

Taxonomic notes on a collection of jumping spiders from Iran (Araneae, Salticidae)

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Summary

An annotated list of 10 salticid species collected in the Khūzestān province of Iran is given. A new species, *Menemerus errabundus* sp. n. (♂ ♀), is diagnosed, figured and described. Three species, *Heliophanus edentulus* Simon, 1871, *Marpissa nivoyi* (Lucas, 1846) and *Plexippus clemens* (O. Pickard-Cambridge, 1872), are recorded from Iran for the first time. Additional new faunistic records from the Mediterranean region and Turkey are given for five species.

Introduction

The previously known salticid fauna of Iran numbers 76 species in 35 genera (Logunov *et al.*, 2002, 2007; Azarkina, 2002a; Sahara, 2006; Logunov, 2007, 2009; Ghahari & Marusik, 2009). This paper describes a small collection of Salticidae taken from the vicinity of the ancient city of Shush (Susa) (c. 32.20°N, 48.25°E) in Khūzestān, the SW province of Iran (the collector is unknown). In total, ten species, of which one is new to science and three new to the Iranian fauna (thus, making 80 salticid species in the entire Iranian fauna), are treated in the present work. In order to clarify the distribution of five relatively rare species, comparative material from the Mediterranean region (particularly, from Greece and Turkey) is also recorded.

The studied specimens are kept in the following collections: BMNH=Department of Entomology, Natural History Museum, London, UK (Mrs J. Beccaloni); HECO=Hope Entomological Collection, Oxford, UK (Ms Z. Simmons); LNMC=Liverpool Museum, National Museums Liverpool, Liverpool, UK (Mr G. Knight); MMUM=Manchester Museum, Manchester, UK (Dr D. V. Logunov); NMPC=National Museum of Prague, Czech Republic (Dr A. Kůrka); PCLJ=personal collection of Dr Lars Jonsson (Kristianstad, Sweden); PCRG=personal collection of Mr Richard Gallon (Llandudno, UK); PCRS=personal collection of Dr Anthony Russell-Smith (Kent, UK); PCSD=personal collection of Mr R. Snazell (Dorset, UK); SMFM=Naturmuseum und Forschungsinstitut Senckenberg, Frankfurt am Main, Germany (Dr P. Jäger). Abbreviations used in the text: D=described; d=dorsal, pr=prolateral, rt=retrolateral, v=ventral. For the leg spination the system and terminology adopted is that used by Ono (1988). The sequence of leg segment measurements is as follows: femur+patella+tibia+metatarsus+tarsus. All measurements are in mm.

Survey of species

Heliophanillus fulgens (O. Pickard-Cambridge, 1872)

Comments: An eastern Mediterranean species (Prószyński, 2003); previously reported from Iran by Logunov *et al.* (2002, 2007).

Material: IRAN: 2♂ 1♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), on short reeds and in reedclump near marsh stream, 12–14 September 1958, coll.?

Comparative material: TURKEY: 12♂ 6♀ (MMUM), Oren Prov. (no exact locality), cherry garden, March 2000, S. Tezcan; 1♂ (MMUM), Armutlu (c. 39°38'N, 40°22'E), cherry garden, March 2000, S. Tezcan; 1♀ (NMPC), Tunceli town (c. 39°06'N, 39°33'E), Munsur river, 22 June 2002, M. Řezáč.

Heliophanus decoratus L. Koch, 1875

Comments: This species has been recorded from the eastern Mediterranean, N and NE Africa (from Morocco to Ethiopia), and the Near East (Wesołowska, 1986; Prószyński, 2003), eastward as far as SW Iran (Fars and Khūzestān provinces); previously reported from Iran by Logunov *et al.* (2002).

Material: IRAN: 1♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), in grass and reed clumps near marsh stream, 13 September 1958, coll.?

Comparative material: TUNISIA: 1♂ (SMFM), Djerba, NE Houmt-Souk (c. 33°53'N, 10°51'E), dry sandy thicket with *Chenopodiadea*, 14 April 1959, H. Kahmann. GREECE: 1♂ (LNMC), Chios, Gridia (c. 38°12'56"N, 26°06'08"E), rocky valley off coast road above shore, 29 April 1997, C. Felton; 1♂ (LNMC), Chios, nr. Armolia (c. 38°14'57"N, 26°21'13"E), weedy edge and track between road and olive grove, 25 April 1997, C. Felton.

