

On some new and uncommon spiders from Israel (Araneae)

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Summary

Spiders recently collected in Israel include new records and valuable additions as well as some previously unknown matching sexes. Two new species of Theridiidae: *Theridion hermonense*, sp. n. and *Steatoda trianguloides*, sp. n. are described. *Thanatus lesserti* (Roewer, 1951) (Philodromidae) is a new Asiatic record and the hitherto unknown male is described. Drawings of the female are provided for the first time. Discovery of the male of *Thanatus fornicatus* Simon, 1897 corroborates a rare connection with the fauna of the Oriental Region. No drawings have ever before been provided. The male of *Singa lucina* (Audouin, 1826) (Araneidae) is newly described and illustrations are provided for the first time. As a result of the matching of the two sexes, two new synonymies in *Oxyptila* (Thomisidae) are established: *Oxyptila complicata* Levy, 1975, ♂ = *O. rigida* (O. P.-Cambridge, 1872), ♀, and *O. aradensis* Levy, 1975, ♂ = *O. judaea* Levy, 1975, ♀.

Introduction

The taxa reported herein complement earlier studies on their congeners found in the Middle East. Additional findings may be expected as this fauna is still incompletely known.

On an excursion to mount Hermon in northern Israel two new theridiid spiders have been collected. These, especially the tiny *Theridion hermonense*, sp. n. taken at the summit, prove to cope successfully with the harsh environmental conditions prevailing there of long snowy winters and high radiation, strong winds and dryness in the summer.

A survey in another area of extreme conditions, the very hot, eremic northern Arava Valley, south of the Dead Sea, yielded two valuable philodromid species. One, *Thanatus lesserti* (Roewer) was known from Egypt since 1876 only by the female holotype. Illustrations of the female are provided for the first time, along with a description of the hitherto unknown male.

Drawings are also provided for the first time of the male of *Thanatus fornicatus* Simon. This, originally described as an Oriental species (Pakistan), has previously been reported, though with reservation, to occur in the Middle East: only a few sparsely distributed females were found and the species stemmed from a rather distant fauna (Levy, 1977). The recent discovery in Israel of an adult male provides irrefutable proof for the presence locally of a non-introduced Oriental element.

The matching of males and females in spiders is often very difficult, particularly in vagrant spiders like the Thomisidae. New evidence has solved the problematic matching of the sexes in two pairs of *Oxyptila* species in Israel. The resulting synonymies are reported.

Another problematic identification of the matching sexes, namely that of clearly identifying the male of *Singa lucina* (Audouin) (Araneidae), has been resolved. Its close resemblance to two other sympatric *Singa* populations in Europe presented difficulties, even uncertainty, regarding their proper separation. In Israel, where there is an allopatric population of *S. lucina*, the study of adult males should thus prove useful. These, eventually, have been collected and their description, including drawings of the male palpus that have not previously been published, is provided.

The material discussed here is deposited in the collections of the Hebrew University of Jerusalem (HUJ). Types from the Hope Entomological Collections, Oxford (HECO) and the Muséum National d'Histoire Naturelle, Paris (MNHN) were reported previously in earlier papers and the curators are thanked once again. Measurements are in mm. AME and PME are abbreviations of anterior median and posterior median eyes respectively. The length of leg given is the combined length of all segments (each measured separately) from femur to tarsus, the more proximal segments excluded. The proportional indices used are: carapace index (length divided by width), clypeus index (height of clypeus divided by diameter of anterior median eye), and patella + tibia index (combined length of both segments of leg I divided by length of carapace). In the different taxa some particular measurements are provided complying with data listed elsewhere for these taxa.

Family Theridiidae

Theridion hermonense, sp. n. (Figs. 1, 2)

Material examined

Holotype female from Mt Hermon (1950m; coordinates 2247/3017 Israel grid), Israel, 7 July 1987, leg. G. Levy (HUJ 14124). Paratype female, same data (HUJ 14125).

Female

Very small spiders, body length only 1.1-1.3. Generally of light red colour with no pattern on back or venter.

Measurements (holotype): Total length 1.3; carapace length 0.52, width 0.50; carapace index 1.04; clypeus height 0.08; clypeus index 2.0; length of legs: I 2.0, II 1.6, III 1.2, IV 1.8; patella + tibia index 1.37.

