Boletín Sociedad Entomológica Aragonesa, nº **45** (2009) : 53−58.

ABOUT SOME *COMPSOBUTHUS* VACHON, 1949 FROM AFRICA AND THE MIDDLE EAST WITH THE DESCRIPTION OF A NEW SPECIES (SCORPIONES, BUTHIDAE)

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Abstract: Two species of *Compsobuthus*, *C. klaptoczi* (Birula, 1909) and *Compsobuthus werneri* (Birula, 1908) are confirmed for eastern Africa, and their taxonomic status is redefined. *C. werneri* is associated exclusively with populations inhabiting Sudan (Nubia), Egypt and parts of the Sinai. Other records of this species from western Africa and the Middle East are attributed to misidentifications. *Compsobuthus schmiedeknechti* Vachon, 1949 is considered as a distinct species, distributed in Lebanon, Israel and parts of the Sinai. A lectotype and paralectotypes are designated for this species. A new species is also described from the north-western region of Egypt, near the border with Libya.
Key words: Scorpiones, Buthidae, *Compsobuthus*, new species, East Africa, Egypt.

Sobre algunos *Compsobuthus* Vachon, 1949 de África y Oriente Medio y descripción de una especie nueva (Scorpiones, Buthidae)
Resumen: Se confirma la presencia en el África oriental de dos especies de *Compsobuthus*, *C. klaptoczi* (Birula, 1909) y *Compsobuthus werneri* (Birula, 1908), y se redefine su estatus taxonómico. Se asocia *C. werneri* exclusivamente con las poblaciones de Sudán (Nubia), Egipto y áreas del Sinaí. Otras citas de esta especie, tanto las de África occidental como las de Oriente Medio, se atribuyen a identificaciones erróneas. *Compsobuthus schmiedeknechti* Vachon, 1949 se considera como especie diferente, distribuída por Líbano, Israel y parte del Sinaí. Se designan un lectotipo y paralectotipos para esta especie. Por otra parte, se describe una especie nueva sobre material del noroeste de Egipto, cerca de la frontera con Libia.
Palabras clave: Scorpiones, Buthidae, *Compsobuthus*, especie nueva, África oriental, Egipto.

Taxonomy/ Taxonomía: *Compsobuthus egyptiensis* **sp. n.**

Introduction

In a recent note on some species of *Compsobuthus* (Lourenço, 2009a), a series of studies on the African species of this genus have been started, with the aim of bring a better clarification to this complex group of scorpions. Since the historical aspects about the creation and composition of this genus have already been discussed in previous papers (Lourenço, 1999, 2001, 2004; Lourenço & Monod, 1998; Lourenço & Vachon, 2001), we will not return to this point here.

In recent years, some rather completed contributions, attempts to clarify the precise identity of some *Compsobuthus* species and also their precise range of distribution. Some of these studies proved to be successful (e. g. Sissom & Fet, 1998) thanks largely to the precise study of old types. In other cases, however, although the efforts have been honest (Sissom, 1994; Kovařik, 2003; Hendrixson, 2006), the studies did not achieve to precisely clarify the identity of several old species. One of the 'key species' in the genus is *Compsobuthus werneri* (Birula, 1908), originally described from Nubia (now Sudan) and subsequently recorded from quite many regions both in Africa and Middle East. Records from Western Africa are clearly due to misidentifications, and the population from Mali, was recently described as a new species (Lourenço, 2009b). The elements distributed in Niger and South of Algeria, will be the subject of another coming paper (Lourenço in preparation).

In the present note, we clarify the status of two species confirmed for Eastern Africa: *Compsobuthus klaptoczi* (Birula, 1909) and *C. werneri*, and their taxonomic status is redefined. The distribution of *C. werneri* is limited to Sudan (Nubia), Egypt and parts of Sinai. The records of this species in Western Africa, and Middle East, are attributed to misidentifications. *Compsobuthus schmiedeknechti* Vachon, 1949, is defined as a distinct species, with a distribution range in Lebanon, Israel and parts of Sinai. A lectotype and paralectotypes are designated for this species. Finally a new species is described from Northwest of Egypt, in a region close to the border with Libya.

