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# The male of *Euscorpiops karschi* (Scorpiones: Euscorpiidae: Scorpiopinae) from China (Xizang)

# Самец *Euscorpiops karschi* (Scorpiones: Euscorpiidae: Scorpiopinae) из Китая (Тибет)

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KEY WORDS: Скорпион, *Euscorpiops*, Euscorpiidae, первоописание, Тибет.

ABSTRACT. *Euscorpiops karschi* Qi, Zhu & Lourenço, 2005 from China Xizang is reported on the basis of both sexes in the present paper. Its male is described and figured for the first time.

РЕЗЮМЕ. Впервые найден самец *Euscorpiops karschi* Qi, Zhu & Lourenço, 2005, ранее известный только по самкам из Тибета. Приведено иллюстрированное описание самца и самки.

## Introduction

Kovařík [2000] revised the family Scorpiopidae and recognized five genera: *Alloscorpiops*, *Dasyscorpiops*, *Neoscorpiops*, *Parascorpiops*, and *Scorpiops*. Kovařík [2000] separated *Scorpiops* into three groups: *S. leptochirus* species group, *S. hardwickii* species group, and *S. petersii* species group. He synonymized *Euscorpiops* with *Scorpiop*s, suggesting that the former, as defined by Vachon [1980], should be considered invalid as there was a difference of only one external trichobothrium on the patella.

Soleglad & Sissom [2001] placed the family Scorpiopidae and the chactid genus *Chactopsis* into the Euscorpiidae, and demonstrated the relationships of the euscorpiid subfamilies as (Euscorpiinae, (Megacorminae, Scorpiopinae)). They restored the genus *Euscorpiops* based of the position of chela trichobothrium $Eb_3$, and the presence of an annular ring on the telson. Kovařík [2005] accepted this division, and considered *Euscorpiops* as a valid genus.

The genus *Euscorpiops* is a small group comprising 16 species with a narrow distribution in South and Southeast Asia including India, Bhutan, Pakistan, Bengal, Malaysia, Thailand, Vietnam, Laos and China [Tikader & Bastawade, 1983; Kovařík, 2004, 2005; Qi et al., 2005, 2007]. Recently, Qi et al. [2005] described four new species of *Euscorpiops*, and proposed a key for the known Chinese species of Scorpiopinae. Zhu et al. [2007] described 1 new species of *Euscorpiops* from China. So far, 7 species of *Euscorpiops* have been recorded from China: *E. novaki* Kovařík, 2005 (Xizang): *E. karschi* Qi, Zhu & Lourenço, 2005 (Xizang); *E. asthenurus* (Pocock, 1900) ( Xizang), *E. kamengensis* Bastawade, 2006 (Xizang); *E. vachoni* Qi, Zhu & Lourenço, 2005 (Yunnan); *E. shidian* Qi, Zhu & Lourenço, 2005 (Yunnan) and *E. yangi* Zhu, Zhang & Lourenço, 2007 (Yunnan).

## Methods

Illustrations and measurements were produced using a TTL-II stereomicroscope with an Abbe drawing device and an ocular micrometer. Measurements follow Sissom et al. [1990] and are given in mm. Trichobothrial notations follow Vachon [1974] and morphological terminology mostly follows Hjelle [1990]. Terminology of metasomal carination follow Vachon [1952] and terminology of pedipalp chelal carinae follow Prendini [2000].

Type series of the new species is deposited in the Museum of the College of Life Sciences, Hebei University (MHBU). All measurements are given in mm.

## Taxonomic Treatment

Euscorpiidae Laurie, 1896

Subfamily Scorpiopinae Kraepelin, 1905

*Euscorpiops* Vachon, 1980

*Scorpiops* Kraepelin, 1899: 179 (in part); Sissom et al., 1990: 114 (in part); Kovařík, 2000: 164 (in part); Kovařík, 2001: 85 (in part).

