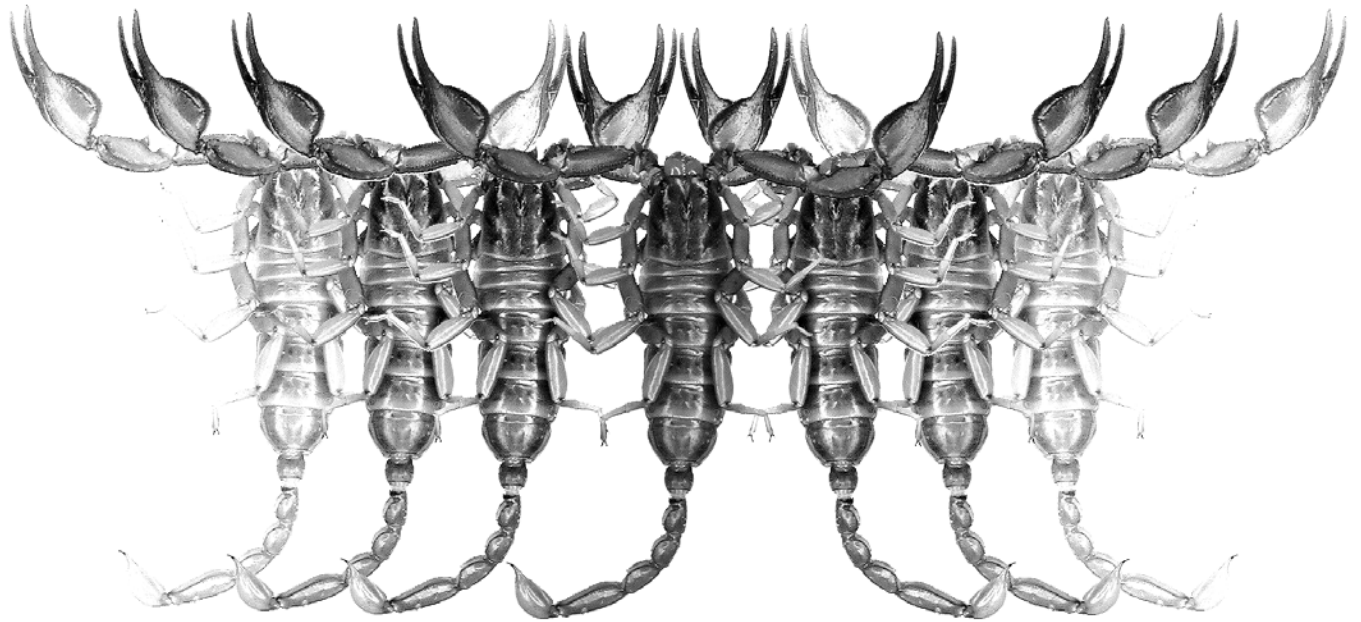


Euscorpilus

Occasional Publications in Scorpiology



Eight New Species of the Genera *Scorpiops* Peters, *Euscorpiops* Vachon, and *Chaerilus* Simon (Scorpiones: Euscorpiidae, Chaerilidae) from Tibet and Yunnan, China

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EDITOR: Victor Fet, Marshall University, 'fet@marshall.edu'

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- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway

Eight new species of the genera *Scorpiops* Peters, *Euscorplops* Vachon, and *Chaerilus* Simon (Scorpiones: Euscorpilidae, Chaerilidae) from Tibet and Yunnan, China

Jian-Xin Qi¹, *Ming-Sheng Zhu¹ & Wilson R. Lourenço²

¹The College of Life Sciences, Hebei University, Baoding, Hebei Province, 071002, China.
E-mail: mingshengzhu@263.net (*corresponding author)

²Département de Systématique et Evolution, USM 0602, Section Arthropodes (Arachnologie),
Muséum national d'Histoire naturelle, CP 053, 61 rue Buffon, 75005, Paris, France.
E-mail: arachne@mnhn.fr

Summary

Eight new species belonging to the genera *Scorpiops* and *Euscorplops* (Euscorpilidae: Scorpilopinae) and *Chaerilus* (Chaerilidae) are described from China. These are: *Scorpiops atomatus* sp. n., *Scorpiops langxian* sp. n., *Scorpiops luridus* sp. n., *Scorpiops pococki* sp. n., *Euscorplops vachoni* sp. n., *Euscorplops shidian* sp. n., *Euscorplops karschi* sp. n., and *Chaerilus tessellatus* sp. n. New records are also reported for these three genera, and the taxa are redescribed. Descriptions and redescriptions are based mainly on the material collected in Tibet Autonomous Region and Yunnan Province. Checklists and identification keys for Chinese species of the genus *Chaerilus* and the subfamily Scorpilopinae are provided.

Introduction

Inventory studies on Chinese scorpions are rare (Lourenço et al., 2005a, 2005b). To date, five families, nine genera and 23 species and subspecies have been reported from China (Fet et al., 2000; Zhu et al., 2004). However, descriptions of new species or citations for new records were, in most cases, done by researchers outside China (Karsch, 1879; Simon, 1880; Birula, 1904; Pocock, 1900; Kraepelin, 1899; Hirst, 1911; Kishida, 1939; Kovařík, 1994, 2000, 2005b; Lourenço et al., 2005a, 2005b).

Xianwen Wu (1936) was the first local researcher who studied scorpions from China, and he reported four species belonging to two families and four genera, based mainly on the specimens deposited in the Museums of the Biological Laboratory of the Science Society of China and the National Research Institute of Biology, Academia Sinica.

Much of the early descriptions on Chinese scorpions were rather simple and sometimes repetitive, and largely based on color patterns and some external morphological characters, such as structure of carinae or pectinal tooth count variation. Many studies of Chinese scorpions have only focused on a single widespread species, *Mesobut-*

hus martensii (Karsch, 1879) (family Buthidae) and thus its morphology, behavior, biology, and toxins have been extensively studied (Song et al., 1982; Li, 1991; Lu et al., 2001; Jiang et al., 2002; Chen et al., 2003). Recently, Qi et al. (2004) provided a more detailed and precise redescription for *Mesobuthus martensii*. With the exception of the redescription and the description of new species by Kovařík (1994, 2000b, 2005b) and Lourenço *et al.* (2005a, 2005b), no other known Chinese species have been properly described and/or redescribed.

In this paper, we describe eight new species of the genera *Scorpiops* Peters and *Euscorplops* Vachon (Euscorpilidae), and *Chaerilus* Simon (Chaerilidae) from China. We also provide checklists and keys for the Chinese species of these three genera. The map (Fig. 144) at the end of this paper shows the distribution of these species.

Methods

Standard terminology for scorpion morphology is used. All measurements are given in millimeters. Type specimens are deposited in Museum of the College of Life Sciences, Hebei University (MHBUS), Baoding, China. Some paratypes are deposited in the Muséum

National d'Histoire Naturelle, Paris, France (MNHN). Trichobothrial nomenclature is according to Vachon (1974, 1975).

Family Euscorpiidae Laurie, 1896
Subfamily Scorpiopinae Kraepelin, 1905
Tribe Scorpiopini Kraepelin, 1905

Comments. The subfamily Scorpiopinae was first proposed by Kraepelin (1905) as Scorpiopsinae, a subfamily of Vaejovidae. The correct latinized family name derived from the type genus *Scorpiops* is Scorpiopinae, and the spelling was corrected by Fet (2000b). Stockwell (1992) raised Scorpiopsinae to the family level as Scorpiopsidae, and Lourenço (1998) agreed with this decision. Fet (2000b) listed the family Scorpiopidae. Subsequently, Soleglad & Sissom (2001) downgraded Scorpiopidae to a subfamily of Euscorpiidae, grouped its Asian genera into tribe Scorpiopini, and also included in this subfamily the North American genus *Troglocormus* (tribe Troglocormini). The subfamily currently forms a monophyletic group within Euscorpiidae, and does not share any synapomorphies with North American Vaejovidae (Soleglad & Sissom, 2001). The tribe Scorpiopini includes six Asian genera, mainly from the south and southeast of the continent.

Vachon (1980) revised the genus *Scorpiops*, and described three subgenera, *Alloscorpiops*, *Euscorpiops*, and *Neoscorpiops*, in addition to the nominotypic subgenus *Scorpiops*. These four subgenera were later elevated to generic level by Lourenço (1998), accompanying two monotypic genera *Parascorpiops* Banks 1928 and *Dasyrscorpiops* Vachon, 1974, thus bringing the total number of genera to six. Kovařík (2000a) revised the family Scorpiopidae and distinguished five genera: *Alloscorpiops*, *Dasyrscorpiops*, *Neoscorpiops*, *Parascorpiops*, and *Scorpiops*. Kovařík (2000a: 164) also separated *Scorpiops* into three groups: *S. leptochirus* species group, *S. hardwickii* species group, and *S. petersii* species group. Kovařík (2000a) synonymized *Euscorpiops* with *Scorpiops*, suggesting that the genus as defined by Vachon (1980) should be considered invalid as there was a difference only in one external trichobothrium on the patella. However, Soleglad & Sissom (2001) restored the genus *Euscorpiops* based of the position of chela trichobothrium Eb_3 and the presence of an annular ring on the telson (Soleglad & Sissom, 2001: 52, figs. 114, 115). Kovařík (2005b) accepted this division, and considered *Euscorpiops* a valid genus. So far, six species of Scorpiopinae have been reported from China (five species of the genus *Scorpiops*, and one of *Euscorpiops*).

