebanon] was described by Levy (1990) to include two new species from Israel [*P. engediensis* and *P. palmonii*] in addition to three Levantine species transferred from *Habronestes* [*P. islamita* (Simon, 1873) and *P. libani* (Simon, 1873)] and *Lachesis* [*P. meadi* (O. P.-Cambridge, 1872)]. It is considered a senior synonym of *Storamia* Jocqué, 1991 (Platnick, 2008). *Pax* is very near to genus *Mallinella* Strand, 1906 of tropical Africa and south East Asia.

This work adds *Pax islamita* (Simon, 1873) as a new record of the species and genus to the zodariid spider fauna of Turkey.

Material and Methods

This study is based on specimens collected from southern Turkey and preserved in 70% ethanol. The identification was made by means of a SZX61 Olympus stereomicroscope and according to Levy (1990). Examined specimens are deposited in the Arachnology Museum of Niğde University (NUAM). All measurements are in millimetres.

Results

Pax islamita (Simon, 1873) (Figs. 1-11)

Material examined: TURKEY: ***Kayseri province***, Yahyalı district, surrounding of Kapuz başı waterfalls, (37°46'N, 35°23'E), 1270m, under stones, 26.V.2007 (3♂♂, 3♀♀). ***Osmaniye Province***, Kadirli district, Karatepe National Park, Çürükler village, (37°15'N, 36°13'E), 297m, under stone and on soil, 24.V.2007 (2♂♂); Hasanbeyli district, (37°09'N, 36°27'E), 661m, under stone, 02.V.2007 (1♂); Toprakkale district, (37°03'N, 36°08'E), 01.V.2007 (1♂, 1♀). ***Kilis Province,*** Sabuncu village (36°50'N, 36°53'E), 521m, under stone, 02.V.2007 (1♀). ***Hatay Province***, Dörtyol district, Karakese village, (36°50´N, 36°16´E), 520m, 13.V.2008 (2♂♂, 2♀♀). ***Ankara Province***, Sincan district (39°58'N, 32°35'E), 855m, 21.VIII.2007 (1♂, 1♀).

Description: Measurements. 2♂♂ (Fig. 1): Total length 7.5-8.0. Carapace length 3.8-4.0, width 3.0-3.2. Abdomen length 3.7-4.0, width 2.7-2.9; 2♀♀ (Fig. 2): Total length 9.0-10.5. Carapace length 3.7-4.0, width 2.4-2.8. Abdomen length 5.3-6.5, width 3.2-4.0. Prosoma rectangular shaped, slightly narrowed in front, slightly elevated in the middle, shiny blackish-brown with no patterns. Male carapace slightly enlarged and darkened than female. Fovea is narrow and distinct. Anterior and posterior eye rows relatively procurved; all eyes are nearly equal and relatively equidistant. Chelicerae have the same colour of carapace; with small fangs. Endites and labium lighter than carapace. Sternum triangular shaped; dark brown with densely covered by black hairs. Legs reddish-yellow; femora dark brown. Abdomen dark, oval shaped with large dorsal scutum in male. Male palp (Figs. 3-5, 8-9) and epigyne (Figs. 6-7, 10-11) resemble description of Levy (1990).

Comment: Adult males and females of *Pax islamita* were collected in May, except those from Sincan district, Ankara Province, in August.

All species of genus *Pax* are known from the Middle East. *P. meadi* (O. P.-Cambridge, 1872) is only known from the type locality, Jericho, Palestine. *P. libani* (Simon, 1873) is recorded from Lebanon and Israel (7 localities, Levy, 1990). Adult males and females were taken in the winter and spring, November to March. *P. palmonii* Levy, 1990 and *P. engediensis* Levy, 1990 are only known from Israel.

P. islamita (Simon, 1873) is recorded from Syria (Damascus), Lebanon (Beirut and near Ba'albek), and Israel (Tiberias, Dan, Mt Carmel, Wadi Natuf in Samaria, En Matta) where an adult male and a female were collected in May and one male was found in August (Levy, 1990). The recording of this species from Turkey widens its distribution to the north and west (Fig. 12).

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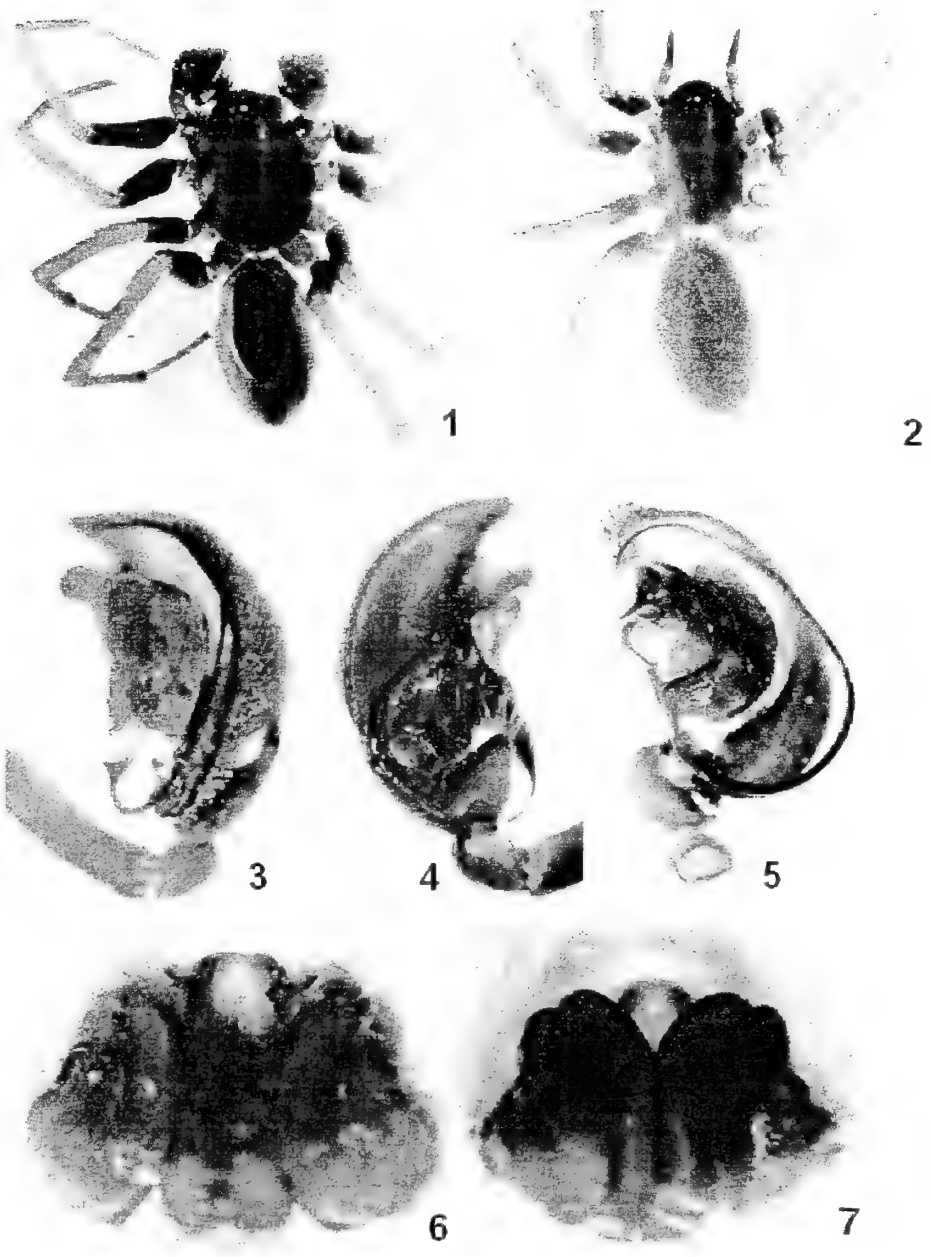

Figs. 1–7: Photographs of *Pax islamita* (Simon, 1873). 1-2. General habitus. 1. Male. 2. Female. 3-5. Right male palp. 3. Prolateral view. 4. Retrolateral view. 5. Ventral view. 6-7. Female. 6. Epigynum, ventral view. 7. Vulvae, dorsal view.

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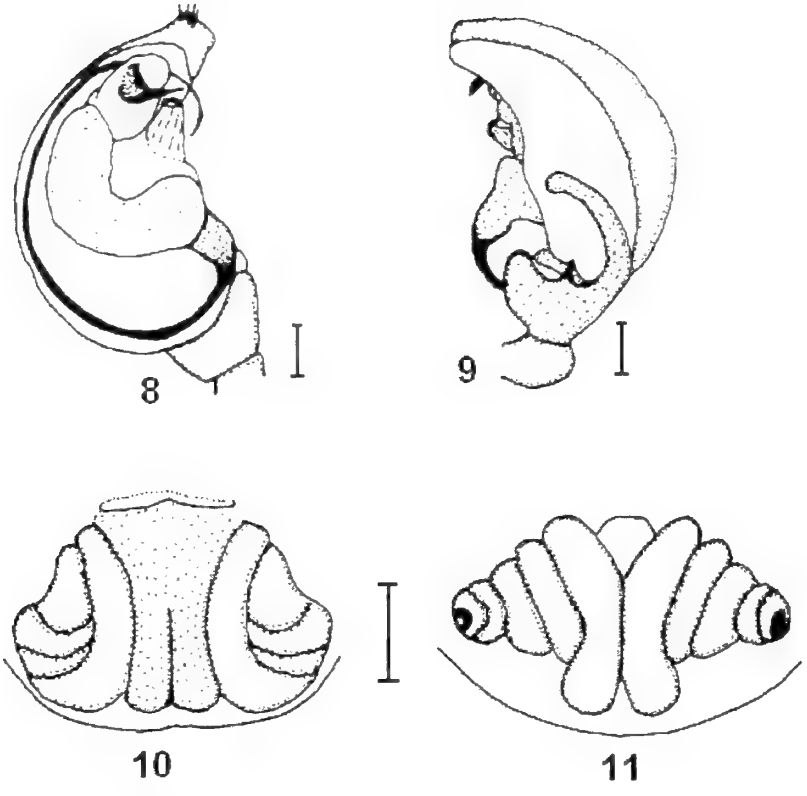

Figs. 8–11. Drawings of genitalia of *Pax islamita* (Simon, 1873). 8-9. Left male palp. 8. Ventral view. 9. Retrolateral view. 10-11. Female. 10. Epigynum, ventral view. 11. Vulvae, dorsal view. Scale bars: 0.25 mm.

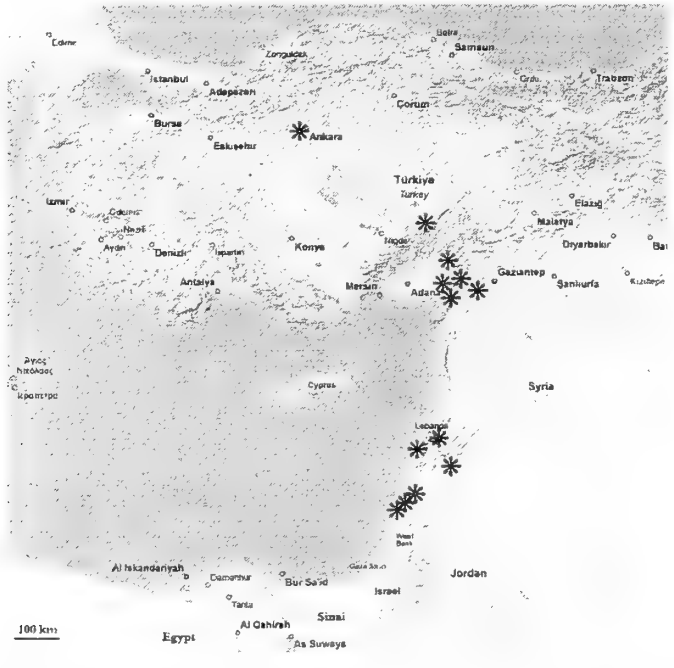

Fig. 12. Distribution map of *Pax islamita* (Simon, 1873) [*] in the eastern Mediterranean region.

Serket (2008) vol. 11(2): 55-61.

Three new records for the spider fauna of Turkey (Araneae: Araneidae, Palpimanidae, Theridiidae)

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Abstract

Aculepeira carbonaria (L. Koch, 1869), *Palpimanus sogdianus* Charitonov, 1946 and *Episinus maculipes* Cavanna, 1876 (Araneidae, Palpimanidae, Theridiidae) are recorded for the first time from Turkey. Their characteristic features and genitalia drawings are presented, together with the geographical distribution of the species.

Keywords: *Aculepeira carbonaria*, *Episinus maculipes*, *Palpimanus sogdianus*, Araneae, New records, Turkey.

Introduction

Turkey, with its different geographic regions, has a peculiar continental fauna rich of species due to its diverse ecosystem types. Although many reports have been made on terrestrial and aquatic animals from Turkey since the late 19th century, detailed studies on some groups are still needed; one of them is the order Araneae (spiders). It currently includes 108 families, 3694 genera, and 40.462 species (Platnick, 2008). Furthermore, 600 fossil species have been described (Selden, 1996; Selden & Dunlop, 1998).

The most comprehensive lists of Turkish spiders are those of Karol (1967) who listed 302 species belonging to 119 genera with several subspecies, and Bayram (2002) who listed 520 species belonging to 162 genera from Turkey. Most recently, Topçu *et al.* (2005) prepared an updated checklist of spiders of Turkey, incorporating data from previous lists. In this study, a total of 613 species and 2 subspecies from Turkey were listed. Thereafter, many authors made contributions in their papers to the spider fauna of Turkey, such as Kaya *et al.* (2006), Seyyar *et al.* (2006a, b), Bayram *et al.* (2007a, b), Demir *et al.* (2007a, b), Kunt *et al.* (2008a, b). Currently, the spider fauna of Turkey consists of 676 species belonging to 226 genera (Bayram *et al.*, 2008).

The aim of the present study is to present new faunistic records for spider fauna of Turkey. In this paper, *Aculepeira carbonaria* (L. Koch, 1869), *Episinus maculipes* Cavanna, 1876 and *Palpimanus sogdianus* Charitonov, 1946 are reported as new records for the araneo-fauna of Turkey.

Material and Methods

All specimens were collected from three different localities of Gaziantep Province in Turkey (Fig. 1). The specimens were collected by means of hand aspirator or sweeping net and preserved in 70% ethanol. Identification was made by means of SMZ10A Nikon stereo microscope using the keys of Heimer & Nentwig (1991), Levi (1977), Marusik & Guseinov (2003). A camera lucida attached to the stereo microscope was used for the genitalia drawings. The specimens were deposited in the museum of the Turkish Arachnological Society (MTAS-TURKEY). All measurements are in millimetres.

Fig. 1: Map of the study area.

Results and Discussion

I. Family Araneidae Simon, 1895 (Orb web spiders) includes 2979 described species in 166 genera, to be the third largest family, after Salticidae and Linyphiidae (Platnick, 2008). The araneid spiders are usually big and have relatively short and strong spined legs. The height of clypeus is less than two diameters of anterior median eyes. The chelicerae are always without lateral stridulation grooves and mostly with lateral condyle. The proximal paracymbium of the male palp is relatively small and glossy (Heimer & Nentwig 1991).

Genus *Aculepeira* Chamberlin & Ivie, 1942 has a median, ventral white streak on the dorsum but differs in both sexes by the elongate, egg-shaped abdomen; the female has a large sclerotized epigynum with a large scape; the male has a large palpus with long, prominent, median apophysis with two flagella and a large boat-shaped to disk-shaped conductor. *Aculepeira* differs from the related *Araneus* by having an elongate, egg-shaped abdomen that is widest anteriorly; the abdomen of the large *Araneus* usually ranges in shape from spherical to longer than wide and may have humps. Unlike any of the large *Araneus* species, *Aculepeira* species have a median, ventral white mark on the dorsum of abdomen (Levi, 1977).

Aculepeira carbonaria (L. Koch, 1869) (Fig. 2)

Material examined: 3♀♀ (MTAS/Ara: 0609-11), Sarısalkım Village, (37°05'32.64"N; 37°16'42.06"E, Gaziantep Province), 02.V.2006, collected from the tops of dry annual plants by a sweeping net.

Description: Body length (n=3): 8.08 (7.57-8.65). General appearance is darkish. Prosoma is greyish black, its sides are dark blackish brown with light border. Legs are greyish black with yellowish brown rings and blackish bristles. Legs measurements are given in Table (1). Opisthosoma is blackish, covered by patches of yellowish white spots, also covered with numerous setae. In addition, a yellowish brown pine tree like shape exists on the opisthosoma.

World Distribution: Palaearctic (Platnick, 2008).

Table 1: Legs measurements of *Aculepeira carbonaria* from Turkey.

Leg (n=3)	Femur	Patella + Tibia	Metatarsus	Tarsus	Total
I	4.21	5.17	3.31	1.43	14.12
II	4.02	4.85	3.06	1.14	13.07
III	2.58	2.87	1.82	0.90	8.07
IV	3.93	4.02	2.78	0.95	11.68

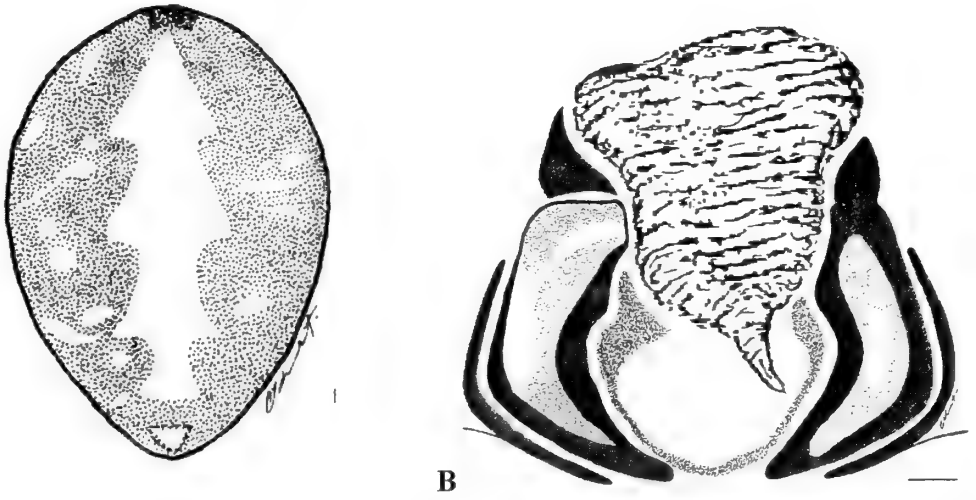

Fig. 2: *Aculepeira carbonaria* (L. Koch, 1869), female. A. Opisthosoma (Dorsal view). B. Epigyne (Ventral view). Scale lines = 0.25 mm.

Remarks: This species is very similar to the other Turkish araneid *Aculepeira ceropegia* (Walckenaer, 1802) but mostly dark coloured. According to Levi (1977), *A. carbonaria* is known only from European mountains, a thing is confirmed by Heimer & Nentwig (1991). Although it is treated by Platnick (2008) as a Palaearctic species, it seems that it has Euro-Asian range. The habitus, genitalia and body size of our specimens are similar to those of European specimens (Heimer & Nentwig, 1991).

II. Family Palpimanidae Thorell, 1870 (Palp-footed spiders) includes 130 described species in 15 genera (Platnick, 2008). Instead of the six spinnerets, palpimanids have only two. In addition to the reduced number of spinnerets, palpimanids can be easily recognized by greatly enlarged first legs. All segments of the leg I are modified. The coxa and trochanter are elongated and frequently bear dorsal tubercles. The femur is usually

expanded dorsally to twice the height of femora II through IV. The patella is enormously elongated and usually longer than the tibia. The tibia, metatarsus, and tarsus bear thick prolateral scopulae composed of spade-shaped setae that may be receptors of some kind. The metatarsus is much shorter than in most other spiders, and rarely is as long as the tarsus, which is typically widened at the tip (Platnick, 1975).

Genus *Palpimanus* Dufour, 1820 is characterized by having a red cephalothorax, more or less dark, large, with almost parallel margins and with a great cephalic development. It has six eyes in two lines on the front margin, the first line strongly procurved and the second slightly recurved. The appendages have the same colour of the prosoma and the first pair of legs is very strong.

Palpimanus sogdianus Charitonov, 1946 (Fig. 3)
Material examined: 2♀♀ (MTAS/Pal: 0703-04), Huzurlu Plateau, (36°58'46"N; 36°28'37"E, Gaziantep Province), 14.VI.2007, found under stones.
Description: Body length (n=2), 5.90 (5.79-6.02). Prosoma is reddish brown. Chelicerae have the same colour of prosoma. Legs I are reddish brown. Legs II and IV are yellowish brown. Legs measurements are given in Table (2). Opisthosoma is yellowish brown with a lot of small sclerotized spots.
World Distribution: Azerbaijan, Iran (Marusik & Guseinov, 2003); Central Asia (Platnick, 2008).

Table 2: Legs measurements of *Palpimanus sogdianus* from Turkey.

Leg (n=2)	Femur	Patella + Tibia	Metatarsus	Tarsus	Total
I	1.61	1.14	0.57	0.57	3.89
II	1.22	1.64	0.57	0.41	3.84
III	1.09	1.43	0.75	0.42	3.69
IV	1.43	2.00	0.98	0.58	4.99

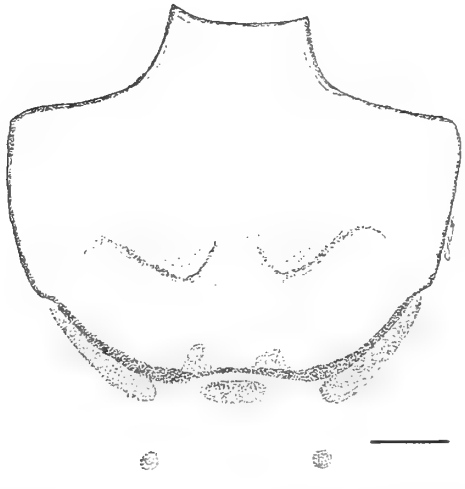

Fig. 3: *Palpimanus sogdianus* Charitonov, 1946, female. Epigyne (Ventral view) (redrawn after Marusik & Guseinov (2003: fig. 33).
Scale line = 0.25 mm.

Remarks: Marusik & Guseinov (2003) recorded *Palpimanus sogdianus* from Azerbaijan in 2003 and stated that it is most closely related to *Palpimanus schmitzi* Kulczyński, 1909 which is distributed in Syria and Israel. We could not get type or comparing material of this species, but our specimens are similar to Azerbaijani specimens of *P. sogdianus*, especially the sclerotised spot pairs of epigyneal area and general appearance.

III. Family Theridiidae Sundevall, 1833 (Cob web or Comb-footed spiders) includes 2288 described species in 98 genera (Platnick, 2008). Theridiids are commonly found in their webs on vegetation. Their general appearance may vary between genera, and they have relatively small globuler opisthosoma and mostly circular prosoma. Tarsus IV is characteristic with a tarsal comb consisting of a few serrated bristles. These bristles may be absent and are often difficult to recognize in the immature and male (Bayram *et al.*, 2007a).

Genus *Episinus* Walckenaer, 1809 has oval prosoma. Clypeus is usually projecting. Eyes are on slight tubercles. First leg is generally longest. Abdomen flat, usually modified with humps or nipples, widest behind middle. Colulus replaced by two setae. Epigynum with distinct openings. A pair of seminal receptacles present. Palpus complex with all sclerites (Yoshida, 1983).

Episinus maculipes Cavanna, 1876 (Fig. 4)
Material examined: 1♀ (MTAS/The: 0612), Sarısalkım Village, (37°05'36.86"N; 37°16'42.29"E, Gaziantep Province), 12.XI.2006, collected from the top of a dry annual plant by aspirator; 1♀ (MTAS/The: 0824), In the garden of Opet Anatolian High School, (37°00'31.1"N; 36°37'13.4"E, Islahiye District, Gaziantep Province), 27.II.2008, collected from the top of an annual plant by aspirator.
Description: Body length (n=2), 5.03 (4.70-5.36). Ocular area is high. Prosoma is yellowish white, with brownish stains. Chelicerae are blackish brown. Sternum has median shiny blackish strips. A V shaped design, of yellowish white bristles, exists behind the ocular area. Legs are yellowish brown with rings, black spots and brownish bristles. Furthermore, first pair of legs is longer than the others. Legs measurements are given in Table (3). Opithosoma is yellowish brown with darkish spots posteriorly. Anterior part is hump shaped. Posterior borders have a lot of blackish brown bristles. In addition, a brownish white cross like shape exists on the opisthosoma.
World Distribution: England to Algeria, Ukraine (Platnick, 2008).

Table 3: Legs measurements of *Episinus maculipes* from Turkey.

Leg (n=2)	Femur	Patella + Tibia	Metatarsus	Tarsus	Total
I	3.43	3.13	3.03	0.28	9.87
II	2.29	2.45	1.94	0.22	6.90
III	1.08	1.09	1.04	0.22	3.43
IV	2.57	1.99	2.56	0.28	7.40

Remarks: According to Heimer & Nentwig (1991), this species occurs on the leaves of bushes and trees. In this study, the specimens were found on annual plants. *E. maculipes* is a Western Palaearctic species, widespread throughout southern Europe (Spain, France, Italy, Germany) including Isle of Wight in the north. It has also been recorded from Crimea (Kovblyuk *et al.*, 2008). Our report is the most easternmost range of *E. maculipes*. The habitus, genitalia and body sizes of our specimens are similar to those of European specimens (Heimer & Nentwig, 1991).

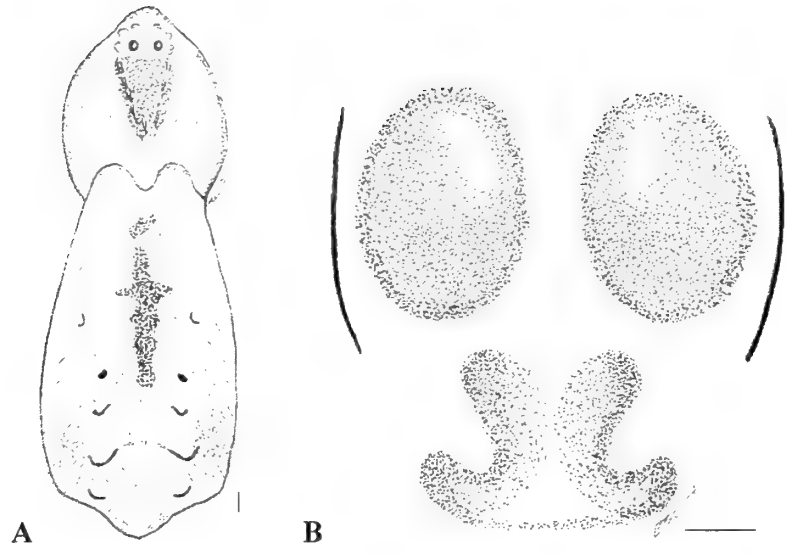

Fig. 4. *Episinus maculipes* Cavanna, 1876, female. A. Habitus (Dorsal view), B. Epigyne (Ventral view). Scale lines = 0.25 mm.

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The first record of family Hersiliidae from Turkey (Arachnida: Araneae)

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Abstract

Hersiliola macullulata (Dufour, 1831) (Araneae, Hersiliidae) and family Hersiliidae are recorded from Turkey for the first time.

Keywords: *Hersiliola macullulata*, Hersiliidae, Araneae, New Record, Turkey.

Introduction

Hersiliidae is a small family of flat, highly cryptic, medium-sized spiders, which mostly live on tree trunks or rocky crags. They can easily be recognized by the flattened body, raised eye region, the extremely long posterior spinnerets, and the long legs stretched out radially on tree bark or lichen-covered crags (Chen, 1994). The spiders are cryptic since their flat bodies are well camouflaged. Only the reflection of the sunlight on guide threads deposited on the tree trunks will help to find them (Dippenaar-Schoemann & Jocqué, 1997). They are very fast movers, in particular after disturbances. They subdue their prey by fixing it to the tree trunk with bands of silk produced by their rapidly rotating long spinnerets. The egg sac can be attached to the tree trunk like a little volcano or may hang on a stalk from branches (Baehr & Baehr, 1987). Hersiliidae Thorell, 1870 includes 157 described species belonging to 11 genera (Platnick, 2008).

Genus *Hersiliola* was described by Thorell in 1870. It includes five species. They are: *H. macullulata* (Dufour, 1831), *H. versicolor* (Blackwall, 1865), *H. simoni* (O.P.-Cambridge, 1872), *H. pallida* Kroneberg, 1875 and *H. afghanica* Roewer, 1960. No hersiliid species has been recorded before from Turkey (Topçu *et al.*, 2005). Only an unidentified specimen of *Hersiliola* is known from the South-East Anatolian Region of Turkey (Bayram, 2002). This is the first record of *Hersiliola macullulata* (Dufour, 1831) and the family Hersiliidae from Turkey.

Material and Methods

Three males and two females of *Hersiliola macullulata* (Dufour, 1831) were collected from Güveççi village, Yayladağı district, Hatay province, Turkey (Fig. 1). The specimens were preserved in 70% ethanol and deposited in the Arachnology Museum of the Turkish Arachnological Society (MTAS-TURKEY). The identification was made by means of a SMZ10A Nikon Stereo microscope with a camera lucida, using the key and data of Foord & Dippenaar-Schoeman (2005).

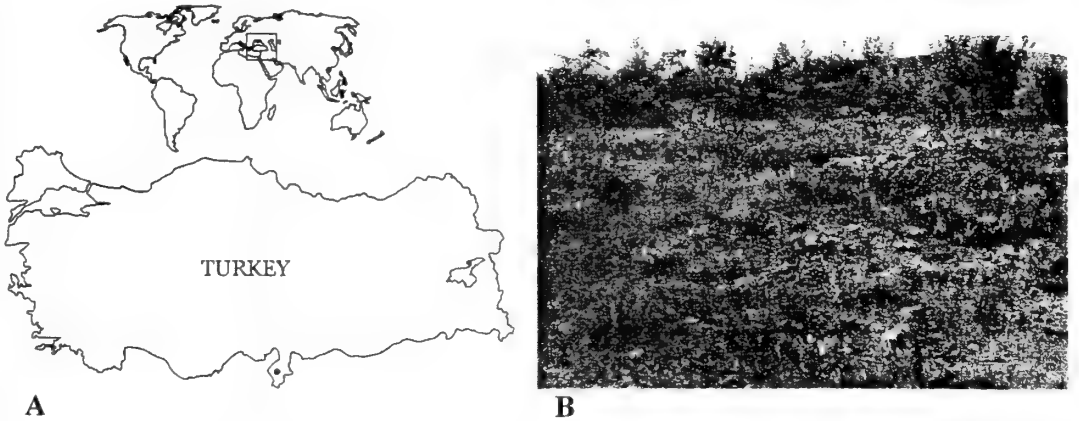

Fig. 1: A. Sampling locality of *Hersiliola macullulata* (Dufour, 1831) in Turkey (circle ● = Hatay Province). B. Habitat picture.

Results

Hersiliola macullulata (Dufour, 1831) (Fig. 2)

Material examined: 3♂♂ (MTAS/Her:0701-03) and 2♀♀ (MTAS/Her:0704-05), Güveççi village, Yayladağı district, Hatay province, Turkey (35°53'36.63"N, 36° 9'38.10"E), 29.IV.2007, found under stones.

Description: Female (n=2): Body length 3.50-5.97 mm. Prosoma pale yellowish with dark spots; clypeus pale with median dark line. Ocular area darkish brown; opisthosoma yellowish with dark spots. Anterior median eyes are larger than others. Chelicarae are very elongate. Medioposterior part of epigyne T-shaped, widens posteriorly into broad sclerotization; copulatory ducts elongate, with at least four or more coils, extending well beyond large spermathecae; seminal receptacles small. Leg I measurements (mm): femur 2.47-2.51, patella+tibia 3.13-3.15, metatarsus 2.69-2.70, tarsus 1.01-1.03.

Male (n=3): Body length 3.27-3.86 mm, generally resemble females, but prosoma wider and body length smaller than females. Palpal tibia stout, as long as wide. Sperm duct regularly curved. Embolus coiled, filiform, originating retrolaterally on bulbus; median tegular apophysis hook shaped with apex acute. Leg I measurements (mm): femur 2.12-2.18, patella+tibia 2.57-2.61, metatarsus 2.24-2.28, tarsus 0.84-0.95.

Discussion

H. macullulata is a Palaearctic species recorded from the Mediterranean region (Algeria, Spain and Israel) to Turkmenistan and also found in the Afrotropical region (Burkina Faso) (Levy, 2003; Foord & Dippenaar-Schoeman, 2005; Platnick, 2008). Habitus and other characters, epigyne and palp structures, are similar to those of Burkina Faso's specimens (Foord & Dippenaar-Schoeman, 2005). However, body size of Turkish

specimens is smaller than those specimens' size. Body length of Turkish specimens is averagely 3.5 mm in male, and 4.7 mm in female, while in Burkina Faso's specimens it is 3.75 mm for male, and 4.95 mm for female.

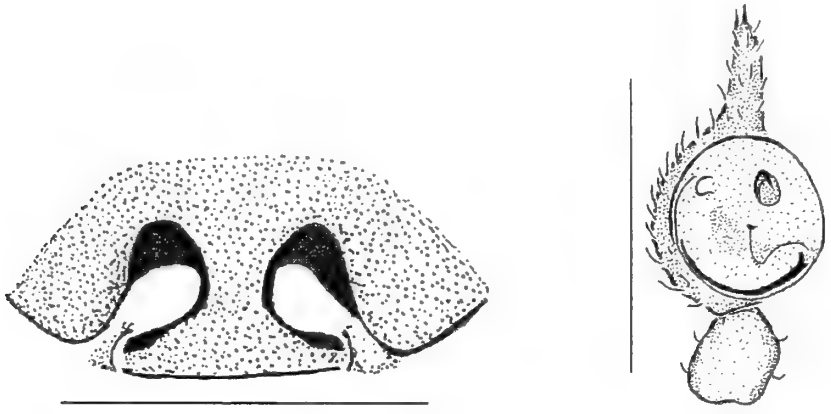

Fig. 2: *Hersiliola macullulata* (Dufour, 1831). A. ♀ Epigyne (Ventral view), B. ♂ Palp (Ventral view). (redrawn after Foord & Dippenaar-Schoeman (2005: figs. 2F, 2A). Scale lines: A = 0.5 mm, B = 1 mm.

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Sun-spiders of Sudan (Arachnida: Solpugida) [Introductory study]

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Abstract

This work includes a list of 25 species of 12 genera of 4 families of order Solpugida recorded from Sudan. Fifteen species are endemic. The distribution of every species is included. A key to the recorded families, genera and species is prepared.

Keywords: Sun-spiders, Solpugida, Arachnida, Sudan.

Introduction

My first visit to Sudan (23 July - 10 August 2008) activated me to get an idea about its arachnological fauna. I could find only a few papers dealing with arachnids of Sudan, especially its sun spiders. Hence, the following work is prepared to present a list of sun spiders species previously recorded from Sudan with keys to families, genera and species depending on the works of Roewer (1933, 1934), Turk (1960) and El-Hennawy (1990, 1999).

This preliminary list is mainly extracted from the works of Roewer (1933, 1934, 1941), El-Hennawy (1999) and Harvey (2003) in addition to the work of Benoit (1964). It includes 25 solpugid species classified within 12 genera and 4 families. Fifteen species are endemic, only recorded from Sudan. The distribution of every species in Sudan is included in the list after species name. After the list and key to families, a simplified catalogue of solpugid Sudanese species is presented including main references, the page number in Harvey's catalogue (2003), and distribution in the world and Sudan..

Abbreviations used:
{T} = Type species; * = endemic species, known only from Sudan;
[H 220] = Harvey's catalogue, 2003, p. 220.

Order Solpugida

List and distribution of Sudanese species of Order Solpugida

I. Family Daesiidae Kraepelin, 1899 2 genera, 6 species (2 *)

Genus *Biton* Karsch, 1880 5 spp. (2 *)

Biton bellulus (Pocock, 1902) * - Wadi Sinkat (?).

Biton ehrenbergi Karsch, 1880 {T} - Dunqulah (northern Sudan), Nubia.

Biton lividus Simon, 1882 * - Sennar, Kordofan: El Obeid.

Biton ragazzii (Kraepelin, 1899) - Port Sudan.

Biton wicki (Birula, 1915) - Abu-Gat, Sennar, Senga, Khartoum, Koshak, Darfur: Kulme.

Genus *Blossia* Simon, 1880 1 sp.

Blossia spinosa Simon, 1880 {T} - Sennar, Dilling, Kur el Affiun (southern Sudan).

II. Family Galeodidae Sundevall 1833 3 genera, 8 species (4 *)

Genus *Galeodes* Pallas, 1772 6 spp. (2 *)

Galeodes arabs C.L.Koch, 1842 – Khartoum, Omdurman, Shendi ?, Mongalla.

Galeodes barbarus Lucas, 1846 - Sudan.

Galeodes edentatus Benoit, 1964 * - Khartoum.

Galeodes granti Pocock, 1903 - Khartoum and its vicinity.

Galeodes kraepelini Roewer, 1934 - Shendi ?

Galeodes schendicus Roewer, 1934 * - Shendi.

Genus *Othoes* Hirst, 1911 1 sp. (1 *)

Othoes floweri Hirst, 1911 {T} * - Wadi Halfa.

Genus *Paragaleodes* Kraepelin, 1899 1 sp. (1 *)

Paragaleodes sericeus Kraepelin, 1899 * - Shendi ?

III. Family Rhagodidae Pocock 1897 4 genera, 6 species (6 *)

Genus *Rhagodalma* Roewer, 1933 1 sp. (1 *)

Rhagodalma melanocephala Roewer, 1933 {T} * - Nubia.

Genus *Rhagodessa* Roewer, 1933 3 spp. (3 *)

Rhagodessa cloudsleythompsoni Benoit, 1964 * - N. of Khartoum.

Rhagodessa melanocephala (Simon, 1879) {T} * - Nubia, Darfur (Zalingei).

Rhagodessa sudanensis Roewer, 1933 * - Sennar.

Genus *Rhagodeya* Roewer, 1933 1 sp. (1 *)

Rhagodeya nubia Roewer, 1933 {T} * - Nubia (Koshesh), Sennar.

Genus *Rhagoduna* Roewer, 1933 1 sp. (1 *)

Rhagoduna nocturna Roewer, 1933 {T} * - Sennar.

IV. Family Solpugidae Leach 1815 3 genera, 5 species (3 *)

Genus *Solpugassa* Roewer, 1933 1 sp.

Solpugassa dentatidens (Simon, 1879) - Bahr el Jebel or on the banks of the White Nile.

Genus *Zeria* Simon, 1879 3 spp. (2 *)

Zeria fordi (Hirst, 1907) - Nubia Mountains, Talodi.

Zeria funksoni (Birula, 1915) * - Galegu, Sennar (Central Sudan).

Zeria schweinfurthi (Karsch, 1880) * - Jur river (southern Sudan), Djebel Marra.

Genus *Zeriassa* Pocock, 1897 1 sp. (1 *)

Zeriassa sudanica Roewer, 1933 * - Sennar.

Key to Solpugid Families recorded in Sudan

1. Anus : ventrally located **Family RHAGODIDAE**
Tarsal segmentation : 1-1-1-1
Heavy-bodied; short-legged; small to large (10-60 mm)
Leg 1 : tarsi : with a pretarsus + 2 claws
metatarsi : with a dense ventral clothing of short spinelike setae
Male cheliceral flagellum : paraxially immovable; composed of 2 flattened, curled, setae that form a nearly complete, slightly curved, truncate, hornlike tube on the mesial surface
Distribution : north-eastern Africa, south-western Asia, and Near East
[27 genera, 98 species]
-. Anus : terminally located 2

2. Tarsal segmentation : 1-4-4-(6-7) **Family SOLPUGIDAE**
Long-legged; small to large (8-60 mm)
Leg 1 : tarsi : without claws
Male cheliceral flagellum : paraxially immovable; mesodorsal to dorsal, whiplike structure separated from the fixed cheliceral finger by a suture
Distribution : predominantly in Africa [17 genera, 191 species]
-. Tarsal segmentation : 1-1-1-1 to 1-2-2-4 3

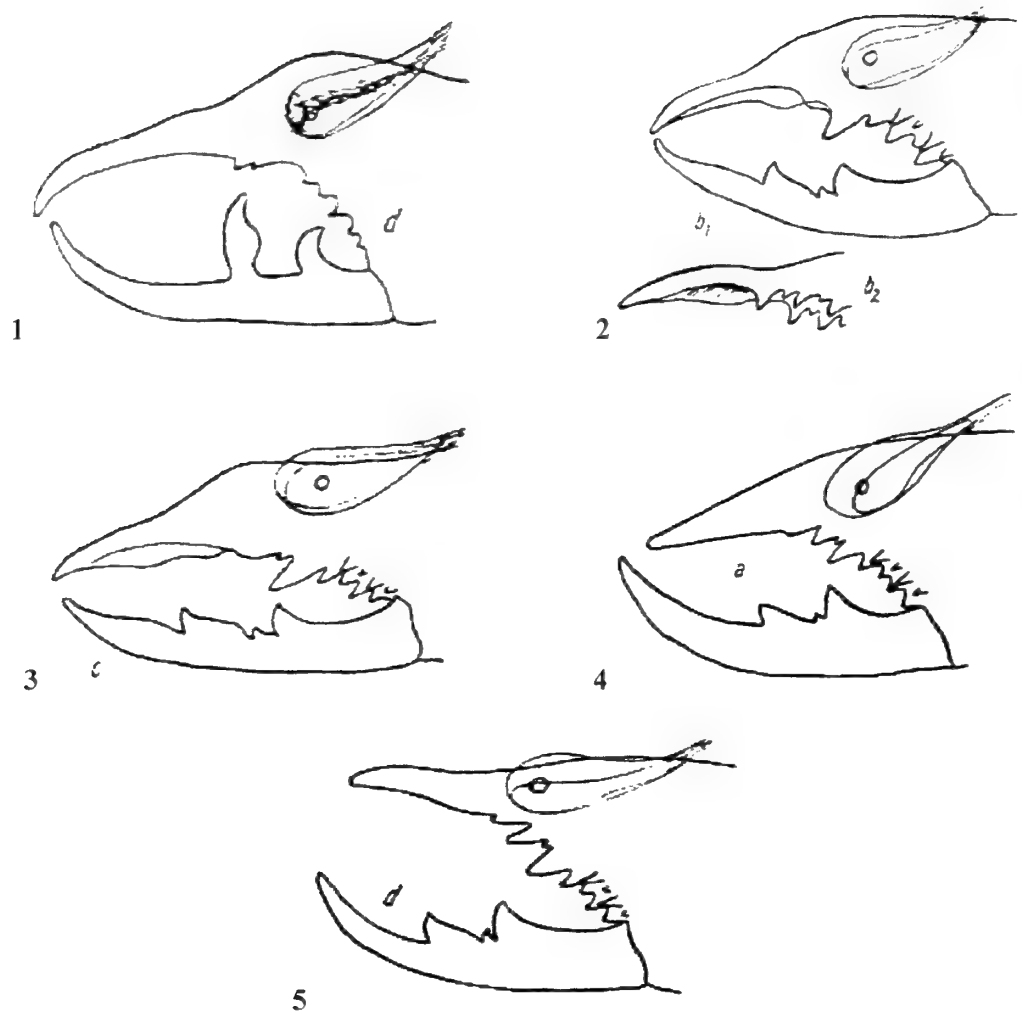
3. Tarsal claws of legs 2 to 4 : setaceous **Family GALEODIDAE**
Tarsal segmentation : 1-2-2-3
Long-legged; small to large (12-70 mm)
Leg 1 : tarsi : without claws or with 1 or 2 claws
Male cheliceral flagellum : paraxially movable; a single, capitate (terminally enlarged) seta located on the mesial surface
Distribution : northern Africa, and Asia [8 genera, 199 species]
-. Tarsal claws of legs 2 to 4 : smooth **Family DAESIIDAE**
Tarsal segmentation : 1-1-1-1 to 1-2-2-4
Long-legged; tiny to moderate-sized (6-23 mm)
Leg 1 : tarsi : without claws
Male cheliceral flagellum : paraxially movable, ovate to irregular membranous structure attached to the mesial surface by a disk
Propeltidium : exterior lobes : fused
Distribution : Africa, southern Europe, Near East, and South America
[6 subfamilies, 28 genera, 189 species]

****

I. Family Daesiidae Kraepelin, 1899 2 genera, 6 species (2 *)

Key to genera
1. Tarsal segmentation 1-2-2-4 ***Biton***
-. Tarsal segmentation 1-1-1-2 ***Blossia***

Genus *Biton* Karsch, 1880 5 spp. (2 *)
Key ♂♂
1. Movable cheliceral finger with 1 front tooth and 1 main tooth; intermediate teeth wanting. Flagellum (Fig. 1). Body length 10 mm ..... ***B. ragazzii***
-. Movable cheliceral finger with 1 front tooth, 1 big main tooth and 1 or 2 small intermediate teeth 2



Figs. 1-5. Prolateral view of ♂ right chelicera. (After Roewer, 1933)
1. *Biton ragazzii* (fig. 278 *d* p.398) 2. *Biton ehrenbergi* (fig. 275 b_{1-2} p.389)
3. *Biton bellulus* (fig. 275 *c* p.389) 4. *Biton wicki* (fig. 276 *a* p.392)
5. *Biton lividus* (fig. 277 *d* p.395) (b2 = tip of immovable finger oblique-lateral)

2. Edge of immovable finger solid, enlarged behind the tip forming a longitudinal groove against the front tooth of the movable finger. Immovable finger without front teeth (Figs. 2, 3) 3
-. Edge of immovable finger without such longitudinal groove. Immovable finger with 1 or 2 distinct front teeth 4

3. Immovable finger without intermediate teeth, with main tooth and 4 median and lateral cheek teeth. Flagellum (Fig. 2). Pedipalp metatarsus ventrally with 1.2.2.2 spines and tarsus with 1 median spine. Colour pale yellow, legs yellow. Body length 14-18 mm ..... ***B. ehrenbergi***
-. Immovable finger with 1 small intermediate tooth before the main tooth. Flagellum (Fig. 3). Pedipalp only with bristles, tarsus without spines. Colour rusty yellow, opisthosomal tergite with 3 narrow yellow long stripes, legs brown. Body length 13 mm ..... ***B. bellulus***

4. Immovable finger with only 1 distinct front tooth and 1 intermediate tooth between the front tooth and the main tooth. Movable finger with 1 intermediate tooth. Flagellum (Fig. 4). Body length 18-20 mm ..... ***B. wicki***
-. Immovable finger with 2 distinct front teeth and 1 intermediate tooth between the 2 front teeth and the main tooth. Flagellum (Fig. 5). Body length 10-11 mm ..... ***B. lividus***

Key ♀♀
1. Chelicerae quite uniformly rusty yellow, without dark brown longitudinal stripes 2
-. Chelicerae with 2 dorsal dark brown longitudinal stripes (often besides a third lateral one). Opisthosomal tergite with more or less distinct brown median stripe 3

2. Tergite of the opisthosoma with distinct brown median stripe. Body length 10-12 mm ..... ***B. lividus***
-. Tergite of the opisthosoma only with a hint of a brown median stripe. Body length 18 mm ..... ***B. ehrenbergi***

3. Tergite of the opisthosoma with three brownish longitudinal stripes. Body length 15 mm ..... ***B. bellulus***
-.Tergite of the opisthosoma irregularly brownish. Body length 18-20 mm ..... ***B. wicki***

Biton bellulus (Pocock, 1902) [H 220]
Distribution: Sudan (Wadi Sinkat) ?.
Ref: 1. *B. b.* Roewer, 1933 pp. 391, 401, 402 fig. 275c.
Note. In Harvey (2003: p.220) "Type locality: Wadi Sikait, *Al Bahr al Ahmar,* Egypt. Distribution: Egypt". Nevertheless, Roewer (1933: p. 402) mentioned "*Biton bellulus* Pocock 1902 S. 6 (sub *Daesia*). ♂, ♀- Ägypten (Wadi Sinkat)". El-Hennawy (1998) made the same and recorded this species from Egypt too. But Wadi Sinkat is in Sudan (?).

Biton ehrenbergi Karsch, 1880 {T} [H 220-221]
Distribution: Cyprus, Egypt, Ethiopia, Greece, Italy, Palestine, Saudi Arabia, Somalia, Sudan (Dunqulah (as Dongolah), northern Sudan), Tunisia.
Ref: 1. *Daesia e.* Kraepelin, 1901 pp. 96-97 figs. 65-66. [Nubien]
2. *B. e.* Roewer, 1933 pp. 390, 391, 400, 402 figs. $275b_{1-2}$, 278i.
3. *B. e.* Roewer, 1941 p. 140.
4. *B. e.* Benoit, 1964 pp. 96-97.
5. *B. e.* Delle Cave & Simonetta, 1971 pp. 44-45.

Biton lividus Simon, 1882 [H 222]
Type locality: Aswan (as Assuan), *Aswan,* Egypt.
Distribution: Egypt, Eritrea, Sudan.
Ref: 1. *Daesia livida* Kraepelin, 1901 p. 98. [Ober- Ägypten (Assuan)]
2. *B. l.* Roewer, 1933 p. 403 fig. 277d [Brit. und Ägypt. Sudan (Sennar, Kordofan; El Obeid)].
3. *B. l.* Benoit, 1964 p. 97.

Biton ragazzii (Kraepelin, 1899) [H 223]
Distribution: Djibouti, Eritrea, Sudan.
Ref: 1. *Daesia r.* Kraepelin, 1901 p. 99 fig. 68. [Erythraea]
2. *B. r.* Roewer, 1933 p. 403 fig. 278d [Erythraea, Port Sudan].
3. *B. r.* Roewer, 1941 p. 140.
4. *B. r.* Benoit, 1964 p. 97.
5. *B. r.* Delle Cave & Simonetta, 1971 pp. 46-48.

Biton wicki (Birula, 1915) [H 226]
Type locality: Abu-Gas, Sudan.
Distribution: Egypt, Ethiopia, Somalia, Sudan, Yemen.
Ref: 1. *B. w.* Roewer, 1933 p. 403 fig. 276a [Brit. und Ägypt. Sudan (Abu-Gat, Sennar, Khartoum, Koshak, Darfur: Kulme); Abessinien (Dire Daua); Somaliland].
2. *Daesia w.* Whittick, 1941 pp. 48-49, fig. 8. [Anglo-Egyptian Sudan (Abu-Gat, Sennaar, Senga, Khartoum, Koshak, Darfur)]
3. *B. w.* Benoit, 1964 p. 96.
4. *B. w.* Delle Cave & Simonetta, 1971 p. 56.

Genus *Blossia* Simon, 1880 1 sp.
Blossia spinosa Simon, 1880 {T} [H 218]
Type locality: El Mex, *Al Iskandariyah* (Alexandria), Egypt.
Distribution: Algeria, Egypt, Morocco, Palestine, Sudan, Tunisia.
Ref: 1. *B. s.* Simon, 1880 p. 400.
2. *B. s.* Kraepelin, 1901 p. 102 fig. 74.
3. *B. s.* Roewer, 1933 pp. 371-372, figs. 265a[1-2]. [Oberägypten (Sennar, Dilling, Kur el Affiun)] (Fig. 6)

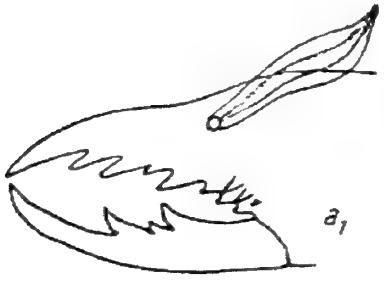


Fig. 6. *Blossia spinosa*, prolateral view of ♂ right chelicera.
(After Roewer, 1933 fig. 287*c* p.430)

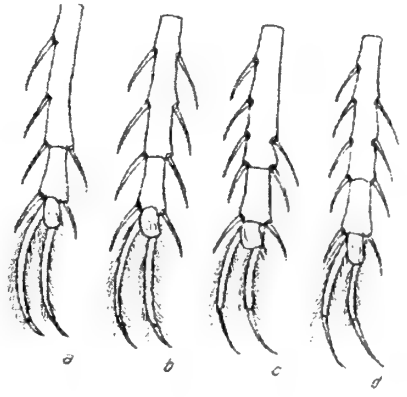


Fig. 7. Tarsal ventral spines of legs.
a-b. *Galeodes*. c-d. *Othoes*.
(After Roewer, 1934. fig. 313 *d-g* p.504)

II. Family Galeodidae Sundevall 1833 3 genera, 8 species (3 *)

Key to genera

1. Claws: unguiculus more or less half the length of the pedunculus of the claw. Tarsi of legs 2 & 3, segments 1 & 2 with 1.1.2.2/2 or 1.2.2.2/2 ventral spines (Fig. 7c, d) ***Othoes***
-. Claws: unguiculus never more than a quarter of the length of the pedunculus of the claw. Tarsi of legs 2 & 3, segments 1 & 2 with 1.1.2/2 or 2.2.2/2 ventral spines (Fig. 7a, b) 2

2. Tarsus I with a bush of hairs terminally and either without claws or with only rudimentary ones. Pedipalpal metatarsus of more or less equal thickness throughout its length. Tarsus of pedipalp ovate. Appendages short. Body, especially in the males covered with golden or bright canary yellow hairs. Male flagellum cochleariform, the two sides not symmetrically broadened ***Paragaleodes***
-. Tarsus I with a pair of small terminal claws usually easily seen. Pedipalpal metatarsus slimmer distally. Tarsus of pedipalp more or less pear-shaped. Appendages long. Body not covered with characteristic yellow hairs. Flagellum of male cultriform with the outline symmetrically broadened ***Galeodes***

Genus *Galeodes* Pallas, 1772 6 spp. (2 *)

Key ♂♂

1. Movable cheliceral finger with 1 intermediate tooth 2
-. Movable cheliceral finger with 2 or 3 intermediate teeth 3

2. Immovable cheliceral finger with 1 intermediate tooth. Metatarsus of the pedipalp, ventrally, without cylindrical bristles. All sternites of the opisthosoma without sensory ctenidia. Plantar bristles of tarsus 4 needle-like (Type I). Colour uniformly brown. Body length 44 mm ..... ***G. granti***
-. Immovable finger without any clear tooth (Fig. 8). Metatarsus of the pedipalp, ventrally, with 7 pairs of short spines and cylindrical bristles. Sternite 6 of the opisthosoma with ctenidia composed of 14-16 long bristles. Colour yellowish-red. Body length 46-57 mm ..... ***G. edentatus***

3. Movable finger with 3 intermediate teeth. Immovable finger with 2 intermediate teeth. Metatarsus of the pedipalp without cylindrical bristles. Colour rusty yellow. Opisthosoma with dorsal black median stripe. Body length 18mm ..... ***G. schendicus***
-. Movable finger with 2 intermediate teeth. Immovable finger with 1 intermediate tooth 4

4. Metatarsus of the pedipalp, ventrally, without cylindrical bristles. Only sternite 6 of the opisthosoma with ctenidia. Opisthosoma dorsally with entirely black median stripe. Plantar bristles of tarsus 4 obtusely clavate (Type IV). Body length until 34 mm ..... ***G. barbarus***
-. Metatarsus of the pedipalp, ventrally, with cylindrical bristles. At least sternite 6 of the opisthosoma with ctenidia 5

5. Tarsus 4 ventrally with especially differentiated plantar bristles needle-like (Type I). Sternites 5-7 of the opisthosoma with needle-like (Type I) ctenidia. Colour yellowish brown. Body length 35-51 mm ..... ***G. arabs***
-. Tarsus 4 ventrally without especially differentiated plantar bristles. Sternite 6 of the opisthosoma with a slanting row of needle-like ctenidia (Type I). Colour loam-yellow. Body length 24 mm ..... ***G. kraepelini***

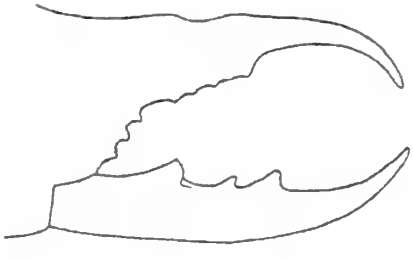


Fig. 8. *Galeodes edentatus* ♂, Right chelicera, exterior (retrolateral) view.
(After Benoit, 1964 p. 92, fig 2)

Key ♀♀

1. Movable cheliceral finger with 1 intermediate tooth (+ one small supplementary tooth, in one case of *G. edentatus*) 2
-. Movable cheliceral finger with 2 intermediate teeth. Immovable cheliceral finger with 1 intermediate tooth 3

2. Immovable cheliceral finger with 1 intermediate tooth. Opisthosoma ventrally without ctenidia. Chelicerae rusty yellow with 2 dark longitudinal stripes. Body length 53 mm ..... ***G. granti***

-. Immovable cheliceral finger without any clear tooth. Sternite 6 of the opisthosoma with ctenidia composed of 14-16 long bristles. Metatarsus of the pedipalp, ventrally, with 7 pairs of short spines and cylindrical bristles. Colour yellowish-red. Body length 29-54 mm ..... ***G. edentatus***

3. Sternite 6 of the opisthosoma with a slanting row of needle-like ctenidia (Type I). Body length until 51 mm ..... ***G. arabs***
-. Opisthosoma ventrally without ctenidia but with dorsal distinct dark median stripe. Body length until 34 mm ..... ***G. barbarus***

Galeodes arabs C.L. Koch, 1842 [H 256-257]
Distribution: Algeria, Djibouti, Egypt, Ethiopia, Iran, Iraq, Kenya, Libya, Morocco, Niger, Oman, Palestine, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, Turkey, Yemen.
Ref: 1. *G. a.* Kraepelin, 1901 p. 21. [Sudan]
2. *G. a.* Tullgren, 1909 p. 1 Omdurman.
[Tullgren (1909: p.1) recorded *Galeodes araneoides* (Pallas, 1772) from Shendy, depending on a young specimen. This may be misidentification.]
3. *G. a.* Roewer, 1934 pp. 518-519, 522-523, 532. [Khartoum, Mongalla.]
4. *G. a.* Roewer, 1941 p. 161.
5. *G. a.* Benoit, 1964 p. 97.

Galeodes barbarus Lucas, 1846 [H 259]
Distribution: Algeria, Egypt, Ethiopia, Libya, Morocco, Somalia, Sudan, Tunisia.
Ref: 1. *G. b.* Roewer, 1934 pp. 516, 523, 534.
2. *G. b.* Roewer, 1941 p. 162.
3. *G. b.* Benoit, 1964 pp. 95-96.

Galeodes edentatus Benoit, 1964 [H 262]
Type locality: Khartoum, *Al Khartum,* Sudan.
Distribution: Sudan.
Ref: 1. *G. e.* Benoit, 1964 pp. 92-95, figs 2-5 [Soudan: Khartoum].

Galeodes granti Pocock, 1903 [H 264]
Distribution: Egypt, Ethiopia, Palestine, Saudi Arabia, Somalia, Sudan, Syria, Yemen.
Ref: 1. *G. g.* Roewer, 1934 pp. 515, 522, 532.
2. *G. g.* Roewer, 1941 p. 162.
3. *G. g.* Benoit, 1964 p. 93 [Khartoum et environs].

Galeodes kraepelini Roewer, 1934 [H 265]
Type locality: Egypt (as "Ober-Ägypten").
Distribution: Egypt.
Ref: 1. *G. k.* Roewer, 1934 p. 533 [Ober-Ägypten (genauer Fundort ?)].
Note. The locality of this species may be „Schendi", in Sudan, like the preceding and succeeding species in the same page.

Galeodes schendicus Roewer, 1934 [H 269]
Type locality: Shendi (as Schendi), *Nile*, Sudan.
Distribution: Sudan.
Ref: 1. *G. s.* Roewer, 1934 p. 533 [Ober-Ägypten (Schendi)].

Genus *Othoes* Hirst, 1911 1 sp. (1 *)
Othoes floweri Hirst, 1911 {T} [H 274]
Type locality: Wadi (as Wady) Halfa, Sudan.
Distribution: Sudan (Wadi Halfa), Egypt ?.
Ref: 1. *O. f.* Roewer, 1934 p. 536 fig. 318 a, d Upper Egypt (Wadi Halfa). (Fig. 9)

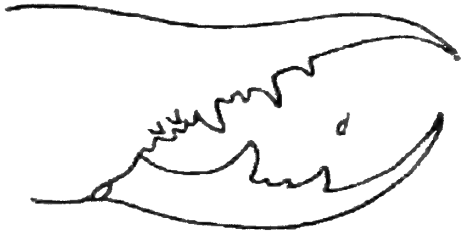


Fig. 9. *Othoes floweri* ♀, prolateral view of left chelicera.
(After Roewer, 1934 fig. 315*d* p.535)

Genus *Paragaleodes* Kraepelin, 1899 1 sp. (1 *)
Paragaleodes sericeus Kraepelin, 1899 [H 276]
Type locality: Egypt (as "Oberägypten").
Distribution: Egypt ?, Sudan.
Ref: 1. *P. s.* Kraepelin, 1901 p. 27. [Ober-Ägypten]
2. *Galeodes s.* Roewer, 1934 pp. 517, 523, 533, fig. 317 [Ober-Aegypten (u. a. Schendi)].
Note. This species may be erroneously recorded from Egypt by El-Hennawy (1998: p.22) and Harvey (2003: p.276) following Roewer (1934: p. 533).

III. Family Rhagodidae Pocock 1897 4 genera, 6 species (6 *)

Key to genera
Number of ventral spines on :

Tarsus 2 & 3	Tarsus 4	Genus
0	1.1	*Rhagoduna*
1.2	2.2.2.2	*Rhagodessa*
1.2.2	1.1.2.2	*Rhagodeya*
2.2.2.2	2.2.2.2	*Rhagodalma*

Genus *Rhagodalma* Roewer, 1933 1 sp. (1 *)
Rhagodalma melanocephala Roewer, 1933 {T} [H 292]
Type locality: Nubia, Sudan.
Distribution: Sudan.
Ref: 1. *R. m.* Roewer, 1933 p. 288 [Nubien (genaue Lokalität?)].

Genus *Rhagodessa* Roewer, 1933 3 spp. (3 *)
Key to species
1. Tibia II and III with 1 dorso-apical spine. Coxae I-III with a line of 6 bacilli. Body and all appendages dark brown, only coxae rusty yellow with red bacilli. Body length 30 mm ..... ***Rhagodessa sudanensis***
-. Tibia II and III with 2 dorso-apical spines. Coxae I-III with a line of 2-4 bacilli. Chelicerae and propeltidium black. Opisthosoma grey yellow with pale dorsal longitudinal band till the quite black anal segment, all coxae, legs and pedipalps rusty yellow, metatarsus black and tarsus I red brown. Body length 20 mm ..... ***Rhagodessa melanocephala***

-. Tibia II with 1 dorso-apical spine and Tibia III with 2 dorso-apical spines. Coxae I-II with 15-16 bacilli, coxae III with 6 bacilli. Prosoma and chelicerae blackish brown, with pale yellow borders and sides. Pedipalps bright brown except metatarsus and tarsus black. Chelicera (Fig. 10). Legs bright brown except tarsus I black. Opisthosoma with a wide median light brown band and black sides. Body length 44 mm ..... ***Rhagodessa cloudsleythompsoni***

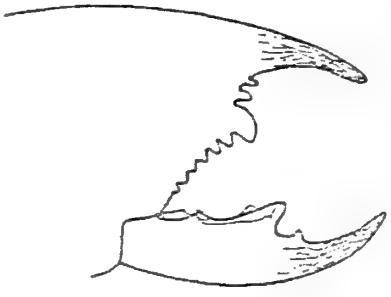


Fig. 10. *Rhagodessa cloudsleythompsoni* ♀
Right chelicera, exterior (retrolateral) view.
(After Benoit, 1964 p. 92, fig 1)

Rhagodessa cloudsleythompsoni Benoit, 1964 [H 296]
Type locality: N. of Khartoum, *Al Khartum,* Sudan.
Distribution: Sudan.
Ref: 1. *R. c.* Benoit, 1964 pp. 91-92, fig.1.

Rhagodessa melanocephala (Simon, 1879) {T} [H 297]
Type locality: Nubie, Sudan.
Distribution: Eritrea, Sudan.
Ref: 1. *Rhax m.* sp. nov. Simon, 1879 122-123 "Nubie", ♀ 20 mm.
2. *Rhagodes melanocephalus* Kraepelin, 1901 pp. 37-38. [Nubien]
3. *R. m.* Roewer, 1933 p. 283 [Nubien, Darfur (Zalingei)].
4. *R. m.* Benoit, 1964 p. 97 [Darfur (Nubie)].

Rhagodessa sudanensis Roewer, 1933 [H 297]
Type locality: Sennar, *Sennar,* Sudan.
Distribution: Sudan.
Ref: 1. *R. s.* Roewer, 1933 p. 283 [Sudan (Sennar)].
2. *R. s.* Benoit, 1964 p. 97 [Sennar].

Genus *Rhagodeya* Roewer, 1933 1 sp. (1 *)
Rhagodeya nubia Roewer, 1933 {T} [H 297]
Type locality: Koshesh, Sudan; Sennar, *Sennar,* Sudan.
Distribution: Sudan.
Ref: 1. *R. n.* Roewer, 1933 p. 284 [Nubien (Kosheh, Sennar)].

Genus *Rhagoduna* Roewer, 1933 1 sp. (1 *)
Rhagoduna nocturna Roewer, 1933 {T} [H 302]
Type locality: Sennar, *Sennar,* Sudan.
Distribution: Sudan.
Ref: 1. *R. n.* Roewer, 1933 p. 271 [Sudan (Sennar)].
2. *R. n.* Benoit, 1964 p. 97 [Sennar].

IV. Family Solpugidae Leach 1815 3 genera, 5 species (3 *)

Key to genera

1. Deutosternum wedge-shaped. Metatarsus of pedipalp ventrally often spiny. Ventral spination of : segments 2-4 of tarsus 2 & 3 : 2/0/2, segments 2-7 of tarsus 4 : 2/2/0/2/0/2 ***Zeriassa***

-. Deutosternum staff-shaped. Metatarsus of pedipalp ventrally never spiny 2

2. Ventral spination of : segments 2-4 of tarsus 2 & 3 : 2/0/2, segments 2-7 of tarsus 4 : 2/2/0/2/0/2 ***Solpugassa***

-. Ventral spination of : segments 2-4 of tarsus 2 & 3 : 2/2/2, segments 2-7 of tarsus 4 : 2/2/2/2/0/2 ***Zeria***

Genus *Solpugassa* Roewer, 1933 1 sp.

Solpugassa dentatidens (Simon, 1879) [H 309]

Type locality: Bahr el Jebel (or White Nile, as rives du fleuve Blanc), Sudan.

Distribution: Djibouti, Ethiopia, Somalia, Sudan (Bahr el Jebel or on the banks of the White Nile).

Ref: 1. *Gaetulia d.* Simon, 1879 115-116, figs.9, 10 "rives du fleuve Blanc", ♂.

2. *Solpuga d.* Kraepelin, 1901 p. 58. [Weisser Nil]

3. *S. d.* Roewer, 1933 p. 431 fig. 287c. (Fig. 11)

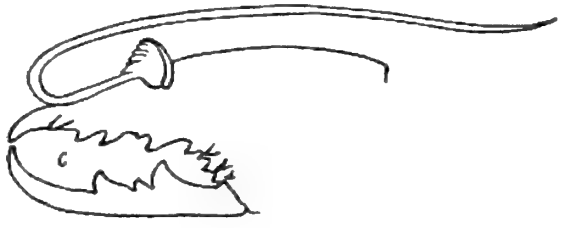


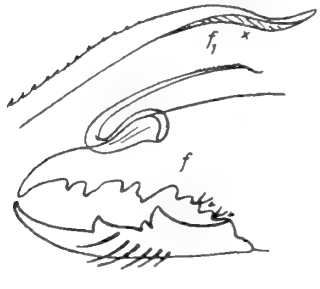
Fig. 11. *Solpugassa dentatidens*, prolateral view of ♂ right chelicera. (After Roewer, 1933 fig. 287*c* p.430)

Genus *Zeria* Simon, 1879 3 spp. (2 *)

Key ♂♂

1. Flagellum (Fig. 12), its shaft end serrated, with a plain fine pointed end. Body length 32 mm ..... ***Zeria schweinfurthi***

-. Flagellum (Fig. 13), its shaft end blunt, with small side teeth or projections near the end, with 1, often bright, lobe (Fig. 11), Body length 28-32 mm ..... ***Zeria fordi***



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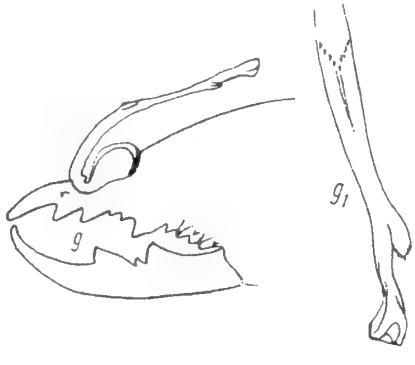

13

Figs. 12-13. Prolateral view of ♂ right chelicera. (After Roewer, 1933)
12. *Zeria schweinfurthi* (fig. 293 *f* p.445) 13. *Zeria fordi* (fig. 298 *g* p.453)
f_1 = Flagellum shaft end g_1 = Flagellum shaft end, dorsal view.

Key ♀♀

1. Immovable finger with only 1 intermediate tooth. Body length 32-35 mm ..... ***Zeria schweinfurthi***

-. Immovable finger with 2 intermediate teeth. Body length 30 mm ..... ***Zeria funksoni***

Zeria fordi (Hirst, 1907) [H 319]
Distribution: Democratic Republic of Congo, Ethiopia, Kenya, Sudan, Tanzania, Uganda.
Ref: 1. *Solpuga f.* Roewer, 1933 p. 463 figs. 298g, g[1] [Sudan: Nuba Mtns., Talodi].

Zeria funksoni (Birula, 1915) * [H 319]
Type locality: Galegu, *Sennar,* Sudan.
Distribution: Sudan.
Ref: 1. *Solpuga f.* Roewer, 1933 p. 465 [Ägypt. Sudan (Galezu)].
2. *Solpuga f.* Benoit, 1964 p. 97.

Zeria schweinfurthi (Karsch, 1880) * [H 323]
Type locality: Djur, Sudan.
Distribution: Sudan (Djur).
Ref: 1. *Solpuga s.* Kraepelin, 1901 p. 69 fig. 33. [Sudan (Djur-Gebiet)]
2. *Solpuga s.* Roewer, 1933 p. 464 figs. 293f, f[1] [East-Sudan (Djur-Gebiet, Djebl Marra)].
3. *Solpuga s.* Lawrence, 1953 p. 970 - 1♂, 1♀ (1935.10.17.11-12), Anglo-Egyptian Sudan; collected by Miss M. Steele, 1932.
4. *Solpuga s.* Benoit, 1964 p. 97.

Genus *Zeriassa* Pocock, 1897 1 sp. (1 *)
Zeriassa sudanica Roewer, 1933 * [H 327]
Type locality: Sennar, *Sennar,* Sudan.
Distribution: Sudan (Sennar).
Ref: 1. *Z. s.* Roewer, 1933 p. 428, fig. 284c [Brit.-Aegypt. Sudan (Sennar)].
2. *Zeriassa* sp. Lawrence, 1953 p. 962 - 1 juvenile ♀ (1935.10.17.394), Anglo-Egyptian Sudan; collected by Miss M. Steele, April 1932.
3. *Z. s.* Benoit, 1964 p. 97.

Acknowledgments

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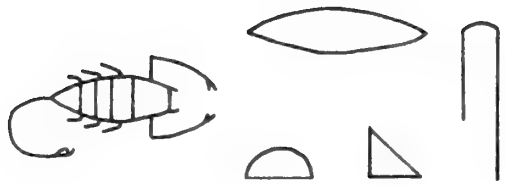

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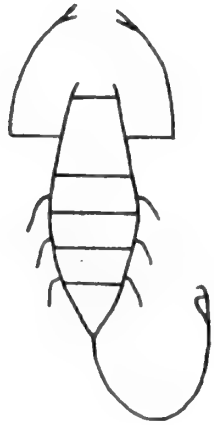

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The first record of genus *Phintella* (Araneae: Salticidae) in the Turkish spider fauna

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Abstract

The spider species *Phintella castriesiana* (Grube, 1861), of genus *Phintella* Strand, 1906, was found in Turkey to represent a new record for the Turkish spider fauna. Its characteristic features, drawings of genitalia and description are presented.

Keywords: *Phintella castriesiana*, Salticidae, Spiders, Turkey.

Introduction

The spiders of the family Salticidae are characterized by the square fronted carapace, with four large, forward-facing eyes, a smaller pair one each side further back, and a scarcely visible pair one each side between front and rear eyes (Roberts, 1995). The family Salticidae is the species richest group of spiders, which includes 5237 species in 567 genera with worldwide distribution (Platnick, 2009). This family is rather poorly known in Turkey when compared with other regions of the world. There are 71 species of 29 genera recorded in the country (Topçu *et al.*, 2005). This is the first record in Turkey for the species, *Phintella castriesiana* (Grube, 1861), and its genus *Phintella* Strand, 1906.

Material and methods

This study is based on a specimen collected from northern Turkey and preserved in 70% ethanol. The identification was made by a SZX61 Olympus stereomicroscope, using the papers of Prószyński (1976) and Metzner (1999). Examined specimen is deposited in the Arachnology Museum of Niğde University (NUAM). All measurements are in millimetres.

Results

Phintella castriesiana (Grube, 1861)

Material examined. Turkey: Kastamonu province, Yarören village, (41°21'366"N, 33°40'335"E), 1125 m, on the leaves of shrubs, 29.VII.2008, (1♀), leg. T. Türkeş.

Description

Measurements: Total length 4.4 mm. Carapace length 2.3 mm, width 1.7 mm. Abdomen length 2.2 mm, width 1.4 mm.

Prosoma dorsally light orange, eye field black from eye edge, posterior lateral eyes with brown rings around, sloping sides with black drawing. Frontal part of cephalic area and its sides with white hairs. Clypeus with sparsely transparent hairs. Labium with three wedge-shaped black stripes. Maxilla orange with light distal part. Sternum light orange. Opisthosoma dorsally light orange with dark reticulate drawing, ventrally light with vague longitudinal dark strip. Legs uniformly light with translucent hairs.

Comments

Determination was made after Prószyński (1971, 1976, 1978, 1983), Hansen (1986), Matsumoto (1989) and Logunov & Wesołowska (1992). The synonymy was discussed by Prószyński (1983). Habitat type was represented by Logunov & Wesołowska (1992) as grass and mixed forest. Ovtcharenko (1978) found *P. castriesiana* in the Caucasus by the shores of the Black Sea.

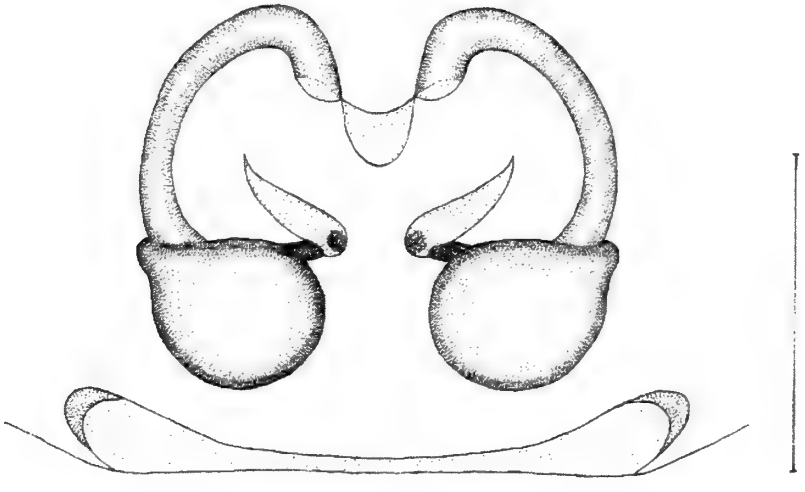

Fig. 1: Dorsal view of vulvae of *Phintella castriesiana* (Grube, 1861). Scale bar: 0.25 mm.

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Spiders (Araneae) new to the fauna of Turkey. 7. New species and genera records of Linyphiidae

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Abstract

Four genera and six species of the family Linyphiidae are reported from Turkey for the first time: *Centromerus minor* Tanasevitch, 1990; *Diplocephalus picinus* (Blackwall, 1841); *Hypomma bituberculatum* (Wider, 1834); *Maso sundevalli* (Westring, 1851); *Metopobactrus prominulus* (O. P.-Cambridge, 1872) and *Micrargus herbigradus* (Blackwall, 1854). Geographical distribution of the species is discussed.

Keywords: Spiders, Linyphiidae, new records, Turkey.

Introduction

The present paper is the seventh in a series on new spider records from Turkey. It is devoted to Linyphiidae. The earlier papers were devoted to Theridiidae (Marusik *et al.*, 2009; Marusik & Kunt, In press-a), Hahniidae (Marusik & Kunt, 2009), Clubionidae (Marusik & Kunt, In press-b), Anyphaenidae (Marusik, In press-a) and Araneidae (Marusik, In press-b).

Linyphiidae is the second largest family with 4365 species worldwide distributed (Platnick, 2009). It is also one of the most species-diverse families in Turkey with 65 species (Bayram *et al.*, 2008). During joint Turkish-Russian Arachnological trip in May – June 2009, several dozens of additional species and even genera have been collected in Turkey including four genera and six species of Linyphiidae.

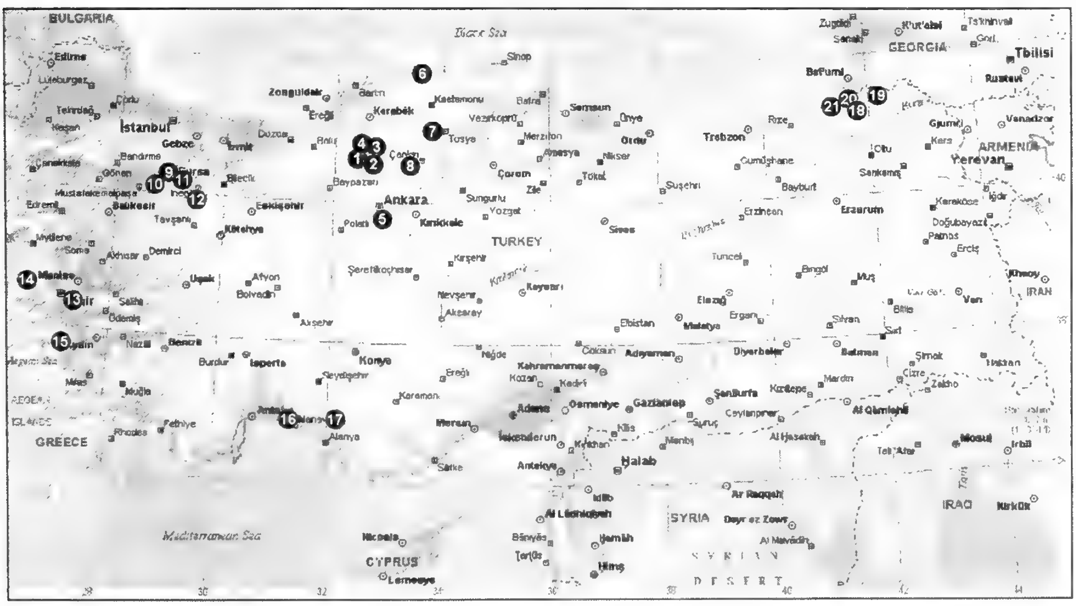
Methods

All specimens were collected during the Turkish-Russian Arachnological expedition in 27 May – 14 June 2009. Eight provinces: Ankara [T-01], Bolu [T-04],

Kastamonu [T-06, 07], Bursa [T-09, 10], İzmir, Aydın, Antalya and Artvin [T-19, 20] provinces were visited during the collection trip (Map 1).

The specimens were collected by sweeping net, hand picking, litter sifting and tree branch beating with the help of aspirator. They were preserved in 70% ethanol. Specimens were photographed using an Olympus Camedia E-520 camera attached to an Olympus SZX12 stereomicroscope. The images were montaged using "CombineZM" image stacking software. Photographs were taken using dishes of different size with paraffin in the bottom. Different sized holes were made in the bottom to keep the specimens in the correct position. Each species entry is supplied with the most appropriate identification references (chiefly well known identification books).

Material treated herein is deposited in the Turkish Arachnological Society collection and in the Zoological Museum of the Moscow State University.



Map 1. Distribution of species newly recorded in Turkey. Numbered dots correspond to the localities studied during Turkish-Russian expedition in 2009. Locality numbers are indicated in "Material examined": [T-1, 4, 6, 7, 9, 10, 19, 20].

Taxonomic survey

Centromerus minor Tanasevitch, 1990
C. m. Tanasevitch, 1990: 13, f. 4.1-4 (♂♀).

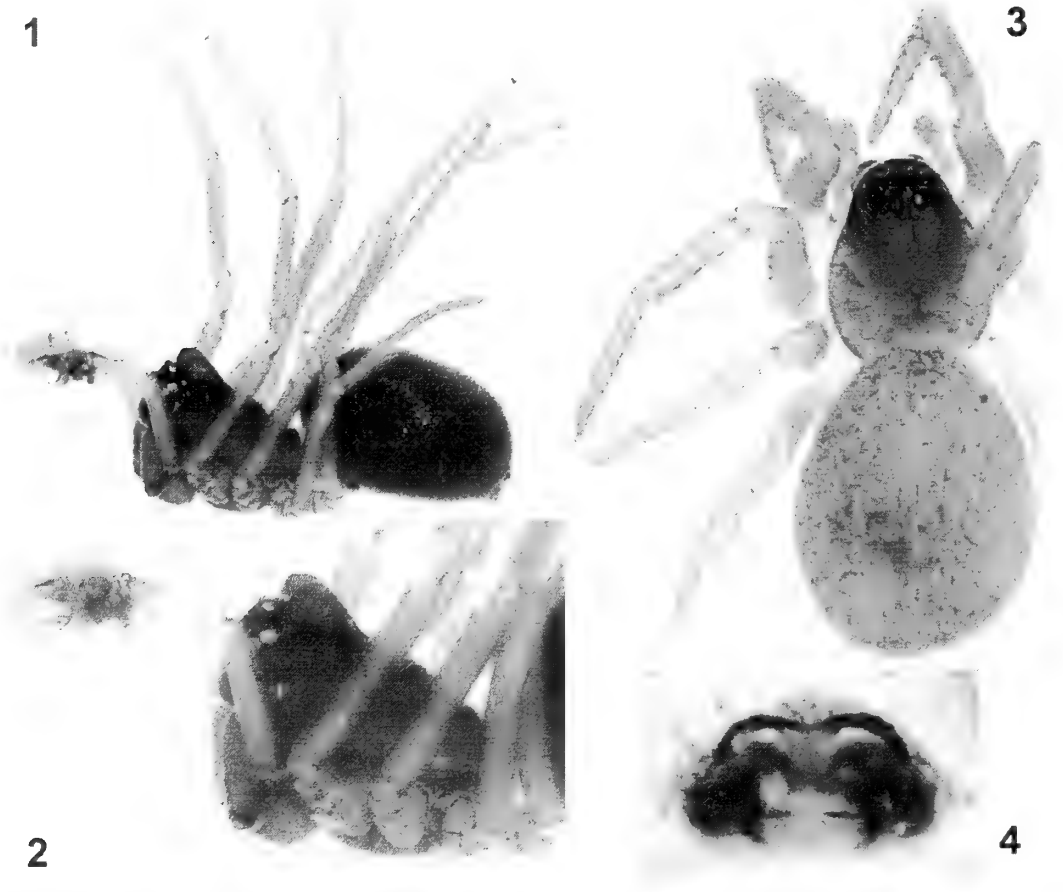
Material examined: 1♀ [T-19] Artvin Province, Şavşat District, Meydancık Town, Erikli Village, 41°24.302'N, 42°17.809'E, 1141 m, litter in oak-spruce forest, 12.06.2009 (Yu.M.Marusik).