Epigynum (holotype): Concave plate with brown, slightly raised fold posteriorly along border of epigastric furrow (Fig. 1); touching, black-ringed small orifices of winding ducts at middle of epigynal plate far from epigastric furrow. Brown spermathecae discernible through transparent integument (Fig. 1); coils of winding ducts lie ventral to spermathecae, not surrounding them (Fig. 2); left and right sides not symmetrical.

Male

Unknown.

Diagnosis

Based on the female. *Theridion hermonense* differs distinctly from all *Theridion* species by the position of the genital orifices on the concave epigynal plate and the elaborate course taken by the spermathecal ducts.

Distribution

Israel, known only from the summit of Mt Hermon.

Comments

Theridion hermonense is the smallest *Theridion* of Israel (Levy & Amitai, 1982a; Levy, 1985). It is much smaller than *T. accoense* Levy or *T. simile* C. L. Koch and may be considered among the smallest in the world. Two adult females were found running on the underside of a stone. They were collected at the bottom of a large doline with spiny cushion shrubs (tragacanthic vegetation) which is covered by deep snow during the winter months. In the summer, however, this area shows extremely arid conditions of absolutely no rain, low humidity and high radiation.

Steatoda trianguloides, sp. n. (Figs. 3-6)*Material examined*

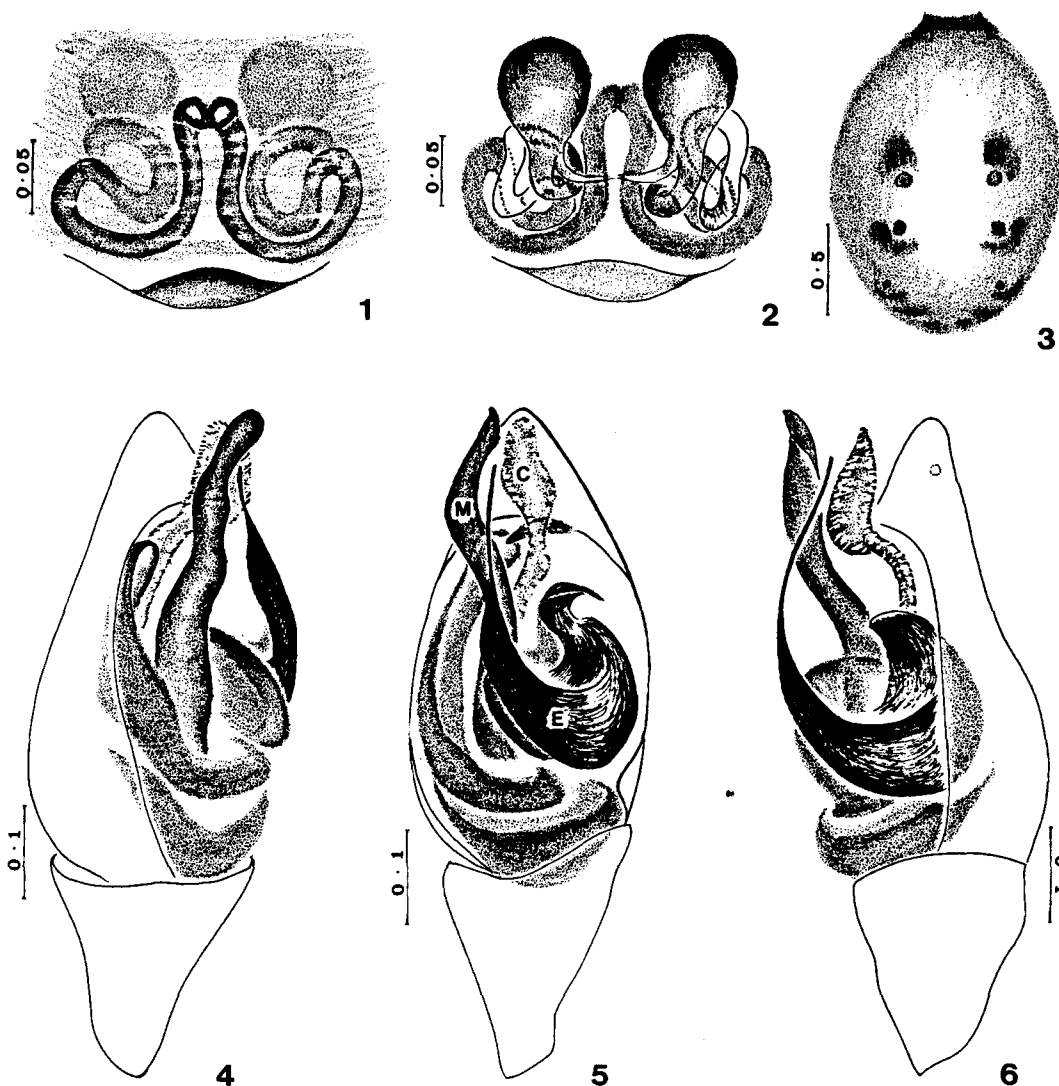
Holotype male from Mt Hermon (1700m; 2215/3018), Israel, 7 July 1987, leg. G. Levy (HUJ 14130).