*Scorpiops* (*Euscorpiops*) Vachon, 1980: 155 (in part); Tikader & Bastawade, 1983: 452 (in part); Bastawade, 1997: 104 (in part).

*Euscorpiops*: Stockwell, 1989: 120 (in part); Kovařík, 1998: 141 (in part); Lourenço, 1998: 246 (in part); Fet, 2000: 488 (in part); Soleglad & Sissom, 2001: 93; Kovařík, 2004: 13.

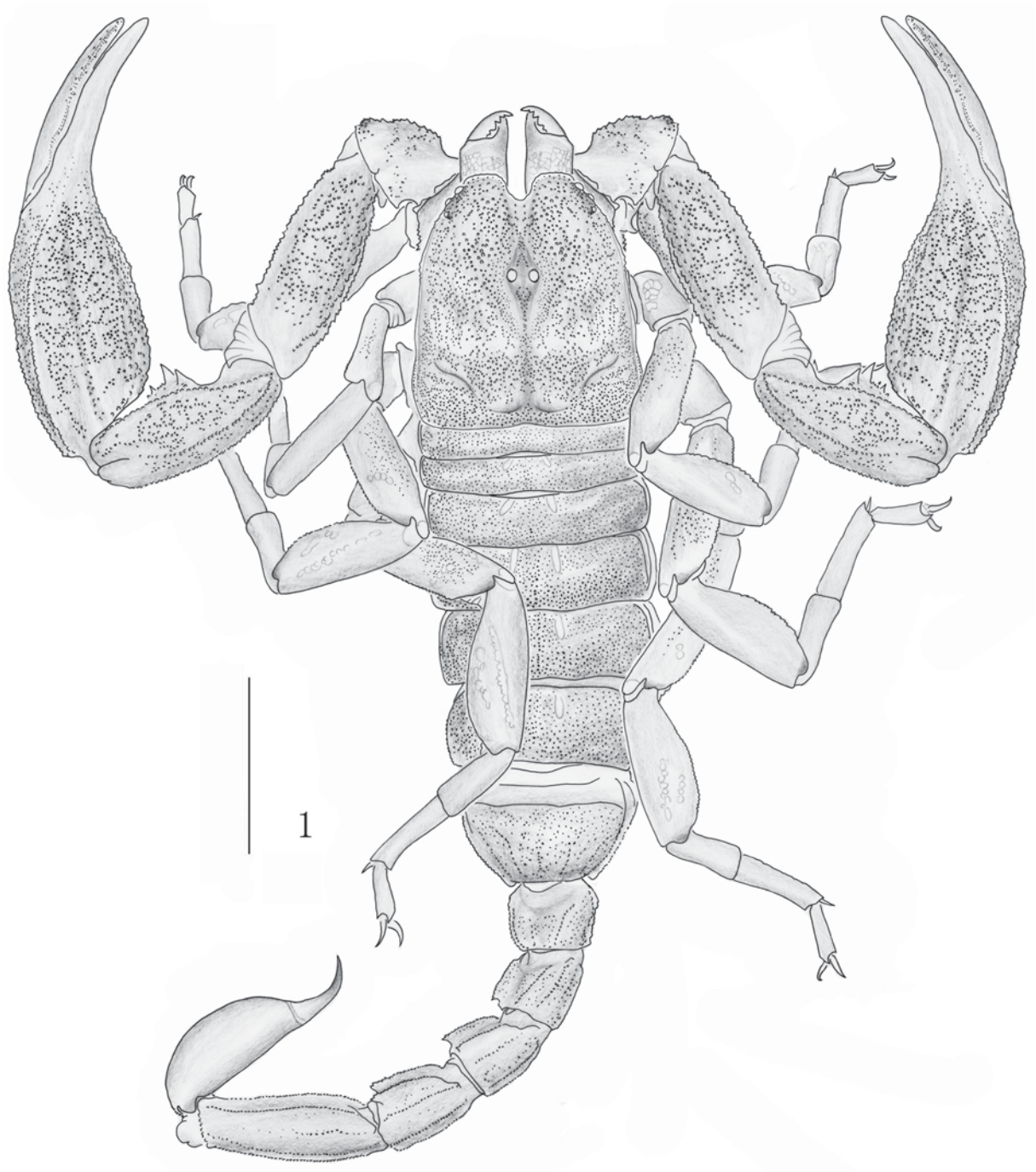
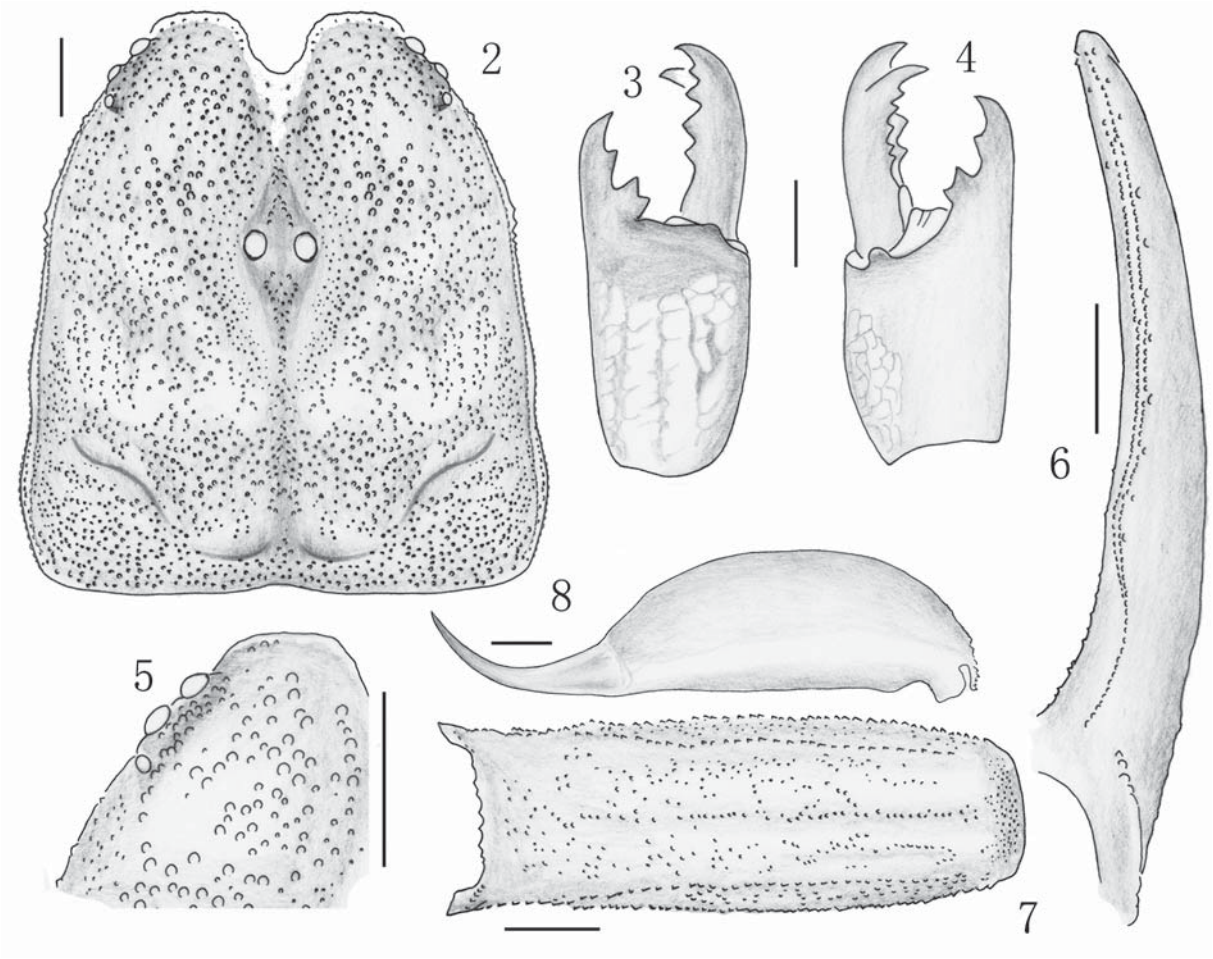