Heliophanus edentulus Simon, 1871

Comments: A Mediterranean species (Wesołowska, 1986; Prószyński, 2003); new species record for Iran.

Material: IRAN: 1♂ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), reed-grass clump near river edge, 15 September 1958, coll.?

Comparative material: TURKEY: 1♂ (PCRS), c. 8 km W of Koycegiz (c. 36°55'N, 28°43'E), sycamore woodland, 5 June 1996, A. Russell-Smith; 1♀ (LNMC), Konya, c. 2 km SW of Beyşehir (c. 37°41'N, 31°43'E), 9 July 1992, S. Judd; 1♀ (LNMC), Adana, c. 8 km S of Sambeyli (c. 37°59'N, 36°5'E), 13 July 1992, S. Judd; 2♂ 5♀ (LNMC), Adana, c. 5.5 km E of Yenice (36°58'01"N, 35°07'17"E), ruderal plants and grasses on road verge, 4 May 1994, S. Judd & C. Felton; 2♀ (LNMC), Isparta, c. 4 km E of Eğridir (c. 37°57'N, 31°00'E), 8 July 1992, S. Judd; 3♀ (LNMC), Konya, Akşehir (c. 38°22'N, 31°25'E), above Dağ Otel, mixed scrub, herbs and grasses on north-facing limestone slope, 19 September 1993, S. Judd & C. Felton; 1♂ (LNMC), Mersin, c. 11 km NW of Mut (c. 36°39'N,

33°25'E), Sukati, 18 July 1992, C. Felton; 1♂ (LNMC), Içel, Silifke sand dunes (c. 36°17'05"N, 33°56'08"E), inner dunes with damp, *Salicornia* dominated, halophytic vegetation and reed bed, 5 May 1994, S. Judd & C. Felton; 1♂ 1♀ (HECO), Malatya, Darende-Malatya (c. 38°33'N, 37°31'E), plants on bank of river Tolmaskoyu, on dry leaves, 5 August 1956, G. Lampel; 1♂ (HECO), Van (c. 38°30'N, 43°22'E), Hahori Bashale, 50 k stream into Zap, among reeds, 30 August 1956, G. Lampel; 2♂ (HECO), Siirt (c. 37°56'N, 41°57'E), Bitter D'Bakir 65 k, in dry herbs under pines, 9 September 1956, G. Lampel; 2♀ (NMPC), Tunceli (39°06'N 39°33'E), town, Munsur river, 22 June 2002, M. Řezáč; 3♂ 2♀ (MMUM), Mersin Prov., bank of river Tarsus (c. 36°55'N, 34°55'E), 4 September 2004, K. Kunt.

Marpissa (Hycitia) nivoyi (Lucas, 1846)

Comments: A South European–Central Asian sub-boreal species (Logunov & Rakov, 1998; Logunov & Guseinov, 2002), with the record from Iran lying in the south-easternmost limit of its range (present data); new species record for Iran.

Material: IRAN: 1♂ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), on short reeds and in reedclump near marsh stream, 12–14 September 1958, coll.?

Comparative material: SPAIN: 1♀ (NMPC), Catalonia, Deltebre (c. 40°44'N, 0°50'W), 26 April 2004, L. J. Dobroruka. GREECE: 1♀ (PCRG), Skala Potamias, pastures, 29 September 2001, coll.?. 1♀ (SMFM), Crete, c. 8 km W of Chania, NW-shore of reservoir nr. Ajia (c. 35°14'N, 24°49'E), marshy, Orchidaceae, Juncaceae, in web or on ground, 23 April 1958, H. Kahmann.

Menemerus errabundus sp. n. (Figs. 1–6)

Types: Holotype ♂ (BMNH) from Iran, Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), running on walls of shady mill stream tunnel, 18 September 1958, coll.? Paratypes: 2♂ 6♀ (BMNH), together with holotype.

Etymology: From the Latin “*errabundus*”, meaning “vagrant”.