Comments. Although Platnick (2009) listed distribution of this species as "Russia, Central Asia", it was known exclusively from Caucasus, from the northern macroslope of the Caucasus Major to southernmost Armenia (cf. Otto & Dietzold, 2009). Beside Russia (northern Caucasus) and Armenia, *C. minor* was reported from eight localities in Georgia and six localities in Azerbaijan (Tanasevitch, 1990). The record of this species from Artvin Province of Turkey does not extend the known range to the west or south. *C. minor* is the third species of the genus in Turkey.

Diplocephalus picinus (Blackwall, 1841)
D. p.:Wiehle, 1960: 515, f. 951-960 (♂♀).
D. p.: Roberts, 1987: 86, f. 37c, 39j (♂♀).
D. p.: Tanasevitch, 1990: 111, f. 22.24, 24.44, 28.12 (♂♀).

Material examined: 2♂♂ 3♀♀ [T-04] Bolu Province, Abant, 40°40.656'N, 31°28.313'E, 1308 m, litter in *Pinus* and mixed *Pinus-Fagus* forests, 28.05.2009 (Yu.M.Marusik); 2♂♂ 14♀♀ [T-06] Kastamonu Province, Azdavay District, 41°41.938'N, 33°25.971'E, 975 m, 30.05.2009 (Yu.M.Marusik); 6♀♀ [T-09] Bursa Province, Uludağ National Park, 40°06.970'N, 29°03.283'E, 648 m, litter in mixed *Quercus, Fagus, Pinus,* etc., 1.06.2009 (Yu.M.Marusik); 1♀ [T-10] Bursa Province, Nilüfer District, 40°07.466'N, 28°42.105'E, 570 m, 2.06.2009 (Yu.M.Marusik).

Comments. Platnick (2009) treated this species as Palaearctic although it has West Palaearctic range and restricted to Europe, Turkey and Caucasus. In Europe, it is known from Ireland to Ural, south to Spain and Bulgaria. In Caucasus, *D. picinus* was reported from all four states: Russia, Armenia, Azerbaijan and Georgia (Otto & Dietzold, 2009). Records from Turkey extend the known range of this species in Asia slightly to the south. It is the fourth species of the genus reported from Turkey.



Figs. 1-4: Male of *Hypomma bituberculatum* (1-2) and female of *Maso sundevalli* (3-4). 1. habitus, lateral. 2. prosoma, lateral. 3. habitus, dorsal. 4. epigyne, ventral.

Hypomma bituberculatum (Wider, 1834) Figs. 1-2.
Enidia bituberculata: Wiehle, 1960: 290, f. 529-537 (♂♀).
H. b.: Roberts, 1987: 44, f. 13d, 16j (♂♀).

Material examined: 1♂ 1juv. [T-06] Kastamonu Province, Azdavay District, 41°41.938'N, 33°25.971'E, 975 m, shaking branches of *Quercus* and *Fagus*, 30.05.2009 (Yu.M.Marusik).

Comments. *Hypomma* is a genus new to Turkey. Although *H. bituberculatum* has trans-Palaearctic range and known from almost all European states (except for Portugal and Greece and some small states), it was never reported from Turkey. This species can be easily recognized due to characteristic modification of carapace in male and shape of the male palp (Figs. 1-2).

Maso sundevalli (Westring, 1851) Figs. 3-4.
M. s.: Wiehle, 1960: 20, f. 9-14 (♂♀).
M. s.: Roberts, 1987: 54, f. 20a (♂♀).
M. s.: Tanasevitch, 1990: 108, f. 22.35, 24.46, 28.30 (♂♀).

Material examined: 1juv [T-01] Ankara Province, Kızılcahamam District, Soğuksu National Park, Göllü Area, 40°27.359'N, 32°35.602'E, 1800 m, dead litter in pine-spruce forest, 27.05.2009 (Yu.M.Marusik); 1♀ [T-04] Bolu Province, Abant, 40°40.656'N, 31°28.313'E, 1308 m, litter in *Pinus* forest, 28.05.2009 (Yu.M.Marusik); 1♀ [T-06] Kastamonu Province, Azdavay District, 41°41.938'N, 33°25.971'E, litter in oak forest, 975 m, 30.05.2009 (Yu.M.Marusik); 2juv. [T-07] Kastamonu Province, Between Kastamonu-Çankırı road, 29 km from the Ilgaz District, 41°05.862'N, 33°44.844'E, 1520 m, litter in spruce forest, 31.05.2009 (Yu.M.Marusik); 9♂♀ [T-20] Artvin Province, 9 km NWW of Artvin, 41°15.642'N, 41°46.365'E, 225 m, 13.06.2009 (Yu.M.Marusik).

Comments. *Maso* is a genus new to Turkey. Although *M. sundevalli* has circum-Holarctic range and known from many states it was never reported from Turkey, while known from adjacent Bulgaria (Helsdingen, 2006) and Georgia (Otto & Dietzold, 2009). Members of this genus can be easily recognised from all other Turkish Erigoninae even in juvenile stage due to the presence of ventral femoral, tibial and metatarsal spines on legs I and II (cf. Fig. 3).

Metopobactrus prominulus (O. P.-Cambridge, 1872)
M. p.: Wiehle, 1960: 246, f. 446-451 (♂♀).
M. p.: Roberts, 1987: 46, f. 14c, 17c (♂♀).
M. p.: Tanasevitch, 1990: 54, f. 16.9-11, 24.53 (♂♀).

Material examined: 1♂ 1♀ [T-20] Artvin Province, 9 km NWW of Artvin, 41°15.642'N, 41°46.365'E, 225 m, 13.06.2009 (Yu.M.Marusik).

Comments. *Metopobactrus* is a genus new to Turkey. Although *M. prominulus* has Holarctic range and known from many European countries, it was never reported from Turkey. It is unknown from adjacent Armenia, Bulgaria, Greece and Georgia (Helsdingen, 2006; Otto & Dietzold, 2009), but it is reported from Azerbaijan (Otto & Dietzold, 2009).

Micrargus herbigradus (Blackwall, 1854)
M. h.: Wiehle, 1960: 262, f. 476-483 (♂♀).
M. h.: Roberts, 1987: 80, f. 34d, 38g (♂♀).
M. h.: Tanasevitch, 1990: 104, f. 22.38, 24.55 (♂♀).

Material examined: 1♀ [T-06] Kastamonu Province, Azdavay District, 41°41.938'N, 33°25.971'E, 975 m, litter in oak forest, 30.05.2009 (Yu.M.Marusik).

Comments. *Micrargus* is a genus new to Turkey. Although *M. herbigradus* has trans-Palaearctic range and known from almost all European countries (Helsdingen, 2006) and all Caucasian states (Otto & Dietzold, 2009), it was never reported from Turkey. This species can be easily recognized due to the shape of copulatory organs. Females of this species have unusually deep, for Erigoninae, epigynal fovea.

Conclusion

Although Linyphiidae is one of the most species diverse families in Turkey, number of species reported in the country (71) is very low. Adjacent, much smaller, countries such as Georgia and Azerbaijan have higher species diversity (87 and 100 respectively). There is no doubt that real diversity of Linyphiidae is at least twice higher. Beside six species new to Turkey reported in this paper, we collected during our joint trip about 30 unidentifiable species, some of which most probably belong to undescribed genera.

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The first record of genus *Neospintharus* Exline, 1950 (Araneae: Theridiidae) from Turkey

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Abstract

The theridiid spider *Neospintharus syriacus* (O. P.-Cambridge, 1872) is recorded for the first time from Turkey. This represents a new spider genus and species record for Turkey. The characteristic features and drawings of both sexes are presented in this study.

Keywords: *Neospintharus syriacus*, new record, Theridiidae, Turkey.

Introduction

The family Theridiidae Sundevall, 1833 is one of the most diverse families of spiders, with 2295 species in 109 genera (Platnick, 2009). Sociality and kleptoparasitism commonly occur in the subfamily Argyrodinae among theridiid spiders (McCrate & Uetz, 2009). Argyrodinae comprises six genera: *Argyrodes* Simon, 1864, *Ariamnes* Thorell, 1869, *Faiditus* Keyserling, 1884, *Neospintharus* Exline, 1950, *Rhomphaea* L. Koch, 1872, and *Spheropistha* Yaginuma, 1957. The latter five genera have recently been removed from synonymy with *Argyrodes* (Agnarsson, 2004). *Neospintharus* Exline, 1950 is a small theridiid genus which contains 12 species and mostly occurs in tropical, subtropical and warm regions of the world (Platnick, 2009). Members of the genus are either kleptoparasitic or araneophagic, usually found in webs of other spiders and they can be easily recognized by their distinct abdominal pattern. Only one species, *Neospintharus syriacus* (O. P.-Cambridge, 1872), occurs in the Mediterranean region (Levy, 1985; Platnick, 2009). So far, 31 species of Theridiidae belonging to 9 genera have been recorded in Turkey, but no member of the genus *Neospintharus* Exline, 1950

has been recorded until now (Karol, 1967; Bayram, 2002; Topçu *et al.*, 2005). This work adds *N. syriacus* (O. P.-Cambridge, 1872) as a new record of the species and genus to the theridiid spider fauna of Turkey.

Material and Methods

Studied specimens were collected by the second and third authors from four different localities in Turkey (Fig. 1):

Locality 1. Hatay [Samandağ, Çevlik (36°07'13.67"N, 35°55'31.89"E)]: Four females and one male specimen were collected in Titus (Vespasianus) Tunnel, from the webs of Pholcidae (*Pholcus* sp.) and Theridiidae (*Steatoda* sp.), on 17 June 2008; five females and one male specimen were collected in Titus (Vespasianus) Tunnel, from the webs of Pholcidae (*Pholcus* sp.), on 11 May 2009.

Locality 2. Mersin, [Silifke (36°22'33.93"N, 33°53'28.56"E)]: One female was collected from Silifke – Mut road on 7 May 2009. The specimen was collected from the web of Pholcidae.

Locality 3. Antalya [Muratpaşa (36°50'50.71"N; 30°45'47.22"E)]: Two females and one male were collected from the webs of Pholcidae on 25 September 2009.

Locality 4. Osmaniye [Bahçe, Aşağı Arıcaklı Village (37°11'28.73"N, 36°36'29.37"E)]: Five females and one male specimen were collected from the webs of Araneidae on 4 May 2008.

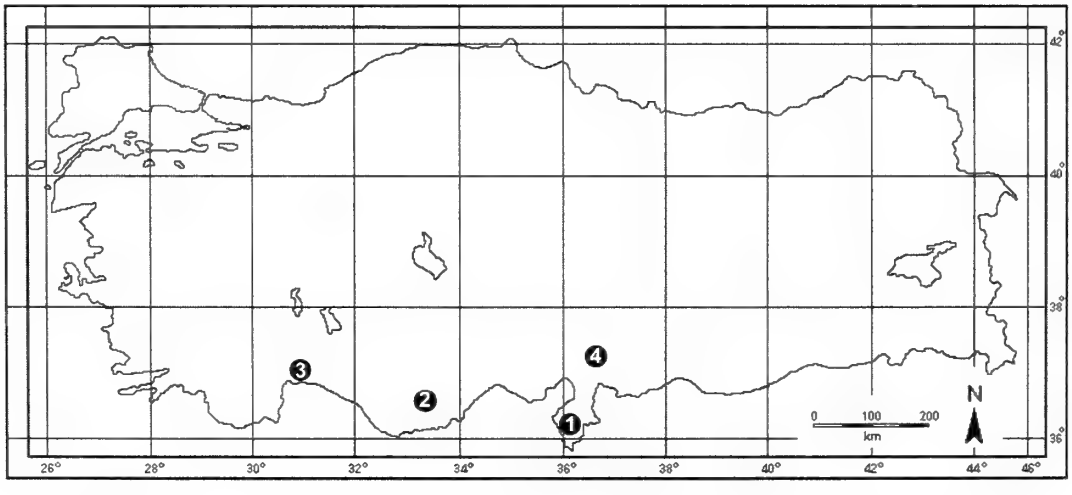
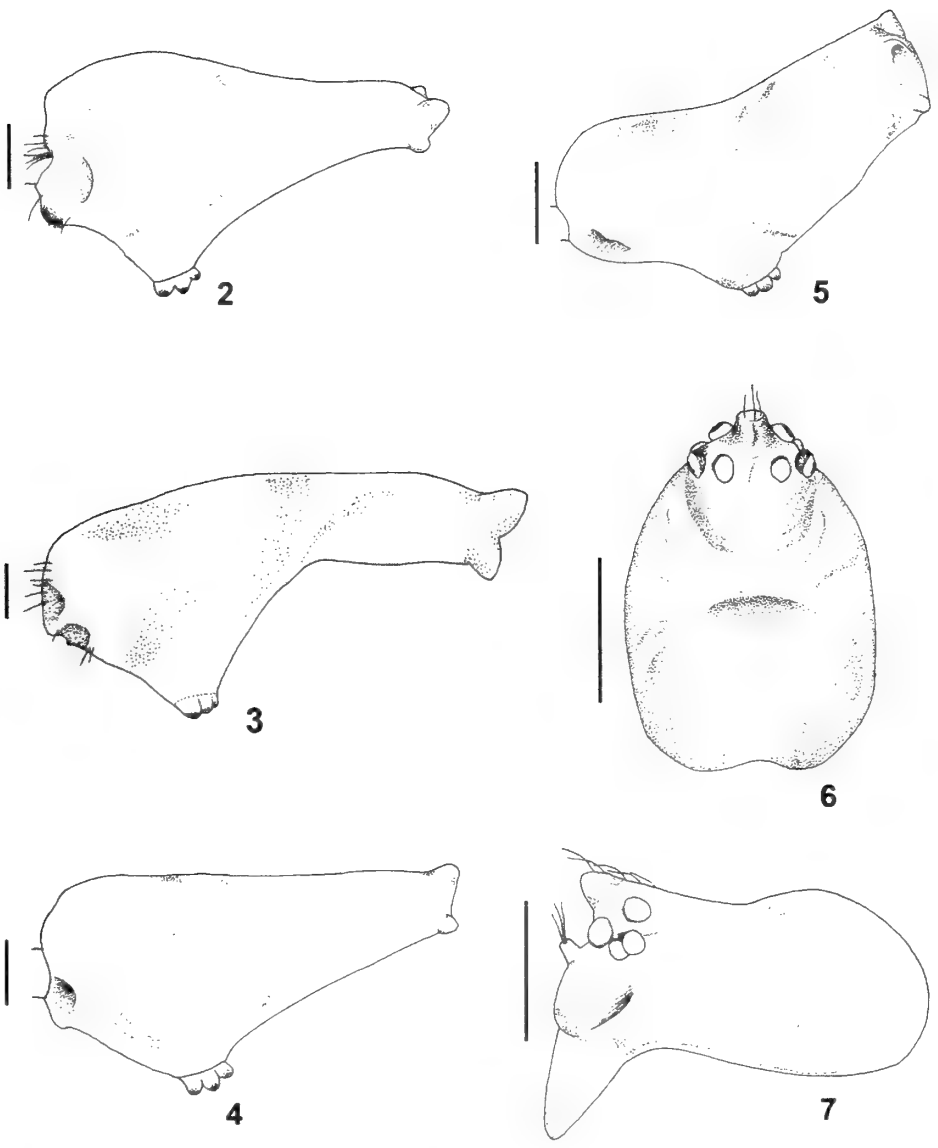


Fig.1. Positions of the collecting sites from which the specimens were collected: 1. Hatay (Samandağ, Çevlik), 2. Mersin (Silifke - Mut), 3. Antalya (Muratpaşa), 4. Osmaniye (Bahçe, Aşağı Arıcaklı Village).

The identification was made using the descriptions of Levy (1985, Figs. 40-43). The drawings were made by the means of a camera lucida attached to the Zeiss Stemi SR microscope and the measurements were taken with an ocular scale bar by Olympus SZ51. Digital images of palpus and epigynum were taken with a digital camera (Leica DFC290, Germany) that was connected to the optical tube of a stereo microscope (Leica M205 C, Leica Microsystems GmbH, Wetzlar, Germany) and five to 15 photographs were taken in different focal planes and combined. All measurements are in mm. Measurements are taken from the dorsal side of the palps and legs.

The taxonomy follows Platnick (2009) and the terminology of male palpus follows Levy (1985).



Figs. 2-7: *Neospintharus syriacus* (O. P.-Cambridge, 1872). 2-4. Variations of female abdomen, lateral view. 5. Abdomen of male, lateral view. 6-7. Male carapace. 6. dorsal view. 7. lateral view. Scale bars: 0.5 mm.

Results

Family Theridiidae Sundevall, 1833
Genus *Neospintharus* Exline, 1950
Type-species: *N. parvus* Exline, 1950 by original designation and monotypy (type specimen lost) (Knoflach-Thaler *et al.*, 2008)
Species *Neospintharus syriacus* (O. P.-Cambridge, 1872)
Synonyms
Argyrodes syriaca O. P.-Cambridge, 1872

Description (Figs. 2-12) [Description was done from preserved specimens.]
Female: General body measures were given in Table (1). Carapace longer than wide, dark brown, with some dark annulations, marginal line black. A transverse thoracic depression is present on carapace. Eye region and clypeus high. Clypeus is swollen,

prolonged and brownish in colour. Clypeus height about 4-4.5 times of the anterior lateral eye. Chelicerae are brownish, without spots. Eyes in two rows, anterior row of eyes recurved, posterior row slightly procurved. Labium wider at the base. Sternum, longer than wide, dark brown with yellow spots, bordered by a thin black line. Legs brownish with some dark annulations, some spines arranged irregularly. Legs length formulae: Leg I > Leg IV > Leg II > Leg III. For leg and pedipalp measures see Table (2). Labium and endites pale brown. Abdomen is rounded at the front, narrowed near the posterior point, longer than high, triangular shaped laterally and varies greatly in size and in shape (Figs. 2-5). Posterior point of abdomen ending with four projections. Dorsum variable in colour, especially yellowish-brown, mottled white or with silvery patches and darker cardiac mark is present. The cardiac mark is extending with a dark mid-dorsal thin line to posterior end of abdomen (Fig. 8). Venter brown to black mottled.

Male: As female, except for the following: Carapace darker, cephalic region higher than in female, male has a slimmer abdomen, legs darker, thinner and longer than in female. The male distinctly differs in the form of carapace, both clypeal and cephalic projections. Clypeal and cephalic projections bear strong setae and do not bear the eyes (Figs. 6-7). Abdomen dorsum without mid-dorsal dark line.

Table 1. General body measurements (in mm) of *Neospintharus syriacus* (O. P.-Cambridge, 1872). L = length, W = width, TBL = total body length.

	Carapace L	Carapace W	Abdomen L	Abdomen W	TBL
Male	1.11 – 1.16	0.80 – 0.86	1.77 – 1.83	0.83 – 0.87	2.88 – 2.99
Female	1.12 – 1.25	0.80 – 0.85	3.17 – 4.27	1.05 – 1.5	4.29 – 5.52

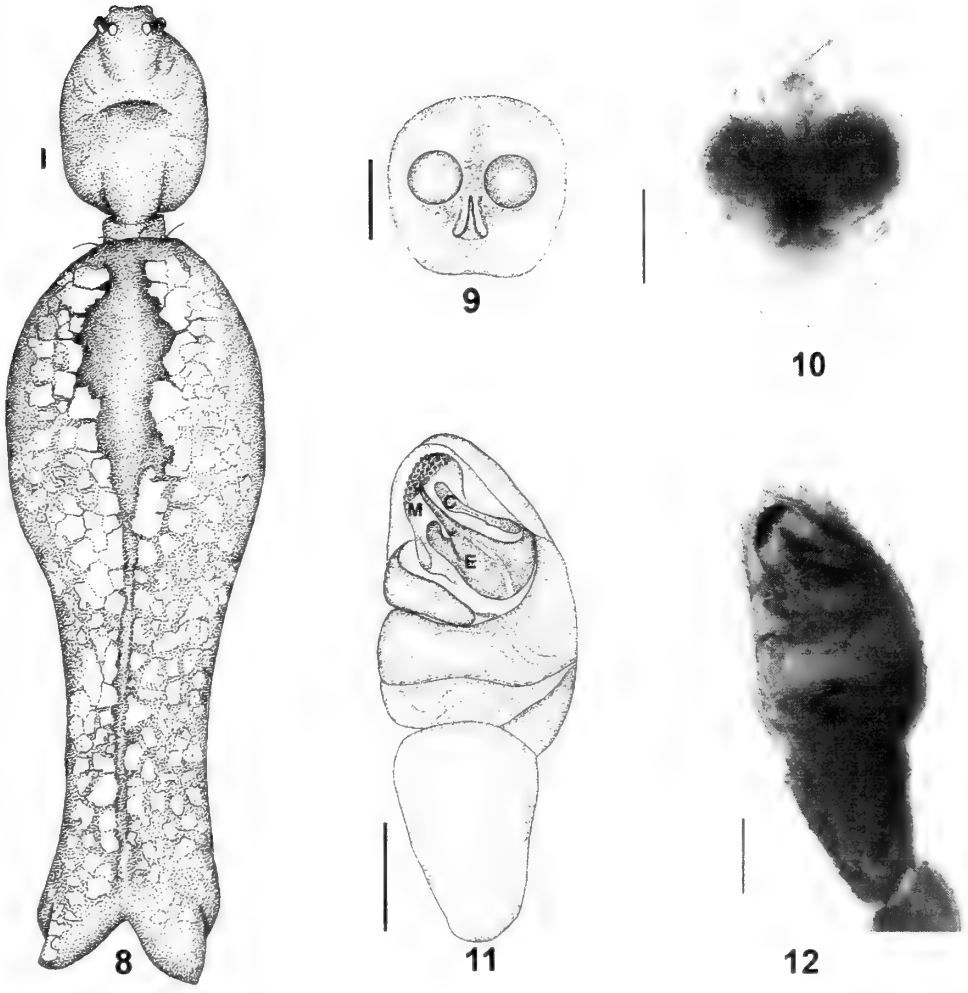
Table 2. Leg and pedipalp measurements (in mm) of male and female specimens of *Neospintharus syriacus* (O.P.-Cambridge, 1872).

		femur	patella	tibia	metatarsus	tarsus
Male	Pedipalp	0.38 – 0.40	0.11 – 0.13	0.12 – 14	–	0.29 – 0.32
	Leg I	2.71 – 2.75	0.27 – 0.31	2.21 – 2.24	2.11 – 2.15	1.10 – 1.12
	Leg II	1.73 – 1.77	0.28 – 0.31	1.29 – 1.33	1.13 – 1.16	0.63 – 0.66
	Leg III	0.6 – 1.0	0.27 – 0.31	0.51 – 0.55	0.58 – 0.63	0.46 – 0.5
	Leg IV	1.93 – 1.97	0.38 – 0.41	1.13 – 1.16	1.08 – 1.11	0.4 – 0.7
Female	Pedipalp	0.32 – 0.4	0.1 – 0.15	0.15 – 0.2	–	0.3 – 0.35
	Leg I	2.8 – 3.07	0.4 – 0.47	2.27 – 2.60	1.62 – 1.75	0.82 – 0.9
	Leg II	1.67 – 1.8	0.27 – 0.42	1.27 – 1.47	1.2 – 1.25	0.72 – 0.77
	Leg III	1.0 – 1.1	0.3 – 0.32	0.52 – 0.57	0.62 – 0.7	0.52 – 0.55
	Leg IV	2.02 – 2.25	0.40 – 0.42	1.22 – 1.35	1.2 – 1.3	0.72 – 0.77

Diagnosis

N. syriacus (O. P.-Cambridge, 1872) can be distinguished from the other known *Neospintharus* species by the following genital characters (Figs. 9-12):

1. Apical part of median apophysis is rough and granulated,
2. embolus with two branches, one longer and pointed, the other short and rounded,
3. conductor spoon shaped,
4. epigynum with triangle shaped median plate.



Figs. 8–12: *Neospintharus syriacus* (O. P.-Cambridge, 1872). 8. Female general habitus, dorsal view. 9-10. Female epigynum, ventral view. 11-12. Male left palpus, retrolateral view. C = conductor, E = embolus, M = median apophysis. Scale bars: 0.1mm.

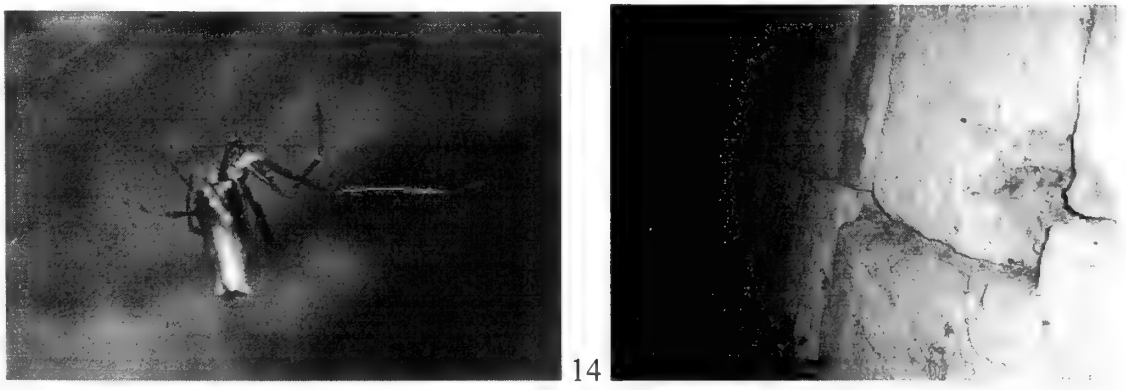


Fig.13. Female *Neospintharus syriacus* (O. P.-Cambridge, 1872) is hanging in a pholcid web upside down. © Photo was taken by Mr. Richard Gallon from Titus (Vespasianus) Tunnel, Çevlik, Samandağ, Hatay. Fig.14. Titus (Vespasianus) Tunnel where *N. syriacus* was collected in Hatay city. © Photo was taken by Kadir Boğaç Kunt.

Habitat and distribution

Cambridge (1872) collected *N. syriacus* on webs of *Cyrtophora* (Araneidae) from Lebanon. Levy (1985) collected most specimens of *N. syriacus* (O. P.-Cambridge, 1872) on water-dripping *Adiantum* ferns. He collected only very few specimens from webs of Linyphiidae and Pholcidae in Israel. More recently, this species was recorded from Greece and Cyprus by Knoflach-Thaler *et al.* (2008) and the authors collected most samples of *N. syriacus* by beating, only a few samples were collected in orb-webs. We collected all of our samples from webs of members of Araneidae, Pholcidae and Theridiidae. The samples were taken their typical positions (hang in the host web upside down) on the host webs (Fig. 13). The majority of our samples were captured in the webs of Pholcidae and Theridiidae among big stones of Titus (Vespasianus) Tunnel (Fig. 14).

N. syriacus (O. P.-Cambridge, 1872) was recorded from Lebanon, Israel, Greece and Cyprus (Platnick, 2009; Knoflach-Thaler *et al.*, 2008). Knoflach-Thaler *et al.* (2008) indicated that this species is more widespread through Mediterranean countries. The recording of this species from Turkey widens its distribution in Mediterranean region.

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Genus *Uroctea* Dufour, 1820 (Araneae: Oecobiidae) in Turkey

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Abstract

The *Uroctea* Dufour, 1820 species of Turkey are presented in this study. Until now, only *U. durandi* (Latreille, 1809) is known from Turkey. Here, we record for the first time from Turkey *U. thaleri* Rheims, Santos & van Harten, 2007 which was originally described from Yemen. All available information on these little known Oecobiidae species is presented along with comments on their distribution pattern in Turkey. Also, some characteristic features with photographs of genitalia and general habitus of both sexes are presented.

Keywords: *Uroctea durandi*, *Uroctea thaleri*, Oecobiidae, Spiders, Turkey.

Introduction

The old world genus *Uroctea* Dufour, 1820 is one of the six genera currently belonging to the family Oecobiidae. It was described by the French naturalist Léon Jean-Marie Dufour in 1820 and includes 18 species which are predominantly distributed in the Palaearctic region (Platnick, 2009).

Roewer (1959) first mentioned *Uroctea durandi* (Latreille, 1809) from Adana province of Turkey. However, neither a specimen nor a figure was shown in his paper, this makes comparison with other species impossible. Afterwards, Topçu *et al.* (2006) have been reported *U. durandi* from Adana, Mersin and Niğde provinces.

In the present study, *U. durandi* (Latreille, 1809) and *U. thaleri* Rheims, Santos & van Harten, 2007 of genus *Uroctea* were studied. *U. thaleri* is recorded for the first time in the Turkish araneofauna.

Material and methods

Specimens from the following institutions were examined/cited. Abbreviations, cities and curators are as follows:
MNHN = Muséum National d`Histoire Naturelle, Paris, France (C. Rollard);
MTAS = Museum of Turkish Arachnological Society, Ankara, Turkey (K.B. Kunt);
OUMNH = Oxford University Museum of Natural History, Oxford, England (Z. Simmons);
ZMB = Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (J. Dunlop).

Specimens were photographed using an HP Photosmart R707 camera attached to an Euromex ZE.1654 stereomicroscope. For SEM photographs, the materials were examined at an accelerating voltage of 15 kv under Jeol JSM 6360 LV Scanning Electron Microscope, and the electron micrographs were recorded.

All measurements are in millimetres. Epigynes were dissected and submerged in 5% KOH to study internal structures.

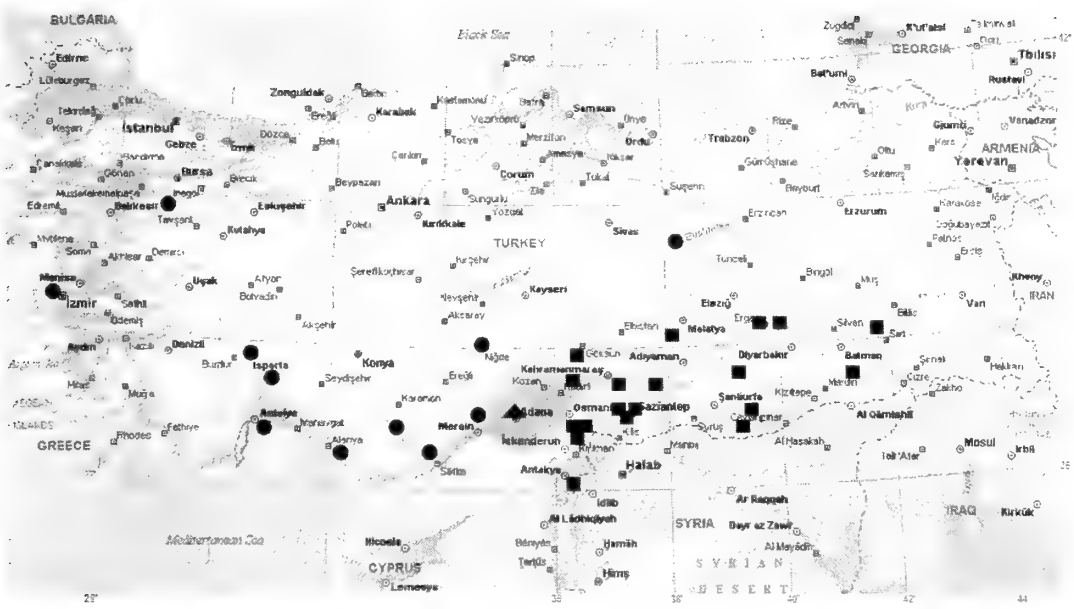
Results

Family **Oecobiidae** Blackwall, 1862
Genus ***Uroctea*** Dufour, 1820
Dufour, *Ann. gén. sci. phys.* v, p. 198, 1820;
Simon, *Hist. Nat. Araign.* i, p. 451, 1893

Uroctea durandi (Latreille, 1809) (Fig. 1).
Material examined: Antalya Province. 2 females, Fener Quarter, Muratpaşa District (36°50'52.91"N, 30°46'12.27"E), 02.X.2008, K.B. Kunt leg.; 1 female, Mahmutlar Town, Alanya District (36°29'17.18"N, 32°07'3.90"E), 26.IX.2009, K.B. Kunt leg. **Bursa Province.** 2 females, Firuzköy, Orhaneli District (39°56'23.79"N, 29°06'23.21"E), 18.VI.2007, R.S. Kaya leg. **Erzincan Province.** 1 female, Kozlupınar Village, Kemaliye District (39°12'29.61"N, 38°34'3.20"E), 29.IX.2008, M. Elverici & C. Elverici leg. **Isparta Province.** 1 subadult female, 1 juvenile, National Park of Kovada Lake, Eğirdir District (37°37'45"N, 30°51'41"E), 10.V.2007, R.S. Kaya leg.; 4 females, Ayazmana Quarter (37°44'46.46"N, 30°34'57.88"E), 09.III.2008, K. Bozkurt leg. **İzmir Province.** 1 female, Karagöl, Yamanlar Mountain, Karşıyaka District (38°33'23.30"N, 27°13'2.17"E), 04.X.2008, E.A. Yağmur & S. Anlaş leg. **Mersin Province.** 1 female, Sertavul Pass, Mut District (36°49'9.55"N, 33°19'14.44"E), 06.XI.2004, K.B. Kunt & A.E. Yaprak leg.; 1 female, 1 juvenile, Çamlıyayla, Tarsus District (37°09'58.53"N, 34°36'14.93"E), 12.V.2008, R.S. Kaya leg.; 1 female, Değirmendere Village, Silifke District (36°25'53"N, 33°45'21"E), 13.V.2008, R.S. Kaya leg. **Niğde Province.** 1 female, 2 juveniles, Fertek Quarter (37°58'43.71"N, 34°37'15.55"E), 12.IX.2008, K.B. Kunt leg.

Comments: *U. durandi* has a circum-Mediterranean distribution. It is known in Andorra, Bulgaria, Croatia, France, Greece, Italy, Macedonia, Portuguese, Slovenia and Spain (Helsdingen, 2006). It has been also recorded from England (Selden, 2003). *U. durandi* is mainly distributed in the Aegean and Mediterranean regions of Turkey (Map 1). The morphological and genitalia features of our samples collected from Marmara and East Anatolian region are the same of our samples collected from Aegean and Mediterranean regions. Furthermore, no differences have been observed between Turkish population samples and type material.

Natural History: Specimens were collected in their tent-like webs under stones from dry areas. We observed the remains of millipedes in their webs (Fig. 2).



Map. 1: Distribution of *Uroctea* species in Turkey. **Circles**: sampling localities of *U. durandi*. **Squares**: sampling localities of *U. thaleri*. **Triangle**: Roewer's record (1959).

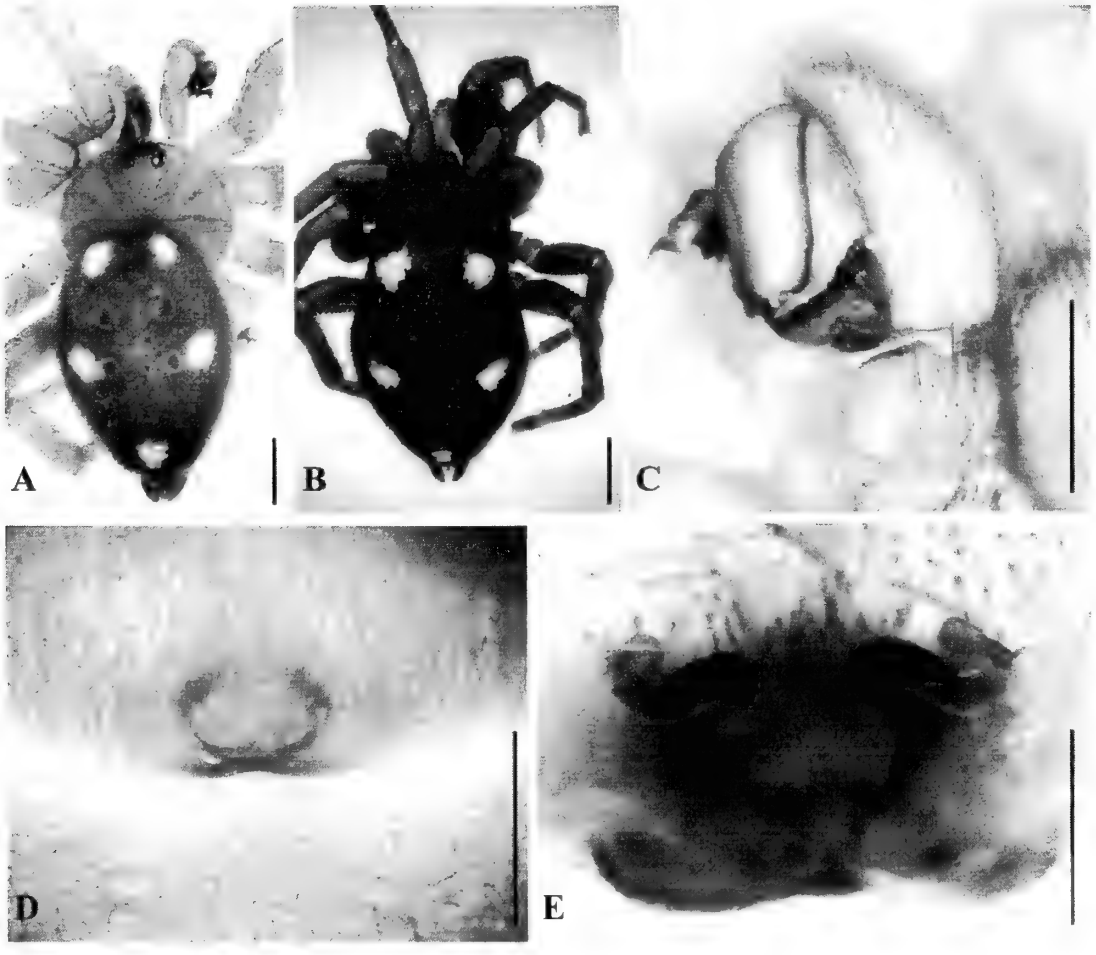


Fig. 1: *Uroctea durandi* (Latreille, 1809).
Male, Paratype MNHN AR 10145: A. Habitus, dorsal view. C. Male palp.
Female, Holotype MNHN AR 10145: B. Habitus, dorsal view. D. Epigyne, ventral view.
E. Internal genitalia, dorsal view. Scale lines: A, B = 1 mm; C, D, E = 0.5 mm.

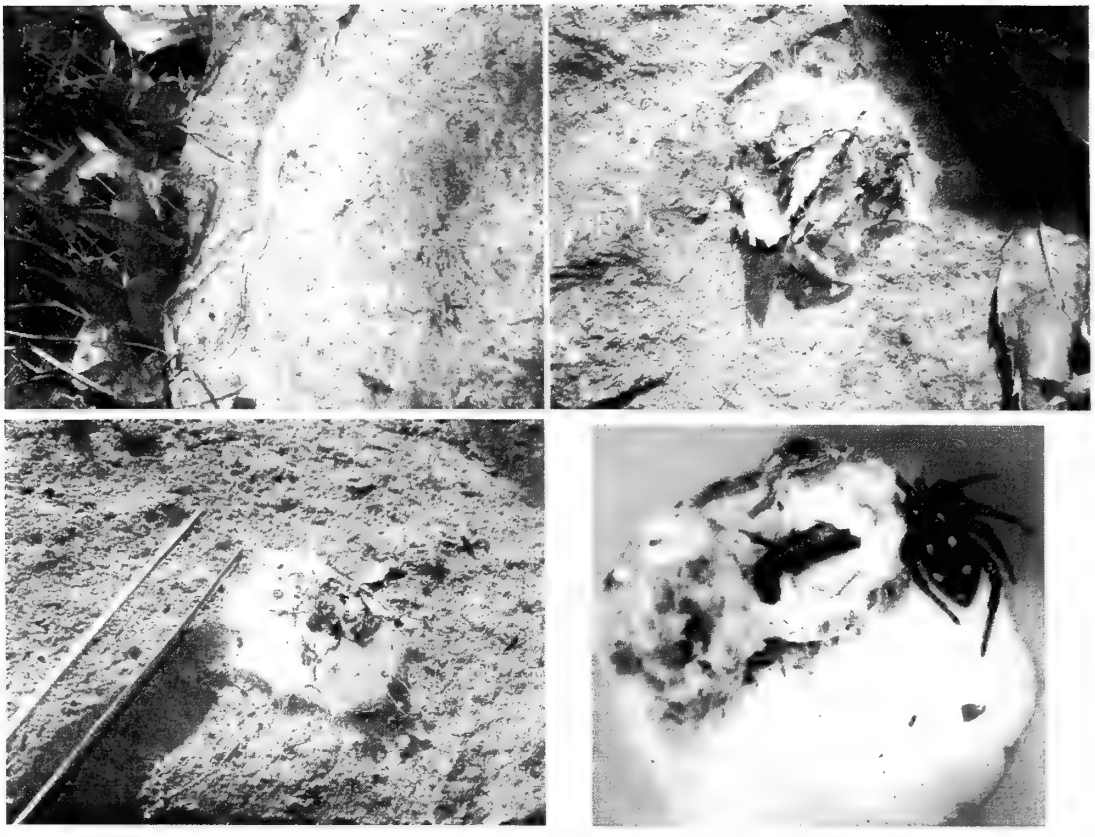


Fig. 2: Tent-like webs of *Uroctea durandi*. Photos by courtesy of Mr. Kağan Bozkurt, from Ayazmana Quarter, Isparta Province, Turkey.

Uroctea thaleri Rheims, Santos & van Harten, 2007 (Figs. 3-5).

Material examined: Adıyaman Province. 1 subadult male, Aydınlar Village, Gerger District, 20.IV.2008, E.A. Yağmur & E. Tezcan leg. **Batman Province.** 1 subadult female, Gercüş District (37°37'28.6"N, 41°24'46.8"E), 17.V.2009, E.A. Yağmur & E. Ulupınar leg. **Diyarbakır Province.** 3 subadult females, Yukarı Kuyulu Village, Ergani District (38°35'8.94"N, 39°15'1.02"E), 13.IV.2008, E.A. Yağmur, G. Çalışır & M. Özkörük leg.; 1 female, Kalkan Village, Eğil District, 14 km southwest (38°08'30.13"N, 40°04'18.99"E), 13.IV.2008, E.A. Yağmur, G. Çalışır & M. Özkörük leg. **Gaziantep Province.** 1 subadult male, Hanağzı Village, İslahiye District (37°04'4.51"N, 36°36'16.79"E), 14.V.2005, E.A. Yağmur & M. Pehlivan leg.; 1 female *(MTAS/Oec: 0805)*, 1 male *(MTAS/Oec: 0806)*, Şahanlık Hill, Huzurlu Plateau, İslahiye District, 14.VI.2008, E.A. Yağmur & E. Tezcan leg.; **Hatay Province.** 1 juvenile, Çakıryiğit Village, Reyhanlı District (36°15'45.31"N, 36°36'24.83"E), 14.IV.2007, E.A. Yağmur, G. Çalışır & M. Yalçın leg.; 2 females, 3 juveniles, Kıcı Village, Belen District (36°29'3.92"N, 36°16'6.84"E), 13.VII.2007, E.A. Yağmur & G. Çalışır leg.; 2 subadult females, Aktepe Town, Hassa District (36°41'55.55"N, 36°29'58.83"E), 05.V.2008, E.A. Yağmur, G. Çalışır, E. Ulupınar & V. Ülgezer leg.; 2 females, 1 subadult male, Belen Pass, 10.V.2008, E.A. Yağmur, G. Çalışır & E. Ulupınar leg. **Kahramanmaraş Province.** 1 subadult male, Başkonuş Plateau (37°34'6.55"N, 36°35'4.94"E), 21.VI.2007, E.A. Yağmur & G. Çalışır leg.; 1 juvenile, Narlı Town, Pazarcık District, 07.III.2008, E.A. Yağmur & G. Çalışır leg.; 2 subadult males, Büyükkızılcık Town, Göksun District (38°12'1.54"N, 36°42'17.83"E), 30.V.2008, E.A. Yağmur & M.S. Kılıç leg. **Malatya Province.** 1 male, Reşadiye Village, Doğanşehir District, 03.V.2008, E.A. Yağmur & E. Tezcan leg. **Osmaniye Province**, Hasanbeyli District, Kuşçubeli Pass (37°07'39.21"N,

36°33'31.58"E), 24.IV.2008, E.A. Yağmur & E. Tezcan leg. **Siirt Province.** 1 female, Baykan District (38°03'08"N, 41°46'50"E), 18.V.2009, E.A. Yağmur & M. Uslu leg. **Şanlıurfa Province.** 1 male, Harran Ruins, Harran (36°52'12.08"N; 39°01'51.47"E), 12.V.2004, R.S. Kaya leg.; 1 female, Karaca Hamlet, Karahisar Village (37°03'48.72"N; 39°15'45.12"E), 09.V.2006, E.A. Yağmur & M.Z. Yıldız leg.; 1 female, 1 juvenile, Aşağı Göklü Village, Halfeti District (37°19'35"N; 38°02'4"E), 21.XII.2007, E.A. Yağmur leg.; 3 juveniles, Siverek District, a bridge about 20 km south of Siverek, 11.IV.2008, E.A. Yağmur, G. Çalışır & M. Özkörük leg.

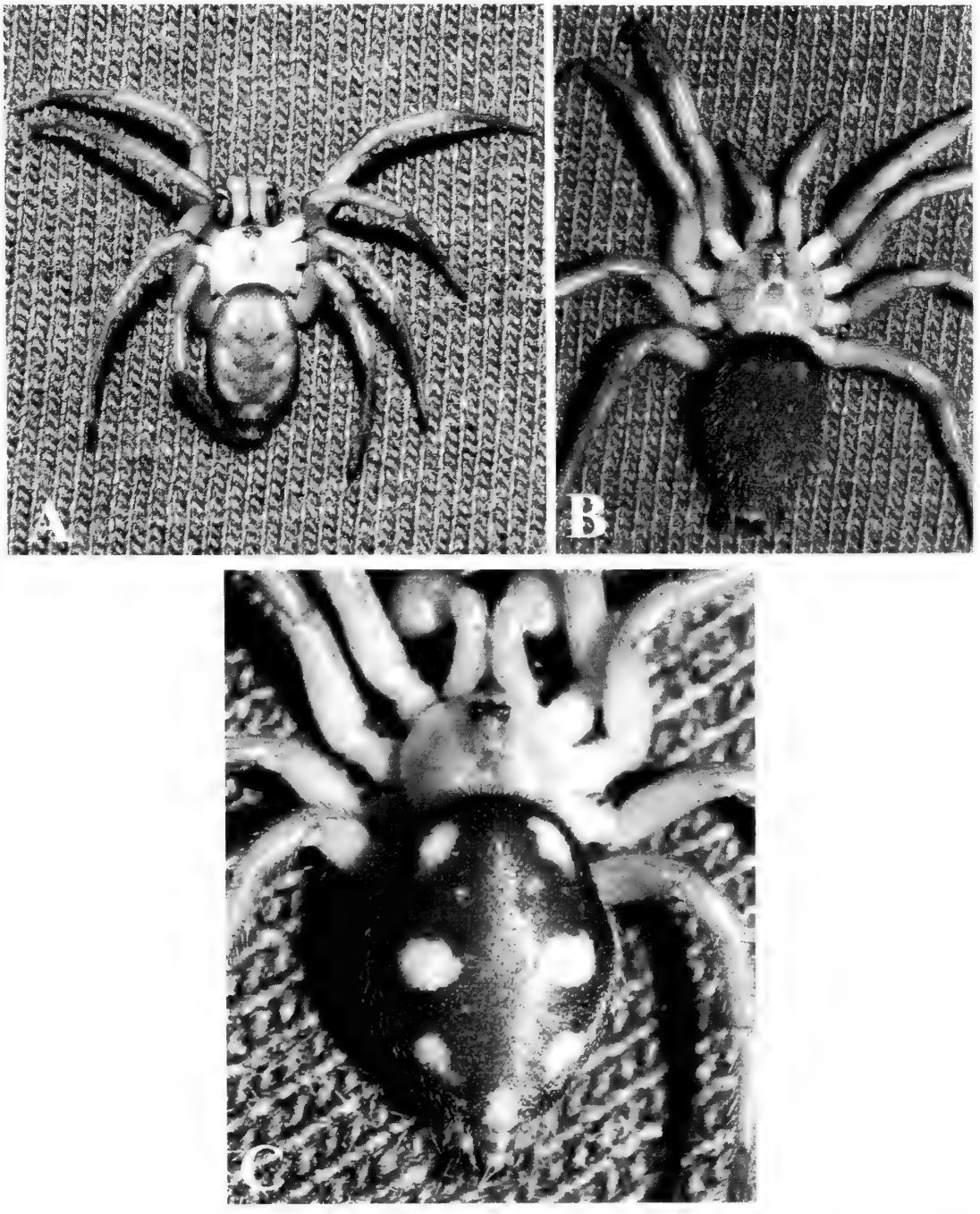


Fig. 3: Abdominal patterns of *Uroctea thaleri* Rheims, Santos & van Harten, 2007 from Turkey. A. Male. B. Female. C. Subadult male.

Comments: According to Rheims *et al.* (2007), "The males of *Uroctea thaleri* can be distinguished from other species of the genus by the extremely wide tegular apophysis 1 and by the long and apically rounded proximal tegular lobe. Females can be distinguished by the long and parallel insemination and fertilization ducts, both describing a median loop between the epigynal plate and the spermathecae. An additional diagnostic character is a blind ending duct emerging basally from the fertilization ducts."

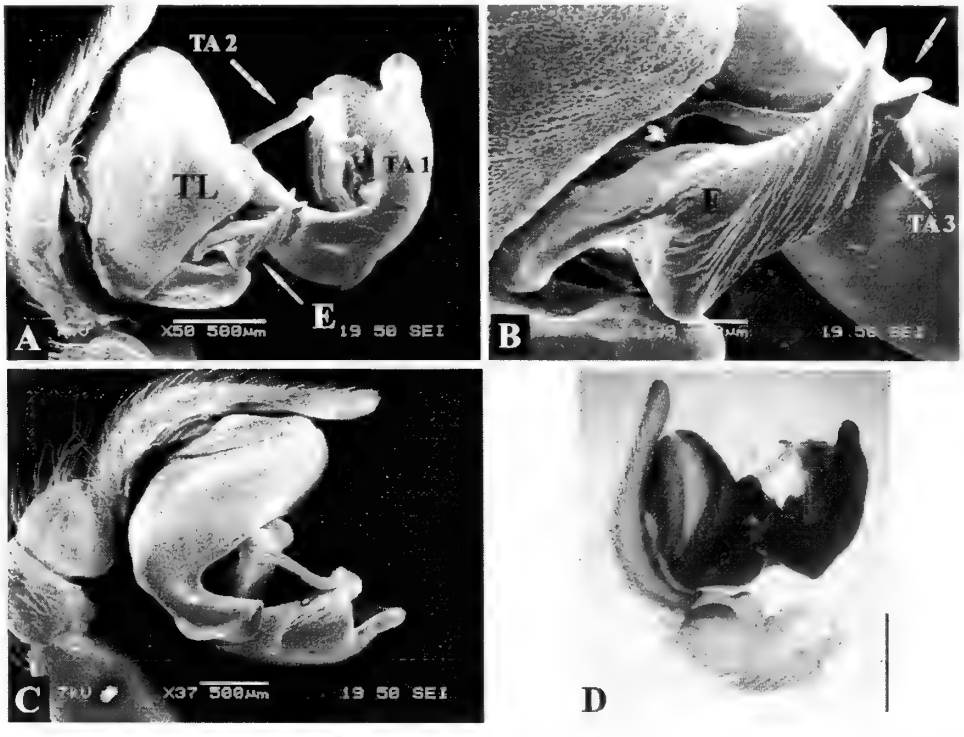


Fig. 4: Male palp of *U. thaleri* (MTAS/Oec: 0806). A, D. Left palp, prolateral view. B. Embolus C. Right palp, prolateral view. A-C: SEM. (D, Scale line = 0.5 mm). Abbreviations: E = embolus; TA1–3 = tegular apophyses; TL = tegular lobe.

Unfortunately, despite of our efforts, we could not examine the type specimens of *U. thaleri* to make comparison between them and our samples. After examining the illustrations of the type specimens of *U. thaleri* presented by Rheims *et al.* (2007, Figs. 5-8, 11-12), there is no doubt that our *Uroctea* samples collected from East Mediterranean and South East Anatolian region belong to *U. thaleri*. Their abdomens are dorsally dark grey with creamy spots or marks (Fig. 3) and they have the same genitalia of male (Fig. 4) and female (Fig. 5).

U. thaleri was described by Rheims *et al.* (2007) from Yemen. However, it has also been recorded from India, Iran and Israel. In fact, it is not unexpected to find *U. thaleri* in Turkey, taking in consideration its known distribution range. However, the record of *U. thaleri* from Israel and the seven creamy abdominal spots of juvenile Turkish samples (Fig. 3C) led us to ask a question: Do our *U. thaleri* specimens belong to *U. septempunctata* species which description was based on juvenile specimens by O.P.-Cambridge (1872) from Palestine and Syria (Lebanon)?

In 1872, O.P.-Cambridge described *U. septempunctata* as follows: "This species is similar to *C. limbata* in form and structure [Fig. 6A, B]. The whole of the fore part of the spider is yellow, but of a clearer, brighter hue than in that species; the abdomen is dull black, but the upperside, instead of being surrounded by a continuous border of a whitish-yellow colour, has in its place a marginal row of seven large yellow spots; four of these

form nearly a square on its fore half, and the three others are in a triangle above the spinners, the apex directed backwards [Fig. 6C]. It is possible that in some examples these spots may become nearly confluent, and so form a band very similar to that on the abdomen of *C. limbata*; but still some other specific characters, such as a slight difference in the relative position of the eyes, and the less dense armature of the legs with hairs, bristles, and fine spines, seem to show that it is quite distinct from that species, of which six adult examples found in 1864 at Alexandria (Egypt) presented no variation whatever in the uniformity and continuity of the abdominal border.

An immature male was found at Jerusalem under a piece of detached rock in the valley of Hinnom, an immature female in a similar situation near Ain Ata, and another at Tiberias."

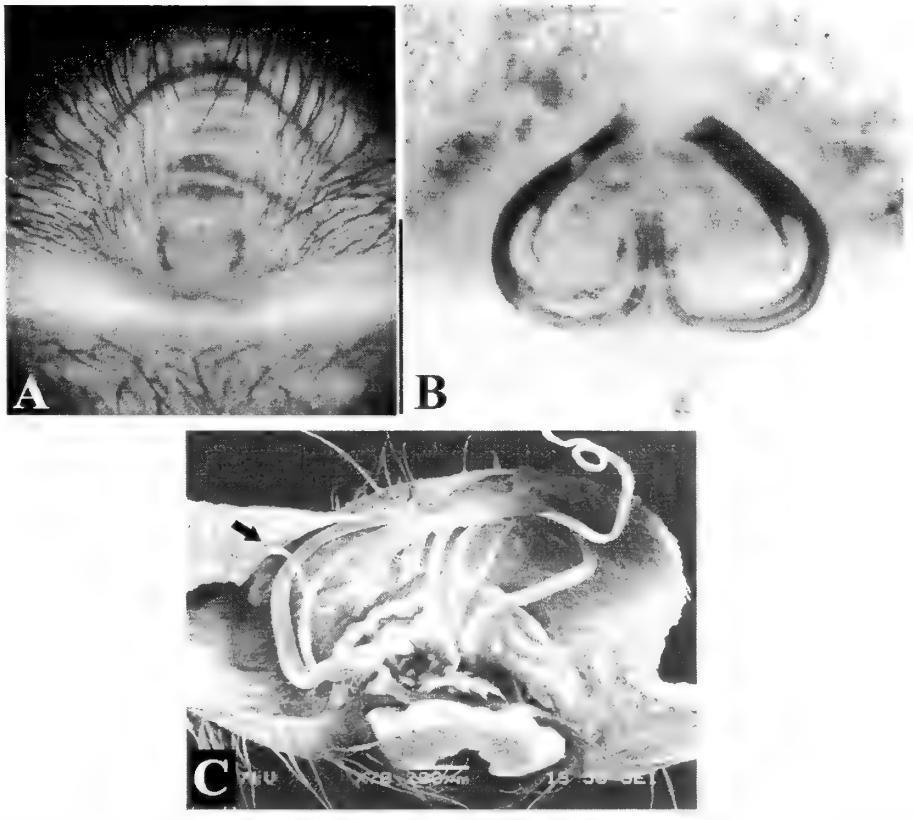


Fig. 5: Epigyne of *U. thaleri* (MTAS/Oec: 0805). A. Ventral view. B. Internal genitalia, dorsal view. (Scale line = 0.5 mm). C. Ditto, SEM, arrow shows blind ending duct.

After O.P.-Cambridge's description, the Italian arachnologist Pietro Pavesi (1895) published a short description, without genitalia illustrations, based on an adult female collected from Hermon Mountain in Palestine/Israel. Pavesi (1895) mentioned that his adult female specimen is deposited in "Museo di Zoologia e Anatomia Comparata", but we learned that the invertebrate collection of this museum was moved to "Museo Regionale di Scienze Naturali, Torino" many years ago. Unfortunately, we could not get a response to our correspondence with the Museum of Torino.

Comparing our *U. thaleri* specimens with a type specimen of *U. septempunctata* (OUMNH) and the Holotype of *U. limbata* (C.L. Koch, 1843) (ZMB), we observed that our Turkish samples of *U. thaleri* are similar to the first species. Especially, the abdominal pattern with seven spots of juvenile *U. thaleri* and *U. septempunctata* samples

(Fig. 3C, 6C). Also, arrangement of the eyes and position of the spines and hairs on the legs are similar in these two species.

As a result, we suggest that *U. thaleri* and *U. septempunctata* may be the same species. We could not obtain a new comparison material of *U. septempunctata* from Israel to be able to reach to definite result. But, we believe that our suggestions and findings will make some contribution to revisional studies and resolve some taxonomical problems of this genus in the future.

Natural History: The habitat selection and web designs are similar to that of *U. durandi*. They run very quickly when disturbed.

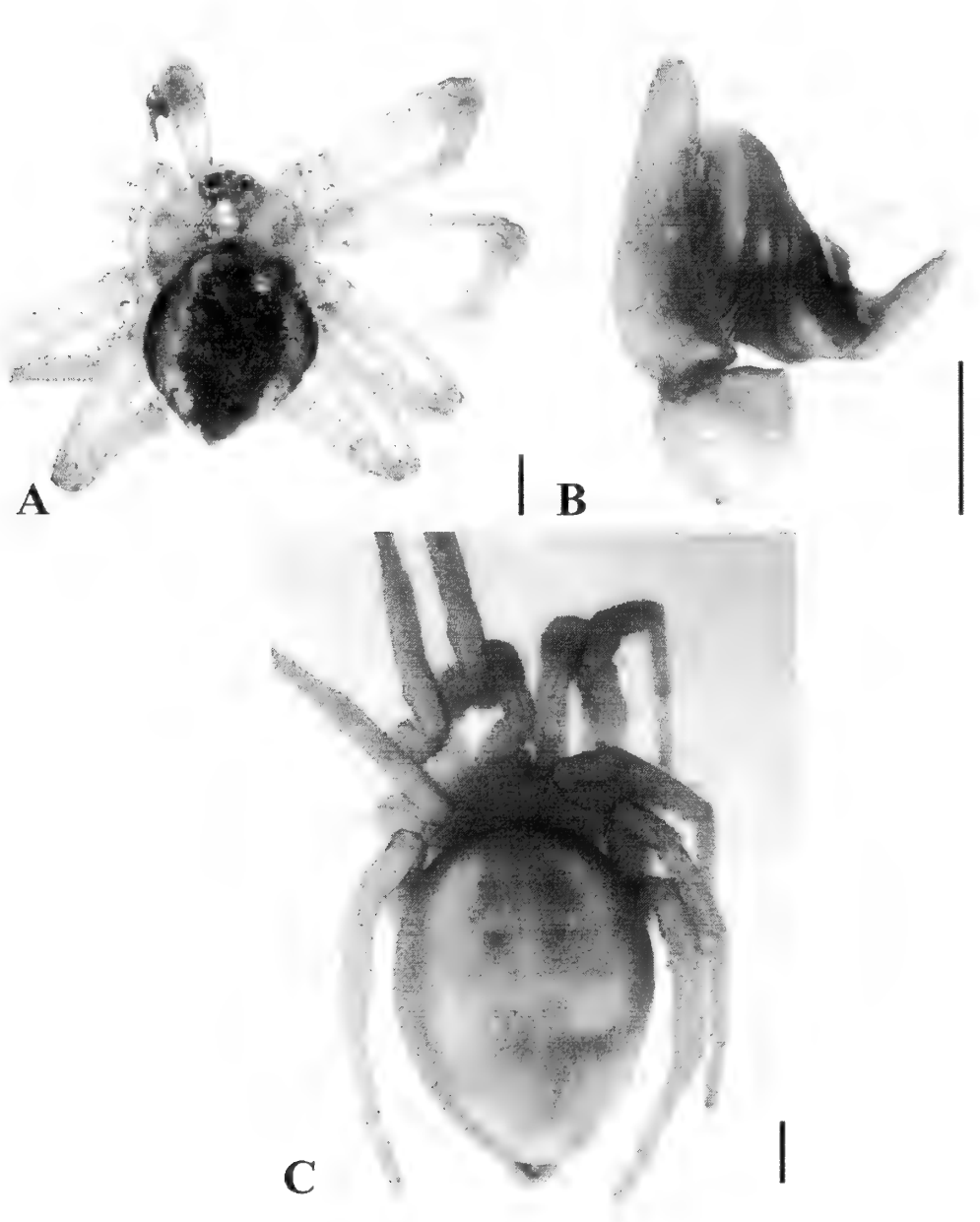


Fig. 6: *Uroctea limbata* (C.L. Koch, 1843) Male, Holotype ZMB 2121: A. Habitus, dorsal view. B. Male palp, prolateral view.
Uroctea septempunctata (O.P.-Cambridge, 1872) OUMNH 506-4671. C. Habitus of juvenile female, dorsal view. Scale lines: A, C = 1 mm; B = 0.5 mm.

Acknowledgments

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Kochiura aulica (C. L. Koch, 1838) (Araneida: Theridiidae) against greenhouse pests

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Abstract

Mass rearing of *Kochiura aulica* (C.L. Koch, 1838) (Arachnida: Araneida: Theridiidae) was achieved during two years, 2005-2007, using 200 containers, each contained 150-200 individuals. Egg sacs were collected from every container for four months after maturity. Number of egg sacs during mass rearing period was 55851 egg sacs, yielded 289217 individuals during four months.

Spiders release was carried out on 22 October 2006. The experiments were conducted in a greenhouse planted with cucumber variety (Gioagosrz) on 9 October 2006 in two levels, 5 and 10 spiderlings/plant, and was left without pesticides. The percent reduction in population density of *Bemesia tabaci* increased gradually reaching its maximum 67.93 and 74.65% in level 1 and level 2 respectively after two months of release. After two months of release, the percentage reduction of *Aphis gossypii* was 68.83 and 85.23% in level 1 and level 2, respectively. After two weeks from releasing the predator, we were obligated to use the biocide (Mospilan) to decrease the population density of aphids after studying its toxicity on the predator under laboratory conditions. The percent reduction of *Polyphagotarsonemus latus* increased gradually after two months of release to reach 69.38 and 70.02% in level 1 and level 2, respectively. Redomel plus 50%W.P. was used as fungicides inside greenhouse.

These experiments denote that *Kochiura aulica* can be used in biological control of insect pests inside greenhouses.

Keywords: *Kochiura aulica*, Theridiidae, Spiders, Mass rearing, Spiders release, Biological control.

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* This article is a part of the Ph.D. Thesis of the first author (NA).

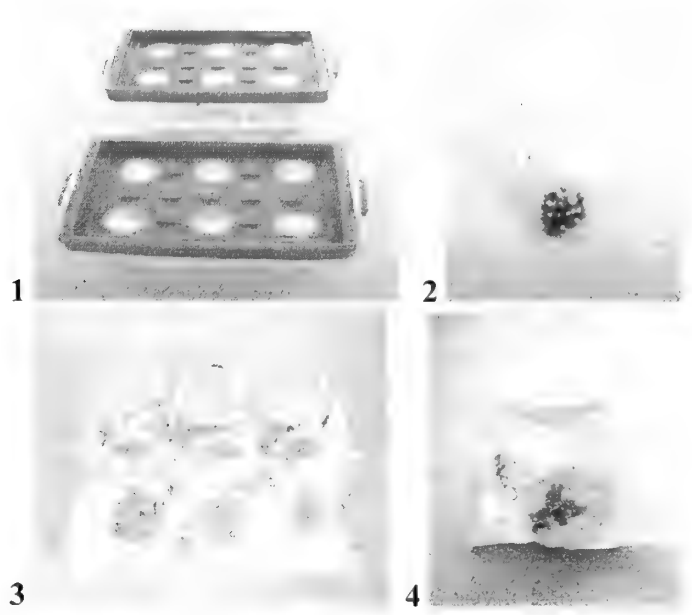
Introduction

Spiders, as predators, play an important role in agroecosystems. They are considered biocontrol agents against economic pests of various agricultural crops. Among the 109 families of spiders, Theridiidae is the fourth among six families which number of species exceeds 2000. Family Theridiidae includes 2295 species of 109 genera (Platnick, 2009). The theridiid spider *Kochiura aulica* is considered one of quasi-social species. Its mass rearing was studied by Abdel-Karim *et al.* (2006). In this paper, *K. aulica* was used as insect pest predator, i.e. a biological control agent.

Material and methods

I. Mass rearing of *Kochiura aulica* (C.L. Koch, 1838)

The stock culture of *K. aulica* was collected from olive trees located in Giza governorate by collecting many spider nests containing a mixture of spiderlings, adults and egg sacs and to be reared in the laboratory according to Abdel-Karim *et al.* (2006). About 150-200 adult individuals of *K. aulica*, at the ratio of 2♀: 1♂, were transferred to 2 litre rectangular plastic container as rearing unit (Fig. 1). The central part of the container's cover was replaced by organza textile to facilitate ventilation. The 200 rearing units were supplied thrice a week by the adult stage of fruit flies, *Drosophila melanogaster* Meigen, 1830 (Diptera: Drosophilidae) adults. Egg sacs were collected, using a fine soft brush, from the stock culture before feeding mothers and were transferred to glass tubes, of 5 cm diameter and 10 cm height (Fig. 2), until hatching. The newly hatched spiderlings were counted and each 50 individuals were transferred to a small glass container (about 250 cc) covered by muslin or organza (Fig. 3) and fed on adult fruit flies. As the new hatch reached the third spiderling instar, the contents of each 3-4 glass containers were transferred to a larger glass container (7 cm diameter and 20 cm height) covered by muslin or organza (Fig. 4) and were fed in the same way until reaching adulthood. Adults were then transferred to plastic containers for mating and egg laying. Rearing continued since July 2003 until April 2007. The regular data was noted from 2005 until 2007.



Figs. 1-4: Rearing containers. 1. Two litres rectangular plastic rearing unit. 2. Glass tube, 5 x 10 cm. 3. A small glass container, about 250 cc. 4. Glass container, 7 x 20 cm.

II. Predator release

The experiments were conducted in a greenhouse which is covered with theran. The greenhouse was divided into three divisions; two replicates and a control using transverse barriers made of theran. Each division was planted with 200 plants of cucumber, *Cucumis sativus* L., variety (Gioagosrz) on October 9, 2006 and was left without pesticides. Release was carried out on 22nd October 2006.

Releasing *K. aulica* was carried out by small bags made of paper. A ring of paper was placed inside the bag, as a pillar, before inserting spiders inside the bag. One bag was prepared for each plant. The rate of predator was 5 spiderlings/plant in the first replicate and 10 spiderlings/plant in the second replicate.

For release, we used 3rd and 4th instars spiderlings. Samples of 10 leaves were taken from each replicate as well as the control and examined in the laboratory using a stereomicroscope. The adults of white flies were examined in the greenhouse. Count was undertaken before release at weekly intervals. On 23rd November, we were obliged to spray the specific natural pesticide Mospilan mixed with Redomel plus (See p.107).

III. Toxicological studies

To study the side effect of some chemical compounds usually used for controlling pests inside the cucumber greenhouse on spiders under laboratory conditions, the following materials were used:

1. Trade name: Vertimec 1.8% EC.
Chemical name: 5-O-dimethyl Avermectin A_{1a} (i) mixture with 5-O-dimethyl-25-de (1-methlypropy)-25-(1-methyl) Avermectin A_{1a}(ii).
2. Trade name: Lannate 90% WP.
Chemical name: methyl N-((methylamino)Carbonyl)oxy) ethanimidothioate.
3. Trade name: Mospilan 20% SP.
Chemical name: (E)-N-(6-chloro-3-Pyridinyl)methyl)-N-cyano-N-methylethanimidamide.
4. Trade name: Redomel plus 50% WP.
Chemical name: methyl N-(2,6 dimethyl phenyl)-N-(methoxyacetyl)-D-alaninate.

Small plastic Petri dishes (8 cm diameter, 1 cm depth) were used. The pesticide formulations were diluted in water to prepare the recommended dose. Two circular coffee filters (7.5 cm diameter), dipped in pesticide solution, were used for each dish, one on bottom and one above. Four replicates were used for each concentration, while in control the coffee filters were dipped in water. Five spider individuals were used for each replicate, kept in an incubator under 20°C and 75-80% RH. Mortality rate was recorded, 1, 2, 5 and 7 days, after application. Mortality values were corrected for control mortality according to Abbott's formula (1925).

Results

I. Mass rearing of *Kochiura aulica*

Two hundred containers were used in rearing spiders during two years 2005-2007. Egg sacs were collected from every container for four months after maturity. During the first month, the average number of egg sacs was 70.37±23.29 (ranged between 127 and 22 egg sacs/container) (Table 1). In the second month, the numbers of egg sacs ranged between 129 and 43. The average number of egg sacs strongly decreased during the third month to reach 75.02±20.87 egg sacs/container (ranged between 127 and 20 egg sacs/container). The average number of egg sacs during the fourth month was the least one as 43.51±16.87 egg sacs/container (ranged between 92 and 11 egg sacs/container).

Table 1. Number of egg sacs per container in mass rearing experiments during two years 2005-2007.

First month		Second month		Third month		Fourth month	
Highest number	Lowest number	Highest number	Lowest number	Highest number	Lowest number	Highest number	Lowest number
127	22	129	43	127	20	92	11
122	29	127	48	127	25	92	11
121	31	126	53	124	32	92	17
114	31	126	58	124	36	91	19
114	32	125	60	121	38	86	19
112	33	124	61	113	38	78	19
112	33	123	61	113	41	75	21
111	34	121	62	110	42	75	22
110	34	121	62	107	43	75	22
110	34	121	63	106	43	74	23
110	-	-	63	-	-	-	23
-	-	-	63	-	-	-	23
-	-	-	-	-	-	-	23

The obtained average number of egg sacs was 279.26 egg sacs/container, ranged between 450 and 179 egg sacs. The highest mean per month occurred in the second month (90.01±18.99), followed by the third month (75.02±20.87) while least mean occurred in the fourth month (43.51±16.87). Total number of egg sacs collected from 200 containers during four months was 55851 egg sacs (Table 2).

Table 2. Average number of egg sacs in mass rearing experiments during two years 2005-2007.

	First month	Second month	Third month	Fourth month	Total
Total	14145	18001	15004	8701	55851
Average	70.73	90.01	75.02	43.51	279.26
SD.	23.29	18.99	20.87	16.87	44.76

During the first month, the average of hatching was 282.26, ranged between 509 and 90, individuals/container (Table 3). During the second month, the average of hatching increased to 562.23 (ranged between 933 and 244 individuals/container). The average rates of hatching during the third month dropped to 412.47 individuals/container (ranged between 1016 and 128 individuals/container). During the fourth month, the the average of hatching was the lowest to record 188.96 individuals/container (ranged between 524 and 9 individuals/continuer).

The hatching number per container averaged 1445.92 (ranged between 2384 and 884 individuals/container) during the four months (Table 4). The highest number occurred in the second month (562.23) followed by the third month (412.47). The lowest number occurred in the fourth month (189.13) individuals/container. Total number of hatching, collected from 200 containers during four months reached to 289217 individuals.

Table 3. Number of hatch per container in mass rearing experiments during two years 2005-2007.

First month		Second month		Third month		Fourth month	
Highest number	Lowest number	Highest number	Lowest number	Highest number	Lowest number	Highest number	Lowest number
509	90	933	244	1016	128	524	9
500	109	930	263	768	160	523	62
484	113	929	272	739	196	512	65
475	118	921	287	721	205	475	68
468	123	910	313	719	212	453	69
463	124	910	314	719	214	451	70
461	124	852	317	673	219	438	74
445	125	851	319	651	220	437	74
439	125	829	327	625	225	419	76
438	135	827	333	619	226	415	78

Table 4. Average number of hatch in mass rearing experiments during two years 2005-2007.

	First month	Second month	Third month	Fourth month	Total
Total	56452	112446	82493	37826	289217
Average	282.26	562.23	412.47	189.13	1446.09
SD.	96.29	150.90	128.33	101.86	275.54

II. Release of *Kochiura aulica* in a greenhouse of cucumber plants

A. Biological control of *Bemesia tabaci*

The release of the predator, *K. aulica*, was carried out with two levels on 22 October 2006. The rate of predator was 5 spiderlings/plant in the first replicate and 10 spiderlings/plant in the second replicate. The pre-count of population density of *Bemisia tabaci* (Gennadius, 1889) was 191, 183 and 223 as adult stage/10 leaves in level 1, level 2 and control, respectively. After one week of release of *K. aulica*, the percent reduction in population density of *B. tabaci* increased gradually to 26.54 and 28.80% in level 1 and level 2, respectively. In the same time, population density of *B. tabaci* in control increased from 223 to 267 adults/10 leaves (Table 5).

After two weeks of predator release, the reduction in population density of *B. tabaci* was 30.30 and 37.59% in level 1 and level 2, respectively. On the opposite side, pest population increased in the control reaching 330 adults/10 leaves. After two months of release, the percent reduction of the pest increased gradually reaching its maximum, 67.93 and 74.65% in level 1 and level 2, respectively. At that time, the pest population was reduced to 103 and 78 adults/10 leaves while the pest population increased in the control reaching 375 adults/10 leaves.

Table 5. Population density and reduction percentage of *Bemesia tabaci* before and after release of *Kochiura aulica* in a greenhouse of cucumber plants (variety Gioagosrz) during the season 2006.

Rate of release, spiderlings per plant (s/pl)	Pre-count	Number (No.) and reduction percent (R%) of adult stages of *Bemesia tabaci*/10 leaves							
		No.	R%	No.	R%	No.	R%	No.	R%
		29/10		5/11		12/11		19/11	
5 s/pl	191	186	26.54	197	30.30	179	30.57	233	35.54
10 s/pl	183	156	28.80	169	37.59	139	43.73	188	45.71
Control	223	267	-	330	-	301	-	422	-
		26/11		3/12		10/12		17/12	
5 s/pl		187	38.79	136	41.19	95	57.50	103	67.93
10 s/pl		123	51.49	97	56.22	68	68.25	78	74.65
Control		309	-	270	-	261	-	375	-

Table 6. Population density and reduction percentage of *Aphis gossypii* before and after release of *Kochiura aulica* in a greenhouse of cucumber plants (variety Gioagosrz) during the season 2006.

Rate of release, spider-lings per plant (s/pl)	Pre-count	Number (No.) and reduction percent (R%) of movable stages of *Aphis gossypii*/10 leaves									
		12/11		19/11		26/11	3/12	10/12		17/12	
		No.	R%	No.	R%	*	Precount	No.	R%	No.	R%
5 s/pl.	73	574	67.27	1326	82.26	*	28	20	53.85	16	68.83
10 s/pl	58	176	87.37	548	90.86	*	48	18	75.77	13	85.23
Control	36	865	-	3686	-	*	42	65	-	77	-

* = The experiment was treated with Mospilan.

B. Biological control of *Aphis gossypii*

The pre-count of population density of *A. gossypii* Glover, 1877 (Hemiptera: Aphididae) was 73, 58 and 36 movable stages/10 leaves in level 1, level 2 and control, respectively (Table 6). The percent reduction in population density of *A. gossypii* reached 67.27 and 87.37% in level 1 and level 2, respectively, after one week of releasing the predator. In the same time, the population density of the pest in control increased from 36 to 865 movable stages/10 leaves. After two weeks from releasing the predator, the reduction percentage of *A. gossypii* reached 82.26 and 90.86 movable stages/10 leaves in level 1 and level 2, respectively. In the same time, the population density of the pest increased in the control reaching 3686 movable stages/10 leaves in spite of the reduction increase, so that we were obliged to use the biocide Mospilan, mixed with Redomel plus,

Table 3. Number of hatch per container in mass rearing experiments during two years 2005-2007.

First month		Second month		Third month		Fourth month	
Highest number	Lowest number	Highest number	Lowest number	Highest number	Lowest number	Highest number	Lowest number
509	90	933	244	1016	128	524	9
500	109	930	263	768	160	523	62
484	113	929	272	739	196	512	65
475	118	921	287	721	205	475	68
468	123	910	313	719	212	453	69
463	124	910	314	719	214	451	70
461	124	852	317	673	219	438	74
445	125	851	319	651	220	437	74
439	125	829	327	625	225	419	76
438	135	827	333	619	226	415	78

Table 4. Average number of hatch in mass rearing experiments during two years 2005-2007.

	First month	Second month	Third month	Fourth month	Total
Total	56452	112446	82493	37826	289217
Average	282.26	562.23	412.47	189.13	1446.09
SD.	96.29	150.90	128.33	101.86	275.54

II. Release of *Kochiura aulica* in a greenhouse of cucumber plants

A. Biological control of *Bemesia tabaci*

The release of the predator, *K. aulica*, was carried out with two levels on 22 October 2006. The rate of predator was 5 spiderlings/plant in the first replicate and 10 spiderlings/plant in the second replicate. The pre-count of population density of *Bemisia tabaci* (Gennadius, 1889) was 191, 183 and 223 as adult stage/10 leaves in level 1, level 2 and control, respectively. After one week of release of *K. aulica*, the percent reduction in population density of *B. tabaci* increased gradually to 26.54 and 28.80% in level 1 and level 2, respectively. In the same time, population density of *B. tabaci* in control increased from 223 to 267 adults/10 leaves (Table 5).

After two weeks of predator release, the reduction in population density of *B. tabaci* was 30.30 and 37.59% in level 1 and level 2, respectively. On the opposite side, pest population increased in the control reaching 330 adults/10 leaves. After two months of release, the percent reduction of the pest increased gradually reaching its maximum, 67.93 and 74.65% in level 1 and level 2, respectively. At that time, the pest population was reduced to 103 and 78 adults/10 leaves while the pest population increased in the control reaching 375 adults/10 leaves.

Table 5. Population density and reduction percentage of *Bemesia tabaci* before and after release of *Kochiura aulica* in a greenhouse of cucumber plants (variety Gioagosrz) during the season 2006.

Rate of release, spiderlings per plant (s/pl)	Pre-count	Number (No.) and reduction percent (R%) of adult stages of *Bemesia tabaci*/10 leaves							
		No.	R%	No.	R%	No.	R%	No.	R%
		29/10		5/11		12/11		19/11	
5 s/pl	191	186	26.54	197	30.30	179	30.57	233	35.54
10 s/pl	183	156	28.80	169	37.59	139	43.73	188	45.71
Control	223	267	-	330	-	301	-	422	-
		26/11		3/12		10/12		17/12	
5 s/pl		187	38.79	136	41.19	95	57.50	103	67.93
10 s/pl		123	51.49	97	56.22	68	68.25	78	74.65
Control		309	-	270	-	261	-	375	-

Table 6. Population density and reduction percentage of *Aphis gossypii* before and after release of *Kochiura aulica* in a greenhouse of cucumber plants (variety Gioagosrz) during the season 2006.

Rate of release, spider-lings per plant (s/pl)	Pre-count	Number (No.) and reduction percent (R%) of movable stages of *Aphis gossypii*/10 leaves									
		12/11		19/11		26/11	3/12	10/12		17/12	
		No.	R%	No.	R%	*	Precount	No.	R%	No.	R%
5 s/pl.	73	574	67.27	1326	82.26	*	28	20	53.85	16	68.83
10 s/pl	58	176	87.37	548	90.86	*	48	18	75.77	13	85.23
Control	36	865	-	3686	-	*	42	65	-	77	-

* = The experiment was treated with Mospilan.

B. Biological control of *Aphis gossypii*

The pre-count of population density of *A. gossypii* Glover, 1877 (Hemiptera: Aphididae) was 73, 58 and 36 movable stages/10 leaves in level 1, level 2 and control, respectively (Table 6). The percent reduction in population density of *A. gossypii* reached 67.27 and 87.37% in level 1 and level 2, respectively, after one week of releasing the predator. In the same time, the population density of the pest in control increased from 36 to 865 movable stages/10 leaves. After two weeks from releasing the predator, the reduction percentage of *A. gossypii* reached 82.26 and 90.86 movable stages/10 leaves in level 1 and level 2, respectively. In the same time, the population density of the pest increased in the control reaching 3686 movable stages/10 leaves in spite of the reduction increase, so that we were obliged to use the biocide Mospilan, mixed with Redomel plus,

to decrease the population density after studying its toxic effect on the predator under laboratory conditions.

This experiment showed that the Mospilan is completely safe for the predator. After fifth week from predator release, the population density of *A. gossypii* was 20, 18 and 65 movable stages/10 leaves in level 1, level 2 and control, respectively with percent reduction 53.85 and 75.77 in level 1 and level 2, respectively. After two months of release, the percentage reduction of *A. gossypii* was 68.83 and 85.23 in level 1 and level 2, respectively.

C. Biological control of *Polyphagotarsonemus latus*

The examined cucumber leaves collected just before releasing the predator *K. aulica* (pre-count) harboured high number of the mite *Polyphagotarsonemus latus* (Banks, 1904) movable stages, with averages 31, 30 and 20 individuals/10 leaves in level 1, level 2 and control, respectively (Table 7).

One week after release, the obtained results indicated reduction percentage in number of the target pest in all treatments, averaged 20.97 and 31.67 in level 1 and level 2 of releasing, respectively. In the same time, population density of the *P. latus* in control increased from 20 to 40 movable stages/10 leaves.

After two weeks from predator release, the reduction percentage in population density was 42.49 and 43.48 in level 1 and level 2, respectively. Then, the percent reduction of the pest increased gradually reaching 69.38 and 78.02 in level 1 and level 2, respectively after two months of release while the pest population increased in the control reaching 276 individuals/10 leaves. At the end of experiments, the predator reached 20 and 50 indiveduals/10 leaves in level 1 and level 2, respectively.

Table 7. Population density and reduction percentage of *Polyphagotarsonemus latus* (Banks) before and after release of *Kochiura aulica* in a greenhouse of cucumber plants (variety Gioagosrz) during the season 2006.

Rate of release, spider-lings per plant (s/pl)	Pre-count	Number (No.) and reduction percent (R%) of movable stages of *Polyphagotarsonemus latus*/10 leaves									
		19/11		26/11		3/12		10/12		17/12	
		No.	R%	No.	R%	No.	R%	No.	R%	No.	R%
5 s/pl.	31	49	20.97	41	42.49	69	50.54	106	64.38	131	69.38
10 s/pl.	30	41	31.67	39	43.48	58	57.04	76	37.61	91	78.02
Control	20	40	-	46	-	90	-	192	-	276	-

III. Toxicological studies

According to mortality and mortality percentage of *Kochiura aulica* after exposing to different concentrations of the tested pesticides, Mospilan 20% F.b. and Redomel plus 50% W.P. are non-toxic agents for this spider. On recommended dose, the mortality percentage of *K. aulica* was 0% after exposure to Mospilan 20% F.b. and Redomel plus 50% W.P., while the acaricide Vertimec 1.8% E.C. and insecticide Lannate

90% W.P. are toxic compounds agents for *K. aulica*. The mortality percentage was 100% on recommended dose after exposure to Vertimec 1.8% E.C. or to Lannate 90% W.P.

Discussion

The mass rearing method, used in this study, was not complicated and inexpensive because the fruit fly *Drosophila melanogaster* can be reared on artificial diet with high reproduction rate. *D. melanogaster* was used as a common prey in rearing many spider species (Jackson, 1974).

During this study, the spider *Kochiura aulica* was released against greenhouse pests found on cucumber plants in two levels, 5 and 10 spiderlings/plant, the second level was the best. In spite of that the reduction of the pests, *Bemesia tabaci*, *Aphis gossypii* and *Polyphagotarsonemus latus*, was approximate.