Fig. 1. Habitus of *Euscorpiops karschi*, holotype ♀, dorsal. Scale bars: 5.0 mm.
Рис. 1. Габитус *Euscorpiops karschi,* голотип ♀, сверху. Масштаб 5,0 мм.




Figs 2–8. *Euscorpiops karschi*, holotype ♀: 2 — carapace; 3, 4— chelicera, dorsal and ventral; 5 — lateral eyes; 6 — dentate margin of movable finger, showing rows of granules; 7— metasomal segment V; 8 — telson, lateral. Scale bars: 1.0 mm.

Рис. 2–8. *Euscorpiops karschi*, голотип ♀: 2 — карапакс; 3, 4 — хелицера, сверху и снизу; 5 — боковые глаза; 6 — зубчатый край подвижного пальца, показаны ряды гранул; 7 — сегмент V метасомы, снизу; 8 — тельсон, сбоку. Масштаб 1,0 мм.

Type species. *Scorpiops asthenurus* Pocock, 1900

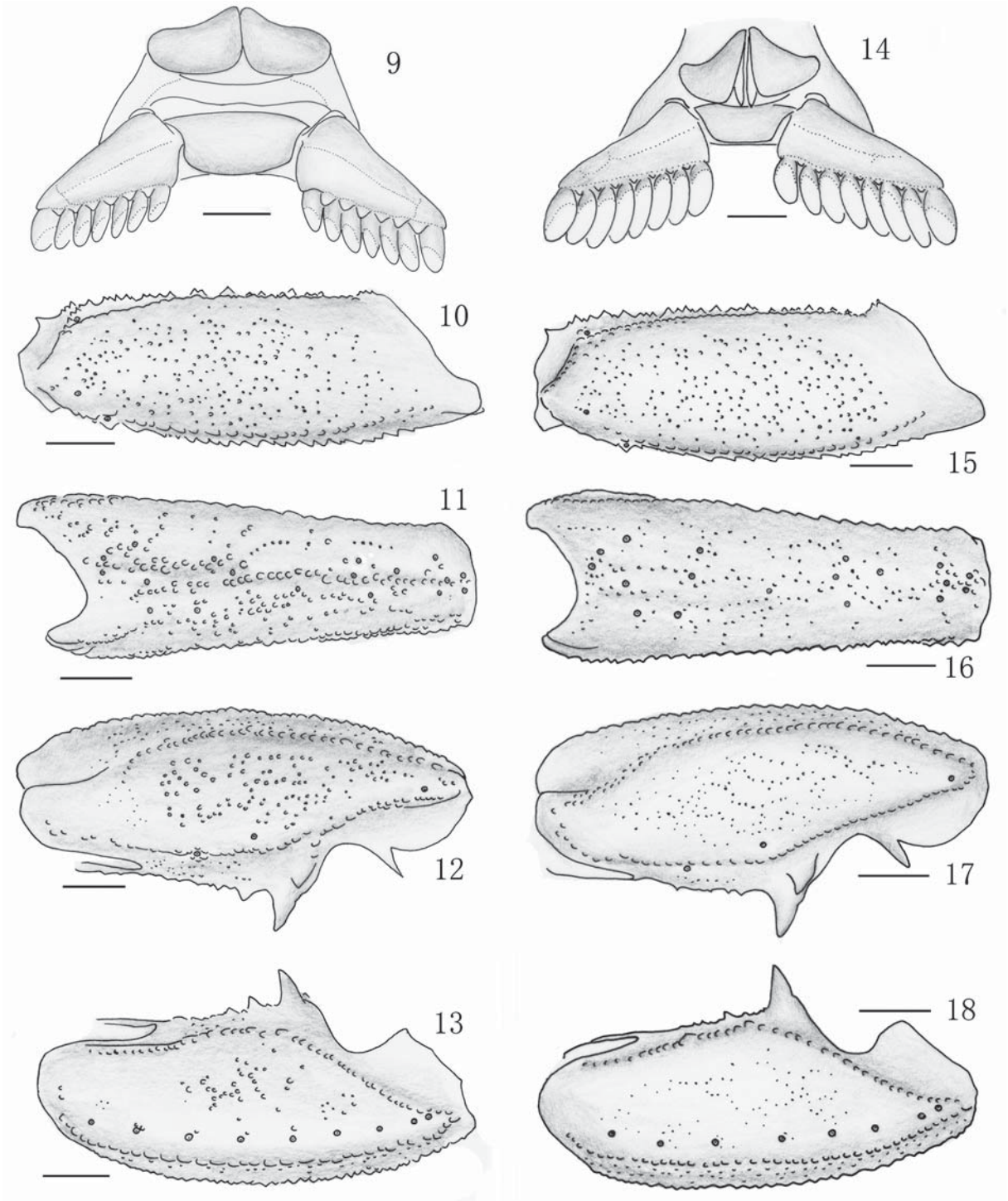
DIAGNOSIS. Ventral edge of cheliceral movable finger with 5–7 denticles. Three pairs of lateral eyes and 17–21 external trichobothria on pedipalp patella. Ventral surface of patella with 6–18 trichobothria. Ventral surface of manus with 4 trichobothria, of which $V_4$ is always situated on ventral aspect of chela. Trichobothrium $Eb_3$ on external surface of chela located between trichobothria *Dt* and *Est*. Telson vesicle/aculeus juncture with annular ring [Kovařík, 2005].