Genus *Scorpiops* Peters, 1861

Scorpiops Peters, 1861: 510; Kraepelin, 1899: 179 (in part); Pocock, 1900: 64 (in part); Vachon, 1980: 143 (in

part); Tikader & Bastawade, 1983: 403 (in part); Lourenço, 1998: 246 (in part); Kovařík, 2000a: 163-166 (in part); Fet, 2000: 491 (in part); Soleglad & Sissom, 2001: 93; Kovařík, 2005b: 8.

Diagnosis. Trichobothrium Eb_3 on the external aspect of the chela located basally to trichobothrium Dt . Annular ring at vesicle/aculeus juncture absent. Three pairs of lateral eyes. 17–19 external trichobothria on pedipalp patella. Ventral aspect of patella with 6–18 trichobothria. Four trichobothria on the ventral aspect of the chela manus.

***Scorpiops luridus* Zhu, Lourenço et Qi, sp. n.**
(Figs. 1–15)

Diagnosis. In accordance with the grouping of species proposed by Kovařík (2000a) for the genus *Scorpiops*, the new species, which has nine trichobothria on the ventral surface of the patella, has to be placed in the *Scorpiops leptochirus* group. The new species differs from other members of the group in having larger size and yellow color, and a pair of small median eyes, which are even slightly smaller than the lateral eyes (Fig. 13).

Comments: *Scorpiops luridus* sp. n. can be distinguished from other *Scorpiops* species, and in particular from *Scorpiops petersii* Pocock, 1893, the most geographically close species of the genus, by the following features: (a) entire carapace surface is densely covered with fine compact granules; (b) the ventral patella of pedipalps is armed with 9 trichobothria; (c) sternite V of mesosoma is granular, with one pair of well-expressed carinae and one pair of carinal traces; (d) tergites are densely covered with very fine granules and a few scattered large granules.

Material: 1♂ holotype, Tibet, Lang district (29°02' N, E.93°08' E), 2 August 2002, Ming-Sheng Zhu leg. (Deposited in MHBUS). Paratypes: 2♀, same data as holotype (One is deposited in MHBUS, the other in MNHN).

Etymology: The specific name refers to the pale color of tergites.

Description (based on male holotype):

Coloration: Basically yellow. Carapace is mahogany, with some black coloration near the eyes. Tergites are from sandy beige to brown. Metasomal segments are sandy beige and paler than tergites; vesicle is yellow, with the end of the aculeus dark mahogany. Pedipalps are dark mahogany except for black margin and carinae. The carinae of patella are black or dark mahogany, and the fingers are mahogany. Chelicerae is yellow, with fingers pale brown. Legs are yellowish. Venter and sternites are yellowish.

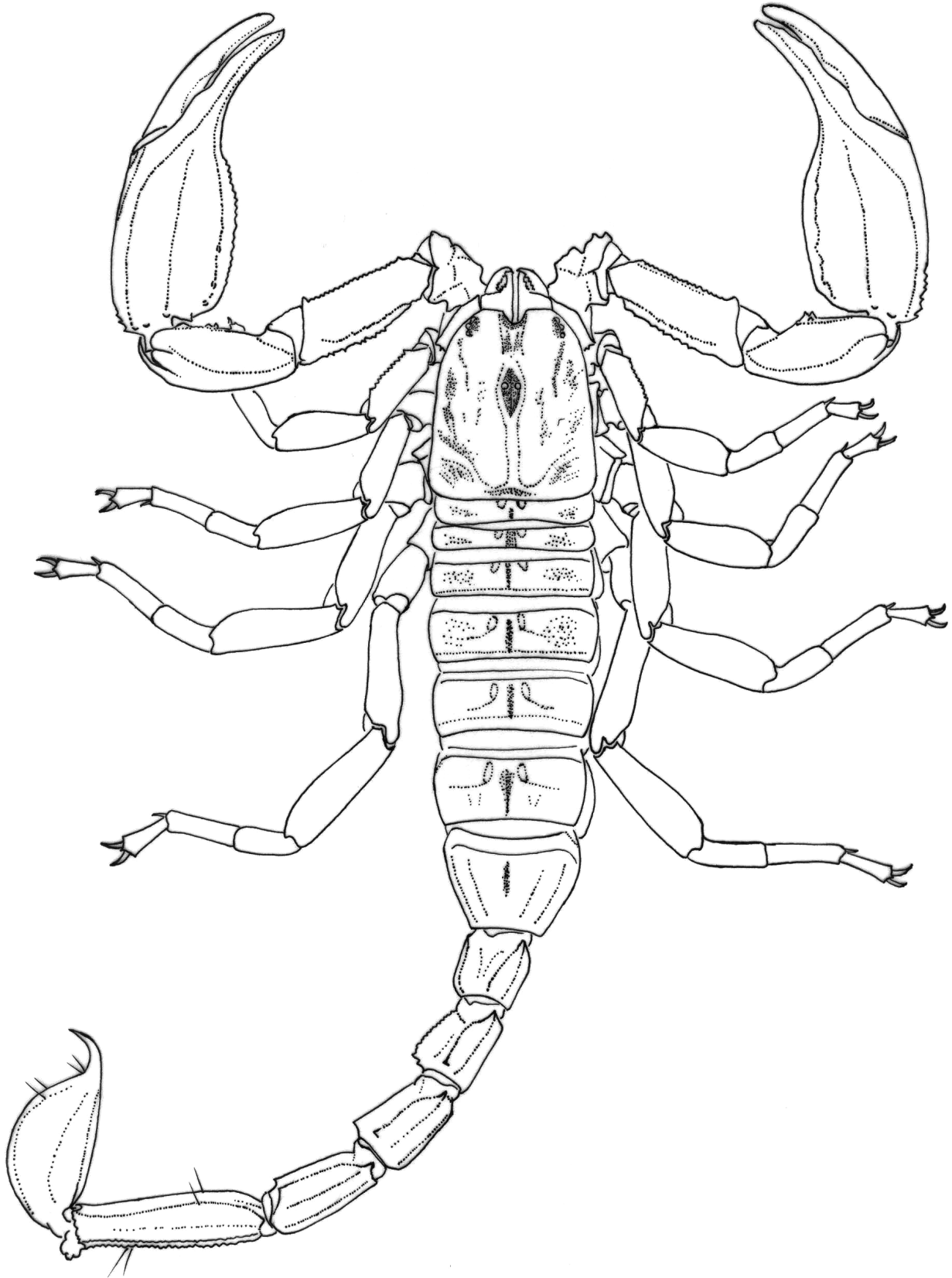
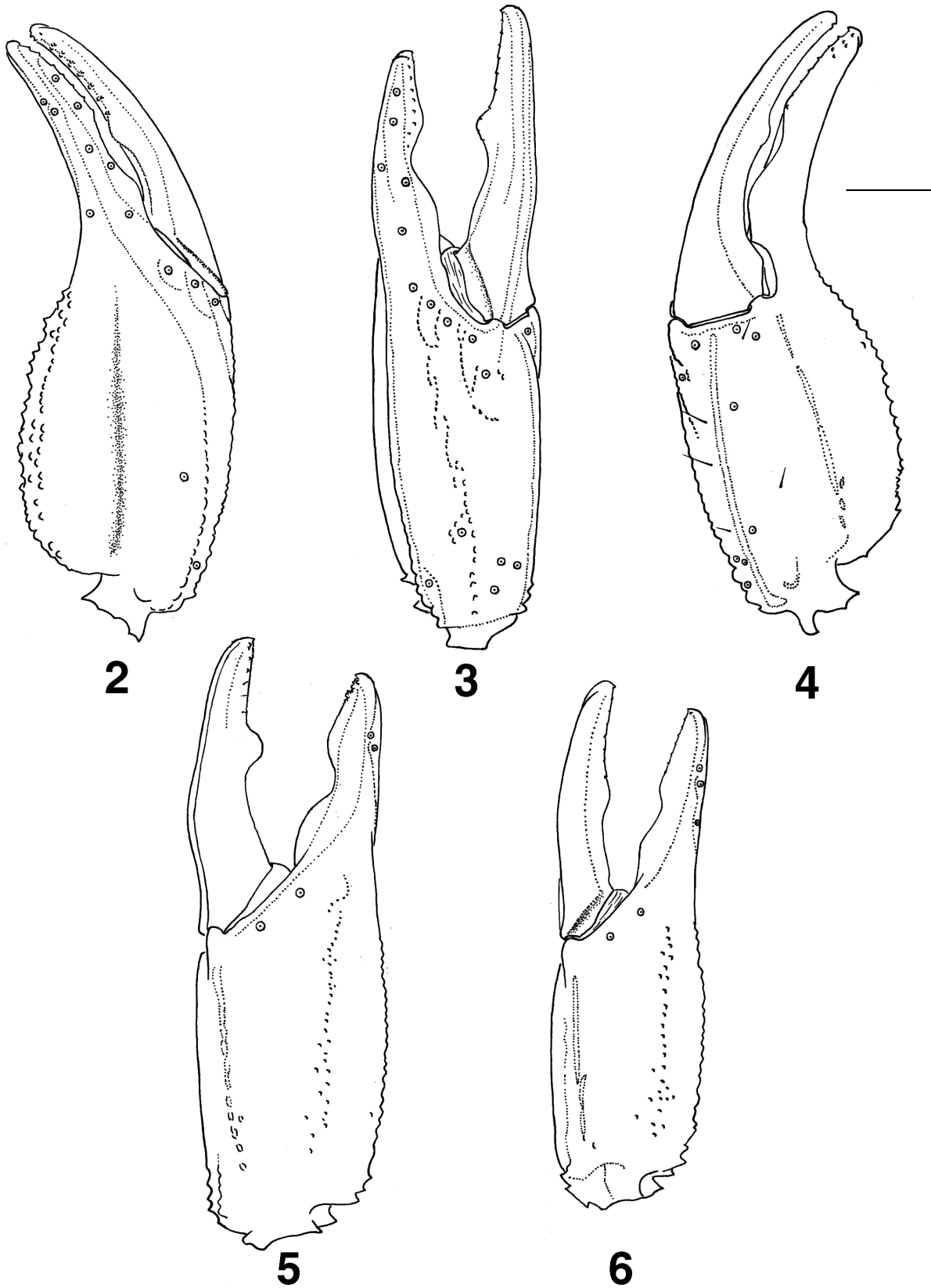
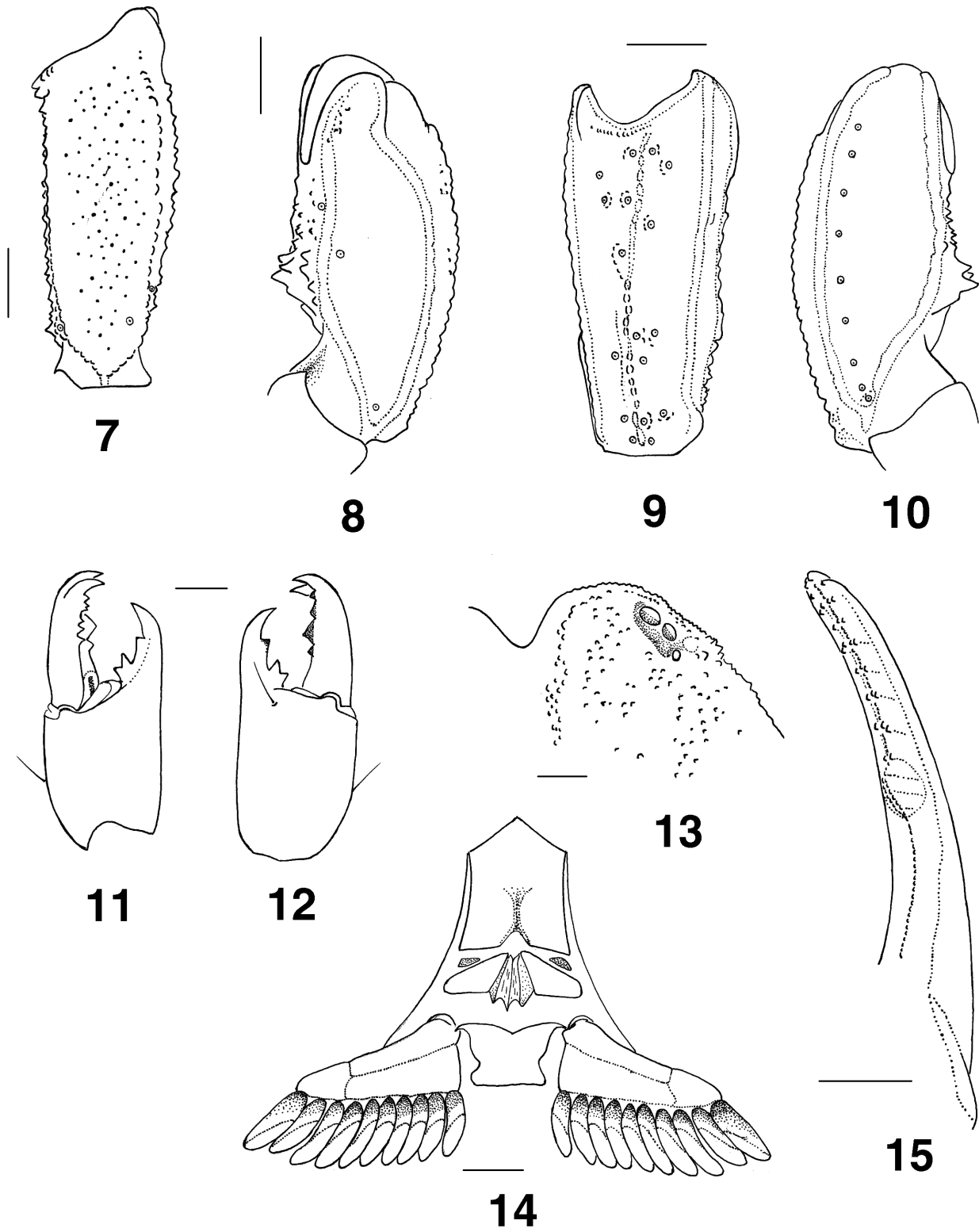