Comparing the predator *K. aulica* with other bio-agents, we must take in consideration that this predator is polyphagous. It predates on different kinds of prey simultaneously.

The fungicide Redomel plus and the natural compound Mospilan are highly safe to the predator. Therefore, we used them to deal with the fungal diseases and aphids inside the commercial cucumber greenhouses during the release of *K. aulica*.

This study is the onset indicator to start series of experiments for applying the usage of the predator *K. aulica* which did not interpolate in releasing system against different pests in greenhouses.

This work is the first actual experience of using the predator *K. aulica* experimentally inside greenhouses. It is recommended to use it in pest management programs under Egyptian greenhouses conditions.

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Arachnida of Ain Gudeirat (Sinai), with notes on family Titanoecidae in Egypt

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Abstract

The region of Ain Gudeirat lies in the eastern side of northern Sinai, Egypt. It is almost a small oasis irrigated by a natural spring in this arid desert. During two short fieldtrips, on April and June 2004, to the region of Ain Gudeirat, 85 specimens of four arachnid orders were collected. The collected material contained 1 scorpion species, 1 sun-spider species, 1 pseudoscorpion species, and 72 spiders of 12 families. The majority of spiders belong to two families, i.e. Lycosidae (43.05%) and Titanoecidae (29.17%). The situation of family Titanoecidae in Egypt is discussed. This preliminary study is the first arachnological study of the region of Ain Gudeirat, which is proposed to be a protected area.

Keywords: Arachnida, spiders, Titanoecidae, scorpions, sun-spiders, pseudoscorpions, Ain Gudeirat, Sinai, Egypt.

Introduction

Ain El Gudeirat is in Wadi El Gudeirat near El Qusaima Village in the northeastern part of Sinai, near Egypt's eastern international borders. It is a spring issuing from Karstic limestones like other Karst springs encountered in the Eastern and Western Deserts of Egypt and in Sinai too. The spring is on the axis of a small syncline gently plunging west to outcrops of Eocene Limestone that overlie the Paleocene shales. Wadi El Gudeirat incises the Limestone formation to the contact between the two formations. Ain El Gudeirat issues from the lowermost part of the highly fractured limestones at a daily rate of 1500 m^3. The springwater flows in a small channel and is used to irrigate several hundred feddans (1 feddan = 1.04 acre) of olive trees and as a source of supply for the local villagers. Ain El Gudeirat's water has a total dissolved solids content of 1440 ppm. Chemical analysis indicates that the water of this spring is of sodium chloride type. Groundwater age dating studies indicate that the age of water from Ain El Gudeirat

is 14 000 years B.P., indicating that the recharge to this spring is late Pleistocene (Idris, 1996). Its water temperature is 23.3 ºC (El Ramly, 1965).

The fresh water of Ain Gudeirat converted its region of desert to a small oasis rich of plants especially *Tamarix* trees in addition to different kinds of herbs. Bedouins and their domestic animals, especially goats and dogs, are daily visitors of the area. The flora and fauna of the region is not studied yet. The available information is mostly about the neighbouring region of El Qusaima.

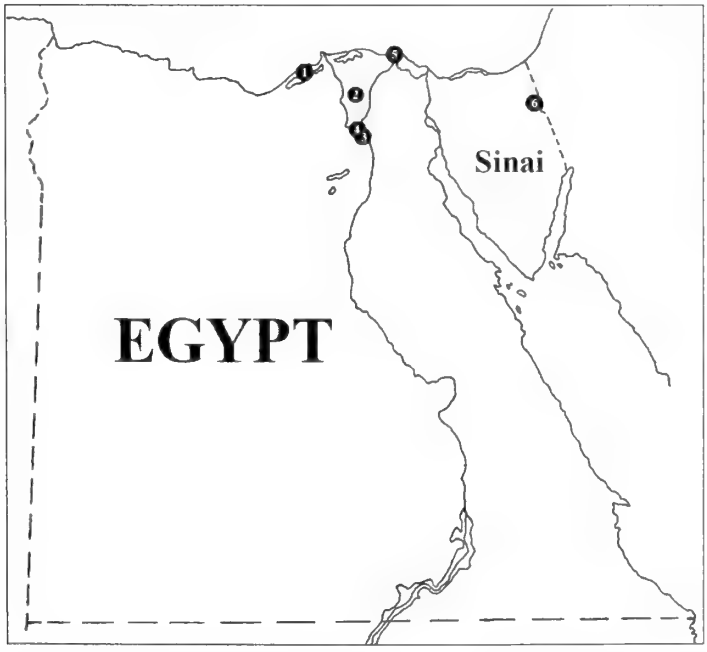
Among 21 species of five orders of mammals recorded from northern Sinai, six species were recorded from El Quseima and two species from Wadi and Ain Gudeirat, i.e. *Psammomys obesus terraesanctae* Thomas, 1902 and *Hystrix cristata* Linnaeus, 1758 of order Rodentia (Osborn & Helmy, 1980). Many bird species are present in the region, some are residents and others are migratory. Saleh (1997) recorded 8 lizard, 6 snake, and 1 toad (*Bufo viridis*) species from the region of El Quseima and its surroundings. Tadpoles were observed swimming in the water of the spring's channel on April 2004.

There are many insect species recorded from northern Sinai. Only, a few of them are recorded from Ain Gudeirat because of lack of a survey and continuous study of the region. Of course, many of these insects and other arthropods depend mainly on the spring's ecosystem.

There are plenty of dragonflies, order Odonata, flying near water surface. Several species of wasps, order Hymenoptera, and flies, order Diptera, were also observed in the region. The North African ant *Messor rufotestaceus* (Foerster, 1850) was recorded from El Quseima (Taylor & Sharaf, 2009).

Abdel-Dayem (2004) studied the diversity of carabid beetles in the Sinai peninsula and identified "Wadi Godirate" as one of the most seven specious sites in Sinai. He recorded 18 species of 10 genera from this moderately elevated site that is having a fresh water habitat. One of those species was thermophilous, found under stones, while the other species were hygrophilous, found at fresh water edges.

A few crabs, Crustacea, order Decapoda, were observed inside water channel and at its edges.



Map 1. Distribution of *Nurscia albomaculata* (Lucas, 1846) in Egypt. **1**. Alexandria. **2**. Shebin El-Kom. **3**. Giza (Cairo). **4**. Al-Kanater. **5**. Ras El-Barr. **6**. Ain Gudeirat.

Methods

The region of Ain Gudeirat (30°38'59.8"N, 34°26'13.7"E, Alt. 404 m) lies in the eastern side of northern Sinai, Egypt (Map 1). During two short fieldtrips, for a few hours, on 24 April and 3 June 2004, 85 specimens of four arachnid orders were collected, looking on plants and under stones, using light trap and UV radiation at night. [Abbreviations: TL = total length, L = length, W = width]. All measurements are in mm.

Results and Discussion

The collected material included 85 specimens of four orders: 1 scorpion, 10 sun-spiders, 2 pseudoscorpions, and 72 spiders of 12 families.

I. Order Scorpionida

Only 1 scorpion of *Leiurus quinquestriatus* (Ehrenberg, 1828), Family Buthidae, was collected in June 2004, after sunset, using UV.

II. Order Solpugida

Ten males of *Biton ehrenbergi* Karsch, 1880 (Family Daesiidae) were collected; 1 under stone, and 6 attracted to light after sunset, in April + 3 attracted to light about 75 minutes after sunset, in June 2004.

III. Order Pseudoscorpionida

Two specimens, 1♂ and 1j, of *Minniza* sp., Family Olpiidae, were found under stones in June 2004.

IV. Order Araneida

The total of 72 spiders of 12 families were found on plants and under stones. The majority of spiders belong to two families, i.e. Lycosidae (43.05%) and Titanoecidae (29.17%) (Table 1).

Table 1. Spiders collected from Ain Gudeirat.

Family	24 April 2004	3 June 2004	%
Araneidae	1♀	---	1.388
Dictynidae	1♀	---	1.388
Filistatidae	---	1j	1.388
Gnaphosidae	---	1♂; 1♀	2.777
Linyphiidae	1♀, 1s♀	1♀	4.166
Lycosidae (6 species)	1♀ *Arctosa cinerea* ?; 1♀ *Hogna ferox*; 4♂, 15♀, 2s♂, 2j	2♀, 1j *Arctosa cinerea* ?; 1♂ *Wadicosa* ?; 1s♂, 1j	43.05
Oecobiidae	1s♀ *Oecobius putus* ?	---	1.388
Pholcidae	1♀	---	1.388
Salticidae	1♀	1♂ *Menemerus animatus* ?	2.777
Sicariidae	1j *Loxosceles* sp.	3j *Loxosceles* sp.	5.555
Tetragnathidae	2j *Tetragnatha* sp. ?	1s♂, 1s♀ *Tetragnatha* sp. ?	5.555
Titanoecidae	3♂, 8♀, 2s♂, 1s♀, 1j *Nurscia albomaculata*	1♂, 4♀, 1j *Nurscia albomaculata*	29.17
Total	50 spiders	22 spiders	

El-Hennawy (2002a) recorded 7 families of spiders from 'Ain Jodairat (misspelling), depending on juvenile specimens collected in 1996 by Dr. Orabi; Filistatidae, Gnaphosidae, Lycosidae, Sicariidae (*Loxosceles* sp.), Theridiidae, Titanoecidae, and Zodariidae. Theridiidae and Zodariidae are wanting this time.

Nurscia albomaculata (Lucas, 1846), family Titanoecidae, was the most dominant species in the area after lycosid spiders. The flimsy webs of these cribellate spiders were found under stones and among low herbs near and over water. The pholcid spider was found in her web in a stone cavity. Other spiders were found under stones, in their webs, and moving on the ground or running on water surface. Seven lycosid females were carrying their egg sacs.

N. albomaculata was not recorded before from northern or southern Sinai (El-Hennawy, 2003, 2005). It was found in nature and inside green houses too. It lives inside its snare attached to plants stems on humid ground. It evidently prefers humid places. Therefore, it was not expected in desert. It is very interesting to find this species in the region of Ain Gudeirat's spring.

Beside the 26 protected areas in Egypt, the region of El Quseima and Ain Gudeirat is proposed as a future protected area. The decision makers usually look for big animals, for vertebrates and neglect other groups, especially "insects" (= including all arthropods). However, the region of Ain Gudeirat deserves study before protection.

Family Titanoecidae in Egypt

Family Titanoecidae Lehtinen 1967 is a small family of 44 species in 5 genera (Platnick, 2009). Its species are "widely distributed in Arctic as well as tropical regions (Indian Ocean Coast in Africa, not in Australia or New Zealand) but tend to be more common in the Northern Hemisphere" (Jocqué & Dippenaar-Schoeman, 2006).

Rock Weavers (Titanoecidae) are small to medium-sized araneomorph spiders. Their diagnostic characters are: three tarsal claws; cribellate; entelegyne; eight eyes; calamistrum long, uniseriate; endites parallel; male palpal tibia complex, with pro- and retrolateral apophyses (Jocqué & Dippenaar-Schoeman, 2006). The type genus of the family is *Titanoeca* Thorell, 1870.

Only two species of two genera of Family Titanoecidae Lehtinen, 1967 are recorded from Egypt until now (El-Hennawy, 2006). They are *Nurscia albomaculata* (Lucas, 1846) from Alexandria and Cairo (Giza) and *Titanoeca tristis* L. Koch, 1872 without known distribution in Egypt.

L. Koch (1875) described *Amaurobius tristis* as a new species from Anseba river's bank. Anseba River (Tigrinya) is now in Eritrea. This species was transferred to *Titanoeca* in Roewer's Katalog der Araneae (1954). Its distribution was "South Europe, Russia, and Egypt"! Possibly because of the title of the book?! El-Hennawy (1990, 2002b, 2006) recorded *T. tristis* from Egypt according to Roewer (1954). Wunderlich (1995) exclaimed when he discussed the didtribution of *Titanoeca tristis* "Ägypten?". Indeed, *Amaurobius tristis* is recorded from Eritrea (not Ethiopia), but not Egypt (Platnick, 2009). Its systematic position may be doubtful. Lehtinen (1967: 271) stated that "*Amaurobius tristis* L. Koch 1875 (♀ type preservation unknown - from Ethiopia) was erroneously synonymized with *T. tristis* L. Koch 1872 by ROEWER (1954a). *A. tristis* L. Koch 1875 really seems to be a true *Titanoeca* but no new-name is here proposed, as its status remains obscure."

The second species is *Nurscia albomaculata* (Lucas, 1846). Genus *Nurscia* Simon, 1874 includes 4 species recorded from Portugal to France, Bulgaria, Cyprus to Central Asia, Russia, China, Korea, Taiwan, and Japan (Platnick, 2009). It was

transferred from the Amaurobiidae by Lehtinen (1967: 253). *N. albomaculata* is one of four species of genus *Nurscia* Simon, 1874. The world distribution of *N. albomaculata* is from Europe to Central Asia (Platnick, 2009).

A good summary of the diagnostic characters and figures of *N. albomaculata* is present in Nentwig, *et al.* (2003) and the most recent work dealt with it is that of Trotta (2005).

Nurscia albomaculata (Lucas, 1846)

Synonyms (Platnick, 2009):

Epeira albo-maculata Lucas, 1846: 250, pl. 15, f. 6 (D♀).
Singa albo-maculata Simon, 1864: 256.
Amaurobius 12-maculatus Canestrini, 1868: 204 (D♂).
Amaurobius distinctus O. P.-Cambridge, 1872a: 263 (D♂♀).
Titanoeca albomaculata Simon, 1874a: 218, pl. 3, f. 7 (♂♀).
Titanoeca distincta O. P.-Cambridge, 1876: 557. *
Amaurobius albomaculatus Canestrini, 1876: 213.
Nurscia albomaculata Lehtinen, 1967: 253 (T♂♀ from *Titanoeca*).

* The record of O. P.-Cambridge of this species from Egypt (1876) was not included in Roewer's Katalog der Araneae (1954) or in "The World Spider Catalog" (Platnick, 2009).

O. P.-Cambridge (1876: 557) recorded *Titanoeca distincta*, of family Agelenides, from Egypt saying, "Adults and immature examples of this Spider were found among the dead stems and débris of bushes and under stones near Alexandria in April 1864. In the same month of the year following I met with it more abundantly under stones and fragments of rock and among débris on the plains of the Jordan". He made both *Amaurobius distinctus* Cambridge, 1872 and *Titanoeca albomaculata* Simon, 1874 synonyms to his *Titanoeca distincta*.

O. P.-Cambridge (1872: 263-264) described *Amaurobius distinctus* as follows:

Amaurobius distinctus, sp. nov.

Male adult, length 2¾ lines [= 5.82 mm]; female adult 3¼ [= 6.88 mm].

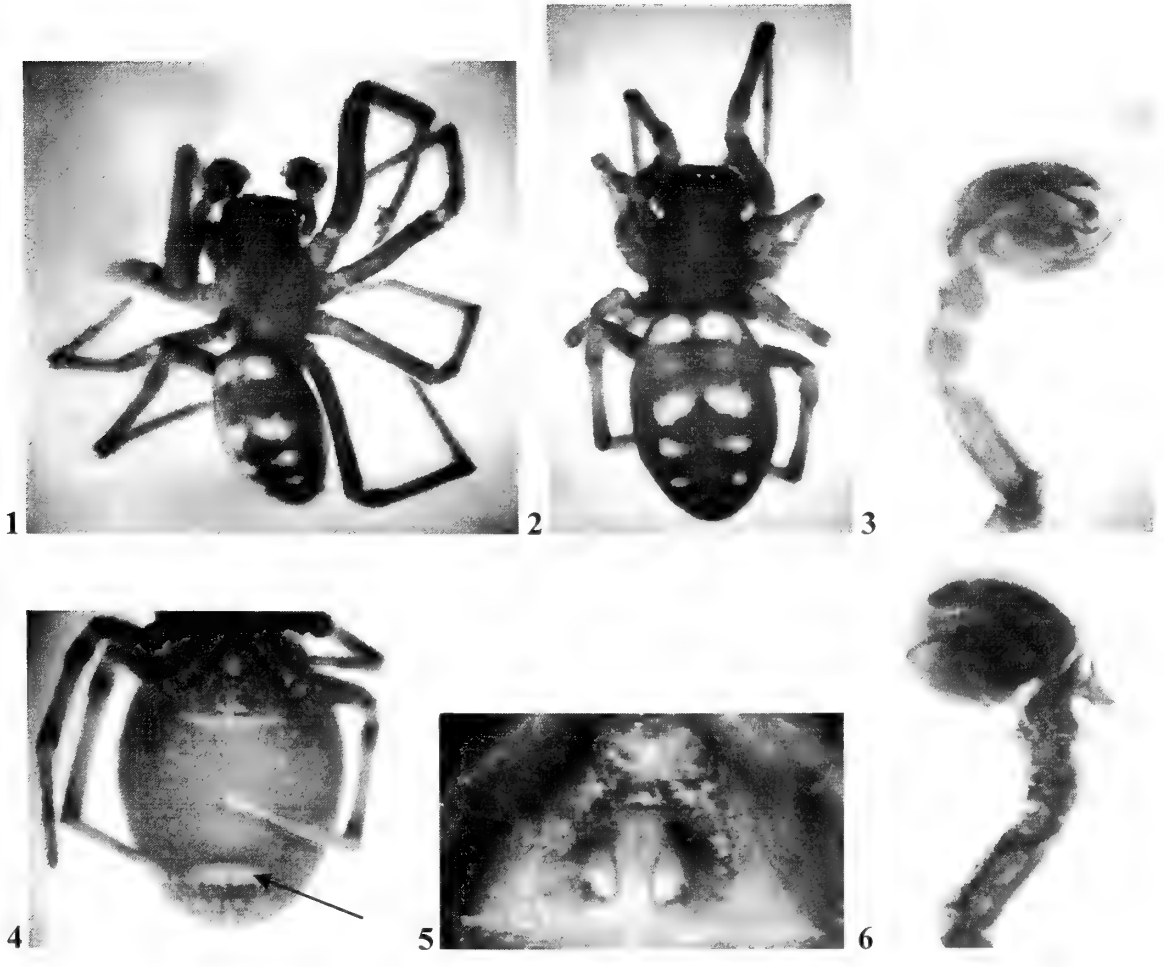
This remarkably distinct species, although closely allied to *A. simplex,* may be at once distinguished by two longitudinal rows of pure white spots on the upperside of the abdomen; the ground-colour of which is jet-black; these rows consist each of 5-6 spots, and they converge towards each other a little as they approach the spinners; the four foremost of the spots are the largest and occupy the fore half of the upperside of the abdomen, forming a large and nearly square area; the spots which succeed are smaller, and diminish gradually in size towards the spinners. The *cephalothorax* is of a dull yellow-brown colour, narrowly margined with black. The *eyes* are very similarly situated to those of *A. simplex,* but those of the lateral pairs are rather nearer to each other. The *legs* are moderately long and strong, and are furnished with hairs and a few spines, of which latter the chief consist of a row beneath the metatarsi of the first pair, short and tooth-like; the colour of the legs is a dull brownish yellow deepening at the extremities of the joints, and thus giving them a kind of indistinctly annulate look. The *falces* [chelicerae] are rather long, strong, similar to the cephalothorax in colour, slightly hollowed on their inner sides, and impressed near their extremities in front. The males of this species have a supernumerary spinning-organ but no calamistra; the females have both.

The *palpi* are short, strong, and similar in colour to the *legs*; the radial joint has some strong irregular prominences at its fore extremity; and the digital, which is large and of a

somewhat oblong-oval form, has a strong, rather angular, sharp-pointed prominence at its base on the outer side; the palpal organs are highly developed and prominent, having some large and variously formed corneous processes connected with them.

Several examples of both sexes, but the males immature, were found beneath stones and among débris of various kinds on the plains of the Jordan. In similar situations I also found examples of both sexes, both adult and immature, at Alexandria (Egypt) in 1864.

The description of O. P.-Cambridge (1872) is adequate for identification. Furthermore, eyes have almost the same diameter. Leg formula I-IV-II-III. The TL of males and females of *Nurscia albomaculata* from the region of Ain Gudeirat are: Males 5.30 - 6.30 mm (5.68±0.54), Females 5.17 - 7.10 mm (6.29±0.665). Body measurements of male (Fig. 1): TL 6.30, Cephalothorax L 2.91, Thoracic part W 2.01, Abdomen L 3.45, and female (Fig. 2): TL 7.10, Cephalothorax L 2.81, Thoracic part W 1.96, Abdomen L 4.35. Legs measurements of male and female (Table 2). Male's palpal organ (Figs. 3, 6) and female's cribellum (Fig. 4) and epigynum (Fig. 5).



Figs. 1-6. *Nurscia albomaculata* (Lucas, 1846). 1, 3, 6. Male. 2, 4, 5. Female. 1, 2. Habitus, dorsal view. 3, 6. Palp, prolateral and retrolateral views. 4. Abdomen, ventral view (Arrow ⟶ cribellum). 5. Epigynum, ventral view.

Table 2. Legs measurements of *Nurscia albomaculata* male and female.

	Male				Female			
Leg	I	II	III	IV	I	II	III	IV
Femur	2.65	2.23	1.85	2.65	2.38	2.01	1.54	1.80
Patella	1.48	0.79	0.53	0.90	1.01	0.90	0.79	0.85
Tibia	2.65	1.85	1.75	2.17	1.70	1.38	1.17	1.59
Metatarsus	2.39	1.85	1.59	1.96	1.70	1.32	1.22	1.59
Tarsus	1.01	0.95	0.79	0.85	0.85	0.69	0.69	0.69
Total length	10.18	7.67	6.51	8.53	7.64	6.30	5.41	6.52

Records and Distribution of *Nurscia albomaculata* in Egypt

Nurscia albomaculata was recorded from (Fig. 1):

1. Alexandria [31°12'51"N, 29°56'46"E]:
   Amaurobius distinctus O.P.-Cambridge, 1872: 264.
   Titanoeca distincta O.P.-Cambridge, 1876: 557.
   Titanoeca albomaculata (= *Amaurobius distinctus*) Simon, 1880: 48.
   Amaurobius (Titanoeca) albomaculata Simon, 1910: 276. Egypt.
2. Shebin El-Kom, Menoufiya Governorate (Ghabbour, *et al.*, 1999) [1]. [30°33'17"N, 31°00'32"E]
3. Dokki, Giza (Cairo) (Sallam & El-Hennawy, 2003). [30°01'20"N, 31°12'18"E]
4. Al-Kanater Agricultural Research Station, El-Qalyubia governorate (Zaher *et al.*, 2005)[2]. [30°11'39"N, 31°07'54"E]
5. Ras El-Barr, at the Mediterranean coast (New locality). [31°29'58"N, 31°48'30"E]
6. Ain Gudeirat, northern Sinai (New locality). [30°38'59.8"N, 34°26'13.7"E, Alt. 404 m]

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[1] Among 2170 spiders belonging to 12 families collected by pitfall traps, only 1♂ Titanoecidae was found within Cucurbits (Cucurbitaceae) fields in Menoufiya Governorate (Ghabbour, *et al.*, 1999).

[2] During one-year survey on spiders inhabiting fields of nine vegetable crops of two families (Leguminosae and Cucurbitaceae) using pitfall traps at Al-Kanater Agricultural Research Station, El-Qalyubia governorate, *Nurscia* spiders were collected on April-June 2001 from the fields of summer cucumber and squash (Zaher *et al.*, 2005).

Natural history

The life style of Titanoecidae was summarized by Jocqué & Dippenaar-Schoeman (2006) as "Ground-dwelling spiders, making flimsy webs under stones or cribellate space webs". The same authors described the "natural history" of the family as follows: "*Titanoeca* spp. construct webs that occasionally include one or more pseudo-orbwebs (Shear, 1986). Members of the genus are usually found in dry rocky areas where they spin flimsy webs under stones and rocks. According to Szlep (1966), *Titanoeca albomaculata* Lucas is found during the day under stones, concealed in a silk retreat. In front of the retreat, a capture-web is attached to low vegetation and stones. The capture-web is compound, consisting of a number of partial webs surrounding the retreat entrance, and may be built in one or more planes and, depending on the substrate, one above the other. This type of web is intermediate between irregular webs and orbwebs. The shape of the web is variable and hackled bands may be present, reminiscent of webs of cribellate orb-weavers" (Dippenaar-Schoeman & Jocqué, 1997).

The web spinning of *Titanoeca albomaculata* was first studied by Szlep (1966). Shear (1986) discussed the "pseudo-orbs" of *Titanoeca albomaculata*, saying, "The web

of *Titanoeca albomaculata* is spun near the ground, and the spider has a retreat under a rock. No frame threads are spun, and radii are constructed in any particular order; some may be laid during the spinning of the cribellate thread. The cribellate thread appears nearly continuous and is laid across the whole range of radii, the spider turning back at the last radius in each series, and, according to Szlep (1966), the measuring activities of the spider resemble those of the orb-weaving uloborids. Additional elements, including sectors and semicircles, may be added later, so that there appear to be several "hubs" in the same web." Eberhard (2000) added "*Titanoeca albomaculata* makes webs resembling sections of orbs ... *Titanoeca*, non-orb weaving species that make geometrically highly organized and stereotyped webs that have semi-independent subunits (Szlep 1966)".

The life cycle of *Nurscia albomaculata* in laboratory was studied by Sallam & El-Hennawy (2003). It had 5-6 spiderling instars before adulthood for both males and females. It continued for about 109 days. Different instars were reared on different stages of larvae of cotton leaf worm *Spodoptera littoralis* (Boisduval, 1833). Adult females lived longer than males; nearly twice (about 144 against 70 days). Life span of females was also longer than that of males (about 244 against 182 days). Males died between October and March while females died between December and April. The studied individuals were found inside their silk tunnels among plants near the connections of the roots with the stems, immediately on soil surface, and under clusters of clay which cover the roots of the plants inside greenhouses of pepper (*Capsicum annum*) in Dokki, Giza. It was the dominant ground spider species in greenhouses. The authors noted cannibalism among adults and that *N.a.* may tolerate a wide range of temperature in nature.

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Scorpions of Saudi Arabia
(List of species, their distribution, and identification key)

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Abstract

This paper presents an updated list of scorpions recorded in the Kingdom of Saudi Arabia, the distribution localities of the species, and simplified identification keys to families and genera. The list includes 23 species and 3 subspecies that belong to 3 families: 18 species of 10 buthid genera, 1 hemiscorpiid species, and 4 species and 3 subspecies of 3 scorpionid genera.

Keywords: Scorpions, Saudi Arabia.

Introduction

Scorpions of Saudi Arabia are not adequately studied yet. The first comprehensive work dealt with them was that of Vachon (1979) who provided a taxonomic study of 14 species and subspecies. Previous and successive infrequent works included the works of Kinzelbach (1985), Vachon & Kinzelbach (1987), and El-Hennawy (1992) who reviewed the scorpion species in the Middle East and the Arab countries. Hendrixson (2006) discussed the taxonomy and species composition of the buthid scorpion fauna in the Kingdom of Saudi Arabia, with notes on two other families. He reviewed the old and recent literature and provided identification keys to families, genera and species of all families with distribution maps of species. Recently, several contributions to the comprehensive study of the scorpion sting syndrome in Saudi Arabia and scorpion's identification appeared in the works of Al-Sadoon & Al-Farraj (2008) and Al-Asmari, *et al.* (2007, 2009a, 2009b) to survey different regions of the country, i.e. Jazan, Al-Medina Al-Munawara, Al-Baha, Hail, and Riyadh regions.

This paper is prepared to present an updated list of scorpions recorded in the Kingdom of Saudi Arabia, the distribution localities of the species, and simplified identification keys to families and genera. The list includes 23 species and 3 subspecies

that belong to 3 families: 18 species of 10 buthid genera, 1 hemiscorpiid species, and 4 species and 3 subspecies of 3 scorpionid genera.

The main references consulted for systematics and identification keys are: *Catalog of the Scorpions of the World (1758-1998)* (Fet *et al.*, 2000), and the works of Sissom (1990), El-Hennawy (1992), and Kovařík (2009). The list and distribution of species mainly depended on Vachon (1979), El-Hennawy (1992), and Hendrixson (2006), in addition to other references.

Scorpions of Saudi Arabia

Family **Buthidae** C. L. Koch, 1837

Genus ***Androctonus*** Ehrenberg, 1828

Androctonus bicolor Ehrenberg, 1828

A. b.; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Androctonus crassicauda (Olivier, 1807)

Buthus australis citrina; Gough & Hirst, 1927: 4; Madina (= *Androctonus amoreuxi* (Audouin, 1825)), "misidentification" (Hendrixson, 2006: 109).

A. c.; Vachon, 1979: 31-34, figs. 1-2, 4; Riyadh; Al Khardj; Riyadh-Dammam, km 85; Wadi Awsat; Harad; Jeddah; Buraiman, Torquam, Wadi Usfahn (near Jeddah); Wadi Hanifa; Al Khubra; Jebel Shafaf; Shaira; Hawi; Khurma; Qunfidah; Medain Saleh; Rumaiya; Khashm ath Thumani; NE Nariya; S Dharan.

A. australis; Levy & Amitai, 1980: 36, 40; Jidda. (El-Hennawy, 1992; Hendrixson, 2006: 38)

A. c.; Hendrixson, 2006: 38-43, figs. 1-2, plate 1; Makkah By-pass km 91.5, 21°14'N 39°49'E, 150 m; Makkah By-pass km 126, 21°19'N 40°00'E, 300 m; Jabal Sayid, 23°49'N 40°57'E, 1000 m; Jeddah City Dump, sea level, 21°24'N 39°13'E; Wadi ar-Rika, 22°30'N 44°35'E; Hulaifa, camp near oasis, 3500 ft; Province El Khobar; Wadi Turabah, 21°N 40°E, 1350 m; station Riyadh; Khashm ath-Thumami, 27°40'N 44°55'E; 35 km NE of Nariya, 27°39'N 48°43'E; 5 km S of Dhahran, 26°15'N 50°08'E; Jabal as-Sinfa, Sawawin District, 27°57'N 35°47'E; Hatim al-Khalidi, Wadi Qatan, 18°06'N 44°07'E; "près de Shigri", 28°N 36°E; Wadi Qatan, 18°06'N 44°07'E, 1500 m; Makkah By-pass km 80, 21°15'N 39°13'E; Makkah Bypass km 118.3, 21°17'N 39°56'E; Makkah By-pass km 125, 21°19'N 40°40'E, 300 m; Jeddah, 21°25'N 39°12'E; south of Jeddah, near sea; Wadi Hamaq, Camp 2; Riyadh; Sanam; al-Hashbah; 20 km NE of Makkah; Jawf; Wadi Qatan; Dammam; Sahal rimpth, 750 m; Taif; Addar, 22°10'N 39°30'E, 150 m; Khaybar/Hail; Wadi Turabah; 5 km W of al-Mubarraz; Wildlife Research Center, ca. 30 km SE of Taif, 21°16'N 40°42'E, 1400 m; Wadi ar-Rika, 22°30'N 44°35'E; vicinity of Riyadh; Turayf, 31°44'N 38°33'E, 850 m; Makkah By-pass km 80, 21°15'N 39°43'E, 150 m; Jabal al-Ghamdiyah.

A. c.; Al-Asmari, *et al.* 2007: 833; Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus ***Apistobuthus*** Finnegan, 1932

Apistobuthus pterygocercus Finnegan, 1932

A. p.; Finnegan, 1932: 92; Uruq Dhahiqah, Shena.

A. p.; Vachon, 1979: 34-35, figs. 4-5; Uraq (SE Arabia); Dhahiga; Shannah; Andhur; Al Khardj; Dhahran.

A. p.; Hendrixson, 2006: 44-46, figs. 3, 6, plate 2; Safura Desert; Shawala, Camp 3.

A. p.; Al-Asmari, *et al.* 2009a: 106; Hail.

Genus ***Buthacus*** Birula, 1908

Buthacus buettikeri Hendrixson, 2006

B. leptochelys ssp.?; Vachon, 1979: 38-39, figs. 7-8, 26, 29, 61-63; Wadi Diriyah; Hofuf Road; Wadi Khuwa; A1 Khubra; Jebel Shamar.

B. b.; Hendrixson, 2006: 47-52, 59, figs. 4-6, plates 3, 4; Um ad-Dabah. Khashm Dhibi. Addar. Wadi Maraum. Jabal al-Ghamdiyah. Kijat. Makkah By-pass km 91.5.

B. leptochelys; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh. [The identification of *B. leptochelys* may be wrong.]

Buthacus yotvatensis nigroaculeatus Levy, Amitai & Shulov, 1973

B. y. n.; Vachon, 1979: 36-38, figs. 6, 8; Dammam; Al Khardj; Dhahran; Kurais area.

B. tadmorensis n.; Kinzelbach, 1985: map III.

B. y. n.; Hendrixson, 2006: 52-56, figs. 6-7, plate 5; Rub al-Khali, 22°07'N 48°14'E; Chantier OGER International, Damman; Riyadh; vicinity of Riyadh; Aqabat al-Uhuraytan, 27°48'N 36°04'E; ca. 80 km NW of Riyadh; Riyadh; Khashm Sudayr.

B. y. n.; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus ***Butheolus*** Simon, 1882

Butheolus anthracinus (Pocock, 1895)

B. a.; Hendrixson, 2006: 56-59, figs. 6, 8, plate 6; Khamis Mushait, 18°18'N 42°44'E.

Butheolus villosus Hendrixson, 2006

B. v.; Hendrixson, 2006: 59-61, figs. 6, 9, plate 7; Khashm Dhibi.

Genus ***Compsobuthus*** Vachon, 1949

Compsobuthus arabicus Levy, Amitai & Shulov, 1973

C. a.; Levy, Amitai & Shulov, 1973: 122-124, figs. 17-20; Daugha; Wadi Mughhin; Ramlat Enfel; Khor Enfel.

C. a.; Vachon, 1979: 39-40, figs. 9, 11; Daugha; Ramlat Enfel; Khor Enfel; Wadi Mughohin; SW & NW Dhahran; Quwayiyah; El Khubra, Ath Thamamah, N of Riyadh.

C. a.; Hendrixson, 2006: 62-64, figs. 10, 13; Daugha, 900 feet [near Yemen-Oman borders].

C. a.; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Compsobuthus fuscatus Hendrixson, 2006

C. werneri ssp.?; Vachon, 1979: 40-42, figs. 10-11, 58-60; Wadi Marba, Khamis Mushayt; Village Qaraah; Abha-Taif Road; Wadi Usfahn (near Jeddah).

C. f.; Hendrixson, 2006: 65-67, 74, figs. 11, 13, plate 8; Jabal Qishayradh, 21°17'N 40°17'E; al-Mashrab Sarat Abidah, nr. 18°N 43.5°E, 2000 m; Wadi Kharrar, 21°17'N 40°06'E, 460 m; Wadi al-Amar, 18°52'N 42°16'E, 2400 m; Namas, 2380 m; Jabal Sawda, 18°18'N 42°20'E, 2000 & 2800 m; Wadi Mahra, 19°38'N 42°38'E, 2000 m; Wadi Mihrim, 13 km Taif al-Had Road, 21°20'N 40°19'E, 1700 m; Wadi Sizan Dam, 17°02'N 41°55'E, 200 m; Hijla, 14 km E of Abha; Jeddah; Wadi Shuqub, Makkah Province, 20°39'N 41°13'E, 1390 m.

C. werneri; Al-Asmari, *et al.* 2007: 831; Jazan; Al-Asmari, *et al.* 2009a: 100, 106; Al-Baha, Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

[The identification of *C. werneri* may be wrong.]

Compsobuthus longipalpis Levy, Amitai & Shulov, 1973

C. l.; Hendrixson, 2006: 68-71, figs. 12, 13; Makkah District.

Compsobuthus pallidus Hendrixson, 2006

C. p.; Hendrixson, 2006: 71-74, figs. 13, 14, plate 9; Saudi Arabia : 31°40'N 39°30'E, 800 m [near Jordan-Iraq borders].

Compsobuthus setosus Hendrixson, 2006

C. s.; Hendrixson, 2006: 74-78, figs. 13, 15, plate 10; Khashm Khafs; Riyadh; vicinity of Riyadh.

Genus ***Hottentotta*** Birula, 1908

Hottentotta jayakari jayakari (Pocock, 1895)

Buthotus j.; Kinzelbach, 1985: Saudi Arabia.

H. j. j.; Hendrixson, 2006: 78-81, figs. 13, 14, 18, plate 11; Farasan Island (Red Sea).

H. j.; Al-Asmari, *et al.* 2007: 831; Jazan.

Genus ***Leiurus*** Ehrenberg, 1828

Leiurus jordanensis Lourenço, Modry & Amr, 2002

L. j.; Hendrixson, 2006: 82-64, figs. 17, 18, 20a, plates 12-13; al-Uyaynah, 28°55'N 36°03'E, 740 m; al-Tawil, 29°58'N 39°34'E, 840 m [near Jordan borders].

Leiurus quinquestriatus (Ehrenberg, 1828)

Buthus q.; Gough & Hirst, 1927: 5, fig. 8; Medina.

L. q. brachycentrus; Vachon, 1966: 211; ARABIA.

L. q.; Vachon, 1979: 49-50, figs. 8, 37, 46-50, 64-66; Wadi Mizbil; Wadi Durmah; Khamis Mushayt; Wadi Tumeir; Wadi Mutaiwiyah, Mecca Road; Jeddah; Wadi Khumra; Abha-Gizan, km 53; Wadi ad Dilla; Kushm Dibi; Jebel Banban; Jubail; Shi area, al Qunfida; Wadi Fatima; Gizan.

L. q. brachycentrus; Levy & Amitai, 1980: 47; Jidda (Gumfudam).

L. q. hebraeus; Levy & Amitai, 1980: 48-53, figs. 47-51, map 3; Jidda; Medina; Amarna.

L. q.; Hendrixson, 2006: 84-64, figs. 18, 19, 20b-c, plates 14-15; Manfah, 17°36'N 43°39'E; Makkah By-pass km 126; Jabal Sayid, 23°49.5'N 40°57'E, 1000 m; Wadi Shayban; Harrat Kuishm, 23°13'N 41°23'E; Grandi Lavori Road, 19°46'N 41°40'E, 960 m; Camp at al-Baha, 20°10'N 41°25'E, IX.1982; Wadi Knayton, 550-650 m; Khamis; Bani Sar, Baha Province, 20°13'N 41°27'E, 2180 m; al-Foqah, Baha Province, 19°50'N 41°51'E, 1630 m; Wadi Shuqub, Makkah Province, 20°39'N 41°13'E, 1390 m; Harithi, 21°18'N 40°18'E; Wadi Marwani; Wadi Turabah, Makkah Province, 21°N 41°E, 1250 m; al-Hadda, 21°23'N 40°14'E, 2000 m; Khashm Dhibi; Jizan; Jabal Dabbagh, 27°52'N 35°45'E, 2000 m; Jabal Barad, 21°08'N 40°13'E, 2000 m; Wadi Turabah, 1800 m; Jiar, 23°38'N 38°33'E; Wadi Thareira, 21°09'N 40°44'E, 1440 m; wadi 30 km NE of al-Jamun, 21°48'N 39°55'E, 350 m; Hakimah, 17°01'N 42°50'E, 60 m; Wadi Wajj, 21°09'N 40°22'E, 1600 m; Jabal Qishayradh, 21°17'N 40°17'E, 1950 m; 1 ♀, Makkah By-pass km 97, 21°12'N 39°50'E, 225 m; Makkah By-pass km 91.5, 21°15'N 39°48'E, 200 m; Wadi Qatan, 1350 m; Hijla, 14 km E of Abha; 10 km NE of Biljurshi; Shumaisy, 25°06'N 38°43'E, 740 m; an-Naamah, 20°15'N 41°16'E, 2100 m; Baha; Fare, 22°45'N 39°47'E, 850 m; al-Foqah, Baha Province, 19°50'N 41°51'E, 1630 m; Wadi Wajj, 18 km SW of Taif, 1800 m; Wadi Tayyah, 18°32'N 42°14'E, 950 m; Wadi Bani Malik; Wadi Tuweig; Wadi Turabah; Wadi Shuqub; al-Faraah; Adama, 1770 m; Wadi Dhiyan, 19°50'N 41°28'E, 1050 m; Biljurshi, 1840 m; Bani Sar; Wadi Maharish, 1000 m; Wadi Yamaniyah, 1100 m; Wadi Ellah, 20°35'N 41°35'E, 1480 m; Adama, 1770 m; Wadi Asidah, 20°25'N 41°12'E, 1480 m; halfway between Ranja nr. Bisha; Jeddah; Wadi Hanaq; Adama, 1770 m; al-Amar, 25°59'N 50°32'E; Jeddah; Wadi Khumra; Khashm Dhibi; Hesua, Camp 1; Wadi Turabah, 1510 m; Khashm al-Atash; Hudenah, 800 m;

Riyadh; vicinity of Riyadh; Wadi Shamruq, 20°29'N 41°19'E, 1600 m; Wadi Mahra, 19°38'N 41°54'E, 2000 m; Grandi Lavori.
L. q.; Al-Asmari, *et al.* 2007: 833; Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 100, 106; Al-Baha, Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus ***Orthochirus*** Karsch, 1891

Orthochirus innesi Simon, 1910
O. i.; Vachon, 1979: 53-55, figs. 36, 38, 55-57; Wadi Mizbil; Wadi Mutaiwiyah, Mecca Road; Al Khardj; Afif, N of Abha; Jeddah; Kushm Dibi.
O. i.; Hendrixson, 2006: 91-95, figs. 21, 23, plate 16; Huraymila, ca. 80 km NW of Riyadh; Nugrah, Janabiyal, 25°36'N 41°28'E, 900 m; Wadi Bani Malik; Wadi Nissah; Hudenah; Khashm Khafs; Wadi Mukhtayn; Khashm Dhibi; Wadi Marwani; Riyadh; Dammam.
O. i.; Al-Asmari, *et al.* 2007: 831, 833; Jazan, Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 100, 106; Al-Baha, Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus ***Parabuthus*** Pocock, 1890

Parabuthus leiosoma leiosoma (Ehrenberg, 1828)
Buthus liosoma; Simon, 1882: 244; Gumfuda.
P. liosoma liosoma; Vachon, 1979: 55-56, figs. 3, 36, 39; Bahara; Abha-Gizan, km 53; Wadi ad Dilla; Shi area, al Qunfida; Jeddah; Burainam, near Jeddah; near Gizan.
P. l. l.; Hendrixson, 2006: 96-99, figs. 22, 23, plate 17; al-Qunfudhah; nr. Abu Arish, 16°58'N 42°50'E, ca. 50 m; Jizan; nr. Jizan, ca. 30 m; Khulais nr. Jeddah; Khashm Khafs; Hesua, Camp 1; Lower Grandi Lavori, 19°35'N 41°39'E, 550 m; Tarfa, 17°03'N 42°21'E; N 30 degrees W 13 km from Shuqayq, 17°50'N 41°57'E, near sea level.
P. liosoma; Al-Asmari, *et al.* 2007: 830; Jazan.

Genus ***Vachoniolus*** Levy, Amitai & Shulov, 1973

Vachoniolus globimanus Levy, Amitai & Shulov, 1973
Buthacus minipectenibus; Levy, Amitai & Shulov, 1973: 128-130, figs. 27-31; Munegger-Sanam; Gebel Shamar; Naifa.
V. minipectinibus; Vachon, 1979: 49, figs, 12-17, 27, 30, 33, 36; Munneger Sanam; Gebel Shamar; S of Dharan; Khobar; Naifa.
V. g.; Hendrixson, 2006: 100-102, figs. 23, 24, plate 18; Munegger-Sanam; Riyadh.
V. minipectinibus; Al-Asmari, *et al.* 2009a: 100; Al-Baha.

Family **Hemiscorpiidae** Pocock, 1893

Genus ***Hemiscorpius*** Peters, 1861

Hemiscorpius arabicus Pocock, 1899
H. a.; Vachon, 1979: 59, figs. 41, 44, 45; Al Hair; Kushm Dibi, (South of Riyadh).
H. sp.; Hendrixson, 2006: 103-104, figs. 25, 27, plate 19; Wadi Birk.
H. a.; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Family **Scorpionidae** Peters, 1862

Genus ***Nebo*** Simon, 1878

Nebo hierichonticus (Simon, 1872) ?
N. h.; Kinzelbach, 1985: Saudi Arabia.
N. spp.; Hendrixson, 2006: 106, figs. 26, 27, plate 20; Munegger-Sanam; Riyadh. Grandi Lavori, 19°45'N 41°40'E, 800-1000 m; USGS Camp at al-Baha, 20°10'N 41°25'E, 2000 m; Buraiman, N of Jeddah; al-Uqdah, Baha Province, 19°35'N 41°07.5'E; Wadi Turabah,

Makkah Province, 21°N 40°E, 1350 m; Jabal Barad, 21°08'N 40°13'E, 2000 m; nr. Abha, 2000 m; Bani Sar, 20°05'N 41°26'E, 2130 m; Hakimah, 17°01'N 42°50'E, 60 m; Jabal Qishayradh, 21°17'N 40°17'E, 1950 m; Dalaghan, Asir, 18°05'N 42°43'E; Baha; Namas, 2380 m; Wadi Maharish, 1000 m; Khaybar/Hail; Leyla; Wadi Bani Malik, at foot of Jabal Ibrahim, 20°27'N 41°09'E, 1400 m; A.M. Al-Maliki, WDS; Wadi Mahra, 19°38'N 41°54'E, 2000 m.
N. h.; Al-Asmari, *et al.* 2007: 831; Jazan; Al-Asmari, *et al.* 2009a: 100; Al-Baha.

Genus ***Pandinus*** Thorell, 1876

Pandinus (Pandinurus) arabicus (Kraepelin, 1894)
Scorpio a.; Kraepelin, 1894: 58-60, fig.10; ARABIA. ?
P. a.; Kraepelin, 1899: 120; Homran, ARABIA.

Pandinus (Pandinurus) exitialis (Pocock, 1888)
P. e.; Vachon, 1966: 215; ARABIA. ?

Genus ***Scorpio*** Linnaeus, 1758

Scorpio maurus Linnaeus, 1758

Scorpio maurus arabicus (Pocock, 1900)
Heterometrus a.; Pocock, 1900: 363; ARABIA.
S. m. a.; Vachon, 1966: 215; ARABIA.

Scorpio maurus fuscus (Ehrenberg, 1829)
S. m. f.; Vachon, 1979: 57-59, figs. 43, 45; camp Khamis Mushayt; Road Taif-Abha, 200-300 km south of Taif,
S. m. f.; Al-Asmari, *et al.* 2009a: 100; Al-Baha.

Scorpio maurus kruglovi Birula, 1910
S. m. k.; Vachon, 1979: 57, figs. 40, 42, 45, 51-53; Wadi Hanifa; petrified forest near Riyadh.
S. m. k.; Al-Asmari, *et al.* 2007: 833; Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Scorpio maurus sspp.
S. m. sspp.; Hendrixson, 2006: 108, figs. 27, 28, plate 21; USGS Camp at al-Baha, 20°10'N 41°25'E, 2000 m; Manfah, 17°36'N 43°39'E; Harithi, Makkah Province, 21°18'N 40°18'E, 1910 m; Bani Sar, Baha Province, 20°13'N 41°27'E, 2180 m; Jabal as-Sinfa, 27°57'N 35°47'E, 300 m; Jabal Sawda, 18°18'N 42°20'E, 2000 m; Hakimah, 17°01'N 42°50'E, 60 m; 31°40'N 39°30'E, 800 m; Hijfa; Namas, 2380 m; Adama, 1770 m.

List of species

Family **Buthidae** C. L. Koch, 1837

Androctonus bicolor Ehrenberg, 1828
Androctonus crassicauda (Olivier, 1807)
Apistobuthus pterygocercus Finnegan, 1932
Buthacus buettikeri Hendrixson, 2006
Buthacus yotvatensis nigroaculeatus Levy, Amitai & Shulov, 1973
Butheolus anthracinus (Pocock, 1895)
Butheolus villosus Hendrixson, 2006
Compsobuthus arabicus Levy, Amitai & Shulov, 1973
Compsobuthus fuscatus Hendrixson, 2006
Compsobuthus longipalpis Levy, Amitai & Shulov, 1973

Compsobuthus pallidus Hendrixson, 2006
Compsobuthus setosus Hendrixson, 2006
Hottentotta jayakari jayakari (Pocock, 1895)
Leiurus jordanensis Lourenço, Modry & Amr, 2002
Leiurus quinquestriatus (Ehrenberg, 1828)
Orthochirus innesi Simon, 1910
Parabuthus leiosoma leiosoma (Ehrenberg, 1828)
Vachoniolus globimanus Levy, Amitai & Shulov, 1973

Family **Hemiscorpiidae** Pocock, 1893
Hemiscorpius arabicus Pocock, 1899

Family **Scorpionidae** Peters, 1862
Nebo hierichonticus (Simon, 1872) ?
Pandinus (Pandinurus) arabicus (Kraepelin, 1894)
Pandinus (Pandinurus) exitialis (Pocock, 1888)
Scorpio maurus arabicus (Pocock, 1900)
Scorpio maurus fuscus (Ehrenberg, 1829)
Scorpio maurus kruglovi Birula, 1910
Scorpio maurus sspp.

Key to the scorpion families in Saudi Arabia

1. Pedipalp patella without ventral trichobothria; sternum subtriangular; anterior margin of carapace not conspicuously notched ..... **Buthidae** C. L. Koch, 1837 (804 species)
– Pedipalp patella with one or more ventral trichobothria; sternum subpentagonal; anterior margin of carapace with distinct notch 2

2. Metasomal segments I-IV with paired ventral submedian carinae; pedipalp chela trichobothrium **ib** located near base of fixed finger; lateroapical margins of tarsi produced into rounded lobes ..... **Scorpionidae** Latreille, 1802 (243 species)
– Metasomal segments I-IV with single ventromedian carina; pedipalp chela trichobothrium **ib** located midway along fixed finger; lateroapical margins of tarsi straight ..... **Hemiscorpiidae** Pocock, 1893 (83 species)

Key to the genera of Family Buthidae in Saudi Arabia

1. Metasomal segment II widely flared, much wider than other segments of metasoma ..... ***Apistobuthus*** Finnegan, 1932
– Metasomal segment II not wider than other segments 2

2. Mesosomal tergites I and II with 5 distinct carinae ..... ***Leiurus*** Ehrenberg, 1828
– Mesosomal tergites I and II without carinae, or with at most 3 carinae 3

3. Carapace with distinct carinae 4
– Carapace smooth or granulated but without distinct carinae 6

4. Central lateral (centromedian) and posterior lateral (posteriomedian) carinae of carapace fused forming a continuous linear row of granules to posterior margin ..... ***Compsobuthus*** Vachon, 1949
– Central lateral (centromedian) and posterior lateral (posteriomedian) carinae of carapace do not form a continuous linear row of granules to posterior margin 5

5. Dentate margin of pedipalp chela movable finger with 3 granules located just proximal to terminal denticle and one basal terminal; metasomal segments robust, increasing in width and depth posteriorly ..... ***Androctonus*** Ehrenberg, 1828
– Dentate margin of pedipalp chela movable finger with 4 granules located just proximal to terminal denticle and one basal terminal ..... ***Hottentotta*** Birula, 1908

6. Pedipalp femoral trichobothria arranged in *alpha*-configuration (Angle formed by trichobothria d1, d3, and d4 opens toward external face of pedipalp femur [<]); stridulatory patch present on dorsal surface of metasomal segments I-III ..... ***Parabuthus*** Pocock, 1890
– Pedipalp femoral trichobothria arranged in *beta*-configuration (Angle formed by trichobothria d1, d3, and d4 opens toward internal face of pedipalp femur [>]); stridulatory patch absent 7

7. Carapace, in lateral view, with a distinct downward slope from median eyes to anterior margin; carapace and tergites densely granular; small scorpions (usually less than 30 mm long) 8
– Carapace, in lateral view, with entire dorsal surface horizontal (or nearly so); carapace and tergites with variable granulation; scorpions of variable size..... 9

8. Metasomal segments IV and V punctate; telson elongate, aculeus as long or longer than vesicle ..... ***Orthochirus*** Karsch, 1892
– Metasomal segments ventrally smooth or granulated; telson bulbous, aculeus shorter than vesicle ..... ***Butheolus*** Simon, 1882

9. Patella of pedipalp with 8 or 9 external trichobothria; carapace smooth to shagreened; male pedipalp chela swollen and globular .... ***Vachoniolus*** Levy, Amitai & Shulov, 1973
– Patella of pedipalp with 7 external trichobothria; carapace granular or smooth; male pedipalp chela not swollen ..... ***Buthacus*** Birula, 1908

Key to the genera of Family Scorpionidae in Saudi Arabia

1. Telson with subaculear tubercle ..... ***Nebo*** Simon, 1878
– Telson without subaculear tubercle 2

2. Stridulation organ located on opposing surfaces of coxae of pedipalps and first pair of legs. Pedipalp patella with numerous ventral trichobothria ..... ***Pandinus*** Thorell, 1876
– Stridulation organ absent. Pedipalp patella with 19 trichobothria, 13 of them on external surface ..... ***Scorpio*** Linnaeus, 1758

Notes on species identification

I. Hendrixson (2006) differentiated among the following species of different genera as follows:

Genus ***Buthacus***
1. Metasomal segments densely hirsute ..... ***Buthacus yotvatensis nigroaculeatus***
– Metasomal segments with few setae ..... ***Buthacus buettikeri***

Genus ***Butheolus***
1. Metasoma and telson densely hirsute; lateral inframedian carinae on metasomal segment IV absent ..... ***Butheolus villosus***
– Metasoma and telson with few setae; lateral inframedian carinae on metasomal segment IV present ..... ***Butheolus anthracinus***

Genus ***Compsobuthus***

1. Pedipalp chela fingers with outer accessory granules 2
– Pedipalp chela fingers without outer accessory granules 3

2. Lateral inframedian carinae on metasomal segments II and III represented by only a few granules; pedipalp chela fingers extremely elongated ..... ***Compsobuthus longipalpis***
– Lateral inframedian carinae on metasomal segments II and III present at least on posterior three-fourths; pedipalp chela fingers not as above ..... ***Compsobuthus fuscatus***

3. Sternite VII and ventral surface of metasomal segments with numerous small red setae; pedipalp chela length/depth approximately 7.00 ..... ***Compsobuthus setosus***
– Sternite VII and ventral surface of metasomal segments lacking numerous small red setae; pedipalp chela length/depth < 6.00 4

4. Carapacial and tergal surfaces densely, minutely granular; pectinal tooth counts 9-15; nine or fewer rows of granules along dentate margin of pedipalp chela fingers ..... ***Compsobuthus arabicus***
– Carapacial and tergal surfaces not as above; pectinal tooth counts 15-18; 10-11 rows of granules along dentate margin of pedipalp chela fingers ..... ***Compsobuthus pallidus***

Genus ***Leiurus***

1. Base colour dark brown to black; ventrolateral carinae of metasomal segment V with spinoid denticles ..... ***Leiurus jordanensis***
– Base colour more or less yellow, often with dusky colouration, but never dark brown to black; ventrolateral carinae of metasomal segment V with lobate denticles distally ..... ***Leiurus quinquestriatus***

II. I agree with Hendrixson (2006) that scorpions of both *Nebo* and *Scorpio* need revision. Do all collected specimens of *Nebo* in Saudi Arabia belong to *Nebo hierichonticus* (Simon, 1872), or to other species?

Hendrixson (2006) stated that "a thorough revision, of *Scorpio*, is badly needed". Three subspecies of *Scorpio maurus* are here listed according to Vachon (1966, 1979). Their identification and their situation may be changed after studying a good material from Saudi Arabia and adjacent countries.

According to the colour plates of Kovařík (2009), *Scorpio maurus fuscus* male has dark body while *Scorpio maurus arabicus* female has a lighter colouration. *Scorpio maurus kruglovi* female has the same colouration of *S. m. fuscus*, while its male has lighter pedipalps and metasoma. However, colouration is not enough to differentiate among species or subspecies. Even, the detailed study of *Scorpio maurus* subspecies by Birula (1910) is not adequate for identification.

III. I could not delete the doubtful (?) records of *Pandinus* from the list. This genus or a similar one was reported from the south of Saudi Arabia, but no available material for examination until now.

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The queries of Dr. Mahmoud Desouky (University of Ha'il) on scorpion identification, meeting Dr. Ali S. Al-Akel (University of King Saud) during a scientific conference to discuss the study of scorpions in Saudi Arabia, and receiving two recent papers on scorpions of Al-Madina and Hail (MD) and an interesting popular book in Arabic on scorpions prepared by Dr. Mohammad K. Al-Sadoon and Dr. Saud A. Al-Farraj (ASA) activated me to prepare this work. I am indebted to them.

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Eresidae of Sudan
(Araneida: Eresidae)

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Abstract

Three species of only one genus of family Eresidae are recorded from Sudan, i.e., *Stegodyphus dufouri*, *S. lineatus*, and *S. manicatus*. The female of *S. m.* is redescribed with notes on its biology and habitat. A key to *Stegodyphus* species in Sudan and a map of their distribution are presented.

Keywords: *Stegodyphus manicatus*, Eresidae, Spiders, Sudan.

Introduction

There are about 80 spider species of 20 families recorded from Sudan. Family Eresidae C. L. Koch, 1850 is one of those families. It includes 100 species and subspecies, of 10 genera, among 40998 spider species all over the world (Platnick, 2009). Only three eresid species of genus *Stegodyphus* Simon, 1873 are recorded from Sudan. All of them are described and figured in the revision of the genus by Kraus & Kraus (1989).

Four juvenile *Stegodyphus* specimens were collected from Sudan on July 2008. They were collected from their nests on trees. Three of them died during transportation to Egypt and only one survived and reared in laboratory until becoming adult female. This adult one was identified as *Stegodyphus manicatus* Simon, 1876 and described below, with notes on its habitat and its biology. The distribution of the three *Stegodyphus* species of Sudan is plotted on a map, in addition to notes on the three species.

Abbreviations used: ALE = anterior lateral eye; AME = anterior median eye; Id = interdistance; L = length; PLE = posterior lateral eye; PME = posterior median eye; TL = total length; W = width. All measurements are in millimetres.

Systematics

Family **Eresidae** C. L. Koch, 1850
"Velvet spiders"

Diagnosis: Small to large (3-35 mm) araneomorph spiders; cribellate; entelegyne; legs with three tarsal claws; carapace convex, rectangular, with eight eyes; median eyes situated close together, with lateral eyes widely spaced; body usually clothed in a dense layer of short plumose setae (Jocqué & Dippenaar-Schoeman, 2006).
Distribution: Mostly Afrotropical and Palaearctic.

Genus ***Stegodyphus*** Simon, 1873

There are 21 species of genus *Stegodyphus*, most of them are recorded from Afrotropical and Palaearctic regions, with 2 species from Brazil and 4 species from Southeast Asia (Platnick, 2009). *Stegodyphus* spiders build their nests and webs on plants. Some of them are social spiders, i.e., living in colonies. The three species recorded from Sudan are solitary or "sub-social" ("non-permanenly social" or "periodic-social") species. The following information about these three species are extracted from literature, mainly from Kraus & Kraus (1989), in addition to photographs of alive specimens to facilitate identification.

Stegodyphus dufouri (Audouin, 1825) Figs. 1-2, 8, 10.
Eresus dufourii Audouin, 1825: 151-152, pl. 4, f. 12 (♀).
Eresus dufourii Audouin, 1827: 376-377, pl. 4, f. 12 (♀).
S. manicatus Simon, 1908: 80 (♂only, misidentified).
S. niloticus Simon, 1908: 80-82 (♀).
S. d. Simon, 1910: 287, f. 4B (♂♀).
S. manicatus Simon, 1910: 288, f. 4C (♂only, misidentified).
S. manicatus Berland & Millot, 1940: 158-159, f. 10C-D (♂, non ♀)
S. assomptioni Berland & Millot, 1940: 160, f. 12 (♀ only).
S. d. Kraus & Kraus, 1989: 208-214, f. 104-105, 111-112, 126-131, 142-173, Map 9 (♂♀).

World Distribution: Mauritania, Mali, Algeria, Tunesia, Libya, Egypt, Sudan, Ethiopia, Somalia, Yemen, Senegal, (Upper Volta, Niger, Tchad ?).

Distribution in Sudan:
- El Khandaq (6♀ BMNH 20.10.35; Sudan Agric. Res. Serv. leg. 30.III. 1936).
- Suakim (5♀ 2♀ pre-Epig. ZMB 3897; Stecker leg. X. 1886).
- Wadi Halfa (1♀ Holotype of *niloticus* MNHN AR929).

Stegodyphus lineatus (Latreille, 1817) Figs. 3-4, 9, 11.
S. l. deserticola Simon, 1908: 79 (D).
S. l. Simon, 1910: 286-287, f. 4A (♂♀).
S. l. deserticola Simon, 1910: 287 (♀).
S. l. Kraus & Kraus, 1989: 231-235, f. 1-2, 28, 202-205, 227-228, 234-242, pl. 3 (f. A-E, G), Map 7 (♂♀).

World Distribution: Spain, Italy, Greece, Turkey, Palestine (Israel), Jordan, Syria, Iraq, Iran, Uzbekistan; Mauritania, Morocco, Algeria, Tunisia, Libya, Niger, Tchad, Egypt, Saudi Arabia, Sudan, Yemen.

Distribution in Sudan:
- Khartoum (1♀ pre-epig. MRAC 120.761; Cloudsley-Thompson leg. 1960-61).

Stegodyphus manicatus Simon, 1876 Figs. 5, 6, 12-22.
S. m. Simon, 1876: 87 (♀).
S. m. Simon, 1908: 79-80 (♀, non ♂).
S. m. Simon, 1910: 288 (♀ only, ♂= *S. dufouri*).
S. m. Berland & Millot, 1940: 158-159, f. 10A-B (♀, non ♂= *S. dufouri*).
S. assomptioni Berland & Millot, 1940: 159-160, f. 11 (♂, nec ♀).
S. m. Kraus & Kraus, 1989: 218-220, f. 108, 114-115, 188-194, Map 6 (♂, ♀).

World Distribution: Senegal, Mali, Niger, Tchad, Sudan, Ethiopia. Mostly south of the Sahara (Kraus & Kraus, 1989: 249, Map 6).

Distribution in Sudan:
- Khartoum (1♀ MRAC 123.051; Cloudsley-Thompson leg.).
- Kassala (1♂ MRAC 133.678; Clarkson leg. 1951).
- Suakim (1♀ ZMB [ex 3897]).

[BMNH = The Natural History Museum, London, United Kingdom
MNHN = Muséum National d'Histoire Naturelle, Paris, France
MRAC = Musée Royal de l'Afrique Centrale, Tervuren, Belgium
ZMB = Museum für Naturkunde, Humboldt-Universität, Berlin, Germany]


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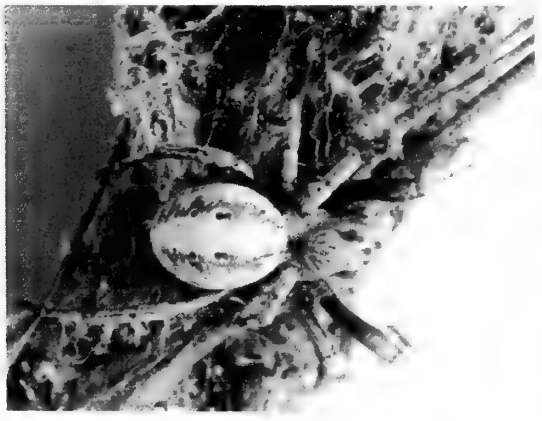
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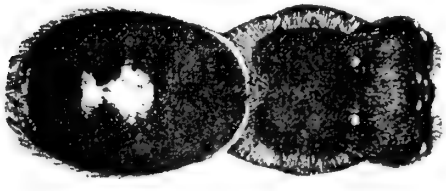
Figs. 1-5. Habitus, dorsal view. (Specimens from Egypt.)
1-2. *Stegodyphus dufouri* (Audouin, 1825) 1. ♂. 2. ♀.
3-4. *Stegodyphus lineatus* (Latreille, 1817) 3. ♂. 4. ♀.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5. *Stegodyphus manicatus* Simon, 1876 ♂.
[Fig. 11A, after Berland & Millot, 1940: 159]

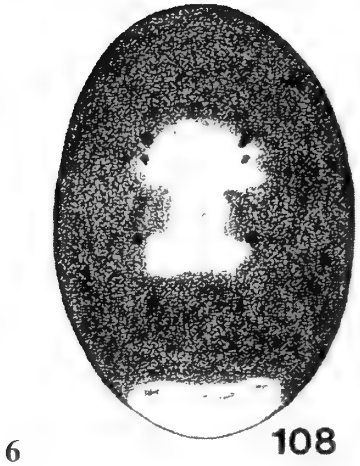

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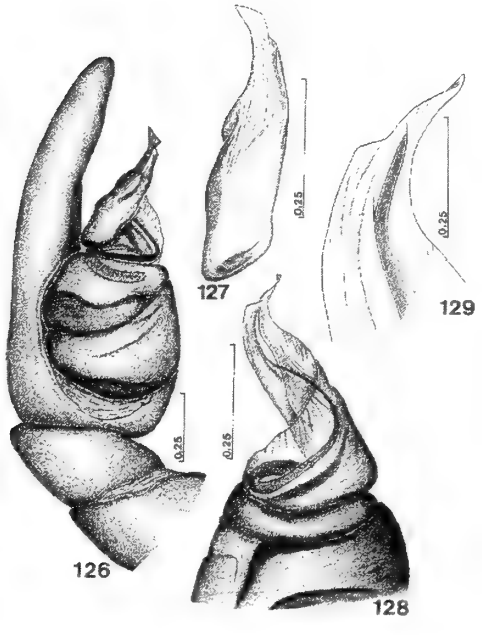
Fig. 6. *Stegodyphus manicatus*, dorsal colour pattern of opisthosoma (♂).
[Fig. 108, after Kraus & Kraus, 1989: 200]

Fig. 7. Distribution map of *Stegodyphus* species of Sudan.
1 = *Stegodyphus dufouri*, 2 = *Stegodyphus lineatus*, 3 = *Stegodyphus manicatus*.
[Wadi Halfa 21°47'35"N, 31°22'16"E; El Khandaq 18°36'00"N, 30°33'60"E;
Sawakin 19°06'01"N, 37°19'56"E; Khartoum 15°34'48"N, 32°31'12"E;
Kassala 15°27'36"N, 36°23'24"E; Al-Ubayyid 13°12'11"N, 30°19'22"E]



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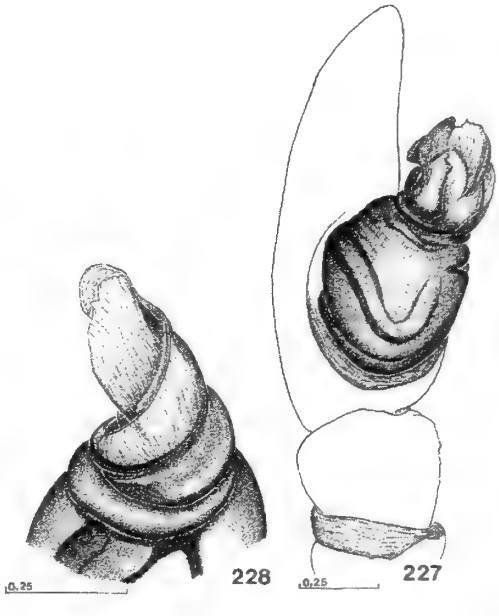

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Fig. 8. Male pedipalp and terminal lamella of *Stegodyphus dufouri*, Egypt, Djebel Mokattam. [Figs. 126-129, after Kraus & Kraus, 1989: 203]

Fig. 9. Male pedipalp and terminal lamella of *Stegodyphus lineatus*. [Figs. 227-228, after Kraus & Kraus, 1989: 229]

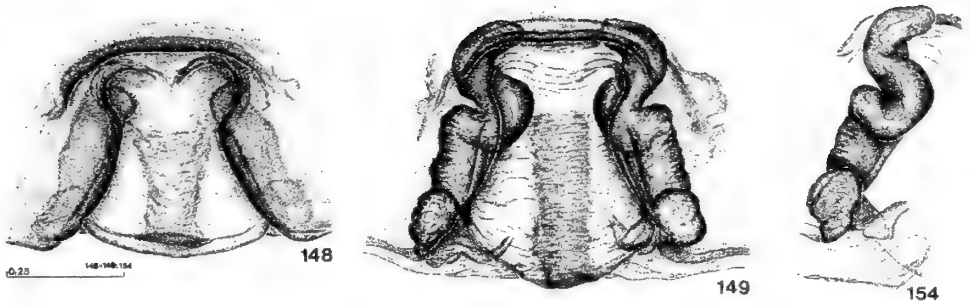

Fig. 10. *Stegodyphus dufouri* epigynum and vulva, type of *niloticus*. 148-149. Ventral view, 154. Dorsal view. [Figs. 148-149, 154, after Kraus & Kraus, 1989: 210]

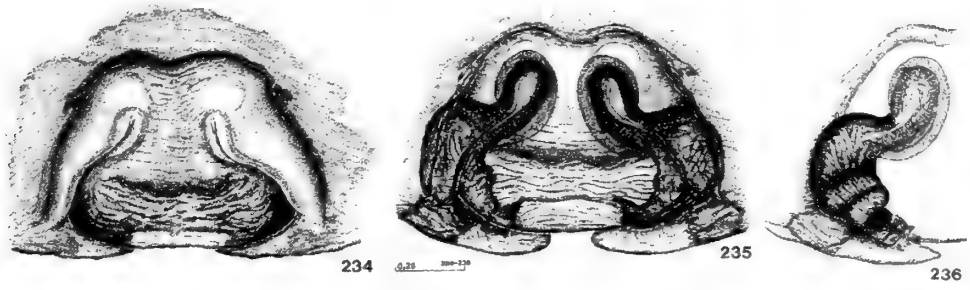

Fig. 11. *Stegodyphus lineatus* Epigynum and vulva. 234-235. Ventral view. 236. Vulva, dorsal view. [Figs. 234-236, after Kraus & Kraus, 1989: 230]

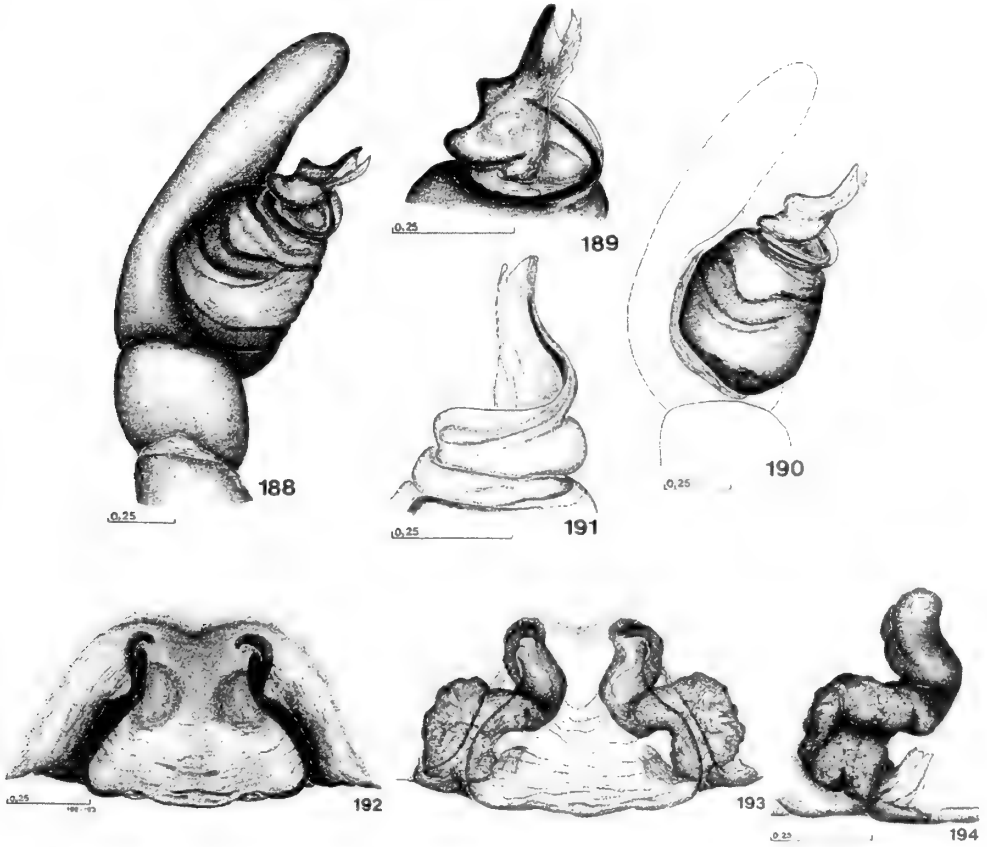

Fig. 12. *Stegodyphus manicatus*. 188-191. Male pedipalp and details of terminal lamella [188-189: type of *assomptioni*, 190-191: other specimen]. 192-194. Epigynum and vulva, ventral and dorsal view [type of *manicatus*]. [Figs. 188-194, after Kraus & Kraus, 1989: 219]

Key to *Stegodyphus* species in Sudan

Stegodyphus	*dufouri*		*lineatus*		*manicatus*	
	♂	♀	♂	♀	♂	♀
L leg I : L cephalothorax	3.1-3.2	2.4-2.9	2.8	2.2	2.5-2.9	2.2
W PME : W AME	1.2	1.0-1.3	1.2	1.2	1.4-1.5	1.4-1.5
Abdominal pattern	Fig. 1	Fig. 2	Fig. 3	Fig. 4	Figs. 5-6	---
♂ Palpal organ	Fig. 8		Fig. 9		Fig. 12	
♀ Epigynum and vulvae		Fig. 10		Fig. 11		Fig. 12

Stegodyphus manicatus from Kordufan, Sudan (Figs. 13-22).

Description: Female (Fig. 18)**:** TL 16.142; Cephalothorax (Fig. 16) L 5.95. Cephalic part: L 3.825, W 3.57; L : W = 1.07; elevated, reddish orange, covered by white hairs, except ocular region, frontal region of prosoma, clypeus and chelicerae covered by black hairs. Thoracic part: L 2.125, W 3.825; L : W = 0.55; colouration similar to cephalic part, but with sparse white hairs. Eyes: transparent; AME and PLE equal; posterior medians (PME) largest, slightly larger than anterior laterals (ALE) and 1¼ times larger than anterior medians (AME) and posterior laterals (PLE). Median ocular area wider than long. Eye measurements (diameters and interdistances): AME 0.204, ALE 0.238, PME 0.255, PLE 0.204, AM-AM 0.238, AL-AL 2.414, PM-PM 0.374, PL-PL 2.006, AM-AL 1.09, AM-PM 0.136. (Id PME : Id AME = 1.57; Id PLE : Id ALE = 83.09%). Chelicerae: covered by dense black hairs. Sternum dark orange. Labium and maxillae: reddish orange, except internal parts white. Pedipalps: dark orange, covered by black hairs on first and second segments. Legs: orange yellow, covered by white hairs. Metatarsus and tarsus IV blackish. Leg II darker than III & IV. Leg I darker than II, with dense black hairs on femur, prolaterally and ventrally, and tibia, only prolaterally. Calamistrum about ⅔ the length of metatarsus IV retrolaterally (Fig. 17).

Table 1: ♀, Legs measurements (mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total length
I	4.081	2.385	2.65	2.915	1.59	13.621
II	3.339	1.749	1.908	1.749	1.06	9.805
III	2.12	1.696	1.431	1.59	0.795	7.632
IV	3.71	2.226	2.65	2.385	1.113	12.084

Relative length of legs 113 : 81 : 63 : 100. Leg formula I-IV-II-III.
L leg I : L cephalothorax = 2.29.
Spination pattern: ventrally: two distal spines on metatarsus I; two distal + two median spines on metatarsi and two distal spines on tibiae II-IV; none elsewhere.
Abdomen: L 10.192; Creamy white dorsally and ventrally, covered by short hairs (Figs. 15, 19). Cribellum bipartite (L 0.583). Epigynum (Fig. 20), W 0.612 ventrally after separating and clearing, and vulvae similar to those figured by Kraus & Kraus (1989: Figs. 192-194) (Fig. 12) except the distance between vulvae, which are contiguous in Kordufan's specimen (Figs. 21-22).

Distribution: *S. m.* was previously recorded from Khartoum, Kassala, and Suakim (Sawakin) (Kraus & Kraus, 1989). The new material studied was collected near Al-Ubayyid: 3 juveniles, from Khor Tagget (13°12'11.5"N, 30°19'22.2"E, Alt. 559m), near Faculty of Science, Kordufan University, 28 July 2008, in their webs on bark of *Adansonia digitata*, Tabaldi tree (Baobab); 1 juvenile, from its nest among *Acacia*

bagworm cocoons (*Auchmophila kordofensis*), on *Acacia nubica* tree, beside the road from Al-Ubayyid to Kazgail (13°06'15.9"N, 30°11'17.3"E, Alt. 585m), 29 July 2008 (Fig. 7).

The described female was one of those collected juveniles, reared in Khartoum and Cairo. Only two moults were observed, 18 August 2008 and 17 September 2008. She lived until 27 June 2009 and preserved on the next day.

Biology and Habitat

The male type of *S. assomptioni* was "captured in the garden of the governor inside a small lodge of silk fixed on a shrub's branch" (Berland & Millot, 1940: 160). Kordufan juvenile specimens were found in their webs on bark of *Adansonia digitata*, Tabaldi tree (Fig. 13) and among *Acacia* bagworm cocoons (*Auchmophila kordofensis*) on *Acacia nubica* tree.

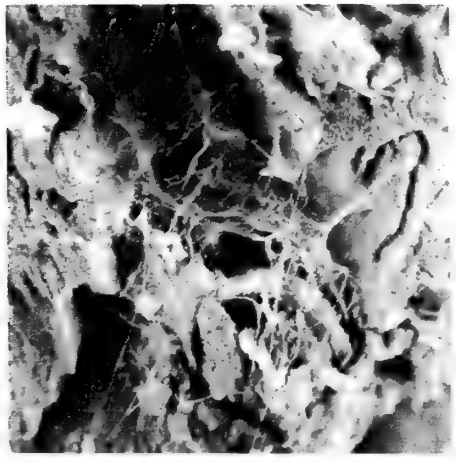
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Fig. 13. Web of juvenile *Stegodyphus manicatus* on tree trunk bark.
Fig. 14. Juvenile *Stegodyphus manicatus* at nest's entrance.


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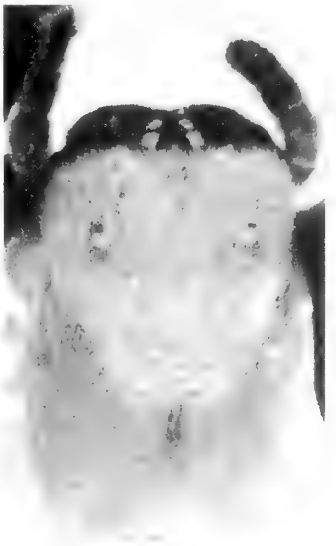
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Fig. 15. Subadult female seizing her prey, *Musca domestica*.
Fig. 16. Female's cephalothorax. Fig. 17. Female's calamistrum on metatarsus IV.

In west Africa, Millot & Bourgin (1942: 299) reported the presence of *S. manicatus* in a colony. Kraus & Kraus (1989: 220) had seen 13 females from Niger col-

lected together with their large nest that showed funnel-like tubes. They reported that "Various cocoons contained nymphs and the succeeding instar; they must have been produced nearly simultaneously, i.e., by different females". They stated "It is not quite clear whether the species may occur in colonies or may perhaps (!) be a social-living species".

S. manicatus juveniles, subadults and adult were reared on different kinds of prey, i.e., bees, wasps, flies, and sometimes caterpillars (Fig. 15). They were very fast in attack and in subduing the prey. They built dense silk nests, each with a single entrance. The colouration of the juvenile was slightly different, with less blach hairs on frontal region of prosoma, chelicerae, and legs (Fig. 14).

Fig. 18. *Stegodyphus manicatus* Simon, 1876. ♀.

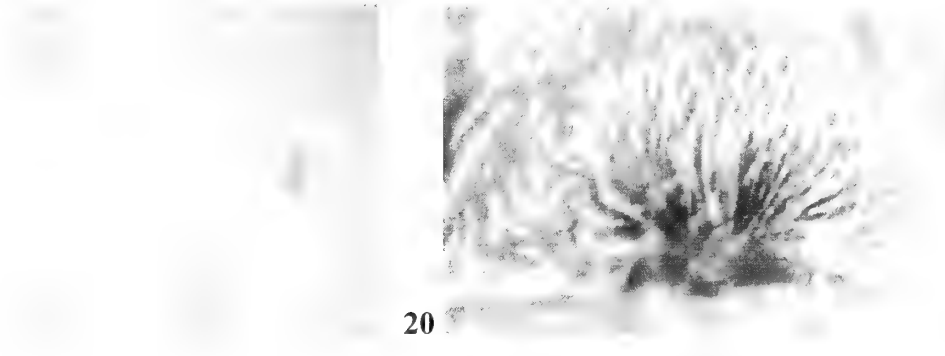

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Fig. 19. Cuticle of adult female's abdomen. Fig. 20. Epigynum, ventral view.

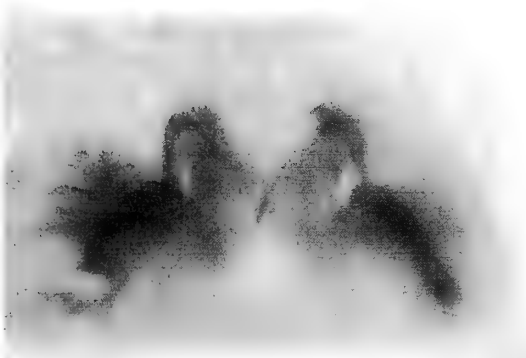

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Fig. 21. Epigynum, ventral view, after separating and clearing.
Fig. 22. Vulvae, dorsal view.

Acknowledgments

I am grateful to Prof. Dr. Tigani M. H. Allam, the director of the Natural History Museum, University of Khartoum, who invited me to visit Sudan (23 July - 10 August 2008). His generosity, his kind help and his wide scope of both culture and science are unforgettable. My sincere thanks are due to all Sudanese colleagues who helped me during my visit to Sudan and made me eager to study its fauna.

I am grateful too to Prof. Dr. Mashaal A. Saleh, the dean of Faculty of Science, Kordufan University who made my visit to Kordufan possible and hosted me there.

My sincere thanks are due to my Sudanese friends Fathy, Serr, Sara, and Aasem who helped me much during my visit to Kordufan.

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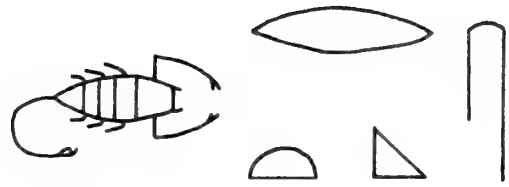

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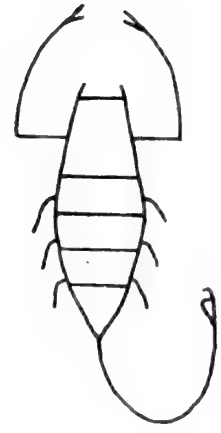

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Leiurus abdullahbayrami (Scorpiones: Buthidae), a new species for the scorpion fauna of Syria

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Abstract

This study reports second *Leiurus* species recorded first time for the Syrian scorpion fauna. The scorpion *Leiurus abdullahbayrami* Yağmur, Koç & Kunt, 2009, was recorded from Al-Hasakah Province and Homs Province. Morphology, ecological conditions and geographical distribution of the species are discussed.

Keywords: *Leiurus abdullahbayrami*, distribution, scorpions, Syria.