*Euscorpiops karschi* Qi, Zhu & Lourenço, 2005
Figs 1–26.

TYPE MATERIAL. Holotype ♀, Xizang, Zayu district, Xia Zayu town (28°30'N, 97°00'E), 8 August 2002, Ming-Sheng Zhu leg. (MHBU (Ar.-MHBU-XZZY0201)). Paratypes: 2 ♀♀ and 2 immature ♂, same data as holotype (one ♀ in MHBU, (Ar.-MHBU-XZZY0202), one ♀ in MNHN (Ar.-MNBU-XZZY0203)).

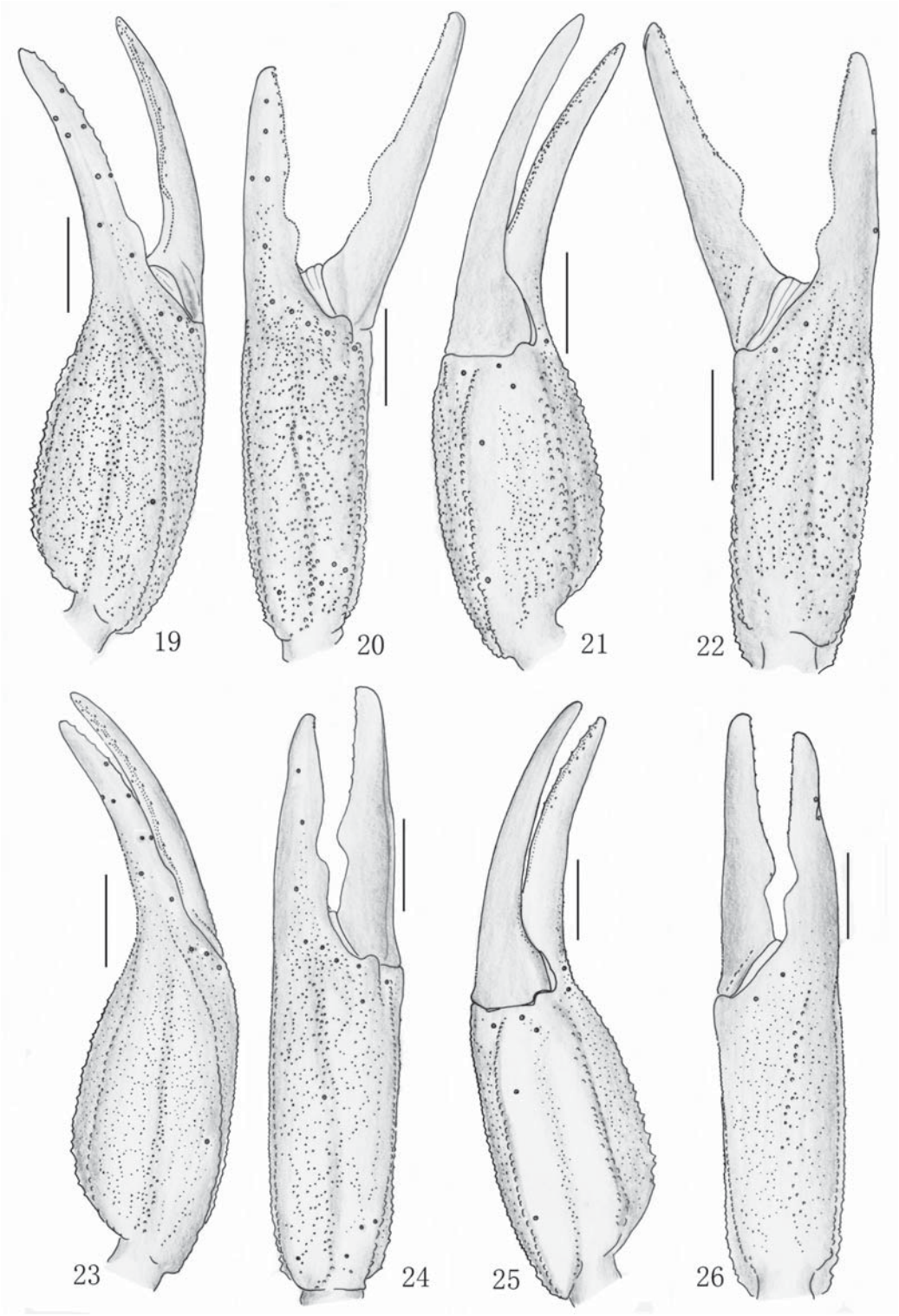
NEW MATERIAL EXAMINED. 1 ♂, Xizang, Zayu district, Xia Zayu town (28°30'N, 97°00'E), 2 October 2007, Fu-Ming Shi leg. (MHBU (Ar.-MHBU-XZZY0701)); 1 ♀, Xizang, Zayu district, Shang Zayu town, 23 August 2005, Zhi-Shun Song leg. (MHBU (Ar.-MHBU-XZZY0501)).

DIAGNOSIS. *Euscorpiops karschi* moderate sized and also differing from the other members of the group in possessing evenly scattered coarse granules of moderate size on carapace. Body color basically brown; the aculeus is shorter than half of vesicle length; all tergites with coarse and evenly scattered moderate granules; pectinal tooth count 7 to 9; dorsal carinae of metasoma IV end in an almost lobe-shaped denticle. *Euscorpiops karschi* can be distinguished from other *Eucorpiops* species from China easily, in particular from *E. shidian* Qi, Zhu & Lourenço, 2005, the most similar species of the genus by the following features: (1) Ventral surface of patella bears 8 trichobothria, *E. shidian* with 11; (2) pedipalp fingers in both sexes are curved markedly, nearly straight in *E. shidian*;. (2) evenly scattered coarse granules of moderate size on carapace, differing size and smooth granules in *E. shidian*.