Figure. 1: *Scorpiops luridus* sp. n., male holotype, habitus. Total length 86.72 mm.



Figures 2–6: *Scorpiops luridus* sp. n., male holotype. 2–5. Chela dorsoexternal, external, ventral and internal aspects. 6 same as 5, female paratype. Scale = 3 mm.



Figures 7–15: *Scorpiops luridus* sp. n., male holotype. **7.** Femur dorsal aspect. **8–10.** Patella dorsal, external and ventral aspects. **11–12.** Chelicera, ventral and dorsal aspects. **13.** Lateral ocular region, in detail, dorsal aspect. **14.** Sternum, genital operculum and pectines. **15.** Dentate margin of the pedipalp chela movable finger. Scales = 1 mm.

Morphology: Carapace surface is densely covered with fine compact granules, lateral furrow broad and flat, posterior median furrow well-expressed. Three pairs of lateral eyes, median eyes are small and almost smaller than lateral eyes, anterior to the center of the carapace. Sternum is pentagonal, longer than wide. Tergites are acarinate, smooth and shiny, with sparse small punctations except for segment VII which has four carinae. Pectinal tooth count 10-10, fulcra absent. Sternites are smooth and shiny, segment VII with four very weak carinae. Metasoma segments II to V are longer than wide; segment V is clearly longer than others, and more than two times longer than the segment II; segments I to V have 10-10-10-8-7 carinae; all the carinae of segments I-IV have pointed serration, only ventral carinae with finely obtuse serration; all carinae of segment V with pointed serration. Vesicle with scattered smooth granules.

Pedipalps are crenulate; tegument is weakly granular; femur with dorsointernal, dorsoexternal, ventrointernal and ventroexternal carinae, all of which are serrated; patella with an interior carina irregularly granulated, the external carina with smooth and irregular granules, two spinoid granules present on the internal aspect, the interoventral spinoid granule being much larger than the interodorsal one; tegument punctated. Chela bears dorsal marginal, external secondary, and ventral internal carinae, with moderately to strongly smooth granulation; all carinae well developed. Fingers are short, shorter than manus. The cutting edge of the finger bears two rows of fine granules. Trichobothriotaxy type C (Vachon, 1974). Chela exhibits four ventral trichobothria; patella with 17 external and nine ventral trichobothria.

Female paratype. Coloration and morphology are very similar to that of the male holotype. Some of the segments are slightly bulkier than that of the male. Pectinal tooth count 8-8.

Measurements (male holotype/female paratype). Total length, 86.72/75.12. Carapace: length, 11.73/10.20; anterior width, 4.97/4.08; posterior width, 10.58/9.18. Metasomal segment I: length, 4.34/4.08; width, 4.46/4.08. Metasomal segment V: length, 12.75/9.56; width, 3.19/2.68; depth, 3.32/2.81. Vesicle: width, 4.59/3.95; depth, 4.59/3.83. Pedipalp: femur length, 10.20/8.93, width, 3.83/3.70; patella length, 9.56/8.29, width, 4.46/4.08; chela length, 11.99/10.20, width, 7.27/6.38, depth, 5.74/4.59; movable finger length, 11.48/9.82.

***Scorpiops atomatus* Qi, Zhu et Lourenço, sp. n.**
(Figs. 16–31)

Diagnosis. In accordance with the grouping of species proposed by Kovarik (2000a) for the genus *Scorpiops*, the new species, which has nine trichobothria on the ventral surface of the patella (Fig. 25), has to be placed in *Scorpiops leptochirus* group. The new species is also

slightly smaller than the other members of the group. Carapace surface is coarse. There are three pairs of lateral eyes with the first two pairs larger than the third eye. Median ocular tubercles are smooth with a pair of small median eyes, which are almost the same size as the first two pairs of lateral eyes (Figs. 16, 31). Pectines with fulcra (Fig. 30).

Comments. *Scorpiops atomatus* sp. n. can be distinguished from other *Scorpiops* species, and in particular from *S. pachmarhicus* Bastawade, 1992, the most geographically close species of the genus by the following features: (a) pectinal tooth count 9-11; (b) manus dorsally almost smooth; (c) tergite VII of mesosoma with two granulated lateral carinae.