Methods

Specimens were examined and measured under a Wild M5 stereomicroscope with an ocular micrometer. Illustrations were produced using a Leica M165c stereomicroscope with a drawing tube (camara lucida). Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology mostly follows Vachon (1952) and Hjelle (1990).

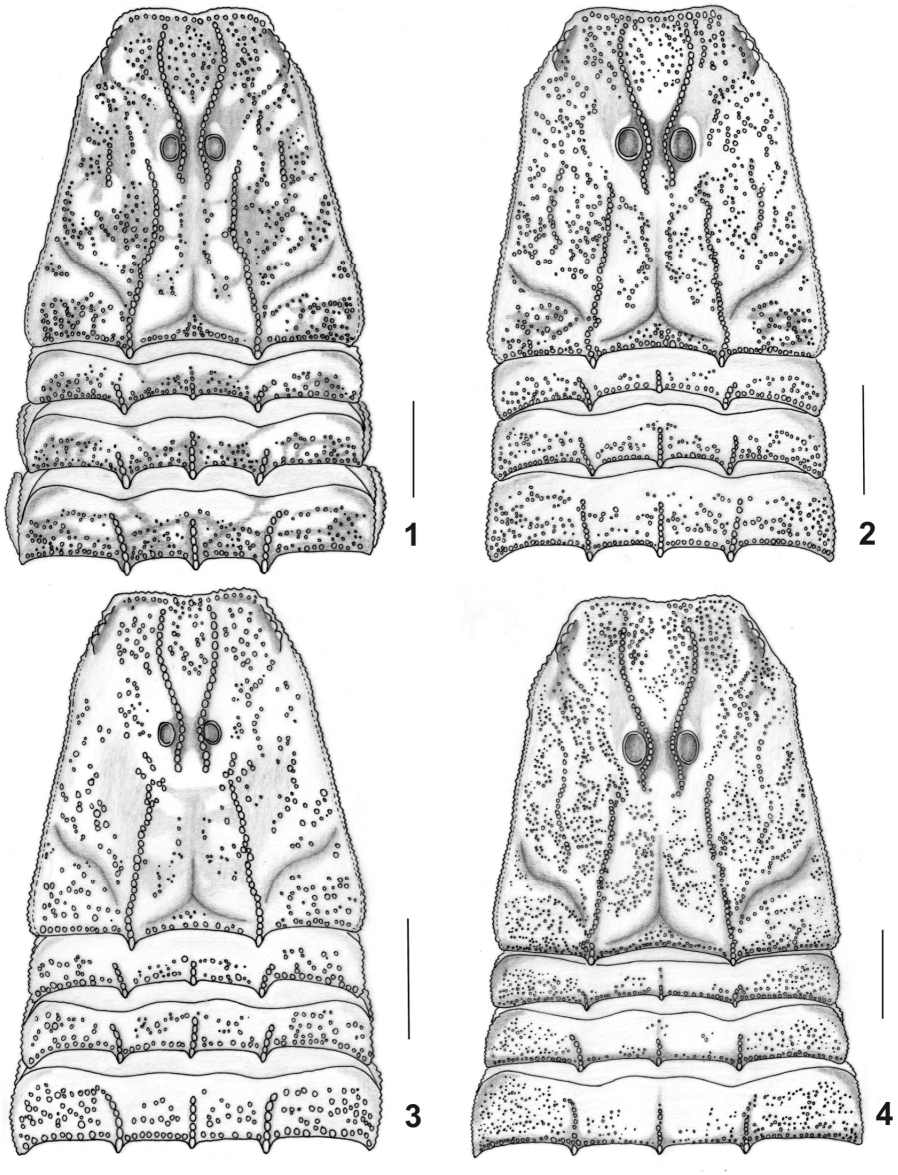

Fig. 1-4. Male carapaces and tergites I-III.
1. *Compsobuthus klaptoczi*.
2. *Compsobuthus werneri*.
3. *Compsobuthus schmiedeknechti* (lectotype).
4. *Compsobuthus egyptiensis* sp. n. (holotype)
(Scale bars = 1.0mm).