Figs 9–18. *Euscorpiops karschi*, holotype ♀ and ♂: 9, 14 — genital operculum and pectines; 10, 15 — femur dorsal; 11–13 — patella external, dorsal and ventral; 16–18 — patella, external, dorsal and ventral. Scale bars: 1.0 mm.

Рис. 9–18. *Euscorpiops karschi*, голотип ♀ (9–13) и ♂ (14–18): 9, 14 — генитальная крышка и гребневидные органы; 10, 15 — бедро, сверху; 11–13 — колено, спереди, сверху и снизу; 16–18 — колено, спереди, сверху и снизу. Масштаб 1,0 мм.




Figs 19–26. *Euscorpiops karschi,* holotype ♀ (19–22) and ♂ (23–26): chela dorsoexternal, external, ventral, internal. Scale bars: 2.0 mm.

Рис. 19–26. *Euscorpiops karschi,* голотип ♀ (19–22) и ♂ (23–26): клешни, спереди-сверху, сверху, снизу, изнутри. Масштаб 2,0 мм.


Fig. 27. Habitus of *Euscorpiops karschi*, male new specimen, dorsal. Scale bars: 5.0 mm.
Рис. 27. Габитус *Euscorpiops karschi*, самец. Масштаб 5,0 мм.

ETYMOLOGY. Patronym in honor of Friedrich Karsch who first described *Mesobuthus martensii* (Buthidae), a wide-spread scorpion species in China [Qi et al., 2005].

DESCRIPTION (based on male newly collected specimen (Ar.-MHBU-XZZY0701)).

Coloration: Basically yellow brown without any diffuse variegated fuscous spots. Carapace yellow brown, median and lateral ocular tubercles black. Tergites and metasoma segments yellow brown, vesicle with a reddish brown aculeus. Chelicerae yellow, with reticular pattern; fingers yellow brown and gradually lighter toward the tip. Pedipalp yellow bromn; carinae dark brown; fingers yellow brown and gradually lighter toward the tip. Legs yellow, tarsal claw yellowish brown. Sternum, genital operculum, venter, sternites and pectines yellowish.

Morphology: Carapace evenly covered with coarse sparse granules and bearing an anteromedian lateral carinae which are granular. Median eyes situated anterior to the centre of carapace; three pairs of lateral eyes, the third smallest. Median ocular tubercle smooth with a pair of small median eyes, little more than the first two pairs of lateral eyes. Median ocular tubercle with a median furrow. Lateral ocular tubercle with a few granules. Lateral furrow broad and flat; anterior median furrow broad and moderately deep; posterior median furrow deep. Anterior and posterior margins smooth; lateral margins with serrate granules.

Mesosoma: Tergites evenly covered with coarse sparse granules, posterior part of tergites with bigger ones; anterior and posterior margins smooth; lateral margins with serrate granules. Tergite II to VI with trace of a median carina appearing and gradually becoming distinct; tergite VII with a degenerate carina, and two pairs of distinct lateral carinae. Sternum pentagonal. Genital opercula subtriangular and smooth. Pectinal tooth count 8/8, fulcra weak (Fig. 14). Sternites almost smooth and shiny; segment VII ventrally with 4 weak carinae and lateral margins with serrate granules.

Metasoma: Segments II to V longer than wide; segments I to V have 10-8-8-8-7 carinae; segments II–IV with a pair of vestigial lateral carinae; all dorsal carinae serrated on segment I, and becoming strongly serrated from II to IV slightly; on segment V, carinae with smaller serration dorsally and larger serration ventrally. Vesicle smooth with few setae.