Male

Carapace and sternum light brown, surface densely covered with small, pointed tubercles. Lateral eyes touching. Chelicerae slender, mesal denticle indistinct. Legs yellowish, tuberculate. Opisthosoma (Fig. 3) light with dark sclerotised ridges anteriorly, a few black spots posteriorly, and a raised brown portion on venter anteriorly.

Measurements: Total length 3.3; carapace length 1.5, width 1.2; carapace index 1.25; clypeus height 0.34; clypeus index 4.86; length of bulb + tibia of palpus 0.70; length of legs: I 6.5, II 5.2, III 4.1, IV 5.5; patella + tibia index 1.47.

Palpus: Slender, bulb appreciably longer than tibia (Figs. 4-6). Slender, cylindrical median apophysis (M) rises almost straight apically (Fig. 4); thick, blackish



Figs. 1-2: *Theridion hermonense*, sp. n., female holotype. 1 Epigynum, ventral view; 2 Vulva, dorsal (inner) view.

Figs. 3-6: *Steatoda trianguloides*, sp. n., male holotype. 3 Opisthosoma, dorsal view; 4 Left palpus, mesal view; 5 Ditto, ventral view; 6 Ditto, retrolateral view. (C = conductor, E = embolus, M = median apophysis.)

projection (hook-like from ventral angle) rises medially from basal division of embolus (E; Figs. 5, 6); strong winding embolus tapers apically to a straight filiform portion; membranous conductor (C) widened apically (Figs. 4-6).

Female

Unknown.

Diagnosis

By its general appearance, especially by somatic characters such as the densely tuberculate prosoma and legs, *S. trianguloides*, as the name implies, resembles *S. triangulosa* (Walckenaer) very closely. The colour pattern of the new species is different, but the very common *S. triangulosa* displays great variation and coloration thus may not serve well for comparison (Levy & Amitai, 1982b). *Steatoda trianguloides* differs distinctly from *S. triangulosa* by the shape of the palpus, mainly by the proportionally smaller tibia, the slender median apophysis, the form of the embolus with its basal process, and the paracymbial hook on the distal rim of the alveolus not projecting on the outer margin of the cymbium.

Distribution

Israel, known only from the type locality on Mt Hermon.

Comment

A single male was found under a stone in rocky terrain with remnants of trees and shrubs that withstand low temperatures and high winds.

Family Philodromidae

Thanatus lesserti (Roewer, 1951) (Figs. 7-10)

Thanatus lineatipes O. P.-Cambridge, 1876: 591; ♀ holotype from Egypt: Cairo (HECO, B. 1308, t. 18; examined). Name preoccupied: Simon, 1870.

Tibellus lineatipes (O. P.-Cambridge): Lessert, 1919: 212; Reimoser, 1919: 125; Bonnet, 1959: 4611. Misplacement.

Tibellus lesserti Roewer, 1951: 488 (replacement of name); Roewer, 1954: 798.

Thanatus lesserti (Roewer): Levy, 1977: 214. **New combination.**

Description of specimens from Israel

Prosoma dark anteriorly and dorsally, with dark median marking slightly tapering posteriorly, and dark lateral bands dorsally. Legs yellow with distinct brown stripes running along segments, mainly on dorsal-prolateral surfaces. Opisthosoma with brownish speckled sides and a distinct dorsal dark median marking bordered by light lines, converging posteriorly; venter with two indistinct lines extending along sides.