Material. 1♂ holotype, Tibet, Lang district (29.02° N, 93.08° E), June to August 2004, Ai-Min Shi and Yi-Bin Ba leg. (MHBU). Paratypes: 3 ♀, 1 ♂, same data as holotype (2 ♀ in MHBU, 1 ♀ and 1 ♂ in MNHN); 1♂, Tibet, Chayu district, Xia Zayü town (28.4° N, 97.0° E), 7 August 2002, Ming-Sheng Zhu leg. (MHBN); 2 ♀, Tibet, Lang district (29.02° N, 93.08° E), 20 August 2002, Ming-Sheng Zhu leg. (MHBN); 1 ♂, Tibet, Gyaca district (29.1° N, 92.7° E), 21 August 2002, Ming-Sheng Zhu leg. (MHBN); 1 ♂, 1♀, 22 August 2002, other data same as above (MHBN).

Etymology. The specific name refers to the spots on tergites.

Description (based on male holotype):

Coloration: Basically brown. Carapace is dark brown, with some black coloration near the eyes. Tergites are dark brown. Metasoma segments are black brown with pale stripes; vesicle brown with a yellowish aculeus. Chelicerae are black brown; with the fingers dark brown and gradually lighter toward the tip, which is yellow. Pedipalps are dark brown; and the fingers are dark yellow. Legs are brown with yellow spots. Venter and sternites are yellowish.

Morphology: Carapace is coarse, with dense, minute granules; lateral furrow broad and flat; posterior median furrow deep, slit-shaped. Median eyes are anterior to the center of the carapace; three pairs of lateral eyes, the third eye being vestigial. Sternum is pentagonal and longer than wide. Tergites are almost everywhere densely covered with fine granules; the trace of median carina first appears on tergite III, and gradually becomes a distinct carina; on the tergite VII, the middle one is only a little protuberant, and its two lateral carinae are granulated. Pectinal tooth count 11-11, fulcra present. Sternites are smooth and shiny, segment VII with four very weak carinae. Metasoma segments II to V are longer than wide; segments I to V have 10-10-10-8-7 carinae. All dorsal carinae are granular on segment I,

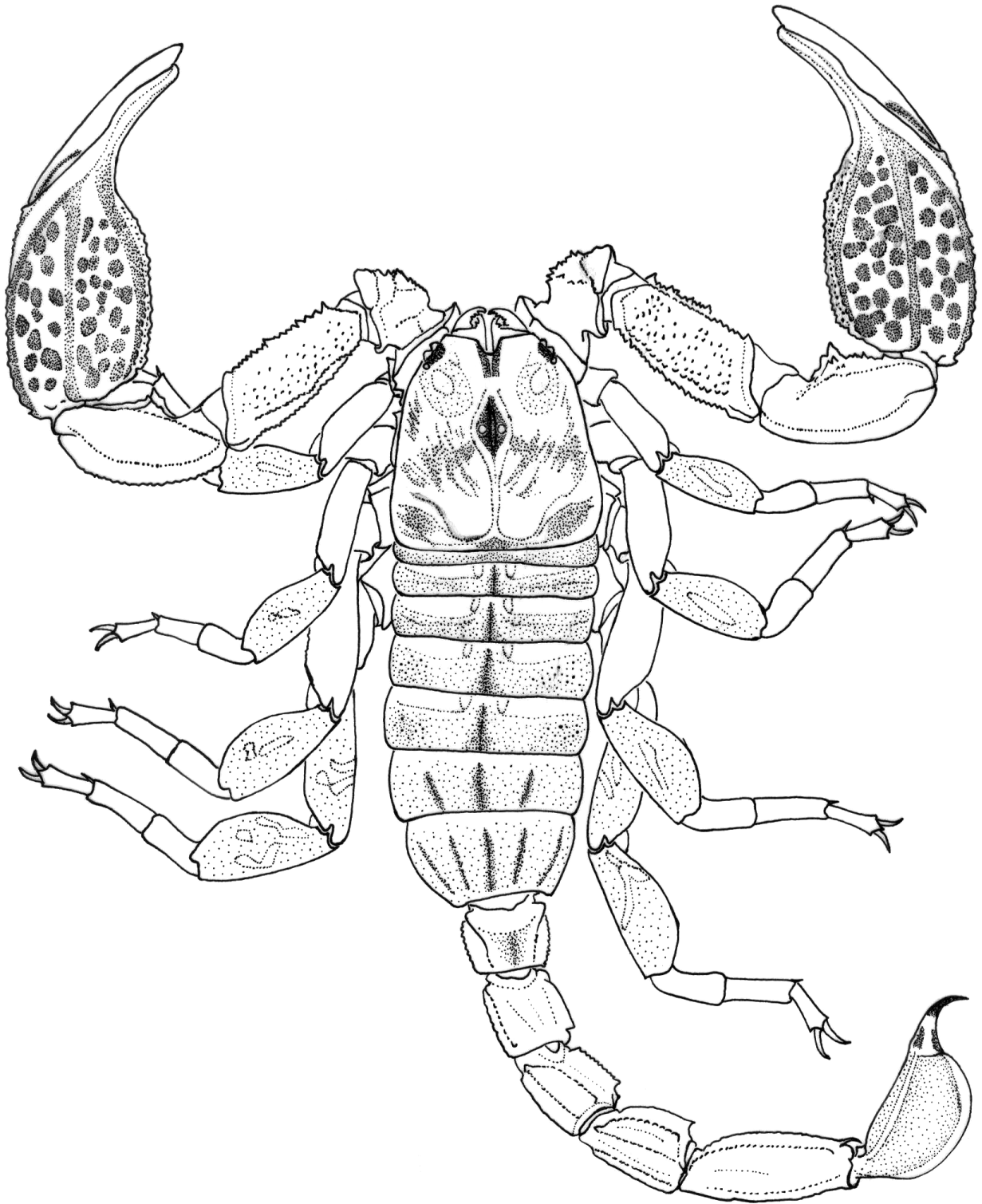
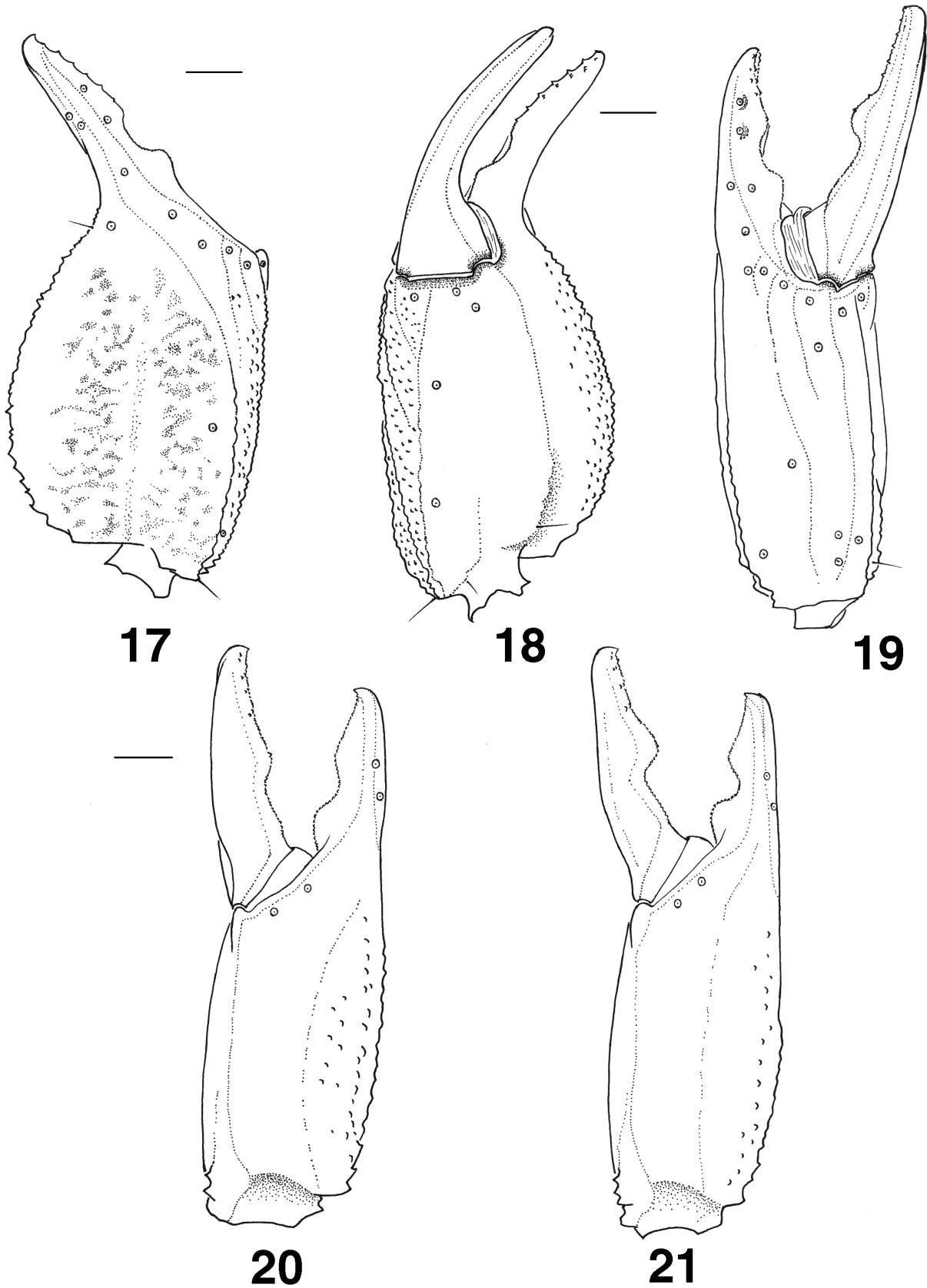
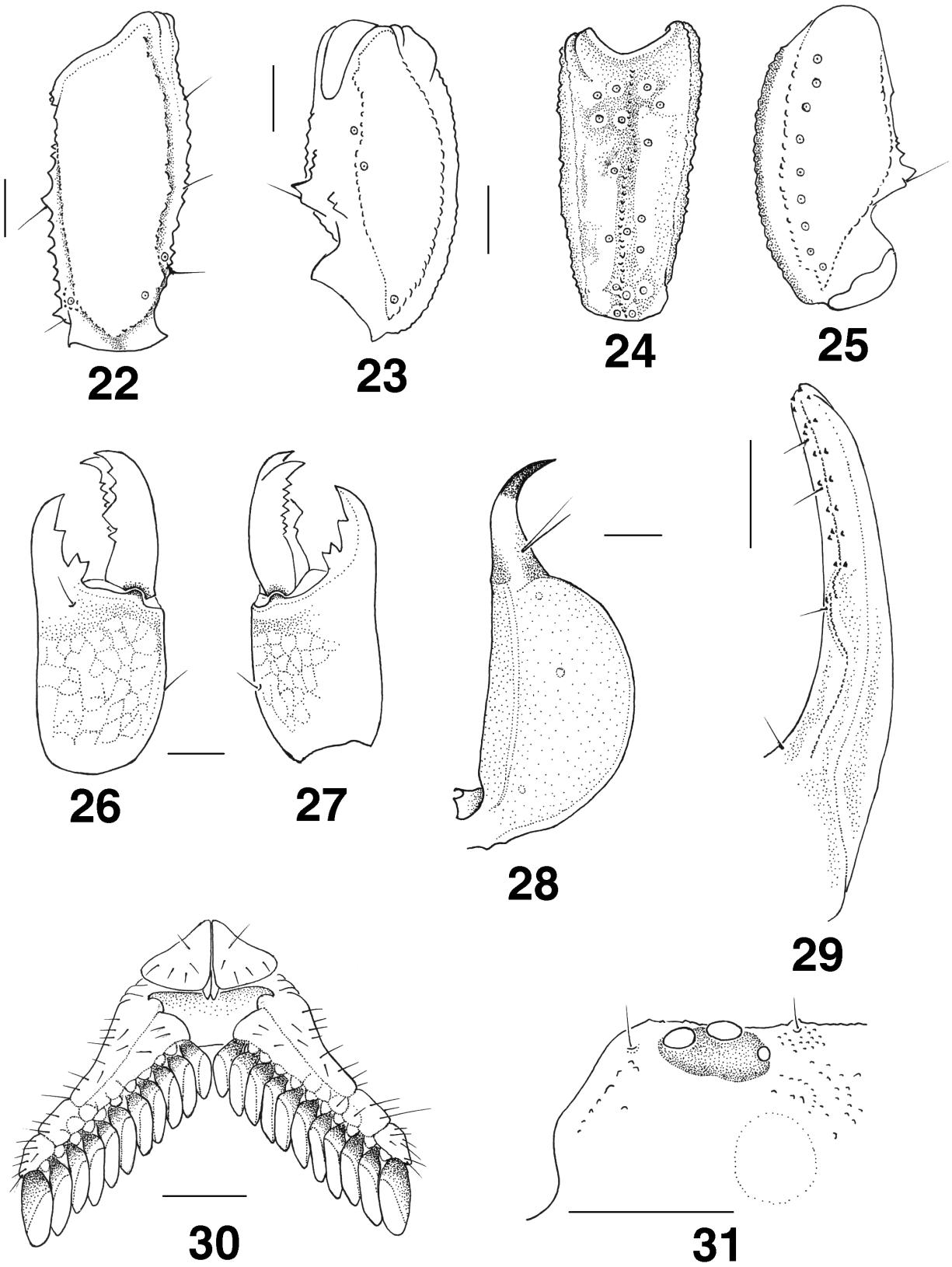