Diagnosis: The male of *Menemerus errabundus* sp. n. is most similar to those of *M. guttatus* Wesołowska, 1999 from Morocco (see Wesołowska, 1999: figs. 143–145) and *M. modestus* Wesołowska, 1999 from Tunisia (see Wesołowska, 1999: figs. 210–212), but can readily be distinguished from both by the conformation of the embolar division, particularly by the shape of the distal lamella (arrowed in Fig. 1), and the mutual arrangement and shapes of the tibial apophyses (Figs. 1–3). The female of the new species is most similar to those of *M. animatus* O. Pickard-Cambridge, 1876 from northern Africa and the Mediterranean (see Wesołowska, 1999: figs. 16–21; and Metzner, 1999: fig. 108) and *M. davidi* Prószyński & Wesołowska, 1999 from NE Africa and the Levant (see Wesołowska, 1999: figs. 86–89), but differs from both in having a wider and relatively deep

epigynal pocket (Fig. 4) and in the mutual arrangement of the insemination ducts and receptacles (Fig. 5).

Distribution: The type locality only.

Description: *Male* (holotype): *Measurements:* Carapace 2.40 long, 1.70 wide, 0.88 high at PLE. Ocular area 1.18 long, 1.40 wide anteriorly and 1.38 wide posteriorly. Diameter of AME 0.48. Abdomen 2.40 long, 1.63 wide. Cheliceral length 0.90. Clypeal height 0.04. Length of leg segments: I 1.63+1.00+1.25+1.03+0.58; II 1.25+0.70+0.88+0.88+0.50; III 1.25+0.63+0.83+0.70+0.53; IV 1.50+0.70+1.15+1.13+0.55. Leg spination: leg I: Fm d 1-1-2; Tb pr 0-0-1, v 2-2-1ap; Mt v 2-0-2ap; leg II: Fm d 1-1-2; Tb pr 0-0-1, v 1-0-1ap; Mt v 2-2ap; leg III: Fm d 1-1-3; Tb pr and rt 1-1, v 1-0-2ap; Mt pr and rt 2ap, v 2-0-2ap; leg IV: Fm d 1-1-3; Tb pr 0-1, rt 1-1, v 1-0-2ap; Mt pr and rt 2ap, v 2-0-2ap. *Coloration:* Carapace brown, with yellow triangular spot behind PLEs, densely covered with white (on eye field and medial yellow figure) and brown (on sides) hairs. Clypeus brown, densely covered with white hairs. Sternum yellow. Maxillae, labium and chelicerae brown. Abdomen light yellow, but dorsum with pale brown pattern of two lateral interrupted stripes and an elongated cardiac spot. Book-lung covers light yellow. Spinnerets yellow, tinged with brown. All legs light yellow. Palps brown, structure as in Figs. 1–3.

Female (paratype): *Measurements:* Carapace 2.56 long, 1.76 wide, 0.98 high at PLE. Ocular area 1.35 long, 1.58 wide anteriorly and 1.55 wide posteriorly. Diameter of AME 0.53. Abdomen 3.20 long, 2.25 wide. Cheliceral length 0.88. Clypeal height 0.05. Length of leg segments: I 1.53+0.90+0.85+0.88+0.55; II 1.38+0.78+0.88+0.80+0.55; III 1.38+0.65+0.88+1.03+0.60; IV 1.70+0.88+1.33+1.25+0.65. Leg spination: leg I: Fm d 0-1-1-2; Tb pr 0-1, v 2-2-2ap; Mt v 2-2ap; leg II: Fm d 1-1-2; Tb v 1-0-1ap; Mt v 2-2ap; leg III: Fm d 1-1-2; Tb pr and rt 1-1, v 1-0-2ap; Mt pr and rt 2ap, v 2-0-2ap; leg IV: Fm d 1-1-2; Tb pr and rt 1-1, v 1-0-2ap; Mt pr and rt 2ap, v 2-0-2ap. *Coloration:* As in male, but differs as follows: labium, maxillae and chelicerae light brown (almost yellow); palps light yellow; all legs yellow with pale brown semi-rings at segment ends. Epigyne and spermathecae as in Figs. 4–6.

Mogrus neglectus (Simon, 1868)

Comments: An eastern Mediterranean–Central Asian species (Logunov, 1995; Metzner, 1999; Prószyński, 2003); previously reported from Iran by Logunov *et al.* (2002).

Material: IRAN: 1♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), “sacs on leaf-bush [label illegible]”, 14 September 1958, coll.?