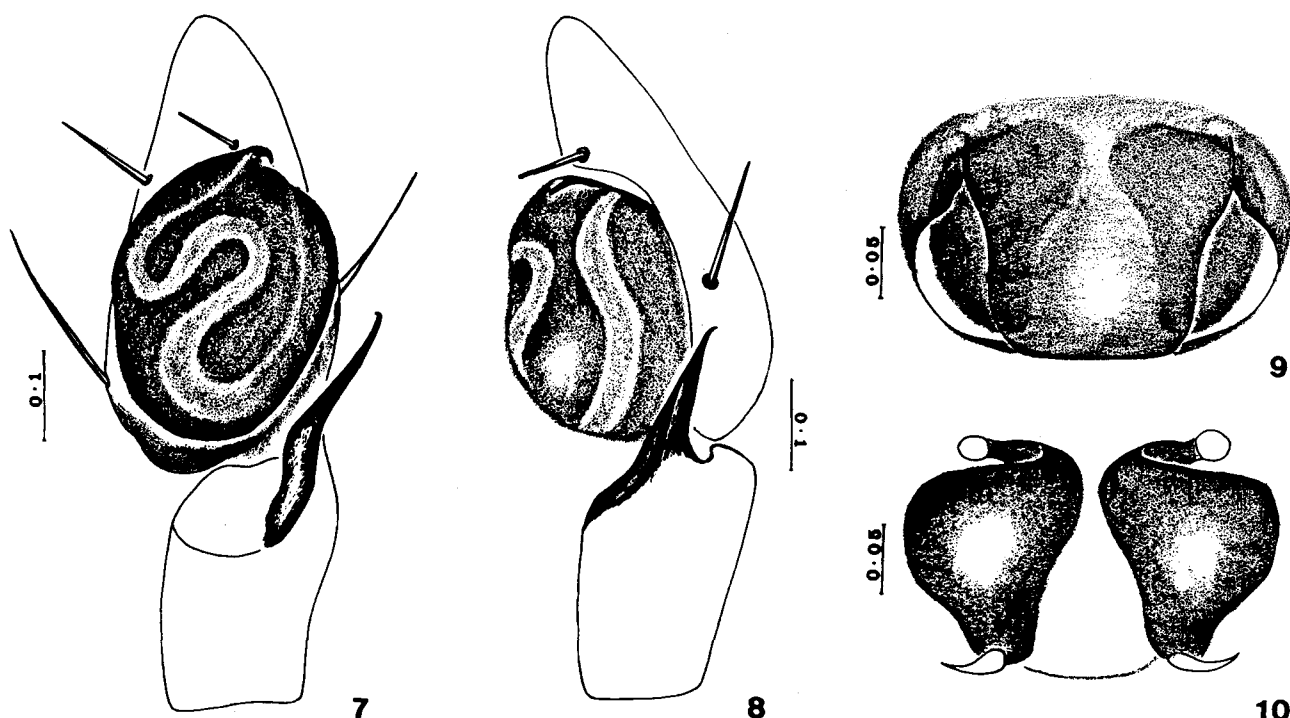
Males

Measurements (2 ♂♂): Total length 3.0-3.1; carapace length 1.4, width 1.3; carapace index 1.07; length of legs: I 6.8-7.1, II 8.1-8.6, III 6.2-6.4, IV 7.8; femur II length 2.3-2.5, width 0.3; femur II length/width 7.7-8.3.

Palpus: Relatively small. Tibia with long tapering, slightly undulating retrolateral apophysis (Figs. 7, 8). Tegulum with looping seminal duct ending apically in black, short embolus (Figs. 7, 8).

Female

Measurements (1 ♀): Total length 3.5; carapace



Figs. 7-10: *Thanatus lesserti* (Roewer, 1951). 7 Male left palpus, ventral view; 8 Ditto, retrolateral view; 9 Epigynum, ventral view; 10 Vulva, dorsal (inner) view.

length 1.4, width 1.3; carapace index 1.07; length of legs: I 5.2, II 6.1, III 4.8, IV 6.0; femur II length 1.8, width 0.35; femur II length/width 5.1.

Epigynum: Wide median septum nearly transparent (Fig. 9); dark spermathecae discernible mainly at large openings on posterolateral sides of septum (Fig. 9). Brown spermathecae large with smooth surface (Fig. 10).

Diagnosis

Thanatus lesserti differs distinctly from other *Thanatus* species by the tapering tibial apophysis and simple embolus on the male palpus and by the peculiar epigynal openings and smooth spermathecae of the female.

Distribution

Africa: Egypt (Cairo; O. P.-Cambridge, 1876).
Asia: southern Israel (Arava Valley); new record.