Taxonomic treatment

Family BUTHIDAE C. L. Koch, 1837

Genus *Compsobuthus* Vachon, 1949

Compsobuthus klaptoczi (Birula, 1909)
Fig. 1, 5.
Buthus klaptoczi Birula, 1909

TYPE LOCALITY: Barka, 5 km E from Benghazi, Cyrenaica, Libya.

TYPE MATERIAL not examined. MATERIAL EXAMINED. Libya, Cyrenaica, W El Bayada, 1000 m, 10/IV/1958 (collector unknown), 4 males, 4 females, MNHN-RS-2556. 10 km E of Barka, road to Toubrouk, 6/IV/1966 (Bianchi), 1 female, MHBU. 12 km NE of Benghazi, under stones, 29/I/1960 (Bianchi), 1 female MHBU.

DIAGNOSIS:
Coloration. Generally yellowish with variegated brownish spots over the carapace, tergites, pedipalps and legs; in juveniles spots are also present on metasomal segments; eyes surrounded by black pigment. Vesicle yellowish; aculeus yellowish at the base and reddish at the tip. Chelicerae yellowish, with dark reddish teeth. Rows of granules on the dentate margins of pedipalp fingers reddish.

Morphology. Prosoma: Anterior margin of carapace weakly emarginate. Carapace carinae moderately to strongly developed. Mesosoma: Tergites with carinae strongly marked; granulations on carapace and tergites moderately to strongly marked. Sternites weakly granular to smooth. Pectines moderately long; pectinal tooth count 14-15 in females, 17-18 in males. Metasoma: Segments I-V with 10-10-10-8-5 carinae. Telson smooth with a very short aculeus (diagnostic); subaculear tubercle absent. Trichobothrial pattern orthobothriotaxic, type A-β (beta). Femur, patella and chela with moderately to strongly marked carinae. Chela with weakly elongated fingers. Dentate margins on fixed and movable fingers composed of 8-9 almost linear rows of granules; inner and outer accessory granules small.

