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A Scorpion *Compsobuthus schmiedeknechti* (Scorpions: Buthidae) New to The Turkish Fauna

[1]Ismail Varol, [2]Ersen Aydın Yagmur, [1]Mehmet Ozaslan and [1]Mehmet Yalcin
[1]Department of Biology, University of Gaziantep, Turkey
[2]Teacher at the Primary School of Sarisalkim Village, Gaziantep, Turkey

Abstract: This is the first study of the buthid scorpion *Compsobuthus schmiedeknechti* Vachon, 1947 from Turkey. Female scorpion specimens were collected from the eastern Mediterranean region of Turkey (Yayladag-Hatay). Morphological structures, taxonomic features and illustrations were used to determine that the specimens were *Compsobuthus schmiedeknechti.* This species is a new record for Turkish scorpion fauna.

Key words: *Compsobuthus schmiedeknechti*, buthidae, scorpions, Turkey

INTRODUCTION

The scorpion fauna of Turkey has been studied for over a century. Different authors (Levy and Amitai, 1980; Vachon and Kinzelbach, 1987; Kabakibi *et al*., 1999; Kovarik, 1996, 2003; Sissom and Fet, 1998; Crucitti and Vignoli, 2002; Vignoli, 2005) have reported the genus *Compsobuthus* (Vachon, 1949) as widespread in the Paleo-Arctic Region (Afghanistan, Algeria, Burkina Faso, Djibouti, Egypt, Eritrea, Ethiopia, India, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Mauritania, Morocco, Niger, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Turkey, United Arab Emirates and Yemen). According to the literature, 30 scorpion species are reported from the genus *Compsobuthus* in this region (Fet and Lowe, 2000; Kovarik, 2003; Vignoli, 2005).

The first study of the Buthid scorpion *Compsobuthus* in Turkey was by Kovarik (1996) from Diyarbakir Province. Kovarik pointed out that *C. matthiesseni* is widely distributed around the Tigris and Euphrates rivers.

Compsobuthus schmiedeknechti is a species belonging to the buthid scorpion group and is distributed in Israel, Jordan, Lebanon (Fet and Lowe, 2000; Fet *et al*., 2000b; Kovarik, 2003) and southern Syria (Kabakibi *et al*., 1999).

The present situation of buthid scorpions in the systematics is as follows:

- Buthidae C.L. Koch, 1837
- *Compsobuthus schmiedeknechti* Vachon, 1949
- *Buthus acutecarinatus judaicus* Birula, 1905: 139-140
- *Compsobuthus schmiedeknechti* Vachon, 1949: 98.
- *Compsobuthus werneri judaicus* Levy and Amitai, 1980.
- *Compsobuthus werneri schmiedeknechti* Fet, 1997; Kovarik, 1998.
- *Compsobuthus schmiedeknechti* Kovarik, 2003
- Holotype: (sex unknown) (MNHN), Nazareth, Israel.

MATERIALS AND METHODS

The specimens were collected in Hatay province, Yayladağ district, Güveççi Village (36° 52` N, 36° 12` E) where the altitude is 350 m (Fig. 1). Hatay province is close to the region of C. *matthiesseni* distribution. Two female *C. schmiedeknechti* adults were collected during daylight on 11.09.2005 from holes under stones. They were preserved in 75% ethanol and brought to the laboratory.

It should be noted that no other scorpion species were collected, although there are several reports of the presence of *Mesobuthus nigrocinctus* Ehrenberg, 1828 and *Scorpio maurus* Linnaeus, 1758. Fet *et al*. (2000a) reported that *C. schmiedeknechti* exists in the same habitat as *M. nigrocinctus* and *S. maurus fuscus.*

Morphological analysis, drawings and measurements were done with a stereomicroscope (Olympus SZX-12) with camera attached, according to the method of Stahnke (1970). Analyses through the camera mounted computer were done with the MOTIC 2.0 PLUS program. Morphological determinations were made according to Hjelle (1990) and Sissom (1990).