Comments

Adults in Israel were taken in September in an arid area with savanna-like vegetation with no perennial grasses. The male is described here for the first time. No illustration of the Egyptian female holotype or of any other specimen has been published since the description in 1876. *Thanatus lesserti* undoubtedly belongs to *Thanatus*, displaying all the characters of this genus. Its occurrence in Egypt and in the Arava Valley may indicate that it is an African element (Ethiopian or Palaeo-eremic) dispersing northwards along the Rift Valley.

Thanatus fornicatus Simon, 1897 (Figs. 11, 12)

Thanatus fornicatus Simon, 1897: 293; types ♂, ♀ from Pakistan: Karachi (MNHN, B. 1569, Ar. 11342; examined). Levy, 1977: 224, figs. 59, 60 (♀).

Description of male from Israel

Prosoma dorsally with light, longitudinal, median band. Legs yellow speckled with dark spots. Opisthosoma with dark, median lanceolate mark extending little over half length of dorsum.

Measurements (1 ♂): Total length 3.3; carapace length 1.6, width 1.6; carapace index 1.0; length of legs: I 7.4, II 8.6, III 7.7, IV 8.6; femur II length 2.4, width 0.4; femur II length/width 6.0.

Palpus: Relatively small. Tibia with nearly transparent, lamellate ventral apophysis and blackish, sclerotised, distally pointed retrolateral apophysis (Figs. 11, 12). Tegulum with distinct, looping seminal duct leading apically to black, sclerotised, hook-like short embolus (Fig. 11); tip of embolus rises above a whitish, retrolateral apical groove bordered medially by indistinct, light projection (Fig. 12).

Diagnosis

The male of *Thanatus fornicatus* is easily distinguished from other *Thanatus* species by the peculiar tibial apophyses of the palpus and the hooked,

short embolus. The female, likewise, differs from all other *Thanatus* species by the epigynal plate with its arched, lateral folds (Levy, 1977: fig. 59).

Distribution

Pakistan, southern Israel, Sinai.

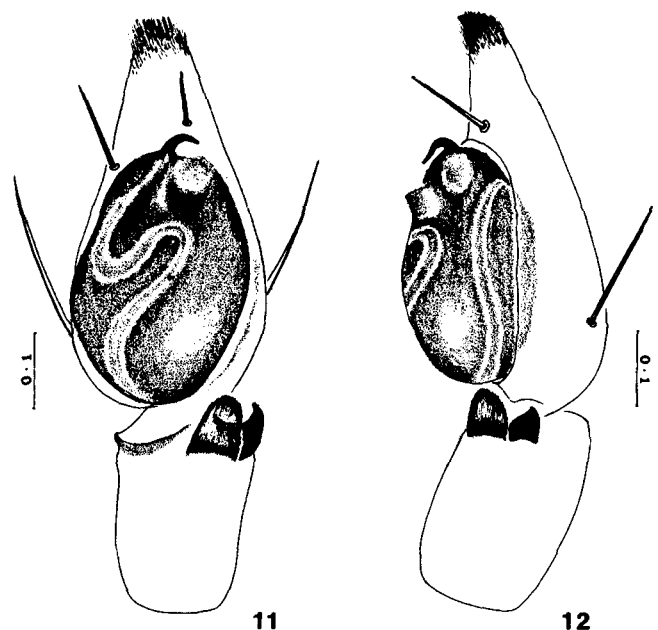
Records. *Israel:* Central Negev: South of Be'er Sheva (sand dunes, co-ordinates 132/058). Arava Valley: Nahal Amaz'yahu (on coarse desert alluvium; 176/028).

Comments

No illustration of the male palpus of *T. fornicatus* has previously been published. The capture of a male in Israel confirms at long last the occurrence of an Oriental (Karachi) species in the Middle East. The cautious identification that I made in 1970 while studying the Simon collection in Paris was based solely on a few sparsely distributed females (Levy, 1977: 226). Israel, being situated at a crossroads between different biogeographic realms, comprises elements from the North Palaearctic, Ethiopian, Central Asiatic, Circum-Mediterranean and Palaeo-eremic (belt of Old World deserts) Regions, but has very few species in common with the Oriental fauna. Unless the present known range of *T. fornicatus* proves to be only a small fraction of its distribution, it may well be considered a unique Oriental element in the Middle East fauna.

Family Thomisidae

Evidence has only recently been gathered for the matching of pairs, formerly predicted, among the following *Oxyptila* males and females (Levy, 1975). Each of the sexes, which have now been found together, were described under a separate name.



Figs. 11-12: *Thanatus fornicatus* Simon, 1897, male left palpus. 11 Ventral view; 12 Retrolateral view.