Figure 16: *Scorpions atomatus* sp. n., male holotype, habitus. Total length 34.94 mm.



Figures 17–21: *Scorpiops atomatus* sp. n., male holotype. Chela, dorsoexternal, ventral, external and internal aspects. **21** same as **20**, female paratype. Scales = 1 mm.



Figures 22–31: *Scorpiops atomatus* sp. n., male holotype. 22. Femur, dorsal aspect. 23–25. Patella, dorsal, external and ventral aspects. 26–27. Chelicera, dorsal and ventral aspects. 28. Telson, lateral aspect. 29. Dentate margin of the pedipalp chela movable finger. 30. Genital operculum and pectines, ventral aspect. 31. Lateral ocular region, in detail, dorsal aspect. Scales = 1 mm.

and gradually become strongly serrated from II to IV; the tegument is punctated; on segment V, carinae with smaller serration dorsally and larger serration ventrally. Vesicle is coarse but without granules.

Pedipalps: femur with dorsointernal, dorsoexternal, ventrointernal and ventroexternal carinae, all are crenulate; tegument granular except ventral surface which is weakly granular; patella with dorsointernal, ventrointernal, ventroexternal and external carinae, are serrated; two spinoid granules present on the internal aspect, the internal-ventral spinoid granule being much larger than the internal-dorsal one; tegument punctuated except ventral, which is almost smooth. Chela bears dorsal marginal, external secondary, and ventral internal carinae which are weakly to moderately granular; ventral median carinae is strong and smooth; other carinae are vestigial or absent; tegument is almost smooth dorsally and ventrally. Trichobothriax type C (Vachon, 1974). Chela with four ventral trichobothria. Patella with 17 external and nine ventral trichobothria.

Female paratype. Coloration and morphology are very similar to that of the male holotype. Some of the segments are slightly bulkier than that of the male. Pectinal tooth count 9-9.

Measurements (male holotype/female paratype). Total length, 34.94/36.48. Carapace: length, 5.87/6.12; anterior width, 2.68/2.81; posterior width, 5.87/6.12. Metasomal segment I: length, 1.40/1.40; width, 2.30/2.55. Metasomal segment V: length, 4.72/4.85; width, 1.66/1.79; depth, 1.91/1.66. Vesicle: width, 2.18/2.04; depth, 2.04/1.91. Pedipalp: femur length, 5.10/5.36, width, 2.04/2.55; patella length, 4.72/5.23, width, 2.30/2.55; chela length, 6.38/5.23, width, 4.08/4.08, depth, 2.68/2.68; movable finger length, 5.74/4.08.

***Scorpiops langxian* Zhu, Qi et Lourenço, sp. n.**
(Figs. 32-46)

Diagnosis: In accordance with the grouping of species proposed by Kovařík (2000a) for the genus *Scorpiops*, the new species, which has seven trichobothria on the ventral surface of the patella, has to be placed in *Scorpiops leptochirus* group. The new species differs from other members of the group with seven trichobothria (*Scorpiops braunwalderi* Kovařík, 2000, *S. feti* Kovařík, 2000, and *S. leptochirus* Pocock, 1893) in possessing a much less wide manus and in being densely covered with fine compact granules on dorsal surface (see Fig. 33). Furthermore, the fingers of pedipalps are flexed in both sexes (Figs. 33-36), whereas in the abovementioned three species they are nearly straight.

Comments. *Scorpiops langxian* sp. n. can be distinguished from other *Scorpiops* species, and in particular from *S. leptochirus* Pocock, 1893, the most geographically close species of the genus, by the following fea-

tures: (a) entire carapace is densely covered with fine compact granules; (b) all tergites are finely granular; (c) fingers of pedipalps are flexed in both sexes.

Material. 1♂ holotype male, Tibet, Lang district (29°02' N, 93°08' E), June to August 2004, Ai-Min Shi and Yi-Bin Ba leg. (MHBUS); Paratypes 1♀, 1♂ same data as holotype (MHBUS); 1♀, Tibet, Nyingchi district (29°34' N, 94.30° E), Baishuwang town, 21 August 2003, Feng Zhang leg. (MNHN).

Etymology. The specific name refers to Lang district of Tibet, type locality of the new species.

Description (based on male holotype):

Coloration: Basically dark brown without any diffuse variegated fuscous spots. Carapace is dark brown. Tergites are dark brown. Metasoma segments are black brown with pale stripes; vesicle is brown with the extremity yellowish. Chelicerae is black brown, and its fingers are dark brown with the top pale brown. Pedipalps are yellow with dark brown stripes. Legs bear brown spots; the claws of legs is reddish-brown. Venter and sternites are pale dark brown.