Introduction

Little has been recently published on the scorpion fauna of Syria. Scorpion species of 3 families, Buthidae, Euscorpiidae and Scorpionidae, are represented in Syria under consideration. It is relatively diverse, 11 genera with 21 species being known with certainty. These species are: *Androctonus amoreuxi* (Audouin, 1825); *A. bicolor* Ehrenberg, 1828; *A. crassicauda* (Olivier, 1807); *Birulatus astartiae* Stathi & Lourenço, 2003; *Buthacus leptochelys* (Ehrenberg, 1829); *B. macrocentrus* (Ehrenberg, 1828) (= *B. tadmorensis*); *Compsobuthus carmelitis* Levy, Amitai & Shulov, 1973; *C. jordanensis* Levy, Amitai & Shulov, 1973; *C. longipalpis* Levy, Amitai & Shulov, 1973; *C. matthiesseni* (Birula, 1905); *C. schmiedeknechti* Vachon, 1949; *C. werneri* (Birula, 1908); *Hottentotta judaicus* (Simon, 1872); *H. saulcyi* (Simon, 1880); *Leiurus quinquestriatus* (Ehrenberg, 1828); *Mesobuthus eupeus* (C.L. Koch, 1839); *M. nigrocinctus* (Ehrenberg, 1828); *Orthochirus innesi* Simon, 1910 (Buthidae); *Nebo hierichonticus* (Simon, 1872); *Scorpio maurus* Linnaeus, 1758 (Scorpionidae); and *Euscorpius mingrelicus* (Kessler, 1874) (Euscorpiidae) (Kinzelbach, 1985; Khalil, 1997; Kabakibi *et al.*, 1999; Fet & Lowe, 2000; Stathi & Lourenço, 2003; Kovařík, 2003; Kovařík, 2004; Kaltsas *et al.*, 2008). Of these, only *Birulatus astartiae* is endemic for

Syria (Stathi & Lourenço, 2003). Since humid habitats are scarce in Syria, *Euscorpius mingrelicus* record is dubious.

Leiurus (Buthidae) in Syria is still poorly known and its geographic range remains rather uncertain. Previously, only *Leiurus quinquestriatus* (including one subspecies, *L. quinquestriatus hebraeus*) was known from Syria (Vachon, 1966; Levy & Amitai, 1980; Kabakibi & Khalil, 1997; Kabakibi *et al.*, 1999; Kaltsas *et al.*, 2008). However, *Leiurus abdullahbayrami* Yağmur, Koç & Kunt, 2009, is the second species of *Leiurus*, recorded for the first time, from Syria.

Material and Methods

Field studies were performed during the period between 30.06.2009 and 30.09.2009 in central and northeastern Syria (Al-Hasakah Province, Homs Province). Three specimens (one male and two females) have been collected under stones in daytime, and fixed in 70% ethanol. The specimens were examined under binocular microscope. Measurements (in mm) were taken with a 0.01 mm accurate Stainless Electronic Digital caliper using the methods described by Stahnke (1970).

In addition, 40 specimens of *Leiurus* were examined that had been collected from southern Syria between 1995-1996 and deposited in the zoology collection of Damascus University.

Abbreviations

MTAS: Museum of Turkish Arachnology Society, Ankara, Turkey.
ZCDU: Zoology Collection of Damascus University, Damascus, Syria.

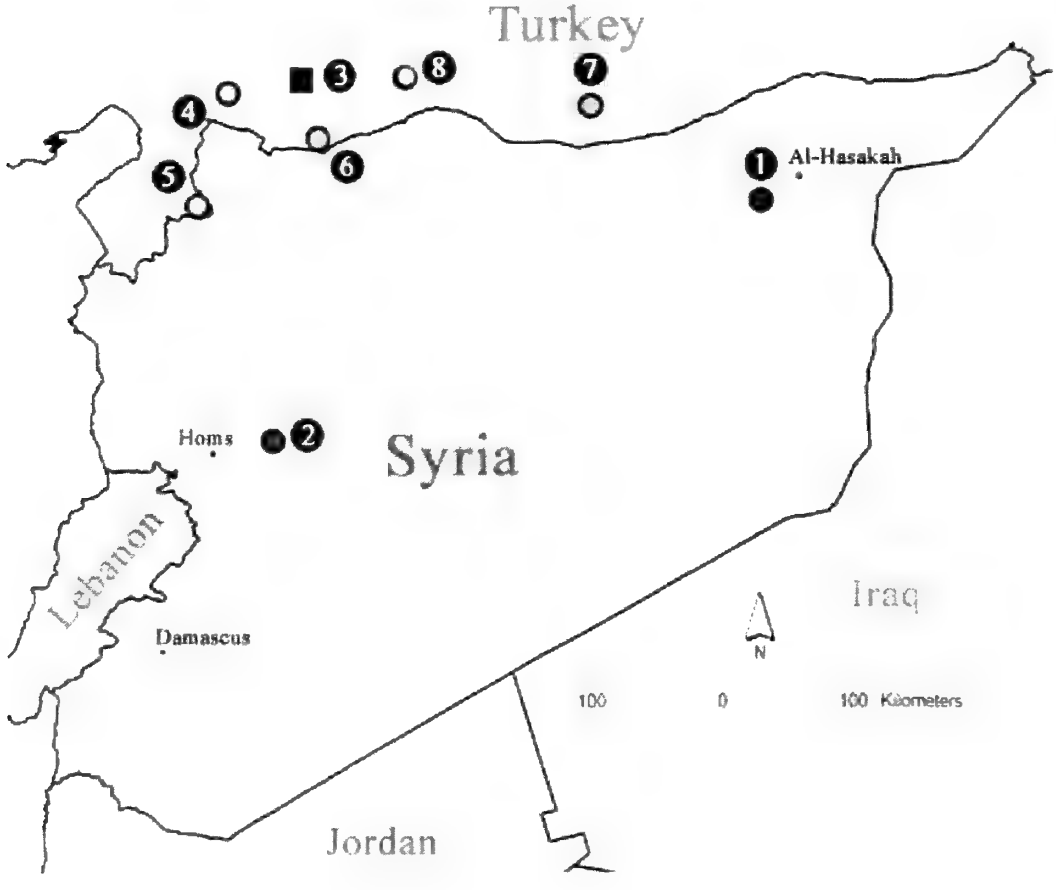

Fig. 1. Sampling localities of *Leiurus abdullahbayrami* in Syria and Turkey. [1-8: see Results]

Results

Material Examined: 1. 1♀, 1♂. Al-Hasakah Province, eastern Abd Al-Aziz Mountain, 40 km SW Al-Hasakah, 12.07.2009, 36°23′20″N, 40°22′01″E, 674 m a.s.l., N. Khalil leg. (MTAS), **2.** 1♀. Homs Province, Al-Mukharram Region, Al-Sankari Village, 04.07.2009, 34°48′46″N, 37°09′32″E, 655 m a.s.l., N. Khalil leg. (MTAS). In addition to 40 specimens of *Leiurus quinquestriatus* from southern Syria are deposited at the ZCDU.
Literature Records: 3. Turkey, Gaziantep Province, Şahinbey District, Sarısalkım Village, 37°05′46.5″N, 37°16′51.3″E, 1029 m a.s.l. (Type locality), **4.** Turkey, Gaziantep Province, İslahiye District, 36°54′00″N, 36° 44′43″E, 487 m a.s.l., **5.** Turkey, Hatay Province, Reyhanlı District, Oğulpınar Village, 36°15′13″N, 36°40′12″E, 316 m a.s.l., **6.** Turkey, Kilis Province, Elbeyli District, Çamurluhöyük mound, 36°39′36″N, 37°28′31″E, 525 m a.s.l., **7.** Turkey, Şanlıurfa Province, Harran District, Şuayipşehir Village, 36°52′36.9″N, 39°22′18.9″E, 506 m a.s.l., **8.** Turkey, Şanlıurfa Province, Birecik District, Yukarı Habib Village, 37°08′49″N, 37°59′56″E, 670 m a.s.l. (Yağmur *et al*., 2009).

Description of *Leiurus abdullahbayrami*: The background colour of prosoma, mesosoma and segment V of metasoma is black, appendages are yellowish. Centrolateral and posteriomedian carinae fused lyre-shaped form. Tergites I and II bear five carinae. Trichobothrium *db* on the fixed finger of the pedipalp is located between trichobothria *est* and *esb*. Fixed finger with 11 oblique granule rows. Movable fingers of pedipalps with 4 distal and 11 oblique granule rows. The ventrolateral carinae of metasomal segment V are armed with large and rounded granules. The anal arch comprises 3 rounded lobes laterally and 6 small lobes posteriorly. Sternites IV-VI are smooth. The pedipalp average length/width ratio is 4.54 in the male and 4.49 in the two females. Leg I-IV with short spines on the ventral side of tarsus. Basitarsus of legs I-III with bristlecombs, basitarsus of legs IV without bristlecombs. Measurements of specimens of *L. abdullahbayrami* from Al-Sankari Village and Abd Al-Aziz Mountain are given in Table (1). Pectinal tooth counts in male 37-38, in females 30-31 and 34-34.

Habitat: This species was found in semi-arid regions on dry calcareous soils, with scattered short vegetation, far from human settlements. It is generally found in steppe and rocky areas (Figs. 2 & 3). The specimens were found in small holes under stones. *L. abdullahbayrami* was observed to share the same habitat in Al-Hasakah Province with *Androctonus crassicauda* and in Homs Province with *Scorpio maurus*.

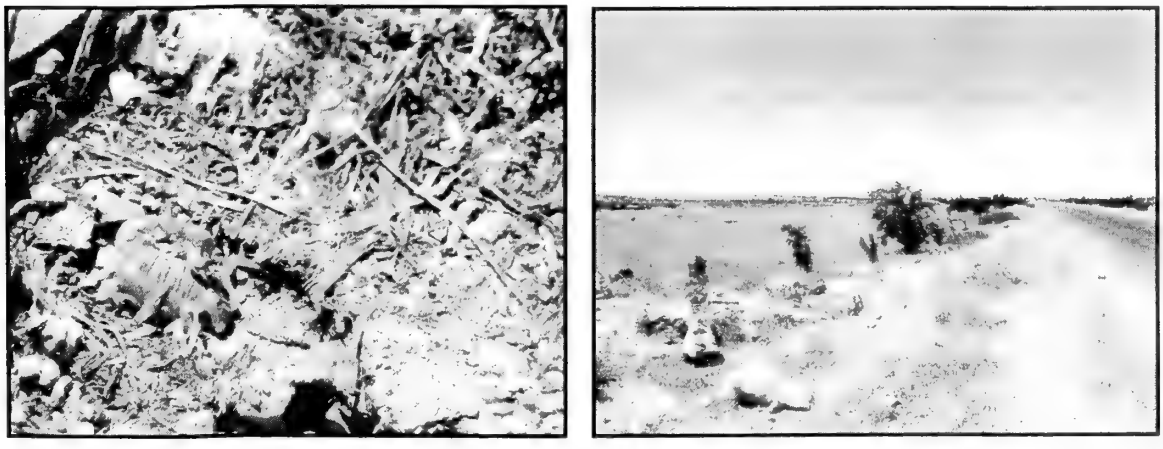

Fig. 2. *Leiurus abdullahbayrami* habitat (Al-Sankari Village, Homs Province).

Table 1. Measurements (in mm) of *Leiurus abdullahbayrami* specimens from Syria.

		Female from Al-Sankari, Homs	Female from Abd Al-Aziz Mountain	Male from Abd Al-Aziz Mountain
Total	length	64.25	67.70	55.73
Carapace	length	7.17	8.42	6.82
	width	7.16	8.25	6.69
Mesosoma	length	22.99	18.82	13.87
Metasoma	length	34..49	41.95	35.37
Segment I	length	4.89	5.16	4.49
	width	4.17	4.85	3.97
Segment II	length	5.07	6.12	5.53
	width	3.73	4.39	3.62
Segment III	length	5.81	6.44	5.68
	width	3.60	4.23	3.55
Segment IV	length	6.21	7.02	6.35
	width	3.55	3.94	3.33
Segment V	length	7.56	8.59	7.68
	width	3.22	3.87	3.06
Telson	length	6.28	9.14	7.83
	width	2.94	3.86	3.39
	depth	2.67	3.33	2.54
Vesicule	length	4.51	5.72	4.48
Sting	length	3.20	3.55	3.40
Pedipalp				
Femur	length	5.54	7.20	5.77
	width	1.75	2.75	1.72
	depth	2.13	1.69	1.37
Patella	length	6.32	7.17	6.46
	width	2.43	3.41	2.40
	depth	1.90	2.32	2.76
Chela	length	10.49	12.78	10.72
	width	2.23	2.95	2.36
	depth	1.93	2.54	2.04
Movable finger	length	6.88	8.40	7.81
Fixed finger	length	5.89	7.06	6.55
Manus	length	3.70	4.22	4.42

Discussion

Leiurus abdullahbayrami was originally described from Turkey (Yağmur *et al.*, 2009). It was recorded very close to Turkish-Syrian border. Therefore, it is suggested to be present in Syria. Levy & Amitai (1980) recorded *L. quinquestriatus* 60 km east of

Homs and east of Palmyra. These two localities are very close to our Al-Sankari (Homs) record of *L. abdullahbayrami*. Therefore, it is possible that *L. abdullahbayrami* from Homs region was misidentified by Levy & Amitai (1980) as *L. quinquestriatus*.

The colouration patterns indicated that three different populations of *L. abdullahbayrami* occur in Turkey (Yağmur *et al.*, 2009). The prosomal and mesosomal colouration of our specimens which were collected from Al-Hasakah is grey and fits to colouration pattern of Şanlıurfa population of Turkey (Fig. 1, No. 7). Al-Hasakah locality is 130 km far from the easternmost population of Turkey (Şanlıurfa Province, Harran District, Şuayipşehir Village), so it is not surprising to find this species from Al-Hasakah locality.

The colouration of Al-Sankari Village (Homs) specimen is black on prosoma with yellow spots and black on mesosoma. Its colouration pattern fits to Gaziantep and Kilis population of Turkey (Fig. 1, No. 6). Homs locality is 200 km far from the southernmost locality of this population (Kilis Province, Elbeyli District) and some sandy soil begins to occur in south and east parts of Homs Province. On the other hand, Turkish populations of *L. abdullahbayrami* were not recorded in sandy area. In addition, the average total precipitation there is less than 150 mm annually. However, the species was observed on various altitudes in Syria and Turkey (506-1535 m a.s.l.). The Al-Sankari Village (Homs) record extends the distribution of *L. abdullahbayrami* to more southern area, and perhaps this locality is the southern border of distribution.

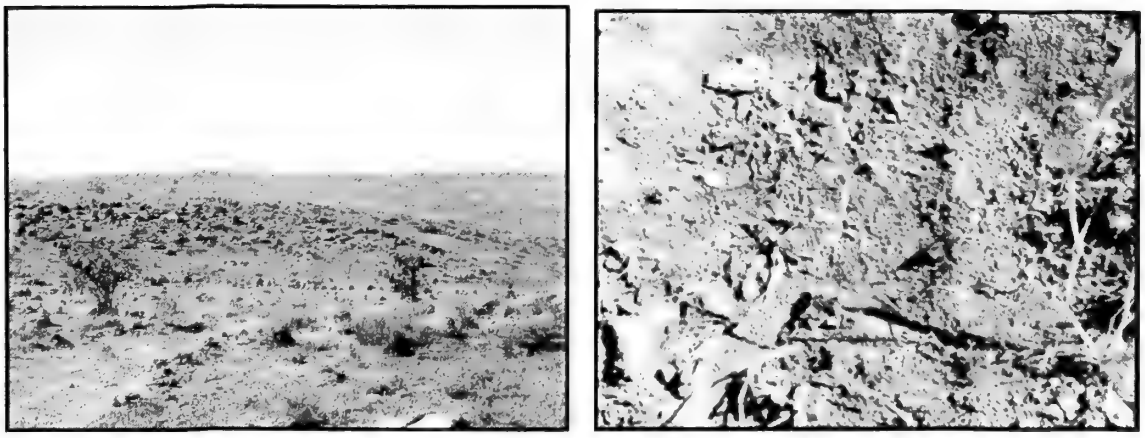

Fig. 3. *Leiurus abdullahbayrami* habitat (Abd Al-Aziz Mountain, Al-Hasaka Province).

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The first record of genus *Argyrodes* Simon, 1864 (Araneae: Theridiidae) from Turkey

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Abstract

The theridiid spider *Argyrodes argyrodes* (Walckenaer, 1842) is recorded for the first time from Turkey. This represents a new spider genus and species record for Turkey. The characteristic features and drawings of both sexes are presented in this study.

Keywords: *Argyrodes argyrodes*, Theridiidae, new record, Turkey.

Introduction

The family Theridiidae Sundevall, 1833 is one of the most diverse spider families, with 2297 species in 112 genera (Platnick, 2010). Spiders of the subfamily Argyrodinae are well known with their kleptoparasitic behaviour to the web-building spiders. Argyrodinae comprises six genera, *Argyrodes* Simon 1864, *Ariamnes* Thorell 1869, *Faiditus* Keyserling 1884, *Neospintharus* Exline 1950, *Rhomphaea* L. Koch 1872, and *Spheropistha* Yaginuma 1957. The latter five genera have been recently removed from synonymy with *Argyrodes* (Agnarsson, 2004).

Argyrodes Simon, 1864 is represented by 92 species and 5 subspecies and widespread throughout the tropics and warmer regions of the world (Platnick, 2010). Members of the genus are either kleptoparasitic or araneophagic, usually found in webs of larger spiders and they hang in the web upside-down with the front pairs of legs folded

(Exline & Levi, 1962; Levi & Levi, 1962). Males of many species of *Argyrodes* have bizarre projections or other modifications of cephalic region and clypeus. Some bear tubercles on the abdomen, or the abdomen is extended beyond the spinnerets (Exline & Levi, 1962). Only a single species, *Argyrodes argyrodes* (Walckenaer, 1842), is known in the Mediterranean region (Levy, 1985; Platnick, 2010). So far, 62 species of Theridiidae belonging to 21 genera have been recorded in Turkey, but no member of the *Argyrodes* has been recorded until now (Bayram *et al.*, 2010). Recently, only one argyrodine species, *Neospintharus syriacus* (O.P.-Cambridge, 1872), has been recorded from Turkey (Kaya *et al.*, 2009). This work adds *A. argyrodes* as a new species and genus record to the theridiid spider fauna of Turkey.

Material and Methods

The spider specimens were collected from two localities in Turkey (Fig. 1):
Locality 1: İzmir [Karaburun District, 1 km North of Parlak Village (38°36'N, 26°23'E, 110 m)]: One female and one male specimens were collected from the webs of *Araneus circe* (Savigny, 1825) (Araneidae) on 06.06.2009, E.A.Yağmur leg.
Locality 2: Antalya [Anamur - Gazipaşa road, 30 km to Gazipaşa (36°06'N, 32°31'E, 423 m)]: One female was collected from a web of Araneidae on 15.06.2009, R.S. Kaya leg.

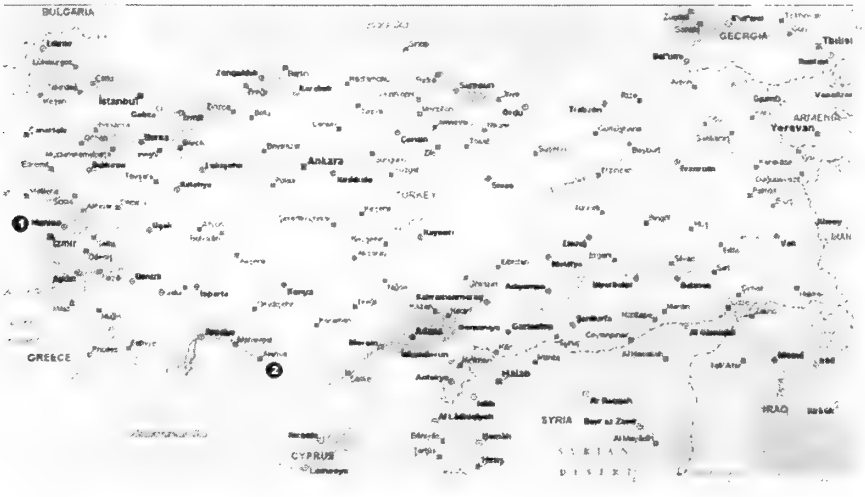


Fig. 1. The localities from which the specimens were collected:
1. İzmir (Karaburun District), 2. Antalya (Anamur – Gazipaşa).

The identification was made using the descriptions of Exline & Levi (1962: figs. 151-153), Levy (1985: figs. 15-28), Agnarsson (2004: figs. 31 A, B, C) and Agnarsson *et al.* (2007: figs. 52-53). The drawings were made by the means of a camera lucida attached to a Zeiss Stemi SR microscope and the measurements were taken by Leica M205 C stereo microscope. Measurements were taken from the dorsal side of the palps and legs. Colouration was described based on alcohol-preserved specimens. The samples were preserved in the collection of the Zoological Museum, Department of Biology, Uludağ University, Bursa, Turkey.

The taxonomy follows Platnick (2010) and the terminology of male palpus follows Levy (1985), Agnarsson (2004) and Agnarsson *et al.* (2007). The abbreviations used in the description are as follows: ALE = anterior lateral eye; AME = anterior median eye; PLE = posterior lateral eye; PME = posterior median eye.

Results

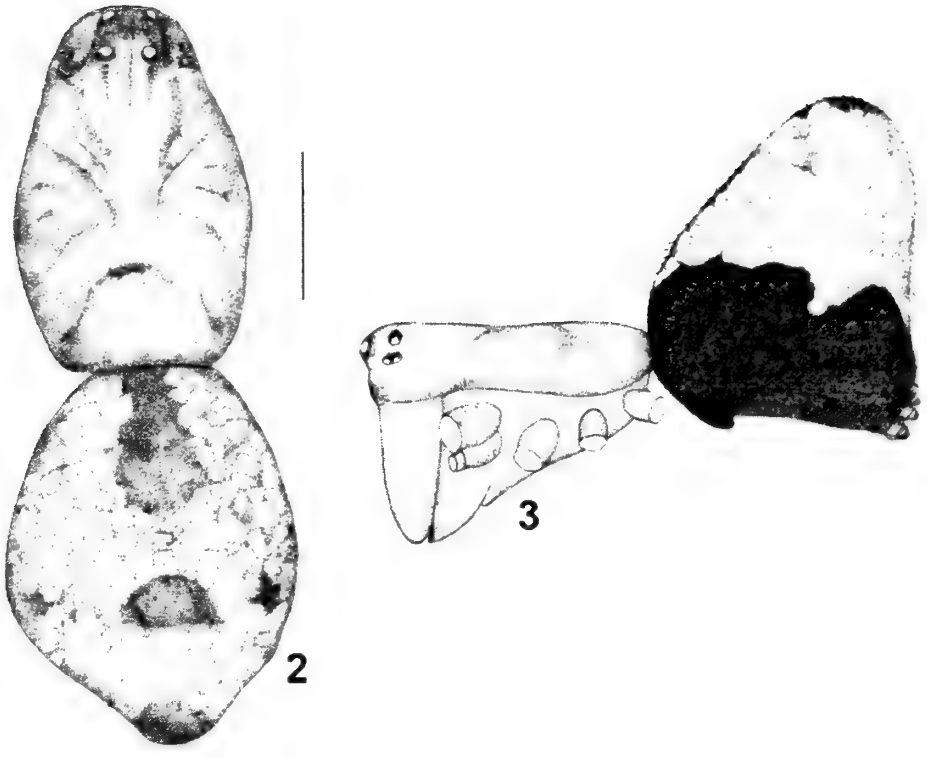
Family **Theridiidae** Sundevall, 1833
Genus ***Argyrodes*** Simon, 1864
Argyrodes argyrodes (Walckenaer, 1842)
Linyphia argyrodes Walckenaer, 1842, Histoire naturelle des Insectes Aptères, vol. 2, p. 282, type locality was uncertain and designed as Algeria by Exline & Levi, 1962 (type specimen lost).
For more references, see Platnick (2010).

Description (Figs. 2-8)
Female: General body measurements were given in Table (1). Carapace elongated and flattened. Carapace dark brown, dusky brown along margins and marginal line black. Ocular region high and eyes on a small cephalic projection. Ocular region and thoracic region with black lines. AME and ALE larger than PME and PLE; PLE almost touching. Anterior and posterior rows of eyes strongly recurved. Clypeus brownish and clypeus height about 4.5-5 times of the anterior lateral eye diameter. Chelicerae small, brownish without spots. Labium wider than long; gnathocoxae longer than wide. Labium and endites dark brown. Sternum longer than wide, triangular shaped, dark brown without spots and posterior end blunt. Legs slender, pale yellow with some dark annulations. Legs length formula: I-II-IV-III; first leg 1.6 times longer than second one. For legs and palp measurements see Table (2). Abdomen cone-shaped, higher than long and ending with a single tip. Dorsum of the abdomen grey, mottled white or with silvery patches, four black marks present. The cardiac mark is black and distinct (Figs. 2-3). Venter dusky brown to black with a few silver pigments anterior to the spinnerets.

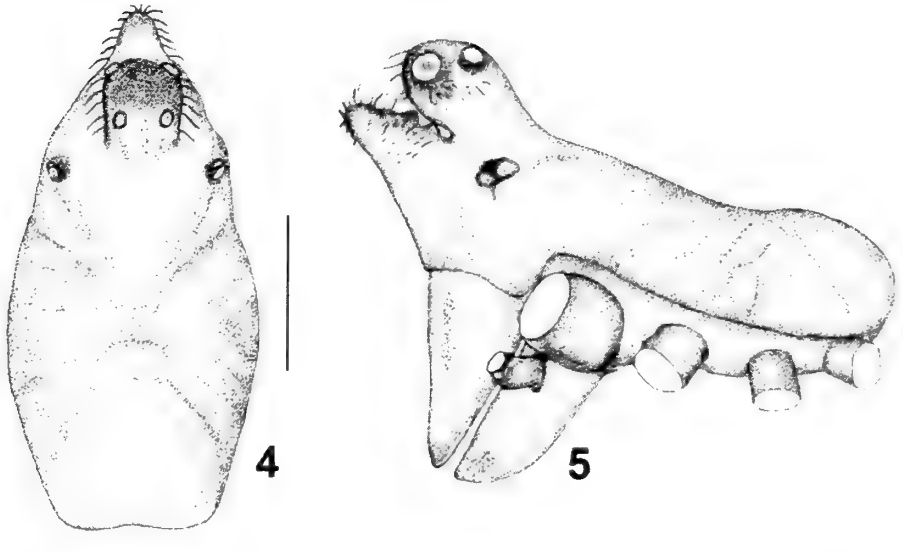
Male: As female, except for the following: Carapace darker, cephalic region higher than in female, male has a slimmer and lower abdomen, legs darker, thinner and longer than in female. The male distinctly differs in the form of carapace, both large clypeal and cephalic projections. Clypeal and cephalic projections dorsally furnished with a brush of short hairs and cephalic projection bears the median eyes. Median eyes on an elevated area and lateral eyes located below their level (Figs. 4-5). Body, leg and palp measurements were given in Tables (1 & 2).

Table 1. Body measurements (in mm) of *Argyrodes argyrodes* (Walckenaer, 1842). L = length, W = width, TBL = total body length.

	Carapace L	Carapace W	Abdomen L	Abdomen W	TBL
Male	1.77	0.9	1.32	1.0	3.09
Female	1.2 – 1.32	0.77 – 0.9	0.87 – 1.5	0.82 – 2.0	2.07– 2.82



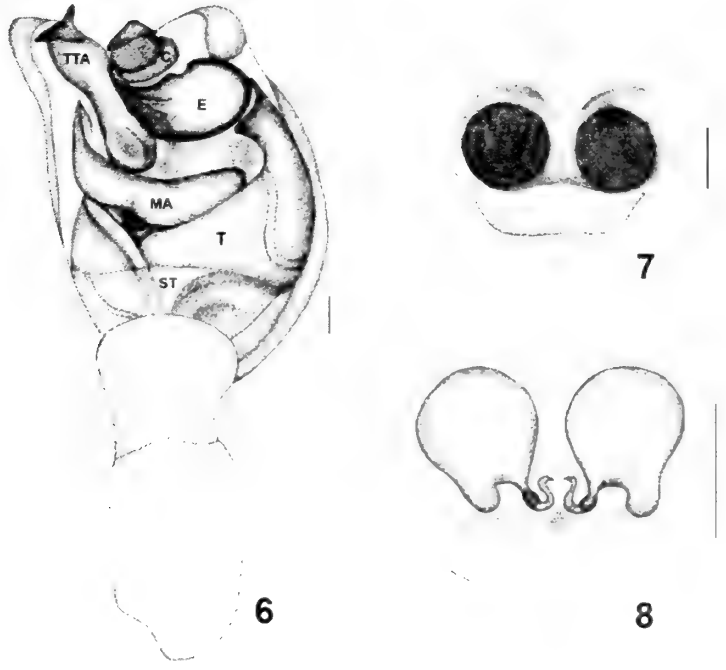
Figs. 2-3: Female habitus of *Argyrodes argyrodes* (Walckenaer, 1842).
2. dorsal view. 3. lateral view. Scale line: 0.5 mm.



Figs. 4-5: Male carapace of *Argyrodes argyrodes* (Walckenaer, 1842).
4. dorsal view. 5. lateral view. Scale line: 0.5 mm.

Table 2. Legs and pedipalp measurements (in mm) of male and female specimens of *Argyrodes argyrodes* (Walckenaer, 1842).

		femur	patella	tibia	metatarsus	tarsus
Male	Pedipalp	0.87	0.42	0.12	–	0.7
	Leg I	2.8	0.5	2.45	2.02	1.02
	Leg II	1.75	0.4	1.1	1.37	0.85
	Leg III	0.95	0.32	0.52	0.6	0.47
	Leg IV	1.6	0.4	0.97	1.05	0.6
Female	Pedipalp	0.1 –0.37	0.12 – 0.17	0.17 – 0.2	–	0.32 – 0.35
	Leg I	2.1 – 2.37	0.4 – 0.47	1.65 – 1.97	1.7 – 1.87	0.82 – 0.95
	Leg II	1.22 – 1.42	0.37 – 0.4	0.85 – 0.97	1.02 – 1.1	0.65 – 0.67
	Leg III	0.77 – 1.0	0.27 – 0.3	0.37 – 0.42	0.57 – 0.62	0.32 – 0.47
	Leg IV	1. 2 – 1.4	0.35 – 0.4	0.6 – 0.65	0.9 – 0.95	0.52 – 0.55



Figs. 6-8: *Argyrodes argyrodes* (Walckenaer, 1842). 6. Male left palpus, ventral view. 7. Female epigyne, ventral view. 8. Female vulvae, dorsal view.
Abbreviations: C = conductor, E = embolus, MA = median apophysis, ST = subtegulum, T = tegulum, TTA = theridiid tegular apophysis. Scale lines: 0.1 mm.

Male palp (Fig. 6)**:** Cymbium blackish brown, rather ovoid, femur slender and two times longer than patella, patella swollen, median apophysis large and long, conductor C-shaped, embolus large and with three branches, one longer, the second short and pointed, the third one is tight folding and intertwined with conductor, theridiid tegular apophysis long and elongated with a dark line basally and triangular shaped apically.

Epigynum and vulvae (Figs. 7-8)**:** Epigynum has a sclerotized broad dark plate with two spherical spermathecae. Vulvae consist of two brown coloured spermathecae, each spermatheca is narrower posteriorly. Ducts are parallel and located between the spermathecae.

Comment: Adult male and females of *A. argyrodes* were collected in June.

Habitat and Distribution

Argyrodes is often found in the webs of other spiders, especially in webs of *Nephila*, *Gasteracantha*, *Argiope*, sometimes *Latrodectus* and others. Walckenaer (1842) collected *A. argyrodes* while the spider was hanging down from oak tree: "prise le 4 Septembre, tombée d'un chêne secoue dans les bois de chênes du comté de Burke". O.P.-Cambridge (1872) collected *A. argyrodes* on webs of *Cyrtophora* (Araneidae). We collected our two samples from İzmir locality on the web of *Araneus circe* (Savigny, 1825). The other female was collected from web of Araneidae, from Antalya locality, while *A. argyrodes* was hanging in the web upside-down with the front pairs of legs folded.

A. argyrodes is distributed in Mediterranean countries, Canary Islands, West Africa, Seychelles Islands (Levy, 1985; Platnick, 2010). The Turkish specimens represent the north easternmost record of its known zoogeographical range. Therefore, the recording of this species from Turkey widens its distribution in the Mediterranean region.

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New records of ground spiders from Turkey (Araneae: Gnaphosidae)

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Abstract

Three ground spider species are recorded for the first time from Turkey: *Leptodrassus albidus* Simon, 1914, *Nomisia excerpta* (O. P.-Cambridge, 1872) and *Zelotes scrutatus* (O. P.-Cambridge, 1872). Diagnostic descriptions and photos of general habitus and male palpal organ of *Leptodrassus albidus* are provided. It is the first record of genus *Leptodrassus* from Turkey.

Keywords: Gnaphosidae, Araneae, new records, Turkey.

Introduction

The spider fauna of Turkey, despite of its outstanding zoogeographical situation, is rather poorly studied compared to other regions of the world. However, Gnaphosidae is the most studied spider family in Turkey but it is still not adequately studied. Gnaphosidae is one of the big spider families, which contains worldwide 2075 species from 112 genera (Platnick, 2010). In Turkey, 120 species of 29 genera have so far recorded (Seyyar *et al.*, 2008, 2009; Kovblyuk *et al.*, 2009; Panayiotou *et al.*, 2010). Here, we record genus *Leptodrassus* Simon, 1878 and three gnaphosid species for the first time from Turkey.

Material and Methods

In this study, the specimens were obtained by manual collection and from under stones in west and north of Turkey. The specimens were preserved in 70% ethanol. Examined specimens were deposited in the Arachnology Museum of Niğde University (NUAM). The identification and photos were made by means of a SZ61 Olympus stereomicroscope.

Abbreviations used: ALE = anterior lateral eye; AME = anterior median eye; C = conductor; E = embolus; OL = opisthosoma length; OW = opisthosoma width; PL = prosoma length; PME = posterior median eye; PW = prosoma width; r = retrolateral process of tegulum; RTA = retrolateral tibial apophysis; TL = total length; v = ventral process of tegulum; VA = ventral apophysis. All measurements are in millimetres.

Fig. 1. *Leptodrassus albidus* Simon, 1914: Male palp, A. ventral view, B. prolateral view, C. retrolateral view; D. Male habitus.

Results

The general characteristics of Turkish specimens of both *Nomisia excerpta* (O. P.-Cambridge, 1872) and *Zelotes scrutatus* (O. P.-Cambridge, 1872) are similar to other Mediterranean congeneric species (Chatzaki *et al.*, 2002). The *Leptodrassus albidus* Simon, 1914 specimens are similar to Greek specimens description and drawings (Chatzaki *et al.*, 2002).

Leptodrassus albidus Simon, 1914
Material: Turkey, Denizli Province, Çivril district, surrounding of Işıklı lake, (38°16'077"N, 29°55'498"E), 827 m, 2♂♂, 18.IX.2008, Leg. M. Cemal Darılmaz. Gümüşhane Province, Şiran District, 1♂, 18.VI.2008, Leg. Kemal Kurt. The spiders were found under stones.

Description: Measurements, TL: 4.5-4.7; PL: 2.0-2.1; PW: 1.35-1.36; OL: 2.5-2.7; OW: 1.45-1.47. Carapace slightly narrowed in front; pale yellow and its ocular area darker; cephalic area slightly elevated. Thoracic groove indistinct in the middle. Anterior row of eyes nearly straight, posterior row slightly recurved in dorsal view; AME relatively large and touching ALE, lateral eyes smallest, circular and touching each other; PME oval and bigger than lateral eyes, separated by more than one diameter. Chelicerae, labium and endites nearly of the same colour of the carapace. Chelicerae with small fangs, with two big retromarginal teeth. Labium triangular in shape. Endites rectangular. Sternum heart-shaped, same colour as carapace, bordered by thin brown strip. Abdomen yellow to brown and without dorsal scutum. Legs yellowish. Palp with 3 ventral spines. Retrolateral tibial apophysis dark and blade-like process. Ventral tibial apophysis light and small. Tegulum with two processes. Conductor small and transparent. Embolus long, curved and disappears at apex. Median apophysis absent (Fig. 1).

Comment: Adult males of this species were collected in September. This species is rare in Turkey, because we did not find it before during our trips in different parts of Turkey. *L. albidus* occurs in Mediterranean countries: Spain, France, Italy, Malta, Greece and Israel. Recording of this species from Turkey widens its distribution. Adult females have not yet been collected from Turkey.
World distribution: Spain to Crete, Azores and Israel (Platnick, 2010; Levy, 2009).

Nomisia excerpta (O. P-Cambridge, 1872)
Material: Turkey, Afyon Province, Çay district, Çayıryazı village, (38°22'468"N, 30°44'550"E), 1112 m, 1♂, 3♀♀, 27.VI.2007, Leg. M. Cemal Darılmaz. The spiders were found under stones.
Description and drawings: see Chatzaki *et al.* (2002); Levy (1995).
World distribution: Canary Islands, Tunisia, Crete, Israel (Platnick, 2010).

Zelotes scrutatus (O. P.-Cambridge, 1872)
Material: Turkey, Denizli Province, Honaz district Yukarı dağdere village (37°46'621"N, 29°21'901"E), 959 m, 2♂♂, 3♀♀, 07.V.2008, Leg. M. Cemal Darılmaz. The spiders were found under stones.
Description and drawings: see Chatzaki *et al.* (2003); Levy (1998).
World distribution: Africa to Central Asia (Platnick, 2010).

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Serket (2010) vol. 12(1): 17-22.

Additional notes on crab spider fauna of Turkey (Araneae: Thomisidae and Philodromidae)

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Abstract

The spider species *Xysticus cor* Canestrini, 1873 and *Philodromus pulchellus* Lucas, 1846 of families Thomisidae and Philodromidae are recorded from Turkey for the first time. Photographs of genitalia and general habitus of these species are presented.

Keywords: Thomisidae, Philodromidae, Araneae, new records, Turkey.

Introduction

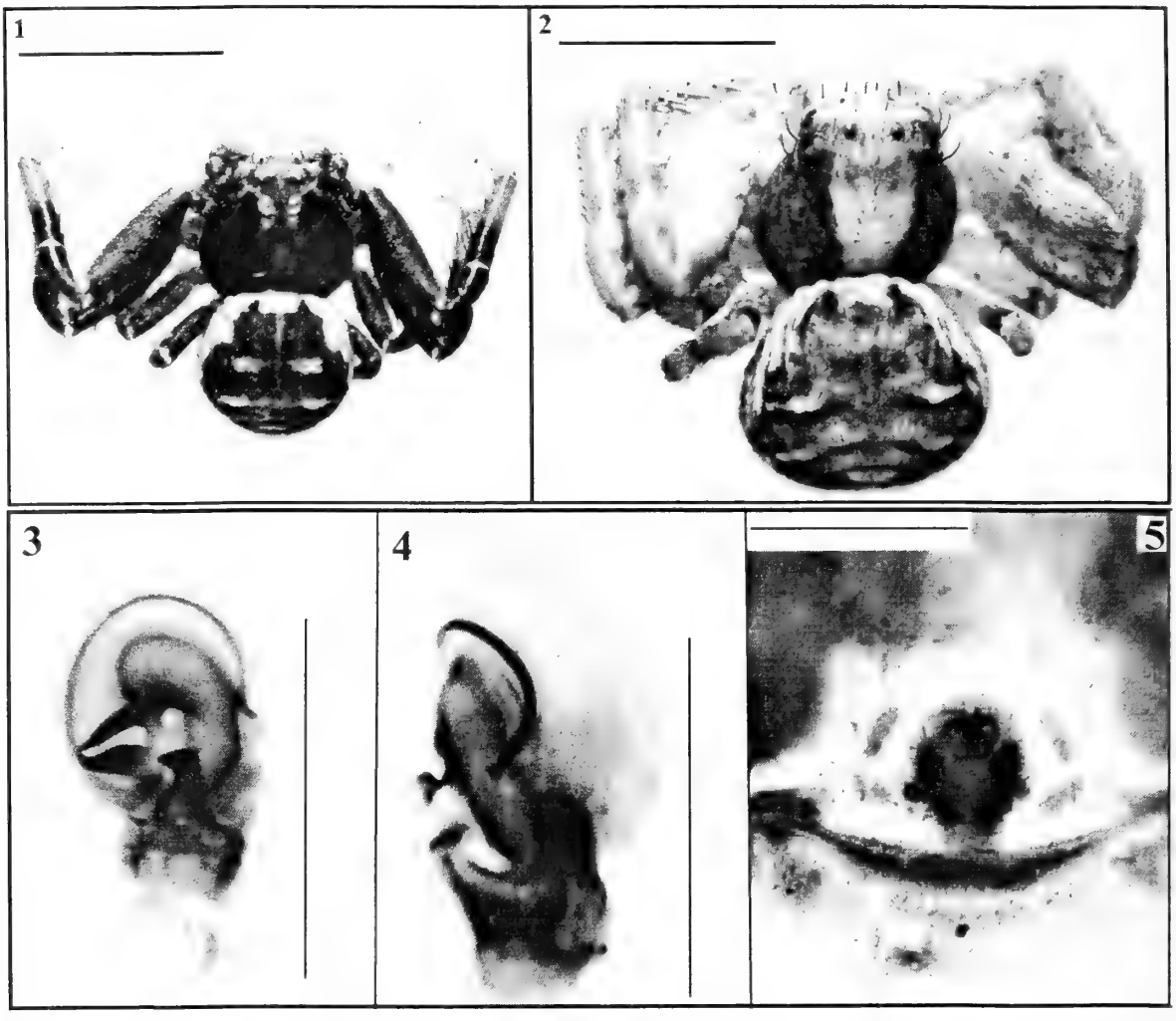
The Thomisidae, commonly called "crab spiders", is a big spider family comprising 173 genera and 2101 species worldwide (Platnick, 2010), of which 78 species of 12 genera are known from Turkey (Demir, 2008b; Demir *et al.*, 2008a, b, 2009a, b; Bayram *et al.*, 2008). The great diversity of form and colour shown by the Thomisidae relates to their exploitation of a wide variety of habitats and their often remarkable capacity for camouflage, sometimes even to the extent of slowly changing colour. The majority of species are rather crab-like in appearance, have the first two pairs of legs longer than the rest, and can walk sideways, as well as forwards and backwards (Roberts, 1995).

Philodromidae or "running crab spiders" is a family of laterigrade, i.e. sideways walking, spiders with essentially equal length of all legs. Philodromids have been regarded as a subfamily of Thomisidae by early authors, but since the detailed study of Homann (1975) their family status is generally accepted (see Platnick, 2010). They are swift runners and actively climb about plants, possibly helped by their legs scopulae and claw tufts. For the most part, they live on vegetation and are often collected by sweeping, the foliage in fields and meadows (Levy, 1977). Worldwide, 533 species of Philodromidae have been described in 29 genera (Platnick, 2010), with only 29 species belonging to 3 genera recorded from Turkey (Demir, 2008a; Demir *et al.*, 2010).

In this study, we present two new records for the Turkish araneofauna.

Material and Methods

In this study, the specimens were collected from eastern Mediterranean region of Turkey. The specimens were preserved in 70% ethanol. The identification was made by means of a SZX61 Olympus stereomicroscope. Examined specimens were deposited in the GUZM (Zoology Museum of Gazi University) and NUAM (Arachnology Museum of Niğde University).



Figs. 1-5: *Xysticus cor* Canestrini, 1873. 1-2. General habitus. 1. Male. 2. Female. 3-4. Left male palp. 3. Ventral view. 4. Retrolateral view. 5. Epigyne (ventral view). Scales: 1-2: 2 mm, 3-5: 0.5 mm.

Results

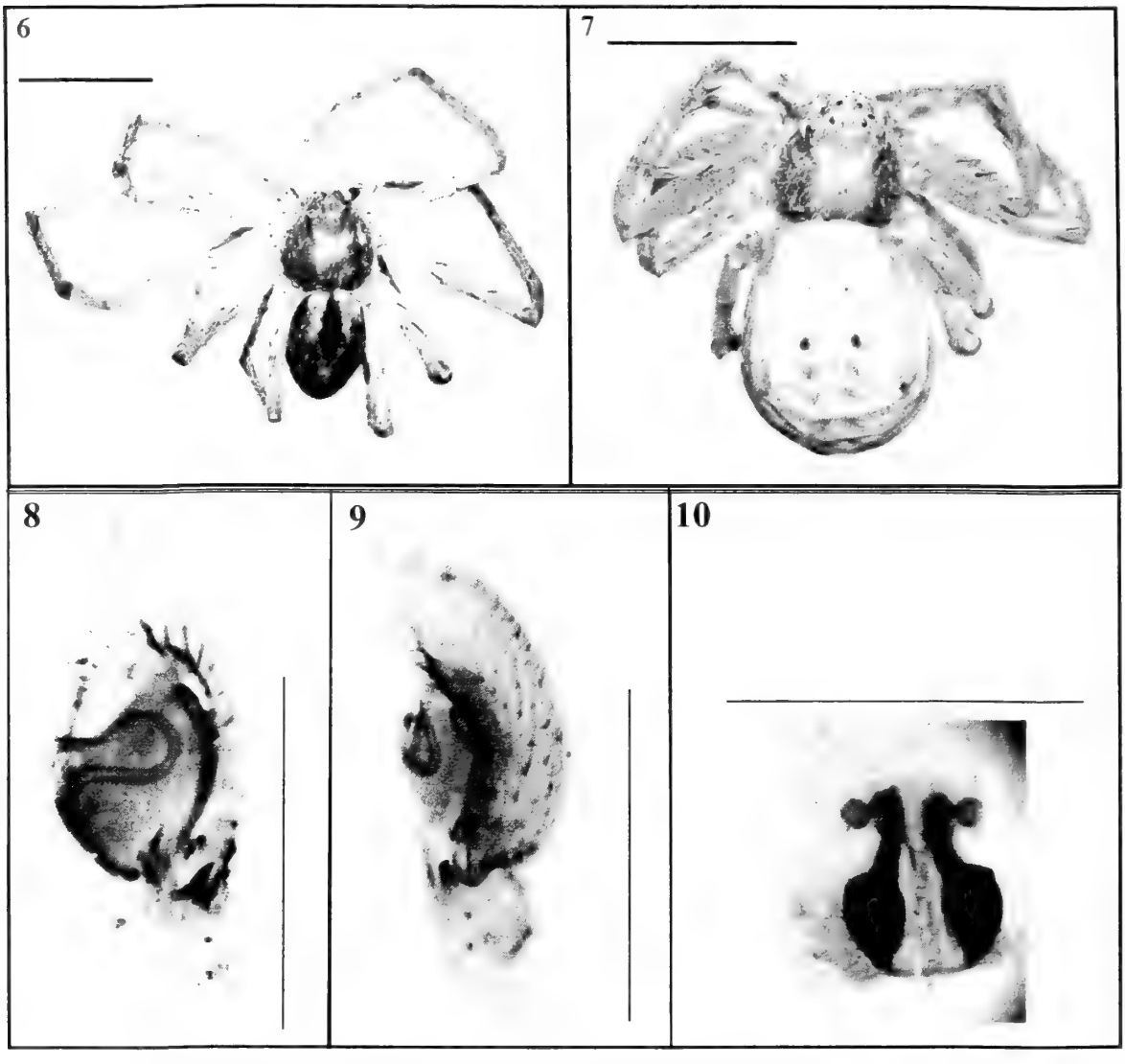
Xysticus cor Canestrini, 1873 (Figs. 1-5)

Material examined: TURKEY: ***Adana province,*** 1♀ (NUAM), Aladağ, Meydan Plateau 1, 37°31'N, 35°23'E, 925m, 19.06.2007, 1♀ (NUAM), Darılık village, 37°35'N, 35°27'E, 950m, 19.06.2008, 1♀ (NUAM), Büyüksofulu village, 37°33'N, 35°09'E, 937m, 19.06.2008, 1♂ 2♀♀ (GUZM), Eğner village, 37°25'N, 35°26'E, 242m, 29.04.2009; 1♂ 1♀ (NUAM), Tufanbeyli, Bozgüney village, 38°15'N, 36°20'E, 1584m, 12.05.2008, 1♂ 1♀ (NUAM), İğdebel village, 38°16'N, 36°22'E, 1621m, 12.05.2008, 1♀ (NUAM), Kayırcık village, 38°09'N, 36°17'E, 1325m, 12.05.2008, 1♂ 1♀ (NUAM), Çakırlar village, 38°19'N, 36°17'E, 1556m, 12.05.2008; 1♂ 1♀ (NUAM), Saimbeyli, Obruk

şelalesi, 37°59'N, 36°05'E, 1005m, 12.05.2008, 1♂ 1♀ (NUAM), Yardibi village, 37°51'N, 36°07'E, 738m, 12.06.2008; 2♂♂ 3♀♀ (NUAM), Feke, Köleli village, 37°52'N, 35°48'E, 1269m, 30.04.2009, 2♀♀ (NUAM), Çürükler village, 37°52'N, 35°57'E, 1522m, 30.04.2009; 3♀♀ (GUZM), Kozan, Çulluuşağı village, 37°40'N, 35°55'E, 716m, 19.05.2009, 1♂ 1♀ (GUZM), Gedikli village, 37°30'N, 35°52'E, 399m, 19.05.2009, 1♂ 1♀ (GUZM), Karahamzalı village, 37°30'N, 35°52'E, 399m, 19.05.2009; ***Hatay province***, 1♂ (NUAM), Belen, Müftüler village, 36°29'N, 36°08'E, 662m, 25.03.2008, 1♂ (NUAM), Kıcı village, 36°28'N, 36°16'E, 628m, 14.05.2008; 1♂ (NUAM), Dörtyol, Karakese 1, 36°49'N, 36°17'E, 875m, 24.04.2008, 1♂ (NUAM), Karakese 2, 36°48'N, 36°17'E, 735m, 24.04.2008; 1♀ (NUAM), Belen-Antakya 1, 36°16'N, 36°11'E, 101m, 14.05.2008; 1♀ (NUAM), Belen-Antakya 2, 36°21'N, 36°11'E, 206m, 14.05.2008; ***İçel province***, 1♂ 3♀♀ (NUAM), Silifke, Kocaoluk village, 36°40'N, 33°54'E, 1402m, 21.04.2007, 1♂ (NUAM), Silifke castle, 36°22'N, 33°55'E, 133m, 21.04.2008, 1♂ (NUAM), Ortaören village, 36°27'N, 33°43'E, 652m, 21.04.2008; 1♀ (NUAM), Anamur, Güngören village, 36°12'N, 32°38'E, 780m, 17.04.2008, 1♂ 1♀ (NUAM), Çamlıpınar village, 36°11'N, 32°41'E, 989m, 17.04.2008, 7♂♂ 2♀♀ (NUAM), Halkalı village, 36°23'N, 32°56'E, 1364m, 22.04.2008, 2♀♀ (NUAM), Evciler village, 36°11'N, 32°55'E, 556m, 22.04.2008, 1♂ (GUZM), Mut, 36°38'N, 33°26'E, 436m, 29.04.2009, 1♂ 2♀♀ (NUAM), Kavaközü village, 36°53'N, 33°23'E, 1560m, 18.04.2008, 2♀♀ (NUAM), Çömelek village, 36°43'N, 33°44'E, 1300m, 18.04.2008, 1♂ 1♀ (NUAM), Sertavul 1, 36°48'N, 33°19'E, 1255m, 19.04.2008, 1♂ 2♀♀ (NUAM), Sertavul 2, 36°51'N, 33°17'E, 1498m, 19.04.2008, 1♂ (GUZM), Zeyne village, 36°26'N, 33°31'E, 415m, 29.04.2009, 1♂ (GUZM), Bozdoğan village, 36°41'N, 33°13'E, 676m, 29.04.2009, 1♂ 2♀♀ (GUZM), Kurtsuyu village, 36°30'N, 33°32'E, 105m, 29.04.2009, 1♂ 1♀ (GUZM), Göksu village, 36°33'N, 33°26'E, 123m, 29.04.2009; 1♂ (NUAM), Tarsus, Gülek, 37°12'N, 34°48'E, 815m, 20.04.2008, 2♂♂ (NUAM), Kandil sırtı, 37°17'N, 34°44'E, 1340m, 20.04.2008, 1♀ (GUZM), Kaburgediği village, 37°08'N, 34°48'E, 711m, 20.04.2008; 2♀♀ (NUAM), Erdemli, Çiftepınar village, 36°43'N, 34°20'E, 325m, 21.04.2008, 1♀ (NUAM), Karayakup village, 36°44'N, 34°24'E, 190m, 21.04.2008, 1♀ (NUAM), Karakız göleti, 36°51'N, 34°13'E, 1605m, 21.04.2008, 1♂ (NUAM), Erdemli 3, 36°42'N, 34°05'E, 1298m, 21.04.2008, 1♀ (NUAM), Tömük 1, 36°47'N, 34°20'E, 793m, 21.04.2008, 1♀ (NUAM), Erdemli 2, 36°40'N, 34°08'E, 886m, 21.04.2008; 1♂ (NUAM), Gülnar, Balandız, 36°22'N, 33°46'E, 712m, 21.04.2008, 1♂ 1♀ (NUAM), Köseçobanlı village, 36°25'N, 33°09'E, 1319m, 22.04.2008, 1♀ (NUAM), Göksu village, 36°45'N, 33°10'E, 596m, 22.04.2008; 2♀♀ (NUAM), Değnek village, 37°02'N, 34°23'E, 1215m, 20.04.2008; 1♀ (NUAM), Arslanköy, 36°59'N, 34°16'E, 1390m, 20.04.2008; 2♀♀ (NUAM), Fındıkpınarı village, 36°54'N, 34°23'E, 1215m, 20.04.2008; 2♀♀ (NUAM), Doğançay village, 36°51'N, 34°26'E, 742m, 20.04.2008; ***Kahramanmaraş province***, 2♀♀ (NUAM), Göksun, Gölpınar village, 37°58'N, 36°30'E, 1544m, 20.05.2007, 1♀ (NUAM), Mehmetbey village, 38°05'N, 36°27'E, 1544m, 20.05.2007; 1♀ (NUAM), Andırın-Geben, 37°37'N, 36°24'E, 1281m, 15.05.2008; 1♀ (NUAM), Andırın-Torun 1, 37°33'N, 36°20'E, 894m, 15.05.2008; 1♀ (NUAM), Andırın-Torun 2, 37°31'N, 36°22'E, 610m, 15.05.2008; 1♀ (NUAM), Andırın, Sarımollalı village, 37°35'N, 36°35'E, 1184m, 21.05.2009; 1♂ (GUZM), Andırın-Geben 3, 37°42'N, 36°30'E, 1267m, 21.05.2009; ***Osmaniye province***, 4♀♀ (NUAM), Yarpuz valley, Boğaz plateau, 37°05'N, 36°20'E, 587m, 23.05.2007, 4♀♀ (NUAM), 24.04.2008; 3♂♂ 6♀♀ (NUAM), Yarpuz village, 37°03'N, 36°25'E, 903m, 01.05.2007, 1♂ (NUAM), 27.03.2008; 1♂ (NUAM), Zorkun-Erzin, 36°58'N, 36°18'E, 1264m, 01.05.2007; 1♀ (NUAM), Bahçe, Yaylalı village, 37°17'N, 36°37'E, 382m, 22.05.2007; 1♂ 1♀ (NUAM), Zorkun, Olukbaşı plateau, 36°58'N, 36°19'E, 1520m, 23.05.2007, 1♀ (NUAM), 18.06.2008, 1♀ (NUAM),

Karınca plateau, 36°58'N, 36°19'E, 1520m, 27.06.2007, 2♀♀ (NUAM), Armutdüzü plateau, 37°01'N, 36°16'E, 805m, 18.06.2008; 2♀♀ (NUAM), Zorkun-Erzin, 36°58'N, 36°18'E, 1264m, 18.06.2008.

World Distribution: Spain, Portugal, France, Switzerland, Austria, Italy, Hungary, Azores (Ono & Martens, 2005; Platnick, 2010).



Figs. 6-10: *Philodromus pulchellus* Lucas, 1846. 6-7. General habitus. 6. Male. 7. Female. 8-9. Left male palp. 8. Ventral view. 9. Retrolateral view. 10. Spermathecae (dorsal view). Scales: 1-2: 2 mm, 3-5: 0.5 mm.

Philodromus pulchellus Lucas, 1846 (Figs. 6-10)

Material examined: TURKEY: ***Adana province,*** 1♂ (NUAM), Pozantı, Belemedik 1, 37°21'N, 34°55'E, 798m, 19.06.2007, 1♂ (NUAM), Belemedik 2, 37°19'N, 34°58'E, 571m, 19.06.2007; ***Hatay province,*** 1♀ (NUAM), Erzin, Isos harabeleri, 36°58'N, 36°07'E, 47m, 04.05.2007; 1♀ (NUAM), Samandağı, Çörükçü village, 36°04'N, 36°00'E, 129m, 27.06.2007, 1♂ 1♀ (NUAM), Fidanlı village, 36°09'N, 36°01'E, 146m, 27.06.2007; 1♂ (NUAM), Yayladağı, Yeşiltepe village, 35°59'N, 36°02'E, 741m, 27.06.2007, 1♂ (NUAM), Güzelyurt village, 35°55'N, 36°03'E, 507m, 27.06.2007, 7♀♀ (NUAM), Hisarcık village, 35°57'N, 36°06'E, 910m, 27.06.2007; 1♂ (NUAM), Dörtyol, Karakese 1, 36°49'N, 36°17'E, 875m, 24.04.2008, 2♂♂ (NUAM), Karakese 2, 36°48'N,

36°17'E, 735m, 24.04.2008; 1♂ (NUAM), Belen, Kıcı village, 36°28'N, 36°16'E, 628m, 14.05.2008; 1♀ (NUAM), Belen-Antakya 2, 36°21'N, 36°11'E, 206m, 14.05.2008; ***İçel province,*** 1♂ (NUAM), Mut, 36°38'N, 33°26'E, 436m, 21.04.2008, 2♀♀ (NUAM), Dağpazarı village, 36°48'N, 33°25'E, 1442m, 18.04.2008, 1♂ 1♀ (NUAM), Demirkapı village, 36°54'N, 33°28'E, 1450m, 18.04.2008, 1♂ 2♀♀ (NUAM), Çivi village, 36°49'N, 33°32'E, 1390m, 18.04.2008, 1♀ (NUAM), Bozdoğan village, 36°41'N, 33°13'E, 676m, 21.04.2008, 1♂ 2♀♀ (NUAM), Kurtsuyu village, 36°30'N, 33°32'E, 105m, 21.04.2008, 1♂ 2♀♀ (NUAM), Alahan, 36°46'N, 33°21'E, 911m, 19.04.2008, 1♀ (NUAM), Sertavul 2, 36°51'N, 33°17'E, 1498m, 19.04.2008, 2♀♀ (NUAM), Sertavul 3, 36°54'N, 33°16'E, 1550m, 19.04.2008; 2♀♀ (NUAM), Değirmendere village, 34°31'E, 37°02'N, 1286m, 20.04.2008; 2♀♀ (NUAM), Değnek village, 37°02'N, 34°23'E, 1215m, 20.04.2008; 1♀ (NUAM), Arslanköy, 36°59'N, 34°16'E, 1390m, 20.04.2008; 1♂ 2♀♀ (NUAM), Gülnar, Göksu village, 36°45'N, 33°10'E, 596m, 21.04.2008, 3♂♂ (NUAM), Çukurkonak village, 36°23'N, 33°19'E, 1082m, 22.04.2008, 2♀♀ (NUAM), Kayrak village, 36°20'N, 33°31'E, 1213m, 22.04.2008; 1♀ (NUAM), Tarsus, Berdan barajı, 36°57'N, 34°50'E, 132m, 29.04.2008, 1♀ (NUAM), Belen village, 37°02'N, 34°41'E, 565m, 29.04.2008, 1♂ (GUZM), Gülek 2, 37°19'N, 34°46'E, 1436m, 02.07.2009, 1♀ (GUZM), Gülek 3, 37°13'N, 34°45'E, 1028m, 02.07.2009, 1♀ (GUZM), Kurtçukuru village, 37°09'N, 34°45'E, 526m, 02.07.2009, 1♀ (GUZM), Kaburgediği village, 37°08'N, 34°48'E, 711m, 02.07.2009, 1♀ (GUZM), Çamalan, 37°11'N, 34°48'E, 778m, 02.07.2009; ***Kahramanmaraş province,*** 1♂ (NUAM), Karacasu village, 37°29'N, 36°01'E, 637m, 21.05.2007; 3♀♀ (NUAM), Türkoğlu, Kızıleniş village, 37°20'N, 36°46'E, 655m, 22.05.2007, 3♂♂ 3♀♀ (GUZM), İmalı village, 37°20'N, 36°43'E, 1104m, 22.05.2009; ***Osmaniye province,*** 5♂♂ 7♀♀ (NUAM), Bahçe, Nohut village, 37°11'N, 36°31'E, 700m, 17.06.2008, 1♀ (NUAM), Aşağı Arıcaklı village, 37°11'N, 36°36'E, 375m, 17.06.2008, 13♂♂ 6♀♀ (NUAM), 22.05.2007, 1♂ (GUZM), 20.05.2009; 1♂ 1♀ (NUAM), Zorkun 1, 37°01'N, 36°17'E, 765m, 23.05.2007; 2♂♂ (NUAM), Yarpuz 1, 37°02'N, 36°26'E, 1132m, 23.05.2007; 1♂ 10♀♀ (NUAM), Hieropolis Castle, 37°10'N, 36°11'E, 100m, 24.05.2007, 2♀♀ (NUAM), 26.06.2007, 4♀♀ (NUAM), 18.06.2008, 2♂♂ 4♀♀ (GUZM), 20.05.2009, 5♂♂ 25♀♀ (NUAM), 13.05.2008, 2♀♀ (GUZM), 01.07.2009; 1♂ (NUAM), Zorkun, Karınca yaylası, 36°58'N, 36°19'E, 1520m, 18.06.2008; 10♂♂ 11♀♀ (GUZM), Yarpuz valley, 37°05'N, 36°20'E, 600m, 20.05.2009.

World Distribution: Mediterranean: Algeria, France, Spain, Israel, Italy, Cyprus, Lebanon, Portugal, Tunusia, Grecee (Levy, 1977; Platnick, 2010).

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Serket (2010) vol. 12(1): 23-31.

Hersiliidae of Sudan
(Araneida: Hersiliidae)

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Abstract

Two species of two genera of family Hersiliidae are recorded from Sudan, i.e., *Hersilia caudata* Savigny, 1825 and *Hersiliola eltigani* sp. n. It is the first record of genus *Hersiliola* in Sudan. A distribution map of the two species in Sudan is presented.

Keywords: *Hersilia caudata*, *Hersiliola eltigani*, Hersiliidae, Spiders, Sudan.

Introduction

Family Hersiliidae Thorell, 1870 is one of the twenty families of spiders recorded from Sudan. It includes 168 species, of 15 genera, among 41253 spider species all over the world (Platnick, 2010; Marusik, *et al*., 2010) (Table 1). Only one hersiliid species is already recorded from Sudan, i.e. *Hersilia caudata* Savigny, 1825.

Benoit (1967) recorded *Hersilia caudata* and described a new species from Sudan (*Hersilia hirtiventris* = *H. caudata*). Foord (2005) discussed the systematics and distribution of the Hersiliidae of the Afrotropical region (Foord & Dippenaar-Schoeman, 2006). *H. caudata* is recorded from three localities in Sudan (Foord, 2005). On 6 August 2008, one juvenile *Hersilia* spider was found among plants in the campus of Shendi University, 16°40'39.7"N, 33°25'17.9"E, Alt. 367m.

Four *Hersiliola* specimens, 1♀, 2s♂, 1j, were collected from Sudan. They were found under stones at Kordufan Mountain's versant, 13°04'25.9"N, 30°20'51.3"E, Alt. 606m, on 30 July 2008. One subadult male was kept alive and reared to moult on 17-18 August 2008 to be adult. It was preserved on 19 August 2008. In this region, I saw a hare, a pair of birds among *Acacia* trees, plenty of butterflies, and a limbless lizard (Malaga is its vernacular name there). There were several kinds of insects, i.e., wasps, beetles, lepidopteran larvae, hemipteran and neuropteran nymphs, in addition to chilopods,

Compsobuthus scorpions, *Biton* and *Galeodes* sun-spiders (solpugids), and spiders of nine families.

The distribution of the two hersiliid species of Sudan is plotted on a map.

Abbreviations used: C = cephalothorax; *Et* = tip of embolus; L = length; *Te* = tegular apophysis; TL = total length; W = width. All measurements are in millimetres.

Table 1. Genera of Hersiliidae, their geographic range and number of described species.

<table>
<tr><td rowspan="5">South America</td><td>Mediterranean</td><td>Africa</td><td>Asia</td><td>Australia</td></tr>
<tr><td rowspan="2">Tama [1]</td><td rowspan="2">Prima [1]
Tyrotama [8]</td><td rowspan="2">Deltshevia [2]
Duninia [2]
Ovtsharenkoia [1]
Promurricia [1]</td><td rowspan="2">Tamopsis [50]</td></tr>
<tr></tr>
<tr><td colspan="4">Hersilia [72]</td></tr>
<tr><td colspan="3">Hersiliola [10]</td><td rowspan="3"></td></tr>
<tr><td colspan="2"></td><td>Murricia [4]</td></tr>
<tr><td colspan="3">Neotama [9]</td></tr>
</table>

[] = number of species

Systematics

Family **Hersiliidae** Thorell, 1870
"Long-spinnered spiders"

Diagnosis: Small to medium sized (5-10 mm) araneomorph spiders; ecribellate; entelegyne; legs with three tarsal claws; carapace ovoid, flattened, with eight eyes on a large tubercle; posterior spinnerets long and slender with apical segment strongly tapering (Jocqué & Dippenaar-Schoeman, 2006).

Distribution: In the tropical, subtropical, and temperate regions.

Lifestyle: Hersiliids have diverse lifestyles, ranging from wandering tree-trunk-dwellers [e.g. *Hersilia*] to ground-dwelling web-builders [e.g. *Hersiliola*]. The hunters run around their prey while producing a band of silk to enswathe them. The webs on the ground are very peculiar curtains hanging under rocks and enclosing pebbles (Jocqué & Dippenaar-Schoeman, 2006).

Key to the genera of Hersiliidae recorded from Sudan (Adopted from Foord, 2005)

1. Metatarsi biarticulate in legs I, II, and IV; leg I longest; leg III about 0.3 times leg I. Chelicerae armed; posterior lateral spinnerets > carapace width; thoracic region of carapace dorso-ventrally flattened. ..... *Hersilia*

-. Metatarsi uniarticulate; leg IV (or II) longest; leg III > 0.5 times leg I. Chelicerae unarmed; posterior lateral spinnerets < carapace width; thoracic region of carapace sloping. ..... *Hersiliola*

Genus ***Hersilia*** Savigny, 1825

There are 72 species of genus *Hersilia* recorded from Africa, Yemen, Socotra, Asia, and Australia (Platnick, 2010); 28 species of them are African. Savigny described genus *Hersilia* and *Hersilia caudata* from Egypt in a work accomplished by Audouin (1825) [El-Hennawy, 2000]. *Hersilia caudata* is recorded from Cape Verde Island, West Africa to China (Platnick, 2010).

Hersilia caudata Savigny, 1825 Figs. 1-4.
H. c. Audouin, 1825: 115, pl. 1, f. 8 (♀).
H. c. Audouin, 1827: 318, pl. 1, f. 8 (♀).
H. c. O. P.-Cambridge, 1876: 560-562, pl. 58, f. 6 (j).
H. diversa O. P.-Cambridge, 1876: 561 (j).
H. hirtiventris Benoit, 1967: 23, f. 6-7 (♀).
H. c. Benoit, 1967: 34, f. 37, 40, 44 (♂♀).
H. c. Rheims, Brescovit & van Harten, 2004: 336-340, f. 1-3, 7-15 (♂♀).
H. c. Foord, 2005: 81-84, f. 9, 26b, 33 (♂♀).
H. c. Foord & Dippenaar-Schoeman, 2006: 59, f. 132-138, 200 (♂♀).

World Distribution: Middle East (Egypt, Palestine-Israel), Africa (Benin, Burkina Faso, Cape Verde Islands, Cameroon, Chad, Guinea, Ivory Coast, Mali, Nigeria, Senegal, Somalia, Sudan, Togo), Asia (Yemen, Socotra, China?), and Australia.

Distribution in Sudan (Fig. 4):
- Kawa (13°43'N, 32°30'E), 200 km south of Khartoum, 1♀, 2.xii.1961, J.L. Cloudsley-Thompson, MRAC 120872 [MRAC = Musée Royal de l'Afrique Centrale, Tervuren, Belgium]
- Reuk (10°45'N, 32°50'E), 1♀, 4.xii.1961, J.L. Cloudsley-Thompson, MRAC 120833
- Bahr-el-Ghazal, Rumbek (6°47'N, 29°40'E), 1 juv. male, 11.iii.1964, G. Lewis, MRAC 126486
- Shendi (16°40'39.7"N, 33°25'17.9"E, Alt. 367m), 1 juv., 6.viii.2008, among plants in the campus of Shendi University.

Description. [Redescribed in detail by Foord (2005)]

O. P.-Cambridge (1876: 561-562) described *Hersilia caudata* and proposed a new name to his immature specimens of Cairo. He said: "The following description of the examples I met with may perhaps call the attention of araneologists to the differences noted; and possibly the true *H. caudata* may eventually prove to be a distinct species, in which case I would propose for that now described the name *Hersilia diversa*.

The length of the largest immature female captured is rather over 3½ lines [= 7.4 mm]. The colour of the cephalothorax is a deep blackish brown, rather the palest along the middle line, on the hinder slope, and a little above the lateral margins; the upper part of the caput is black, with a short brightish orange-yellow longitudinal streak on the hinder part between the eyes of the hind central pair. The clypeus (which equals in height two thirds of that of the facial space) is orange-yellow above and dull yellow on its lower part, the middle of which has a short longitudinal white streak with a blackish patch on each side of it. This arrangement of colours gives a very distinct and diversified appearance to the "facies," and appears to be pretty well defined in all the examples met with *(vide* fig. 6 *b*).

The *legs* are of a dull yellowish hue, marked and broadly annulated with yellow and blackish-brown; these markings form a broken longitudinal line of deepish black-brown on the fore sides of the femoral joints. The *palpi* are similar to the legs in colour, and marked with black-brown on their upper or fore sides.

The *abdomen* is of a dull yellowish brown above, thickly punctuated with pale yellowish points mixed with a few blackish spots here and there, chiefly near the cephalothorax, the lateral margins of the upperside of the abdomen are very distinctly defined by the inner edge of the black markings on the sides; this well-defined edge is denticulate or strongly crenellated; along the middle line of the fore half is a strong and very distinct black longitudinal marking, denticulate or irregularly jagged on its edges;

this marking is broadest near its middle, and comes to a blunt point about two thirds of the distance from the cephalothorax to the spinners, and is followed by some broken angular bars, or chevrons, which decrease in length towards the hinder extremity of the abdomen, in addition to the above markings, there are four pale transverse wavy lines, which cross the whole of the upperside of the abdomen, the two foremost, however, being interrupted by the longitudinal black marking; the sides of the abdomen are marked, but not regularly, with blackish brown spots and small markings, some of them assuming an oblique direction; but none of the lateral markings extend far down towards the underside, which is (as are also the sternum, maxillae, and labium) of a plain yellowish hue devoid of markings. The long spinners of the superior pair are dull yellow faintly marked or annulated with yellowish brown, or sometimes with brownish black. .... in fact I saw, and captured, only females, and all those immature."

A B

Fig. 1. *Hersilia caudata* Savigny, 1825 ♀.
A. Drawing by Savigny in Audouin (1825), pl. 1, fig. 8, near Cairo.
B. Photograph, Sohag, Upper Egypt.

Fig. 2. *Hersilia caudata* (?) immature, Shendi. Habitus, postero-dorsal view.

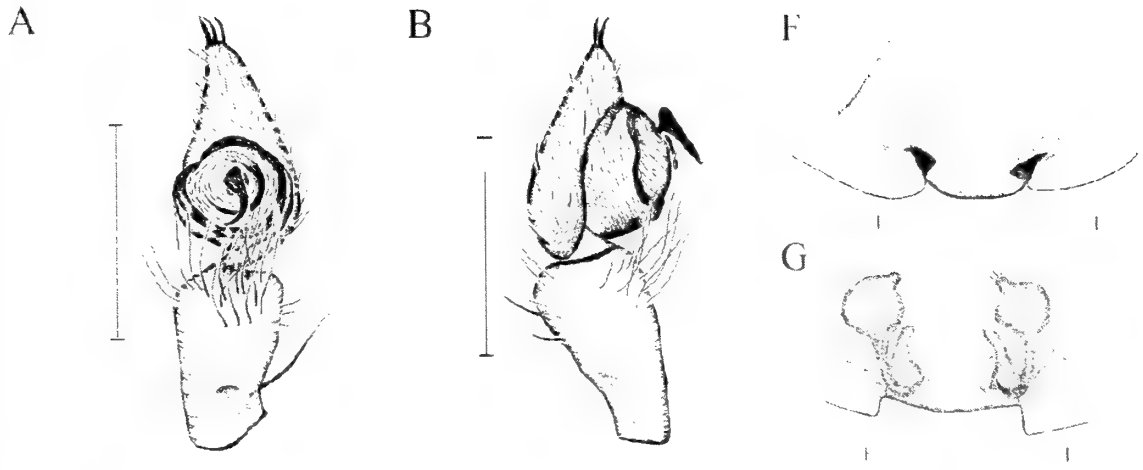


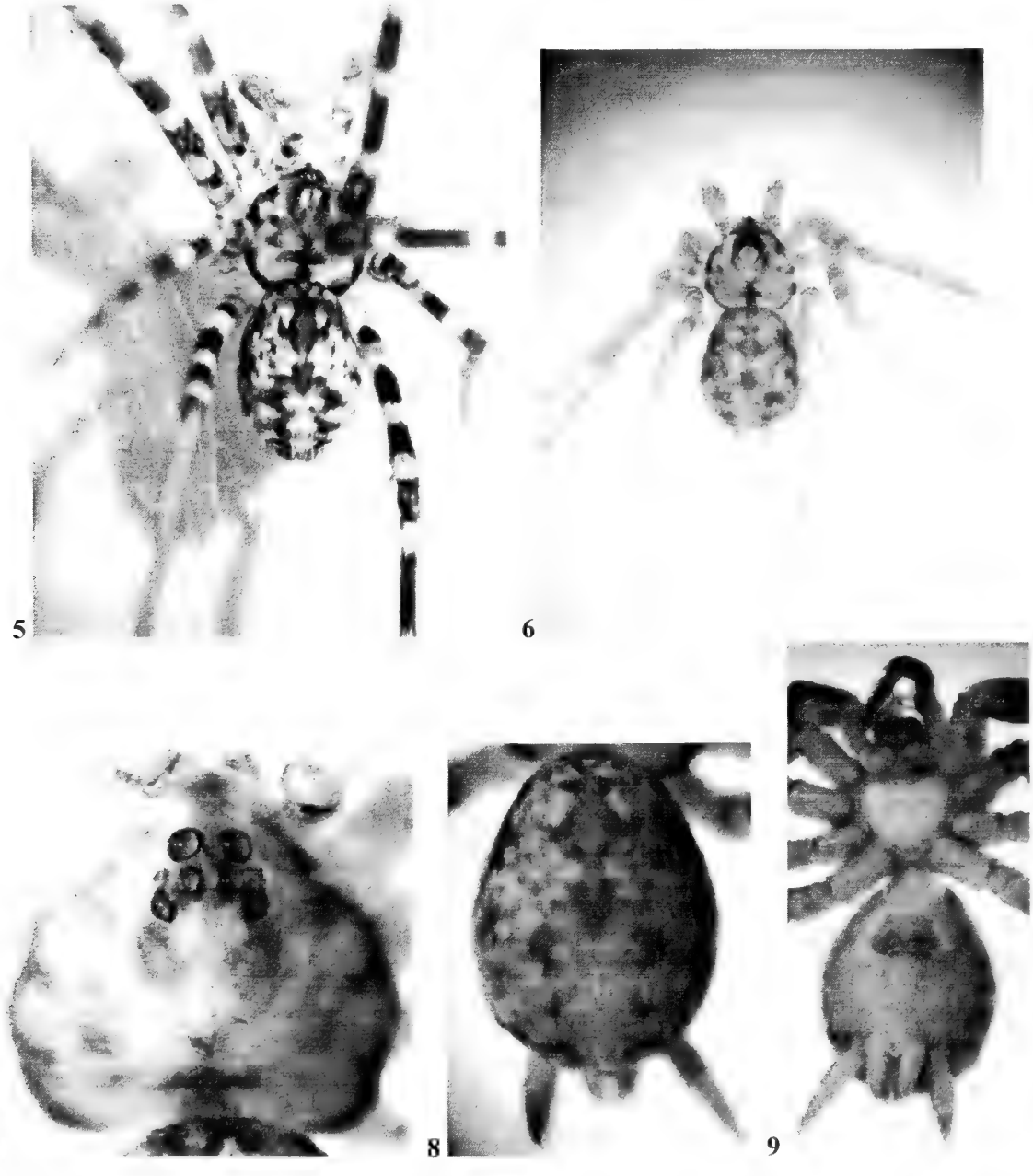
Fig. 3. *Hersilia caudata*: Male, left palp: A. ventral view, B. prolateral view.
Female: F. epigyne, ventral view, G. vulvae, dorsal view.
After Foord (2005, Chapter 2, Figure 9)

Fig. 4. Distribution map of *Hersilia* and *Hersiliola* species of Sudan.
1 = Shendi (16°40'39.7"N, 33°25'17.9"E)
2 = Kawa (13°43'N, 32°30'E), 200 km south of Khartoum
3 = Reuk (10°45'N, 32°50'E)
4 = Bahr-el-Ghazal, Rumbek (06°47'N, 29°40'E)
5 = Kordufan Mountain (13°04'25.9"N, 30°20'51.3"E)
● = *Hersilia caudata*, ■ = *Hersiliola eltigani* sp. n.

Genus ***Hersiliola*** Thorell, 1870

There are 10 species of genus *Hersiliola* recorded from Mediterranean countries, Asia (Afghanistan, Iran, Turkey, Turkmenistan, Uzbekistan, China), and Africa (Mali, Nigeria, Cape Verde Is.) (Platnick, 2010; Marusik, *et al.*, 2010).

Diagnosis. [Modified after Marusik & Fet (2009)] *Hersiliola* can be easily distinguished from other hersiliid genera by short spinnerets (shorter than abdomen length) and the shape of copulatory organs: a digitate cymbium; flattened bulbus of the male palp [= discoid tegulum]; a small, hook-like, median tegular apophysis perpendicular to the axis of the palp; a filiform, elongate, spirally coiled embolus; elongate insemination ducts coiled around fertilization ducts and uncoiled upper loop; small [relatively smaller] seminal receptacles. [Redescribed in detail by Foord and Dippenaar-Schoeman (2005)]



Figs. 5-9. *Hersiliola eltigani* sp.n. 5-6. Habitus, dorsal view. 5. Male, alive. 6. Juvenile. 7-9. Female. 7-8. Dorsal view. 7. Carapace. 8. Abdomen. 9. Ventral view.

Hersiliola eltigani sp.n. Figs. 4, 5-14.
H. macullulata Foord & Dippenaar-Schoeman, 2005: 259-261, f. 2A-2E (♂ only, misidentified).

Material examined: Holotype ♂ (s♂ was kept alive and reared to moult on 17-18 August 2008 to be adult), Paratypes 1♀, 1s♂, 1j, under stones, on 30 July 2008, Kordufan Mountain's versant (13°04'25.9"N, 30°20'51.3"E, Alt. 606m), deposited in the Arachnid Collection of Egypt (ACE 20080730.1-4).

Etymology. The specific name is a patronym in honour of Prof. Dr. El-Tigani M. H. Allam, El-Khartoum, Sudan, who invited me to visit Sudan, to discover this new species.

Diagnosis. The male of *Hersiliola eltigani* sp.n. is most similar to *Hersiliola macullulata* (Dufour, 1831), from which it can be distinguished by the shape of the tegular apophysis which is sharply pointed and the position of the embolic base at about 4 o'clock. The female of *H. eltigani* sp.n. differs by an epigynum with a septum thinner than height of epigynal median plate.

Description
Colouration: *Male*: carapace pale yellowish brown, abdomen pale reddish brown (Fig. 5); *Female*: carapace reddish brown, abdomen more brownish (Figs. 7-8); *Juvenile*: carapace pale yellowish brown, lighter than male, abdomen lighter than carapace (Fig. 6). Carapace outer margin black. Both carapace and abdomen mottled with grey-brown patches. Abdomen with dorsal rhomboidal pattern. No mottling beneath (Fig. 9). Legs with wide annulations, faint in female and juvenile, very dark in male.

Male (Holotype). TL 3.50; Cephalothorax: L 1.59, W 1.75 (CL/CW 0.91); Sternum L 0.79; Abdomen: L 1.91, W 1.48. Legs measurements: Table (2).
Relative length of legs 85 : 91 : 52 : 100. Leg formula IV-II-I-III.

Table 2: ♂, Legs measurements (mm).

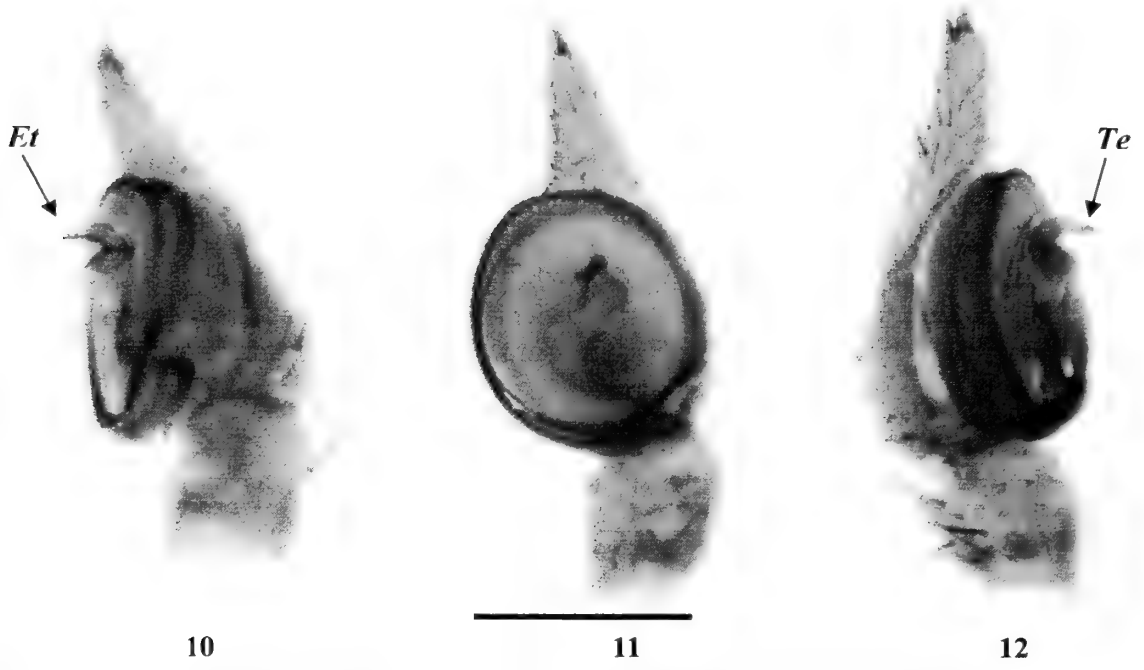
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total length
I	2.33	0.74	1.91	2.28	1.17	8.43
II	2.38	0.69	2.28	2.54	1.11	9.00
III	1.48	0.53	1.17	1.32	0.69	5.19
IV	2.65	0.58	2.60	3.07	1.01	9.91

Pedipalp: cymbium L 1.06, tegulum diameter 0.53; embolus with about 1.5 coils; embolic base at about 4 o'clock; tegular apophysis sharply pointed; tip of cymbium is shorter than the diameter of the tegulum (Figs. 10-12).