Pedipalps: Femur with external, dorsointernal, dorsoexternal, ventrointernal, ventroexternal and internal carinae crenulated; tegument with evenly scattered coarse granules dorsally and smooth ventrally. Patella with dorsointernal, dorsoexternal, ventrointernal, ventroexternal and external carinae with granules; two large spinoid granules present on the internal aspect; tegument with few coarse granules. Trichobothrial pattern C, neobothriotaxic [Vachon 1974]; patella with 18 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 5 et), 8 ventral trichobothria (Figs 16–18). Chela elongate and narrow, with 4 ventral trichobothria. Chela with dorsal marginal, external secondary, and ventral internal carinae; tegument granulated dorsally and ventrally.Fingers curved (Figs 23–26).

Chelicerae: Tibiae smooth. Movable finger with 4 teeth on dorsal edge and 7 teeth on ventral edge. Fixed finger with 3 teeth on dorsal edge.

Legs: Trochanter with few granules and setae. Femur dorsal surface evenly covered with coarse sparse

Table 1. Measurements of *Euscorpiops karschi* (in mm).
Таблица 1. Измерения *Euscorpiops karschi* (в мм).

| | Female holotype (Ar.-MHBU-XZZY0201) | Male new specimen (Ar.-MHBU-XZZY0701) |
|---|---|---|
| Total length | 48.2 | 45.1 |
| Carapace: | | |
| –Length | 7.7 | 6.9 |
| –Anterior width | 3.3 | 4.2 |
| –Posterior width | 7.4 | 6.2 |
| Metasomal segment I: | | |
| –Length | 2.3 | 2.6 |
| –Width | 3.1 | 2.7 |
| –Depth | 2.4 | 2.1 |
| Metasomal segment II: | | |
| –Length | 2.6 | 2.8 |
| –Width | 2.6 | 2.3 |
| –Depth | 2.3 | 2.0 |
| Metasomal segment III: | | |
| –Length | 2.8 | 3.1 |
| –Width | 2.4 | 2.1 |
| –Depth | 2.4 | 2.1 |
| Metasomal segment IV: | | |
| –Length | 3.2 | 3.8 |
| –Width | 2.0 | 2.0 |
| –Depth | 2.4 | 2.2 |
| Metasomal segment V: | | |
| –Length | 6.4 | 6.2 |
| –Width | 2.0 | 2.0 |
| –Depth | 2.0 | 2.0 |
| Telson | | |
| –Length | 7.8 | 6.9 |
| –Width | 2.3 | 2.4 |
| –Depth | 2.4 | 2.0 |
| Pedipalp femur | | |
| –Length | 7.8 | 7.3 |
| –Width | 2.9 | 2.7 |
| –Depth | 2.0 | 2.0 |
| Pedipalp patella | | |
| –Length | 6.4 | 6.3 |
| –Width | 3.4 | 3.3 |
| –Depth | 2.6 | 2.4 |
| Chela | | |
| –Length | 16.3 | 13.5 |
| –Width (manus) | 4.6 | 3.9 |
| –Depth (manus) | 4.0 | 3.0 |
| Movable finger: | | |
| –Length | 7.4 | 7.2 |
| Pectinal teeth (left/right) | 7/7 | 8/8 |

granules and ventrally smooth, internally with 2 granular carinae. Patella dorsally with scattered small granules, internally with 1 granular vestigial carina. Tibiae with few setae, without spurs. Basitarsus with 3 distinct rows of spinules and more setae, with 2 lateral pedal spurs. Tarsus ventrally with row of spinules. Claws hook-like.

VARIATION. Two new specimens: morphology very similar to female holotype (Figs 1–13, 19–22). In the holotype, pedipalp fingers not so curved, metasoma weak correspondingly, coloration darker than that of male. Number of pectinal teeth: holotype, 7/7; 1 female paratype, 8/8; new female specimen (Ar.-MHBU-XZZY0501), 7/7; 1 male immature with 9/9 and another male immature with 9/ 8. Measurements in Table 1.

HABITAT. Found under stones.

DISTRBUTION. China (Xizang).

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