Morphology: Carapace lustrous and acarinate, lateral furrow broad and flat, posterior median furrow shallow slit-shaped; with dense, minute punctuation. Median eyes are anterior to the center of the carapace; three pairs of lateral eyes. Sternum is pentagonal, longer than wide. Tergites are almost acarinate, with scattered small punctations; tergite I has almost no carinae, downwards, the median carina gradually becomes distinct to finely granular; tergite VII with a median carina and two pairs of lateral carinae. Pectinal tooth count 8-8, fulcra absent. Sternites are almost smooth and shiny; sternite VII is granular, with four smooth granular carinae. Metasoma segments II to V are longer than wide; segments I to V have 10-10-10-10-7 carinae; only on segment I all the carinae are distinct; segments II-IV with a pair of lateral carinae weakened; segments I-IV only with a pair of dorsal carinae crenulated, other carinae with smooth granules; the tegument is coarsely granular; dorsal carinae of segments V are irregularly granular with small granulation ventrally. Vesicle is smooth and shiny with small punctations.

Pedipalps: femur with dorsointernal, dorsoexternal, ventrointernal and ventroexternal crenulated carinae; tegument with evenly scattered coarse granules dorsally and smooth granules ventrally. Patella with dorsointernal, ventrointernal, ventroexternal and external carinae with smooth granules; two spinoid granules present on the internal aspect, the internal-ventral spinoid granule being much larger than the internal-dorsal one; tegument with coarse granules dorsally and almost everywhere with smooth granules ventrally. Chela with dorsal marginal, external secondary, and ventral internal carinae,

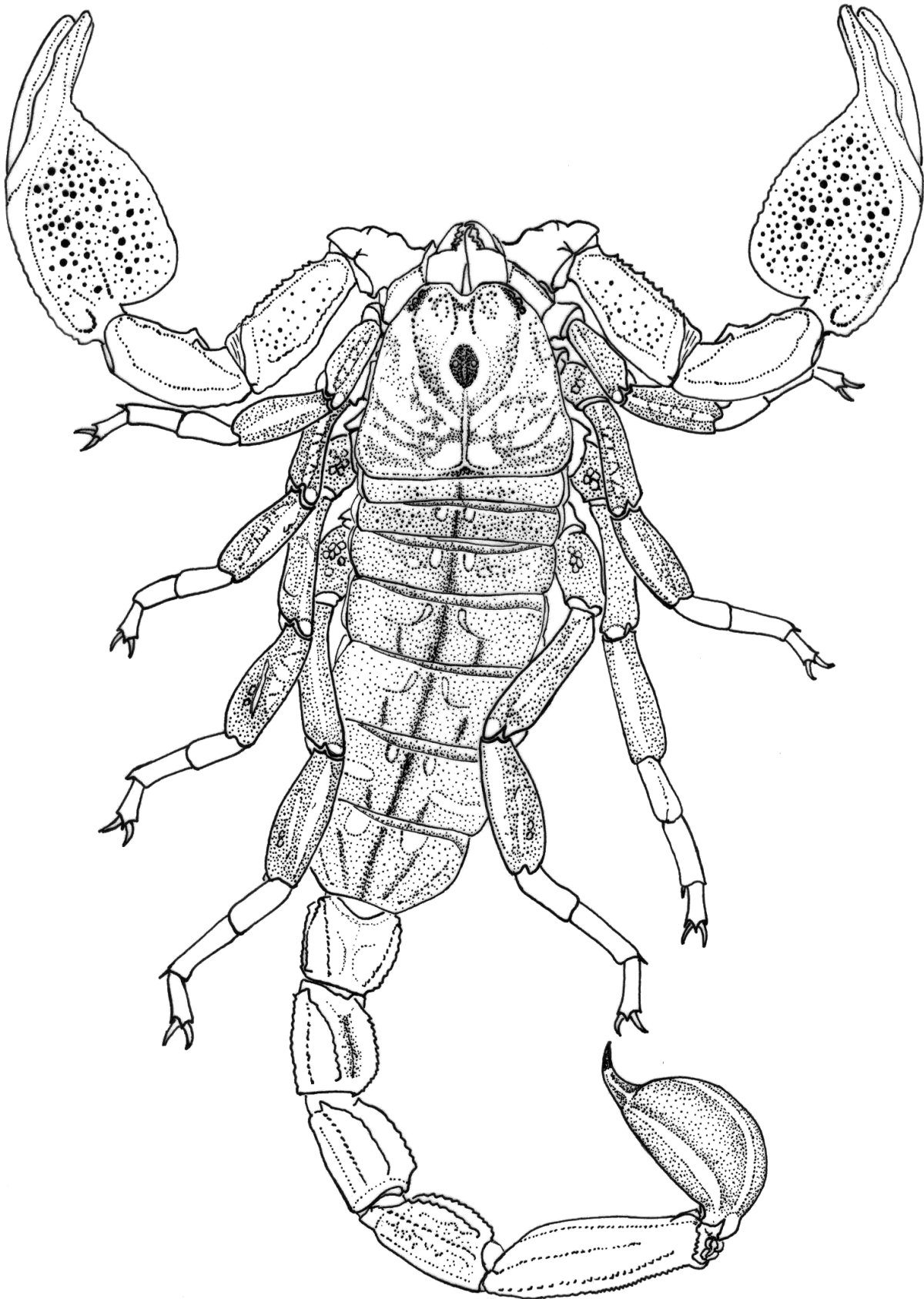
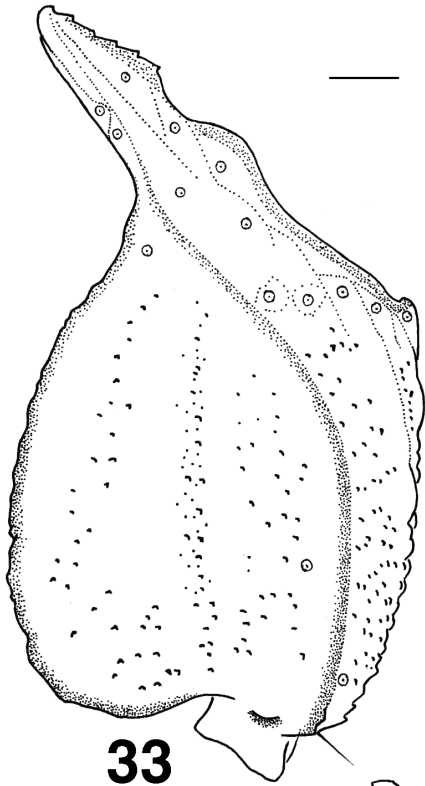
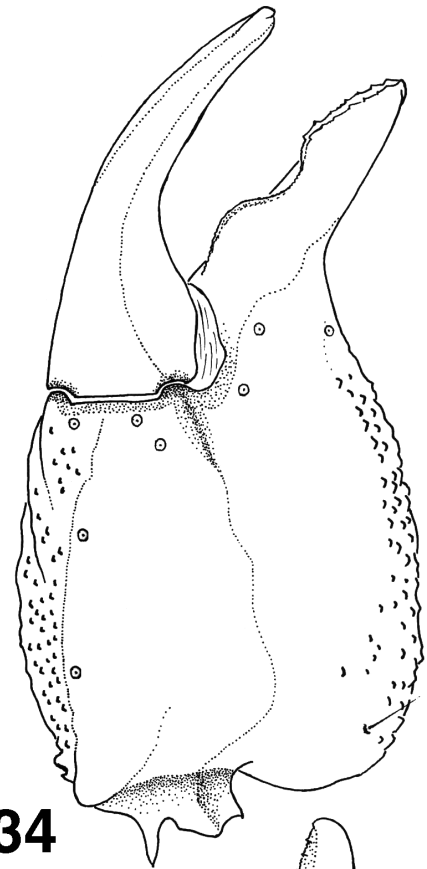
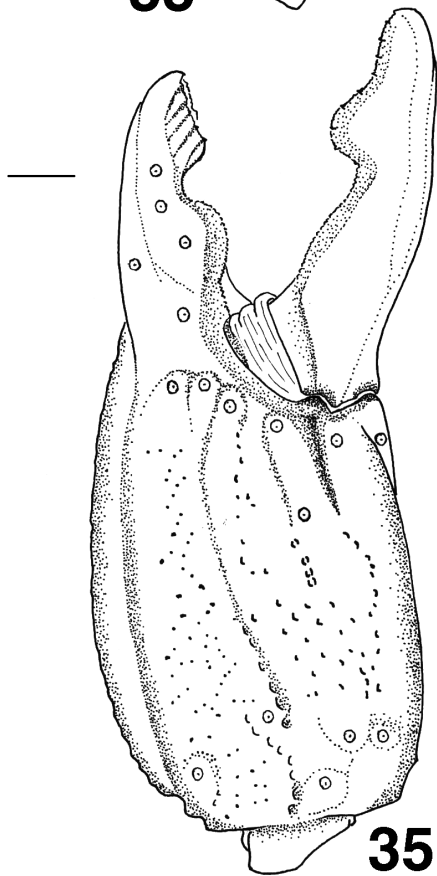
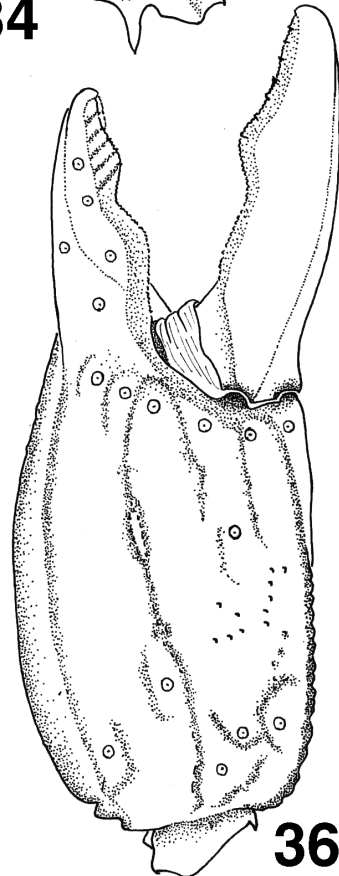
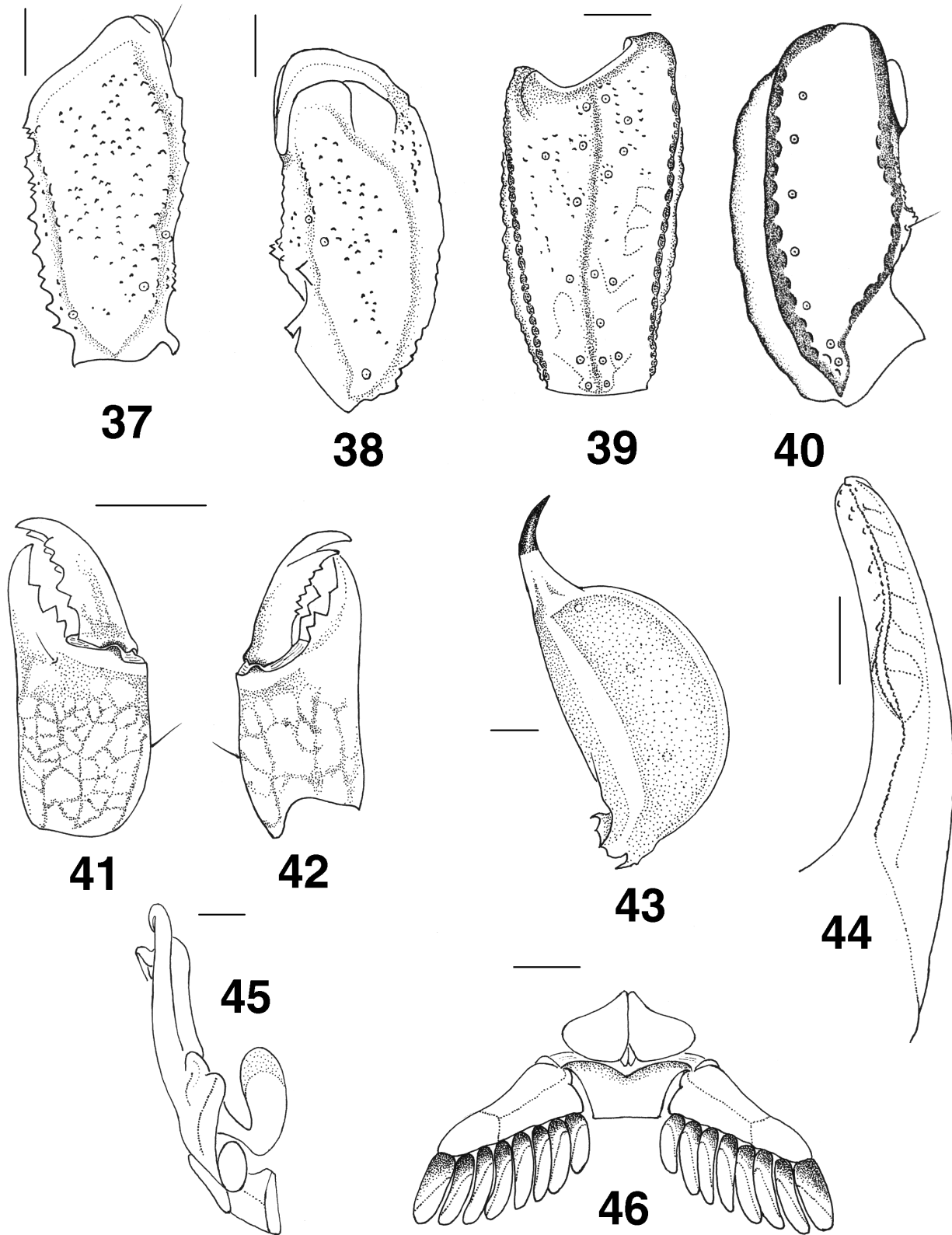