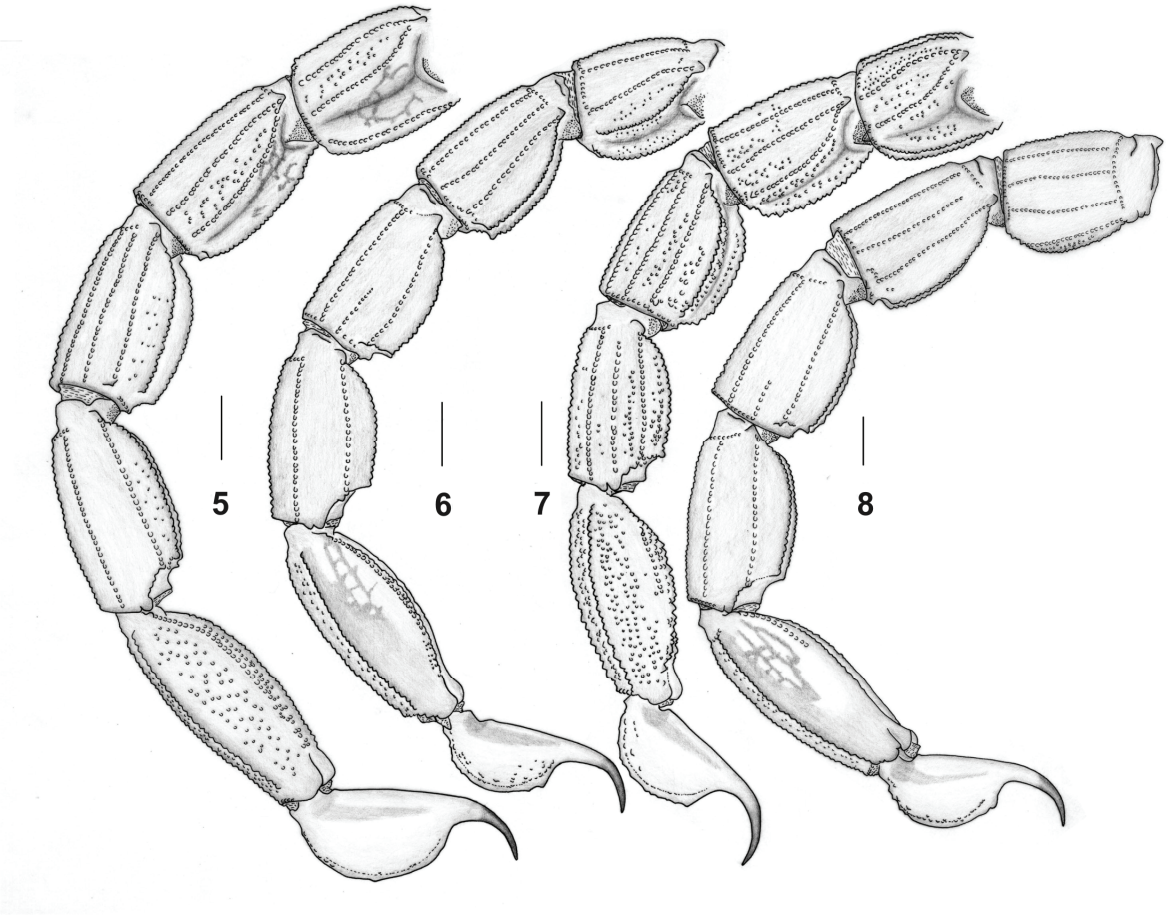

Fig. 5-8. Male metasomal segments I-V and telson, lateral aspect. **5.** *Compsobuthus klaptoczi*. **6.** *Compsobuthus werneri*. **7.** *Compsobuthus schmiedeknechti* (lectotype). **8.** *Compsobuthus egyptiensis* sp. n. (holotype) (Scale bars = 1.0mm).

Compsobuthus werneri (Birula, 1908)
Fig. 2, 6.
Buthus acutecarinatus werneri Birula, 1908

TYPE LOCALITY: Wadi Halfa, N Nubia, Sudan and Assiut, Sudan.

TYPE MATERIAL not examined. TOPOTYPES EXAMINED. Sudan (Nubia), Wadi Halfa, no date (collecteur unknown). Det. M. Vachon (1949), 2 males, 2 females, MNHN-RS-1853. Abou Hamad, X/1960 (J.L. Cloudsley-Thompson), 1 male, 1 female, MHBU.

NOTE: For the complex nomenclatural aspects related to *Buthus acutecarinatus werneri* Birula, 1908, *Buthus acutecarinatus judaicus* Birula, 1905 and *Compsobuthus schmiedeknechti* Vachon, 1949 refer to Fet & Lowe (2000).

DIAGNOSIS:
Coloration. Generally yellowish to pale yellow with only metasomal segment V slightly dark reddish-brown; eyes surrounded by black pigment. Vesicle yellowish; aculeus yellowish at the base and reddish at the tip. Chelicerae yellowish, with reddish teeth. Pedipalps yellowish overall; rows of granules on the dentate margins of the fingers reddish. Legs yellowish.
Morphology. Prosoma: Anterior margin of carapace weakly emarginate. Carapace carinae moderately developed. Mesosoma: Tergites with carinae moderately to strongly marked. Sternites weakly granular to smooth. Pectines moderately long; pectinal tooth count 15-17 in females, 18-21 in males. Metasoma: Segments I-V with 10-10-8-8-5 carinae. Telson smooth; aculeus moderately elongated; subaculear tubercle inconspicuous. Trichobothrial pattern orthobothriotaxic, type A-β (beta). Femur and patella with moderately marked carinae. Chela with weakly elongated fingers. Dentate margins on fixed and movable fingers composed of 8-9 almost linear rows of granules; inner and outer accessory granules moderate to small.