Comparative material: GREECE: 1♂ 3♀ (SMFM, 5152), Thessaloniki (c. 40°38'N, 22°57'E), date and coll.? CYPRUS: 1♂ (LNMC), Gerónisos Akámas (c. 35°03'N, 32°18'E), sparsely vegetated shingle bank, 6 September 1997, C. Felton. TURKEY: 5♀ (LNMC), Silifke, Mersin (36°38'56.70"N, 33°21'41.45"E), sand dune system with scattered scrub up to 400 m from sea, 10 June 1993, S. Judd & C. Felton; 1♀ (LNMC), Içel, Silifke sand

dunes (36°17'05"N, 33°56'08"E), inner dunes with damp, *Salicornia* dominated, halophytic vegetation and reed bed, 6 May 1994, S. Judd & C. Felton; 3♀ (LNMC), İçel, Silifke, c. 1 km E of Tasucu (36°18'37"N, 33°54'14"E), canalised river marsh with *Phragmites*, *Juncus* and *Mentha*, alongside timber yard, 6 May 1994, S. Judd & C. Felton; 5♀ (LNMC), İçel, c. 31 km N of Anamur (36°12'11"N, 32°54'01"E), young, goat-grazed, pine plantation on high, rock strewn, mountain slope, 7 May 1994, S. Judd & C. Felton; 5♀ (HECO), Tuz Gölü, on reed heads in Dalt mouth (c. 38°44'N, 33°05'E), 29 January 1956, G. Lampel; 1♀ (SMFM), Istanbul, 'r. Berg. Yakacik', 300 m a.s.l., June 1966, coll.?.; 1♂ 2♀ (PCSD, 18, 75), nr. Dalyan (c. 36°50'N, 28°38'E), saltmarsh below Caunos, 18–23 May 1997, R. Snazell; 1♀ (PCLJ), Nur Dağı, 31 May 2004, L. Jonsson.

***Plexippoides flavescens* (O. Pickard-Cambridge, 1872)**

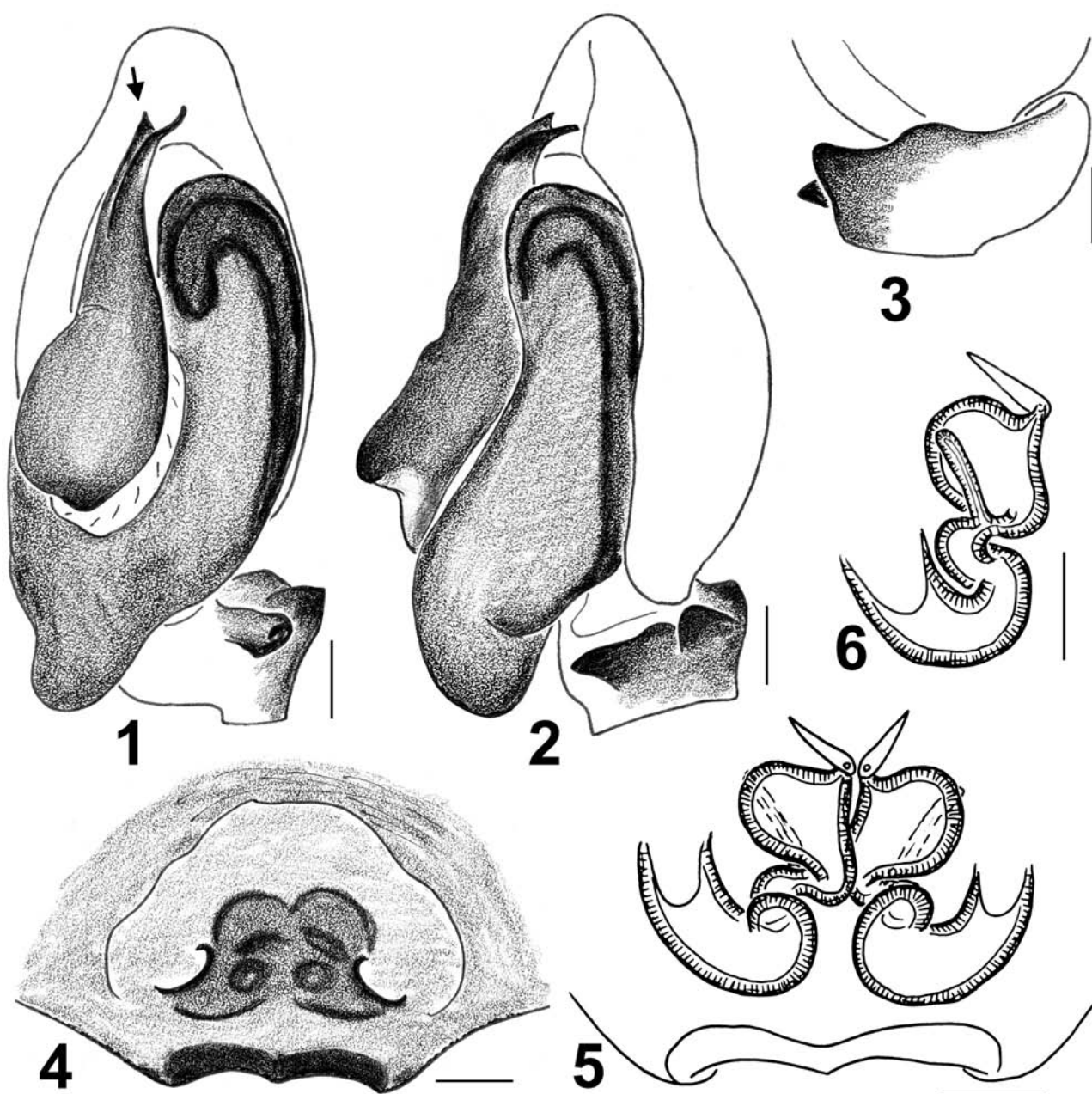
Comments: This species is known from the Near East and Sinai in the west to Central Asia in the east (Logunov & Zamanpoore, 2005); previously reported from Iran by Logunov *et al.* (2002, 2007) and Ghahari & Marusik (2009).