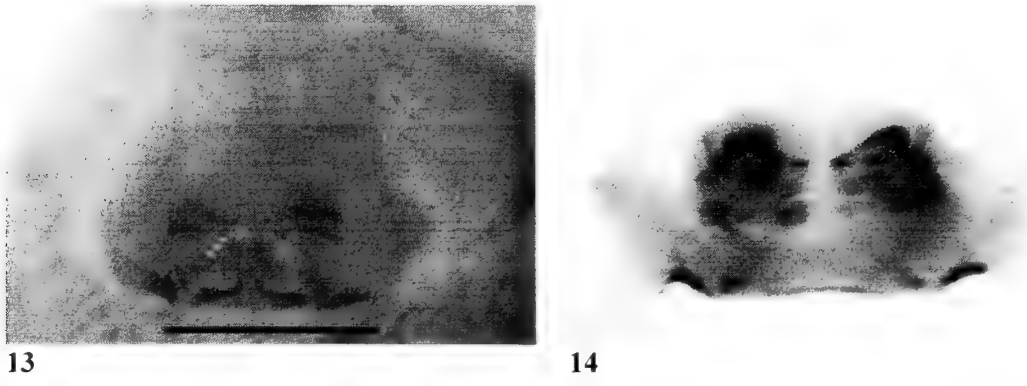
Female (Paratype). TL 3.97; Cephalothorax: L 1.59, W 1.64 (CL/CW 0.97); Sternum L 0.79; Abdomen: L 2.38, W 1.85. Legs measurements: Table (3).
Relative length of legs 98 : 104 : 57 : 100. Leg formula II-IV-I-III.

Table 3: ♀, Legs measurements (mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total length
I	2.17	0.58	1.70	1.85	0.95	7.25
II	2.23	0.64	1.85	2.07	0.95	7.74
III	1.43	0.42	0.64	1.11	0.64	4.24
IV	2.12	0.53	2.07	2.07	0.64	7.43



Figs. 10-12. *Hersiliola eltigani* sp. n. Male palp. 10. Retrolateral view. 11. Ventral view. 12. Prolateral view. Scale = 0.5 mm.



Figs. 13-14. *Hersiliola eltigani* sp. n. Female. 13. Epigynum, ventral view. 14. Vulvae, dorsal view. Scale = 0.5 mm.

Epigynum with a distinct median plate and windows; septum thinner than median plate height of epigynal plate; insemination duct with almost five coils around fertilization duct (Figs. 13-14).

World Distribution: Sudan and Burkina Faso.

Distribution in Sudan (Fig. 4): Kordufan Mountain's versant (13°04'25.9"N, 30°20'51.3"E, Alt. 606m).

Comment. Foord & Dippenaar-Schoeman (2005) described *Hersiliola macullulata* (Dufour, 1831) depending on males from Burkina Faso (MRAC 172.521, 207.790, 207.791). Those male specimens were misidentified. They are similar to the Sudanese male described here as *Hersiliola eltigani* sp. n. The female of *H. eltigani* is different from both *H. macullulata* and *H. versicolor* (Blackwall, 1865) of Cape Verde Islands.

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I am greatly indebted to my friend Prof. Dr. Yuri Marusik (Magadan, Russia) whose precious comments directed me to describe a new *Hersilola*. He sent me necessary literature too. His advices and the advice of my friend Prof. Dr. Victor Fet (Marshall University, USA) are appreciated.

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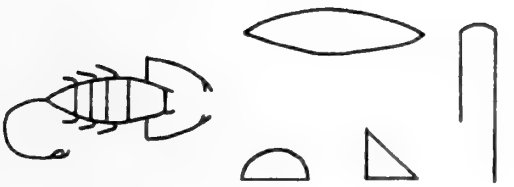

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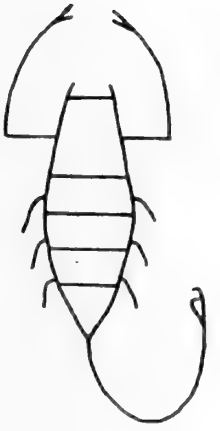

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The Turkish Harvestmen (Opiliones) with zoogeographical remarks

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Abstract

The species of Turkish harvestmen fauna that were recorded by various authors from different localities of Turkey are zoogeographically evaluated. Also, chorotypes for each taxon are given with the zoogeographical remarks.

Keywords: Arachnida, Harvestmen, Opiliones, Turkey.

Introduction

Harvestmen (Opiliones) are represented by more than 6000 described species (Hallan, 2005), and comprise the third most diverse order of Arachnida. They are significant predators in natural ecosystems and often found in disturbed habitats as well as in forests, under stones, in caves, on the trunks of trees, on the soil, in forest litter, in soil crevices, and sometimes rather deep in the soil.

Harvestmen are common and abundant arachnids in Turkey. These animals are insufficiently studied in Turkey and there is a need to update faunal and ecological data. There are a few articles on the harvestmen fauna in Turkey. The first data on Turkish opilionid were published by foreigner arachnologists, such as Kulczyński (1903), Nosek (1905), Roewer (1923, 1950, 1956, 1957, 1959, 1962), Gruber (1968, 1969, 1976, 1979, 1998), Šilhavý (1955), Staręga (1973, 1976, 1981, 2003), Martens (1978, 2006) and Snegovaya (1999). Recently, harvestmen attracted the attention of Turkish authors and studies on opilionid fauna of Turkey have gradually increased (Bayram, 1994; Bayram *et al.*, 2005; Bayram & Çorak, 2007; Çorak & Bayram, 2007; Yiğit *et al.*, 2007; Kurt *et al.*, 2008a, 2008b; Bayram *et al.*, 2010).

Nowadays, such data about the Turkish harvestmen fauna have reached a considerable level. At present, 63 species and 1 subspecies belonging to 7 families have

been recorded from the country until the present time. The main aim of the present paper is to evaulate the Turkish harvestmen fauna zoogeographically and faunistically by using known data.

Material and Methods

In this paper, classification and nomenclature of the harvestmen suggested by Hallan (2005) are followed. Within the family, the genera and species are listed alphabetically. Distribution of species in geographical regions of Turkey is summarized in remarks according to Topçu *et al.* (2005) [MR = Marmara, AR = Aegean, BSR = Black Sea [WBR, MBR, EBR], CAR = Central Anatolia, EAR = East Anatolia, MER = Mediterranean, and SAR = Southeast Anatolia Regions]. The present zoogeographical characterization is based on the chorotype classification of Anatolian fauna, recently proposed by Vigna Taglianti *et al.* (1999). In this study, as possible as one chorotype description can be identified for each taxon. But this kind of description can not be possible for some taxa, so one, two or three chorotypes are used for them.

Results

Family Dicranolasmatidae Simon, 1879

Dicranolasma giljarovi Šilhavý, 1966
Distribution in Turkey: CAR, EAR. **World Distribution:** Eastern Mediterranean, Caucasia (Martens, 1965; Staręga, 1978; Snegovaya, 1999; Çorak, 2004; Bayram & Çorak, 2007). **Chorotype:** Turano-Mediterranean.

Dicranolasma hoberlandti Šilhavý, 1956
Distribution in Turkey: MR, MER. **World Distribution:** Southeast European, Eastern Mediterranean, Caucasia, Middle East (Martens, 1965; Gruber, 1969; Staręga, 1973; Bayram & Çorak, 2007). **Chorotype:** Turano-Mediterranean.

Dicranolasma ponticum Gruber, 1998
Distribution in Turkey: MBR, EBR. **World Distribution:** Southeast European, Eastern Mediterranean, Caucasia, Middle East (Gruber, 1998; Bayram & Çorak, 2007).
Chorotype: Turano-Mediterranean.

Dicranolasma ressli Gruber, 1998
Distribution in Turkey: CAR. **World Distribution:** Turkey (Gruber, 1968).
Chorotype: Anatolian.

Dicranolasma scabrum (Herbst, 1799)
Distribution in Turkey: MR, CAR, EAR. **World Distribution:** Central Europe to South Europe, Caucasia, Middle East (Martens, 1965; Staręga & Chevrizov, 1978; Karaman, 1995; Snegovaya, 1999; Çorak, 2004; Bayram & Çolak, 2007). **Chorotype:** W-Palearctic.

Family Ischyropsalididae Simon, 1879

Ischyropsalis hellwigi hellwigi (Panzer, 1794)
Distribution in Turkey: CAR. **World Distribution:** European (Spoek, 1975; Bliss & Martens, 1995; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Komposch, 2004; Komposch & Gruber, 2004; Blick & Komposch, 2004; Hallan, 2005; Kurt *et al.*, 2008a).
Chorotype: European.

Family Nemastomatidae Simon, 1872

Giljarovia tenebricosa (Redikorzevi, 1936)
Distribution in Turkey: EBR. **World Distribution:** Caucasia, Turkey (Martens, 2006). **Chorotype:** Turano-Anatolian.

Giljarovia turcica Gruber, 1976
Distribution in Turkey: MBR, EBR. **World Distribution:** Turkey (Gruber, 1976). **Chorotype:** Anatolian.

Histricostoma caucasicum (Redikorzev, 1936)
Distribution in Turkey: EBR. **World Distribution:** Russia, Turkey, Georgia (Redikorzev, 1936; Roewer, 1951; Staręga, 1966, 1978; Snegovaya & Chemeris, 2004; Martens, 2006). **Chorotype:** E-European.

Mediostoma ceratocephalum Gruber, 1976
Distribution in Turkey: MER. **World Distribution:** Turkey (Gruber, 1976). **Chorotype:** Anatolian.

Mitostoma gracile (Redikorzew, 1936)
Distribution in Turkey: EBR, CAR. **World Distribution:** Russia, Caucasia, Bulgaria, Turkey (Staręga, 1976; Martens, 1978, 2006; Snegovaya & Chemeris, 2004). **Chorotype:** E-European.

Nemastoma anatolicum Roewer, 1962
Distribution in Turkey: MER. **World Distribution:** Turkey (Roewer, 1962; Staręga, 1973). **Chorotype:** Anatolian.

Paranemastoma supersum (Roewer, 1951)
Distribution in Turkey: EBR. **World Distribution:** Georgia, Turkey (Martens, 2006). **Chorotype:** Turano-Anatolian.

Paranemastoma werneri Kulczyński, 1903
Distribution in Turkey: Unknown exact locality. **World Distribution:** Turkey (Hallan, 2005). **Chorotype:** Anatolian.

Pyza anatolica (Roewer, 1959)
Distribution in Turkey: EAR, SAR. **World Distribution:** Turkey (Gruber, 1979). **Chorotype:** Anatolian.

Pyza taurica Gruber, 1979
Distribution in Turkey: MER, CAR. **World Distribution:** Turkey (Gruber, 1979). **Chorotype:** Anatolian.

Vestiferum alatum Martens, 2006
Distribution in Turkey: EBR. **World Distribution:** Georgia, Turkey (Martens, 2006). **Chorotype:** Turano-Anatolian.

Family Phalangiidae Latreille, 1802

Buresilia macrina (Roewer, 1956)
Distribution in Turkey: Unknown exact locality. **World Distribution:** Turkey (Roewer, 1956; Staręga, 1981; Hallan, 2005). **Chorotype:** Anatolian.

Dasylobus kulczynskii Nosek, 1905
Distribution in Turkey: CAR. **World Distribution:** Turkey (Nosek, 1905; Hallan, 2005). **Chorotype:** Anatolian.

Egaenus convexus (C.L. Koch, 1835)
Distribution in Turkey: Unknown exact locality. **World Distribution:** Europe to Central Asia (Roewer, 1956; Staręga, 2000; Klimeš, 2000; Novak & Gruber, 2000; Komposch, 2004; Blick & Komposch, 2004; Komposch & Gruber, 2004).
Chorotype: Palearctic.

Egaenus marenzelleri Nosek, 1905
Distribution in Turkey: CAR. **World Distribution:** Turkey (Nosek, 1905; Hallan, 2005). **Chorotype:** Anatolian.

Homolophus funestus L. Koch, 1877
Distribution in Turkey: CAR. **World Distribution:** Siberia, Mongolia, Turkey (Blick & Komposch, 2004; Hallan, 2005; Stol, 2007; Kurt *et al.*, 2008b).
Chorotype: Central Asiatic-European.

Lacinius ephippiatus (C.L. Koch, 1885)
Distribution in Turkey: EAR. **World Distribution:** East Europe to North Europe, Caucasia, Turkey (Spoek, 1975; Martens, 1978; Stol, 1993, 2002, 2007; Bliss & Martens, 1995; Farzalieva & Esyunin, 1999; Vanhercke, 1999; Novak & Gruber, 2000; Klimeš, 2000; Staręga, 2002; Komposch, 2004; Komposch & Gruber, 2004; Blick & Komposch, 2004; Hallan, 2005; Çorak *et al.*, 2008). **Chorotype:** European.

Metaphalangium cirtaum (C.L. Koch, 1839)
Distribution in Turkey: Unknown exact locality. **World Distribution:** South Europe, Mediterranean (Cokendolpher, 1990; Bayram *et al.*, 2010).
Chorotype: S-European+Mediterranean.

Metaphalangium strandi (Nosek, 1905)
Distribution in Turkey: CAR. **World Distribution:** Turkey (Nosek, 1905; Hallan, 2005). **Chorotype:** Anatolian.

Metaplatybunus grandissimus (C.L. Koch, 1839)
Distribution in Turkey: Unknown exact locality. **World Distribution:** Eastern Mediterranean, Georgia (Roewer, 1912, 1923, 1956, 1959; Martens, 1966; Staręga, 1966; Mitov, 2000). **Chorotype:** E-Mediterranean.

Metaplatybunus petrophilus Martens, 1965
Distribution in Turkey: CAR, EAR. **World Distribution:** Eastern Mediterranean (Çorak, 2004; Bayram *et al.*, 2010). **Chorotype:** E-Mediterranean.

Mitopus morio (Fabricius, 1779)
Distribution in Turkey: CAR. **World Distribution:** European (Spoek, 1975; Martens, 1978; Stol, 1993, 2002, 2007; Bliss & Martens, 1995; Farzalieva & Esyunin, 1999; Vanhercke, 1999; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Komposch & Gruber, 2004; Komposch, 2004; Blick & Komposch, 2004; Hallan, 2005). **Chorotype:** European.

Oligolophus hansenii (Kraepelin, 1896)
Distribution in Turkey: CAR. **World Distribution:** Central to West Europe, Turkey (Spoek, 1975; Stol, 1993, 2002, 2007; Bliss & Martens, 1995; Vanhercke, 1999; Staręga, 2002; Blick & Komposch, 2004; Hallan, 2005; Kurt *et al.*, 2008b). **Chorotype:** European.

Oligolophus tridens (C.L. Koch, 1836)
Distribution in Turkey: CAR. **World Distribution:** European (Spoek, 1975; Martens, 1978; Vanhercke, 1999; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Komposch & Gruber, 2004; Komposch, 2004; Blick & Komposch, 2004; Hallan, 2005; Stol, 2007; Kurt *et al.*, 2008b). **Chorotype:** European.

Opilio hemseni Roewer, 1952
Distribution in Turkey: EBR. **World Distribution:** Ukraine, Russia, Georgia, Turkey, Iran (Staręga, 2003). **Chorotype:** E-European+ Irano-Anatolian.

Opilio insulae Roewer, 1956
Distribution in Turkey: AR. **World Distribution:** Ukraine, Greece, Turkey (Gruber, 1978; Bayram *et al.*, 2010). **Chorotype:** E-European.

Opilio lederi Roewer, 1911
Distribution in Turkey: EAR, SAR. **World Distribution:** European, Caucasia, Central Asia, North Africa, Turkey (Gruber, 1979; Bayram *et al.*, 2010). **Chorotype:** Palearctic.

Opilio parietinus (De Geer, 1778)
Distribution in Turkey: CAR. **World Distribution:** European, Caucasia, Central Asia, North Africa, Turkey (Šilhavý, 1966; Spoek, 1975; Hillyard & Sankey, 1989; Bliss & Martens, 1995; Snegovaya, 1999; Vanhercke, 1999; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Komposch & Gruber, 2004; Çorak, 2004; Komposch, 2004; Blick & Komposch, 2004; Stol, 2007). **Chorotype:** Palearctic.

Opilio redikorzevi Roewer, 1956
Distribution in Turkey: CAR. **World Distribution:** Caucasia, Turkey (Redikorvez, 1936; Šilhavý, 1966; Kurt *et al.*, 2008b). **Chorotype:** Turano-Anatolian.

Opilio saxatilis C.L. Koch, 1839
Distribution in Turkey: CAR, EAR. **World Distribution:** European (Šilhavý, 1966; Spoek, 1975; Martens, 1978; Hillyard & Sankey, 1989; Bliss & Martens, 1995; Snegovaya, 1999; Vanhercke, 1999; Klimeš, 2000; Mitov, 2000; Novak & Gruber, 2000; Staręga, 2002; Blick & Komposch, 2004; Çorak, 2004; Komposch, 2004; Komposch & Gruber, 2004; Hallan, 2005; Stol, 2007). **Chorotype:** European.

Opilio validus Roewer, 1959
Distribution in Turkey: Unknown exact locality. **World Distribution:** Turkey (Mitov, 2000). **Chorotype:** Anatolian.

Phalangium opilio Linnaeus, 1761
Distribution in Turkey: CAR. **World Distribution:** European (Šilhavý, 1966; Spoek, 1975; Martens, 1978; Hillyard & Sankey, 1989; Bliss & Martens, 1995; Snegovaya, 1999; Vanhercke, 1999; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Blick & Komposch, 2004; Çorak, 2004; Komposch, 2004; Komposch & Gruber, 2004; Hallan, 2005; Stol, 2007;). **Chorotype:** European.

Phalangium punctipes (C.L. Koch, 1878)
Distribution in Turkey: CAR. **World Distribution:** Cuba, Congo, Central Asia, Caucasia, Eastern Mediterranean (Šilhavý, 1966; Blick & Komposch, 2004; Hallan, 2005; Kurt *et al.*, 2008b; Stol, 2007). **Chorotype:** Palearctic+Neotropical+Afrotropical.

Phalangium savignyi Audouin, 1825
Distribution in Turkey: MER. **World Distribution:** Russian, Caucasia, Mediterranean (Cokendolpher, 1990; Bayram *et al.*, 2010). **Chorotype:** Mediterranean.

Platybunoides argaea Šilhavý, 1956
Distribution in Turkey: CAR. **World Distribution:** Turkey (Šilhavý, 1956).
Chorotype: Anatolian.

Platybunus anatolicus Roewer, 1956
Distribution in Turkey: CAR. **World Distribution:** Turkey (Roewer, 1956).
Chorotype: Anatolian.

Rafalskia cretica (Roewer, 1923)
Distribution in Turkey: Unknown exact locality. **World Distribution:** Eastern Mediterranean (Mitov, 2003). **Chorotype:** E-Mediterranean.

Rafalskia olympica (Kulczyński, 1903)
Distribution in Turkey: MR. **World Distribution:** Turkey (Staręga, 1981; Karaman, 2002; Hallan, 2005). **Chorotype:** Anatolian.

Rilaena gruberi Staręga, 1973
Distribution in Turkey: EAR. **World Distribution:** Iraq, Turkey (Staręga, 1973).
Chorotype: SW-Asiatic (Irano-Anatolian).

Zachaeus anatolicus (Kulczyński, 1923)
Distribution in Turkey: CAR. **World Distribution:** Eastern Mediterranean, Yugoslavia, Azerbaijan (Staręga, 1978; Snegovaya, 2002). **Chorotype:** Turano-Mediterranean.

Zachaeus crista (Brullé, 1832)
Distribution in Turkey: CAR, WBR. **World Distribution:** European, Turkey, Azerbaijan (Martens, 1965; Gruber, 1969, 1979; Hillyard & Sankey, 1989; Snegovaya, 1999; Klimeš, 2000; Çorak, 2004; Komposch, 2004; Bayram & Çorak, 2007).
Chorotype: European.

Zachaeus hebraicus (Simon, 1884)
Distribution in Turkey: MER. **World Distribution:** Eastern Mediterranean, Middle East (Roewer, 1923, 1956; Staręga, 1967, 1973). **Chorotype:** E-Mediterranean.

Zachaeus orchimonti (Giltay, 1933)
Distribution in Turkey: Unknown exact locality. **World Distribution:** Turkey (Giltay, 1933; Hallan, 2005). **Chorotype:** Anatolian.

Family Sclerosomatidae Simon, 1879

Leiobunum albigenium Sørensen, 1911
Distribution in Turkey: MER. **World Distribution:** Eastern Mediterranean (Šilhavý, 1956). **Chorotype:** E-Mediterranean.

Leiobunum ghigii Di Caporiacco, 1927
Distribution in Turkey: Unknown exact locality. **World Distribution:** Eastern Mediterranean (Di Caporiacco, 1929; Gruber, 1968). **Chorotype:** E-Mediterranean.

Leiobunum rotundum (Latreille, 1798)
Distribution in Turkey: CAR. **World Distribution:** European (Šilhavý, 1966; Spoek, 1975; Martens, 1978; Hillyard & Sankey, 1989; Bliss & Martens, 1995; Snegovaya, 1999; Vanhercke, 1999; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Blick & Komposch, 2004; Çorak, 2004; Komposch, 2004; Komposch & Gruber, 2004; Hallan, 2005; Kurt *et al.*, 2008a; Stol, 2007). **Chorotype:** European.

Leiobunum rupestre (Herbst, 1799)
Distribution in Turkey: CAR. **World Distribution:** European (Martens, 1978; Martens, 1995; Klimeš, 2000; Novak & Gruber, 2000; Staręga, 2002; Blick & Komposch, 2004; Komposch, 2004; Bliss & Komposch, 2004; Hallan, 2005; Kurt *et al.*, 2008a; Stol, 2007). **Chorotype:** European.

Leiobunum seriatum Simon, 1878
Distribution in Turkey: MER. **World Distribution:** Eastern Mediterranean, Middle East (Šilhavý, 1955; Staręga, 1973). **Chorotype:** E-Mediterranean.

Family Sironidae Simon, 1879

Cyphophthalmus duricorius bithynicus (Gruber, 1969)
Distribution in Turkey: MR. **World Distribution:** Turkey (Gruber, 1968).
Chorotype: Anatolian.

Cyphophthalmus duricorius yalovensis (Gruber, 1969)
Distribution in Turkey: MR. **World Distribution:** Turkey (Gruber, 1968).
Chorotype: Anatolian.

Family Trogulidae Sundevall, 1833

Calathocratus beieri Gruber, 1968
Distribution in Turkey: MER. **World Distribution:** Turkey (Gruber, 1968; Schönhofer, 2009). **Chorotype:** Anatolian.

Platybessobius caucasicus Šilhavý, 1966
Distribution in Turkey: Unknown exact locality. **World Distribution:** Russia, Caucasia, Turkey (Roewer, 1923, 1950; Redikorvez, 1936; Šilhavý, 1955; Snegovaya, 1999). **Chorotype:** E-European.

Platybessobius singularis Roewer, 1940
Distribution in Turkey: MER, AR, CAR, MR, WBR. **World Distribution:** Caucasia, Turkey, Greece (Šilhavý, 1966; Gruber, 1968; Schönhofer, 2009).
Chorotype: Turano-Mediterranean (Balkano-Anatolian).

Trogulocratus rhodiensis Gruber, 1963
Distribution in Turkey: MR, AR. **World Distribution:** Turkey, Greece (Martens, 1965; Gruber, 1978). **Chorotype:** Turano-Mediterranean (Balkano-Anatolian).

Trogulus graecus Dahl, 1903
Distribution in Turkey: Unknown exact locality. **World Distribution:** Eastern Mediterranean (Staręga, 1976; Mitov, 2000; Schönhofer, 2009). **Chorotype:** E-Mediterranean.

Trogulus gypseus Simon, 1879
Distribution in Turkey: MER, AR. **World Distribution:** Mediterranean (Roewer, 1959; Martens, 1965; Gruber, 1968; Schönhofer, 2009). **Chorotype:** Mediterranean.

Trogulus tricarinatus (Linnaeus, 1758)
Distribution in Turkey: MR. **World Distribution:** Central to South Europe (Roewer, 1959; Gruber, 1968; Martens, 1978; Mitov, 2000, Schönhofer, 2009). **Chorotype:** European.

Trogulus uncinatus Gruber, 1973
Distribution in Turkey: MR. **World Distribution:** Turkey (Gruber, 1968; Schönhofer, 2009). **Chorotype:** Anatolian.

Zoogeographical Remarks

Turkish harvestmen include 63 species and 1 subspecies belonging to 7 families. They have different chorotypes as follows:

19 species (+ 1 subspecies), about 31%, have "Anatolian" chorotype. They are endemic to Turkey. These taxa are: *Buresilia macrina*, *Calathocratus beieri*, *Cyphophthalmus duricorius bithynicus*, *C. d. yalovensis*, *Dasylobus kulczynskii*, *Dicranolasma ressli*, *Egaenus marenzelleri*, *Giljarovia turcica*, *Mediostoma ceratocephalum*, *Metaphalangium strandi*, *Nemastoma anatolicum*, *Opilio validus*, *Paranemastoma werneri*, *Platybunoides argaea*, *Platybunus anatolicus*, *Pyza anatolica*, *P. taurica*, *Rafalskia olympica*, *Trogulus uncinatus*, *Zachaeus orchimonti*.

11 species, about 18%, have "European" chorotype. These taxa are: *Ischyropsalis hellwigi hellwigi*, *Lacinius ephippiatus*, *Leiobunum rotundum*, *L. rupestre*, *Mitopus morio*, *Oligolophus hansenii*, *O. tridens*, *Opilio saxatilis*, *Phalangium opilio*, *Trogulus tricarinatus* and *Zachaeus crista*.

8 species, about 11%, have "E-Mediterranean" chorotype. These taxa are: *Leiobunum albigenium*, *L. ghigii*, *L. seriatum*, *Metaplatybunus grandissimus*, *M. Petrophilus*, *Rafalskia cretica*, *Trogulus graecus* and *Zachaeus hebraicus*.

6 species, about 8%, have "Turano-Mediterranean" chorotype. These taxa are: *Dicranolasma giljarovi*, *D. hoberlandti*, *D. ponticum*, *Platybessobius singularis*, *Trogulocratus rhodiensis* and *Zachaeus anatolicus*.

4 species, about 6%, have "Turano-Anatolian" chorotype. These taxa are: *Giljarovia tenebricosa*, *Opilio redikorzevi*, *Paranemastoma supersum* and *Vestiferum alatum*.

4 species, about 6%, have "E-European" chorotype. These taxa are: *Histricostoma caucasicum*, *Mitostoma gracile*, *Opilio insulae* and *Platybessobius caucasicus*.

3 species, about 5%, have "Palearctic" chorotype. These taxa are: *Egaenus convexus*, *Opilio lederi* and *O. parietinus*.

2 species, about 3%, have "Mediterranean" chorotype. These taxa are: *Phalangium savignyi* and *Trogulus gypseus*.

Each, 1 species, about 2%, of the remaining species has a different chorotype.
Dicranolasma scabrum has "W-Palearctic" chorotype.
Homolophus funestus has "Central Asiatic-European" chorotype.
Metaphalangium cirtaum has "S-European+Mediterranean" chorotype.
Opilio hemseni has "E-European+Irano-Anatolian" chorotype.
Phalangium punctipes has "Palearctic+Neotropic+Afrotropical" chorotype.
Rilaena gruberi has "SW-Asiatic (Irano-Anatolian)" chorotype.

So, most Turkish harvestmen species belongs to Anatolian chorotype (31 %). European and E-Mediterranean chorotypes (29 %) follow them.

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Serket (2010) vol. 12(2): 45-46.

A new name for a preoccupied specific epithet in the genus *Metaphalangium* Roewer, 1911 (Opiliones: Phalangiidae)

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Abstract

According to the International Code of Zoological Nomenclature (ICZN, 1999), *Metaphalangium strandi* Caporiacco, 1948 is not correct because the specific epithet is illegitimate. The authors request the replacement name of the specific epithet *strandi* Caporiacco, 1948 and they suggest *rhodesensis* nom. nov. Accordingly, new combination is herein proposed for the species: *Metaphalangium rhodesensis* nom. nov. pro *Metaphalangium strandi* Caporiacco, 1948 syn. n.

Keywords: Nomenclatural change, homonymy, replacement name, Opiliones, Phalangiidae, *Metaphalangium*.

Family Phalangiidae
Genus *Metaphalangium* Roewer, 1911
Species *Metaphalangium rhodesensis* nom. nov.

Metaphalangium strandi Caporiacco, 1948. L'aracnofauna di Rodi. Redia, 33, 27-75 (Opiliones: Phalangiidae). Preoccupied by *Metaphalangium strandi* (Nosek, 1905). Araneiden, Opilionen und Chernetiden. *In*: Penther, A., Zederbauer, E., Ergebnisse einer naturwissenschaftliche Reise zum Erdschais-Dagh (Kleinasien). Annalen des Naturhistorischen Museums in Wien, 20, 114–154 (Opiliones: Phalangiidae).

The names *Metaphalangium strandi* (Nosek, 1905) and *Metaphalangium strandi* Caporiacco, 1948 were included in the family Phalangiidae.

The specific epithet *strandi* was initially introduced by Nosek (1905) with the original combination *Phalangium strandi* Nosek, 1905 from Niğde province in CSE Turkey. It is still used as a valid species name.

Subsequently, Caporiacco (1948) described a new species from Rhodes Island with the same specific epithet as *Metaphalangium strandi* Caporiacco, 1948 by original combination. According to Gruber (1978), Martens (1965) accepted the species *Metaphalangium strandi* Caporiacco, 1948 might be identical with *Zacheus crista* (Brullé, 1832). However, it is still used as a valid species name.

Metaphalangium strandi (Nosek, 1905) has priority over *Metaphalangium strandi* Caporiacco, 1948. Thus, *Metaphalangium strandi* Caporiacco, 1948 is illegitimate and consequently can not be correct. The name *Metaphalangium strandi* Caporiacco, 1948 is a primary junior homonym of the name *Metaphalangium strandi* (Nosek, 1905). According to Article 60 of the International Code of Zoological Nomenclature (1999), it must be rejected and replaced. It has no synonym. So, we propose for the specific epithet *strandi* Caporiacco, 1948 the replacement name *rhodesensis* nom. nov.

Etymology: The name is dedicated to Rhodes Island that is the type locality for *Metaphalangium strandi* Caporiacco, 1948.

Summary of nomenclatural changes:

Genus *Metaphalangium* Roewer, 1911

Species *Metaphalangium rhodesensis* nom. nov.
pro *M. strandi* Caporiacco, 1948 syn. n., [nec *M. strandi* (Nosek, 1905)]
[orig. comb.: *Metaphalangium strandi* Caporiacco, 1948 from Rhodes Island]

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Serket (2010) vol. 12(2): 47-60.

Systematics of the philodromid spider fauna of Uludağ Mountain region (Araneae: Philodromidae) with a review of the Philodromidae in Turkey

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Abstract

Philodromid spiders were collected and examined between the years of 2006-2009 from the Uludağ Mountain. The paper presents distribution of 7 species from the genera *Philodromus* and *Thanatus*. *Philodromus aureolus* (Clerck, 1757) and *Thanatus atratus* Simon, 1875 are the most dominant species among philodromids. *Philodromus rufus* Walckenaer, 1826 and *P. collinus* C.L. Koch, 1835 are rare spiders. This paper presents an annotated checklist of the Philodromidae of Turkey which includes 38 species of four genera.

Keywords: Araneae, Philodromidae, Uludağ Mountain, Bursa, Turkey.

Introduction

Philodromid spiders usually have elongate bodies and quite long slender legs with the back pairs nearly as well-developed as the front ones (Levy, 1977). The philodromids have elongate legs of about equal length, except for species of *Ebo* which have the second pair of legs much longer than the first (Jennings & Cutler, 1996). The Philodromidae are active hunters and have claw tufts and scopulae on the metatarsi and tarsi of legs. Those species which wait camouflaged in flowers, and ambush visiting insect, have venom which is apparently highly toxic to insects such as bumble bees, which are much larger than the spiders themselves (Roberts, 1995). Philodromids make little use of silk other than in constructing egg sacs (Levy, 1977).

For a long time, philodromid spiders were regarded as a derived taxon of crab spiders, and were allocated to subfamily rank within the Thomisidae (Muster, 2009). Detailed studies of embryological characters, chromosomes and eye structure later suggested that Philodromidae and Thomisidae are not closely related to each other (Muster, 2009).

The spider family Philodromidae Thorell, 1870 comprises 536 species in 29 genera in the world (Platnick, 2010; Logunov & Kunt, 2010). The checklist of Philodromidae fauna of Turkey (Demir, 2008) included 27 species. As pointed out by Logunov & Kunt (2010), records of some species remain doubtful and require verification based upon reference to the pertinent material. For instance, *Philodromus lividus* Simon, 1875 was recorded by Kulczyński (1903) from Bursa, but its confirmed distribution is restricted to the western Mediterranean, from Spain and Algeria eastward as far as Italy (Logunov & Kunt, 2010). Two species from Turkey: *Philodromus krausi* Muster & Thaler, 2004 and *P. lunatus* Muster & Thaler, 2004 are described as new species. Thereafter, *Philodromus femurostriatus* Muster, 2009 and *P. pinetorum* Muster, 2009 are described as new from Turkey. The Philodromidae of Turkey includes 38 species of four genera (Bayram *et al.*, 2010; Demir, 2008; Logunov & Huseynov, 2008; Logunov & Kunt, 2010). A very conservative estimate could be at least 45 species (Logunov & Kunt, 2010). Although this number of species is higher than those of neighbouring countries such as Greece (27 species), Azarbaijan (22 species) or Israel (19 species), it is hardly exhaustive (Logunov & Kunt, 2010).

Philodromus bonneti Karol, 1968, *Philodromus bucaensis* (Logunov & Kunt, 2010), *Philodromus krausi* Muster & Thaler, 2004, *Thanatus okayi* Karol, 1966, and *Thanatus nitidus* Logunov & Kunt, 2010 are endemic philodromids for Turkey (Muster & Thaler, 2004; Platnick, 2010; Logunov & Kunt, 2010).

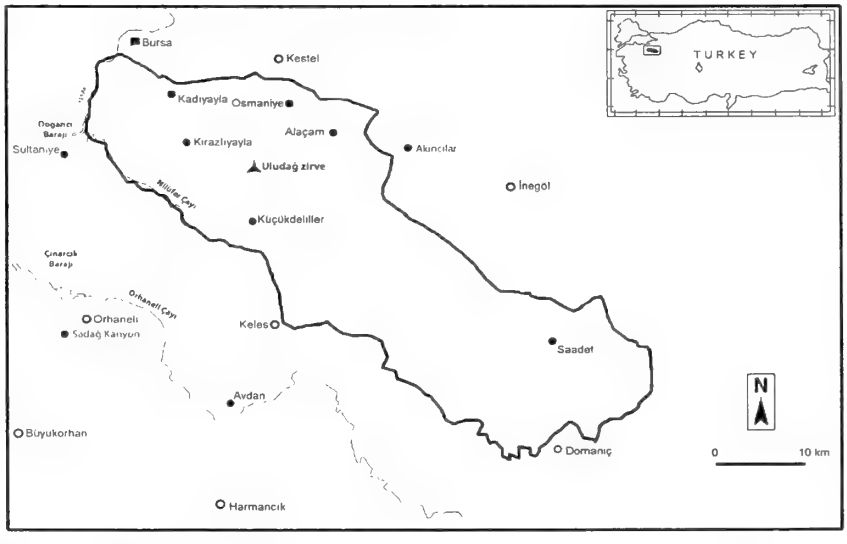


Fig. 1. The localities from which spider specimens were collected in Uludağ Mountain.

Material and Methods

The specimens were collected from Uludağ mountain, Turkey in the spring and summer months of 2006-2009 (Fig. 1). They were collected from under stones, on ground and on plants by hand sampling, aspirator, sweeping and beating bushes and trees. In this study, only adult spiders were identified, and specimens were preserved in 70 % ethanol. The studied specimens are deposited in the Department of Biology, Zoology Museum, Uludağ University, Bursa, Turkey.

Identification was made by stereo microscope using the keys of Nentwig *et al.* (2003), Logunov & Huseynov (2008), Muster & Thaler (2003), Muster (2009), Roberts (1995), and Segers (1992). In this study, drawings of palpus, epigynum, and vulvae of the species are presented.

The terminology of male and female genital morphology mostly follows Muster & Thaler (2004) and Muster (2009). Abbreviations used in the text are:

aSDL : ascending part of sperm duct loop, dSDL : descending part of s. d. l.,
ITA : intermediate tibial apophysis, RTA : retrolateral t. a., VTA : ventral t. a.

Results and Discussion

Genus *Philodromus* Walckenaer, 1826

Spiders with oval to angularly shaped body. Carapace is about as long as wide, narrowing in front. Eyes approximately of the same size; eyes of anterior row closer together than eyes of posterior row; lateral eyes of both rows sometimes with small eye tubercles; posterior-median eyes situated closer to posterior-lateral eyes than to each other; median quadrangle of eyes wider than long, or nearly so, with posterior side usually wider than in front. Legs moderately long and slender, second pair slightly longer than others, but legs of nearly equal length; distal joints armed ventrally with scopulae and claw tufts. Abdomen is usually oval and rounded at sides, sometimes with median dark mark and posterior stripes or chevrons (Levy, 1977).

Philodromus aureolus (Clerck, 1757) (Figs. 2-4)

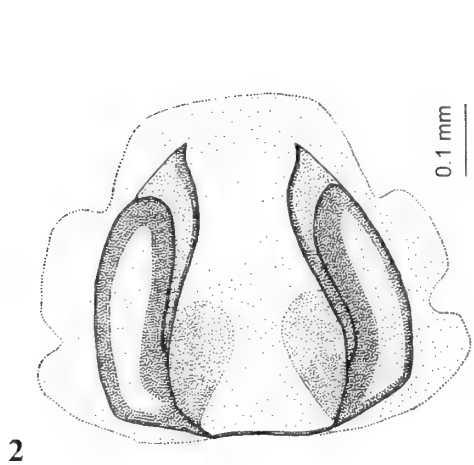
Material examined: 1♂, 1♀, Kadıyayla, (1.252 m), 23.07.2006; 4♀♀, Saadet, (590 m), 02.07.2007; 1♀, Uludağ, 07.2006; 1♀, around Küçükdeliler, (1.050 m), 07.08.2007; 2♀♀, Kirazlıyayla, (1.505 m), 29.07.2008.

This species was found on *Silene compacta*, *Mentha spicata*, *Eryngium* sp.

Description: Female: Total body length 4.04-5.71 mm. Earth-coloured. Carapace is a little wider than long and circular shaped. Colouration of carapace dark brown and the middle of carapace is light. Lateral eyes > median eyes. Anterior median eyes are closer to anterior lateral eyes than to each other. Posterior median eyes are closer to lateral eyes than to each other. Distance between anterior median eyes shorter than distance between posterior median eyes and trapezium formed by four median eyes. Eyes except the posterior median eyes, looking semi-circular shaped, arranged in a row as seen from above. Sternum is swollen, with weak hairs, almost as long as wide. Labium is as long as wide. Abdomen is longer than wide. The abdominal folium is brown or almost blackish brown. Hairs on the abdomen are weak. The ventral side of the abdomen is lighter than the dorsal side. Legs yellowish brown or grey with small brown patches and with rare short hairs. First pair and second pair of legs are longer than others. Epigyne is distinctive and large, wider than long. Median septum is bottle-like. There is not sclerotised arch. Receptacula are nearly half as long as copulatory ducts. Glandular mounds are flat.

Male: Total body length 5.23 mm. Carapace is much less wider than long, and is circular. Carapace is brown. Lateral eyes > median eyes. Anterior median eyes are closer to the anterior lateral eyes than to each other. Posterior median eyes are closer to lateral eyes than to each other. Distance between anterior median eyes shorter than distance between posterior median eyes and trapezium formed by four median eyes. Eyes except the posterior median eyes, looking semi-circular shaped, arranged in a row as seen dorsally and frontally. Sternum is longer than wide. Labium is as long as wide. Abdomen is longer than wide and its dorsal surface with weak short blackish brown hairs. The ventral side of the abdomen is lighter than the dorsal side. Legs are yellowish brown with rare short hairs and spines. First pair and second pair of legs are longer than others. Embolus is slightly curved and sickle-shaped; tibia with ventral, intermediate and retrolateral apophyses; VTA large, quadrangular and thick; ITA short; RTA long and almost touching cymbial process. Cymbium is a little broad.

World Distribution: Palaearctic (Platnick, 2010).



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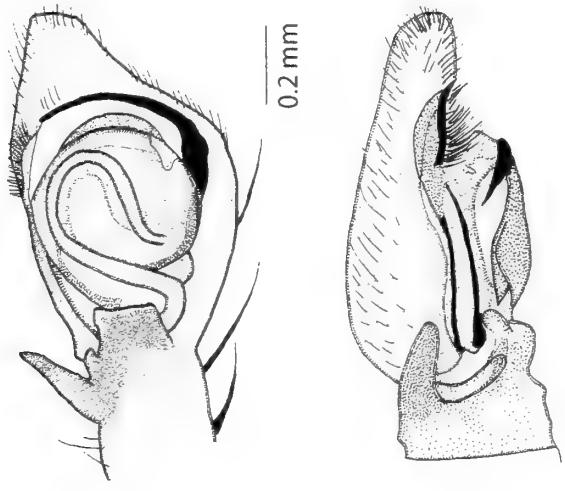


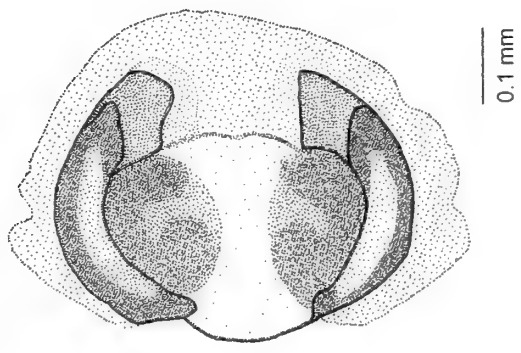
4 a b

Figs. 2-4: *Philodromus aureolus* (Clerck, 1757).
2. Female, epigynum, ventral view. 3. Female, vulvae, dorsal view.
4. Male right palpus, ventral view (a), lateral view (b).

Remarks: This species was formerly confused with *P. cespitum* (Muster & Thaler, 2004; Segers, 1992). In *P. praedatus*, the upper edge of the ventral apophysis is bi-divided and the retrolateral apophysis is bent, whereas in *P. aureolus* the upper edge of the ventral apophysis as well as the retrolateral apophysis are straight (Segers, 1990). One further difference is the shape of the embolus which is smoothly curved in *P. aureolus*, whereas in *P. praedatus* it is distinctly more curved in the proximal part (Segers, 1990). As pointed out by Segers (1990), females of species of the *P. aureolus* group are known to show important intraspecific variability in epigyne and vulvae (Braun, 1965; Snazell, 1976), it is not possible to identify the two species by examining the epigyne only.

The male specimens figured as *P. aureolus* from Israel by Levy (1977) are similar but the specimens figured as *P. aureolus* from the Mediterranean by Muster & Thaler (2004) are different. VTA with oblique border, ITA well expressed like specimens of Israel unlike the Mediterranean specimens. The epigyne figured from Israel by Levy (1977) are different: median septum of epigyne with distinct arch whereas our specimens do not have distinct arch. The epigyne figured as *P. aureolus* from Mediterranean by Muster & Thaler (2004) is similar.

Philodromus cespitum (Walckenaer, 1802) (Figs. 5, 6)
Material examined: 1♀, Akıncılar, (470 m), 16.07.2006; 1♀, Alaçam, (770 m), 17.09.2006; 1♀, Avdan, (620 m), 07.08.2007.
This species was found on *Eryngium campestre*.
Description: Female: Total body length 3.7-5.0 mm. Earth-coloured. A slim cream coloured line is extending from the middle of the posterior eyes until the middle of the carapace. There is a cream coloured anchor-like pattern in the middle of the carapace. Eyes are approximately of the same size. Anterior median eyes are closer to the anterior lateral eyes than to each other. Distance between anterior median eyes is shorter than distance between posterior median eyes. Posterior median eyes are closer to posterior lateral eyes than to each other. Row of eyes except the posterior median eyes is semi-circular shaped as anteriorly seen. Labium and sternum are approximately as long as wide. Sternum earth-coloured, like shield. Abdomen is earth-brown, as long as wide, with a dark brown dorsal pattern. Legs are brown with rare short hairs. First pair and second pair of legs are longer than others. Metatarsi and tarsi of all legs with short hairs on the ventral part. Epigyne is quite distinctive and wider than long, with a distinct median plate separated by a quite developed sclerotised arch; median plate almost as long as wide; atrium is narrower than median plate; copulatory duct half ring-shaped and receptacula half as long as copulatory duct; glandular mound is unnoticeable.
World Distribution: Holarctic (Platnick, 2010).



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Figs. 5-6. *Philodromus cespitum* (Walckenaer, 1802). Female.
5. Epigynum, ventral view. 6. Vulvae, dorsal view.

Remarks: *P. aureolus similis* is believed to be a junior synonym of *P. cespitum* (Segers, 1992). Being one of the most frequent *Philodromus*-species in central Europe, *P. cespitum* reaches higher latitudes more than all of its congeners (Palmgren, 1983; Muster & Thaler, 2004). *P. cespitum* seems to be rare in the Mediterranean region; most of the numerous old records certainly refer to misidentification when compared with recently redescribed or reinstalled species of this group (Muster & Thaler, 2004). Uludağ is not exactly Mediterranean. Females can be distinguished from those of *P. longipalpis* by their smaller epigyne and by their overall darker colour. The epigyne of *P. fuscolimbatus* has an atrium which is at least as wide as the median plate, whereas in *P. cespitum* the atrium is normally narrower than the median plate (Segers, 1992). *P. cespitum* from Italy examined by Muster & Thaler (2004: 314, fig. 22a) is similar to our specimens' epigyne of *P. cespitum*.

Philodromus collinus C. L. Koch, 1835 (Fig. 7)
Material examined: 1♂, Kirazlıyayla, (1.505 m), 29.07.2008.
This species was found on the ground.

Description: Male: Total body length 3.6 mm. Carapace as long as wide, rounded, dark brown. Eyes are approximately of the same size. Distance between anterior median eyes is approximately equal to distance between anterior lateral eyes. Distance between anterior median eyes is smaller than distance between the posterior median eyes. Posterior median eyes are closer to the lateral eyes than to each other. Eyes except the posterior median eyes, looking semi-circular shaped arranged in a row as seen from above. Labium and sternum are longer than wide. Abdomen is longer than wide. The dorsal side of the abdomen is dark brown, darker than the carapace. First pair and second pair of legs are much longer than others. Legs are slender, with long rare spines and rare hairs. Legs are brown, lighter than carapace and abdomen. There are small dark brown patches on legs. Embolus slim, of intermediate length, with a slight curve upwards and half a circle; tibia with ventral and retrolateral apophyses; ITA not developed; VTA looks like snake's head; RTA thin, long, pencil-like.
World Distribution: Europe, Russia (Platnick, 2010).

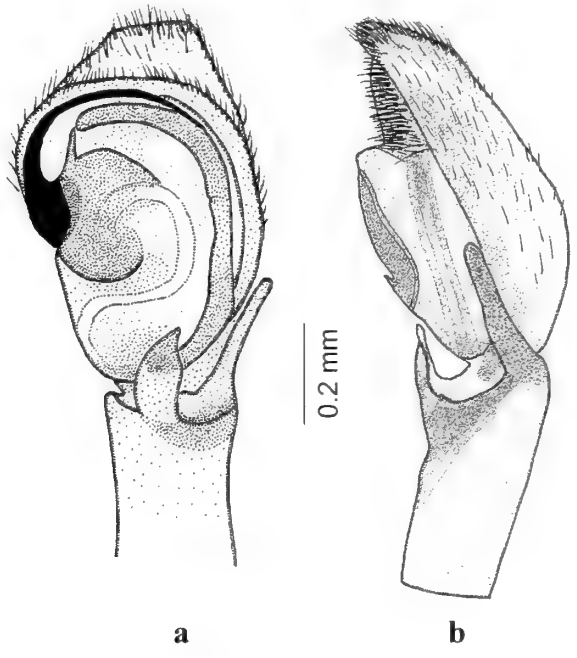


Fig. 7. *Philodromus collinus* C. L. Koch, 1835
Male left palpus, ventral view (a), lateral view (b).

Remarks: It is possibly restricted to higher altitudes in the Mediterranean (Muster & Thaler, 2004). It is very similar in general appearance to *P. aureolus* and *P. cespitum*, but the abdomen is usually marked with a midline band of white hairs which tapers to the spinnerets (Roberts, 1995). In contrast to the opinion of Braun (1965), colouration is highly variable. Specimens with unicoloured legs and without dorsal abdominal pattern occur both in the Mediterranean region and in central Europe (Muster & Thaler, 2004). In the most specimens from the Alps and Saxony, the RTA is pointing to a single tip, whereas it is bifid in Greek, and obviously in some British specimens. The RTA of our male specimens is pointing to a single tip, unlike specimens from Britain examined by Roberts (1995: 172, fig. ♂) and Muster & Thaler (2004: 310, fig. 9).

Philodromus pinetorum Muster, 2009 (Fig. 8)
Material examined: 2♂♂, near to Sadağ Canyon, (480 m), 08.03.2007.
This species was found on *Pinus nigra*.

Description: Male: Total body length 3.2-3.5 mm. Blackish brown-coloured. Carapace is rather bigger than abdomen, wider than long, often with hairs. A trapezium formed by four median eyes is in front of carapace. Distance between anterior median eyes shorter than distance between posterior median eyes. Median eyes are closer to lateral eyes than to each other. Anterior median eyes and anterior lateral eyes are equal in size. Posterior median eyes are smallest. Posterior lateral eyes > anterior eyes > posterior median eyes. There are a few spines on the anterior of the carapace. Sternum is brown, longer than wide, with dense short hairs. Abdomen is blackish brown, smaller than carapace, longer than wide, with short hairs; its ventral side is dark brown with short hairs. Legs have the same colour of the body; tarsi and metatarsi of first and second legs has more hairs than the other segments of legs; legs I, II are longer than legs III and IV; all legs have rare spines. Embolus is originating at 10 o'clock and conspicuously thick, widened from originating to its half but suddenly narrowing at about 12 o'clock, then becoming filiform with a thin diameter and its end is at about 3 o'clock; tibia with ventral, intermediate and retrolateral apophyses; VTA slim, curved; DTA triangular shaped; RTA bifid; sperm duct asymmetric.
World Distribution: France to Turkey (Platnick, 2010).

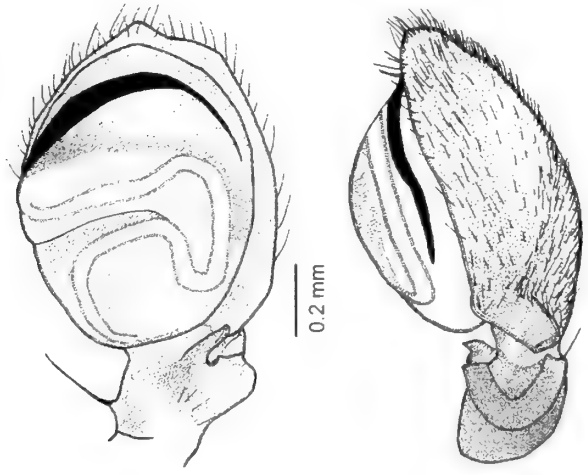


Fig. 8. *Philodromus pinetorum* Muster, 2009
Male, left palpus: (a) ventral view, (b) lateral view.

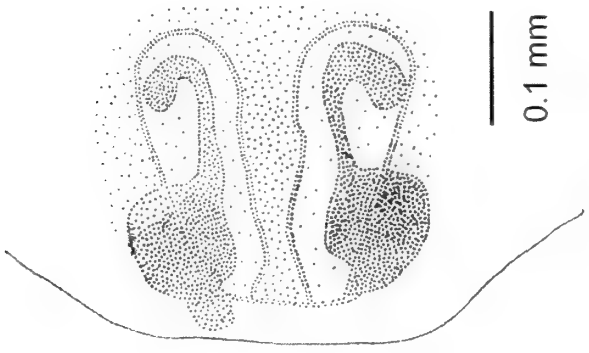
Remarks: As pointed out by Muster (2009), the identity of this species has repeatedly been mistaken; tube 662 from the Simon collection labelled '*Ph. poecilus* Th. Suecia (Th.) Rossia (Wagner) Gallia' contained 27 adult specimens of *P. pinetorum* and five juveniles. Also the figures *P. poecilus* in Simon (1932) undoubtedly belong to this recently described species. In Turkey, *P. pinetorum* appears to be a most common species (Muster, 2009).

Philodromus rufus Walckenaer, 1826 (Figs. 9, 10)
Material examined: 1♀, Saadet, (590 m), 02.07.2007.
This species was found on *Silene compacta*.

Description: Female: Total body length 3.2 mm. Colouration yellow. Carapace is wide and rounded. Eyes are situated on separate tubercles. Row of eyes except the posterior median eyes is semi-circular shaped as seen from the anterior of the carapace. Anterior

median eyes are a little closer to anterior lateral eyes than to each other. Lateral eyes a little bigger than median eyes. Labium and sternum are as long as wide; sternum is flat. Abdomen is longer than wide. Two anterior pairs of legs are quite long; metatarsi and tibiae of all legs rarely have spines. Epigyne is distinctive. Receptaculae are not close to each other.

World Distribution: Holarctic (Platnick, 2010).



9

10

Fig. 9. *Philodromus rufus* Walckenaer, 1826. Female.
9. Epigynum, ventral view. 10. Vulvae, dorsal view.

Remarks: As pointed out by Dondale (1972), the name of *Philodromus* sp. near *rufus* depends on the identity of *P. clarkii* Blachwall, 1850 and on that of *P. pellax* Herman, 1879 (Segers, 1989). It further depends on the identity of *P. rubidus* Simon, 1870 and *P. albidus* Kulczyński, 1911, two species for which the original descriptions state that they are very close to *P. rufus* (Segers, 1989). Females of *P. albidus* are distinguished by the form of the spermathecal organ which is elongated and projects laterally in *P. rufus* and is curled over in *P. albidus* (Segers, 1989: figs. 5-7). Laboratory breeding between European and North American lots of *Philodromus rufus* is demonstrated. On this base, *P. rufus* of Western Europe is designated *P. rufus rufus,* which differs from the North American subspecies in colour and in the time interval between successive egg sacs in ovipositing females (Dondale, 1972).

Genus *Thanatus* C. L. Koch, 1837

Spiders with oval to elongate body. Carapace is about as long as wide, rounded at sides and slightly narrowing in front. Eyes are small, approximately of same size; eyes of anterior row distinctly closer together than eyes of posterior row; posterior row of eyes approximately equally spaced, sometimes posterior-median eyes closer to each other than to posterior-lateral eyes; median quadrangle of eyes distinctly longer than wide. Legs are relatively long, fourth pair almost longest; distal joints armed ventrally with scopulae; claws with distinct denticles and tufts of spatulate bristles beneath. Abdomen is oval, rounded in front and slightly tapering posteriorly; dorsum with dark, median, rhomboid or lanceolate marking (Levy, 1977).

Thanatus atratus Simon, 1875 (Figs. 11-13)

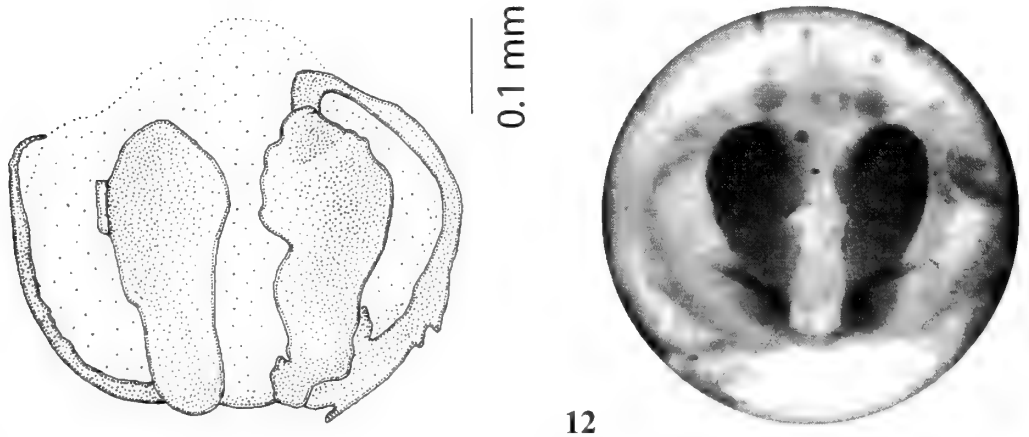
Material examined: 3♂♂, Sultaniye, (835 m), 03.06.2006; 1♀, near to Osmaniye, (520 m), 13.07.2006.

This species was found under stones.

Description: Female: Total body length 6.0 mm. Colouration brown. Carapace is a little longer than wide; the middle of the carapace has a dark brown thick longitudinal stripe, also the sides of carapace with dark brown bands. Anterior median eyes are closer to anterior lateral eyes than to each other. Distance between posterior median eyes is approximately equal to that of posterior lateral eyes. Anterior median eyes are closer to each other than to posterior median eyes. Anterior median eyes smallest. Lateral eyes > median eyes. Labium is approximately as long as wide. Sternum is rounded with rare hairs. Abdomen is longer than wide, also slightly tapering, with dark brown median rhomboid dorsal marking; its ventral side with short hairs. There are dense hairs on all the body and legs. Legs are brown. Epigyne is distinctive and wide. Receptaculae are close to each other.

Male: Total body length 5.0-5.6 mm. Colouration brown. The centre of the carapace is light in colour, with a longitudinal dark brown folium. The sides of the carapace are dark brown. Anterior median eyes smallest. Lateral eyes > median eyes. Anterior median eyes are closer to anterior lateral eyes than to each other. Distance between posterior median eyes is approximately equal to posterior lateral eyes. Distance between anterior median eyes is shorter than distance between posterior lateral eyes. Carapace and labium are approximately as long as wide. Sternum is brown, rounded with thin hairs. Abdomen is longer than wide, with a dark brown, median, rhomboid dorsal marking; its ventral side is brown, with thin hairs. All the body without strong hairs. Palpus with dense hairs on tarsus and metatarsus; embolus short, and its tip is curved; VTA short, indefinite; RTA triangle-shaped; aSDL and dSDL are parallel; cymbium is narrow.

World Distribution: Palaearctic (Platnick, 2010).



Figs. 11-12. *Thanatus atratus* Simon, 1875. Female.
11. Epigynum, ventral view. 12. Vulvae, dorsal view.

Remarks: The body size of our specimens is similar to those of North Asia. The male specimens figured as *T. atratus* from North Asia by Logunov (1996: fig. 191) and eastern Alps by Muster & Thaler (2003: figs. 3, 6) are similar, regarding the embolus and sperm duct. VTA and RTA are different from those of North Asia, but are similar to those of eastern Alps whereas RTA is thicker. Female figured as *T. atratus* from eastern Alps by Muster & Thaler (2003: figs. 14, 15) is similar. *T. atratus* is most closely related to *T. vulgaris* and *T. tuvinensis*; the most reliable distinguishing characters of males are the shape and size of the tegular apophysis, the shape of the embolus. Females differ in having the more narrow and not depressed central division of epigyne in comparison with that of *T. vulgaris* and also in shape of the bursa copulatrix (Logunov, 1996).

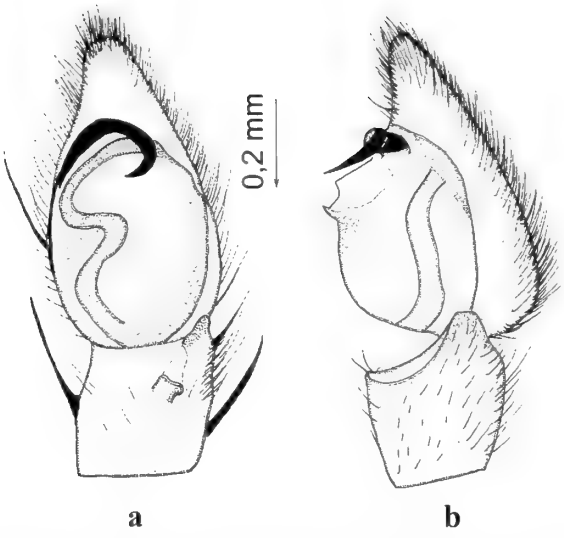


Fig. 13. *Thanatus atratus* Simon, 1875. Male left palpus: (a) ventral view, (b) lateral view.

Thanatus imbecillus L. Koch, 1878 (Fig. 14)
Material examined: 2♂♂, Alpin zone, (2.200 m), 05.07.2009.
This species was found under stones.
Description: Male: Total body length 12.0 mm. Carapace dark brown, like black, and approximately as long as wide. Median eyes are a little smaller than lateral eyes. Distance between anterior median eyes is shorter than distance between posterior median eyes, as trapezium is formed by four median eyes. Anterior median eyes are closer to anterior lateral eyes than to each other. Posterior median eyes are closer to lateral eyes than to each other. Sternum is reddish brown, shield-like, with rare hairs. Sternum is slightly longer than wide. Labium is brown, wider than long. The dorsum of the abdomen is reddish-brown, with a blackish-brown, rhomboid-shaped folium; its ventral side has three yellowish brown longitudinal lines. Femora, trochanters, and coxae are blackish brown but other segments of legs are brown. Body is without strong hairs. Embolus is slim, its distal end is not curved; VTA trapezoid-shaped; aSDL and dSDL are parallel to each other.
World Distribution: Bulgaria to Central Asia (Platnick, 2010).

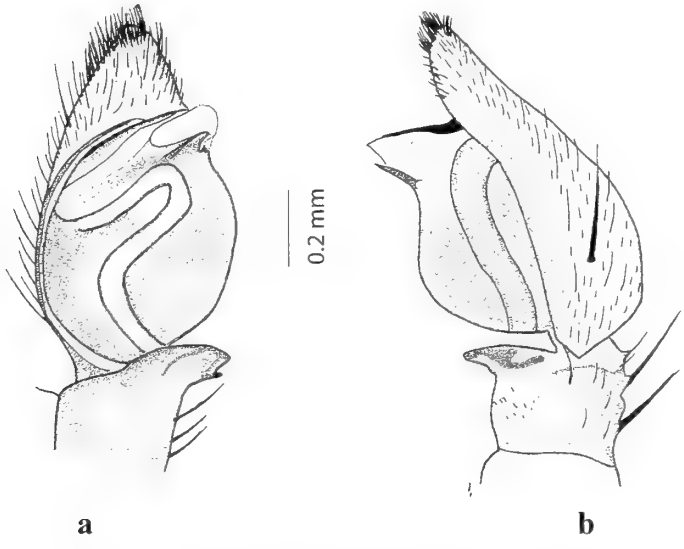


Fig. 14. *Thanatus imbecillus* L. Koch, 1878
Male left palpus: (a) ventral view, (b) lateral view.

Remarks: As pointed out by Lyakhov (1999), this is a rare species related to *T. meronensis* (Levy, 1977: figs 55-58), which has so far been reported from Balkan Peninsula, the Caucasus and Middle Asia. As pointed out by Logunov & Huseynov (2008), it has been suggested (Kovblyuk *et al.*, 2008: 26) that the records of *T. meronensis* from Israel could belong to *T. imbecillus.* Both species are close but distinct: viz., the male palp of *T. imbecillus* is twice as large as that of *T. meronensis* (figs. 19, 23), its tegular apophysis is longer and the tibial apophysis is stronger and of different shape (figs. 20, 24) (Logunov & Huseynov, 2008). The male holotype of *T. meronensis* is clearly distinct from the males of true *T. imbecillus*, suggesting a separated taxonomic status of the two species (Logunov & Huseynov, 2008). It is one of the commonest species of the Turkish philodromids, displaying a high variation in body size (males from one catch may be twice as large as those from another) and colour (Logunov & Kunt, 2010). The palp figured as *T. imbecillus* from Azerbaijan by Logunov & Huseynov (2008: fig. 19) is similar to our specimens.

Annotated checklist of the Philodromidae of Turkey

The present checklist of the Philodromid species of Turkey is mainly based on the data included in "The Checklist of the Spiders of Turkey" Version 10.10 (Bayram *et al.*, 2010); Topçu *et al.*, 2005; Demir, 2008; Logunov & Huseynov, 2008; Logunov & Kunt, 2010.

No.	Species	Distribution
1	***Philodromus albidus*** Kulczyński, 1911	Southeast Anatolia Region
2	***Philodromus aureolus*** (Clerck, 1757)	Mediterranean Region
3	***Philodromus azcursor*** Logunov & Huseynov, 2008	East Black Sea Region Mediterranean Region
4	***Philodromus bistigma*** Simon, 1870	Aegean Region
5	***Philodromus bonneti*** Karol, 1968	Marmara Region
6	***Philodromus bucaensis*** (Logunov & Kunt, 2010)	Aegean Region
7	***Philodromus buchari*** Kubcová, 2004	Central Anatolia Region
8	***Philodromus cespitum*** (Walckenaer, 1802)	Middle Black Sea Region Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region
9	***Philodromus collinus*** C.L.Koch, 1835	Marmara Region Mediterranean Region East Black Sea Region
10	***Philodromus dispar*** Walckenaer, 1826	East Black Sea Region West Black Sea Region Central Anatolia Region Marmara Region Mediterranean Region
11	***Philodromus fallax*** Sundevall, 1833	Central Anatolia Region
12	***Philodromus femurostriatus*** Muster, 2009	Aegean Region Mediterranean Region
13	***Philodromus fuscolimbatus*** Lucas, 1846	Marmara Region
14	***Philodromus glaucinus*** Simon, 1870	Marmara Region
15	***Philodromus histrio*** (Latreille, 1819)	East Anatolia Region Central Anatolia Region

16	***Philodromus krausi*** Muster & Thaler, 2004	Aegean Region, Middle Black Sea Region
17	***Philodromus lividus*** Simon, 1875	Marmara Region
18	***Philodromus longipalpis*** Simon, 1870	Marmara Region
19	***Philodromus lunatus*** Muster & Thaler, 2004	Aegean Region Central Anatolia Region Mediterranean Region
20	***Philodromus margaritatus*** (Clerck, 1757)	Southeast Anatolia Region
21	***Philodromus medius*** O. Pickard-Cambridge, 1872	Mediterranean Region
22	***Philodromus pinetorum*** Muster, 2009	Aegean Region Central Anatolia Region Marmara Region Mediterranean Region
23	***Philodromus poecilus*** (Thorell, 1872)	Central Anatolia Region
24	***Philodromus pulchellus*** Lucas, 1846	Aegean Region Marmara Region Mediterranean Region
25	***Philodromus rufus*** Walckenaer, 1826	Marmara Region Mediterranean Region Southeast Anatolia Region
26	***Thanatus atratus*** Simon, 1875	Central Anatolia Region Mediterranean Region Southeast Anatolia Region
27	***Thanatus formicinus*** (Clerck, 1757)	Aegean Region Central Anatolia Region East Anatolia Region Mediterranean Region Southeast Anatolia Region
28	***Thanatus imbecillus*** L. Koch, 1878	Black Sea Region Central Anatolia Region Southeast Anatolia Region Mediterranean Region
29	***Thanatus lineatipes*** Simon, 1870	Aegean Region
30	***Thanatus nitidus*** Logunov & Kunt, 2010	Southeast Anatolia Region
31	***Thanatus oblongiusculus*** (Lucas, 1846)	Central Anatolia Region Mediterranean Region Southeast Anatolia Region
32	***Thanatus okayi*** Karol, 1966	Marmara Region
33	***Thanatus pictus*** L. Koch, 1881	Aegean Region Central Anatolia Region Southeast Anatolia Region
34	***Thanatus sabulosus*** (Menge, 1875)	Middle Black Sea Region
35	***Thanatus striatus*** C.L.Koch, 1845	Aegean Region Central Anatolia Region East Anatolia Region Mediterranean Region
36	***Thanatus vulgaris*** Simon, 1870	Aegean Region Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region Southeast Anatolia Region

37	***Tibellus macellus*** Simon 1875	Aegean Region Central Anatolia Region Marmara Region Mediterranean Region Southeast Anatolia Region
38	***Tibellus oblongus*** (Walckenaer, 1802)	Aegean Region Central Anatolia Region East Anatolia Region Mediterranean Region Southeast Anatolia Region

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Notes on Spiders of Africa - I

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Abstract

It is a preliminary step in the way of assessment of spiders of Africa. How many spider species are recorded from Africa? what is their proportion to the world's described species? What is the difference between North African and sub-Saharan spiders?

Keywords: Spiders, Araneae, Africa.

Introduction

Nowadays, "The world spider catalog" (Platnick, 2010) is the most important source of information in the field of araneology. The present work is extracted from this catalogue. It is a preliminary step in the way of assessment of spiders of Africa. How many spider species are recorded from Africa? what is their proportion to the world's described species? What is the difference between North African and sub-Saharan spiders?

Canary islands' spiders are included with spiders recorded from all other African islands. Spiders of Sinai (Egypt) are also included in the study.

The first part is a catalogue of genera recorded from Africa. The families are alphabetically arranged. Each genus is followed by the number of species recorded from Africa. Each family is followed by the sum of genera and species. N = North African spiders and S = sub-Saharan spiders.

The second part includes comments in tables of: a summary of the catalogue, proportions of African species to the world species and comparison between North African and sub-Saharan spiders.

SPIDERS OF AFRICA – FAMILIES AND GENERA

Family **AGELENIDAE** C. L. Koch, 1837 11 genera, 72 species [28 N, 44 S]

Agelescape 1 N
Agelena 38 [7 N, 31 S]
Textrix 2 [1 N, 1 S]
Neotegenaria 1 S
Lycosoides 9 N
Benoitia 8 [2 N, 6 S]
Kidugua 1 S
Olorunia 1 S
Tegenaria 5 N
Malthonica 4 [3 N, 1 S]
Mistaria 2 S

Family **AMAUROBIIDAE** Thorell, 1870b 8 genera, 17 species [9 N, 8 S]

Amaurobius 6 N
Arctobius 1 N
Callobius 1 N
Coelotes 1 N
Chresiona 3 S
Macrobunus 1 S
Obatala 1 S
Pseudauximus 3 S

Family **AMMOXENIDAE** Simon, 1893a 2 genera, 13 species [13 S]

Ammoxenus 6 S
Rastellus 7 S

Family **ANAPIDAE** Simon, 1895a 6 genera, 12 species [1 N, 11 S]

Zangherella 1 N
Crozetulus 3 S
Dippenaaria 1 S
Forsteriola 2 S
Metanapis 3 S
Pseudanapis 2 S

Family **ANYPHAENIDAE** Bertkau, 1878 1 genus, 1 species [1 S]

Amaurobioides 1 S

Family **ARANEIDAE** Clerck, 1757 73 genera, 388 species [49 N, 339 S]

Aculepeira 1 N
Araniella 1 N
Gibbaranea 2 N
Leviellus 1 N
Nuctenea 2 N
Poecilarcys 1 N
Siwa 2 N
Zygiella 2 N
Agalenatea 2 [1 N, 1 S]
Araneus 86 [8 N, 78 S]
Argiope 13 [3 N, 10 S]
Cyclosa 16 [5 N, 11 S]
Cyrtarachne 10 [1 N, 9 S]
Cyrtophora 7 [1 N, 6 S]
Gasteracantha 21 [1 N, 20 S]
Gea 4 [1 N, 3 S]
Hypsosinga 3 [1 N, 2 S]
Larinia 15 [2 N, 13 S]
Larinioides 3 [2 N, 1 S]
Nemoscolus 15 [3 N, 12 S]
Neoscona 28 [2 N, 26 S]
Pararaneus 5 [1 N, 4 S]
Prasonica 7 [1 N, 6 S]
Singa 8 [4 N, 4 S]
Acantharachne 8 S
Acrosomoides 3 S
Acusilas 1 S
Aethriscus 2 S
Aethrodiscus 1 S
Aetrocantha 1 S
Afracantha 1 S
Arachnura 1 S
Aranoethra 3 S
Artonis 1 S
Augusta 1 S
Caerostris 9 S
Chorizopes 2 S
Cladomelea 4 S
Coelossia 2 S
Cyphalonotus 3 S
Eriophora 1 S
Eriovixia 3 S
Exechocentrus 1 S
Faradja 1 S
Gastroxya 4 S
Hypsacantha 1 S
Ideocaira 2 S
Isoxya 16 S
Kilima 3 S
Lipocrea 1 S
Madacantha 1 S
Mahembea 1 S
Megaraneus 1 S
Nemosinga 3 S
Nemospiza 1 S
Paralarinia 4 S
Paraplectana 6 S
Parmatergus 3 S
Pasilobus 5 S
Pherenice 1 S
Poltys 10 S
Prasonicella 2 S
Pronous 1 S
Pseudartonis 4 S
Pseudopsyllo 1 S
Psyllo 1 S
Pycnacantha 4 S
Sedasta 1 S
Singafrotypa 3 S
Thelacantha 1 S
Togacantha 1 S
Umbonata 1 S
Ursa 1 S

Family **ARCHAEIDAE** C. L. Koch & Berendt, 1854 2 genera, 32 species [32 S]

Afrarchaea 13 S
Eriauchenius 19 S

Family **ATYPIDAE** Thorell, 1870b 1 genus, 1 species [1 S]

Calommata 1 S

Family **BARYCHELIDAE** Simon, 1889m 9 genera, 39 species [39 S]

Ammonius 1 S
Cyphonisia 13 S
Eubrachycercus 1 S
Idioctis 1 S
Pisenor 9 S
Sason 1 S
Sipalolasma 4 S
Tigidia 8 S
Zophoryctes 1 S

Family **CAPONIIDAE** Simon, 1890a 2 genera, 13 species [13 S]

Caponia 11 S **Diploglena** 2 S

Family **CHUMMIDAE** Jocqué, 2001 1 genus, 2 species [2 S]

Chumma 2 S

Family **CITHAERONIDAE** Simon, 1893a 1 genus, 4 species [1 N, 3 S]

Cithaeron 4 [1 N, 3 S]

Family **CLUBIONIDAE** Wagner, 1887 3 genera, 63 species [8 N, 55 S]

Carteroniella 1 S **Carteronius** 4 S **Clubiona** 58 [8 N, 50 S]

Family **CORINNIDAE** Karsch, 1880c 34 genera, 224 species [14 N, 210 S]

Castanilla 2 N
Castianeira 23 [2 N, 21 S]
Apochinomma 1 S
Brachyphaea 8 S
Copa 8 S
Fuchiba 6 S
Lessertina 1 S
Merenius 10 S
Orthobula 6 S
Poachelas 3 S
Pseudocorinna 3 S
Vendaphaea 1 S
Liophrurillus 1 N
Graptartia 4 [1 N, 3 S]
Arushina 1 S
Cambalida 3 S
Corinna 10 S
Fuchibotulus 2 S
Mandaneta 1 S
Messapus 2 S
Paccius 8 S
Procopius 11 S
Spinotrachelas 1 S
Scorteccia 1 N
Trachelas 14 [7 N, 7 S]
Austrophaea 1 S
Cetonana 6 S
Corinnomma 3 S
Hortipes 69 S
Medmassa 1 S
Myrmecotypus 1 S
Planochelas 3 S
Pronophaea 3 S
Thysanina 6 S

Family **CTENIDAE** Keyserling, 1877a 11 genera, 141 species [1 N, 140 S]

Anahita 14 [1 N, 13 S]
Caloctenus 1 S
Petaloctenus 4 S
Viridasius 1 S
Africactenus 20 S
Ctenus 80 S
Thoriosa 4 S
Vulsor 7 S
Apolania 1 S
Mahafalytenus 7 S
Trogloctenus 2 S

Family **CTENIZIDAE** Thorell, 1887 3 genera, 47 species [2 N, 45 S]

Ummidia 2 N **Conothele** 1 S **Stasimopus** 44 S

Family **CYATHOLIPIDAE** Simon, 1894a 14 genera, 44 species [44 S]

Alaranea 4 S
Ilisoa 3 S
Pembatatu 3 S
Ulwembua 7 S
Vazaha 1 S
Buibui 5 S
Isicabu 5 S
Scharffia 4 S
Umwani 2 S
Wanzia 1 S
Cyatholipus 6 S
Kubwa 1 S
Ubacisi 1 S
Uvik 1 S

Family **CYRTAUCHENIIDAE** Simon, 1889m 5 genera, 73 species [14 N, 59 S]

Cyrtauchenius 14 N
Bolostromus 1 S
Acontius 9 S
Homostola 5 S
Ancylotrypa 44 S

Family **DEINOPIDAE** C. L. Koch, 1850 3 genera, 14 species [14 S]

Avellopsis 1 S **Deinopis** 10 S **Menneus** 3 S

Family **DESIDAE** Pocock, 1895b 1 genus, 3 species [3 S]

Desis 3 S

Family **DICTYNIDAE** O. P.-Cambridge, 1871c 16 genera, 51 species [37 N, 14 S]

Ajmonia 3 N
Altella 4 N
Chaerea 1 N
Devade 2 N
Emblyna 1 N
Lathys 10 N
Scotolathys 1 N
Archaeodictyna 4 [3 N, 1 S]
Dictyna 9 [6 N, 3 S]
Mizaga 2 [1 N, 1 S]
Nigma 7 [5 N, 2 S]
Anaxibia 2 S
Helenactyna 2 S
Hoplolathys 1 S
Mashimo 1 S
Shango 1 S

Family **DIPLURIDAE** Simon, 1889m 4 genera, 12 species [12 S]

Allothele 5 S
Euagrus 1 S
Lathrothele 4 S
Thelechoris 2 S

Family **DRYMUSIDAE** Simon, 1893a 1 genus, 3 species [3 S]

Drymusa 3 S

Family **DYSDERIDAE** C. L. Koch, 1837b 4 genera, 133 species [131 N, 2 S]

Harpactea 36 N
Rhode 3 N
Stalitochara 1 N
Dysdera 93 [91 N, 2 S]

Family **ERESIDAE** C. L. Koch, 1850 10 genera, 75 species [13 N, 62 S]

Adonea 1 N
Eresus 10 N
Dorceus 5 [4 N, 1 S]
Stegodyphus 14 [3 N, 11 S]
Dresserus 24 S
Gandanameno 5 S
Paradonea 4 S
Penestomus 2 S
Seothyra 13 S
Wajane 2 S

Family **FILISTATIDAE** Ausserer, 1867 5 genera, 18 species [10 N, 8 S]

Filistata 7 N
Sahastata 1 N
Pritha 5 [2 N, 3 S]
Afrofilistata 1 S
Andoharano 4 S

Family **GALLIENIELLIDAE** Millot, 1947a 5 genera, 29 species [29 S]

Austrachelas 9 S
Drassodella 7 S
Gallieniella 4 S
Legendrena 7 S
Toxoniella 2 S

Family **GNAPHOSIDAE** Pocock, 1898c 49 genera, 585 species [177 N, 408 S]

Haplodrassus 8 N
Leptodrassex 2 N
Leptopilos 2 N
Pseudodrassus 2 N
Pterotrichina 1 N
Scotognapha 13 N
Talanites 3 N
Zelominor 1 N
Anagraphis 3 [1 N, 2 S]
Aphantaulax 11 [3 N, 8 S]
Berlandina 10 [4 N, 6 S]
Drassodes 49 [20 N, 29 S]
Echemus 6 [3 N, 3 S]
Gnaphosa 4 [3 N, 1 S]
Heser 1 NS
Leptodrassus 6 [1 N, 5 S]
Megamyrmaekion 7 [3 N, 4 S]
Micaria 12 [9 N, 3 S]
Minosia 10 [3 N, 7 S]
Minosiella 3 [2 N, 1 S]
Nomisia 23 [8 N, 15 S]
Odontodrassus 4 [1 N, 3 S]
Poecilochroa 12 [3 N, 9 S]
Pterotricha 20 [13 N, 7 S]
Scotophaeus 31 [10 N, 21 S]
Setaphis 28 [11 N, 17 S]
Synaphosus 7 [4 N, 3 S]
Trachyzelotes 9 [7 N, 2 S]
Urozelotes 2 [1 N, 1 S]
Zelotes 130 [33 N, 97 S]
Amusia 2 S
Aneplasa 8 S
Asemesthes 26 S
Australoechemus 2 S
Benoitodes 2 S
Camillina 13 S
Diaphractus 3 S
Echemella 6 S
Eilica 4 S
Ladissa 2 S
Latonigena 1 S
Microdrassus 1 S
Smionia 2 S
Titus 1 S
Trephopoda 6 S
Trichothyse 3 S
Xerophaeus 42 S
Zelotibia 22 S
Zelowan 18 S

Family **HAHNIIDAE** Bertkau, 1878 2 genera, 33 species [5 N, 28 S]

Hahnia 32 [5 N, 27 S] **Alistra** 1 S

Family **HERSILIIDAE** Thorell, 1870b 7 genera, 47 species [4 N, 43 S]

Tama .1 N **Hersilia** 31 [1 N, 30 S] **Hersiliola** 4 [2 N, 2 S]
Murricia 1 S **Neotama** 1 S **Prima** 1 S
Tyrotama 8 S

Family **HEXATHELIDAE** Simon, 1892a 1 genus, 5 species [1 N, 4 S]

Macrothele 5 [1 N, 4 S]

Family **IDIOPIDAE** Simon, 1889m 10 genera, 102 species [2 N, 100 S]

Titanidiops 3 [2 N, 1 S] **Ctenolophus** 7 S **Galeosoma** 15 S
Genysa 3 S **Gorgyrella** 5 S **Heligmomerus** 6 S
Hiboka 1 S **Idiops** 58 S **Scalidognathus** 1 S
Segregara 3 S

Family **LEPTONETIDAE** Simon, 1890a 2 genera, 3 species [3 N]

Leptoneta 1 N **Paraleptoneta** 2 N

Family **LINYPHIIDAE** Blackwall, 1859b 121 genera, 627 species [216 N, 411 S]

Acartauchenius 8 N **Alioranus** 1 N **Bolyphantes** 1 N
Brachycerasphora 4 N **Canariellanum** 4 N **Canariphantes** 5 N
Centromerus 11 N **Cherserigone** 1 N **Didectoprocnemis** 1 N
Diplocephalus 4 N **Entelecara** 2 N **Erigonoplus** 1 N
Frontiphantes 1 N **Gnathonarium** 1 N **Hybocoptus** 2 N
Lessertia 2 N **Maso** 1 N **Mecopisthes** 4 N
Megalepthyphantes 3 N **Mermessus** 2 N **Metopobactrus** 1 N
Minicia 4 N **Ostearius** 1 N **Ouedia** 1 N
Palliduphantes 11 N **Parapelecopsis** 1 N **Pecado** 1 N
Porrhomma 1 N **Scotargus** 5 N **Silometopus** 1 N
Sintula 5 N **Tapinocyba** 1 N **Thaumatoncus** 2 N
Theonina 2 N **Troglohyphantes** 5 N **Typhochrestus** 15 N
Agyneta 2 [1 N, 1 S] **Araeoncus** 14 [3 N, 11 S] **Bathyphantes** 5 [1 N, 4 S]
Ceratinopsis 13 [2 N, 11 S] **Erigone** 8 [1 N, 7 S] **Frontinellina** 2 [1 N, 1 S]
Gonatium 3 [2 N, 1 S] **Gongylidiellum** 2 [1 N, 1 S] **Improphantes** 6 [4 N, 2 S]
Lepthyphantes 59 [17 N, 42 S] **Meioneta** 22 [2 N, 20 S] **Microlinyphia** 6 [1 N, 5 S]
Neriene 10 [1 N, 9 S] **Oedothorax** 12 [2 N, 10 S] **Pelecopsis** 53 [21 N, 32 S]
Prinerigone 3 [2 N, 1 S] **Savignia** 2 [1 N, 1 S] **Tenuiphantes** 9 [8 N, 1 S]
Trichoncus 4 [2 N, 2 S] **Trichopterna** 5 [1 N, 4 S] **Walckenaeria** 44 [26 N, 18 S]
Aberdaria 1 S **Afribactrus** 1 S **Afromynoglenes** 1 S
Afroneta 27 S **Asthenargellus** 2 S **Asthenargus** 7 S
Bursellia 9 S **Callitrichia** 23 S **Cameroneta** 1 S
Ceratocyba 1 S **Chenisides** 2 S **Comorella** 1 S
Deelemania 4 S **Donacochara** 1 S **Enguterothrix** 3 S
Erigonops 1 S **Gibbafroneta** 1 S **Haplomaro** 1 S
Helsdingenia 2 S **Holma** 1 S **Holmelgonia** 14 S
Hypomma 1 S **Ibadana** 1 S **Koinothrix** 1 S
Labullula 1 S **Laminafroneta** 2 S **Limoneta** 2 S
Linyphia 3 S **Locketidium** 3 S **Lucrinus** 1 S
Machadocara 2 S **Mecynidis** 8 S **Metaleptyphantes** 16 S
Microbathyphantes 2 S **Microctenonyx** 1 S **Microcyba** 18 S
Millidgea 3 S **Mioxena** 2 S **Moreiraxena** 1 S
Murphydium 1 S **Napometa** 2 S **Neoeburnella** 1 S