In this study, two female adults of *C. schmiedeknechti* were examined. Measurements are given below and the data presented as the length and/or

Corresponding Author: Mehmet Ozaslan, Department of Biology, University of Gaziantep, Turkey
Tel: +90342 3601200 Fax: 90342 3601032

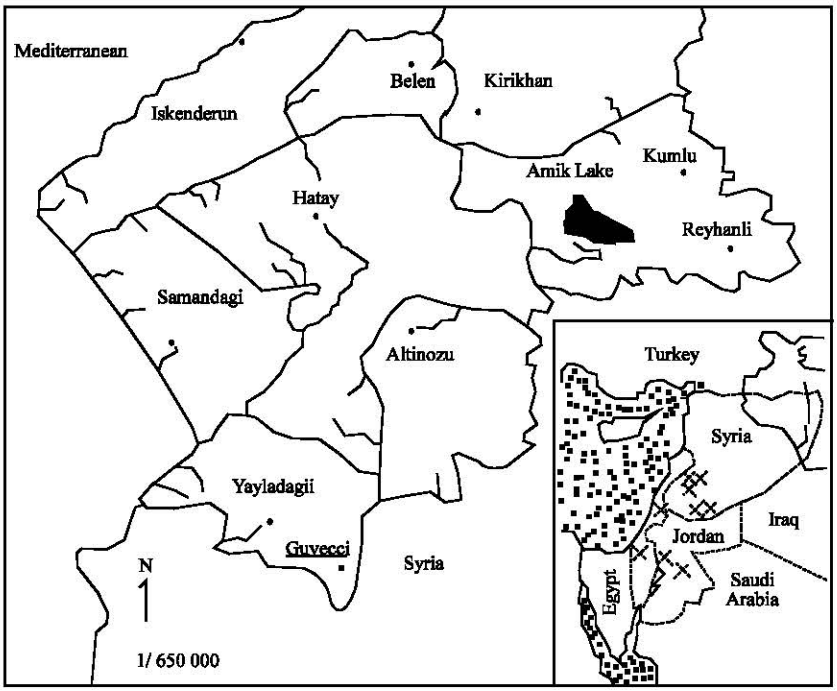

Fig. 1: Map showing Guvecci village where the samples were collected

length-width. Measurements of the first specimen are given out of parentheses and the second in parentheses, with all sizes represented in mm.

Total: 27.3 (25.3); Carapace: 3.9-4.2 (3.5-3.4); Metasoma: 16.9 (15.1); Metasoma I: 2.4-1.8 (2.1-1.6); Metasoma II: 2.7-1.7 (2.4-1.5); Metasoma III: 2.8-1.6 (2.6-1.5); Metasoma IV: 3.5-1.6 (2.9-1.4); Metasoma V: 3.8-1.5 (3.8-1.4); Telson: 3.5-1.6 (3.0-1.3); Pedipalp femur: 2.6-1.0 (2.5-0.8); Pedipalp patella: 3.4-1.2 (3.4-1.0); Chela: 5.7 (5.3); Manus: 2.4-1.0 (2.8-0.9); Fixed finger: 3.6 (2.6); Movable finger: 3.8 (3.0).

Diagnosis: The general coloration ranged from dark brown to light yellow. Crest on the body and part of fifth segment of metasoma darker than other parts. Carapace formed with abundance of coarse granulation; median eyes separated by more than their diameter (Fig. 2A). Pedipalps, femur and tibia with fine granulation; hand slightly granulated on the inner side; median and intermediary crests distinct or indistinct; movable finger with nine series of denticles (Fig. 2C). Mesosoma tergits granulate, granules coarser and more numerous laterally; seventh sternite with fine granulation laterally. Meatasomal segments III and IV with complete, distinct intermediary crest (Fig. 2B); fifth segment less than twice as long as wide or high; segments with dense, coarse granules dorsally, granules less coarse laterally; acules distinctly shorter than vesicule without pedicel, rarely of the same length; segments with the usual number of bristles ventrally, without bristles between ventral crests. Females with 12-16 (usually 13-15) denticles, males with 15-18 (usually 16-17 denticles) (Levy and Amitai, 1980).

Lateral inframedian carinae on third and fourth segments of metasoma complete in *C. schmiedeknechti*, incomplete in *C. werneri* (Levy and Amitai, 1980). Movable fingers with nine series of denticles in *C. schmiedeknechti*, ten series of denticles in *C. werneri*. Females of *C. schmiedeknechti* with 12-16 denticles and males with 15-18 denticles. On the other hand, the females of *C. werneri* have 16-21 denticles and the males 18-23 denticles. Both specimens in the study had a pecten with 14 denticles. Metasoma and padipalps not as narrow as in *C. matthiesseni* and *C. longipalpis*. External accessory denticles similar to *C. schmiedeknechti* and *C. werneri*. Lateral inframedian carinae third and fourth segments of metasoma complete. Specimens in this study were therefore classified as *C. schmiedeknechti*.