Material: IRAN: 2♂ 2♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), Danus(?) palace walls & litter [label is illegible; apparently, Prophet Daniel's tomb], 12 September 1958, coll.?

***Plexippus clemens* (O. Pickard-Cambridge, 1872) (Figs. 7–12)**

Salticus clemens O. Pickard-Cambridge, 1872: 335 (D♀).

Plexippus similis Wesolowska & van Harten, 1994: 72, figs. 147–149 (D♀).



Figs. 1–6: Copulatory organs of *Menemerus errabundus* sp. n. (♂ holotype and ♀ paratype). **1** Male palp, ventral view; **2** Ditto, retrolateral view; **3** Palpal tibia, dorsal view; **4** Epigyne; **5** Spermathecae, dorsal view; **6** Ditto, ventral view. Scale lines=0.1 mm.

Plexippus clemens: Prószyński, 2003: 142, figs. 592–593. Synonymised *Plexippus similis* with *P. clemens*.

Plexippus tectonicus Prószyński, 2003: 145, figs. 581–582, 586, 591, 736–737 (D♂ ♀).

Plexippus clemens: Wesołowska & van Harten, 2007: 246, figs. 165–168. Synonymised *Plexippus tectonicus* with *P. clemens*.

For a complete set of taxonomic references see Platnick (2010).

Type: Holotype ♀ (HECO, tube 21, jar n.1821; Figs. 11, 12) from Jordan, “*Attus clemens* Cambr., O.P.-Cambridge coll.”; according to Pickard-Cambridge (1872: 336), a single adult female “was found on low plants on the plains of the Jordan”, with no exact locality being given.

Comments: A poorly known species, recorded to date only from Algeria, the Levant, Yemen and Iran (Prószyński, 2003; Wesołowska & van Harten, 2007; present data); new species record for Iran.

Plexippus clemens has a rather complicated history. It was originally described from Jordan (Pickard-Cambridge, 1872) and then has been recorded/described under different names from Yemen (Wesołowska & van Harten, 1994: sub. *P. similis*), Algeria and Israel