Notioscopus 1 S
Pachydelphus 4 S
Pseudomicrocentria 1 S
Syedra 1 S
Thyreobaeus 1 S
Trachyneta 2 S
Tybaertiella 3 S
Venia 1 S
Ophrynia 13 S
Proelauna 1 S
Simplicistilus 1 S
Thapsagus 1 S
Tmeticides 1 S
Troxochrus 1 S
Typhistes 2 S
Oreocyba 2 S
Pseudomaso 1 S
Strongyliceps 2 S
Theoa 1 S
Toschia 9 S
Turinyphia 1 S
Ulugurella 1 S

Family **LIOCRANIDAE** Simon, 1897 12 genera, 42 species [21 N, 21 S]

Agroeca 3 N
Scotina 1 N
Andromma 5 S
Donuea 1 S
Apostenus 6 N
Agraecina 4 [3 N, 1 S]
Argistes 1 S
Liocranum 2 S
Cybaeodes 3 N
Mesiotelus 6 [5 N, 1 S]
Coryssiphus 3 S
Rhaeboctesis 7 S

Family **LYCOSIDAE** Sundevall, 1833b 52 genera, 632 species [140 N, 492 S]

Alopecosella 1 N
Phonophilus 1 N
Alopecosa 23 [19 N, 4 S]
Evippa 9 [4 N, 5 S]
Hogna 113 [22 N, 91 S]
Megarctosa 3 [1 N, 2 S]
Pardosa [18 N, 68 S]
Trochosa 29 [6 N, 23 S]
Arctosomma 1 S
Auloniella 1 S
Caporiaccosa 1 S
Edenticosa 1 S
Hognoides 2 S
Minicosa 1 S
Proevippa 11 S
Pterartoriola 4 S
Trochosippa 7 S
Zenonina 6 S
Cynosa 1 N
Wadicosa 1 N
Arctosa 74 [18 N, 56 S]
Geolycosa 30 [2 N, 28 S]
Hyaenosa 3 [1 N, 2 S]
Ocyale 7 [1 N, 6 S]
Pirata 18 [7 N, 11 S]
Amblyothele 8 S
Artoria 3 S
Brevilabus 2 S
Dejerosa 1 S
Evippomma 4 S
Loculla 4 S
Pardosella 5 S
Pseudevippa 1 S
Schizocosa 12 S
Trochosula 1 S
Orthocosa 1 N
Allocosa 71 [17 N, 54 S]
Crocodilosa 2 [1 N, 1 S]
Hippasa 13 [3 N, 10 S]
Lycosa 33 [13 N, 20 S]
Orinocosa 4 [1 N, 3 S]
Trabea 12 [1 N, 11 S]
Anomalomma 1 S
Artoriellula 1 S
Bristowiella 2 S
Dolocosa 1 S
Foveosa 5 S
Malimbosa 1 S
Passiena 2 S
Pterartoria 4 S
Tricassa 2 S
Xerolycosa 2 S

Family **MICROSTIGMATIDAE** Roewer, 1942a 1 genus, 6 species [6 S]

Microstigmata 6 S

Family **MIGIDAE** Simon, 1889m 5 genera, 47 species [47 S]

Micromesomma 1 S
Poecilomigas 3 S
Moggridgea 30 S
Thyropoeus 2 S
Paramigas 11 S

Family **MIMETIDAE** Simon, 1881a 4 genera, 21 species [5 N, 16 S]

Ero 9 [3 N, 6 S]
Reo 1 S
Mimetus 10 [2 N, 8 S]
Kratochvilia 1 S

Family **MITURGIDAE** Simon, 1886g 5 genera, 80 species [14 N, 66 S]

Cheiracanthium 42 [13 N, 29 S]
Syrisca 7 S
Cheiramiona 27 [1 N, 26 S]
Tecution 3 S
Parapostenus 1 S

Family **MYSMENIDAE** Petrunkevitch, 1928 9 genera, 12 species [3 N, 9 S]

Calodipoena 1 N
Isela 1 S
Microdipoena 3 S
Trogloneta 2 N
Kilifina 1 S
Mysmena 1 S
Anjouanella 1 S
Leviola 1 S
Mysmenella 1 S

Family **NEMESIIDAE** Simon, 1889m 6 genera, 63 species [10 N, 53 S]

Nemesia 11 [10 N, 1 S] **Entypesa** 3 S **Hermacha** 16 S
Lepthercus 2 S **Pionothele** 1 S **Spiroctenus** 30 S

Family **NEPHILIDAE** Simon, 1894a 3 genera, 27 species [27 S]

Clitaetra 5 S **Nephila** 20 S **Nephilengys** 2 S

Family **NESTICIDAE** Simon, 1894a 3 genera, 8 species [1 N, 7 S]

Canarionesticus 1 N **Nesticella** 5 S **Nesticus** 2 S

Family **OCHYROCERATIDAE** Fage, 1912 7 genera, 21 species [21 S]

Dundocera 3 S **Euso** 1 S **Lundacera** 1 S
Ouette 1 S **Roche** 1 S **Speocera** 7 S
Theotima 7 S

Family **OECOBIIDAE** Blackwall, 1862a 5 genera, 53 species [38 N, 15 S]

Oecobius 41 [35 N, 6 S] **Uroctea** 8 [3 N, 5 S] **Paroecobius** 2 S
Urocteana 1 S **Uroecobius** 1 S

Family **OONOPIDAE** Simon, 1890a 36 genera, 113 species [20 N, 93 S]

Ovobulbus 1 N **Dysderina** 7 [2 N, 5 S] **Gamasomorpha** 10 [1 N, 9 S]
Oonopinus 3 [1 N, 2 S] **Oonops** 8 [3 N, 5 S] **Opopaea** 17 [3 N, 14 S]
Orchestina 9 [4 N, 5 S] **Silhouettella** 2 [1 N, 1 S] **Sulsula** 2 [1 N, 1 S]
Telchius 3 [2 N, 1 S] **Xestaspis** 5 [1 N, 4 S] **Anophthalmoonops** 1 S
Antoonops 4 S **Aridella** 1 S **Australoonops** 1 S
Blanioonops 1 S **Brignolia** 1 S **Caecoonops** 2 S
Calculus 1 S **Cousinea** 1 S **Diblemma** 1 S
Hypnoonops 1 S **Ischnothyrella** 1 S **Ischnothyreus** 2 S
Kijabe 2 S **Lionneta** 8 S **Lisna** 1 S
Nephrochirus 1 S **Patri** 1 S **Pelicinus** 1 S
Prida 1 S **Pseudoscaphiella** 1 S **Stenoonops** 1 S
Termitoonops 5 S **Triaeris** 5 S **Zyngoonops** 1 S

Family **ORSOLOBIDAE** Cooke, 1965 2 genera, 4 species [4 S]

Afrilobus 3 S **Azanialobus** 1 S

Family **OXYOPIDAE** Thorell, 1870b 4 genera, 121 species [13 N, 108 S]

Oxyopes 100 [10 N, 90 S] **Peucetia** 15 [3 N, 12 S] **Hamataliwa** 5 S
Hostus 1 S

Family **PALPIMANIDAE** Thorell, 1870b 11 genera, 55 species [6 N, 49 S]

Chedima 1 N **Palpimanus** 26 [5 N, 21 S] **Anisaedus** 2 S
Badia 1 S **Boagrius** 1 S **Diaphorocellus** 4 S
Hybosida 4 S **Ikuma** 2 S **Sarascelis** 6 S
Scelidocteus 7 S **Steriphopus** 1 S

Family **PHILODROMIDAE** Thorell, 1870b 7 genera, 127 species [47 N, 80 S]

Halodromus 4 [3 N, 1 S] **Philodromus** 68 [31 N, 37 S] **Thanatus** 28 [11 N, 17 S]
Tibellus 19 [2 N, 17 S] **Hirriusa** 3 S **Suemus** 3 S
Tibitanus 2 S

Family **PHOLCIDAE** C. L. Koch, 1850 22 genera, 226 species [60 N, 166 S]

Artema 1 N **Holocnemus** 1 N **Micropholcus** 1 N

Modisimus 1 N
Pholcus 46 [28 N, 18 S]
Anansus 3 S
Crossopriza 5 S
Nyikoa 1 S
Quamtana 25 S
Zatavua 17 S
Nita 1 N
Smeringopus 21 [1 N, 20 S]
Buitinga 20 S
Leptopholcus 6 S
Paramicromerys 14 S
Smeringopina 8 S
Ossinissa 1 N
Spermophorides 27 [25 N, 2 S]
Cenemus 3 S
Ninetis 4 S
Pehrforsskalia 1 S
Spermophora 19 S

Family **PHYXELIDIDAE** Lehtinen, 1967 11 genera, 51 species [51 S]

Ambohima 2 S
Malaika 2 S
Phyxelida 18 S
Vidole 5 S
Kulalania 1 S
Matundua 1 S
Pongolania 2 S
Xevioso 9 S
Lamaika 1 S
Namaquarachne 5 S
Themacrys 5 S

Family **PISAURIDAE** Simon, 1890a 34 genera, 124 species [7 N, 117 S]

Cladycnis 1 N
Dolomedes 23 [1 N, 22 S]
Charminus 10 S
Cispius 10 S
Euprosthenops 9 S
Hygropoda 3 S
Paracladycnis 1 S
Ransonia 1 S
Tapinothele 1 S
Tetragonophthalma 1 S
Tolma 1 S
Walrencea 1 S
Nilus 1 N
Afropisaura 3 S
Chiasmopes 4 S
Conakrya 1 S
Euprosthenopsis 8 S
Hypsithylla 1 S
Perenethis 2 S
Rothus 3 S
Tapinothelella 1 S
Thalassiopsis 1 S
Voraptipus 1 S
Pisaura 4 N
Caripetella 1 S
Cispinilus 1 S
Dendrolycosa 1 S
Hala 2 S
Maypacius 9 S
Phalaeops 2 S
Tallonia 1 S
Tapinothelops 2 S
Thalassius 12 S
Vuattouxia 1 S

Family **PRODIDOMIDAE** Simon, 1884g 13 genera, 80 species [16 N, 64 S]

Prodidomus 24 [4 N, 20 S]
Austrodomus 2 S
Namundra 4 S
Purcelliana 1 S
Zimiris 2 S
Zimirina 13 [12 N, 1 S]
Eleleis 1 S
Plutonodomus 1 S
Theuma 26 S
Anagrina 2 S
Katumbea 1 S
Prodida 1 S
Theumella 2 S

Family **SALTICIDAE** Blackwall, 1841 148 genera, 1091 species [165 N, 926 S]

Ballus 3 N
Macaroeris 6 N
Plexippoides 1 N
Aelurillus 24 [14 N, 10 S]
Carrhotus 8 [2 N, 6 S]
Dendryphantes 9 [1 N, 8 S]
Festucula 3 [1 N, 2 S]
Heliophanus 111 [14 N, 97 S]
Leptorchestes 4 [3 N, 1 S]
Mexcala 18 [1 N, 17 S]
Neaetha 10 [6 N, 4 S]
Philaeus 5 [4 N, 1 S]
Pseudicius 24 [4 N, 20 S]
Salticus 10 [8 N, 2 S]
Thyenula 10 [1 N, 9 S]
Afrobeata 2 S
Araegeus 2 S
Baryphas 5 S
Chalcoscirtus 2 N
Mendoza 1 N
Pseudeuophrys 1 N
Afraflacilla 6 [2 N, 4 S]
Cosmophasis 10 [1 N, 9 S]
Euophrys 23 [12 N, 11 S]
Habrocestum 21 [6 N, 15 S]
Icius 16 [6 N, 10 S]
Marpissa 2 [1 N, 1 S]
Mogrus 16 [7 N, 9 S]
Neon 2 [1 N, 1 S]
Phlegra 50 [8 N, 42 S]
Rafalus 4 [2 N, 2 S]
Stenaelurillus 16 [4 N, 12 S]
Yllenus 7 [6 N, 1 S]
Afromarengo 1 S
Asemonea 14 S
Bavia 1 S
Heliophanillus 1 N
Paraneaetha 1 N
Synageles 3 N
Bianor 10 [2 N, 8 S]
Cyrba 9 [1 N, 8 S]
Evarcha 32 [3 N, 29 S]
Hasarius 9 [1 N, 8 S]
Langona 21 [2 N, 19 S]
Menemerus 40 [11 N, 29 S]
Myrmarachne 81 [2 N, 79 S]
Pellenes 23 [5 N, 18 S]
Plexippus 9 [2 N, 7 S]
Saitis 6 [2 N, 4 S]
Thyene 35 [1 N, 34 S]
Aenigma 1 S
Alfenus 2 S
Bacelarella 7 S
Baviola 3 S

Belippo 7 S
Brettus 1 S
Cembalea 3 S
Cynapes 3 S
Eburneana 3 S
Enoplomischus 2 S
Goleta 2 S
Hermotimus 1 S
Homalattus 6 S
Klamathia 1 S
Longarenus 1 S
Malloneta 1 S
Mashonarus 2 S
Microbianor 5 S
Modunda 1 S
Nigorella 4 S
Pachyballus 6 S
Padilla 17 S
Parajotus 3 S
Pharacocerus 9 S
Pignus 3 S
Polemus 2 S
Pseudoplexippus 1 S
Salpesia 1 S
Sibianor 3 S
Sonoita 1 S
Telamonia 5 S
Tomobella 2 S
Toticoryx 1 S
Uxuma 1 S
Viciria 21 S
Yogetor 2 S
Bokokius 1 S
Bristowia 1 S
Chrysilla 1 S
Dasycyptus 2 S
Echinussa 3 S
Giuiria 1 S
Gramenca 1 S
Hispo 9 S
Hyllus 52 S
Lamottella 1 S
Lophostica 3 S
Maltecora 3 S
Massagris 6 S
Microheros 1 S
Monomotapa 1 S
Nimbarus 1 S
Pachyonomastus 1 S
Pandisus 5 S
Pellolessertia 1 S
Phaulostylus 4 S
Pochyta 14 S
Portia 3 S
Rhene 16 S
Saraina 3 S
Simaetha 1 S
Tanzania 3 S
Thiratoscirtus 5 S
Tomocyrba 6 S
Tusitala 9 S
Vatovia 1 S
Wesolowskana 2 S
Brancus 6 S
Cavillator 1 S
Copocrossa 2 S
Depreissia 1 S
Encymachus 2 S
Goleba 5 S
Harmochirus 3 S
Holcolaetis 7 S
Kima 5 S
Langelurillus 11 S
Macopaeus 1 S
Margaromma 1 S
Meleon 8 S
Mikrus 1 S
Natta 2 S
Orsima 1 S
Pachypoessa 2 S
Paraheliophanus 4 S
Peplometus 2 S
Phintella 6 S
Poessa 1 S
Pseudemathis 1 S
Sadies 5 S
Schenkelia 4 S
Sitticus 2 S
Tarne 1 S
Thyenillus 1 S
Tomomingi 7 S
Ugandinella 1 S
Veissella 2 S
Xuriella 1 S

Family **SCYTODIDAE** Blackwall, 1864a 2 genera, 64 species [63 N, 1 S]

Scytodes 63 [8 N, 58 S]
Soeuria 1 S

Family **SEGESTRIIDAE** Simon, 1893a 2 genera, 38 species [6 N, 32 S]

Ariadna 34 [3 N, 31 S]
Segestria 4 [3 N, 1 S]

Family **SELENOPIDAE** Simon, 1897a 4 genera, 107 species [1 N, 106 S]

Selenops 34 [1 N, 33 S]
Anyphops 64 S
Garcorops 3 S
Hovops 6 S

Family **SICARIIDAE** Keyserling, 1880 2 genera, 21 species [3 N, 18 S]

Loxosceles 15 [3 N, 12 S]
Sicarius 6 S

Family **SPARASSIDAE** Bertkau, 1872 36 genera, 238 species [31 N, 207 S]

Cerbalus 6 N
Eusparassus 20 [9 N, 11 S]
Anchonastus 4 S
Berlandia 2 S
Chrosioderma 9 S
Leucorchestris 7 S
Nisueta 5 S
Nonianus 1 N
Micrommata 4 [3 N, 1 S]
Arandisa 1 S
Carparachne 2 S
Damastes 17 S
Megaloremmius 1 S
Orchestrella 2 S
Cebrennus 9 [8 N, 1 S]
Olios 82 [4 N, 78 S]
Barylestis 9 S
Cercetius 1 S
Heteropoda 1 S
Microrchestris 2 S
Palystella 4 S

Palystes 18 S
Pleorotus 1 S
Rhacocnemis 1 S
Staianus 1 S
Stipax 1 S
Panaretella 5 S
Pseudomicrommata 1 S
Rhitymna 4 S
Stasina 1 S
Thelcticopis 3 S
Parapalystes 5 S
Remmius 5 S
Sarotesius 1 S
Stasinoides 1 S
Thomasettia 1 S

Family **STIPHIDIIDAE** Dalmas, 1917a 1 genus, 2 species [2 S]

Ischalea 2 S

Family **SYMPHYTOGNATHIDAE** Hickman, 1931 3 genera, 5 species [5 S]

Anapistula 3 S
Patu 1 S
Symphytognatha 1 S

Family **SYNAPHRIDAE** Wunderlich, 1986 2 genera, 7 species [4 N, 3 S]

Synaphris 6 [4 N, 2 S]
Africepheia 1 S

Family **TELEMIDAE** Fage, 1913 3 genera, 7 species [7 S]

Apneumonella 1 S
Cangoderces 3 S
Seychellia 3 S

Family **TENGELLIDAE** Dahl, 1908 1 genus, 1 species [1 S]

Calamistrula 1 S

Family **TETRABLEMMIDAE** O. P.-Cambridge, 1873d 7 genera, 11 species [11 S]

Afroblemma 2 S
Anansia 1 S
Cuangoblemma 1 S
Hexablemma 1 S
Mariblemma 1 S
Shearella 1 S
Tetrablemma 4 S

Family **TETRAGNATHIDAE** Menge, 1866 16 genera, 154 species [12 N, 142 S]

Meta 10 [4 N, 6 S]
Pachygnatha 18 [2 N, 16 S]
Tetragnatha 61 [6 N, 55 S]
Diphya 1 S
Dolichognatha 5 S
Dyschiriognatha 1 S
Glenognatha 1 S
Leucauge 45 S
Mecynometa 2 S
Mesida 2 S
Orsinome 1 S
Parameta 2 S
Parazilia 1 S
Pholcipes 1 S
Sancus 1 S
Tylorida 2 S

Family **THERAPHOSIDAE** Thorell, 1869 30 genera, 162 species [11 N, 151 S]

Chaetopelma 3 [2 N, 1 S]
Harpactirella 11 [1 N, 10 S]
Ischnocolus 11 [8 N, 3 S]
Anoploscelus 2 S
Augacephalus 2 S
Batesiella 1 S
Brachionopus 5 S
Ceratogyrus 10 S
Citharischius 2 S
Encyocratella 1 S
Encyocrates 1 S
Eucratoscelus 2 S
Eumenophorus 2 S
Euphrictus 2 S
Harpactira 16 S
Heteroscodra 3 S
Heterothele 10 S
Hysterocrates 21 S
Idiothele 1 S
Loxomphalia 1 S
Loxoptygus 3 S
Mascaraneus 1 S
Monocentropus 1 S
Myostola 1 S
Nesiergus 3 S
Phoneyusa 25 S
Pterinochilus 9 S
Selenogyrus 5 S
Stromatopelma 6 S
Trichognathella 1 S

Family **THERIDIIDAE** Sundevall, 1833b 55 genera, 382 species [97 N, 285 S]

Anatolidion 1 N
Asagena 1 N
Dipoenata 3 N
Echinotheridion 1 N
Eurypoena 2 N
Kochiura 1 N
Macaridion 1 N
Neottiura 3 N
Paidiscura 2 N
Pholcomma 1 N
Rugathodes 1 N
Sardinidion 1 N
Simitidion 1 N
Achaearanea 4 [1 N, 3 S]
Anelosimus 15 [1 N, 14 S]
Argyrodes 28 [2 N, 26 S]
Coleosoma 2 [1 N, 1 S]
Crustulina 9 [3 N, 6 S]

Dipoena 20 [10 N, 10 S]
Euryopis 8 [4 N, 4 S]
Platnickina 2 [1 N, 1 S]
Steatoda 42 [13 N, 29 S]
Thwaitesia 9 [1 N, 8 S]
Asygyna 2 S
Carniella 1 S
Dipoenura 1 S
Nanume 1 S
Pycnoepisinus 1 S
Spinembolia 1 S
Theonoe 1 S
Zercidium 1 S
Enoplognatha 15[12 N, 3 S]
Latrodectus 11 [4 N, 7 S]
Rhomphaea 6 [2 N, 4 S]
Theridion 103 [16 N, 87 S]
Argyrodella 1 S
Audifia 1 S
Chorizopella 1 S
Histagonia 1 S
Phycosoma 4 S
Sesato 1 S
Stoda 1 S
Thymoites 2 S
Episinus 12 [4 N, 8 S]
Phoroncidia 16 [1 N, 15 S]
Robertus 2 [1 N, 1 S]
Theridula 7 [1 N, 6 S]
Ariamnes 4 S
Bardala 1 S
Coscinida 4 S
Moneta 2 S
Proboscidula 2 S
Seycellesa 1 S
Styposis 1 S
Tidarren 16 S

Family **THERIDIOSOMATIDAE** Simon, 1881a 4 genera, 8 species [8 S]

Andasta 2 S
Zoma 1 S
Theridiosoma 3 S
Wendilgarda 2 S

Family **THOMISIDAE** Sundevall, 1833b 69 genera, 453 species [71 N, 382 S]

Pistius 1 N
Misumena 5 [3 N, 2 S]
Runcinia 14 [2 N, 12 S]
Tmarus 35 [3 N, 32 S]
Ansiea 2 S
Avelis 1 S
Camaricus 4 S
Diaea 12 S
Epidius 3 S
Gnoerichia 1 S
Heriaesynaema 1 S
Holopelus 4 S
Ledouxia 1 S
Mystaria 2 S
Pactactes 3 S
Parasmodix 1 S
Phaenopoma 3 S
Platythomisus 9 S
Pseudoporrhopis 1 S
Smodicinus 1 S
Stiphropella 1 S
Tagulis 1 S
Thomisops 8 S
Firmicus 18 [2 N, 16 S]
Ozyptila 18 [13 N, 5 S]
Synema 56 [4 N, 52 S]
Xysticus 57 [31 N, 26 S]
Apyretina 5 S
Bonapruncinia 1 S
Cynathea 3 S
Diplotychus 1 S
Felsina 1 S
Haedanula 1 S
Heterogriffus 1 S
Iphoctesis 1 S
Misumenops 3 S
Ostanes 1 S
Parabomis 3 S
Parastrophius 1 S
Phrynarachne 11 S
Porropis 1 S
Pyresthesis 1 S
Soelteria 1 S
Stiphropus 12 S
Talaus 1 S
Trichopagis 1 S
Heriaeus 8 [4 N, 4 S]
Pherecydes 8 [1 N, 7 S]
Thomisus 49 [7 N, 42 S]
Amyciaea 1 S
Ascurisoma 1 S
Borboropactus 4 S
Cyriogonus 6 S
Emplesiogonus 2 S
Geraesta 2 S
Herbessus 1 S
Hewittia 1 S
Lampertia 1 S
Monaeses 10 S
Oxytate 6 S
Paramystaria 6 S
Pasiasula 1 S
Plastonomus 1 S
Prepotelus 4 S
Simorcus 12 S
Stephanopis 3 S
Sylligma 3 S
Tharrhalea 3 S
Zametopias 1 S

Family **TITANOECIDAE** Lehtinen, 1967 2 genera, 2 species [2 N]

Nurscia 1 N
Titanoeca 1 N

Family **TROCHANTERIIDAE** Karsch, 1879d 1 genus, 16 species [1 N, 15 S]

Platyoides 16 [1 N, 15 S]

Family **ULOBORIDAE** Thorell, 1869 5 genera, 21 species [5 N, 16 S]

Polenecia 1 N
Miagrammopes 4 S
Hyptiotes 3 [2 N, 1 S]
Philoponella 2 S
Uloborus 11 [2 N, 9 S]

Family **ZODARIIDAE** Thorell, 1881 35 genera, 258 species [42 N, 216 S]

Amphiledorus 2 N
Lachesana 2 N
Palaestina 1 N

Selamia 3 N
Mallinus 2 [1 N, 1 S]
Akyttara 4 S
Australutica 2 S
Chariobas 7 S
Cydrela 12 S
Dusmadiores 3 S
Mallinella 29 S
Omucukia 2 S
Psammoduon 3 S
Systenoplacis 21 S
Trygetus 3 N
Ranops 2 [1 N, 1 S]
Asceua 3 S
Caesetius 10 S
Cicynethus 3 S
Cyrioctea 5 S
Heradida 6 S
Mastidiores 1 S
Palfuria 9 S
Psammorygma 3 S
Thaumastochilus 2 S
Zodarion 23 N
Zodariellum 8 [6 N, 2 S]
Aschema 2 S
Capheris 10 S
Cryptothele 1 S
Diores 59 S
Hermippus 7 S
Microdiores 4 S
Procydrela 2 S
Rotundrela 2 S

Family **ZORIDAE** F. O. P.-Cambridge, 1893 1 genus, 5 species [5 S]

Voraptus 5 S

Family **ZOROCRATIDAE** Dahl, 1913 3 genera, 10 species [10 S]

Raecius 6 S
Uduba 2 S
Zorodictyna 2 S

Family **ZOROPSIDAE** Bertkau, 1882 4 genera, 33 species [6 N, 27 S]

Zoropsis 6 N
Griswoldia 12 S
Phanotea 13 S
Pseudoctenus 2 S

Comments in Tables

The following table (1) summarizes the catalogue of spider genera recorded from Africa.

Family	Genera	Species	N	S
AGELENIDAE C. L. Koch, 1837	11	72	28	44
AMAUROBIIDAE Thorell, 1870	8	17	9	8
AMMOXENIDAE Simon, 1893	2	13	--	13
ANAPIDAE Simon, 1895	6	12	1	11
ANYPHAENIDAE Bertkau, 1878	1	1	--	1
ARANEIDAE Clerck, 1757	73	388	49	339
ARCHAEIDAE C. L. Koch & Berendt, 1854	2	32	--	32
ATYPIDAE Thorell, 1870	1	1	--	1
BARYCHELIDAE Simon, 1889	9	39	--	39
CAPONIIDAE Simon, 1890	2	13	--	13
CHUMMIDAE Jocqué, 2001	1	2	--	2
CITHAERONIDAE Simon, 1893	1	4	1	3
CLUBIONIDAE Wagner, 1887	3	63	8	55
CORINNIDAE Karsch, 1880	34	224	14	210
CTENIDAE Keyserling, 1877	11	141	1	140
CTENIZIDAE Thorell, 1887	3	47	2	45
CYATHOLIPIDAE Simon, 1894	14	44	--	44
CYRTAUCHENIIDAE Simon, 1889	5	73	14	59
DEINOPIDAE C. L. Koch, 1850	3	14	--	14
DESIDAE Pocock, 1895	1	3	--	3
DICTYNIDAE O. P.-Cambridge, 1871	16	51	37	14
DIPLURIDAE Simon, 1889	4	12	--	12
DRYMUSIDAE Simon, 1893	1	3	--	3
DYSDERIDAE C. L. Koch, 1837	4	133	131	2

ERESIDAE C. L. Koch, 1850	10	75	13	62
FILISTATIDAE Ausserer, 1867	5	18	10	8
GALLIENIELLIDAE Millot, 1947	5	29	--	29
GNAPHOSIDAE Pocock, 1898	49	585	177	408
HAHNIIDAE Bertkau, 1878	2	33	5	28
HERSILIIDAE Thorell, 1870	7	47	4	43
HEXATHELIDAE Simon, 1892	1	5	1	4
IDIOPIDAE Simon, 1889	10	102	2	100
LEPTONETIDAE Simon, 1890	2	3	3	--
LINYPHIIDAE Blackwall, 1859	121	627	216	411
LIOCRANIDAE Simon, 1897	12	42	21	21
LYCOSIDAE Sundevall, 1833	52	632	140	492
MICROSTIGMATIDAE Roewer, 1942	1	6	--	6
MIGIDAE Simon, 1889	5	47	--	47
MIMETIDAE Simon, 1881	4	21	5	16
MITURGIDAE Simon, 1886	5	80	14	66
MYSMENIDAE Petrunkevitch, 1928	9	12	3	9
NEMESIIDAE Simon, 1889	6	63	10	53
NEPHILIDAE Simon, 1894	3	27	--	27
NESTICIDAE Simon, 1894	3	8	1	7
OCHYROCERATIDAE Fage, 1912	7	21	--	21
OECOBIIDAE Blackwall, 1862	5	53	38	15
OONOPIDAE Simon, 1890	36	113	20	93
ORSOLOBIDAE Cooke, 1965	2	4	--	4
OXYOPIDAE Thorell, 1870	4	121	13	108
PALPIMANIDAE Thorell, 1870	11	55	6	49
PHILODROMIDAE Thorell, 1870	7	127	47	80
PHOLCIDAE C. L. Koch, 1850	22	226	60	166
PHYXELIDIDAE Lehtinen, 1967	11	51	--	51
PISAURIDAE Simon, 1890	34	124	7	117
PRODIDOMIDAE Simon, 1884	13	80	16	64
SALTICIDAE Blackwall, 1841	148	1091	165	926
SCYTODIDAE Blackwall, 1864	2	64	63	1
SEGESTRIIDAE Simon, 1893	2	38	6	32
SELENOPIDAE Simon, 1897	4	107	1	106
SICARIIDAE Keyserling, 1880	2	21	3	18
SPARASSIDAE Bertkau, 1872	36	238	31	207
STIPHIDIIDAE Dalmas, 1917	1	2	--	2
SYMPHYTOGNATHIDAE Hickman, 1931	3	5	--	5
SYNAPHRIDAE Wunderlich, 1986	2	7	4	3
TELEMIDAE Fage, 1913	3	7	--	7
TENGELLIDAE Dahl, 1908	1	1	--	1
TETRABLEMMIDAE O. P.-Cambridge, 1873	7	11	--	11
TETRAGNATHIDAE Menge, 1866	16	154	12	142
THERAPHOSIDAE Thorell, 1869	30	162	11	151
THERIDIIDAE Sundevall, 1833	55	382	97	285
THERIDIOSOMATIDAE Simon, 1881	4	8	--	8
THOMISIDAE Sundevall, 1833	69	453	71	382

TITANOECIDAE Lehtinen, 1967	2	2	2	--
TROCHANTERIIDAE Karsch, 1879	1	16	1	15
ULOBORIDAE Thorell, 1869	5	21	5	16
ZODARIIDAE Thorell, 1881	35	258	42	216
ZORIDAE F. O. P.-Cambridge, 1893	1	5	--	5
ZOROCRATIDAE Dahl, 1913	3	10	--	10
ZOROPSIDAE Bertkau, 1882	4	33	6	27
Total 79 Families	1116	7935	1647	6288
			20.76%	79.24%
World Spider Catalog 109 Families	3802	41719		
% 72.48	29.35%	19.02%		

N = North African spiders, S = sub-Saharan spiders.

There are 7935 species, 1116 genera, and 79 families of spiders recorded from Africa. This means that more than 70% of the known spider families of the world are represented in the continent, while only 19% of the described spider species are recorded from Africa. About 79% of the African spiders are sub-Saharan.

The proportion of African species to the world species of each family and a comparison between North African and sub-Saharan spiders are presented in Table (2).

Table 2. Spider species of Africa compared with spiders of the world.

Family	Species		%	Family	Species		%
	World	Africa			World	Africa	
Agelenidae	515	72	13.98	Mysmenidae	123	12	9.76
Amaurobiidae	874	17	1.94	Nemesiidae	350	63	18.00
Ammoxenidae	18	13	**72.22**	Nephilidae	58	27	46.55
Anapidae	149	12	8.05	Nesticidae	206	8	3.88
Anyphaenidae	516	1	0.19	Ochyroceratidae	159	21	13.21
Araneidae	2999	388	12.94	Oecobiidae	105	53	50.48
Archaeidae	37	32	**86.49**	Oonopidae	617	113	18.31
Atypidae	43	1	2.32	Orsolobidae	181	4	2.21
Barychelidae	303	39	12.87	Oxyopidae	430	121	28.14
Caponiidae	74	13	17.57	Palpimanidae	131	55	41.98
Chummidae	2	2	**100**	Philodromidae	536	127	23.69
Cithaeronidae	6	4	66.67	Pholcidae	1084	226	20.85
Clubionidae	563	63	11.19	Phyxelididae	54	51	**94.44**
Corinnidae	960	224	23.33	Pisauridae	339	124	36.85
Ctenidae	475	141	29.68	Prodidomidae	302	80	26.49
Ctenizidae	123	47	38.21	Salticidae	5293	1091	20.61
Cyatholipidae	58	44	**75.86**	Scytodidae	228	64	28.07
Cyrtaucheniidae	134	73	54.48	Segestriidae	111	38	34.23
Deinopidae	57	14	24.56	Selenopidae	196	107	54.59
Desidae	182	3	1.65	Sicariidae	123	21	17.07
Dictynidae	564	51	9.04	Sparassidae	1094	238	21.75
Dipluridae	178	12	6.74	Stiphidiidae	136	2	1.47
Drymusidae	15	3	20.00	Symphytognathidae	65	5	7.69
Dysderidae	511	133	26.03	Synaphridae	12	7	58.33
Eresidae	100	75	**75.00**	Telemidae	45	7	15.56

Filistatidae	112	18	16.07	Tengellidae	51	1	1.96
Gallieniellidae	57	29	50.88	Tetrablemmidae	141	11	7.80
Gnaphosidae	2102	585	27.83	Tetragnathidae	949	154	16.23
Hahniidae	241	33	13.69	Theraphosidae	935	162	17.33
Hersiliidae	169	47	27.81	Theridiidae	2308	382	16.55
Hexathelidae	86	5	5.81	Theridiosomatidae	85	8	9.41
Idiopidae	303	102	33.66	Thomisidae	2123	453	21.34
Leptonetidae	213	3	1.41	Titanoecidae	44	2	4.54
Linyphiidae	4379	627	14.32	Trochanteriidae	152	16	10.53
Liocranidae	175	42	24.00	Uloboridae	265	21	7.92
Lycosidae	2367	632	26.70	Zodariidae	935	258	27.59
Microstigmatidae	15	6	40.00	Zoridae	79	5	6.33
Migidae	91	47	51.65	Zorocratidae	42	10	23.81
Mimetidae	156	21	13.46	Zoropsidae	78	33	42.31
Miturgidae	347	80	23.05				

Table 3. Spider families representd in Africa by more than 25% of the described species of the world (30 families).

Family	%	Family	%	Family	%
Chummidae	**100**	Migidae	51.65	Idiopidae	33.66
Phyxelididae	**94.44**	Gallieniellidae	50.88	Ctenidae	29.68
Archaeidae	**86.49**	Oecobiidae	50.48	Oxyopidae	28.14
Cyatholipidae	**75.86**	Nephilidae	46.55	Scytodidae	28.07
Eresidae	**75.00**	Zoropsidae	42.31	Gnaphosidae	27.83
Ammoxenidae	**72.22**	Palpimanidae	41.98	Hersiliidae	27.81
Cithaeronidae	66.67	Microstigmatidae	40.00	Zodariidae	27.59
Synaphridae	58.33	Ctenizidae	38.21	Lycosidae	26.70
Selenopidae	54.59	Pisauridae	36.85	Prodidomidae	26.49
Cyrtaucheniidae	54.48	Segestriidae	34.23	Dysderidae	26.03

Table 4. The most represented spider families in Africa (> 100 species).

Family	Species	Family	Species	Family	Species
Salticidae	1091	Zodariidae	258	Dysderidae	133
Lycosidae	632	Sparassidae	238	Philodromidae	127
Linyphiidae	627	Pholcidae	226	Pisauridae	124
Gnaphosidae	585	Corinnidae	224	Oxyopidae	121
Thomisidae	453	Theraphosidae	162	Oonopidae	113
Araneidae	388	Tetragnathidae	154	Selenopidae	107
Theridiidae	382	Ctenidae	141	Idiopidae	102

There is a great diversity of spider families in Africa (79 families, >70%) although only 19% of the world described spider species are recorded from Africa. This continent needs more intensive studies.

Reference

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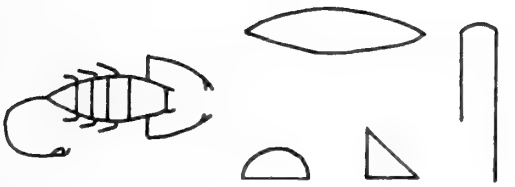

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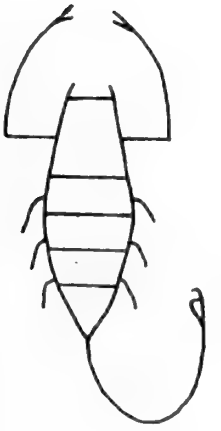

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First record of *Eresus algericus* El-Hennawy, 2004 from Israel (Arachnida: Araneae)

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Abstract

Eresus algericus El-Hennawy, 2004 is recorded from Israel for the first time. This is the second record of the species. The holotype was found in Algeria in 1903.

Keywords: Araneae, Spiders, Eresidae, Israel.

The genus *Eresus* Walckenaer, 1805 presently contains not more than 17 species (Platnick, 2010). Nevertheless, it is subject to recent taxonomic changes even in the well-known spider fauna of Central Europe (Řezáč *et al.*, 2008). Recently, Hisham El-Hennawy described a new *Eresus*-species based on a male specimen from the collection of the Oxford University Museum of Natural History (El-Hennawy, 2004a). This spider was found in 1903 in Algeria.

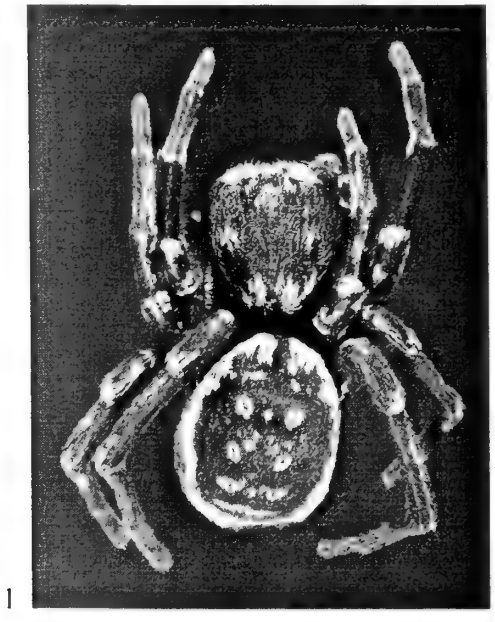
The second known specimen of this species, also a male, was collected in the Haluza sand dunes in Israel (leg. D.W. Wrase, 22.III.2008). The Haluza sand dune region (also spelled Khalutsa) lies near the town of Be'er Sheva in the North Western part of the Negev desert (coordinates: 31.066°N 34.466°E). The sand dunes of this region are quite old. The area is characterized by stabilized dunes, few shifting sand dunes and interdunes which are completely stabilized. The vegetation of the interdunes is dominated by the bush *Anabasis articulata* (Forsk.) (I. Renan i. litt.).

Eresus algericus has a characteristic pattern of white rings and transverse lines on the abdomen (Figs. 1 and 2). The distal parts of the metatarsi, tibiae and patellae are covered with white hairs. A few differences in the patterns of white hairs between the two specimens can be noted. In the spider from Israel, the first transverse line on the abdomen tends to look more like a third pair of (compressed) rings. There is a large patch of white hair on the proximal end of the cephalic part of the carapace. The metatarsi I and II carry a band of white hair on the prolateral side.

The main difference between the holotype and the specimen from Israel is their respective size. The spider from Israel has a total length of 6.5 mm, thus reaching only 60 percent of the 10.79 mm of the holotype. Strong variations in size are not unusual in

Eresus spiders. Řezáč *et al.* (2008) report ranges of 2.6-4.2 mm for the carapace of male *E. kollari* Rossi, 1846 and 3.5–5.6 mm for *E. moravicus* Řezáč, 2008, respectively. The comparison of the palp of *E. algericus* (Figs. 1 and 2 in El-Hennawy, 2004a) with the palp of the specimen from Israel (Figs. 3 and 4) leaves no doubt that both specimens belong to the same species.

Species of *Eresus* in the southern Mediterranean mostly have a restricted distribution area (El-Hennawy, 2004b, 2005; Platnick, 2010). Apparently the geographic range of *E. algericus* is much larger than previously thought. More records of this rare spider are needed to get a better picture of its distribution.



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Figs. 1-4. Male of *Eresus algericus* El-Hennawy, 2004 (specimen from Israel). 1-2. Habitus, dorsal view 1. dry. 2. in alcohol. 3-4. left palp 3. prolateral view. 4. retrolateral view.

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I would like to thank David W. Wrase (Berlin) for his help and the provision of the specimen, Ingolf Rödel (Lugau) for the photographs, Jacob Kielhorn (Berlin) for the editing of the photos, and Ittai Renan (Tel-Aviv) for information on the locality.

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New record species of *Diaea* Thorell, 1869 (Araneae: Thomisidae) for the Turkish spider fauna, with a review of the Thomisidae of Turkey

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Abstract

The spider species *Diaea dorsata* (Fabricius, 1777) of family Thomisidae is recorded for the first time in Turkey. Its characteristic features, drawings of genitalia, and description are presented. In addition, this paper presents an updated annotated checklist of the Thomisidae of Turkey which includes 83 species.

Keywords: *Diaea dorsata*, Thomisidae, Araneae, Spiders, new record, Turkey.

Introduction

Thomisids are small to median-sized spiders. Legs extending sideways in laterigrade position. First two pairs of legs stout and much longer than posterior pairs. They are all hunting spiders (Levy, 1985).

Thomisidae is one of the largest spider families including 2146 species in 177 genera in the world (Platnick, 2011). In Turkey, 79 species of 14 genera are recorded (Topçu *et al.*, 2005; Bayram *et al.*, 2010; Demir, 2008). Seven thomisid species are endemic in Turkey and most of them are known from a single or just a few localities. Genus *Diaea* includes 76 species all over the World, but only *Diaea livens* Simon, 1876 is known in Turkey (Bayram *et al.*, 2002; Platnick, 2011). This is the first record of the species *Diaea dorsata* (Fabricius, 1777) in Turkey. This record increases the number of Turkish species of Thomisidae to 83 belonging to 14 genera.

Material and Methods

Only one specimen was collected from Uludağ Mountain (Bursa province), Turkey (Fig. 1) by hand sampling. It was found on a plant. The specimen was preserved

in 70% ethanol and deposited in the Zoological Museum of Department of Biology, Uludağ University, Bursa, Turkey. For identification, Roberts (1995) and Nentwig *et al.* (2010) were used. A stereo microscope was used for examination. Epigynum/vulvae have been immersed for 15 minutes in 10% KOH solution before examination.

Fig. 1. The locality from which the spider specimen was collected in Turkey.

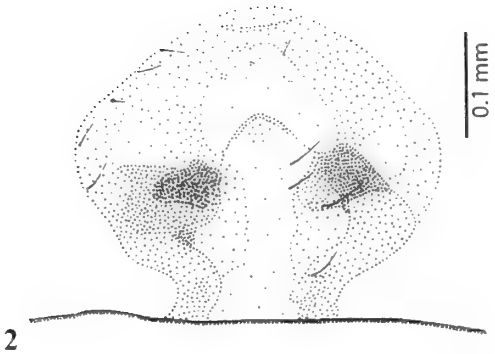
Diaea dorsata (Fabricius, 1777) (Figs. 2-3)
Material examined: Turkey: Bursa provice, Kirazlıyayla (Uludağ Mountein), 1505 m, 06.VII.2008, (1♀), coll. Z. Uyar.

Description
Measurements: Total body length 5.5 mm; carapace length 2.0 mm, width 1.9 mm; sternum length 0.9 mm, width 1.0 mm; abdomen length 3.5 mm, width 2.4 mm. Epigyne length 0.3 mm, width 0.4 mm. Legs (Table 1).

Table 1: Legs measurements (mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.7	1.1	2.4	2.0	1.0	9.2
II	2.7	1.0	2.2	1.9	0.9	8.7
III	1.5	0.5	1.1	0.8	0.6	4.5
IV	1.6	0.6	1.0	0.9	0.5	4.6

The Carapace is green, as long as wide, circular shaped. Labium is longer than wide. Sternum is green. Anterior lateral eyes > posterior lateral eyes > anterior median eyes > posterior median eyes. Anterior and posterior lateral eyes are on the light small tubercle. Abdomen is oval, longer than wide, creamy in colour. The abdominal folium is reddish brown, in the centre with yellow design. The outline of the folium is dark while its centre is light. The venter of the abdomen is creamy with white patches. Legs are green, I and II are considerably longer than III and IV. Tarsus and metatarsus are greenish brown. Epigyne (Fig. 2) is pale, with a slightly concave anterior projection. Spermathecae (Fig. 3) are darker.



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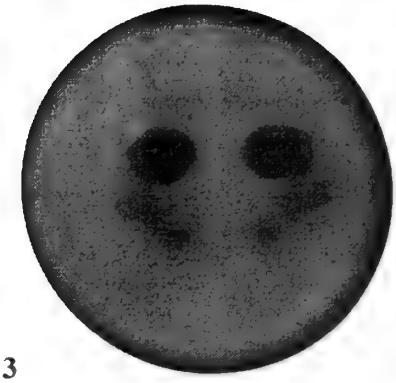

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Figs. 2-3: *Diaea dorsata* (Fabricius, 1777)
2. Female, epigyne, ventral view. 3. Female, vulvae, dorsal view.

Habitat: This species was found on *Cirsium* sp.
Distribution: Palaearctic (Platnick, 2011).

Discussion

The body size of our specimen is similar to that of European specimens (Roberts, 1995). The abdomen folium figured as *D. dorsata* from CSSR by Buchar & Thaler (1984) and from Spain by Urones (2000) is similar to our specimen. In addition, no significant differences have been determined in genital structures. The epigyne resembles those of European specimens.

Diaea livens was the single species of the genus *Diaea* that has been recorded from Uludağ Mountain in Turkey. Now, *Diaea dorsata* (Fabricius, 1777) is also recorded from the same region in Turkey as well. This record increases the number of Turkish species of *Diaea* to two and the number of Turkish Thomisidae to 83 species (Table 2).

Table 2: Annotated checklist of the Thomisidae of Turkey.
The present checklist of the thomisid species of Turkey is mainly based on the data included in "The Checklist of the Spiders of Turkey" Version 10.10 (Bayram *et al.*, 2010); Bayram *et al.*, 2002; 2008; Demir, 2008; Demir *et al.*, 2009a, 2009b, 2010; Logunov, 2006; Topçu *et al.*, 2005; Yılmaz *et al.*, 2009.

No.	Species	Distribution in Turkey
1	***Coriarachne depressa*** (C.L.Koch, 1837)	Aegean Region Mediterranean Region
2	***Cozyptila blackwalli*** (Simon, 1875)	Central Anatolia Region
3	***Cozyptila guseinovorum*** Marusik & Kovblyuk, 2005	Aegean Region Marmara Region
4	***Cozyptila thaleri*** Marusik & Kovblyuk, 2005	Central Anatolia Region Marmara Region
5	***Diaea dorsata*** (Fabricius 1777)	Marmara Region - **new record**
6	***Diaea livens*** Simon, 1876	Marmara Region Southeast Anatolia Region
7	***Ebrechtella tricuspidata*** (Fabricius, 1775)	Central Anatolia Region
8	***Heriaeus buffoni*** (Audouin, 1825)	Marmara Region

9	***Heriaeus graminicola*** (Doleschall, 1852)	Central Anatolia Region Mediterranean Region
10	***Heriaeus hirtus*** (Latreille, 1819)	Marmara Region
11	***Heriaeus melloteei*** Simon, 1886	Central Anatolia Region Mediterranean Region
12	***Heriaeus orientalis*** Simon, 1918	Marmara Region
13	***Heriaeus pilosus*** Nosek, 1905	Central Anatolia Region
14	***Heriaeus setiger*** (O.P.-Cambridge, 1872)	Aegean Region
15	***Heriaeus simoni*** Kulczyński, 1903	Marmara Region Mediterranean Region
16	***Heriaeus spinipalpus*** Loerbroks, 1983	East Anatolia Region Marmara Region
17	***Misumena vatia*** (Clerck, 1757)	Central Anatolia Region Marmara Region Mediterranean Region
18	***Monaeses israeliensis*** Levy, 1973	Mediterranean Region
19	***Ozyptila ankarensis*** Karol, 1966	Central Anatolia Region
20	***Ozyptila atomaria*** (Panzer, 1801)	Central Anatolia Region East Anatolia Region
21	***Ozyptila claveata*** (Walckenaer, 1837)	Aegean Region Central Anatolia Region Southeast Anatolia Region
22	***Ozyptila clavidorsa*** Roewer, 1959	Southeast Anatolia Region
23	***Ozyptila conostyla*** Hippa, Koponen & Oksola, 1986	Central Anatolia Region
24	***Ozyptila praticola*** (C.L.Koch, 1837)	Aegean Region Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region.
25	***Ozyptila rauda*** Simon, 1875	West Black Sea Region
26	***Ozyptila sanctuaria*** (O.P.-Cambridge, 1871)	Central Anatolia Region East Anatolia Region
27	***Ozyptila simplex*** (O.P.-Cambridge, 1862)	East Anatolia Region Mediterranean Region
28	***Ozyptila spirembola*** Wunderlich, 1995	West Black Sea Region
29	***Ozyptila tricoloripes*** Strand, 1913	East Anatolia Region
30	***Pistius truncatus*** (Pallas, 1772)	Central Anatolia Region Marmara Region Mediterranean Region
31	***Runcinia grammica*** (C.L.Koch, 1837)	Aegean Region Marmara Region Mediterranean Region
32	***Synema anatolica*** Demir, Aktaş & Topçu, 2009	Mediterranean Region
33	***Synema globosum*** (Fabricius, 1775)	Central Anatolia Region Marmara Region Mediterranean Region Southeast Anatolia Region
34	***Synema plorator*** (O.P.-Cambridge, 1872)	Marmara Region Mediterranean Region

		Southeast Anatolia Region
35	***Synema utotchkini*** Marusik & Logunov, 1995	Southeast Anatolia Region
36	***Thomisus citrinellus*** Simon, 1875	Black Sea Region
37	***Thomisus onustus*** Walckenaer, 1805	Aegean Region Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region Southeast Anatolia Region
38	***Thomisus zyuzini*** Marusik & Logunov, 1990	Mediterranean Region
39	***Tmarus piger*** (Walckenaer, 1802)	Black Sea Region Southeast Anatolia Region
40	***Tmarus piochardi*** (Simon, 1866)	Aegean Region Southeast Anatolia Region
41	***Tmarus stellio*** Simon, 1875	Central Anatolia Region Marmara Region
42	***Xysticus abditus*** Logunov, 2006	Central Anatolia Region Marmara Region
43	***Xysticus acerbus*** Thorell, 1872	Marmara Region Southeast Anatolia Region
44	***Xysticus anatolicus*** Demir, Aktaş & Topçu, 2008	Central Anatolia Region
45	***Xysticus audax*** (Schrank, 1803)	Marmara Region Mediterranean Region
46	***Xysticus bacurianensis*** Mcheidze, 1971	East Black Sea Region
47	***Xysticus bifasciatus*** C.L.Koch, 1837	Aegean Region Central Anatolia Region
48	***Xysticus bufo*** (Dufour, 1820)	Aegean Region Marmara Region
49	***Xysticus caperatus*** Simon, 1875	Mediterranean Region
50	***Xysticus cor*** Canestrini, 1873	Mediterranean Region
51	***Xysticus cribratus*** Simon, 1885	Central Anatolia Region
52	***Xysticus cristatus*** (Clerck, 1757)	Aegean Region Central Anatolia Region East Anatolia Region East Black Sea Region Marmara Region Mediterranean Region Southeast Anatolia Region West Black Sea Region
53	***Xysticus demirsoyi*** Demir, Topçu & Türkeş, 2006	Central Anatolia Region
54	***Xysticus edax*** (O. P.-Cambridge, 1872	Mediterranean Region
55	***Xysticus erraticus*** (Blackwall, 1834)	East Anatolia Region
56	***Xysticus ferrugineus*** Menge, 1876	Central Anatolia Region
57	***Xysticus ferus*** O.P.-Cambridge, 1876	Aegean Region
58	***Xysticus gallicus*** Simon, 1875	Central Anatolia Region
59	***Xysticus graecus*** C.L.Koch, 1837	Central Anatolia Region Marmara Region
60	***Xysticus gymnocephalus*** Strand, 1915	Central Anatolia Region
61	***Xysticus kaznakovi*** Utochkin, 1968	Mediterranean Region

62	***Xysticus kochi*** Thorell, 1872	Aegean Region Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region West Black Sea Region
63	***Xysticus laetus*** Thorell, 1875	Central Anatolia Region Marmara Region Mediterranean Region West Black Sea Region.
64	***Xysticus lalandei*** (Audouin, 1825)	Central Anatolia Region Aegean Region
65	***Xysticus lanio*** C.L.Koch, 1835	Marmara Region Mediterranean Region
66	***Xysticus lineatus*** (Westring, 1851)	Mediterranean Region
67	***Xysticus luctator*** L.Koch, 1870	Central Anatolia Region
68	***Xysticus luctuosus*** (Blackwall, 1836)	Central Anatolia Region East Anatolia Region Marmara Region Southeast Anatolia Region
69	***Xysticus macedonicus*** Silhavy, 1944	Southeast Anatolia Region
70	***Xysticus ninnii*** Thorell, 1872	Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region
71	***Xysticus nubilus*** Simon, 1875	Aegean Region
72	***Xysticus pseudolanio*** Wunderlich, 1995	East Black Sea Region West Black Sea Region
73	***Xysticus pseudorectilineus*** (Wunderlich, 1995)	Central Anatolia Region Mediterranean Region Southeast Anatolia Region
74	***Xysticus rectilineus*** (O.P.-Cambridge, 1872)	Central Anatolia Region
75	***Xysticus robustus*** (Hahn, 1832)	Aegean Region Central Anatolia Region East Anatolia Region Marmara Region Mediterranean Region Southeast Anatolia Region
76	***Xysticus sabulosus*** (Hahn, 1832)	Central Anatolia Region East Anatolia Region Marmara Region
77	***Xysticus striatipes*** L.Koch, 1870	Central Anatolia Region Marmara Region Mediterranean Region
78	***Xysticus thessalicoides*** Wunderlich, 1995	East Black Sea Region Mediterranean Region West Black Sea Region
79	***Xysticus thessalicus*** Simon, 1916	Aegean Region Central Anatolia Region

80	***Xysticus tristrami*** (O.P.-Cambridge, 1872)	Central Anatolia Region Marmara Region
81	***Xysticus ulmi*** (Hahn, 1831)	Central Anatolia Region East Anatolia Region, Mediterranean Region Southeast Anatolia Region
82	***Xysticus viduus*** Kulczyński, 1898	Central Anatolia Region
83	***Xysticus xerodermus*** Strand, 1913	Central Anatolia Region

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Two new theridiid records from Turkey (Araneae: Theridiidae)

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Abstract

This short paper reports two theridiid species which are new for the Turkish araneo-fauna. The characteristic features and photographs of *Theridion hannoniae* Denis, 1944 and *Theridion hemerobium* Simon, 1914 are presented. The total number of theridiid species recorded from Turkey is now 64.

Keywords: Araneae, Theridiidae, Taxonomy, New records, Turkey.

Introduction

Theridiids are a large group of space-web builders found throughout the world. These spiders build irregular snares, from the threads of which they suspend themselves in an inverted position waiting for their prey. They have a comb of serrated bristles on the tarsus of the fourth leg. A total of 2310 species in 113 genera have been identified in the family Theridiidae all over the world (Platnick, 2011). Genus *Theridion* Walckenaer, 1805 is well studied in the Palaearctic and Mediterranean regions and hitherto 7 species have been known from Turkey (Bayram *et al.*, 2010). These species are *T. adrianopoli* Drensky, 1915, *T. betteni* Wiehle, 1960, *T. cinereum* Thorell, 1875, *T. melanurum* Hahn, 1831, *T. mystaceum* L. Koch, 1870, *T. pinastri* L. Koch, 1872 and *T. varians* Hahn, 1833. This paper deals with the characteristic features and distribution of *T. hannoniae* Denis, 1944 and *T. hemerobium* Simon, 1914 adding two new species to the araneo-fauna of Turkey.

Material and Methods

The present study is based on the material deposited in the collection of the Arachnological Museum of Kırıkkale University (KUAM). Two specimens were examined in this study. The specimens were preserved in 70% ethanol. Pictures were taken using a Leica S8APO microscope by means of the Leica DC 160 camera. The description of colour was based on live specimens. The epigyne was macerated in 10% KOH. The keys of Heimer & Nentwig (1991), Roberts (1995) and Tyschchenko (1971) were used. All measurements are in millimetres.

Results

1. *Theridion hannoniae* Denis, 1944 (Figs. 1-4)
Material examined: 1♂, Alifakılı village, Tarsus, Mersin, (N 36°54', E 34°58'), from a pomegranate garden, 21.11.2009; 6♀♀, Yahşihan, Kırıkkale (N 39°50', E 33°30'), from a garden. 20.3.2010 (KUAM-THE.The.hann.01-07).

Description of female:
Body length: 1.7. Prosoma: length 0.6, width 0.6. Opisthosoma: length 1.1, width 1.0. Prosoma is yellowish dark brown. Legs are grey-white to yellowish, with dark annulations (Fig. 1). Opisthosoma is dorsally greyish brown to dark brown with white brighter spots, ventrally grey with 2 big brighter spots between epigyne and spinnerets (Fig. 2). Legs formula: I-IV-II-III (Table 1). Epigynal cavity includes a copulatory orifices situated at the anterior edges. This cavity is surrounded by two longitudinal, sclerotised ridges roughly encircling a square. Receptacula seminis is slightly elongated or oval shaped (Fig. 3). Copulatory ducts diverge sideways forming a wider inwards coil and another small turn again before entering receptacula seminis (Fig 4).

Table 1. Measurements of the legs of the female *Theridion hannoniae*.

Leg (♀ n=7)	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.9	0.3	0.7	0.7	0.45	3.05
II	0.5	0.3	0.3	0.3	0.35	1.75
III	0.5	0.2	0.3	0.3	0.3	1.6
IV	0.9	0.2	0.6	0.35	0.4	2.45

Distribution: Europe, North Africa, Madeira, Canary Is. (Platnick, 2011).

2. *Theridion hemerobium* Simon, 1914 (Figs. 5-6)
Material examined: 1♂, Pekmezci village, Kozan, Adana, (N 37°26', E 35°51'), from a garden, 01.04.2010; 1♂, Akarsu village, Tarsus, Mersin, (N 36°53', E 34°56'), from a pomegranate garden, 18.02.2009 (KUAM-THE.The.heme.01).

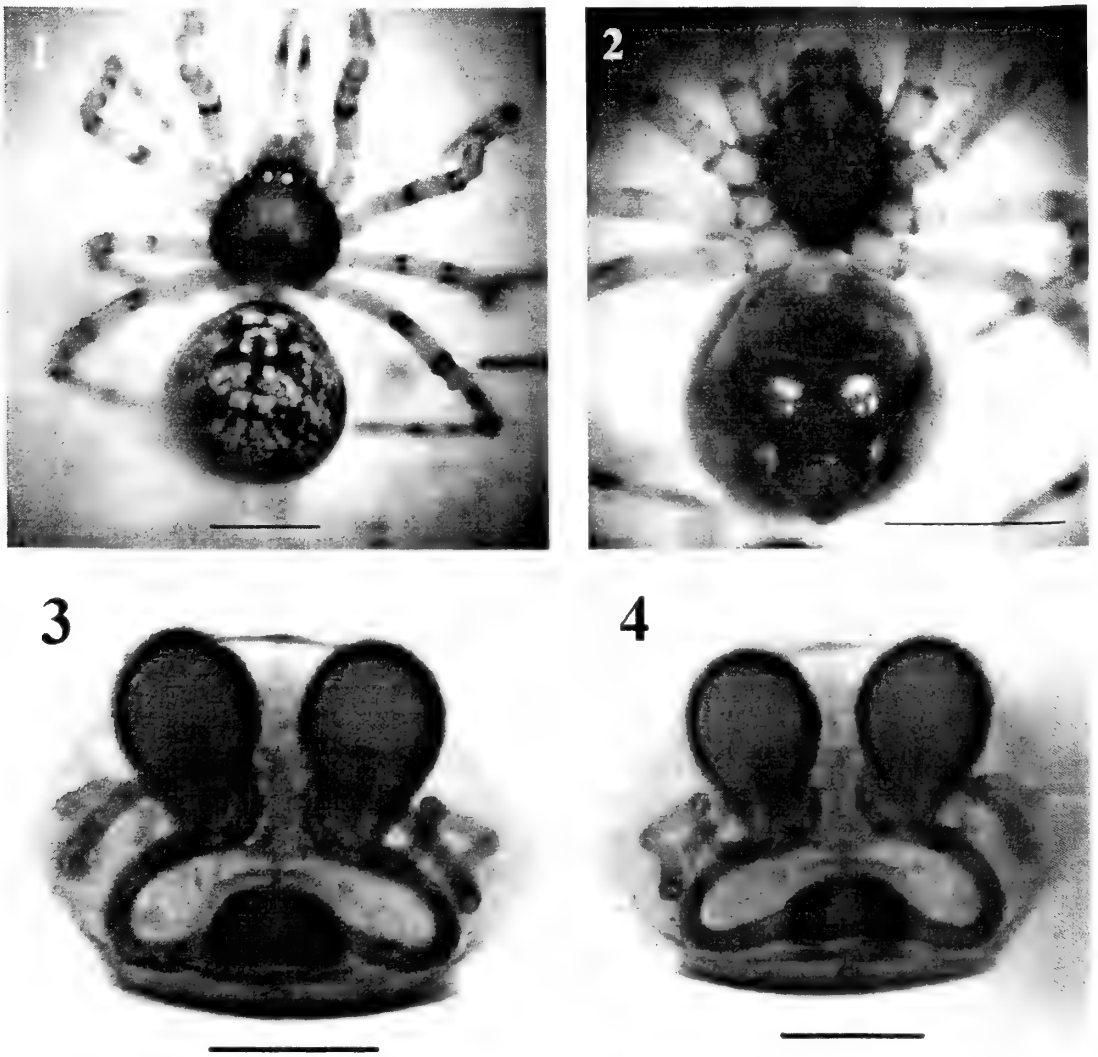
Description of male:
Body length: 2.5. Prosoma: length 1.2, width 0.9. Opisthosoma: length 1.3, width 1.2. Prosoma is light yellow with blackish median stripe, ocular area blackish. Opisthosoma with a whitish pattern, bordered with grey. *T. hemerobium* has less contrast colours (Fig. 5). Legs formula: I-II-IV-III (Table 2). Conductor and median apophysis have diagnostic

shapes. Subtegulum is half of the bulbus. Bulbus with basin-shaped, terminal hooked conductor. Embolus is semicircular (Fig. 6).

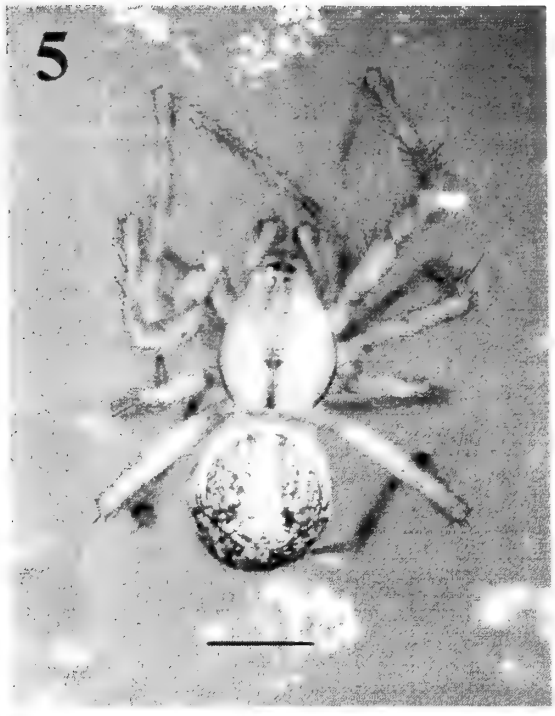
Table 2. Measurements of the legs of the male *Theridion hemerobium*.

Leg (♂ n=2)	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.4	0.3	1.4	1.9	0.6	6.6
II	1.2	0.3	1.0	0.9	0.6	4.0
III	0.8	0.3	0.6	0.5	0.3	2.5
IV	1.1	0.2	0.7	1.1	0.4	3.5

Distribution: USA, Canada, Europe (Platnick, 2011).



Figs. 1-4. Female of *Theridion hannoniae* Denis, 1944. 1. Habitus, dorsal view, 2. ventral view (scale = 1 mm). 3. Epigyne, ventral view, 4. vulvae, dorsal view (scale = 0.1 mm).



Figs. 5-6. Male of *Theridion hemerobium* Simon, 1914. 5. Habitus, dorsal view (scale = 1 mm). 6. Pedipalp, ventral view (scale = 0.1 mm).

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Notes on Spiders of Africa – II (Madagascar, Seychelles, Aldabra, Comoro Is., Réunion, Mauritius, and Rodriguez)

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Abstract

This is the second step in the way of assessment of spiders of Africa. It is devoted to the spiders of the islands at the eastern side of the continent, i.e. Madagascar, Seychelles, Aldabra, Comoro Is., Réunion, Mauritius, and Rodriguez. The 60 families, 320 genera, and 847 species/subspecies recorded from these islands are listed in addition to the endemic species of each island.

Keywords: Spiders, Araneae, Africa, Madagascar, Seychelles, Aldabra, Comoro Is., Réunion, Mauritius, Rodriguez.

Introduction

This work depends, as its predecessor (El-Hennawy, 2010), on "The world spider catalog" (Platnick, 2010) in addition to the papers of Gertsch & Ennik (1983) and Knoflach & van Harten (2002) for the records of both *Loxosceles rufescens* (Dufour, 1820) and *Latrodectus geometricus* C.L. Koch, 1841 from Madagascar.

The families, genera, and species/subspecies recorded from these islands are alphabetically arranged in Table (1). The sum of spider genera and species of each family are arranged in Table (2), in addition to the sum of endemic species. In Table (3), the sum of families, genera and species of spiders of each island/s, in addition to the sum of endemic species are recorded. The sum of spider genera and species of African islands at the eastern side of the continent are arranged within families in Table (4).

The aim of this work is to facilitate the assessment of spiders of the African islands at the eastern side of the continent and the comparison between them and the main continent.

Abbreviations used: E = endemic species/subspecies, G = genera, Sp = species/subspecies.

Table 1. Spider species of African islands at the eastern side of the continent.

	Madagascar	Seychelles	Aldabra	Comoro Is.	Réunion	Mauritius	Rodriguez	Other Countries
Agelenidae								
Agelena borbonica Vinson, 1863					*			
Araneidae								
Acantharachne giltayi Lessert, 1938	*							Congo
A. madecassa Emerit, 2000	*							
A. milloti Emerit, 2000	*							
Acrosomoides acrosomoides (O. P.-Cambridge, 1879)	*							
Arachnura scorpionoides Vinson, 1863	*					*		Congo, Ethiopia
Araneus amygdalaceus (Keyserling, 1864)						*		
A. kraepelini (Lenz, 1891)	*							
A. lenzi (Roewer, 1942)	*							
A. madagascaricus (Strand, 1908)	*							
A. margitae (Strand, 1917)	*							
A. nossibeus (Strand, 1907)	*							
A. pallescens (Lenz, 1891)	*							
A. saccalava (Strand, 1907)	*							
A. sambava (Strand, 1907)	*							Yemen
Argiope comorica Bjørn, 1997				*				
A. coquereli (Vinson, 1863)	*							Zanzibar
A. ranomafanensis Bjørn, 1997	*							
Augusta glyphica (Guérin, 1839)	*							
Caerostris cowani Butler, 1882	*							
C. ecclesiigera Butler, 1882	*							
C. ecclesiigera Butler, 1882	*							
C. hirsuta (Simon, 1895)	*							
C. mayottensis Grasshoff, 1984				*				
C. mitralis (Vinson, 1863)	*							Central Africa
C. sexcuspidata (Fabricius, 1793)	*		*	*				Africa
Chorizopes antongilensis Emerit, 1997	*							
C. madagascariensis Emerit, 1997	*							
Coelossia trituberculata Simon, 1903	*					*		
Cyclosa hova Strand, 1907	*							
C. quavansea Roberts, 1983			*					
C. sanctibenedicti (Vinson, 1863)	*				*			
Cyphalonotus columnifer Simon, 1903	*							
Cyrtarachne grubei (Keyserling, 1864)						*		
C. ixoides (Simon, 1870)	*							Mediterranean to Georgia
C. madagascariensis Emerit, 2000	*							
Exechocentrus lancearius Simon, 1889	*							
Gasteracantha clarki Emerit, 1974		*						
G. rhomboidea Guérin, 1838						*		
G. r. comorensis Strand, 1917				*				
G. r. madagascariensis Vinson, 1863	*							
G. rufithorax Simon, 1881	*							

G. sanguinolenta andrefanae Emerit, 1974	*							
G. s. bigoti Emerit, 1974	*							
G. s. emeriti Roberts, 1983			*					
G. s. insulicola Emerit, 1974		*						
G. s. mangrovae Emerit, 1974	*							
G. thorelli Keyserling, 1864	*							
G. versicolor avaratrae Emerit, 1974	*							
G. v. formosa Vinson, 1863	*							
Isoxya cowani (Butler, 1882)	*							
I. mahafalensis Emerit, 1974	*							
I. milloti Emerit, 1974	*							
I. reuteri (Lenz, 1886)	*							
Kilima decens (Blackwall, 1866)		*						Central, East, Southern Africa
Larinia dasia (Roberts, 1983)			*					
L. tamatave (Grasshoff, 1971)	*							
Madacantha nossibeana (Strand, 1916)	*							
Nemoscolus waterloti Berland, 1920	*							
Neoscona angulatula (Schenkel, 1937)	*		*					Kenya
N. cereolella (Strand, 1907)	*							Congo, East Africa
N. punctigera (Doleschall, 1857)					*			Réunion to Japan
N. quincasea Roberts, 1983					*			Central, Southern Africa
N. triangula mensamontella (Strand, 1907)	*							
Paraplectana walleri (Blackwall, 1865)	*							West, Central Africa
Pararaneus uncivulva (Strand, 1907)	*							
Parmatergus coccinelloides Emerit, 1994	*							
P. c. ambrae Emerit, 1994	*							
P. lens Emerit, 1994	*							
Pasilobus antongilensis Emerit, 2000	*							
P. capuroni Emerit, 2000	*							
Poltys horridus Locket, 1980				*				
P. kochi Keyserling, 1864	*					*		
P. reuteri Lenz, 1886	*							
P. vesicularis Simon, 1889	*							
Prasonica albolimbata Simon, 1895	*							Congo, Yemen
P. anarillea Roberts, 1983			*					
P. seriata Simon, 1895	*							Africa
Prasonicella cavipalpis Grasshoff, 1971	*							
P. marsa Roberts, 1983			*					
Pronous tetralobus Simon, 1895	*							
Pycnacantha fuscosa Simon, 1903	*							
Thelacantha brevispina (Doleschall, 1857)	*							India to Philippines, Australia
Archaeidae *Afrarchaea fisheri* Lotz, 2003	*							
A. godfreyi (Hewitt, 1919)	*							South Africa
A. maharaeensis Lotz, 2003	*							
Eriauchenius ambre Wood, 2008	*							
E. anabohazo Wood, 2008	*							
E. borimontsina Wood, 2008	*							

E. bourgini (Millot, 1948)	*							
E. gracilicollis (Millot, 1948)	*							
E. griswoldi Wood, 2008	*							
E. halambohitra Wood, 2008	*							
E. jeanneli (Millot, 1948)	*							
E. lavatenda Wood, 2008	*							
E. legendrei (Platnick, 1991)	*							
E. namoroka Wood, 2008	*							
E. pauliani (Legendre, 1970)	*							
E. ratsirarsoni (Lotz, 2003)	*							
E. spiceri Wood, 2008	*							
E. tsingyensis (Lotz, 2003)	*							
E. vadoni (Millot, 1948)	*							
E. voronakely Wood, 2008	*							
E. workmani O. P.-Cambridge, 1881	*							
Barychelidae *Idioctis intertidalis* (Benoit & Legendre, 1968)	*	*						
Sason sechellanum Simon, 1898		*						
Tigidia alluaudi (Simon, 1902)	*							
T. bastardi (Simon, 1902)	*							
T. dubia (Strand, 1907)	*							
T. majori (Pocock, 1903)	*							
T. mathiauxi (Simon, 1902)	*							
T. mauriciana Simon, 1892						*		
T. processigera (Strand, 1907)	*							
T. typica (Strand, 1907)	*							
Zophoryctes flavopilosus Simon, 1902	*							
Clubionidae *Carteronius argenticomus* (Keyserling, 1877)	*							
C. fuscus Simon, 1896						*		
C. vittiger Simon, 1896	*							
Clubiona alluaudi Simon, 1898						*		
C. hitchinsi Saaristo, 2002		*						
C. hoffmanni Schenkel, 1937	*							
C. mahensis Simon, 1893		*						
C. nemorum Ledoux, 2004					*			
C. nigromaculosa Blackwall, 1877		*			*			
Corinnidae *Castianeira majungae* Simon, 1896	*							
Cetonana aculifera (Strand, 1916)	*							
Copa auroplumosa Strand, 1907	*							
C. lineata Simon, 1903	*							
Corinna nossibeensis Strand, 1907	*							
Myrmecotypus scrobiculata Thorell, 1881		*						India, Taiwan, Seychelles to Philippines
Orthobula impressa Simon, 1897		*						Sri Lanka
O. sicca Simon, 1903	*							
Paccius angulatus Platnick, 2000	*							
P. elevatus Platnick, 2000	*							
P. griswoldi Platnick, 2000	*							

P. madagascariensis (Simon, 1889)	*							
P. mucronatus Simon, 1898	*							
P. quadridentatus Simon, 1898		*						
P. quinteri Platnick, 2000	*							
P. scharffi Platnick, 2000	*							
Ctenidae								
Anahita zoroides Schmidt & Krause, 1994				*				
Apolania segmentata Simon, 1898		*						
Mahafalytenus fo Silva, 2007	*							
M. fohy Silva, 2007	*							
M. hafa Silva, 2007	*							
M. isalo Silva, 2007	*							
M. osy Silva, 2007	*							
M. paosy Silva, 2007	*							
M. tsilo Silva, 2007	*							
Trogloctenus briali Ledoux, 2004					*			
Viridasius fasciatus (Lenz, 1886)	*							
Vulsor bidens Simon, 1889				*				
V. isaloensis (Ono, 1993)	*							
V. penicillatus Simon, 1896	*							
V. quartus Strand, 1907	*							
V. quintus Strand, 1907	*							
V. septimus Strand, 1907	*							
V. sextus Strand, 1907	*							
Ctenizidae								
Conothele truncicola Saaristo, 2002		*						
Cyatholipidae								
Alaranea alba Griswold, 1997	*							
A. ardua Griswold, 1997	*							
A. betsileo Griswold, 1997	*							
A. merina Griswold, 1997	*							
Ulwembua antsiranana Griswold, 1997	*							
U. nigra Griswold, 2001	*							
U. ranomafana Griswold, 1997	*							
Vazaha toamasina Griswold, 1997	*							
Deinopidae								
Deinopis madagascariensis Lenz, 1886	*							
Desidae								
Desis crosslandi Pocock, 1903	*							Zanzibar
Dipluridae								
Thelechoris rutenbergi Karsch, 1881	*							
T. striatipes (Simon, 1889)	*							East, Southern Africa
Eresidae								
Stegodyphus mimosarum Pavesi, 1883	*							Africa
S. simplicifrons Simon, 1906	*							
Filistatidae								
Andoharano decaryi (Fage, 1945)	*							
A. grandidieri (Simon, 1901)	*							
A. milloti Legendre, 1971	*							
A. monodi Legendre, 1971	*							
Pritha heikkii Saaristo, 1978		*						

P. sechellana Benoit, 1978		*						
Gallieniellidae *Gallieniella betroka* Platnick, 1984	*							
G. blanci Platnick, 1984	*							
G. jocquei Platnick, 1984				*				
G. mygaloides Millot, 1947	*							
Legendrena angavokely Platnick, 1984	*							
L. perinet Platnick, 1984	*							
L. rolandi Platnick, 1984	*							
L. rothi Platnick, 1995	*							
L. spiralis Platnick, 1995	*							
L. steineri Platnick, 1990	*							
L. tamatave Platnick, 1984	*							
Gnaphosidae *Camillina aldabrae* (Strand, 1907)		*	*					Central, Southern Africa, Borneo
C. cordifera (Tullgren, 1910)		*						Central, Southern Africa
C. fiana Platnick & Murphy, 1987	*			*				
C. tsima Platnick & Murphy, 1987	*							
Drassodes malagassicus (Butler, 1879)	*							
Microdrassus inaudax (Simon, 1898)		*						
Odontodrassus aphanes (Thorell, 1897)		*						Myanmar to Japan, New Caledonia, Jamaica
Poecilochroa malagassa Strand, 1907	*							
Scotophaeus nossibeensis Strand, 1907	*							
Xerophaeus oceanicus Schmidt & Jocqué, 1983					*			
Zelotes bastardi (Simon, 1896)	*							Zimbabwe, South Africa
Hahniidae *Alistra personata* Ledoux, 2004					*			
Hersiliidae *Hersilia aldabrensis* Foord & Dippenaar-Schoeman, 2006			*	*				
H. eloetsensis Foord & Dippenaar-Schoeman, 2006	*							
H. insulana Strand, 1907	*							
H. tamatavensis Foord & Dippenaar-Schoeman, 2006	*							
H. vinsoni Lucas, 1869	*							
Prima ansieae Foord, 2008	*							
Idiopidae *Genysa bicalcarata* Simon, 1889	*							
G. decorsei (Simon, 1902)	*							
Hiboka geayi Fage, 1922	*							
Scalidognathus seticeps Karsch, 1891		*						
Linyphiidae *Afroneta longipalpis* Ledoux & Attié, 2008					*			
Comorella spectabilis Jocqué, 1985				*				
Erigone convalescens Jocqué, 1985				*				
Helsdingenia extensa (Locket, 1968)	*			*				St. Helena, Africa
Labullula annulipes Strand, 1913				*				Cameroon, Central

								Africa, Angola
Lepthyphantes louettei Jocqué, 1985				*				
Meioneta alboguttata Jocqué, 1985				*				
M. flandroyae Jocqué, 1985				*				
M. pogonophora Locket, 1968		*						Angola
M. tincta Jocqué, 1985				*				
Metaleptyphantes perexiguus (Simon & Fage, 1922)				*				Africa
M. praecipuus Locket, 1968		*						Angola
Microbathyphantes palmarius (Marples, 1955)		*						Sri Lanka, Myanmar, Polynesia
Microlinyphia cylindriformis Jocqué, 1985				*				
M. simoni van Helsdingen, 1970	*							
Neriene comoroensis Locket, 1980				*				
N. kartala Jocqué, 1985				*				
Oedothorax legrandi Jocqué, 1985				*				
Savignia kartalensis Jocqué, 1985				*				
Thapsagus pulcher Simon, 1894	*							
Theoa tricaudata (Locket, 1982)		*						Malaysia
Thyreobaeus scutiger Simon, 1889	*							
Tmeticides araneiformis Strand, 1907	*							
Liocranidae *Donuea decorsei* (Simon, 1903)	*							
Lycosidae *Arctosa atroventrosa* (Lenz, 1886)	*							
Bristowiella kartalensis Alderweireldt, 1988				*				
B. seychellensis (Bristowe, 1973)		*	*	*				
Geolycosa nossibeensis (Strand, 1907)	*							
G. urbana hova (Strand, 1907)	*							
Hognoides urbanides (Strand, 1907)	*							
Lycosa madagascariensis Vinson, 1863	*							
L. signata Lenz, 1886	*							
Ocyale fera Strand, 1908	*							
Pardosa cinerascens (Roewer, 1951)	*							
P. vinsoni (Roewer, 1951)	*							
P. zorimorpha (Strand, 1907)	*							
Tricassa madagascariensis Jocqué & Alderweireldt, 2001	*							
Migidae *Micromesomma cowani* Pocock, 1895	*							
Moggridgea nesiota Griswold, 1987				*				
Paramigas alluaudi (Simon, 1903)	*							
P. andasibe Raven, 2001	*							
P. goodmani Griswold & Ledford, 2001	*							
P. macrops Griswold & Ledford, 2001	*							
P. manakambus Griswold & Ledford, 2001	*							
P. milloti Griswold & Ledford, 2001	*							
P. oracle Griswold & Ledford, 2001	*							
P. pauliani (Dresco & Canard, 1975)	*							
P. pectinatus Griswold & Ledford, 2001	*							
P. perroti (Simon, 1891)	*							
P. rothorum Griswold & Ledford, 2001	*							

Thyropoeus malagasus (Strand, 1908)	*							
T. mirandus Pocock, 1895	*							
Mimetidae *Ero comorensis* Emerit, 1996		*		*				
E. lokobeana Emerit, 1996	*							
E. madagascariensis Emerit, 1996	*							
Mimetus comorensis Schmidt & Krause, 1994				*				
M. madacassus Emerit, 1996	*							
Miturgidae *Cheiracanthium africanum* Lessert, 1921					*			Africa
C. furculatum Karsch, 1879				*				Cape Verde Is., Africa
C. inclusum (Hentz, 1847)					*			New World, Africa
C. insulare (Vinson, 1863)					*			
C. leucophaeum Simon, 1897	*							
Mysmenidae *Anjouanella comorensis* Baert, 1986				*				
Microdipoena elsae Saaristo, 1978		*						
Nemesiidae *Entypesa annulipes* (Strand, 1907)	*							
E. nebulosa Simon, 1902	*							
Nephilidae *Clitaetra episinoides* Simon, 1889				*				
C. perroti Simon, 1894	*							
Nephila comorana Strand, 1916				*				
N. inaurata (Walckenaer, 1841)					*	*	*	
N. i. madagascariensis (Vinson, 1863)		*						South Africa to Seychelles
N. komaci Kuntner & Coddington, 2009	*							South Africa
N. pilipes malagassa (Strand, 1907)	*							
N. senegalensis hildebrandti Dahl, 1912	*							
Nephilengys borbonica (Vinson, 1863)	*	*	*	*				Mascarene Is.
Nesticidae *Nesticella sechellana* (Simon, 1898)		*						
Ochyroceratidae *Euso muehlenbergi* (Saaristo, 1998)		*						
Ouette ouette Saaristo, 1998		*						
Roche roche Saaristo, 1998		*						
Oonopidae *Aridella bowleri* Saaristo, 2002		*						
Brignolia cubana Dumitrescu & Georgescu, 1983		*						Cuba, Yemen
Cousinea keeleyi Saaristo, 2001		*						
Diblemma donisthorpei O. P.-Cambridge, 1908		*						Britain (introduced)
Gamasomorpha austera Simon, 1898		*						
G. insularis Simon, 1907		*				*		Madeira, Bioko, São Tomé, St. Helena, Yemen
G. mornensis Benoit, 1979		*						
Ischnothyrella jivani (Benoit, 1979)		*						
Ischnothyreus serpentinum Saaristo, 2001		*						