***Oxyptila rigida* (O. P.-Cambridge, 1872)**

Thomisus rigidus O. P.-Cambridge, 1872: 305; ♀♀ syntypes from the Plains of the Jordan, Israel (HECO, B. 1256, t. 12; examined).

Oxyptila rigida (O. P.-Cambridge): Levy, 1975: 168, figs. 24, 25 (♀).

Oxyptila complicata Levy, 1975: 169, figs. 26, 27; ♂ holotype from Deganya, Israel (HUJ). NEW SYNONYMY.

Distribution

Israel.

Records: Eastern Galilee: Dan, HaGosh'rim. Sea of Galilee area: Capernaum, Deganya. Dead Sea area: Plains of the Jordan, En Fashkha.

***Oxyptila judaea* Levy, 1975**

Oxyptila judaea Levy, 1975: 171, figs. 28, 29; ♀ holotype from Jerusalem, Israel (HUJ).

Oxyptila aradensis Levy, 1975: 172, figs. 30, 31; ♂ holotype from Jerusalem, Israel (HUJ). NEW SYNONYMY.

Distribution

Israel, Sinai.

Records. *Israel*: Judean Hills: Jerusalem. North and Central Negev: Lahav, Arad, Ze'elim, Revivim, Sede Boqer. *Sinai*: South of Elat and in the Sinai mountains.

Family Araneidae***Singa lucina* (Audouin, 1826) (Figs. 13-17)**

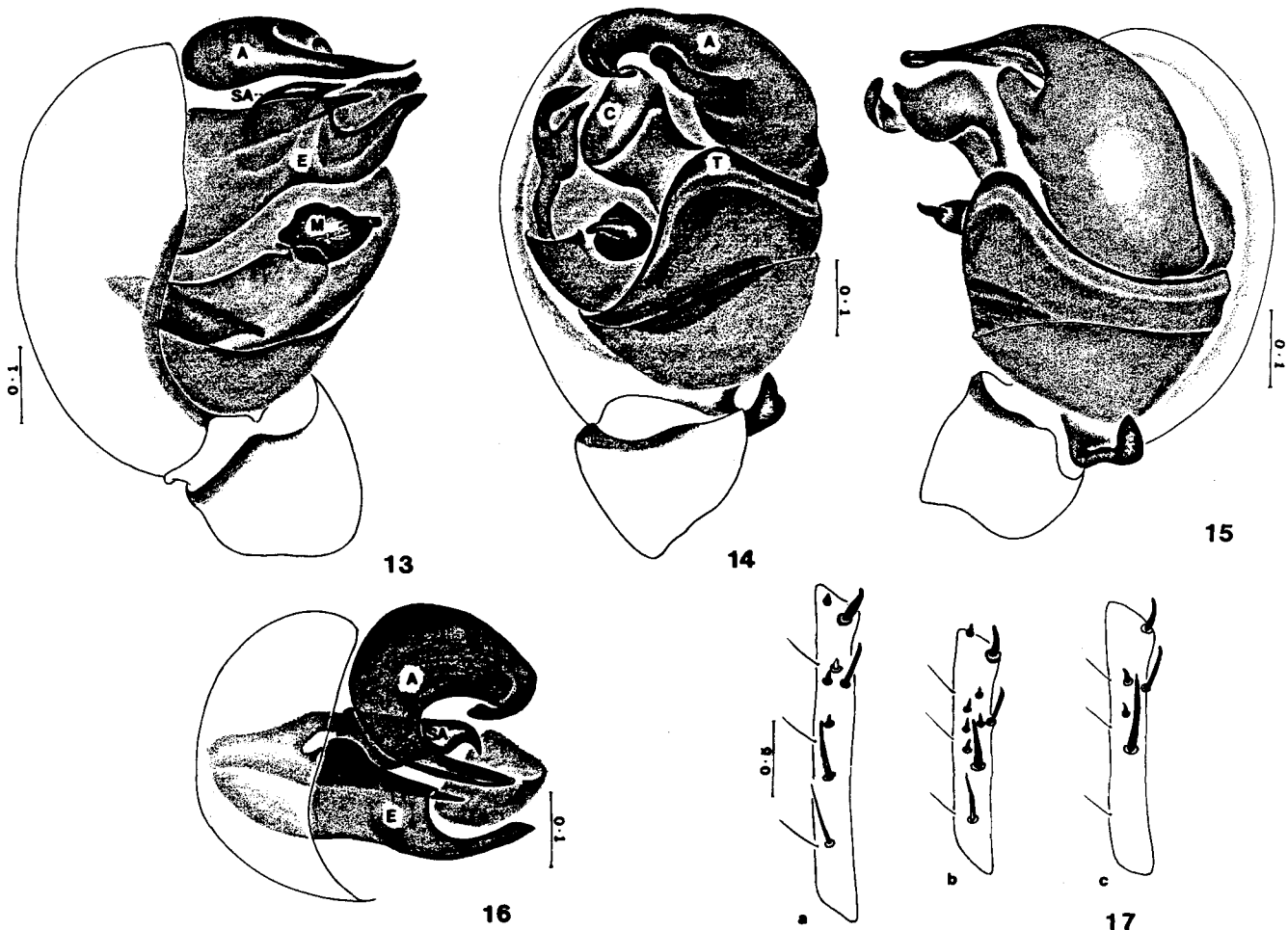
Epeira lucina Audouin, 1826: 345, pl. 3, fig. 4; ♀ type from Egypt, presumably among specimens determined by E. Simon (MNHN); for the date 1826, see Tollitt (1986).