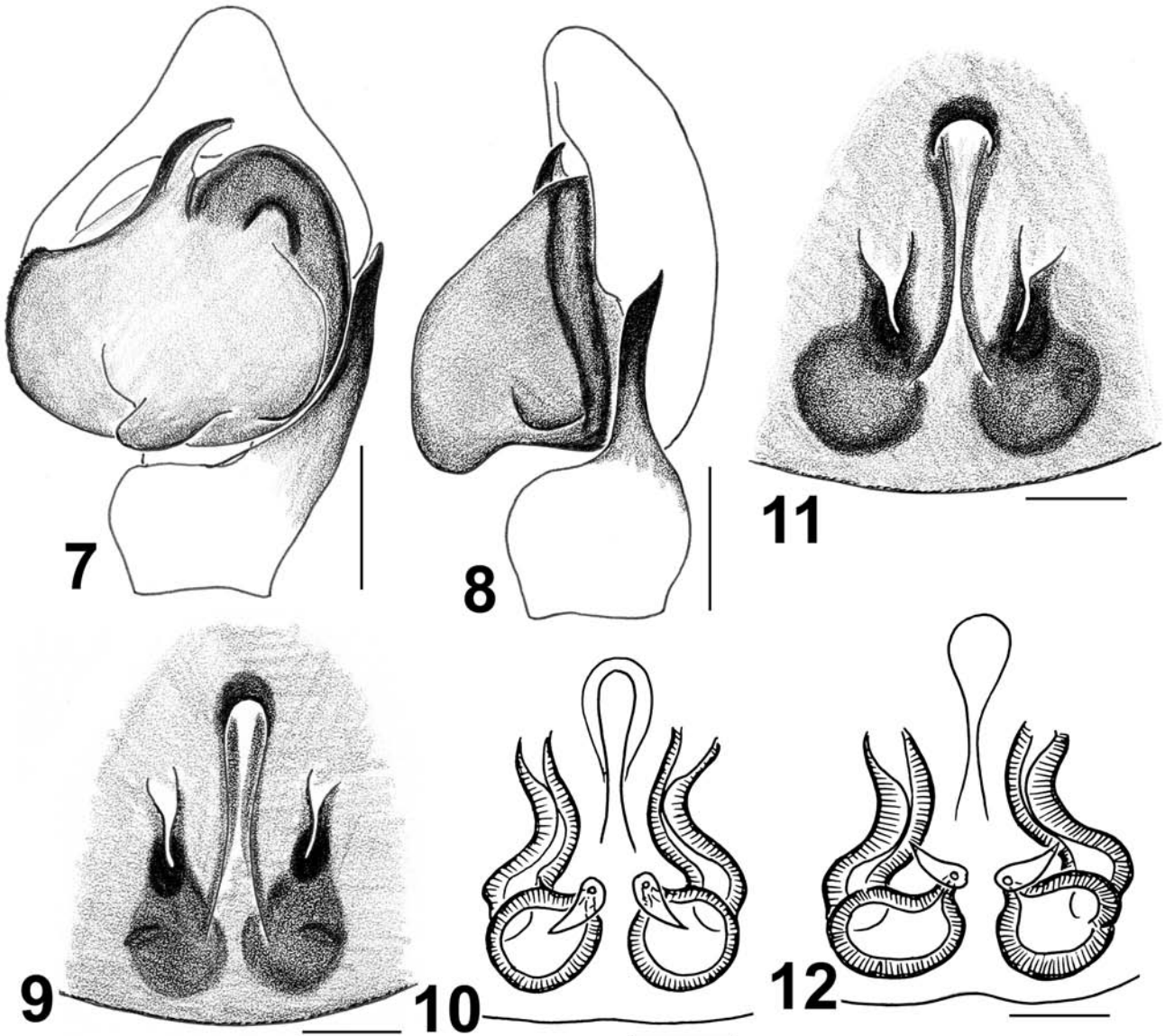
(Prószyński, 2003: sub. both *P. tectonicus* and *P. clemens*). The name *P. similis* was synonymised with *P. clemens* by Prószyński (2003: 142), who, in error, also described a new species *P. tectonicus* from Israel. Recently, Wesołowska & van Harten (2007) discussed the taxonomic status of *P. clemens* and synonymised *P. tectonicus* with *P. clemens*. As I have been able to examine a series of 3♂ and 3♀ of *P. clemens* collected together from Iran (Figs. 7–10) and to compare them to the ♀ holotype of *Attus clemens* (Figs. 11–12), I can confirm that the name *P. clemens* is indeed a senior synonym both of *P. similis* and of *P. tectonicus*.

Material: IRAN: 3♂ 3♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), on short reeds and in reedclump near marsh stream, 12–14 September 1958, coll.?