Compsobuthus schmiedeknechti Vachon, 1949
Fig. 3, 7.
Compsobuthus schmiedeknechti Vachon, 1949

TYPE LOCALITY: Nazareth, Israel.

TYPE MATERIAL composed of a large series of syntypes. 4 males, MNHN-RS-6997, and 16 females MNHN-RS-1834. One male (previous selected by M. Vachon) is herewith designated lectotype, and the other males and females paralectotypes.

OTHER MATERIAL: South of Israel, X/2005 (E. Ythier leg.), 1 female, MHBU.

DIAGNOSIS:
Coloration. Generally yellowish to reddish-yellow or reddish-brown with spots over carapace and tergites carinae

and metasomal segment V; eyes surrounded by black pigment. Vesicle yellowish; aculeus yellowish at the base and reddish at the tip. Chelicerae yellowish, with dark reddish teeth. Pedipalps yellowish to reddish-yellow; rows of granules on the dentate margins of the fingers reddish. Legs yellowish.

Morphology. Prosoma: Anterior margin of carapace weakly emarginate. Carapace carinae moderately to strongly developed; granulations intensely marked. Mesosoma: Tergites with carinae strongly marked; granulations as for the carapace. Sternites weakly granular to smooth. Pectines moderately long; pectinal tooth count 12-15 in females, 16-18 in males. Metasoma: Segments I-V with 10-10-10-10-5 carinae (diagnostic). Telson smooth; aculeus moderately short; subaculear tubercle inconspicuous. Trichobothrial pattern orthobothriotaxic, type A-β (beta). Chela, femur and patella with moderately marked carinae. Chela with weakly elongated fingers. Dentate margins on movable and fixed fingers composed of 8-9 almost linear rows of granules; inner and outer accessory granules moderate to small.

***Compsobuthus egyptiensis* sp. n.**

Fig. 4, 8-17.

TYPE MATERIAL: Egypt, NW of Siwa, 11/VII/1983 (P.M. Brignoli leg.), 1 male holotype, MNHN-RS; 1 male paratype MHBU.

DIAGNOSIS: General coloration yellowish to pale yellow with a blackish-brown transversal spot over the posterior edge of carapace and tergites I-VI (diagnostic); eyes surrounded by black pigment. Carinae on carapace and tergites moderately developed; granulations weakly marked. Sternites weakly granular to smooth. Pectines long; pectinal tooth count 19-20 (19-19) in males. Metasomal segments I-V with 10-10-8-8-5 carinae. Telson weakly granular to smooth; aculeus shorter than vesicle; subaculear tubercle weak, rhomboid. Trichobothrial pattern orthobothriotaxic, type A-β (beta). Femur and patella with moderately to strongly marked carinae. Chela with moderately elongated fingers. Dentate margins on movable and fixed fingers composed of 10/11 almost linear rows of granules; inner and outer accessory granules moderately to strongly marked.

RELATIONSHIPS: The new species shows affinities with *C. werneri*, however can be distinct from this last species by the following characters: (i) a different pigmentation pattern; the blackish-brown transversal spots on the posterior edge of carapace and tergites I-VI are diagnostic, (ii) a less marked granulation on carapace and tergites, (iii) carinae of carapace and tergites are less marked, (iv) the aculeus is shorter than vesicle, (v) metasomal segment III has only 8 carinae.

DESCRIPTION based on male holotype and male paratype (**measurements** in Table I).

Coloration. Generally yellowish to pale yellow with a blackish-brown transversal spot over the posterior edge of carapace and tergites I-VI; eyes surrounded by black pigment. Vesicle yellowish; aculeus yellowish at the base and reddish at the tip. Chelicerae yellowish, with dark reddish teeth. Pedipalps yellowish overall; rows of granules on the dentate margins of the fingers reddish. Legs and venter pale yellow.