Taxonomic position: The *Compsobuthus* genus is separated into two groups according to the existence or not of external accessory denticles on the movable finger on the pedipalpus (Levy *et al*., 1973). External accessory denticles are present in the *werneri* group and absent in the *acutecarinatus* group. *C. schmiedeknechti* is the first record in the *werneri* group in Turkey.

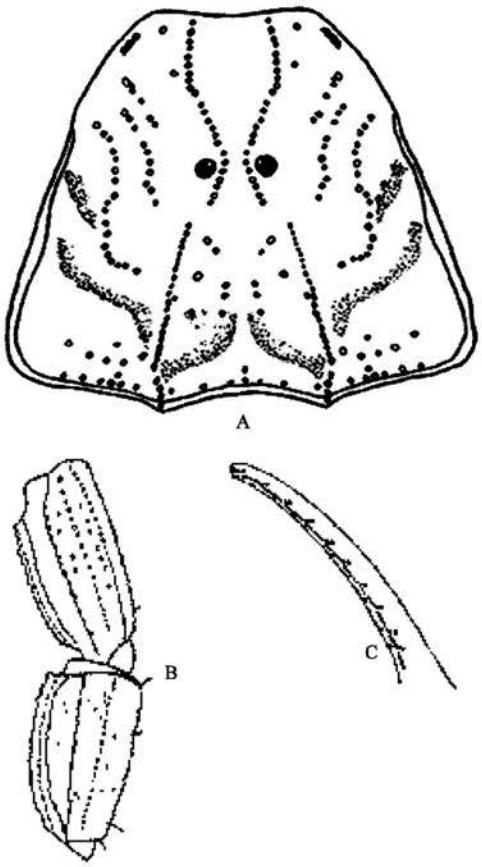

Fig. 2: *Compsobuthus schmiedeknechti* female A: Carapace from dorsal aspect; B: Lateral view of metasomal segments III and IV; C: Dentition of pedipalp chela on movable finger *C. schmiedeknechti* was described by Birula (1905)

as a sub-species of *C. acutecarinatus* from southern Palestine and Saudi Arabia as *Buthus acutecarinatus judaicus*. Then, Vachon (1949) described *C. schmiedeknecht* (Levy and Amitai, 1980) as a species. Recently, Fet and Lowe (2000) have separated *C.w. werneri* (Birula, 1908) and *C.w. schmiedeknechti* (Vachon, 1949) and classified them into two subspecies. Finally, Kovarik (2003) described the latter and named it *C. schmiedeknechti*.

RESULTS AND DISCUSSION

The subjects for this study were collected in the Yayladağ district which is in the same climatic belt with the distribution area of *C. matthiesseni* reported by Kovarik (1996). Under these circumstances it was predictable that these two species would be distributed in Hatay province. It was earlier reported that *Buthus acutecarinatus judaicus* Birula (1905) and *Buthus acutecarinatus werneri* (Birula, 1908) are distributed in Middle East (Jordan and Lebanon) and Africa (Sudan). Kovarik (2003) who reported that *C. schmiedeknechti* spanned Israel, Jordan and Lebanon. In last 2 decades, it was revealed that these two forms are the same species (Levy and Amitai, 1980). Recently, the taxonomy of *C. werneri werneri* has been re-described. It is clear that *Buthus acutecarinatus judaicus* Birula (1905) is a senior synonym of *Buthus acutecarinatus werneri* (Birula, 1908) (Sissom, 1994).

Meanwhile, (Vachon, 1949) described the type locality for *Compsobuthus schmiedeknechti* as Nazareth, Israel. Resent studies indicate that the scorpion inhabiting Israel, Jordan and Lebanon should be called *Compsobuthus werneri schmiedeknechti* (Vachon, 1949), according to the new taxonomic criteria (Fet, 1997). It should be considerated as a junior synonym. Kovarik (2003) then redescribed and named this species *Compsobuthus schmiedeknechti* (Vachon, 1949).

Present findings match the descriptions of Levy and Amitai (1980), Kovarik (1996), Sissom and Fet (1998) Cruitti and Malori (1998), Crucitti (1999), Crucitti and Cicuzza (2001); Crucitti and Vignoli (2002) and Kovarik (2003). Therefore, the species examined in our study was determined to be *Compsobuthus schmiedeknechti* (Vachon, 1949). *C. schmiedeknechti* is the second record in Turkey from the *Compsobuthus* genus following *C. matthiesseni*.

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