Singa lucina (Audouin): Simon, 1864: 256; Levy, 1984: 122, figs. 1-8, ♀ (see there additional references).

Description of male from Israel

Carapace blackish anteriorly, to light brown laterally and posteriorly. Sternum light at middle, black laterally. Black chelicerae armed with 4 pro- and 3 retromarginal teeth. Legs yellowish with dark patches on distal upper parts of femora. Opisthosoma dorsally with a light median band bordered by two reddish brown longitudinal bands each containing, along middle, some light markings; venter dark with two light spots along sides.

Measurements (2 ♂♂): Total length 4.1-4.7; carapace length 2.1-2.4, width 1.5-1.7; carapace index 1.4; AME-AME 6.0-7.0 times PME-PME; PM diameter 4.5-5.0 times PME-PME; clypeus height 0.10-0.13; clypeus index 1.0-1.2; length of legs: I 8.4-9.9, II 7.0-8.0, III 3.3-3.9, IV 4.8-5.3; patella + tibia index 1.5; tibia I length/width 10.0-11.0; tibia II length/width



Figs. 13-16: *Singa lucina* (Audouin, 1826), male left palpus. **13** Mesal view; **14** Ventral view; **15** Retrolateral view; **16** Apical view. (A = terminal apophysis, C = conductor, E = embolic division, M = median apophysis, SA = subterminal apophysis, T = tegulum.)

Fig. 17: *Singa* spp. males, spination of left tibia II, prolateral view. **a**) *Singa lucina* (Audouin, 1826) from Israel; the additional, light spine indicates a variation; **b**) *Singa hamata* (Clerck, 1757) from Germany; **c**) *Singa semiatra* L. Koch, 1867 from Italy.

7.2-8.0.

Palpus: Large, transparent embolic division (E) extends across mesal side of bulb and ends with a deep notch (Fig. 13). Large fleshy conductor (C) rises at centre below apical smooth rim of tegulum (T). Black, sclerotised, median apophysis (M) bears a strong pointed process (Fig. 14). Large terminal apophysis (A) extends over retrolateral and apical portions of bulb partly covering inner black, sclerotised subterminal apophysis (SA; Figs. 15, 16).

Diagnosis

The male palpus of *Singa lucina* resembles very closely that of *S. hamata* (Clerck) and *S. nitidula* C. L. Koch. Subtle differences from both are found mainly in the form of the embolic division and the shape of the process or processes of the median apophysis. The females are most readily separated from each other by the form of the epigynal plate (Levy, 1984: figs. 7-12).

Distribution

France, Yugoslavia, Greece, Hungary, southern USSR, Syria, Lebanon, Israel, Egypt.

Comments

Drawings of the male palpus of *S. lucina* have never before been published. Of the three sympatric *Singa* populations found in several north Mediterranean countries: *hamata*, *nitidula* and *lucina*, only the latter occurs in the Middle East. This enabled a certain identification of the male of *S. lucina* isolated from the other closely similar species.

Simon (1929: 699) used somatic characters: coloration and leg spination, for separating the males of these species. While in preserved specimens the colour pattern is often washed out, the different arrangements of the spines and strong bristles in some *Singa* species seem a potentially useful character (Fig. 17). Such a character, however, has not infrequently proved variable and should be used cautiously and be based on a larger sample than was available here.