I. velox Jackson, 1908		*						Egypt, Europe (introduced)
Lionneta gerlachi Saaristo, 2001		*						
L. mahensis Benoit, 1979		*						
L. orophila (Benoit, 1979)		*						
L. praslinensis Benoit, 1979		*						
L. savyi (Benoit, 1979)		*						
L. sechellensis Benoit, 1979		*						
L. silhouettei Benoit, 1979		*						
L. veli Saaristo, 2002		*						
Lisna trichinalis (Benoit, 1979)		*						
Oonopinus kilikus Suman, 1965		*						Hawaii
Opopaea probosciella Saaristo, 2001		*						
O. silhouettei (Benoit, 1979)		*						Rapa Nui
O. suspecta Saaristo, 2002		*						
Orchestina justini Saaristo, 2001		*						
O. maureen Saaristo, 2001		*						
O. sechellorum Benoit, 1979		*						
Patri david (Benoit, 1979)		*						
Pelicinus mahei (Benoit, 1979)		*						Canary Is.
Prida sechellensis (Benoit, 1979)		*						
Silhouettella curieusei Benoit, 1979		*						
Stenoonops opisthornatus Benoit, 1979		*						
Oxyopidae *Hostus paroculus* Simon, 1898	*							
Oxyopes dumonti (Vinson, 1863)	*	*						East Africa
O. pallidecoloratus Strand, 1906	*							Ethiopia, Congo, East Africa
Peucetia lucasi (Vinson, 1863)	*			*				
P. madagascariensis (Vinson, 1863)	*			*				
P. striata Karsch, 1878				*				Yemen to South Africa, St. Helena
Palpimanidae *Hybosida dauban* Platnick, 1979		*						
H. lucida Simon, 1898		*						
Steriphopus lacertosus Simon, 1898		*						
Philodromidae *Philodromus niveus* Vinson, 1863	*							
Thanatus philodromicus Strand, 1916	*							
Pholcidae *Cenemus culiculus* (Simon, 1898)		*						
C. mikehilli Saaristo, 2002		*						
C. silhouette Saaristo, 2001		*						
Crossopriza nigrescens Millot, 1946	*							
Leptopholcus sakalavensis Millot, 1946	*							
Ninetis toliara Huber & El-Hennawy, 2007	*							
Paramicromerys betsileo Huber, 2003	*							
P. coddingtoni Huber, 2003	*							
P. combesi (Millot, 1946)	*							
P. madagascariensis (Simon, 1893)	*							
P. mahira Huber, 2003	*							
P. manantenina Huber, 2003	*							
P. marojejy Huber, 2003	*							

P. megaceros (Millot, 1946)	*							
P. nampoinai Huber, 2003	*							
P. quinteri Huber, 2003	*							
P. rabeariveloi Huber, 2003	*							
P. ralamboi Huber, 2003	*							
P. rothorum Huber, 2003	*							
P. scharffi Huber, 2003	*							
Pholcus lambertoni Millot, 1946	*							
Smeringopus madagascariensis Millot, 1946	*							
Spermophora jocquei Huber, 2003				*				
S. lambilloni Huber, 2003				*				
S. ranomafana Huber, 2003	*							
S. vyvato Huber, 2003	*							
Spermophorides lascars Saaristo, 2001		*						
Zatavua analalava Huber, 2003	*							
Z. andrei (Millot, 1946)	*							
Z. ankaranae (Millot, 1946)	*							
Z. fagei (Millot, 1946)	*							
Z. griswoldi Huber, 2003	*							
Z. imerinensis (Millot, 1946)	*							
Z. impudica (Millot, 1946)	*							
Z. isalo Huber, 2003	*							
Z. kely Huber, 2003	*							
Z. madagascariensis (Fage, 1945)	*							
Z. mahafaly Huber, 2003	*							
Z. punctata (Millot, 1946)	*							
Z. talatakely Huber, 2003	*							
Z. tamatave Huber, 2003	*							
Z. voahangyae Huber, 2003	*							
Z. vohiparara Huber, 2003	*							
Z. zanahary Huber, 2003	*							
Phyxelididae								
Ambohima pauliani Griswold, 1990	*							
A. sublima Griswold, 1990	*							
Phyxelida fanivelona Griswold, 1990	*							
P. malagasyana Griswold, 1990	*							
Pisauridae								
Caripetella madagascariensis (Lenz, 1886)	*			*				
Dolomedes saccalavus Strand, 1907	*							
Hala impigra Jocqué, 1994	*							
H. paulyi Jocqué, 1994	*							
Hygropoda borbonica (Vinson, 1863)					*			
H. madagascarica Strand, 1907	*							
Hypsithylla linearis Simon, 1903	*							
Maypacius bilineatus (Pavesi, 1895)	*							Central, East Africa
M. vittiger Simon, 1898	*							
Paracladycnis vis Blandin, 1979	*							
Perenethis simoni (Lessert, 1916)				*				Africa
Ransonia mahasoana Blandin, 1979	*							
Tallonia picta Simon, 1889	*							
Thalassiopsis vachoni Roewer, 1955	*							
Thalassius esimoni Sierwald, 1984	*							

T. leoninus Strand, 1916	*							
T. majungensis Strand, 1907	*							
Tolma toreuta Jocqué, 1994	*							
Prodidomidae *Prodida stella* Saaristo, 2002		*						
Prodidomus revocatus Cooke, 1964						*		
Salticidae *Aelurillus madagascariensis* Azarkina, 2009	*							
Asemonea ornatissima Peckham & Wheeler, 1889	*							
Bavia albolineata Peckham & Peckham, 1885	*							
Baviola braueri Simon, 1898		*						
B. luteosignata Wanless, 1984		*						
B. vanmoli Wanless, 1984		*						
Bianor paulyi Logunov, 2009	*			*				
Brettus madagascarensis (Peckham & Peckham, 1903)	*							
Carrhotus bellus Wanless, 1984		*						
C. harringtoni Prószyński, 1992	*							
C. sannio (Thorell, 1877)					*			India to Sulawesi
Cynapes canosus Simon, 1900						*		
C. lineatus (Vinson, 1863)	*							
C. wrighti (Blackwall, 1877)		*						
Cyrba legendrei Wanless, 1984	*			*				
Echinussa imerinensis Simon, 1901	*							
E. praedatoria (Keyserling, 1877)	*							
E. vibrabunda (Simon, 1886)	*							
Evarcha madagascariensis Prószyński, 1992	*							
Goleba lyra Maddison & Zhang, 2006	*							
G. pallens (Blackwall, 1877)		*	*					
G. punctata (Peckham & Wheeler, 1889)	*							
Goleta peckhami Simon, 1900	*							
G. workmani (Peckham & Peckham, 1885)	*							
Harmochirus bianoriformis (Strand, 1907)	*							Central, East Africa
Hasarius insignis Simon, 1886				*				
H. mahensis Wanless, 1984		*						
H. rufociliatus Simon, 1898		*						
Heliophanus activus (Blackwall, 1877)		*						
H. eccentricus Ledoux, 2007					*			
H. hamifer Simon, 1886	*	*						Mozambique, Zimbabwe
H. imerinensis Simon, 1901	*							
H. innominatus Wesolowska, 1986	*							
H. mauricianus Simon, 1901					*	*		
H. modicus Peckham & Peckham, 1903	*							South Africa
H. mucronatus Simon, 1901	*							
H. orchesta Simon, 1886	*							Central, Southern Africa
H. similior Ledoux, 2007					*			
H. variabilis (Vinson, 1863)					*			
Hispo alboclypea Wanless, 1981		*						

H. cingulata Simon, 1886	*							
H. frenata (Simon, 1900)	*							
H. georgius (Peckham & Peckham, 1892)	*							Central, East, Southern Africa
H. macfarlanei Wanless, 1981	*							
H. pullata Wanless, 1981	*							
H. striolata Simon, 1898		*						
H. sulcata Wanless, 1981	*							
H. tenuis Wanless, 1981	*							
Hyllus acutus (Blackwall, 1877)		*		*				
H. albomarginatus (Lenz, 1886)	*							
H. albooculatus (Vinson, 1863)	*							
H. bifasciatus Ono, 1993	*							
H. interrogationis (Strand, 1907)	*							
H. lugubrellus Strand, 1908	*							
H. lugubris (Vinson, 1863)	*							
H. madagascariensis (Vinson, 1863)	*							
H. nossibeensis Strand, 1907	*							
H. vinsoni (Peckham & Peckham, 1885)	*							
H. virgillus Strand, 1907	*							
Lophostica mauriciana Simon, 1902					*	*		
L. minor Ledoux, 2007					*			
L. nova Ledoux, 2007					*			
Macopaeus spinosus Simon, 1900	*							
Meleon insulanus Logunov & Azarkina, 2008	*							
M. madagascarensis (Wanless, 1978)	*							
M. raharizonina Logunov & Azarkina, 2008	*							
M. russata (Simon, 1900)	*							
M. tsaratanana Logunov & Azarkina, 2008	*							
Microbianor deltshevi Logunov, 2009	*							
M. golovatchi Logunov, 2000		*						
M. madagascarensis Logunov, 2009	*							
M. nigritarsus Logunov, 2000		*						
M. saaristoi Logunov, 2000		*			*			
Myrmarachne andringitra Wanless, 1978	*							
M. augusta (Peckham & Peckham, 1892)	*							
M. constricta (Blackwall, 1877)		*						
M. cowani (Peckham & Peckham, 1892)	*							
M. diegoensis Wanless, 1978	*							
M. electrica (Peckham & Peckham, 1892)	*							
M. eugenei Wanless, 1978	*							
M. eumenes (Simon, 1900)	*							
M. longiventris (Simon, 1903)	*							
M. mahasoa Wanless, 1978	*							
M. nubilis Wanless, 1978	*							
M. peckhami Roewer, 1951	*							
M. ransoni Wanless, 1978	*							
M. simplexella Roewer, 1951	*							
M. volatilis (Peckham & Peckham, 1892)	*							China, Vietnam
Natta chionogaster (Simon, 1901)	*							Africa
Pachypoessa lacertosa Simon, 1902	*							Southern Africa
Padilla ambigua Ledoux, 2007					*			

P. armata Peckham & Peckham, 1894	*							
P. astina Andriamalala, 2007	*							
P. boritandroka Andriamalala, 2007	*							
P. cornuta (Peckham & Peckham, 1885)	*							
P. foty Andriamalala, 2007	*							
P. graminicola Ledoux, 2007					*			
P. griswoldi Andriamalala, 2007	*							
P. lavatandroka Andriamalala, 2007	*							
P. maingoka Andriamalala, 2007	*							
P. manjelatra Andriamalala, 2007	*							
P. mazavaloha Andriamalala, 2007	*							
P. mihaingo Andriamalala, 2007	*							
P. mitohy Andriamalala, 2007	*							
P. ngeroka Andriamalala, 2007	*							
P. ombimanga Andriamalala, 2007	*							
P. sartor Simon, 1900	*							
Pandisus decorus Wanless, 1980	*							
P. modestus (Peckham & Wheeler, 1889)	*							
P. parvulus Wanless, 1980	*							
P. sarae Wanless, 1980	*							
P. scalaris Simon, 1900	*							
Pharacocerus ebenauensis Strand, 1908	*							
P. sessor Simon, 1902	*							
Phaulostylus furcifer Simon, 1902	*							
P. grammicus Simon, 1902	*							
P. grandidieri Simon, 1902	*							
P. leucolophus Simon, 1902	*							
Pochyta albimana Simon, 1902	*							
Poessa argenteofrenata Simon, 1902	*							
Portia schultzi Karsch, 1878	*							Central, East, Southern Africa
Pseudemathis trifida Simon, 1902					*	*		
Pseudicius seychellensis Wanless, 1984		*						
P. unicus (Peckham & Peckham, 1894)	*							
Sadies castanea Ledoux, 2007					*			
S. fulgida Wanless, 1984		*						
S. gibbosa Wanless, 1984		*						
S. seychellensis Wanless, 1984		*						
S. trifasciata Wanless, 1984		*						
Salpesia soricina Simon, 1901		*						
Salticus coronatus (Camboué, 1887)	*							
Thyene inflata (Gerstäcker, 1873)	*							Africa
T. tamatavi (Vinson, 1863)	*							
T. varians Peckham & Peckham, 1901	*							
Tomobella andasibe (Maddison & Zhang, 2006)	*							
T. fotsy Szüts & Scharff, 2009	*							
Tomocyrba barbata Simon, 1900	*							
T. berniae Szüts & Scharff, 2009	*							
T. decollata Simon, 1900	*							
T. griswoldi Szüts & Scharff, 2009	*							
T. thaleri Szüts & Scharff, 2009	*							
T. ubicki Szüts & Scharff, 2009	*							

Veissella milloti Logunov & Azarkina, 2008				*				
Scytodidae *Scytodes bertheloti* Lucas, 1838		*						Mediterranean to Turkmenistan
S. oswaldi Lenz, 1891	*							
S. pholcoides Simon, 1898		*						
S. socialis Miller, 2006	*							
Soeuria soeur Saaristo, 1997		*						
Segestriidae *Ariadna ustulata* Simon, 1898		*						
Segestria madagascarensis Keyserling, 1877	*							
Selenopidae *Anyphops benoiti* Corronca, 1998	*							
Garcorops jocquei Corronca, 2003				*				
G. madagascar Corronca, 2003	*							
G. paulyi Corronca, 2003	*							
Hovops dufouri (Vinson, 1863)	*				*			
H. legrasi (Simon, 1887)	*							
H. madagascariensis (Vinson, 1863)	*							
H. mariensis (Strand, 1908)	*							
H. modestus (Lenz, 1886)	*							
H. pusillus (Simon, 1887)	*							
Selenops comorensis Schmidt & Krause, 1994				*				
S. ivohibe Corronca, 2005	*							
S. secretus Hirst, 1911		*						
S. vigilans Pocock, 1898	*							West, Central, East Africa
Sicariidae *Loxosceles rufescens* (Dufour, 1820)	*							Cosmopolitan
Sparassidae *Chrosioderma albidum* Simon, 1897	*							
C. analalava Silva, 2005	*							
C. havia Silva, 2005	*							
C. mahavelona Silva, 2005	*							
C. mipentinapentina Silva, 2005	*							
C. namoroka Silva, 2005	*							
C. ranomafana Silva, 2005	*							
C. roaloha Silva, 2005	*							
C. soalala Silva, 2005	*							
Damastes atrignathus Strand, 1908	*							
D. coquereli Simon, 1880	*							
D. c. affinis Strand, 1907	*							
D. decoratus (Simon, 1897)	*							
D. fasciolatus (Simon, 1903)	*							
D. flavomaculatus Simon, 1880	*							
D. grandidieri Simon, 1880	*							
D. majungensis Strand, 1907	*							
D. malagassus (Fage, 1926)	*							
D. malagasus (Karsch, 1881)	*							
D. masculinus Strand, 1908	*							
D. nossibeensis Strand, 1907	*							
D. oswaldi Lenz, 1891	*							

D. pallidus (Schenkel, 1937)	*							
D. sikoranus Strand, 1906	*							
D. validus (Blackwall, 1877)		*						
Eusparassus laterifuscus Strand, 1908	*							
Megaloremmius leo Simon, 1903	*							
Olios coenobitus Fage, 1926	*							
O. erraticus Fage, 1926	*							
O. lamarcki (Latreille, 1806)	*							Madagascar to Sri Lanka, India
O. malagassus Strand, 1907	*							
O. m. septifer Strand, 1908	*							
O. mordax (O. P.-Cambridge, 1899)	*							
O. nossibeensis Strand, 1907	*							
O. pusillus Simon, 1880	*							
O. subpusillus Strand, 1907	*							
Palystes convexus Strand, 1907	*							
P. spiralis Strand, 1907	*							
Pleorotus braueri Simon, 1898		*						
Rhacocnemis guttatus (Blackwall, 1877)		*						
Rhitymna flava Schmidt & Krause, 1994				*				
R. hildebrandti Järvi, 1914	*							
R. imerinensis (Vinson, 1863)	*							
Staianus acuminatus Simon, 1889	*							
Stipax triangulifer Simon, 1898		*						
Thomasettia seychellana Hirst, 1911		*						
Stiphidiidae *Ischalea incerta* (O. P.-Cambridge, 1877)	*							
I. longiceps Simon, 1898						*		
Symphytognathidae *Anapistula seychellensis* Saaristo, 1996		*						
Patu silho Saaristo, 1996		*						
Synaphridae *Africepheia madagascariensis* Miller, 2007	*							
Synaphris schlingeri Miller, 2007	*							
S. toliara Miller, 2007	*							
Telemidae *Seychellia lodoiceae* Brignoli, 1980		*						
S. wiljoi Saaristo, 1978		*						
Tengellidae *Calamistrula evanescens* Dahl, 1901	*							
Tetrablemmidae *Mariblemma pandani* (Brignoli, 1978)		*						
Shearella browni (Shear, 1978)	*							
Tetrablemma benoiti (Brignoli, 1978)		*						
Tetragnathidae *Diphya pumila* Simon, 1889	*							
Dolichognatha comorensis (Schmidt & Krause, 1993)				*				
Dyschiriognatha argyrostilba (O. P.-Cambridge, 1876)		*						Cameroon to Egypt, St. Helena
Leucauge argyrescens Benoit, 1978		*		*				
L. comorensis Schmidt & Krause, 1993				*				

L. lechei Strand, 1908	*							
L. moheliensis Schmidt & Krause, 1993				*				
L. tetragnathella Strand, 1907	*							
L. undulata (Vinson, 1863)	*						*	Ethiopia, East Africa
Mecynometa gibbosa Schmidt & Krause, 1993				*				
Mesida thorelli (Blackwall, 1877)		*						
M. t. mauritiana (Simon, 1898)						*		
Orsinome vorkampiana Strand, 1907	*							
Pachygnatha longipes Simon, 1894	*							
P. mucronata comorana Schmidt & Krause, 1993				*				
Pholcipes bifurcochelis Schmidt & Krause, 1993				*				
Tetragnatha boydi O. P.-Cambridge, 1898		*						Mexico to Brazil, Sardinia, Africa to China
T. b. praedator Tullgren, 1910				*				Tanzania
T. ceylonica O. P.-Cambridge, 1869		*						South Africa to Philippines, New Britain
T. demissa L. Koch, 1872		*	*					South Africa, Australia to Tonga
T. maralba Roberts, 1983			*					
T. nigrigularis Simon, 1898		*						
T. protensa Walckenaer, 1841	*							Madagascar to Australia, New Caledonia, Palau
T. strandi melanogaster Schmidt & Krause, 1993				*				
Tylorida mornensis (Benoit, 1978)		*						
Theraphosidae *Encyocrates raffrayi* Simon, 1892	*							
Mascaraneus remotus Gallon, 2005						*		
Monocentropus lambertoni Fage, 1922	*							
Nesiergus gardineri (Hirst, 1911)		*						
N. halophilus Benoit, 1978		*						
N. insulanus Simon, 1903		*						
Phoneyusa bouvieri Berland, 1917	*							
Theridiidae *Achaearanea alboinsignita* Locket, 1980				*				
Anelosimus amelie Agnarsson, 2009				*				
A. andasibe Agnarsson & Kuntner, 2005	*							
A. decaryi (Fage, 1930)	*		*	*				
A. may Agnarsson, 2005	*							
A. nazariani Agnarsson & Kuntner, 2005	*							
A. placens (Blackwall, 1877)		*						
A. sallee Agnarsson & Kuntner, 2005	*							
A. salut Agnarsson & Kuntner, 2005	*							
A. vondrona Agnarsson & Kuntner, 2005	*							
Argyrodella pusillus (Saaristo, 1978)		*						
Argyrodes abscissus O. P.-Cambridge, 1880	*							
A. argyrodes (Walckenaer, 1841)		*						Mediterranean to

								West Africa
A. borbonicus Lopez, 1990					*			
A. calmettei Lopez, 1990					*			
A. chionus Roberts, 1983			*					
A. cognatus (Blackwall, 1877)		*						
A. fissifrontellus Saaristo, 1978		*						
A. meus Strand, 1907	*							
A. minax O. P.-Cambridge, 1880	*			*				
A. rostratus Blackwall, 1877		*						
A. sextuberculosus Strand, 1908	*							Mozambique
A. viridis (Vinson, 1863)	*				*			
A. zonatus (Walckenaer, 1841)	*				*			East Africa, Bioko
Asygyna coddingtoni Agnarsson, 2006	*							
A. huberi Agnarsson, 2006	*							
Bardala labarda (Roberts, 1983)			*					
Crustulina ambigua Simon, 1889	*							
Dipoena hasra Roberts, 1983			*					
D. pristea Roberts, 1983			*					
D. transversisulcata Strand, 1908	*							
Euryopis helcra Roberts, 1983			*					
Latrodectus geometricus C. L. Koch, 1841	*							Cosmopolitan
L. menavodi Vinson, 1863	*			*				
L. obscurior Dahl, 1902	*							Cape Verde Is.
Moneta coercervea (Roberts, 1978)		*						
Nanume naneum (Roberts, 1983)			*					
Phoroncidia aurata O. P.-Cambridge, 1877	*							
P. quadrispinella Strand, 1907	*							
P. rubroargentea Berland, 1913	*							
Phycosoma excisum (Simon, 1889)	*							
P. martinae (Roberts, 1983)			*					India, China, Korea, Ryukyu Is., Philippines
P. menustya (Roberts, 1983)			*					
P. spundana (Roberts, 1978)		*						
Rhomphaea barycephala (Roberts, 1983)			*					
R. recurvata (Saaristo, 1978)		*						
Sesato setosa Saaristo, 2006		*						
Seycellesa braueri (Simon, 1898)		*						
Spinembolia clabnum (Roberts, 1978)		*						
Stoda libudum (Roberts, 1978)		*						
Theridion cloxum Roberts, 1983			*					
T. decemperlatum (Simon, 1889)	*							
T. lacticolor Berland, 1920	*							Kenya, Yemen
T. leve Blackwall, 1877		*						
T. mehlum Roberts, 1983			*					
T. melanostictum O. P.-Cambridge, 1876		*	*					Mediterranean, China, Japan, USA, Canada, Hispaniola
T. nagorum Roberts, 1983			*					
T. palanum Roberts, 1983			*					
T. puellae Locket, 1980				*				
T. quadrilineatum Lenz, 1886	*							

Theridula perlata Simon, 1889	*							
T. theriella Strand, 1907	*							
Thwaitesia argenteosquamata (Lenz, 1891)	*							
T. aureosignata (Lenz, 1891)	*							
T. inaurata (Vinson, 1863)					*			
T. pulcherrima Butler, 1882	*							
Tidarren apartiolum Knoflach & van Harten, 2006	*							
T. dasyglossa Knoflach & van Harten, 2006	*							
T. ephemerum Knoflach & van Harten, 2006	*							
T. horaki Knoflach & van Harten, 2006	*							
T. obtusum Knoflach & van Harten, 2006	*							
Theridiosomatidae								
Andasta benoiti (Roberts, 1978)		*						
A. siltte Saaristo, 1996		*						
Zoma zoma Saaristo, 1996		*						
Thomisidae								
Apyretina catenulata (Simon, 1903)	*							
A. nigra (Simon, 1903)	*							
A. pentagona (Simon, 1895)	*							
A. quinquenotata (Simon, 1903)	*							
A. tessera (Simon, 1903)	*							
Cyriogonus fuscitarsis Strand, 1908	*							
C. lactifer Simon, 1886	*							
C. rutenbergi (Karsch, 1881)	*							
C. simoni Lenz, 1891	*							
C. triquetrus Simon, 1886	*							
C. vinsoni (Thorell, 1875)	*							
Diaea nakajimai Ono, 1993	*							
Diplotychus longulus Simon, 1903	*							
Emplesiogonus scutulatus Simon, 1903	*							
E. striatus Simon, 1903	*							
Firmicus bimaculatus (Simon, 1886)	*							
F.insularis (Blackwall, 1877)		*						
Geraesta bilobata Simon, 1897	*							
G. hirta Simon, 1889	*							
Herbessus decorsei Simon, 1903	*							
Iphoctesis echinipes Simon, 1903	*							
Lampertia pulchra Strand, 1907	*							
Ledouxia alluaudi (Simon, 1898)					*	*		
Phrynarachne clavigera Simon, 1903	*							
P. pusiola Simon, 1903	*							
P. rugosa (Latreille, 1804)	*				*	*		West Africa, Malawi
Plastonomus octoguttatus Simon, 1903	*							
Prepotelus curtus Ledoux, 2004					*			
P. lanceolatus Simon, 1898					*	*		
P. limbatus (Simon, 1898)						*		
P. pectinitarsis (Simon, 1898)						*		
Pseudoporrhopis granum Simon, 1886	*							
Pyresthesis laevis (Keyserling, 1877)	*							
Runcinia oculifrons Strand, 1907	*							
Soelteria nigra Dahl, 1907	*							

Stephanopis octolobata Simon, 1886	*							
S. rhomboidalis Simon, 1886	*							
Synema hildebrandti Dahl, 1907	*							
S. lunulatum Dahl, 1907	*							
S. obscurifrons Dahl, 1907	*							
S. obscuripes Dahl, 1907	*							
Tharrhalea cerussata Simon, 1886	*							
T. semiargentea Simon, 1895	*							
T. superpicta Simon, 1886	*							
Thomisus boesenbergi Lenz, 1891	*							
T. citrinellus Simon, 1875		*						Mediterranean, Africa, Yemen, Socotra
T. lamperti Strand, 1907	*							
T. madagascariensis Comellini, 1957	*							
T. madagascariensis pallidus Comellini, 1957	*							
T. nossibeensis Strand, 1907	*							
Tmarus foliatus Lessert, 1928				*				Africa
Trichopagis manicata Simon, 1886	*							Gabon, Guinea, South Africa
Xysticus hepaticus Simon, 1903	*							
Trochanteriidae *Platyoides grandidieri* Simon, 1903	*		*		*			Kenya
P. mailaka Platnick, 1985	*							
P. ravina Andriamalala & Ubick, 2007	*							
P. vao Andriamalala & Ubick, 2007	*							
P. velonus Platnick, 1985	*							
Uloboridae *Uloborus aureus* Vinson, 1863	*							
U. vanillarum Vinson, 1863	*							
U. velutinus Butler, 1882	*							
Zodariidae *Asceua radiosa* Jocqué, 1986				*				
Aschema madagascariensis (Strand, 1907)	*							
A. pallida Jocqué, 1991	*							
Cryptothele alluaudi Simon, 1893		*						
Diores anomalus Jocqué, 1990	*							
D. filomenae Jocqué, 2003				*				
D. milloti Jocqué, 1990	*							
D. seiugatus Jocqué, 1986				*				
Omucukia angusta (Simon, 1889)	*							
O. madrela (Jocqué, 1991)	*							
Zoridae *Voraptus tenellus* (Simon, 1893)		*						
Zorocratidae *Uduba dahli* Simon, 1903	*							
U. madagascariensis (Vinson, 1863)	*							
Zorodictyna inhonesta (Simon, 1906)	*							
Z. oswaldi (Lenz, 1891)	*							
Total number of species	**556**	**145**	**30**	**68**	**39**	**24**	**2**	

Table 2. Sum of spider genera and species of African islands at the eastern side of the continent arranged within families, in addition to the sum of endemic species.

Family	Madagascar			Seychelles			Aldabra			Comoro Is.			Réunion			Mauritius			Rodriguez		
	G	Sp	E	G	Sp	E	G	Sp	E	G	Sp	E	G	Sp	E	G	Sp	E	G	Sp	E
Agelenidae	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-
Araneidae	29	65	49	2	3	2	7	7	5	4	5	4	2	3	0	6	6	3	-	-	-
Archaeidae	2	21	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barychelidae	3	9	8	2	2	1	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-
Clubionidae	2	3	3	1	3	2	-	-	-	-	-	-	1	2	1	2	2	2	-	-	-
Corinnidae	6	13	13	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ctenidae	3	14	14	1	1	1	-	-	-	2	2	2	1	1	1	-	-	-	-	-	-
Ctenizidae	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyatholipidae	3	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Deinopidae	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Desidae	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dipluridae	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eresidae	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Filistatidae	1	4	4	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gallieniellidae	2	10	10	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-
Gnaphosidae	5	6	4	3	4	1	1	1	0	1	1	0	1	1	1	-	-	-	-	-	-
Hahniidae	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-
Hersiliidae	2	5	5	-	-	-	1	1	0	1	1	0	-	-	-	-	-	-	-	-	-
Idiopidae	2	3	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linyphiidae	5	5	4	3	4	0	-	-	-	11	14	11	1	1	1	-	-	-	-	-	-
Liocranidae	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lycosidae	7	11	11	1	1	0	1	1	0	1	2	1	-	-	-	-	-	-	-	-	-
Migidae	3	14	14	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-
Mimetidae	2	3	3	1	1	0	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-
Miturgidae	1	1	1	-	-	-	-	-	-	1	1	0	1	3	1	-	-	-	-	-	-
Mysmenidae	-	-	-	1	1	1	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-
Nemesiidae	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephilidae	3	5	3	2	2	0	1	1	0	3	3	2	1	1	0	1	1	0	1	1	0
Nesticidae	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ochyroceratidae	-	-	-	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oonopidae	-	-	-	14	31	24	-	-	-	-	-	-	-	-	-	1	1	0	-	-	-
Oxyopidae	3	5	1	1	1	0	-	-	-	1	3	0	-	-	-	-	-	-	-	-	-
Palpimanidae	-	-	-	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Philodromidae	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pholcidae	8	38	38	2	4	4	-	-	-	1	2	2	-	-	-	-	-	-	-	-	-
Phyxelididae	2	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisauridae	12	16	14	-	-	-	-	-	-	2	2	0	1	1	1	-	-	-	-	-	-
Prodidomidae	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-
Salticidae	34	106	94	13	23	19	1	1	0	5	5	2	7	13	8	4	4	1	-	-	-
Scytodidae	1	2	2	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Segestriidae	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenopidae	4	11	9	1	1	1	-	-	-	2	2	2	1	1	0	-	-	-	-	-	-
Sicariidae	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sparassidae	8	40	39	5	5	5	-	-	-	1	1	1	-	-	-	-	-	-	-	-
Stiphidiidae	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-
Symphytognathidae	-	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Synaphridae	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Telemidae	-	-	-	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tengellidae	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrablemmidae	1	1	1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetragnathidae	5	7	5	5	8	3	1	2	1	6	9	7	-	-	-	1	1	1	1	1	0
Theraphosidae	3	3	3	1	3	3	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-
Theridiidae	12	37	28	11	15	13	9	15	12	5	6	3	2	5	3	-	-	-	-	-	-
Theridiosomatidae	-	-	-	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thomisidae	22	45	42	2	2	1	-	-	-	1	1	0	3	4	1	3	5	2	-	-	-
Trochanteriidae	1	5	4	-	-	-	1	1	0	-	-	-	1	1	0	-	-	-	-	-	-
Uloboridae	1	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zodariidae	3	6	6	1	1	1	-	-	-	2	3	3	-	-	-	-	-	-	-	-	-
Zoridae	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zorocratidae	2	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total number of genera/species	**217**	**556**	**488**	**97**	**145**	**108**	**23**	**30**	**18**	**55**	**68**	**44**	**25**	**39**	**20**	**22**	**24**	**13**	**2**	**2**	**0**

Table 3. Sum of families, genera and species of spiders of each African island/s at the eastern side of the continent, in addition to the sum of endemic species.

Islands	Families	Genera	Species	Endemic species/subspecies	
Madagascar	47	217	556	488	87.77 %
Seychelles	45	97	145	108	74.48 %
Aldabra	9	23	30	18	60.00 %
Comoro Is.	22	55	68	44	64.70 %
Réunion	15	25	39	20	51.28 %
Mauritius	11	22	24	13	54.17 %
Rodriguez	2	2	2	0	0

Conclusion

There are 60 families, 320 genera, and 847 species/subspecies recorded from the islands at the eastern side of the African continent, i.e. Madagascar, Seychelles, Aldabra, Comoro Is., Réunion, Mauritius, and Rodriguez. There are 691 endemic species in these islands, i.e. 81.58 % of the species of these islands and 1.63 % of the known spider species in the world. The highest ratio of endemic species is in Madagascar (87.77 %) followed by Seychelles (74.48 %) and the lowest one is in Réunion (51.28 %) while Rodriguez is out of comparison with its only two recorded species.

Family Salticidae has the priority in number of species (143) followed by Araneidae (82). In Madagascar, the two families are represented by 106 and 65 species, respectively, with 94 endemic salticid species (88.68 %) and 49 endemic araneids (75.38 %). This denotes the uniqueness of the spider fauna of this region.

Table 4. Sum of spider genera and species of African islands at the eastern side of the continent arranged within families.

Family	G	Sp	Family	G	Sp
Agelenidae	1	1	Oonopidae	17	31
Araneidae	30	82	Oxyopidae	3	6
Archaeidae	2	21	Palpimanidae	2	3
Barychelidae	4	11	Philodromidae	2	2
Clubionidae	2	9	Pholcidae	10	44
Corinnidae	7	16	Phyxelididae	2	4
Ctenidae	6	18	Pisauridae	13	18
Ctenizidae	1	1	Prodidomidae	2	2
Cyatholipidae	3	8	Salticidae	41	143
Deinopidae	1	1	Scytodidae	2	5
Desidae	1	1	Segestriidae	2	2
Dipluridae	1	2	Selenopidae	4	14
Eresidae	1	2	Sicariidae	1	1
Filistatidae	2	6	Sparassidae	12	46
Gallieniellidae	2	11	Stiphidiidae	1	2
Gnaphosidae	8	11	Symphytognathidae	2	2
Hahniidae	1	1	Synaphridae	2	3
Hersiliidae	2	6	Telemidae	1	2
Idiopidae	3	4	Tengellidae	1	1
Linyphiidae	17	23	Tetrablemmidae	3	3
Liocranidae	1	1	Tetragnathidae	11	25
Lycosidae	8	13	Theraphosidae	5	7
Migidae	4	15	Theridiidae	23	71
Mimetidae	2	5	Theridiosomatidae	2	3
Miturgidae	1	5	Thomisidae	25	53
Mysmenidae	2	2	Trochanteriidae	1	5
Nemesiidae	1	2	Uloboridae	1	3
Nephilidae	3	9	Zodariidae	5	10
Nesticidae	1	1	Zoridae	1	1
Ochyroceratidae	3	3	Zorocratidae	2	4
Total number:	**60 Families**		**320 genera**	**847 species**	

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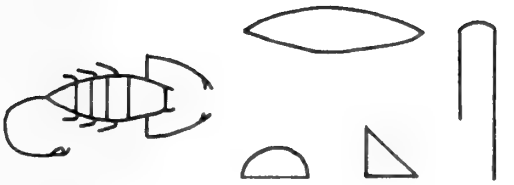

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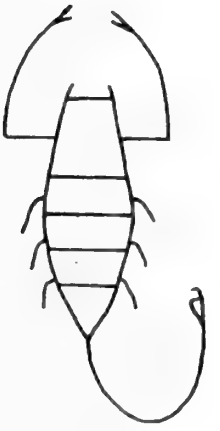

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The first record of *Cheiracanthium molle* in Saudi Arabia

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Abstract

Cheiracanthium molle L. Koch, 1875 of family Miturgidae is recorded from Al-Baha, Saudi Arabia. It is the first record of this species outside Africa.

Keywords: Spiders, Miturgidae, *Cheiracanthium molle*, Al-Baha, Saudi Arabia.

Introduction

Genus *Cheiracanthium* C.L. Koch, 1839 was transferred from the Clubionidae by Ramírez, Bonaldo & Brescovit, 1997 and recently placed in "Chiracanthiidae" by Ono, 2009 (Platnick, 2011). On the other side, some scientists "follow Deeleman-Reinhold (2001) and Raven (2009, and references therein) in placing the Eutichurinae with *Cheiracanthium* in the Clubionidae" (Jäger & Dankittipakul, 2010). This genus includes 178 species and 1 subspecies, worldwide distributed. In Africa, 42 species of *Cheiracanthium* were recorded (El-Hennawy, 2010).

Cheiracanthium molle L. Koch, 1875 is an African species recorded from: Botswana, Chad, Comores, Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Tanzania and Zimbabwe (Lotz, 2007). It was described as a new species from Abyssinia (now Ethiopia) by L. Koch (1875) and re-described, in detail, by Lotz (2007: 45-49, Figs. 84-92, 137). It is collected for the first time from Al-Baha, Saudi Arabia. This is the first record outside Africa (Map 1).

Al-Baha province is situated between Makkah and Asir region, in south-western Saudi Arabia. It represents different altitudes, mostly between 800 and 2500m above the sea level. It is characterized by natural tree cover and agricultural plateau. Due to its location, Al-Baha's climate is moderate in summer and cold in winter (Doha, 2009). It belongs to the Afrotropical region. The spiders of Al-Baha are not studied yet.

Abbreviations used: ALE = anterior lateral eye; AME = anterior median eye; AM-AM = inter-distance between anterior median eyes; CA = cymbial apophysis; CI (CL/CW) = carapace index; CL = cephalothorax length; CLL = clypeal length; CON = conductor; CW = cephalothorax width; L = length; LI = total length of leg I;

MOQAW = median ocular quadrangle anterior width; MOQPW = median ocular quadrangle posterior width; OAL = ocular area length; OAW = ocular area width; p = prolateral; PLE = posterior lateral eye; PME = posterior median eye; r = retrolateral; RTA = retrolateral tibial apophysis; STL = sternum length; STW = sternum width; TA = tegular apophysis; TL = total length; v = ventral. All measurements were taken in millimetres.

Cheiracanthium molle L. Koch, 1875

(Figs. 1-6, Tables 1-2, Map 1)

Material examined: 1♂, 1s♂, Saudi Arabia, Al-Baha, Gebel El-Baher (20°00'N, 41°27'E, elevation 2170m). Coll. M.S. El-Hawagry, 25 May 2011.

Description: Male (Fig. 1): TL 4.67; body and legs are creamy-yellowish; CL 2.12, CW 1.61; OAL 0.66; OAW 0.32; CLL 0.05; CI (CL/CW) 1.32 [similar to Lotz (2007)], LI:CL 6.78, STL 1.11, STW 0.79.

Eyes: posterior medians (PME) largest; anterior laterals (ALE) smallest; all inter-distances equal the diameter of AME and PLE. Eye measurements (diameters and inter-distances): AME 0.11, ALE 0.05, PME 0.13, PLE 0.11, AM-AM 0.11, AM-AL 0.11, PM-PM 0.11, PM-PL 0.11, MOQAW 0.32, MOQPW 0.37.

Chelicerae: fang without distinct basal extension, on the contrary of Lotz (2007) (Fig. 2).

Legs: leg formula I-IV-II-III (Table 1) and leg spination (Table 2) almost similar to Lotz (2007).

Table 1: Legs and pedipalp measurements (mm)

Leg	I	II	III	IV	Palp
Femur	3.55	2.39	1.85	2.97	1 .06
Patella	1.06	0.79	0.64	0.90	0.26
Tibia	3.82	2.38	1.59	2.65	0.53
Metatarsus	4.24	2.76	2.38	3.71	---
Tarsus	1.70	0.79	0.74	0.85	1.01
Total length	14.37	9.11	7.20	11.08	2.86

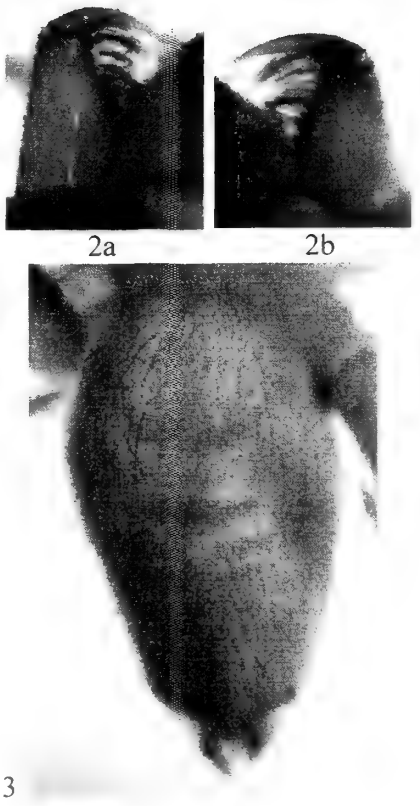
Table 2: Leg spination

Leg	Femur	Tibia	Metatarsus
I	p 0-1-1, r 0-1-1	v 2-2,2,2-0	v 2-1_r-1_p
II	p 0-1-1, r 0-1-1	p 1-0-1, v 1-2-0	p 1-1-0, v 2-2,2
III	p 0-1-1, r 0-1-1	p 1-0-1, r 1-0-1, v 1-0-0	p 1-1-1, r 1-1-1, v 2-2-2
IV	p 0-1-1, r 0-1-1	p 1-0-1, r 1-0-1, v 1-0-0	p 1-1-1, r 1-1-1, v > 20

Abdomen: L 2.55; more yellowish than cephalothorax; with two darker transverse bands (Fig. 3), not "an indistinct heart-mark" as in Lotz (2007). Palp (Figs. 4-6): "cymbium elongate, longer than patella and tibia combined; three short sharply pointed RTA that curve outward; tegular apophysis large, parallel to conductor and double lobed, fishtail-like at apex; embolus long, almost encircling tegulum, ending at conductor apex; conductor unsclerotised but distinct" as described by Lotz (2007).

Habitat

Collected from a mountainous region, inside a building among rocks with scattered herbs.



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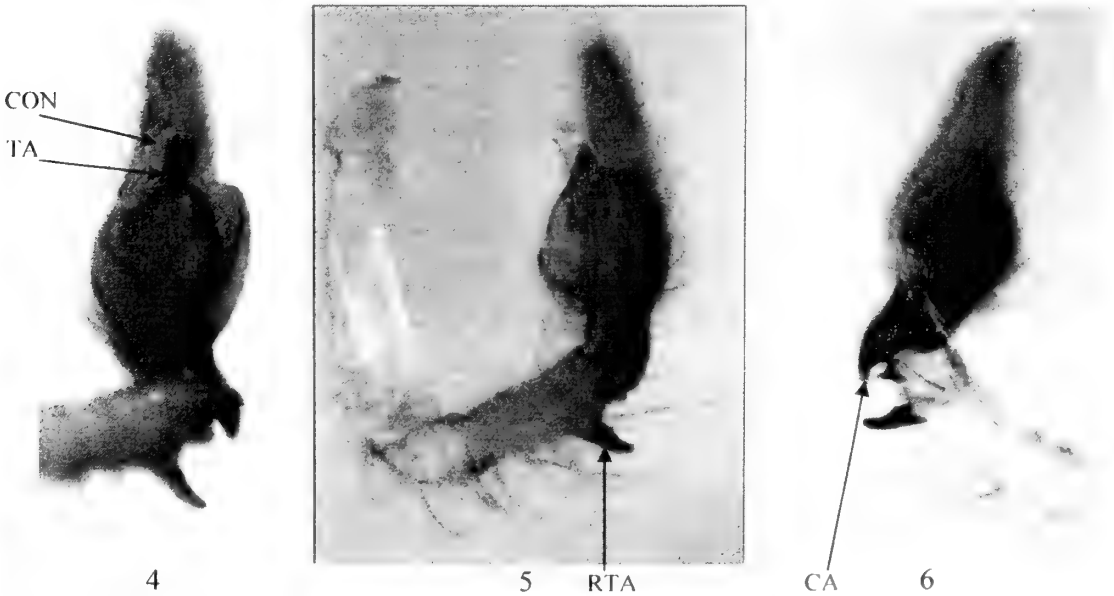
Figs. 1-6: *Cheiracanthium molle* L. Koch, 1875 ♂.
1. Habitus. 2. Cheliceral fang, a. dorsal view, b. ventral view. 3. Abdomen, dorsal view.



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4-6. Palp (left).
4. ventral view. 5. prolateral view. 6. dorsal view, showing three pointed apophyses.
CA = cymbial apophysis; CON = conductor; RTA = retrolateral tibial apophysis; TA = tegular apophysis.

Map 1. Distribution of *Cheiracanthium molle* L. Koch, 1875
* = Al-Baha, • = known records from Africa (modified after Lotz (2007: 69, fig. 137).

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I am grateful to Dr. Magdi S. El-Hawagry, Professor of Insect taxonomy, Cairo University and Al-Baha University, Al-Baha, Saudi Arabia, who collected the studied specimen during his supervision of the project "Survey and Classification of Agricultural and Medical Insects in Al-Baha District", supported by the Deanship of Scientific Research of Al-Baha University.

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New records of Linyphiidae (Araneae) for Turkish araneo-fauna

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Abstract

Bathyphantes similis Kulczyński, 1894, *Bolyphantes alticeps* (Sundevall, 1833), *Centromerus sylvaticus* (Blackwall, 1841), *Mansuphantes fragilis* (Thorell, 1875), *Micrargus subaequalis* (Westring, 1851), *Neriene peltata* (Wider, 1834), *N. radiata* (Walckenaer, 1841), *Tenuiphantes cristatus* (Menge, 1866), and *T. jacksoni* (Schenkel, 1925) are nine new records for the spider fauna of Turkey. The characteristic features and drawings of female genitalia and male palpal organs are presented. Distribution of these species is plotted on a map.

Keywords: Spiders, Linyphiidae, new records, Black Sea Region, Turkey.

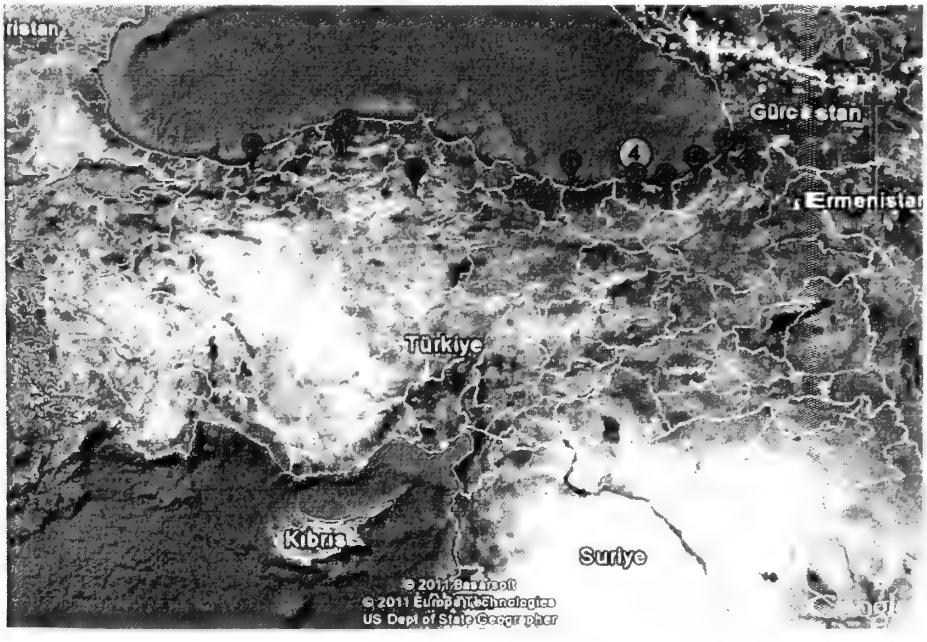
Introduction

Linyphiidae is the second largest family of spiders, including 4401 species (Platnick, 2011). There are 68 species known in the Turkish fauna (Bayram *et al.*, 2007, Demir *et al.*, 2008, Marusik & Kunt, 2009, Seyyar *et al.*, 2008, Tanasevitch *et al.*, 2005, Topçu *et al.*, 2005, 2008). The new records in this study raise the number of linyphiid species known from Turkey to 77.

Material and Methods

This study was carried out through 2007-2010 in 8 localities in the 6 provinces of the Black Sea region (Map1). Spiders were collected using aspirator from among leaves and stems of plants, fallen leaves in forests, on ground, algae upon rocks, soil cracks, stones, boulders and tree bark. They were preserved in 70% ethanol. Examined specimens were deposited in the NUAM. The identification and genitalia drawings were made by means of a SZX-16 Olympus stereomicroscope with a camera lucida, depending on the keys of Heimer & Nentwig (1991) and Roberts (1995) were used.

Abbreviations used: cd = copulatory duct, cdo = copulatory duct opening, cym = cymbium, emb = embolus, fd = fertilization duct, m = metre, mm = millimetre, NUAM: Arachnology Museum of the Niğde University, pcym = paracymbium, sc = scapus, sp = spermatecha, tib = tibia. All measurements are in millimetres and scale lines in the figures correspond to 0.1 mm.



Map 1: Distribution map of linyphiid species newly recorded in the Black Sea Region, 2007-2010, in Turkey. Numbered dots correspond to locality 'L-1...9' as shown in "Material examined". 1. *Bathyphantes similis* Kulczyński, 1894
2. *Bolyphantes alticeps* (Sundevall, 1833) 3. *Centromerus sylvaticus* (Blackwall, 1841)
4. *Mansuphantes fragilis* (Thorell, 1875) 5. *Micrargus subaequalis* (Westring, 1851)
6. *Neriene peltata* (Wider, 1834) 7. *Neriene radiata* (Walckenaer, 1841)
8. *Tenuiphantes cristatus* (Menge, 1866) 9. *Tenuiphantes jacksoni* (Schenkel, 1925)

Results

Bathyphantes similis Kulczyński, 1894
Material examined: 1♂ [L-1], Artvin Province, Murgul District, 11.09.2009 (T. Türkeş).
Male. (Fig. 1) Carapace: 1.00 long, 0.90 wide, brown; sternum brown. Abdomen: 1.00 long, 0.80 wide, black. Legs: orange-brown.
Distribution. Europe, Russia (Platnick, 2011), Turkey (new record).
Habitat. Specimen was collected from low vegetation.

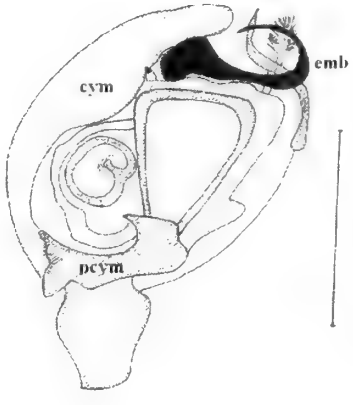
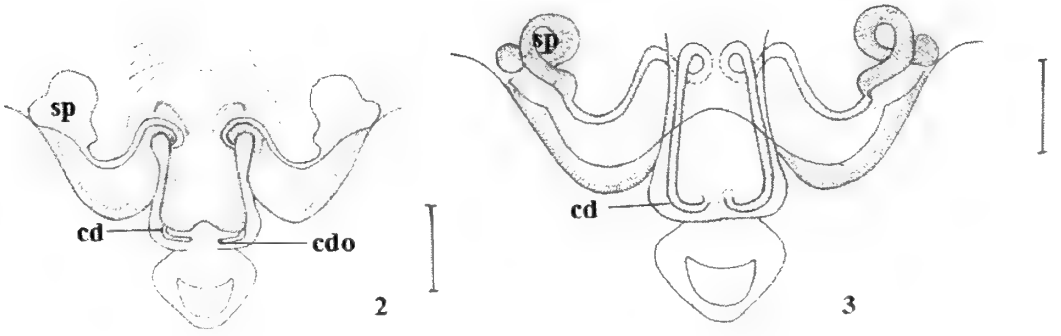


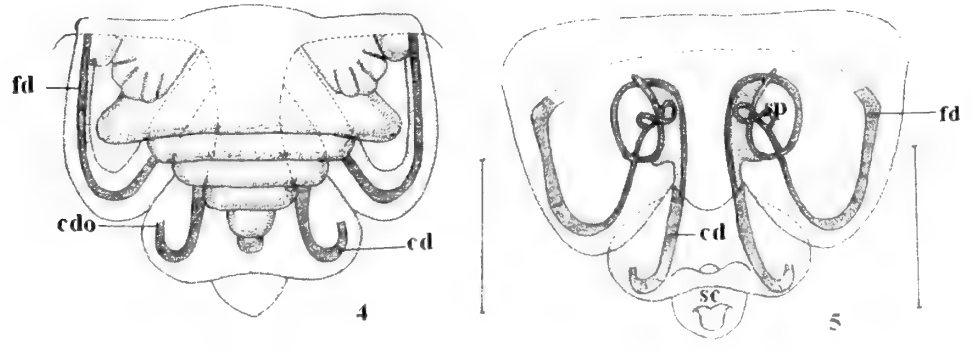
Fig. 1: *Bathyphantes similis* Kulczyński, 1894 ♂ Palp, retrolateral view.

Bolyphantes alticeps (Sundevall, 1833)
Material examined: 1♀ [L-2], Trabzon Province, Maçka District, 26.08.2010 (T. Türkeş).
Female. (Figs. 2-3) Carapace: 1.50 long, 1.15 wide, yellow with laterally dark greenish brown; sternum dark yellow with laterally dark brown. Abdomen: 2.1 long, 1.25 wide, yellowish brown, dorsally with irregularly arranged spots. Legs: yellowish to light brown, with long, robust spines.
Distribution. Palaearctic (Platnick, 2011), Turkey (new genus record).
Habitat. Specimen was collected from subalpine zone.



Figs. 2-3: *Bolyphantes alticeps* (Sundevall, 1833) ♀ 2. Epigyne, ventral view.
3. Vulvae, dorsal view.

Centromerus sylvaticus (Blackwall, 1841)
Material examined: 1♀ [L-3], Çorum Province, the road of Laçin, 1078 m, 28.10.2007 (T. Türkeş).
Female. (Figs. 4-5) Carapace: 1.25 long, 0.80 wide; sternum and carapace yellow. Abdomen: 1.50 long, 0.75 wide, greyish yellow. Legs: light yellow.
Distribution. Holarctic (Platnick, 2011), Turkey (new record).
Habitat. Specimen was collected among dry plant residues in wooded area.



Figs. 4-5: *Centromerus sylvaticus* (Blackwall, 1841) ♀ 4. Epigyne, ventral view.
5. Vulvae, dorsal view.

Mansuphantes fragilis (Thorell, 1875)
Material examined: 1♀ [L-4], Trabzon Province, Maçka District, 2150 m, 14.09.2009 (T. Türkeş).
Female. (Fig. 6) Carapace: 1.20 long, 0.80 wide, light yellow; sternum yellowish green. Abdomen: 1.30 long, 0.75 wide, yellow. Legs: light yellow.

Distribution. Europe (Platnick, 2011), Turkey (new record).
Habitat. Specimen was collected from humid forest area on low vegetation.

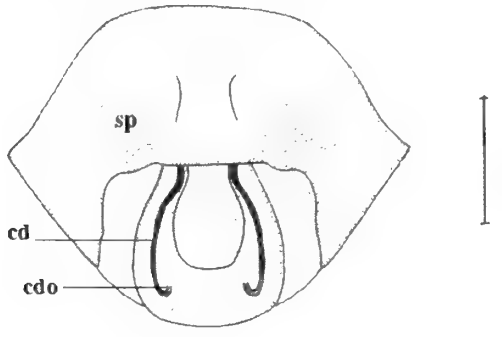
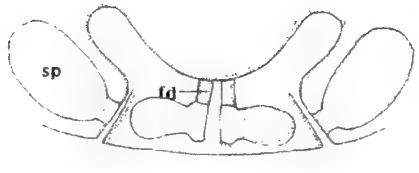


Fig. 6: *Mansuphantes fragilis* (Thorell, 1875) ♀ Epigyne, ventral view.

Micrargus subaequalis (Westring, 1851)
Material examined: 3♀♀, 1♂ [L-5], Artvin Province, Ardanuç District, 2520 m, 29.08.2010 (T. Türkeş).
Male. (Fig. 9) Carapace: 0.90 long, 0.75 wide, yellowish brown; sternum brown. Abdomen: 0.85 long, 0.75 wide, dark brownish black. Legs: light yellowish brown.
Female. (Figs. 7-8) Carapace: 0.80 long, 0.70 wide; sternum and carapace yellowish green. Abdomen: 0.85 long, 0.75 wide, greyish green. Legs: light yellowish green.
Distribution. Palaearctic (Platnick, 2011), Turkey (new record).
Habitat. Specimens were collected from dry open land.



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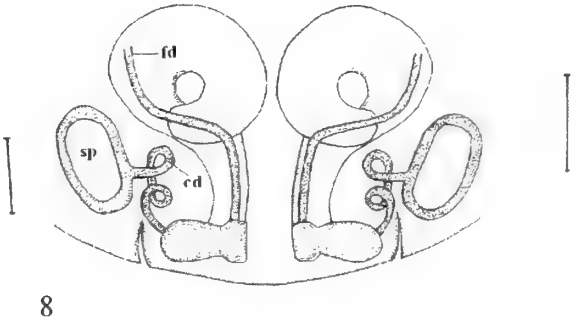

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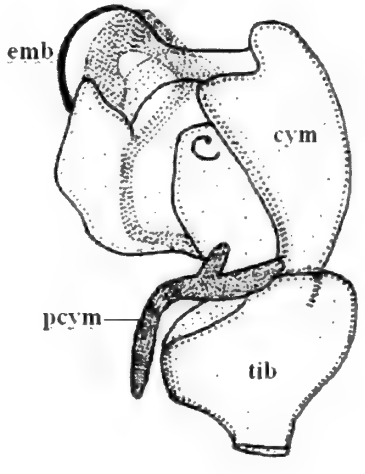

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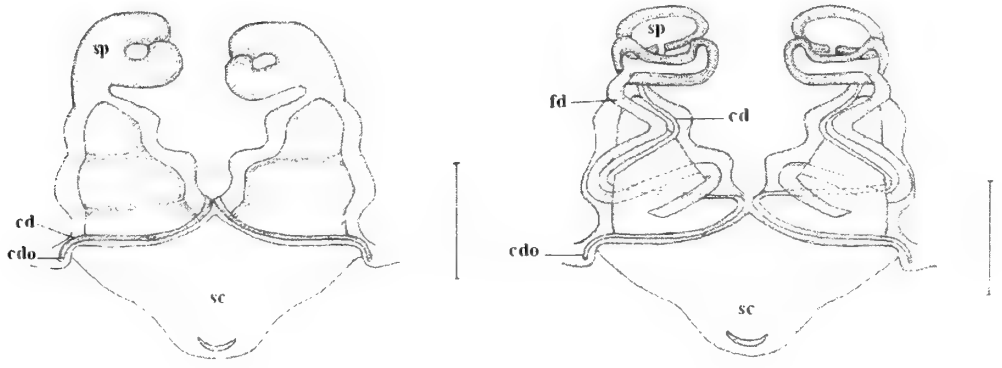
Figs. 7-9: *Micrargus subaequalis* (Westring, 1851)
7. ♀ Epigyne, ventral view.
8. ♀ Vulvae, dorsal view.
9. ♂ palp, retrolateral.

Neriene peltata (Wider, 1834)
Material examined: 3♀♀ [L-6], Rize Province, Elevit District, 02.07.2009 (T. Türkeş).
Female. (Figs. 10-11) Carapace: 1.00 long, 1.00 wide, yellowish brown; sternum brown. Abdomen: 2.00 long, 1.00 wide, dorsally with dark longitudinal band and irregular white lined margin. Legs: yellow.
Distribution. Greenland, Palaearctic (Platnick, 2011), Turkey (new record).
Habitat. Specimens were collected from on bushes and trees.



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Figs. 10-11: *Neriene peltata* (Wider, 1834) ♀ 10. Epigyne, ventral view. 11. Vulvae, dorsal view.

Neriene radiata (Walckenaer, 1841)
Material examined: 1♀ [L-7], Zonguldak Province, Ereğli District, 380 m, 28.07.08; 1♂ and 1♀, Giresun Province, Bulancak District, 21.05.08 (T. Türkeş).
Female. (Fig. 12) Carapace: 2.00 long, 1.50 wide, yellowish brown with cephalic part brown; sternum brown. Abdomen: 2.75 long, 1.25 wide, with black pattern. Legs: brown.
Distribution. Holarctic (Platnick, 2011), Turkey (new record).
Habitat. Specimens were collected from high vegetation, on half-shadowed bushes and trees.

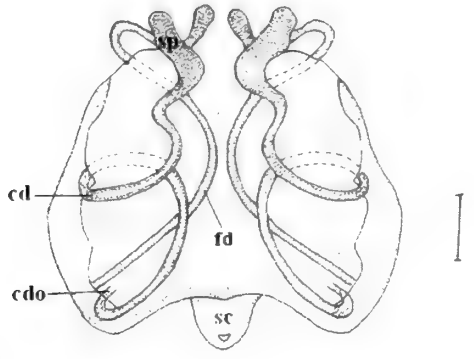
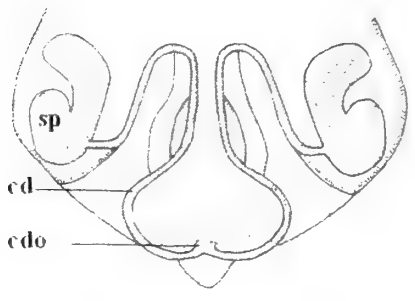


Fig. 12: *Neriene radiata* (Walckenaer, 1841) ♀ Vulvae, dorsal view.

Tenuiphantes cristatus (Menge, 1866)
Material examined: 2♀♀ [L-8], Kastamonu Province, Ballıdağ District, 1587 m, 19.10.2007 (T. Türkeş).
Female. (Figs. 13-14) Carapace: 1.00 long, 0.75 wide, yellowish orange; sternum orange-brown. Abdomen: 1.50 long, 0.75 wide, grey-white with dark pattern. Legs: yellowish orange.
Distribution. Palaearctic (Platnick, 2011), Turkey (new record).
Habitat. Specimens were collected from litter layer of a deciduous forest.



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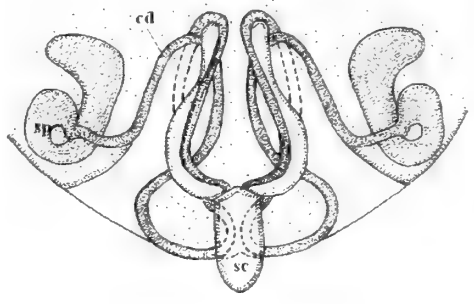

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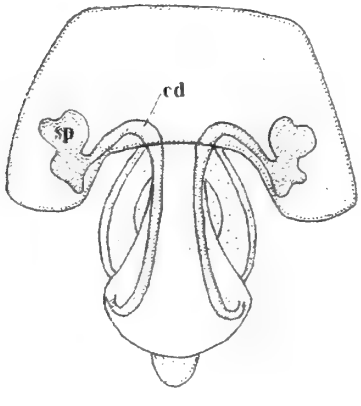
Figs. 13-14: *Tenuiphantes cristatus* (Menge, 1866) ♀ 13. Epigyne, ventral view.
14. Vulvae, dorsal view.

Tenuiphantes jacksoni (Schenkel, 1925)
Material examined: 1♀ [L-9], Trabzon Province, Çaykara District, 2053 m, 01.07.2009 (T. Türkeş).
Female. (Figs. 15-16) Carapace: 1.00 long, 0.75 wide, yellow; sternum yellowish brown. Abdomen: 1.50 long, 1.25 wide, yellowish grey with black chevrons. Legs: muddy yellow.
Distribution. Switzerland, Austria (Platnick, 2011), Turkey (new record).
Habitat. Specimen was collected from subalpine zone in a soil crack.



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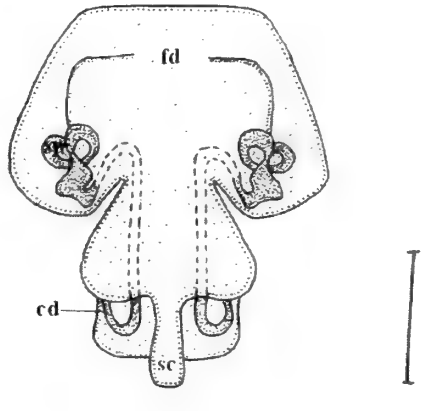

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Figs. 15-16: *Tenuiphantes jacksoni* (Schenkel, 1925) ♀
15. Epigyne, ventral view. 16. Vulvae, dorsal view.

Conclusion

Comparing the previously recorded 68 linyphiid species from Turkey with the 2367 Palaearctic species of family Linyphiidae, we expect that there are more unrecorded linyphiid species in Turkey. Linyphiid species need more detailed studies in Turkey to know their real number and distribution.

Acknowledgment

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Thomisidae and Philodromidae (Araneae) of the Central Anatolia Region, with a new record for Turkey

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Abstract

Faunistic data, including zoogeographical distribution, of 28 species belonging to the families of Thomisidae and Philodromidae are presented. All species were collected from Central Anatolia Region in Turkey between 1996 and 2007. *Philodromus buxi* Simon, 1884 is recorded for the first time from Turkey.

Keywords: Thomisidae, Philodromidae, Araneae, new record, Turkey.

Introduction

Arachnological studies of Turkey began towards the end of the 19th century. They were increased during the 20th century, specially faunistic and taxonomic works. Recently, they continue with an increased speed.

The Thomisidae, commonly called the crab spiders, is a big spider family comprising 177 genera and 2152 species worldwide, of which 78 species of 12 genera are known from Turkey (Bayram *et al.*, 2008; Demir, 2008b; Demir *et al.*, 2008a,b, 2009a,b; Platnick, 2011). The great diversity of form and colour shown by the Thomisidae relates to their exploitation of a wide variety of habitats and their often remarkable capacity for camouflage, sometimes even to the extent of slowly changing colour. The majority of species are rather crab-like in appearance, have the first two pairs of legs longer than the rest, and can walk sideways, as well as forwards and backwards (Roberts, 1995).

Philodromidae or "running crab spiders" are a family of laterigrade, i.e. sideways walking, spiders with essentially equal length of all legs. Philodromidae has been regarded as a subfamily of Thomisidae by early authors, but since the detailed study of Homann (1975) their family status is generally accepted (Platnick, 2011). These spiders are found living under stones, under bark on trees, and in vegetation (Roberts, 1995). The

total of 535 species of Philodromidae have been described so far in 29 genera (Platnick, 2011), with only 27 species belonging to 4 genera were recorded from Turkey (Demir, 2008a).

Material and Methods

The material was collected by pitfall trapping and sweeping net over plants between 1996 and 2007. They were preserved in 70% ethanol and deposited in the collection of the Arachnology Museum of Niğde University (NUAM).

For identification, the keys given by Demir *et al.* (2008a,b, 2009a,b), Levy (1973, 1976), Logunov & Demir (2006), Logunov (2006), Marusik & Logunov (1990, 1995), Roberts (1995), Simon (1932), and Wunderlich (1995) were used. World distribution of all species follows Platnick (2011).

Results

Family **Thomisidae** Sundevall, 1833

Genus ***Diaea*** Thorell, 1869
Diaea livens Simon, 1876
Material examined: 1♀, Ankara province, Kızılcahamam district, Işık mountain 10.07.2003.
World Distribution: USA, Central Europe to Azerbaijan.

Genus ***Misumena*** Latreille, 1804
Misumena vatia (Clerck, 1757)
Material examined: 1♀, Nevşehir, Avanos, 05.06.2000; 1♂, Ankara province, Güdül district, 24.5.2003; 2♂♂, 5♀♀, Çankırı province, Ilgaz district, 28.07.2005; 1♀, Ankara province, Çubuk district, surroundings of Karagöl lake, 16.07.2003.
World Distribution: Holarctic.

Genus ***Monaeses*** Thorell, 1869
Monaeses israeliensis Levy, 1973
Material examined: 2♀♀, Ankara province, Polatlı district, 18.06.2003; 1♂, Ankara province, Nallıhan district, 14.05.2003; 1♂, 4♀♀, Ankara province, Ayaş district, 14.05.2003; 1♂, 2♀♀, Ankara province, Güdül district, 21.05.2003.
World Distribution: Greece, Turkey, Israel, Lebanon, Central Asia.

Genus ***Ozyptila*** Simon, 1864
Ozyptila praticola (C.L. Koch, 1837)
Material examined: 1♀, Aksaray province, Ihlara district, 28.06.2004.
World Distribution: Holarctic.

Ozyptila simplex (O.P.-Cambridge, 1862)
Material examined: 1♂, Ankara province, Gölbaşı district, 24.06.2003.
World Distribution: Palaearctic.

Genus ***Runcinia*** Simon, 1875
Runcinia grammica (C.L. Koch, 1837)
Material examined: 6♀♀, Ankara province, Kızılcahamam district, 30.07.2001; 1♂, Ankara province, Kızılcahamam district, 13.06.2003; 3♂♂, Ankara province, Şereflilоçhisar district, Tuz lake, 15.06.2002; 1♂, 2♀♀, Ankara province, Gölbaşı

district, Topaklı village, 24.06.2003; 1♂, 1♀, Ankara province, Gölbaşı district, Koparan village, 24.06.2003; 4♂♂, 1♀, Ankara province, Polatlı district, Sapanca village; 4♀♀, Eskişehir province, Beyyazı district, Abbashalimpaşa village, 14.07.2004; 1♀, Ankara province, Polatlı district, Şabanözü village, 18.06.2003; 5♂♂, 1♀, Ankara province, Polatlı district, Sarıhalil village, 18.06.2003; 1♂, Aksaray province, Ortaköy district, Akin village, 29.06.2004; 1♂, 2♀♀, Ankara province, Gölbaşı district, 24.06.2003; 4♀♀, Ankara province, Akyurt district, 23.07.2003; 6♂♂, 5♀♀, Eskişehir province, Çaylom village, 13.07.2004; 2♂♂, 2♀♀, Yozgat province, Akdağmadeni district, 18.07.2003; 10♂♂, 17♀♀, Ankara province, Kazan district, 16.06.2003; 4♂♂, 2♀♀, Ankara province, Nallıhan district, Atça village, 23.06.2003; 1♀, Ankara province, Güdül district, 09.07.2003; 5♂♂, 2♀♀, Ankara province, Nallıhan district, 23.06.2003; 2♂♂, 10♀♀, Ankara province, Kazan district, 16.06.2003; 6♂♂, 7♀♀, Ankara province, Bala district, 21.06.2003; 4♂♂, 1♀, Ankara province, Ayaş district, Ören village, 20.06.2003; 2♂♂, 6♀♀, Kırıkkale province, 25.06.2004; 2♀♀, Kırşehir province, Mucur district, 26.06.2004; 6♂♂, 2♀♀, Kayseri province, Bünyan district, 23.06.2005; 4♂♂, 4♀♀, Ankara province, Polatlı district, Gündoğan village, 18.06.2003.
World Distribution: Palaearctic, St. Helena, South Africa.

Genus ***Synema*** Simon, 1864
Synema globosum (Fabricius, 1775)
Material examined: 9♀♀, Niğde province, Koyunlu village, 22.05.2002; 3♀♀, Ankara province, Şerflikoçhisar district, Tuz lake, 05.06.2002; 3♀♀, Ankara province, Küçükesat, 27.05.2005; 3♀♀, Niğde province, Fertek village, 09.06.2005; 3♀♀, Niğde province, Fertek village, 29.05.2002; 2♀♀, Niğde province, Ulukışla district, Kolsuz pass, 14.05.1996; 2♀♀, Ankara province, Elmadağ district, 15.05.2003; 1♂, 1♀, Ankara province, Evren district, İnebeli village, 28.05.2003; 1♀, Ankara province, Güdül district, Akbaş village, 18.05.2005; 1♀, Niğde province, Fertek village, 13.05.2004; 3♀♀, Ankara province, Şereflikoçhisar district, Tuz lake, 05.06.2002; 1♀, Niğde province, Fertek village, 19.05.2005; 1♂, Ankara province, Çubuk district, Karagöl lake, 16.07.2003.
World Distribution: Palaearctic.

Synema utotchkini Marusik & Logunov, 1995
Material examined: 1♂, Niğde, Bor, Okçu village, 09.09.2006.
World Distribution: Turkey, Kazakhstan, Kyrgyzstan.

Genus ***Thomisus*** Walckenaer, 1805
Thomisus onustus Walckenaer, 1805
Material examined: 3♂♂, Ankara province, Polatlı district, Sarıhalil village, 18.06.2003; 5♂♂, Ankara province, Haymana district, 25.05.2003; 3♂♂, Ankara province, Çubuk district, Karagöl lake, 16.07.2003; 11♂♂, 8♀♀, Ankara province, Şereklikoçhisar district, 29.05.2004; 9♂♂, 6♀♀, Ankara province, Ayaş district, Akkaya village, 14.05.2003; 1♀, Niğde province, Bor district, Tepeköy village, 24.07.1996; 3♂♂, 1♀, Nevşehir province, Ürgüp district , 26.06.2004; 1♂, 2♀♀, Ankara province, Evren district, 29.05.2004; 12♂♂, 4♀♀, Niğde province, Uluağaç pond, 05.06.2002; 1♀, Çankırı province, Ilgaz district, Musaköy village, 28.07.2005; 1♀, Kırıkkale province, center, 23.08.2003; 1♀, Ankara province, Çubuk district, Tuğlaköy village, 25.06.2003; 4♂♂, Niğde province, Fertek village, 29.05.2002; 13♂♂, 4♀♀, Ankara province, Bala district, Belören village, 21.06.2003; 1♀, Ankara province, Ayaş district, Akçakavak village, 14.05.2003; 2♂♂, Ankara province, Kızılcahamam district, Kavaközü village, 21.05.2003; 1♂, 2♀♀, Ankara province, Çubuk district, Karagöl lake, 16.07.2003; 2♂♂, Ankara province, Nallıhan district, 14.05.2003; 3♀♀, Ankara province, Haymana district, Kesikkavak village, 25.05.2003; 1♂, 1♀, Niğde province, Fertek village, 28.05.2005; 1♂,

2♀♀, Yozgat province, Saraykent district, 18.07.2003; 2♀♀, Nevşehir province, Hacıbektaş district, 31.07.2001; 1♂, 1♀, Sivas province, Kangal district, 19.07.2003; 2♂♂, 1♀, Ankara province, Evren district, İnebeyli village, 28.05.2003; 2♀♀, Ankara province, Polatlı district, Sapanca village, 18.06.2003; 1♂, Ankara province, Gölbalı district, Topaklı village, 24.06.2003; 2♂♂, 4♀♀, Ankara province, Evren district, Deliler village 28.05.2003; 20♂♂, 16♀♀, Ankara province, Tuz lake, 05.06.2002; 2♀♀, Nevşehir province, Hacıbektaş district, 31.07.2001.
World Distribution: Palaearctic.

Genus ***Tmarus*** Simon, 1875
Tmarus piochardi (Simon, 1866)
Material examined: 1♂, Niğde province, Meydan plateau, 01.04.2002.
World Distribution: Mediterranean.

Tmarus stellio Simon, 1875
Material examined: 1♀, Ankara province, Kızılcahamam district, 17.06.2003.
World Distribution: Palaearctic.

Genus ***Xysticus*** C.L. Koch, 1835
Xysticus caperatus Simon, 1875
Material examined: 1♂, Niğde province, Bor district, Hançerli village, 03.07.1996; 2♂♂, 1♀, Aksaray province, Hasan mountain, 28.06.2004; 1♂, Niğde province, Fertek village, 17.06.2002; 1♂, Ankara province, Polatlı district, Sarıhalil village, 18.06.2003; 1♀, Ankara province, Güdül district, 09.07.2003; 1♀, Kayseri province, Yahyalı district, Ovaçiftliği village, 21.07.2003; 1♀, Kayseri province, Güzelöz district, 23.06.2001; 2♀♀, Ankara province, Çubuk district, Yukarı Emirler village, 04.09.2003; 1♀, Niğde province, Gümüşler village, 18.07.2004; 1♀, Ankara province, Kızılcahamam district, 13.06.2001.
World Distribution: Mediterranean, Russia.

Xysticus edax (O. P.-Cambridge, 1872)
Material examined: 1♂, 1♀, Niğde province, Ulukışla district, Madenköy village, 14.05.2002.
World Distribution: Turkey, Israel.

Xysticus gallicus Simon, 1875
Material examined: 1♀, Niğde province, Ulukışla district, Meydan plateau, 28.06.2007; 2♀♀, Kayseri province, Erciyes mountain, 28.06.2007; 1♂, Niğde province, Çamardı district, Demirkazık mountain, 18.05.2001; 1♀, Çankırı province, Ilgaz district, 21.07.2004; 1♀, Niğde province, Çiftlik district, Azatlı village, Murtaza dam, 27.06.2004; 1♀, Kayseri province, Erciyes mountain, Tekir pond, 21.07.2003.
World Distribution: Palaearctic.

Xysticus gymnocephalus Strand, 1915
Material examined: 1♂, Konya province, Ermenek district, 2005.
World Distribution: Turkey, Lebanon, Israel.

Xysticus kaznakovi Utochkin, 1968
Material examined: 1♂, Niğde province, Ulukışla district, Kolsuz pass, 14.05.1996; 1♂, Niğde province, Ulukışla district, Çiftehan village, 18.05.1996; 1♂, Ankara province, Bala district, 15.05.2003; 1♂, Ankara province, Kalecik district, Ahmetadil village, 30.05.2003; 1♂, Ankara province, Evren district, Deliler village, 28.05.2003.
World Distribution: Turkey to Central Asia.

Xysticus kochi Thorell, 1872

Material examined: 1♀, Konya province, Çumra district, Gökköyük village, 27.05.2005; 2♂ 4♀♀, Ankara province, Haymana district, Culuk village, 10.05.2003; 2♂♂, Ankara province, Kızılcahamam district, Süleler village, 21.05.2003; 2♂♂, 8♀♀, Niğde province, Kayaardı, 05.05.2001; 1♂, Konya province, Cihanbeyli district, Beşkavak village, 13.05.2005; 1♀, Konya province, Bozkır district, Akçapınar village, 15.05.2005; 1♂, Ankara province, Çubuk district, Sarısu village, 16.05.2003; 1♂, Ankara province, Ayaş district, Başbereket village, 30.05.2004; 1♀, Ankara province, Kızılcahamam district, Seyhamamı village, 21.05.2003; 1♀, Ankara province, Şereflikoçhisar district, Tuz lake, 09.05.2003; 1♀, Ankara province, Evren district, Çatalpınar village, 28.05.2003; 2♂♂, 1♀, Ankara province, Kızılcahamam district, Seyhamamı village, 21.05.2003; 2♂♂, 1♀, Niğde province, Fertek village, 07.05.2002; 2♀♀, Ankara province, Kalecik district, Ahmetadil village, 30.05.2003; 3♀♀, Ankara province, Küçükesat district, 27.05.2005; 1♂, Ankara province, Batıkent district, 01.06.2002; 4♂♂, Ankara province, Kızılcahamam district, 21.05.2003; 2♂♂ 1♀, Ankara province, Güdül district, İlhanköy village, 24.05.2003; 1♂, 1♀, Ankara province, Evren district, Deliler village, 28.05.2003; 1♀, Ankara province, Gölbaşı district, 09.05.2003; 1♀, Ankara province, Şereflikoçhisar district, center, 09.05.2003; 1♂, Niğde province, İtulumaz mountain, 01.06.2002; 1♂, 1♀, Niğde province, Ulukışla district, Maden village, 09.06.2001; 1♀, Konya province, Cihanbeyli district, Kuşçu village, 13.05.2005; 2♂♂, Ankara province, Kızılcahamam district, Kavaközü village, 21.05.2003; 1♂, 1♀, Ankara province, Nallıhan district, Davutoğlan village, 14.05.2003; 1♀, Çankırı province, Çerkeş district, Işık mountain, 27.07.2005; 3♂♂, Konya province, Seydişehir district, Taraşçı village, 15.05.2005; 1♂, Kayseri province, Yeşilhisar district, Soğanlı village, 23.06.2001; 2♀♀, Ankara province, Kızılcahamam district, Seyhamamı village, 21.05.2003; 1♂, Ankara province, Kızılcahamam district, Kavaközü village, 21.05.2003; 1♂, Niğde province, Ulukışla district, 18.07.2003; 1♂, Niğde province, Fertek village, 06.05.2001; 1♀, Ankara province, Ayaş district, Başbereket village, 20.06.2003; 3♀♀, Ankara province, Güdül district, Garipçe village, 24.05.2003; 1♂, Ankara province, Haymana district, Cingirli village 10.05.2003; 1♀, Ankara province, Nallıhan district, Atça village, 23.06.2003; 2♂, 1♀, Ankara province, Elmadağ district, Küçük Edige village, 15.05.2003; 2♀♀, Niğde province, Selçuk district, 22.05.2005; 2♂♂, 1♀, Ankara province, Bala district,15.05.2003; 1♂, Gölcük, 10.05.2004; 1♀, Ankara province, Çubuk district, Evci village, 29.05.2003; 3♂♂, Ankara province, Evren district, Çatalpınar village, 28.05.2003; 1♂, Ankara province, Çubuk district, Çavundur village, 16.05.2003; 3♀♀, Niğde province, Fertek village, 13.05.2004; 2♀♀, Niğde province, Gümüşler village, 04.06.2005; 1♂, Ankara province, Çubuk district, Kışlacık village, 29.05.2003; 1♂, 3♀♀, Niğde, Fertek, Özbelde, 28.05.2005; 2♀♀, Ankara, Tuz lake, 05.06.2002; 1♂, Ankara province, Haymana district, Dikilitaş village, 25.05.2003; 2♀♀, Niğde province, Fertek village, 28.05.2005; 1♀, Ankara province, Kızılcahamam district, Süleler village, 21.05.2003; 2♂♂, Ankara province, Ayaş district, Akçakavak village, 14.05.2003; 4♀♀, Ankara province, Gölbalı district, Topaklı village, 24.06.2003; 1♀, Kırşehir province, Çiçekdağı district, 25.06.2004; 2♀♀, Niğde province, Fertek village, 22.05.2005; 2♀♀, Ankara province, Kızılcahamam district, 21.05.2003; 1♀, Niğde province, Uluağaç village, 29.05.2005.

World Distribution: Europe, Mediterranean to Central Asia.

Xysticus laetus Thorell, 1875

Material examined: 1♀, Niğde province, Ulukışla district, Alihoca village 18.05.2002; 3♀♀, Ankara province, Kızılcahamam district, Süleler village, 21.05.2003; 1♀, Eskişehir province, Mihalıççık district, Gürleyik village, 13.07.2004; 1♀, Niğde province, Uluağaç

pound, 19.05.2004; 3♀♀, Kırşehir province, Mucur district, 26.06.2004; 2♀♀, Ankara province, Ayaş district, Başbereket village, 20.06.2003; 3♀♀, Ankara province, Nallıhan district, Belenören village, 23.06.2003; 1♀, Ankara province, Ayaş district, Bayat village, 20.06.2003; 2♀♀, Ankara province, Güdül district, Garipçe village, 24.05.2003; 2♀♀, Ankara province, Evren district, Deliler village, 28.05.2003; 1♀, Ankara province, Polatlı district, Sapanca village, 18.06.2003; 2♀♀, Ankara province, Beypazarı district, Karaören village, 07.06.2003; 1♀, Ankara province, Kazan district, Karalar village, 16.06.2003; 1♀, Ankara province, Polatlı district, Şabanözü village, 18.06.2003; 1♀, Ankara province, Elmadağ district, 15.05.2003; 1♀, Ankara province, Kızılcahamam district, Korkmazlar village, 21.05.2003; 1♀, Ankara province, Evren district, Torunobası village, 28.05.2003; 1♀, Ankara province, Kızılcahamam district, Kavaközü village, 21.05.2003; 1♂, Ankara province, Elmadağ district, Kuşcuali village, 15.05.2003; 1♂, Niğde province, Çamardı district, Bulduruş pass, 22.04.2001; 1♂, Niğde province, Bor district, 07.04.1996; 1♂, 3♀♀, Ankara province, Haymana district, Boyalık village, 10.05.2003; 1♂, Ankara province, Ayaş district, Akçakavak village, 14.05.2003; 1♀, Kırıkkale province, Keskin district, Yeniyapan village, 21.06.2005; 1♀, Ankara province, Gölbaşı district, 09.05.2003; 1♀, Konya province, Cihanbeyli district, Kuşçu village, 13.05.2005; 2♀♀, Ankara province, Bala district, 15.05.2003; 1♀, Niğde province, Ulukışla district, Madenköy village, 26.06.2002; 2♀♀, Ankara province, Elmadağ district, Küçük Edige village, 15.05.2003; 1♀, Niğde province, Fertek village, 08.07.2003; 1♀, Çankırı province, Korgun district, Kıyısin village, 28.07.2005; 1♀, Ankara province, Ayaş district, Ören village, 20.06.2003; 1♀, Ankara province, Elmadağ district, Akçaali village, 08.06.2003; 1♀, Niğde province, Ulukışla district, Çiftehan village, 18.05.1996; 1♀, Ankara province, Haymana district, Yeşilyurt village, 10.05.2003; 1♀, Konya province, Çumra district, Gökköyük village, 27.05.2005; 1♀, Çankırı province, Çerkeş district, Işık mountain, 27.07.2005; 1♀, Ankara province, Çubuk district, Durhasan village, 25.06.2003; 1♀, Ankara province, Bala district, Karaali village, 21.06.2003; 1♀, Sivas province, Koyulhisar district, Akseki village, 21.07.2005; 2♀♀, Ankara province, Nallıhan district, Davutoğlan village, 14.05.2003; 5♀♀, Ankara province, Ayaş district, Feruz village, 20.06.2003; 2♀♀, Ankara province, Ayaş district, Başbereket village, 20.06.2003.