Table I. Morphometric values (in mm) of *Compsobuthus werneri*, male topotype and *Compsobuthus egyptiensis* sp. n., male holotype.

	C. werneri	*C. egyptiensis* sp. n.
Total length	24.0	31.0
Carapace:		
- length	3.1	4.0
- anterior width	1.9	2.4
- posterior width	3.1	3.9
Metasomal segment I:		
- length	2.0	2.8
- width	1.8	2.4
Metasomal segment V:		
- length	3.5	4.4
- width	1.5	2.0
- depth	1.5	1.9
Vesicle:		
- width	1.1	1.5
- depth	1.2	1.4
Pedipalp:		
- Femur length	2.6	3.7
- Femur width	0.8	1.1
- Patella length	3.4	4.2
- Patella width	1.3	1.7
- Chela length	5.6	6.9
- Chela width	1.1	1.7
- Chela depth	1.2	1.7
Movable finger:		
- length	3.9	4.7

Morphology. Prosoma: Anterior margin of carapace weakly emarginate. Carapace carinae moderately developed; anterior median, central median, posterior median and central lateral moderately marked; posterior median carinae terminating distally in a small spinoid process that extends beyond the posterior margin of the carapace. Intercarinal spaces weakly granular; almost smooth centrally. Median ocular tubercle anterior to the centre of the carapace; median eyes separated by more than one ocular diameter. Three pairs of lateral eyes. Mesosoma: Tergites I-VI tricarinate. Lateral carinae on I-VI strongly marked; each carina terminating distally with a spinoid process that extends strongly beyond the posterior margin of tergite. Median carinae on I weak; on II-VI moderate to strong, crenulate; terminating distally on each segment with a spinoid process that extends slightly beyond the posterior margin of the tergite. Tergite VII pentacarinate, with lateral pairs of carinae moderate to strong; median carinae present on proximal one-half, moderate. Intercarinal spaces weakly granular. Sternites: Lateral carinae absent from sternites III-V; weak to vestigial on VI; moderate, finely crenulate on VII. Submedian carinae absent from all sternites. Pectines long; pectinal tooth count 19-20 (19-19) in male holotype and male paratype. Metasoma: Segments I-II with ten carinae, crenulate; III-IV with eight carinae. Segment V with five carinae; ventromedian carinae moderate to weak. Dorsal furrows of all segments weakly developed, smooth; intercarinal spaces weakly granular. Telson weakly granular to smooth. Subaculear tubercle weak, rhomboid. Chelicerae: With two denticles at the base of the movable finger, partially fused (Vachon, 1963). Pedipalps: Trichobothrial pattern orthobothriotaxic, type A (Vachon, 1974); dorsal trichobothria of femur in β (beta) configuration (Vachon, 1975). Femur pentacarinate; all carinae moderately crenulate. Patella with eight carinae; all carinae moderately mar-