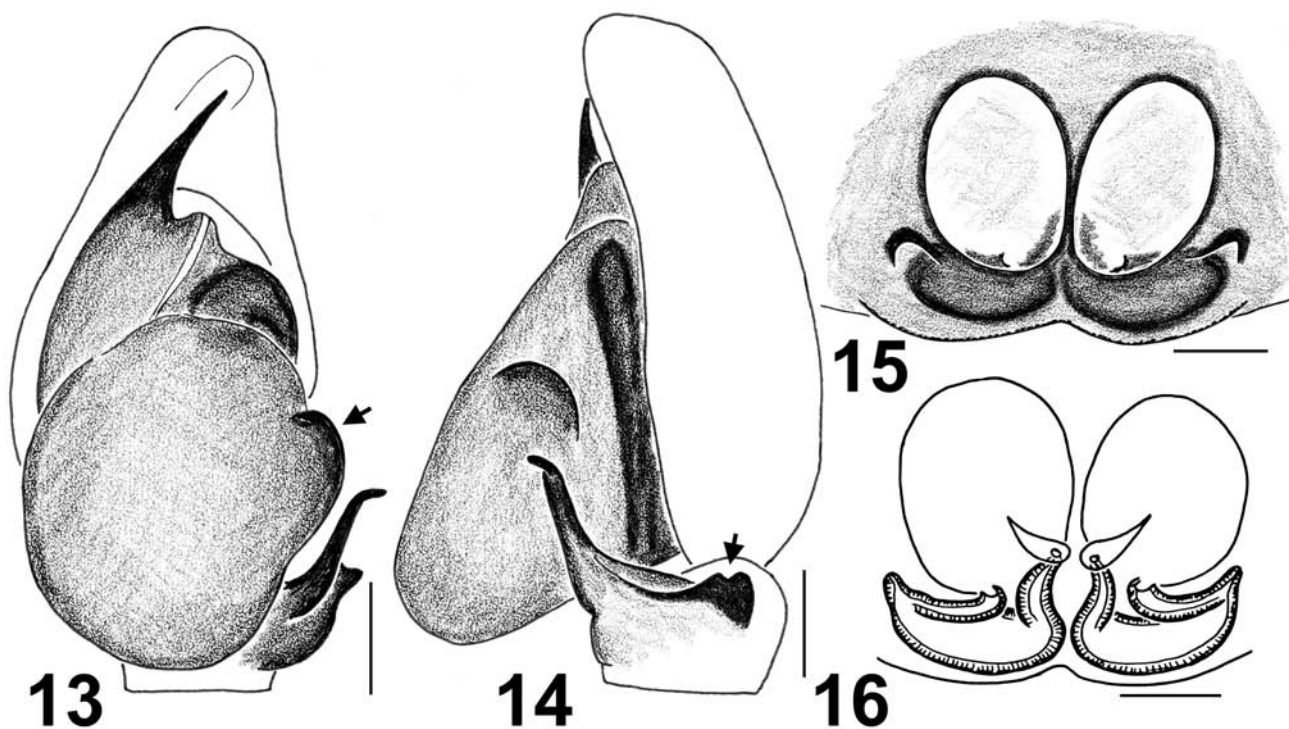
***Pseudicius palaestinensis* Strand, 1915 (Figs. 13–16)**

Pseudicius picaceus palaestinensis Strand, 1915: 169 (D♂).

Pseudicius palaestinensis: Prószyński, 2003: 152, figs. 598, 601–602, 610–611 (D♀).



Figs. 7–12: Copulatory organs of *Plexippus clemens* (O. Pickard-Cambridge, 1872) (7–10 specimens from Iran, 11–12 holotype). 7 Male palp, ventral view; 8 Ditto, retrolateral view; 9, 11 Epigyne; 10, 12 Spermathecae, dorsal view. Scale lines=0.25 mm (7, 8), 0.1 mm (9–12).



Figs. 13–16: Copulatory organs of *Pseudicius palaestinis* Strand, 1915 (specimens from Iran). **13** Male palp, ventral view; **14** Ditto, retrolateral view; **15** Epigyne; **16** Spermathecae, dorsal view. Scale lines=0.1 mm.

Comments: A poorly known species, recorded to date only from the Levant and Iran (Logunov *et al.*, 2002; Prószyński, 2003); previously reported from Iran by Logunov *et al.* (2002).