World Distribution: Italy to Central Asia.

Xysticus pseudorectilineus (Wunderlich, 1995)

Material examined: 4♀♀, Kayseri province, Yahyalı district, Dikme village, 26.05.2007; 1♀, Kayseri province, Yahyalı district, Kapuzbaşı waterfalls, 26.05.2007; 2♂♂, 1♀, Ankara province, Çubuk district, Yukarı Emirler village, 04.09.2003; 1♀, Ankara province, Elmadağ district, Yeşildere village, 23.07.2003; 2♀♀, Niğde province, 23.04.2002; 1♀, Niğde province, Bor district, Kemerhisar village, 15.06.2003; 9♀♀, Niğde province, Gümüşler village, 06.05.2002; 1♀, Niğde province, İncesu village, 12.05.2003.

World Distribution: Greece, Turkey.

Xysticus striatipes L. Koch, 1870

Material examined: 1♂, Ankara province, Çubuk district, Elmalı village, 04.09.2003; 2♀♀, Niğde province, Fertek village, 20.05.2005; 1♀, Ankara province, Çamlıdere district, Atça village, 11.09.2003; 1♂, Ankara province, Akıncı village, 04.09.2004; 1♀, Niğde province, Bor district, 06.07.2001; 1♀, Nevşehir province, Derinkuyu district, Til village, 20.03.2005; 1♀, Niğde province, Ulukışla district, Güney village, 14.05.1996; 1♀, Niğde province, Bor district, Havuzlu village, 23.04.1996; 2♂♂, Nevşehir province, Derinkuyu district, 29.06.2003; 1♂, Niğde province, Ulukışla district, 26.05.2003; 1♀,

Ankara province, Beşevler district, 18.07.2006; 1♂, Niğde province, Fertek village, 29.05.2002; 2♀♀, Niğde province, İncesu village, 12.05.2003.
World Distribution: Palaearctic.

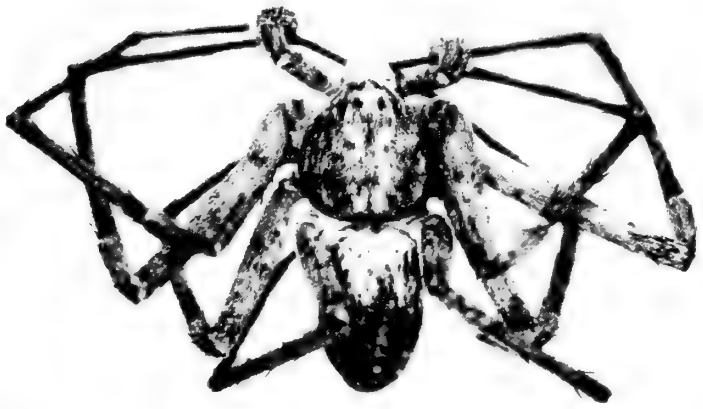
Xysticus thessalicus Simon, 1916
Material examined: 2♂♂, 4♀♀, Konya province, Seydişehir district, 21.05.2006; 1♀, Kayseri province, Yahyalı district, Dikme village, 26.05.2007; 1♀, Niğde province, Gümüş village, 28.06.2007; 1♂, Kayseri province, Talas district, 18.05.2007; 4♀♀, Ankara province, Kızılcahamam district, Pazar village, 17.06.2003; 1♂, Niğde province, Fertek village, 18.07.2003; 1♀, Ankara province, Güdül district, Garipçe village, 24.05.2003; 1♀, Konya province, Doğanhisar district, Deştiğin village, 14.05.2005; 2♂♂, 1♀, Ankara province, Gölbaşı district, 09.05.2003; 1♀, Ankara province, Çubuk district, Yukarıçavundur village, 16.05.2003; 1♂, Niğde province, Fertek village, 08.10.2002; 2♀♀, Ankara province, Ayaş district, Başbereket village, 30.05.2004; 1♂, Ankara province, Evren district, Torunobası village, 28.05.2003; 1♀, Niğde province, Ulukışla district, Alihoca village, 26.05.2002; 3♂♂, Ankara province, Kızılcahamam district, Süleler village, 21.05.2003; 9♀♀, Ankara province, Kızılcahamam district, Seyhamamı village, 21.05.2003; 3♀♀, Ankara province, Ayaş district, Akçakavak village, 14.05.2003; 2♂♂, 1♀, Ankara province, Kızılcahamam district, Kavaközü village, 21.05.2003; 1♂♂, 1♀, Niğde province, Fertek village, 29.05.2002; 1♀, Niğde province, Ulukışla district, 18.07.2003; 1♀, Ankara province, Güdül district, Akbaş village, 18.05.2005; 1♀, Ankara province, Haymana district, 29.05.2004; 2♀♀, Ankara province, Şereflikoçhisar district, Tuz lake, 05.06.2002; 2♂♂, Kayseri province, Hacılar district, 28.04.2004; 2♂♂, Niğde province, Altunhisar district, Keçiboyduran hill, 27.06.2004; 1♀, Kayseri province, Hisarcık district, 05.05.2006; 1♀, Kayseri province, Kıranardı Village, 27.04.2004; 1♀, Ankara province, Haymana district, 29.05.2004; 2♂♂, Niğde province, Koyunlu village, 22.05.2003; 2♀♀, Ankara province, Ayaş district, Bayat village, 20.06.2003.
World Distribution: Balkans, Greece, Turkey, Israel.

Xysticus tristrami (O. P.-Cambridge, 1872)
Material examined: 1♀, Kayseri province, Yahyalı district, Kapuzbaşı waterfalls, 26.05.2007; 3♂♂, 3♀♀, Kayseri province, Yahyalı district, Dikme village, 26.05.2007; 6♀♀, Konya province, Beyşehir district, Bademli village, 28.06.2007; 2♂♂, 3♀♀, Niğde province, Ulukışla district, Kolsuz pass, 14.05.1996; 2♀♀, Niğde province, Fertek village, 09.06.2005; 1♀, Ankara province, Çubuk district, Elmalı village, 04.09.2003; 1♀, Kayseri province, Yeşilhisar district, Araplıbeli village, 18.05.2003; 1♂, 7♀♀, Niğde province, Fertek village, 28.05.2005; 1♀, Nevşehir province, Ürgüp district, 14.05.2005; 2♀♀, Ankara province, Beypazarı district, Geyikpınarı village, 07.06.2003; 1♀, Niğde province, Fertek village, 05.07.2002; 1♂, 3♀♀, Niğde province, Ulukışla district, Meydan plateau, 01.06.2002; 1♀, Kırıkkale province, Gürler village, 12.08.2003; 3♀♀, Niğde province, Gümüşler village, 04.06.2005; 1♂, Niğde province, 22.05.2004; 1♂, 1♀, Ankara province, Kızılcahamam district, 21.05.2003; 1♂, 2♀♀, Niğde province, Fertek village, 13.05.2004; 2♀♀, Konya province, Cihanbeyli district, Beşkavak village, 13.05.2005; 1♀, Niğde province, İtulumaz mountain, 01.06.2002; 9♀♀, Aksaray province, Gülağaç district, 19.03.2005; 2♂♂, 1♀, Niğde province, Fertek village, 08.10.2002; 5♀♀, Niğde province, Roma pond, 01.06.1996; 1♂, 1♀, Niğde province, Kayaardı, 14.05.1996; 1♀, Niğde province, Gümüşler village, 17.07.2003; 5♂♂, 6♀♀, Ankara province, Akyurt district, Kozludere village, 30.05.2003; 4♀♀, Niğde province, Fertek village, 24.03.1996.
World Distribution: Saudi Arabia to Central Asia.

Xysticus xerodermus Strand, 1913
Material examined: 1♀, Ankara province, Ayaş district, Feruz village, 20.06.2003.
World Distribution: Turkey, Israel.

Family **Philodromidae** Thorell, 1870

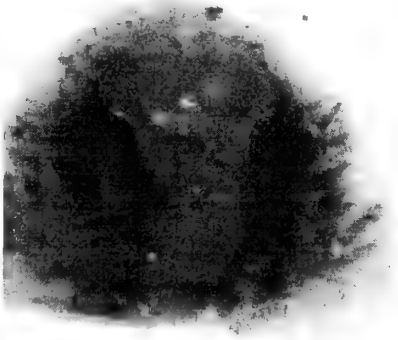
Genus ***Philodromus*** Walckenaer, 1826
Philodromus buxi Simon, 1884 (Figs. 1-3)



1

2

3



Figs. 1-3: Philodromus buxi Simon, 1884
1. ♂ habitus, dorsal view. 2. ♂ palp, ventral view.
3. ♀ Epigyne, ventral view.

Material examined: 1♂, 1♀, Niğde province, Çamardı district, Yelatan village, 17.06.2005; 2♀♀, Çankırı province, Şabanözü district, Bulduk village, 29.07.2005; 1♀, Ankara province, Çubuk district, Başören village, 16.07.2003; 6♀♀, Ankara province, Akyurt district, 23.07.2003; 1♀, Ankara province, Çubuk district, Ovacık village, 25.06.2003; 3♀♀, Çankırı province, Ilgaz district, 21.07.2004; 3♀♀, Yozgat province, Çamlık, 18.07.2003; 4♀♀, Çankırı province, Çerkeş district, Karga village, 27.07.2005; 2♀♀, Ankara province, Haymana district, Dikilitaş village, 25.05.2003; 4♂♂, 8♀♀, Ankara province, Ayaş district, Ilıca village, 30.05.2004; 1♀, Ankara province, Kızılcahamam district, Kavaközü village, 17.06.2003; 2♀♀, Ankara province, Ayaş district, Bayat village, 20.06.2003; 1♀, Yozgat province, Akdağmadeni district, Oluközü village, 20.07.2005; 1♂, 1♀, Aksaray province, Gülağaç district, Doğantarla village, 18.06.2005; 1♀, Ankara province, Nallıhan district, 23.06.2003; 1♂, Konya province, Çumra district, Gökköyük village, 27.05.2005; 1♀, Ankara province, Nallıhan district, Atça village, 23.06.2003; 3♀♀, Kırşehir province, Mucur district, 26.06.2004; 1♀, Kırşehir province, Kaman district, Akpınar village, 25.06.2004; 1♀, Ankara province, Kızılcahamam district, Işık mountain, 10.07.2003; 1♂, Ankara province, Şereflikoçhisar district, Sadıklı village, 28.05.2003; 6♀♀, Ankara province, Güdül district, 09.07.2003; 1♀, Ankara province, Kızılcahamam district, 17.06.2003;

1 , Ankara province, Bala district, Atça village, 21.06.2003; 1♀, Çankırı province, Ilgaz district, Musaköy village, 28.07.2005; 2♂♂, 2♀♀, Kayseri province, Himmetdede district, 24.06.2005; 1♀, Ankara province, Beypazarı district, Geyikpınarı village, 07.06.2003; 3♂♂, Ankara province, Kızılcahamam district, Pazar village, 17.06.2003; 1 , Ankara province, Beypazarı district, Karaören village, 07.06.2003; 1♂, 1♀, Kayseri province, Yeşilhisar district, Güzelöz village, 22.06.2005.
Distribution: Europe to Kazakhstan.

Philodromus cespitum (Walckenaer, 1802)
Material examined: 1♂, 1♀, Kayseri province, Yeşilhisar district, Soğanlı, 23.06.2001; 3 , Ankara province, Kızılcahamam district, 30.07.2001; 4♀♀, Aksaray province, Gülağaç district, Belisırma village, Ihlara valley, 12.08.2001; 1♂, Ankara province, Kazan district, Memlik village, 16.06.2003; 1♂, Aksaray province, Ihlara district, Ihlara valley, 28.06.2004; 1♂, Ankara province, Çubuk district, Durhasan village, 25.06.2003; 2♂♂, Ankara province, Güdül district, İlhanköy village, 24.05.2003; 1♂, Ankara province, Çubuk district, Evci village, 29.05.2003; 2♂♂, Yozgat province, Yenifakılı district, Bektaşlı village, 24.06.2005; 1♂, Ankara province, Elmadağ district, Gümüşyayla village, 08.06.2003; 3♂♂, 1♀, Aksaray province, Ortaköy district, Yukarıkabakulak village, 16.06.2005; 3♂♂, 4♀♀, Ankara province, Bala district, Karaali village, 21.06.2003; 4♂♂, 1♀, Niğde province, Uluağaç village, 29.05.2005; 1♂, 4♀♀, Kırşehir province, Mucur district, Kargınlı village, 26.06.2004; 3♂♂, 8♀♀, Kayseri province, Pınarbaşı district, Karaboğaz village, 23.06.2005; 1♂, 1♀, Niğde province, Çamardı district, Yelatan village, 17.06.2005; 3♂♂, 1♀, Ankara province, Ayaş district, Başbereket village, 20.06.2003; 1♀, Ankara province, Haymana district, Soğulca village, 25.05.2003; 1♂, 2♀♀, Ankara province, Elmadağ district, Akçaali village, 08.06.2003; 1♂, 1♀, Nevşehir province, Ürgüp district 26.06.2004; 1♀, Ankara province, Çubuk district, Tuğlaköy village, 25.06.2003; 7♀♀, Ankara province, Kızılcahamam district, Seyhamamı village, 17.06.2003; 1♀, Ankara province, Ayaş district, Feruz village, 30.05.2004; 1♂, 4♀♀, Ankara province, Kazan district, Karalar village, 16.06.2003; 1♀, Nevşehir province, Ürgüp district, Mustafapaşa village, 22.06.2005; 1♀, Kırşehir province, Boztepe district, Eskidoğanlı village, 22.07.2003; 1♂, Ankara province, Kızılcahamam district, 17.06.2003; 1♀, Sivas province, Yıldızeli district, Mentepe village, 22.07.2005; 2♂♂, 5♀♀, Ankara province, Ayaş district, Feruz village, 20.06.2003; 1♀, Çankırı province, Ilgaz district, Musaköy village, 28.07.2005; 2♂♂, Ankara province, Ayaş district, Bayat village, 20.06.2003; 2♂♂, 2♀♀, Kayseri province, Himmetdede district, 24.06.2005; 7♀♀, Ankara province, Kızılcahamam district, Pazar village, 17.06.2003; 3♂♂, Kayseri province, Yeşilhisar district, Güzelöz village, 22.06.2005; 1♂, Kayseri province, Tomarza district, Köprüköy village, 23.06.2005; 1♂, Ankara province, Ayaş district, Ören village, 20.06.2003; 3♂♂, Ankara province, Beypazarı district, Geyikpınarı village, 07.06.2003.
Distribution: Holarctic.

Philodromus poecilus (Thorell, 1872)
Material examined: 1♀, Niğde province, Bor district, 03.07.2004; 1♀, Ankara province, Ayaş district, Ilıca village, 30.05.2004; 1♀, Ankara province, Güdül district, 09.07.2003.
Distribution: Palaearctic.

Genus ***Thanatus*** C.L. Koch, 1837
Thanatus vulgaris Simon, 1870
Material examined: 2♂♂, 10♀♀, Ankara district, Şereflikoçhisar district, Tuz lake, 05.06.2002; 1♂, 1♀, Ankara province, Bala district, Nallıgölcük village, 21.06.2003; 1♂,

Niğde province, Bor district, Kızılca village, 01.06.1996; 2♂♂, Ankara province, Şereflikoçhisar district, 29.05.2004; 1♂, Ankara province, Kızılcahamam district, 21.05.2003.

Distribution: Holarctic.

Genus ***Tibellus*** Simon, 1875

Tibellus oblongus (Walckenaer, 1802)

Material examined: 1♂, 1 ♀, Ankara province, Gölbalı district, Topaklı village, 24.06.2003; 1♂, 2♀♀, Ankara province, Şereflikoçhisar district, Sadıklı village, 28.05.2003; 1♀, Ankara province, Ayaş district, Feruz village, 30.05.2004; 1♀, Ankara province, Ayaş district, Bayat village, 20.06.2003; 4♂♂, 3♀♀, Ankara province, Ayaş district, Başbereket village, 20.06.2003; 1♂, Ankara province, Ayaş district, Başbereket village, 30.05.2004; 2♂♂, 2♀♀, Ankara province, Haymana district, 29.05.2004; 1♀, Niğde province, Fertek village, 27.05.2005; 1♂, 2♀♀, Ankara province, Elmadağ district, Küçük Edige village, 15.05.2003; 1♂, 3♀♀, Sivas province, Yıldızeli district, Mentepe village, 22.07.2005; 1♂, 3♀♀, Ankara province, Kızılcahamam district, Pazar village, 17.06.2003; 4♂♂, 5♀♀, Niğde province, Akkaya dam, 06.07.2001; 1♂, 3♀♀, Ankara province, Çubuk district, Ovacık village, 29.05.2003; 1♂, 1♀, Ankara province, Çubuk district, Ovacık village, 25.06.2003; 2♂♂, Ankara province, Haymana district, 10.05.2003; 4♂♂, 3♀♀, Ankara province, Şereflikoçhisar district, Tuz lake, 09.05.2003; 1 ♂, 2 ♀♀, Ankara province, Elmadağ district, Gümüşyayla village, 08.06.2003; 4♂♂, 1♀, Ankara province, Kızılcahamam district, 21.05.2003; 2♂♂, Ankara province, Gölbaşı district, Tuluntaş village, 20.05.2003; 1♂, 4♀♀, Konya province, Kulu district, Kozanlı village, 13.05.2005; 1♂, 3♀♀, Ankara province, Güdül district, Garipçe village, 24.05.2003; 2♀♀, Ankara province, Nallıhan district 17.07.2003; 2♂♂, 2♀♀, Kayseri province, Sultan morass, 27.05.2005; 1♀, Ankara province, Bala district, Atça village, 21.06.2003; 2♂♂, 2♀♀, Ankara province, Elmadağ district, Kuşcuali village, 15.05.2003; 2♂♂, 2♀♀, Ankara province, Kazan district, Bitik village, 16.06.2003; 1♂, 1♀, Ankara province, Evren district, Torunobası village, 28.05.2003; 1♀, Ankara province, Ayaş district, Akkaya village, 14.05.2003; 1♀, Yozgat province, Topçu village, 20.07.2005; 1♂, 2♀♀, Kırşehir province, Mucur district, Kargınlı village, 26.06.2004.

Distribution: Holarctic.

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Serket (2011) vol. 12(4): 135-140.

New records of family Lycosidae (Araneae) in Turkey

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Abstract

Arctosa maculata (Hahn, 1822), *A. stigmosa* (Thorell, 1875), *Pardosa aenigmatica* Tongiorgi, 1966, *P. blanda* (C.L. Koch, 1833), *P. mixta* (Kulczyński, 1887), *P. saltans* Töpfer-Hofmann, 2000, and *Pirata insularis* Emerton, 1885 are identified as new records for the Turkish araneofauna to increase the number of Turkish lycosids from 63 to 70. Their characteristic features and illustrations are presented.

Keywords: Spiders, Lycosidae, systematics, habitat, Central Anatolia Region, Turkey.

Introduction

The family Lycosidae is known as wolf spiders. They live mostly solitary and hunt alone. They are real hunters that live in a wide variety of terrestrial habitats. They have eight eyes arranged in three rows. The bottom row consists of four small eyes, the middle row has two large eyes and the top row has two medium-sized eyes. They have excellent eyesight and they can look in four directions. The species of Lycosidae are usually marked with various shades of brown, gray, buff and black. They have well-developed legs. They carry their egg sacs by attaching them to their spinnerets. Family Lycosidae includes 118 genera and 2382 species worldwide (Platnick, 2011). It is represented by 63 species classified in 11 genera in Turkey (Topçu *et. al.*, 2005).

In this study, *Arctosa maculata* (Hahn, 1822), *Arctosa stigmosa* (Thorell, 1875), *Pardosa aenigmatica* Tongiorgi, 1966, *Pardosa blanda* (C.L. Koch, 1833), *Pardosa mixta* (Kulczyński, 1887), *Pardosa saltans* Töpfer-Hofmann, 2000, *Pirata insularis* Emerton, 1885 are recorded for the first time from Turkey.

Material and Methods

The specimens were collected from different locations of Central Anatolia Region. These specimens were preserved in 70% ethanol. The identification keys of

Simon (1937), Locket & Millidge (1951), Tyschchenko (1971), Heimer & Nentwig (1991), and Roberts (1995) were used. SZX16 and SZ61 Olympus binocculer stereomicroscopes were used during identification. The photographs of species were taken by digital camera. Zoogeografic distributions of species have been given according to the world spider catalog database (Platnick, 2011). Examined specimens were deposited in the Arachnology Museum of Niğde University (NUAM). All measurements are in millimetres and scale lines in the figures correspond to 1 mm.

Results

Arctosa maculata (Hahn, 1822)
Material examined: 3♀♀, Turkey, Kayseri province, Yahyalı district, Delialiuşağı village, 22.VI.2005.
Description: Female (Fig. 1): Prosoma length 4.1-4.5, reddish brown with dark spots, brighter median band distinctly serrated. Legs yellowish, femora with weak annulations. Opisthosoma light brown with yellow median stripe. Epigynal atrium divided by broad septum.
World distribution: Europe, Russia.

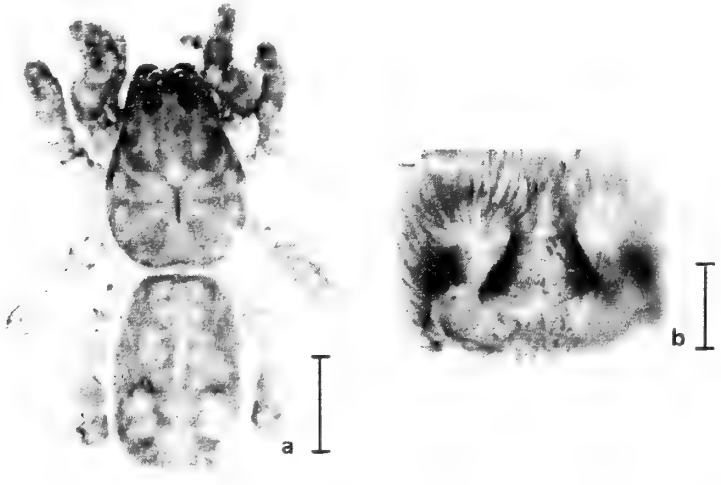

Fig. 1: *Arctosa maculata* (Hahn, 1822). **a.** Habitus of female. **b.** Epigyne. Scale lines = 1.0 mm

Arctosa stigmosa (Thorell, 1875)
Material examined: 1♀, Turkey, Çankırı province, Dodurga district, 21.VII.2004.
Description: Female (Fig. 2): Prosoma length 2.7-3.7, yellow-brown, whitish in eye region. Opisthosoma yellowish green, median longitudinal stripe merging anteriorly with two brighter spots. Legs yellowish, vaguely annulated. Epigyne with anteriorly divergent median part.
World distribution: France, Norway to Ukraine.

Pardosa aenigmatica Tongiorgi, 1966
Material examined: 1♂, Turkey, Ankara province, Kızılcahamam district, Süleler village, 21.V.2003; 1♂, Ankara province, Kızılcahamam district, Korkmazlar village, 21.V.2003.

Description: Female (Fig. 3): Total length 8.0. Prosoma dark brown with light median stripe. Opisthosoma greyish brown. Epigynal atrium narrow medially, widening posteriorly.
World distribution: Italy, Azerbaijan.

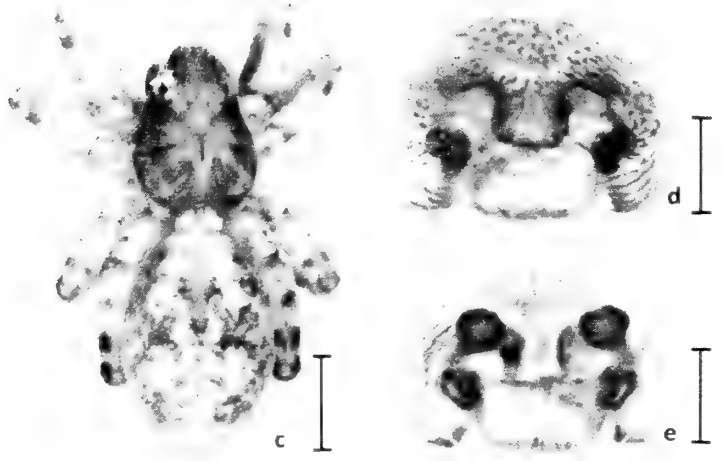

Fig. 2: *Arctosa stigmosa* (Thorell, 1875). **c.** Habitus of female. **d.** Epigyne. **e.** Vulvae. Scale lines = 1.0 mm

Fig. 3: *Pardosa aenigmatica* Tongiorgi, 1966. **f.** Habitus of female. **g.** Epigyne. **h.** Vulvae. Scale lines = 1.0 mm

Pardosa blanda (C.L. Koch, 1833)
Material examined: 1♀, Turkey, Çankırı province, Çerkeş district, Işık mountain, 27.VII.2005; 1♀, Çankırı province, Bayramören district, 27.VII.2005; 1♀, Yozgat province, Aydıncık district, 22.VII.2005.
Description: Female (Fig. 4): Prosoma length 2.9-3.4, dark brown with yellowish median band and lateral bands. Legs dark brown, tarsi and metatarsi annulated. Opisthosoma reddish brown. Septum of epigyne longer than wide.
World distribution: Palaearctic.

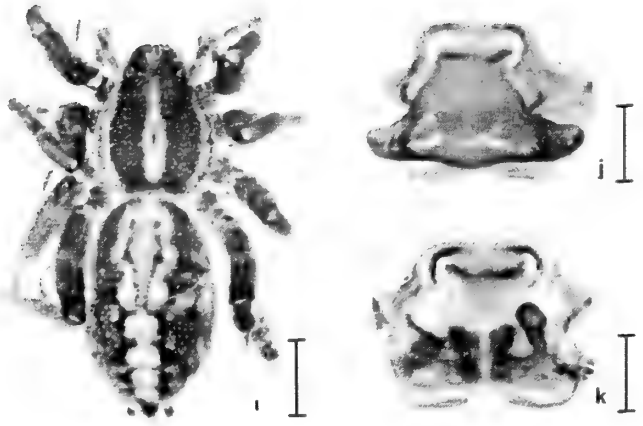

Fig. 4: *Pardosa blanda* (C.L. Koch, 1833). **i.** Habitus of female. **j.** Epigyne. **k.** Vulvae. Scale lines = 1.0 mm

Pardosa mixta (Kulczyński, 1887)
Material examined: 1♀, Turkey, Niğde province, Merkez district, 05.VI.2003.
Description: Female (Fig. 5): Prosoma length 3.0, dark brown. Opisthosoma red-brown. Legs with weak annulations, leg I with oppressed hairs. Femur dorsally with long spots. Epigyne with parallel sides of septum, posterior angle obtuse, often wrinkled.
World distribution: Europe.

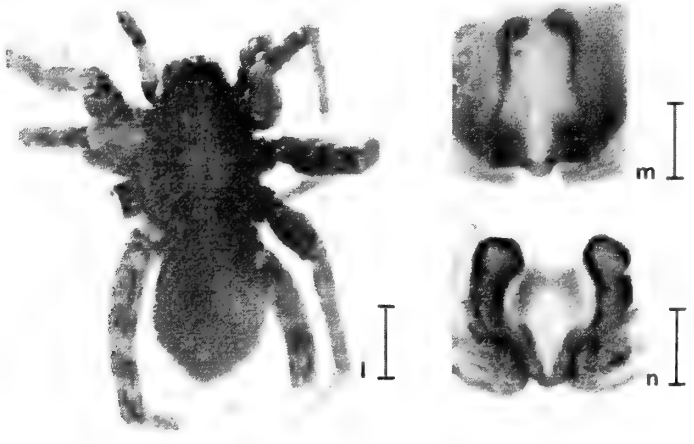

Fig. 5: *Pardosa mixta* (Kulczyński, 1887). **l.** Habitus of female. **m.** Epigyne. **n.** Vulvae. Scale lines = 1.0 mm

Pardosa saltans Töpfer-Hofmann, 2000
Material examined: 2♀♀, Turkey, Ankara province, Kızılcahamam district, Süleler village, 21.V.2003; 2♂♂, Ankara province, Kızılcahamam district, Kavaközü village, 21.V.2003; 1♀, Ankara province, Güdül district, Tahtaörencik village, 24.V.2003; 1♂, 3♀♀, Ankara province, Çubuk district, Karagöl 29.V.2003; 2♀♀, Ankara province, Kızılcahamam district, Güvem 10.VII.2003; 2♂♂, Ankara province, Çubuk district, Kışlacık village, 16.VII.2003; 1♀, Çankırı province, Çerkeş district, 27.VII.2005; 1♀, Konya province, Yunak district, Beş ışıklı village, 13.V.2005; 2♂♂, 3♀♀, Konya province, Doğanhisar district, 14.V.2005; 1♀, Yozgat province, Akdağmadeni district, 20.VII.2005.

Description (Fig. 6)**:** Male: Total length 4.7, female: 5.7. Prosoma dark brown with distinct median stripes with white hairs, no lateral pattern. Opisthosoma brown with light brown median stripe. Palp dark brown to almost black. Cymbium narrow dorso-ventrally. Terminal apophysis a rectangular plate curved almost at right angle. Anterior rim of epigynal atrium with distinct projection. Anterior median septum glass-ilke.
World distribution: Europe.

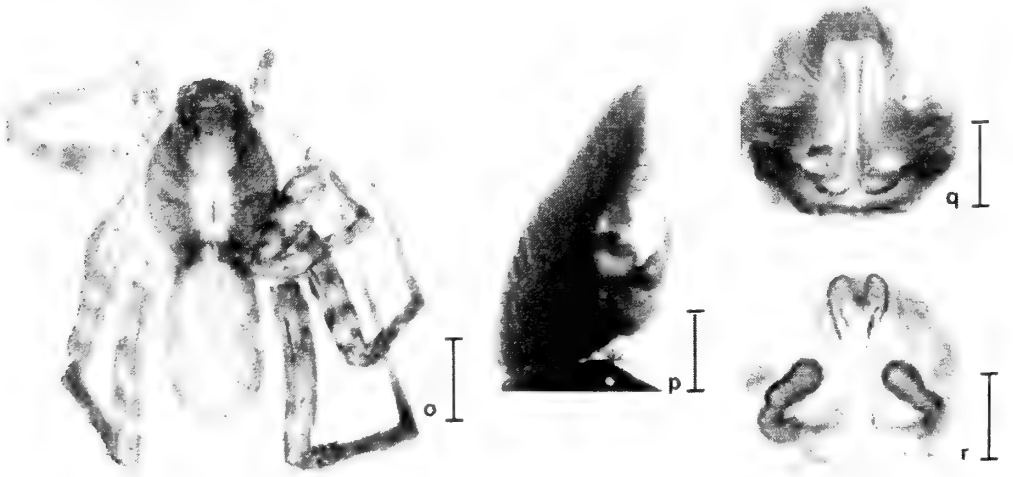

Fig. 6: *Pardosa saltans* Töpfer-Hofmann, 2000. **o.** Habitus of female **p.** Male palp, lateral view. **q.** Epigyne **r.** Vulva. Scale lines = 1.0 mm

Pirata insularis Emerton, 1885
Material examined: 1♂, Turkey, Yozgat province, Yenifakılı district, 24.VI.2005.
Description: Male (Fig. 7): Total length 4.0. Prosoma yellowish brown. Opisthosoma greyish brown with white median line. Legs yellowish brown. Palp with brown cymbium. Tegular apopyhsis large, sickle-shaped and with tooth basally. Embolus terminating close.
World distribution: Holarctic.

Fig. 7: *Pirata insularis* Emerton, 1885. **s.** Habitus of male **t.** Palp, ventral view.
Scale lines = 1.0 mm

Table 1. Examined specimens of family Lycosidae.

GENERA	SPECIES	♀	♂
Arctosa C.L. Koch, 1847	*Arctosa maculata* (Hahn, 1822)	3	-
	Arctosa stigmosa (Thorell, 1875)	1	-
Pardosa C.L. Koch, 1847	*Pardosa aenigmatica* Tongiorgi, 1966	2	-
	Pardosa blanda (C.L. Koch, 1833)	3	-
	Pardosa mixta (Kulczyński, 1887)	1	-
	Pardosa saltans Töpfer-Hofmann, 2000	14	7
Pirata Sundevall, 1833	*Pirata insularis* Emerton, 1885	-	1

Conclusion

In this study, 7 species belong to 3 genera from the family Lycosidae were identified (Table 1) and the number of species belonging to family Lycosidae in Turkey has been increased from 63 to 70. Lycosid species in Turkey is expected to increase along with detailed studies. Thus, important contributions to Turkey's biological wealth are necessary.

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Serket (2011) vol. 12(4): 141-143.

A new linyphid spider record from Turkey (Araneae: Linyphiidae)

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Abstract

This short paper reports one linyphid species as a new record for the Turkish araneo-fauna. The characteristic features and photographs of *Diplocephalus crassilobus* (Simon, 1884) are presented. The total number of linyphid species recorded from Turkey is now 90.

Keywords: Araneae, Linyphiidae, Taxonomy, New record, Turkey.

Introduction

A total of 4401 species in 586 genera have been identified in the family Linyphidae all over the world (Platnick, 2012). Genus *Diplocephalus* Bertkau, 1883 is well studied in the Palaearctic, Oriental and Australian regions. Hitherto, 5 species have been known from Turkey (Bayram *et al.*, 2010). These species are *D. caucasicus* Tanasevitch, 1987, *D. cristatus* (Blackwall, 1833), *D. latifrons* (O.P.-Cambridge, 1863), *D. picinus* (Blackwall, 1841) and *D. turcicus* Brignoli, 1972.

This paper presents the characteristic features and distribution of *Diplocephalus crassilobus* (Simon, 1884) adding a new species to the araneo-fauna of Turkey.

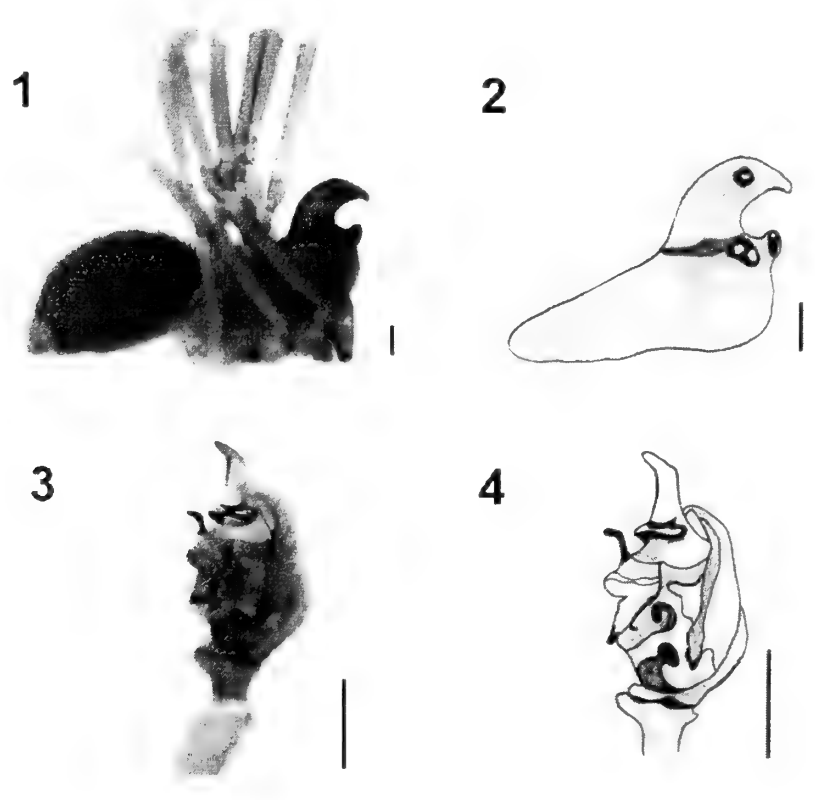
Material and Methods

The present study is based on the material deposited in the collection of the Arachnological Museum of Kırıkkale University (KUAM). One male specimen was examined in this study. The specimen was preserved in 70% ethanol. Pictures were taken using a Leica S8APO microscope by means of the Leica DC 160 camera. Identification depended on the descriptions and figures of Millidge (1979) and Gnelitsa (2006). All measurements are in millimetres.

Results

Diplocephalus crassilobus (Simon, 1884) (Figs. 1-4)
Material examined: 1♂, Amasra, Bartın, (41°43'N, 32°22'E), from a garden, 11.09.2011; (KUAM-LIN.Dip.cras.01).

Description of male
Body length: 2.05, Prosoma: length 1.0, width 0.7. Opisthosoma: length 1.05, width 0.75. Prosoma is yellowish brown and its shape in lateral view as in Figs. (1-2). Male carapace with cephalic pits. Opisthosoma is dark grey. Legs are grey-white to yellowish. Male palpal tibia with a long curved apical apophysis. In the male pedipalp, shape of the distal piece of the anterior radical process is characteristic and its ventral tooth is sharply pointed (Figs. 3-4, 5). Leg formula: IV-I-II-III (Table 1).
Distribution: Europe (Platnick, 2011).



Figs. 1-4: *Diplocephalus crassilobus* (Simon, 1884) ♂.
1-2. Habitus, lateral view. 3-4. Pedipalp, retrolateral view. (Scale lines = 0.1 mm)

Table 1. Measurements of the legs of *Diplocephalus crassilobus* (Simon, 1884) male

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.70	0.125	0.60	0.60	0.50	2.52
II	0.65	0.125	0.55	0.55	0.45	2.32
III	0.55	0.100	0.50	0.35	0.45	1.95
IV	0.80	0.125	0.80	0.60	0.30	2.62

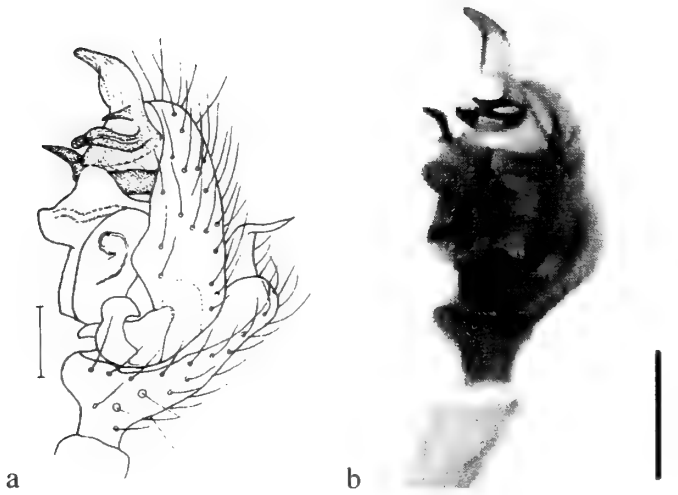


Fig. 5. *Diplocephalus crassilobus* (Simon, 1884) ♂ palp.
Comparison between a. Millidge (1979), fig. 55 and b. the Turkish specimen.

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The cobweb spiders (Araneae, Theridiidae) of Uludağ mountain, Bursa

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Abstract

The cobweb spiders, Theridiidae, were collected from 57 different localities between 2002 and 2007 from the Uludağ Mountain, Turkey. A total of 355 adult specimens were examined and identified to species level. The family is represented by 12 species belonging to 6 genera in the study area. The Holarctic species are dominant among the Theridiids of this fauna.

Keywords: Araneae, Theridiidae, Uludağ Mountain, Turkey.

Introduction

The spider family Theridiidae, also known as cobweb or comb-footed spiders, is one of the most species-rich families of spiders, with 2324 species in 119 genera (Platnick, 2011). This family is represented in Turkey by 64 species in 23 genera (Bayram *et al.*, 2010). Members of the family have great variation in shape and colouration, the majority has an abdominal pattern, but some are uniformly greyish or black.

The first list of spiders of Turkey, a list of 302 species, was published by Karol (1967) and later supplemented by Bayram (2002). Recently, Topçu *et al.* (2005) published an updated checklist of spiders in Turkey. Now, the total number of species of Araneae in Turkey is 717, belonging to 247 genera and 47 family (Bayram *et al.*, 2010). The spider fauna of the Uludağ Mountain region has not been known in detail. Scattered data about the spiders of Uludağ Mountain can be found in papers of Kulczyński (1903) and Karol (1967). The authors have been studying the spider fauna of this region in recent years. Because of the geographical and zoogeographical features of the mountain, this region has great significance. To date, some new faunistical studies about the spiders of Uludağ Mountain can be found in the papers of Kaya & Uğurtaş (2008), Yılmaz *et al.* (2009) and Uyar *et al.* (2010).

The aim of the present study is to document the theridiids of Uludağ Mountain. This represents the first faunal study of the Theridiidae of Uludağ, Bursa.

Study Area

Uludağ is the highest mountain in the Marmara region including Thrace and Northwest side of Anatolian peninsula. Its range is about 40 km long and 15-20 km wide. The highest point is Uludağ hill (2543 m) (Fig. 1).

The geomorphologic structure of the mountain is very interesting with very steep southern slopes of calcareous rocks and north-western parts constituted of granite.

The climate of the mountain changes from low altitudes to summit, while the lower slopes facing Bursa city have a subtype of the Mediterranean climate. In the upper parts, the climate is very cold and icy (Akman, 1990). Because of these changes in its climate and the geomorphologic structure, six vegetation belts can be distinguished in the Uludağ: *Lauretum* belt (up to 350 m), *Castanetum* belt (from 350 to 700 m), *Fagetum* belt (from 700 to 1500 m), *Pinetum* belt (between 1000 and 1200 m), *Abietum* belt (from 1500 to 2100 m) and *Alpinetum* belt (from 1900 to 2543 m) (Daşkın & Kaynak, 2010; Güleryüz, 2000).

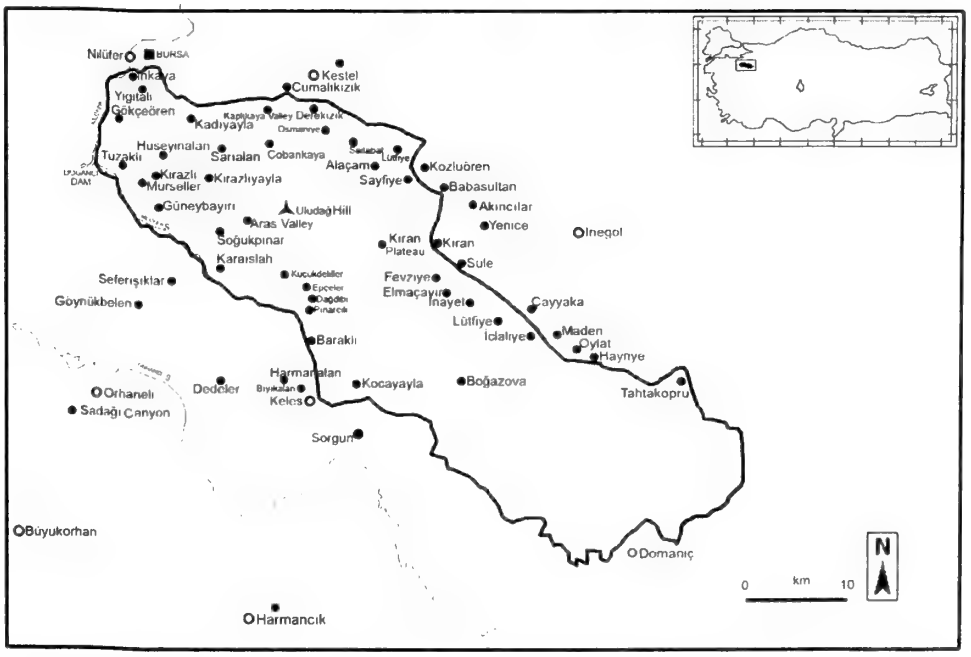


Fig. 1. The localities where the spiders have been collected on Uludağ Mountain.

Material and Methods

The survey of Theridiids of Uludağ Mountain is based on the material collected in the spring and summer months of 2002-2007 at 57 sites. The collection was performed by hand aspirator, sweeping net, and beating bushes and trees. Only adult individuals were identified and evaluated. Specimens were preserved in 5% glycerin alcohol and housed in the Zoology Museum of Department of Biology, Uludağ University, Bursa, Turkey. The taxonomy and general distribution of all species follow Platnick (2011). The localities where the spiders have been collected are shown in Fig. (1). The spider specimens were identified according to Heimer & Nentwig (1991), Levy & Amitai (1982), Levy (1998), Nentwig *et al.* (2003) and Roberts (1995).

Results

In this study, cobweb spiders were collected between 2002 and 2007 from Uludağ Mountain. A total of 12 theridiid spider species in 6 genera were identified.

Family **Theridiidae** Sundevall, 1833

Genus ***Asagena*** Sundevall, 1833

Asagena phalerata (Panzer, 1801) (Figs. 2-3)

Specimens examined: Soğukpınar, 03.06.2002, 1♂; Aras Valley, 06.06.2002, 2♀♀; Sarıalan, 16.07.2003, 4♀♀; Kadıyayla, 27.06.2004, 2♀♀; Sarıalan, 27.06.2004, 1♀; Gökçeören, 13.05.2005, 1♀; around Kaplıkaya Stream, 30.07.2005, 2♀♀,1♂; Kaplıkaya Valley, 25.09.2005, 1♀; Osmaniye, 03.06.2006, 2♀♀; Aras Valley, 09.07.2006, 3♀♀; Kadıyayla, 12.07.2006, 2♀♀; Kaplıkaya Valley, 15.06.2007, 1♀.

Description: Total body length 5.5-6 mm in females and 5 mm in males. Carapace and sternum dark reddish brown with wrinkles and granulations. Abdomen shiny black, dorsum with two pairs of white horizontal markings and reddish dots, venter dark brown. Legs light brown. Epigynal plate almost circular, anterior margin with a projection. Male palp: terminal apophysis like beak of bird, embolus long.

World Distribution: Palaearctic (Platnick, 2011).

Figs. 2-3. *Asagena phalerata* (Panzer, 1801)
2. Epigynum, ventral view. 3. Male palp, retrolateral view. Scale bars: 0.5 mm

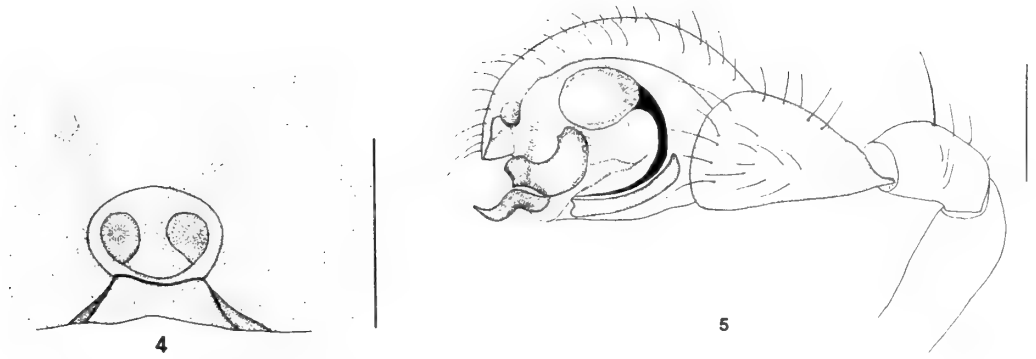
Genus ***Enoplognatha*** Pavesi, 1880

Enoplognatha latimana Hippa & Oksala, 1982 (Figs. 4-5)

Specimens examined: Orhaneli-Keles crossroads 19. km, 06.05.2004, 1♀; Göynükbelen, 09.05.2005, 1♀; Gökçeören, 13.05.2005, 3♀♀, 1♂; Kirazlı, 15.06.2005, 3♀♀; Hüseyinalan, 14.05.2006, 1♀; Mürseller, 19.05.2006, 3♀♀; Sayfiye, 20.06.2006, 1♀; Alaçam, 28.06.2006, 3♀♀, 2♂♂; 13.07.2006, 2♂♂; Cumalıkızık, 12.04.2007, 1♀; Gelemiç, 20.06.2007, 2♂♂.

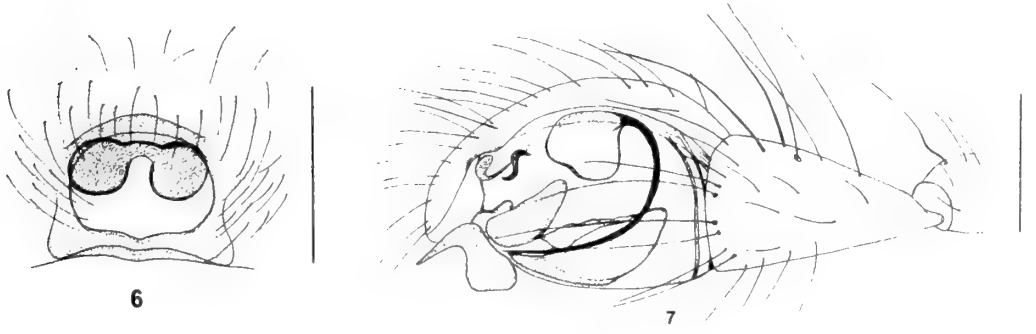
Description: Total body length 5.5-6.5 mm in females and 5-6 mm in males. Carapace light brown, marginal line black. Sternum pale yellow with small central and lateral lines. Abdomen yellow or white with 4-5 mid-dorsal pairs of black spots. Legs white. Posterior margin of epigynum strongly sclerotized. Male palp: conductor hook-shaped and its tip directed upwards, embolus strongly arched.

World Distribution: Holarctic (Platnick, 2011).



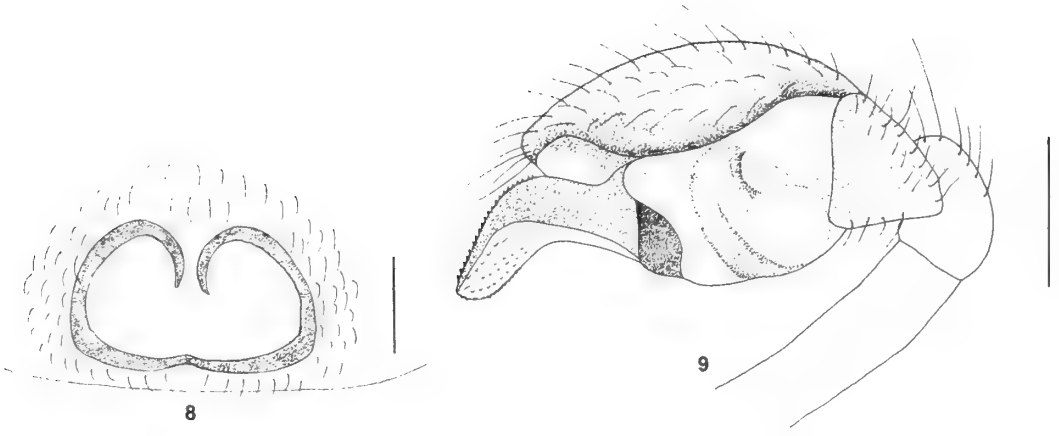
Figs. 4-5. *Enoplognatha latimana* Hippa & Oksala, 1982
4. Epigynum, ventral view. 5. Male palp, retrolateral view. Scale bars: 0.25 mm

Enoplognatha ovata (Clerck, 1757) (Figs. 6-7)
Specimens examined: Göynükbelen, 09.05.2005, 1♂; Gökçeören, 13.05.2005, 2♀♀, 1♂; Mürseller, 15.06.2005, 1♂; Küçükdeliller, 18.06.2005, 1♀; İnayet, 25.06.2005, 2♀♀, 1♂; Gökçeören, 19.05.2006, 1♀, 1♂; İnegöl-Maden, 27.08.2006, 2♀♀; Alaçam, 26.09.2006, 2♀♀, 3♂; Kozluören, 26.10.2006, 2♀♀, 1♂.
Description: Total body length 5.5-6.5 mm in females and 5-5.5 mm in males. Carapace yellowish brown, marginal line black. Sternum pale yellow with black narrow central and lateral lines. Abdomen yellow or white with 6 mid-dorsal pairs of black spots. Legs yellow. Posterior margin of epigynum not strongly sclerotized. Male palp: conductor hook-shaped and its tip directed downwards, embolus strongly arched.
World Distribution: Holarctic (Platnick, 2011).



Figs. 6-7. *Enoplognatha ovata* (Clerck, 1757)
6. Epigynum, ventral view. 7. Male palp, retrolateral view. Scale bars: 0.5 mm

Genus ***Parasteatoda*** Archer, 1946
Parasteatoda lunata (Clerck, 1757) (Figs. 8-9)
Specimens examined: around Yiğitali, 14.05.2006, 3♀♀; Sayfiye, 16.07.2006, 2♀♀; Kozluören, 16.07.2006, 3♀♀; 2 ♂♂; Cumalıkızık, 12.04.2007, 4♀♀; 2 ♂♂; entrance of Oylat Cave, 01.07.2007, 3♀♀; Derekızık, 21.07.2007, 5♀♀; 2 ♂♂.
Description: Total body length 3-4 mm in females and 2.5-3 mm in males. Carapace reddish-brown, cephalic region higher, carapace darker than sternum. Abdomen colourful and higher than long. Legs yellowish and annulated with black. Epigynum with circular opening, anterior margin with a small tip pointing posteriorly. Male palp: conductor big and twisted, embolus long and thin.
World Distribution: Palaearctic (Platnick, 2011).



Figs. 8-9. *Parasteatoda lunata* (Clerck, 1757)
8. Epigynum, ventral view. 9. Male palp, retrolateral view. Scale bars: 0.1 mm

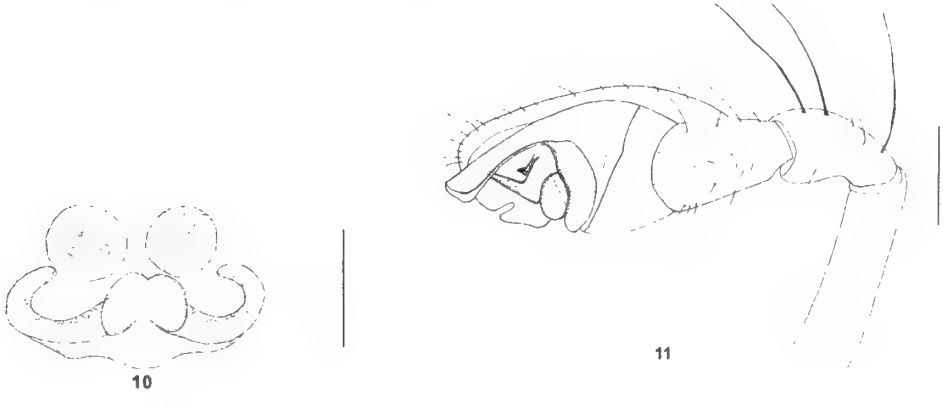
Genus ***Phylloneta*** Archer, 1950

Phylloneta impressa (L. Koch, 1881) (Figs. 10-11)

Specimens examined: Tuzaklı, 13.05.2005,1♀,1♂; Kirazlı, 15.06.2005, 2♀♀, Fevziye, 25.06.2005, 2♀♀, 1♂; Oylat, 28.06.2005, 1♀; between Sorgun and Boğazova, 23.04.2006, 1♀; Osmaneli, 03.06.2006, 1♀; Kozluören, 20.06.2006, 2♀♀; İnegöl-Akıncılar, 16.07.2006, 3♀♀, 1♂; Keles-Bıyıklıalan, 18.07.2006, 2♀♀, 1♂; Gelemiç, 18.07.2006, 3♀♀; Kıran-Çiftlik crossroads, 22.08.2006, 1♀; Alaçam to Sayfiye, 2-3 km, 26.08.2006, 4♀♀, 1♂; Alaçam, 26.10.2006, 1♀; Sule, 20.06.2007, 4♀♀, 2♂♂; Fevziye, 20.06.2007, 3♀♀, 1♂; Alaçam, 21.07.2007, 3♀♀.

Description: Total body length 4-5.5 mm in females and 3-3.5 mm in males. Carapace reddish brown, central and lateral lines darker. Sternum brown, darker in laterally. Abdomen whitish, dorsum with dark markings, venter dark brown with some dark spots. Legs yellowish with dark annulations. Epigynum broader than long and has paired funnel like openings. Male palp: median apophysis small, conductor big and apically broad, embolus fine arched.

World Distribution: Holarctic (Platnick, 2011).



Figs. 10-11. *Phylloneta impressa* (L. Koch, 1881)
10. Epigynum, ventral view. 11. Male palp, retrolateral view. Scale bars: 0.25 mm

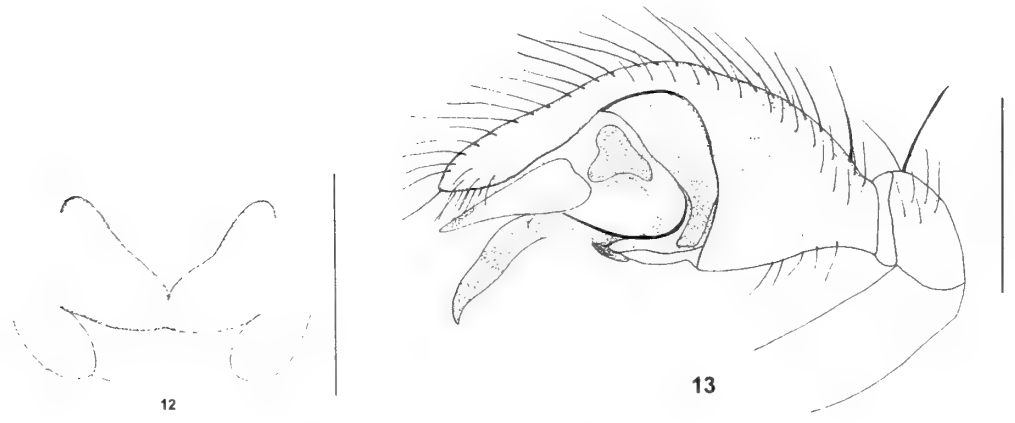
Genus ***Steatoda*** Sundevall, 1833

Steatoda albomaculata (De Geer, 1778) (Figs. 12-13)

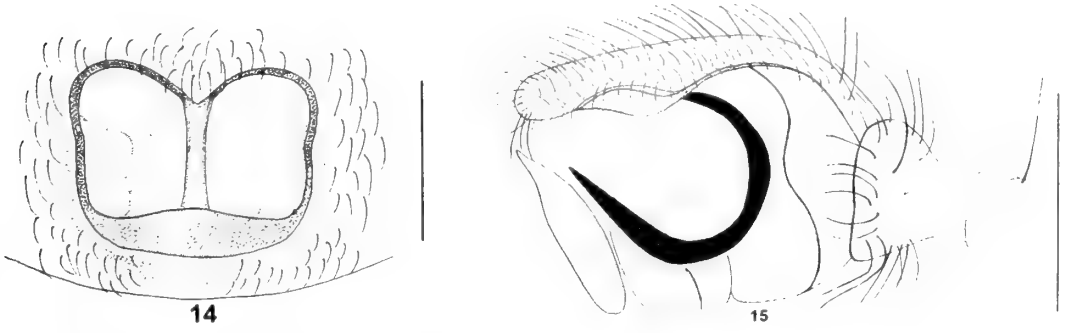
Specimens examined: around Volfram, 08.07.2006, 3♀♀; Kestel, Osmaniye, 24.08.2006, 1♂; Gözede, 24.08.2006, 2♀♀; Alaçam, 26.10.2006, 2♀♀.

Description: Total body length 5.5-6 mm in females and 3.5 mm in male. Carapace and sternum brown to black, without granulations. Abdomen brownish black, dorsum with a series of white median spots and lateral lines, venter black with white markings. Legs yellowish brown with dark annulations. Epigynal plate and groove large, transverse band broad. Endites of males with distinct protuberances. Male palp: median apophysis strongly angulate and pointing finger-like away from the bulbus.

World Distribution: Cosmopolitan (Platnick, 2011).



Figs. 12-13. *Steatoda albomaculata* (De Geer, 1778)
12. Epigynum, ventral view. 13. Male palp, retrolateral view. Scale bars: 0.4 mm



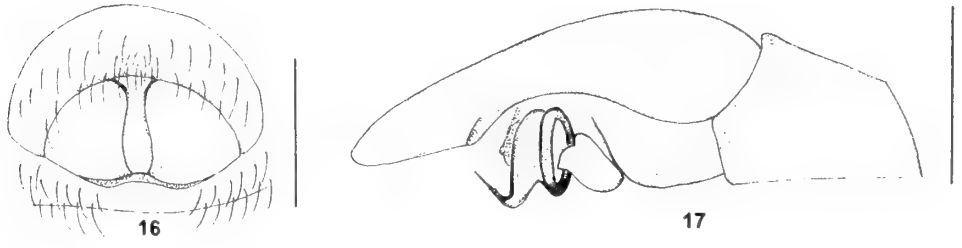
Figs. 14-15. *Steatoda bipunctata* (Linnaeus, 1758)
14. Epigynum, ventral view. 15. Male palp, ventral view. Scale bars: 0.5 mm

Steatoda bipunctata (Linnaeus, 1758) (Figs. 14-15)

Specimens examined: Soğukpınar, 03.06.2002, 2♀♀; around Soğukpınar, 05.06.2003, 5♀♀; Kirazlı, Leylek Stone, 21.07.2003, 2♀♀, 1♂; Kadıyayla, 27.06.2004, 1♂; Bakacak, 27.06.2004, 2♀♀, 1♂; Gökçeören, 13.05.2005, 2♀♀; Kirazlıyayla, 19.05.2005, 7♀♀; Mürseller, 15.06.2005, 2♀♀, 3♂♂; around Oylat cave, 28.06.2005, 3♀♀, 1♂; Soğukpınar, Ketenlik, 12.08.2005, 1♀; Alaçam, 01.10.2005, 3♀♀; İnkaya, 13.04.2006, 2♀♀; Soğukpınar, 19.05.2006, 3♀♀, 2♂♂; Karaıslah-Soğukpınar crossroads, 19.05.2006, 4♀♀, 1♂; Sarıalan, 26.06.2006, 1♀; Kıran-Çiftlik, 22.08.2006, 4♀♀; Alaçam, 26.10.2006, 1♀; Harmanalan 13 km, 08.03.2007, 1♀.

Description: Total body length 5-6.5 mm in females and 4.5-5 mm in males. Carapace and sternum shiny brown to black with some lines and spots. Abdomen brownish black, dorsum with white lateral lines, venter black. Legs dark brown with some dark annulations. Epigynal plate square shaped and pointing posteriorly. Male palp: median apophysis and embolus big and thick.
World Distribution: Holarctic (Platnick, 2011).

Steatoda grossa (C.L. Koch, 1838) (Figs. 16-17)
Specimens examined: Kuşaklıkaya, 12.06.2004, 1♀; İnayet, 25.06.2005, 2♀♀; Oylat, 28.06.2005, 1♀; Tahtaköprü, 28.06.2005, 1♀; Kaplıkaya Valley, 30.07.2005, 2♀♀; Alaçam, 23.10.2005, 3♀♀; Soğukpınar, 19.05.2006, 1♀; İnegöl-Çayyaka, 5 km, 23.08.2006, 3♀♀; Kıran, 24.08.2006, 1♀; Alaçam, 26.09.2006, 2♀♀; between Dedeler-Firuzköy, 08.03.2007, 3♀♀,1♂; before Dedeler-Orhaneli 3 km, 08.03.2007, 2♂♂; Keles-Dedeler, 08.03.2007, 4♀♀,1♂.
Description: Total body length 8-9 mm in females and 6-6.5 mm in males. Carapace dark brown. Sternum yellowish brown. Abdomen purplish black, dorsum with white central triangles and white lateral lines, venter black with some light spots posteriorly. Legs brown. Epigynal plate round, epigynum with slender septum. Male palp: median apophysis small and hooked, embolus spiral shaped.
World Distribution: Cosmopolitan (Platnick, 2011).

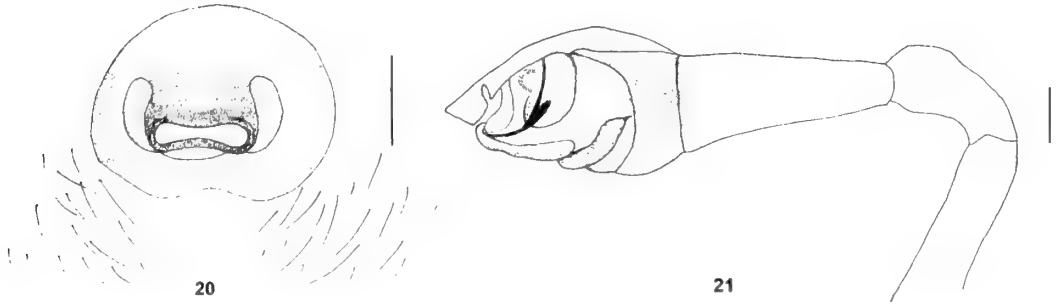


Figs. 16-17. *Steatoda grossa* (C.L. Koch, 1838)
16. Epigynum, ventral view. 17. Male palp, lateral view. Scale bars: 0.5 mm

Steatoda paykulliana (Walckenaer, 1805) (Figs. 18-19)
Specimens examined: Orhaneli to Harmancık, 2 km, 20.05.2002, 3♀♀; Orhaneli to Harmancık, 6 km, 20.05.2002, 2♀♀; Tuzaklı crossroads, 06.06.2002, 3♀♀, 1♂; Keles-Kocayayla, 07.07.2003, 2♀♀; Kocayayla to Boğazova, 07.07.2003, 4♀♀; Bakacak, 16.07.2003, 1♀; Kadıyayla, 27.06.2004, 1♀; Sarıalan, 27.06.2004, 2♀♀; Seferiışıklar-Göynükbelen crossroads, 09.05.2005, 2♀♀; Gökçeören,13.05.2005,1♀; Kirazlı, 15.06.2005, 4♀♀,1♂; İnayet, 25.06.2005, 2♀♀, 2♂♂; Epçeler, 18.06.2005, 2♀♀; Kadıyayla, 31.07.2005, 4♀♀, 1♂; Kestel, 20.10.2005, 1♂; İnkaya, 13.04.2006, 2♀♀; Hüseyinalan, 14.05.2006, 3♀♀; Gökçeören, 19.05.2006, 2♀♀; Harmanalan, 13 km, 08.03.2007, 1♀; Pınarcık, 23.06.2006, 2♀♀; Dağdibi, 23.06.2006, 1♀; Yiğitali, 23.04.2007, 1♀; Firuzköy, 18.06.2007, 4♀♀, 2♂♂; Dağgüney, 18.06.2007, 4♀♀; Fevziye, 20.06.2007, 1♀; Çayyaka, 20.06.2007, 1♀, 2♂♂.
Description: Total body length 9-13 mm in females and 6-7 mm in males. Carapace and sternum dark brown to black, without granulations. Abdomen shiny black, encircled in front, dorsum with white central markings and white lateral lines, venter black with some light spots. Legs light brown with dark annulations. Epigynal plate rectangular, posterior projection strongly sclerotized. Male palp: median apophysis short and its tip hook-shaped, embolus extending above median apophysis.
World Distribution: Europe, Mediterranean to Central Asia (Platnick, 2011).

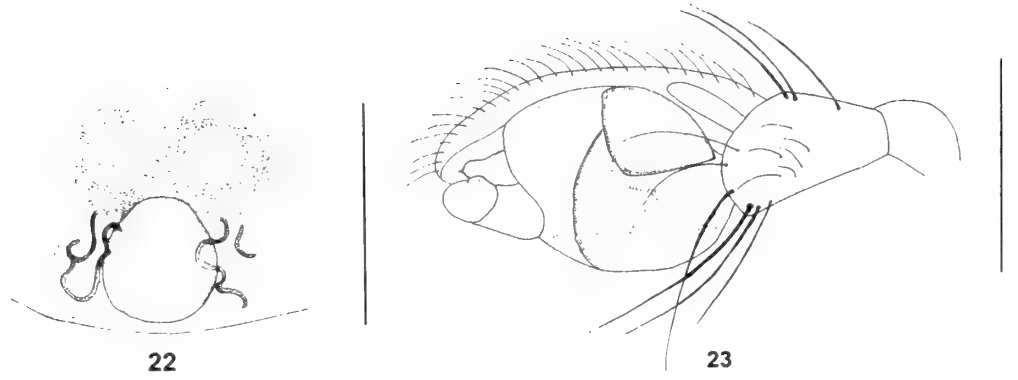
Figs. 18-19. *Steatoda paykulliana* (Walckenaer, 1805)
18. Epigynum, ventral view. 19. Male palp, ventral view. Scale bars: 0.2 mm

Steatoda triangulosa (Walckenaer, 1802) (Figs. 20-21)
Specimens examined: Kirazlı, 21.07.2003, 1♀; Alaçam, 01.10.2005, 2♀♀; Alaçam, 25.06.2006, 1♀, 2♂♂ ; Alaçam, 28.06.2006, 1♂.
Description: Total body length 5.5-7 mm in females and 3-4 mm in males. Carapace and sternum shiny brown without granulations in females and with some granulations in males. Abdomen shiny black, dorsum with white triangular markings and white lateral lines, venter black with some light spots posteriorly. Legs yellowish brown with dark annulations. Epigynal plate with narrow openings. Male palp very slender, median apophysis with s-shaped tip, embolus short.
World Distribution: Cosmopolitan (Platnick, 2011).



Figs. 20-21. *Steatoda triangulosa* (Walckenaer, 1802)
20. Epigynum, ventral view. 21. Male palp, lateral view. Scale bars: 0.1 mm

Genus ***Theridion*** Walckenaer, 1805
Theridion mystaceum L. Koch, 1870 (Figs. 22-23)
Specimens examined: Kaplıkaya Valley, 25.06.2004, 2♀♀; Kadıyayla, 31.07.2005, 1♀,1♂; Sarıalan, 05.08.2005, 1♀; Kozluören, 20.06.2006, 1♀,1♂; Sayfiye Köyü, 20.06.2006, 1♂; Babasultan, 20.06.2006, 2♀♀, 1♂; Alaçam, 25.06.2006, 3♀♀; Gökçeören, 30.06.2006, 4♀♀; Sorgun, 10.07.2006, 3♀♀, 1♂; Akıncılar, 16.07.2006, 3♀♀; Gelemiç, 18.07.2006, 1♀; Alaçam, 30.06.2007, 3♀♀.
Description: Total body length 2-2.5 mm in females and 1.5-2 mm in males. Carapace brown with dark margins. Sternum brown. Abdomen grey to black with central light stripe, venter dark brown with white spot behind epigastric furrow. Legs yellowish with dark annulations. Epigynal opening circular shaped, ducts visible. Male palp: conductor with small projecting tip, embolus short.
World Distribution: Palaearctic (Platnick, 2011).



Figs. 22-23. *Theridion mystaceum* L. Koch, 1870
22. Epigynum, ventral view. 23. Male palp, retrolateral view. Scale bars: 0.25 mm

Theridion varians Hahn, 1833 (Fig.24)
Specimens examined: Tuzaklı crossroads, 06.06.2002, 1♀; Gökçeören, 13.05.2005, 2♂♂; Tuzaklı, 13.05.2005,1♀; Kirazlı, 15.06.2005, 2♀♀; Fevziye, 25.06.2005, 1♀; Oylat, 28.06.2005, 2♂♀; Alaçam, 01.10.2005, 1♀; Kozluören, 20.06.2006, 2♀♀; Sayfiye, 20.06.2006, 1♀; İnegöl-Yenice, 16.07.2006, 1♀; Bıyıklıalan, 18.07.2006, 2♀♀; Gelemiç, 18.07.2006, 1♀; Alaçam, 26.08.2006, 3♀♀; Alaçam, 26.10.2006, 1♀; between Kozluören and Babasultan, 26.10.2006, 1♀; Alaçam, 02.06.2007, 4♀♀.
Description: Total body length 3-3.5 mm in females. Carapace pale brown with dark median band. Sternum white, laterally darker. Abdomen reddish brown with dark dorso-median stripe. Legs whitish with dark annulations. Epigynal opening longer than wide and apple-shaped.
World Distribution: Holarctic (Platnick, 2011).

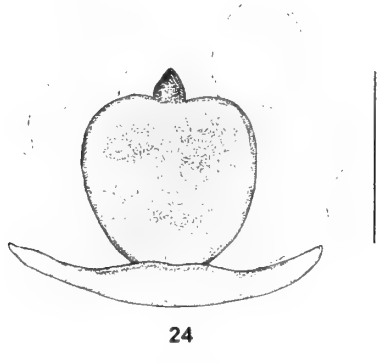


Fig. 24. *Theridion varians* Hahn, 1833
24. Epigynum, ventral view. Scale bar: 0.25 mm

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The spider fauna of islands of Lake Uluabat, Turkey

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Abstract

The survey of the spider fauna of islands of Lake Uluabat (Bursa), western part of Turkey, was conducted during the years 2003-2005. A total of 64 spider species belonging to 54 genera and 25 families were collected. The fauna showed that Palaearctic species are dominant.

Keywords: Araneae, Island fauna, Uluabat Lake, Turkey.

Introduction

Lake Uluabat is located in Bursa, North-western part of Turkey, lying east to west, south of the Marmara Sea. The length of the lake from east to west is approximately 15 km. Lake Uluabat is one of the most important area for wetlands of Turkey. There are 8 major islands located in the Lake Uluabat (Fig. 1). The land of the islands is mainly composed of grasslands, rocky habitats and large farming areas (cultivated olives) also available. The coastal region of the islands is covered with reeds.

The spiders of the world comprise 42473 described species (Platnick, 2011), of which about 717 spider species are known in Turkey (Topçu *et al.*, 2005, Bayram *et al.*, 2010). Despite the huge increase in the studies on Turkish spiders during recent years, there are still many regions of the country that remain poorly studied. However, some spider records from Lake Uluabat can be found in the paper of Kaya & Uğurtaş (2007). The purpose of this study is to make contribution to the spider diversity of Turkey.

Material and Methods

The specimens were collected from the islands of Lake Uluabat in the spring and summer months of 2003-2005. The collection was performed by hand aspirator, sweeping net, and beating bushes and trees. The specimens were preserved in 5% glycerin alcohol and deposited in the Zoology Museum of Department of Biology, Uludağ University,

Bursa, Turkey. The taxonomy and general distribution of all species follows Platnick (2011).

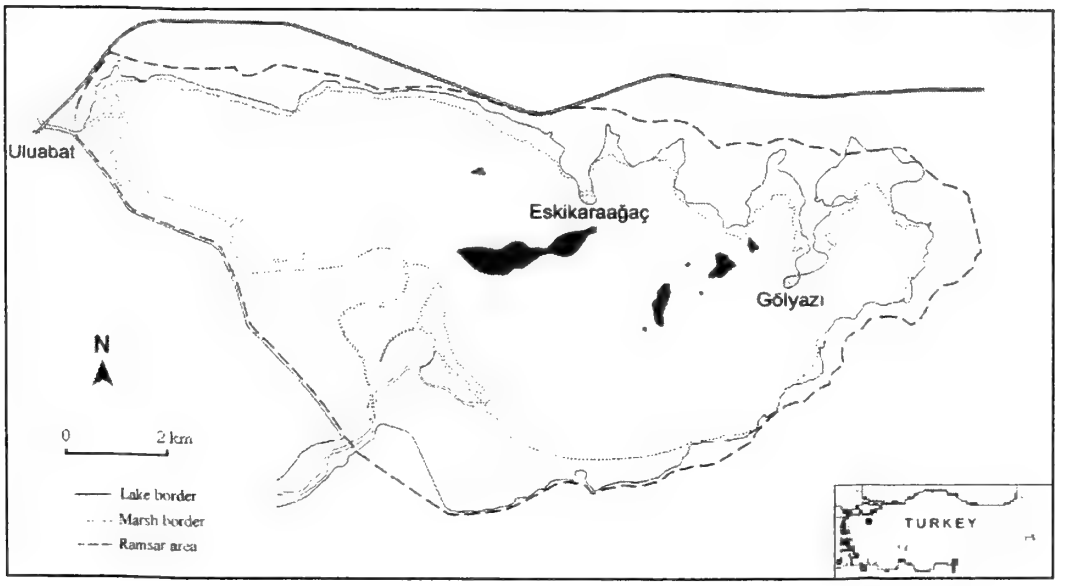

Fig. 1. Map showing the islands in the Lake Uluabat, from which the spiders have been collected.

Results

In this study, a total of 1198 adult individuals of 64 species from 54 genera and 25 families were collected in the Islands of Lake Uluabat from 2003-2005, including: 1 Ctenizidae, 1 Scytodidae, 1 Pholcidae, 2 Segestriidae, 2 Dysderidae, 1 Mimetidae, 1 Eresidae, 1 Uloboridae, 2 Theridiidae, 1 Linyphiidae, 3 Tetragnathidae, 8 Araneidae, 6 Lycosidae, 1 Pisauridae, 1 Oxyopidae, 4 Agelenidae, 1 Dictynidae, 1 Amourobiidae, 1 Titanoecidae, 1 Miturgidae, 8 Gnaphosidae, 1 Sparassidae, 2 Philodromidae, 7 Thomisidae and 6 Salticidae.

The spider species recorded from the study area are given in Table (1). In this study, the richest spider families, of number of species, were Araneidae and Gnaphosidae. This was followed by crab-spiders, Thomisidae, wolf spiders, Lycosidae, and jumping spiders, Salticidae. Araneidae, Gnaphosidae, Thomisidae and Salticidae were represented by the greatest number of genera.

Concerning habitats, most of the species were found in reeds and forest areas. Among them, Tetragnathids and Araneids were the most abundant families.

The zoogeographic classification of the spiders, on the basis of literature data reflecting their current distribution, shows that Palaearctic species are dominant (Platnick, 2011).

Table 1. The spider species collected from the islands of Lake Uluabat, Bursa.

Families / Species	World Distribution
1. CTENIZIDAE	
Cyrtocarenum cunicularium (Olivier, 1811)	Greece, Crete, Rhodes, Turkey
2. SCYTODIDAE	
Scytodes thoracica (Latreille, 1802)	Holarctic, Pacific Is.

3. PHOLCIDAE	
Holocnemus pluchei (Scopoli, 1763)	Mediterranean
4. SEGESTRIIDAE	
Ariadna insidiatrix Audouin, 1826	Mediterranean
Segestria florentina (Rossi, 1790)	Europe to Georgia
5. DYSDERIDAE	
Dysdera crocata C.L. Koch, 1838	Cosmopolitan
Dysdera lata Reuss, 1834	Mediterranean to Georgia
6. MIMETIDAE	
Ero tuberculata (De Geer, 1778)	Palaearctic
7. ERESIDAE	
Eresus kollari Rossi, 1846	Europe to Central Asia
8. ULOBORIDAE	
Uloborus walckenaerius Latreille, 1806	Palaearctic
9. THERIDIIDAE	
Parasteatoda lunata (Clerck, 1757)	Palaearctic
Steatoda paykulliana (Walckenaer, 1805)	Europe, Mediterranean to Central Asia
10. LINYPHIIDAE	
Frontinellina frutetorum (C.L. Koch, 1834)	Palaearctic
11. TETRAGNATHIDAE	
Tetragnatha extensa (Linnaeus, 1758)	Holarctic , Madeira
Tetragnatha montana Simon, 1874	Palaearctic
Tetragnatha obtusa L. Koch, 1837	Palaearctic
12. ARANEIDAE	
Agalenatea redii (Scopoli, 1763)	Palaearctic
Araneus angulatus Clerck, 1757	Palaearctic
Araneus diadematus Clerck, 1757	Holarctic
Argiope bruennichi (Scopoli, 1772)	Palaearctic
Gibbaranea bituberculata (Walckenaer, 1802)	Palaearctic
Glyptogona sextuberculata (Keyserling, 1863)	Italy to Israel, Turkey
Larinioides cornutus (Clerck, 1757)	Holarctic
Neoscona adianta (Walckenaer, 1802)	Palaearctic
13. LYCOSIDAE	
Alopecosa fabrilis (Clerck, 1757)	Palaearctic
Pardosa amentata (Clerck, 1757)	Europe, Russia
Pirata piraticus (Clerck, 1757)	Holarctic
Trochosa hispanica Simon, 1870	Mediterranean to Central Asia
Trochosa robusta (Simon, 1876)	Palaearctic
Trochosa ruricola (De Geer, 1778)	Holarctic, Bermuda
14. PISAURIDAE	
Pisaura mirabilis (Clerck, 1757)	Palaearctic
15. OXYOPIDAE	
Oxyopes heterophthalmus (Latreille, 1804)	Palaearctic
16. AGELENIDAE	
Agelena labyrinthica (Clerck, 1757)	Palaearctic
Allagelena gracilens (C.L. Koch, 1841)	Central Europe, Mediterranean to Central Asia
Maimuna vestita (C.L. Koch, 1841)	Eastern Mediterranean
Tegenaria sp.	
17. DICTYNIDAE	
Dictyna latens (Fabricius, 1775)	Europe to Central Asia

18. AMAUROBIIDAE	
Amaurobius fenestralis (Ström, 1768)	Europe to Central Asia
19. TITANOECIDAE	
Nurscia albosignata Simon, 1874	Bulgaria, Cyprus to Central Asia
20. MITURGIDAE	
Cheiracanthium punctorium (Villers, 1789)	Europe to Central Asia
21. GNAPHOSIDAE	
Drassodes cupreus (Blackwall, 1834)	Palaearctic
Drassodes lapidosus (Walckenaer, 1802)	Palaearctic
Drassylus lutetianus (L. Koch, 1866)	Europe to Kazakhstan
Drassylus praeficus (L. Koch, 1866)	Europe to Central Asia
Haplodrossus signifer (C.L. Koch, 1839)	Holarctic
Nomisia exornata (C.L. Koch, 1839)	Europe to Central Asia
Phaeocedus braccatus (L. Koch, 1866)	Palaearctic
Scotophaeus scutulatus (L. Koch, 1866)	Europe to Central Asia, Algeria
22. SPARASSIDAE	
Micrommata virescens (Clerck, 1757)	Palaearctic
23. PHILODROMIDAE	
Philodromus cespitum (Walckenaer, 1802)	Holarctic
Philodromus longipalpis Simon, 1870	Europe, Iran, Azerbaijan
24. THOMISIDAE	
Ebrechtella tricuspidata (Fabricius, 1775)	Palaearctic
Misumena vatia (Clerck, 1757)	Holarctic
Runcinia grammica (C.L. Koch, 1837)	Palearctic, St. Helena, South Africa
Synema globosum (Fabricius, 1775)	Palaearctic
Thomisus onustus Walckenaer, 1805	Palaearctic
Xysticus abditus Logunov, 2006	Bulgaria, Turkey
Xysticus striatipes L. Koch, 1870	Palaearctic
25. SALTICIDAE	
Cyrba algerina (Lucas, 1846)	Canary Islands to Central Asia
Evarcha arcuata (Clerck, 1757)	Palaearctic
Menemerus semilimbatus (Hahn, 1829)	Canary Islands to Azerbaijan; Argentina, USA
Philaeus chrysops (Poda, 1761)	Palaearctic
Phlegra fasciata (Hahn, 1826)	Palaearctic
Salticus scenicus (Clerck, 1757)	Holarctic

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ERRATA

linyphid = linyphiid
Linyphidae = Linyphiidae

In Contents of *Serket* 12(4)
and p. 141: Title, Abstract, and Introduction