Figure 32: *Scorpions langxian* sp. n., male holotype, habitus. Total length 57.52 mm.

**33****34****35****36**

Figures 33–36: *Scorpiops langxian* sp. n., male holotype. Chela dorsoexternal, internal and external aspects. 36 same as 35, female paratype. Scales = 1 mm.



Figures 37–46: *Scorpiops langxian* sp. n., male holotype. 37. Femur, dorsal aspect. 38–40. Patella, dorsal, external and ventral aspects. 41–42. Chelicera, dorsal and ventral aspects. 43. Telson, lateral aspect. 44. Dentate margin of the pedipalp chela movable finger. 45. Paraxial organ, external aspect. 46. Genital operculum and pectines. Scales = 1 mm.

all smooth; ventral median carina is strong; other carinae are vestigial or absent; tegument is granulated dorsally and punctated ventrally. Trichobothriotaxy type C (Vachon, 1974). Chela with four ventral trichobothria. Patella with 17 external and seven ventral trichobothria.

Female paratype. Coloration and morphology are very similar to that of the male holotype. Some of the segments are slightly bulkier. Pectinal tooth count 6-6. Manus is narrower than in male.

Measurements (male holotype/female paratype). Total length, 57.52/57.76. Carapace: length, 6.76/7.27; anterior width, 3.70/3.06; posterior width, 7.91/7.65. Metasomal segment I: length, 3.32/3.44; width, 3.70/3.44. Metasomal segment V: length, 8.29/7.65; width, 2.81/2.42; depth, 2.81/2.55. Vesicle: width, 3.70/2.81; depth, 3.57/2.68. Pedipalp: femur length, 5.74/5.23; width, 2.93/2.81; patella length, 5.87/5.87; width, 3.57/3.06; chela length, 7.01/7.27; width, 6.12/5.87; depth, 4.46/4.08; movable finger length, 6.89/7.01.

Scorpiops pococki Zhu, Qi et Lourenço, **sp. n.**
(Figs. 47–61)

Diagnosis. The new species has eight trichobothria on the ventral surface of the patella (Fig. 56) and 6 or 8 pectinal teeth (Fig. 61); it also has an oval smooth region behind lateral ocular tubercles (Figs. 47 and 60). Mesosomal tergite VII with a median carina and two pairs of lateral carinae (Fig. 47).

Material. 1♂ holotype, Tibet, Gyaca district (29°08'N, 92°43'E), 22 August 2002, Ming-Sheng Zhu leg. (MHBUS); paratypes: 7♀ and 4♂, same data as holotype (1♀ and 1♂ in MNHN, the others in MHBUS); 1♀, Tibet, Zayü district, Xia Zayü town (28°30'N, 97°00'E), 7 August 2002, Ming-Sheng Zhu leg.; 1♂, Tibet, Ny-ningchi district (29°34'N, 94°30'E), 2 August 2002, Ming-Sheng Zhu leg., 2♀, 3♂, 17 August 2002, other data same as above; 3♀, Tibet, Nêdong district (29°11'N, 91°48'E), 15 August 2002, Ming-Sheng Zhu leg.; 1♂, Tibet, Xigazê (29°16'N, 88°51'E), 7 September 2002, Ming-Sheng Zhu leg.; 3♀, Tibet, Lhasa Shi (29°39'N, 91°08'E), 23 August 2003, Feng Zhang leg. (all others in MHBUS).

Etymology: Patronym in honor of Reginald Innes Pocock, who greatly contributed to scorpion science as well as other areas of zoology.

Description (based on male holotype):

Coloration: Basically reddish brown without any diffuse variegated fuscous spots. Carapace is reddish brown, and some black areas near the eyes. Tergites are dark brown. Chelicerae is unevenly dark brown and the fingers are uniformly dark reddish. Pedipalps are dark reddish-

brown. Tarsal claws are brown. Venter and sternites are yellow.

Morphology: Carapace is lustrous; anteromedian carinae are large irregularly granules; anteromedian furrow is deep, slit-shaped, lateral furrow is broad and flat; posterior median furrow is shallow, slit-shaped. Median eyes are anterior to the center of the carapace; three pairs of lateral eyes. Sternum is pentagonal and longer than wide. Tergites are almost acarinate and covered with dense finely granular; tergite I is acarinate; downwards, the median carina gradually become distinct minutely granular carinae; segment VI has a pair of marked lateral carinae; segment VII bears a median and two pairs of lateral carinae. Pectinal tooth count 8-7, fulcra absent. Sternites are smooth and shiny; segment VII has four weakly granular carinae. Metasomal segments II to V are longer than wide; segments I to V have 10-10-10-10-7 carinae; segments II-IV have a pair of weakened lateral carinae, which only occupy the posterior part; all the carinae on segments I-IV with minute serration; segment V bears ventromedian carina, which has strong serration. Vesicle is coarse and densely granular.