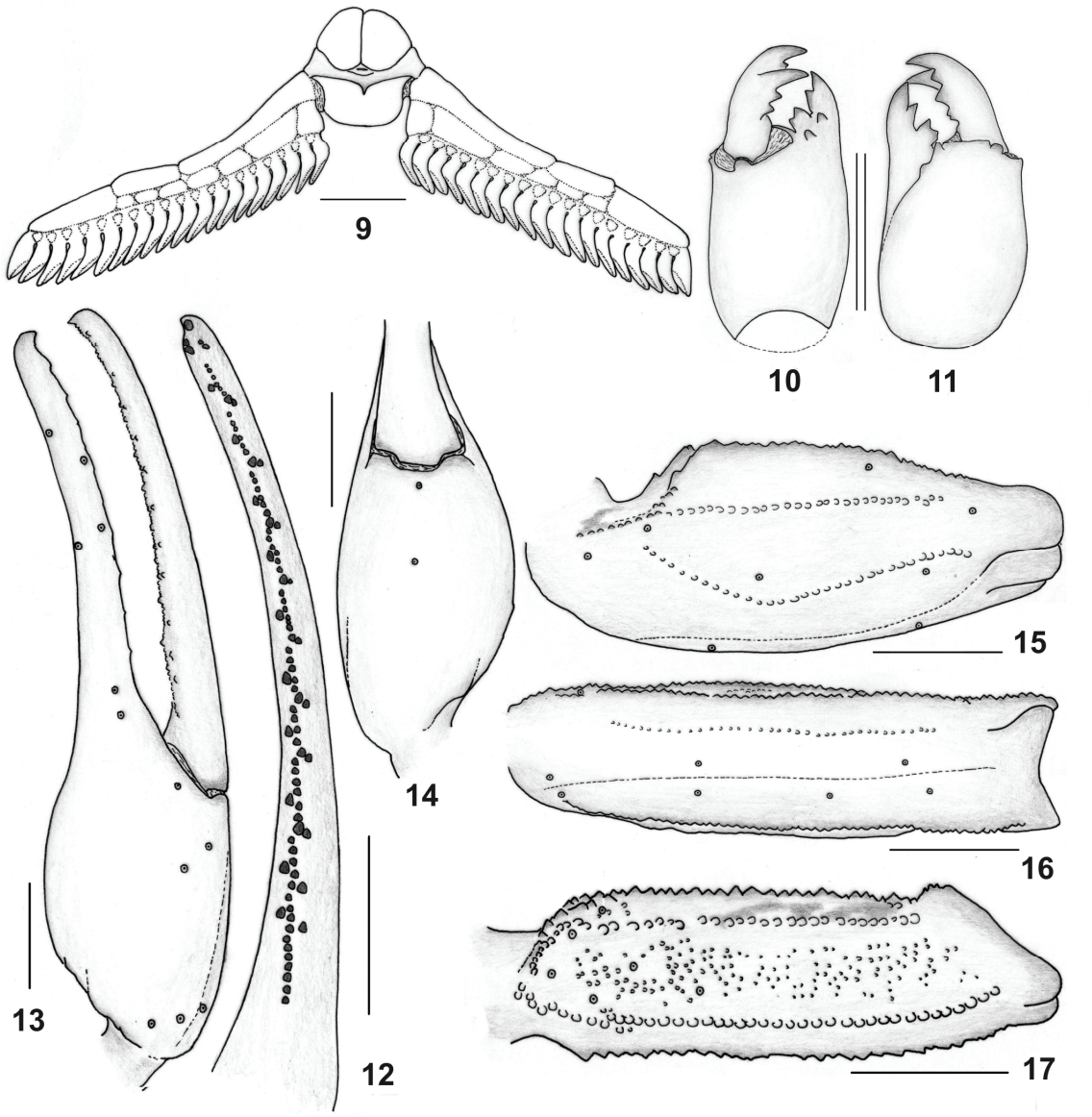

Fig. 9-16. *Compsobuthus egyptiensis* sp. n., male holotype. **9.** Pectines. **10-11.** Chelicerae, ventral and dorsal aspects. **12.** Disposition of the granulations over the dentate margins of pedipalp-chela movable finger. **13-17.** Trichobothrial pattern. **13-14.** Chela, dorso-external and ventral aspects. **15-16.** Patella, dorsal and external aspects. **17.** Femur, dorsal aspects (Scale bars = 1.0mm).

ked; dorsointernal carinae with one spinoid granule. Chela moderately slender, with weakly elongated fingers; all carinae moderately marked. Dentate margins on movable and fixed fingers composed of 10/11 almost linear rows of granules; inner and outer accessory granules moderately to strongly marked. Legs: Ventral aspect of tarsi with two rows of setae. Tibial spurs present on legs III and IV, moderate. Pedal spurs present, moderate on all legs.

Acknowledgements

We are most grateful to Victor Fet, Marshal University, US, for his comments to the manuscript. This study was supported by grants from the National Natural Science Foundation of China (30670254).

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