Adult females of *S. lucina* in Israel are found from April to September. Adult males were only recently collected in April by Dr Yael Lubin along with a female and an egg sac. They were found in dense vegetation on the banks of fish ponds. The spiders rest at night and occasionally in daylight at the hub of the nearly vertical orb-web (Y. Lubin, pers. comm.). The brownish,

flattened egg sac is concealed in a rolled leaf in the vegetation nearby. The large sac, 7 × 4 mm on the surface and 2 mm thick, contains 3-4 layers of several dozen white eggs, each about 0.8 mm in diameter. The sac is lined inside with fine white threads while the cover casing is made of rough, not densely woven, dark threads. Dark coloured egg sacs, a noteworthy phenomenon, have been reported in *S. hamata* (Wiehle, 1931: 43; Nielsen, 1932: 15).

References

- AUDOUIN, V. 1826: Explication sommaire des planches d'arachnides de l'Egypte et de la Syrie. In J. C. Savigny, *Description de l'Egypte* **22**: 291-430. Paris.
- BONNET, P. 1959: *Bibliographia Araneorum* **2** (5): 4231-5058. Toulouse, Douladoure.
- CAMBRIDGE, O. P.- 1872: General list of the spiders of Palestine and Syria. *Proc.zool.Soc.Lond.* **1872**: 212-354.
- CAMBRIDGE, O. P.- 1876: Catalogue of a collection of spiders made in Egypt. *Proc.zool.Soc.Lond.* **1876**: 541-630.
- LESSERT, R. DE 1919: Araignées du Kilimandjaro et du Mérou, III, Thomisidae. *Revue suisse Zool.* **27** (5): 99-234.
- LEVY, G. 1975: The spider genera *Synaema* and *Oxyptila* in Israel (Araneae: Thomisidae). *Israel J. Zool.* **24**: 155-175.
- LEVY, G. 1977: The philodromid spiders of Israel (Araneae: Philodromidae). *Israel J. Zool.* **26**: 193-229.
- LEVY, G. 1984: The spider genera *Singa* and *Hypsosinga* (Araneae, Araneidae) in Israel. *Zoologica Scr.* **13** (2): 121-133.
- LEVY, G. 1985: Spiders of the genera *Episinus*, *Argyrodes* and *Coscinida* from Israel, with additional notes on *Theridion* (Araneae: Theridiidae). *J.Zool., Lond.* **207**: 87-123.
- LEVY, G. & AMITAI, P. 1982a: The comb-footed spider genera *Theridion*, *Achaearanea* and *Anelosimus* of Israel (Araneae: Theridiidae). *J.Zool., Lond.* **196**: 81-131.
- LEVY, G. & AMITAI, P. 1982b: The cobweb spider genus *Steatoda* (Araneae, Theridiidae) of Israel and Sinai. *Zoologica Scr.* **11**: 13-30.
- NIELSEN, E. 1932: *The biology of spiders* **1**: 1-248. Copenhagen.
- REIMOSER, E. 1919: Katalog der echten Spinnen (Araneae) des Paläarktischen Gebietes. *Abh.zool.-bot.Ges.Wien* **10**: 1-280.
- ROEWER, C. F. 1951: Neue Namen einiger Araneen-Arten. *Abh.naturw.Ver.Bremen* **32** (2): 437-456.
- ROEWER, C. F. 1954: *Katalog der Araneae* **2** (1): 1-923. Bruxelles.
- SIMON, E. 1864: *Histoire naturelle des araignées (Aranéides)*. 1-540. Paris.
- SIMON, E. 1870: Aranéides nouveaux ou peu connus du midi de l'Europe. *Mém.Soc.r.Sci.Liège* (2) **3**: 271-358.
- SIMON, E. 1897: Arachnides recueillis par M. M. Maindron à Kurrachee et à Matheran (près Bombay) en 1896. *Bull.Mus.Hist.nat.Paris* **3** (7): 289-297.
- SIMON, E. 1929: *Les arachnides de France* **6** (3): 533-772. Paris.
- TOLLITT, M. E. 1986: Dates and authorship of the text volumes of the Histoire naturelle section of Savigny's Description de l'Egypte. *Bull.zool.Nom.* **43** (1): 107-111.
- WIEHLE, H. 1931: Spinnentiere oder Arachnoidea, VI. 27. Familie: Araneidae. *Tierwelt Dtl.* **23**: 1-136.