This name was described by Strand (1915) as a subspecies of the south European–Mediterranean species *Pseudicius picaceus* (Simon, 1868) from Israel, and was recently elevated to the status of full species by Prószyński (2003: figs. 610, 611), who re-examined the ♂ holotype. However, when diagnosing the male of *P. palaestinis*, Prószyński (2003: 153) compared it with that of *P. pseudocourtauldi* Logunov, 1999 from Armenia (see Logunov, 1999), rather than with that of *P. picaceus*, the closest if not identical species of *Pseudicius*. *Pseudicius pseudocourtauldi* indeed belongs to the same species group, as does the more common *P. courtauldi* Bristowe, 1935 (see Logunov, 1993: figs. 4a–f), but it is easily distinguishable from *P. palaestinis* by the much wider and stronger dorsal tibial apophysis and the much shorter ventral tibial apophysis (cf. Figs. 13–14 and Logunov, 1999: figs. 7–8); females of both species are very close and almost indistinguishable by the conformation of their copulatory organs.

A series of 2♂ and 2♀ of *P. palaestinis* collected together from SW Iran allowed me to provide a differential diagnosis of this species from *P. picaceus*, from which it differs in having a slightly shorter ventral tibial apophysis, a notched dorsal tibial apophysis (arrowed in Fig. 14), a wider tegulum with a well-marked lateral bulge (arrowed in Fig. 13) and, particularly, the mutual arrangement of the insemination ducts and spermathecae (cf. Figs. 15–16 and Metzner, 1999: figs. 58d–e).

Thus, in my opinion, *P. palaestinis* is distinct from the true *P. picaceus*. The distribution of both species,

particularly in Asia Minor and the Near East, needs to be further clarified when more material becomes available. *Pseudicius picaceus* is quite common in Greece and Turkey (Metzner, 1999; Logunov, unpubl. data), whereas *P. palaestinis* remains known only from a few localities in Israel and Iran (Logunov *et al.*, 2002; Prószyński, 2003; present data). Incidentally, the male of *P. courtauldi* reported from the Greek islands and illustrated by Metzner (1999: figs. 56a–c) almost certainly belongs to *P. palaestinis*. This matter requires further attention in the future.

Material: IRAN: 2♂ 2♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), fallen tree on dry mound, 17 September 1958, coll.?

Thyene imperialis (Rossi, 1846)

Comments: This species is distributed from East Africa, throughout the Mediterranean region and Central Asia to China and India (Logunov & Zamanpoore, 2005); previously reported from Iran by Logunov *et al.* (2002, 2007).

Material: IRAN: 1♀ (BMNH), Khūzestān, Shush (Susa) (c. 32.20°N, 48.25°E), in grass and reed clumps near marsh stream, 13 September 1958, coll.?

Discussion

The Salticidae fauna of Iran currently includes 80 species in 35 genera (Logunov *et al.*, 2002, 2007; Azarkina, 2002a; Saha, 2006; Logunov, 2007, 2009; Ghahari & Marusik, 2009; present data) and it is safe to assume that this fauna still remains poorly known. For instance, the salticid fauna of Greece, which is much

smaller in area and less diverse in habitats, consists of 123 species in 39 genera (Metzner, 1999; Logunov, 2001). Even the salticid faunas of such smaller countries as Azerbaijan and Yemen contain more recorded species: 82 species in 35 genera and 81 in 33 genera respectively (see Logunov & Guseinov, 2002; Wesolowska & van Harten, 2007). This is hardly surprising, since based on map 2 in Logunov *et al.* (2002) one can easily see that no spider collecting has been done in almost the entire eastern and south-eastern half of Iran (provinces Esfahān, Khorāsān, Sīstān and Balūchestān, etc.). As a result, many taxa are either under-represented or missing. For instance, only three species of *Aelurillus* have been reported from Iran (Logunov *et al.*, 2002; Azarkina, 2002a), compared with eight species in the neighbouring Turkmenistan (Mikhailov, 1997; Azarkina, 2002b); no species of *Proszynskiana*, compared with four species in Turkmenistan (Logunov, 1996); only two species of *Sitticus* (Logunov *et al.*, 2002), compared with 4–5 in Turkmenistan (Mikhailov, 1997); a single species of *Mogrus* (Logunov *et al.*, 2002), compared with seven species recorded from Yemen (Wesolowska & van Harten, 2007); etc. Particularly notable is the complete absence of any species record of *Yllenus*, a diverse central Asian genus, with 18 species being known to date from the neighbouring Turkmenistan (Logunov & Marusik, 2003). Thus, a very conservative estimate of the real diversity of Iranian Salticidae should be no less than 120 species, but it is likely to be more than that.

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