Pedipalps: femur with dorsal interior carina serrated; tegument is partly granular. Patella with dorsal internal, ventral internal, ventral external and external carinae, smooth; two spinoid granules present on the internal aspect, the internal-ventral spinoid granule being much larger than the internal-dorsal one; tegument smooth. Chela with dorsal marginal, external secondary, and ventral internal carinae, which are coarsely granular. Ventral median carina is strong; other carinae are vestigial or absent; tegument is granular dorsally and smooth ventrally. Trichobothriotaxy type C (Vachon, 1974). Chela with four ventral trichobothria. Patella with 17 external and eight ventral trichobothria.

Female paratype: compared with male, the finger is less flexed, pectinal tooth count 6/6. Telson is smaller than that of male.

Measurements (in mm) (male holotype/female paratype). Total length, 52.26/62.10. Carapace: length, 6.89/8.16; anterior width, 2.68/2.81; posterior width, 7.10/7.52. Metasomal segment I: length, 3.19/3.32; width, 3.57/3.57. Metasomal segment V: length, 7.65/7.65; width, 2.55/2.42; depth, 2.55/2.55. Vesicle: width, 2.81/2.93; depth, 2.93/3.06. Pedipalp: femur length, 4.97/5.87; width, 2.55/3.93; patella length, 5.10/5.74; width, 2.55/3.93; chela length, 6.76/7.27; width, 3.83/3.95; depth, 5.10/5.23; movable finger length, 5.99/6.50.

Genus *Euscorpis* Vachon, 1980

Scorpiops (*Euscorpis*) Vachon, 1980: 151 (in part); Tikader & Bastawade, 1983: 452 (in part); *Euscorpis* Lourenço, 1998: 246 (in part); Fet, 2000b: 491; Soleglad & Sissom, 2001: 93; Kovařík, 2005b: 1.

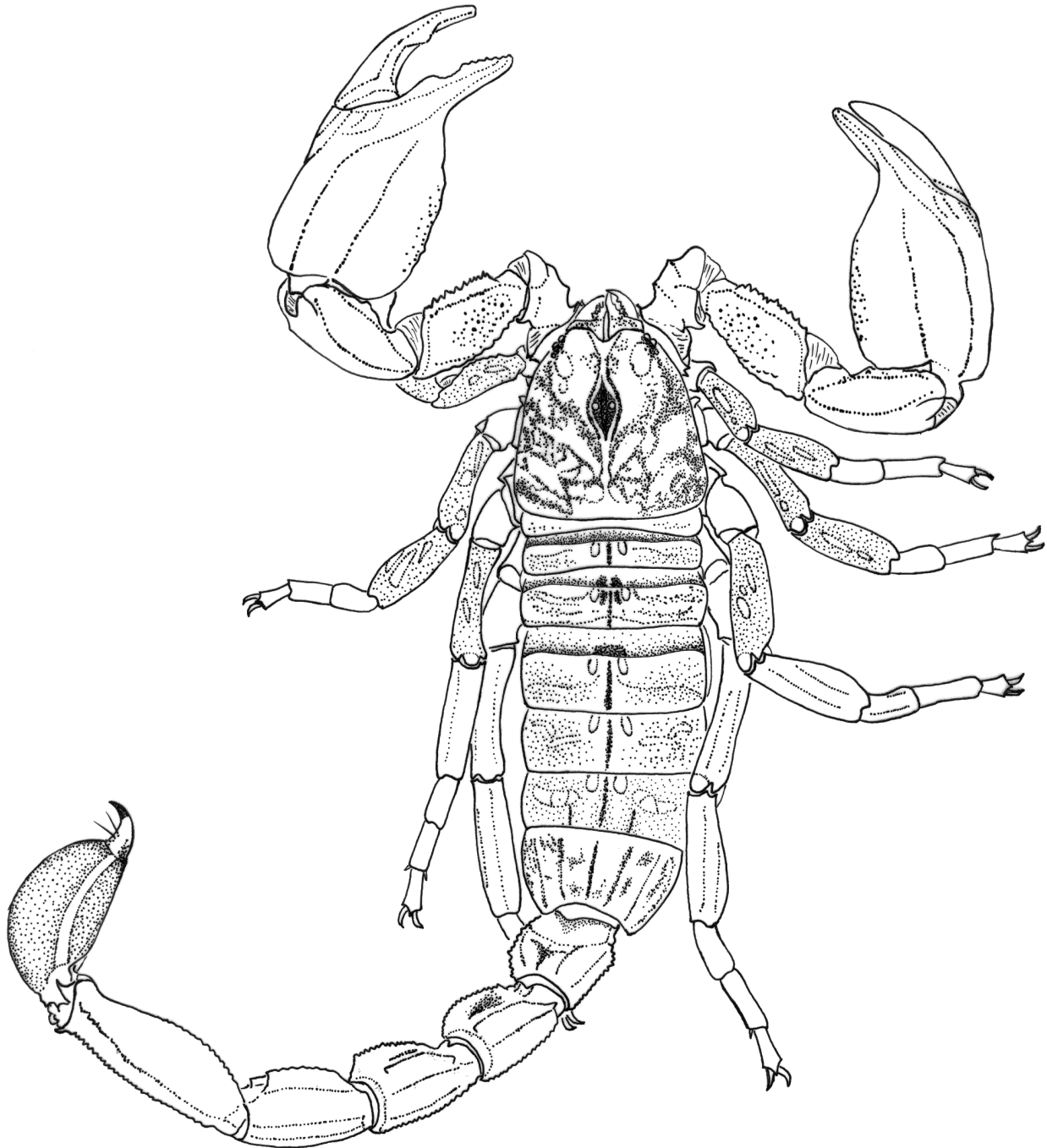
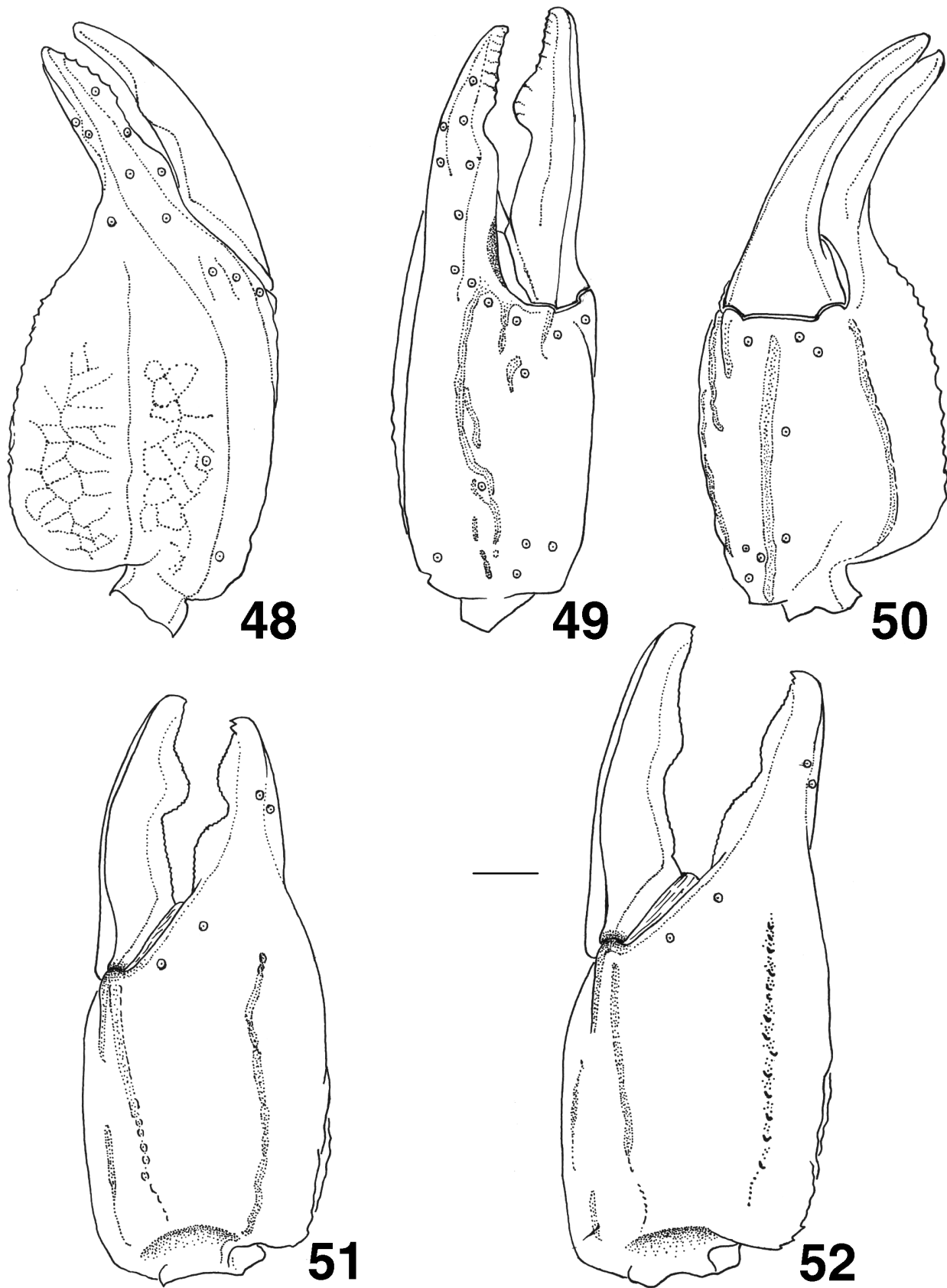


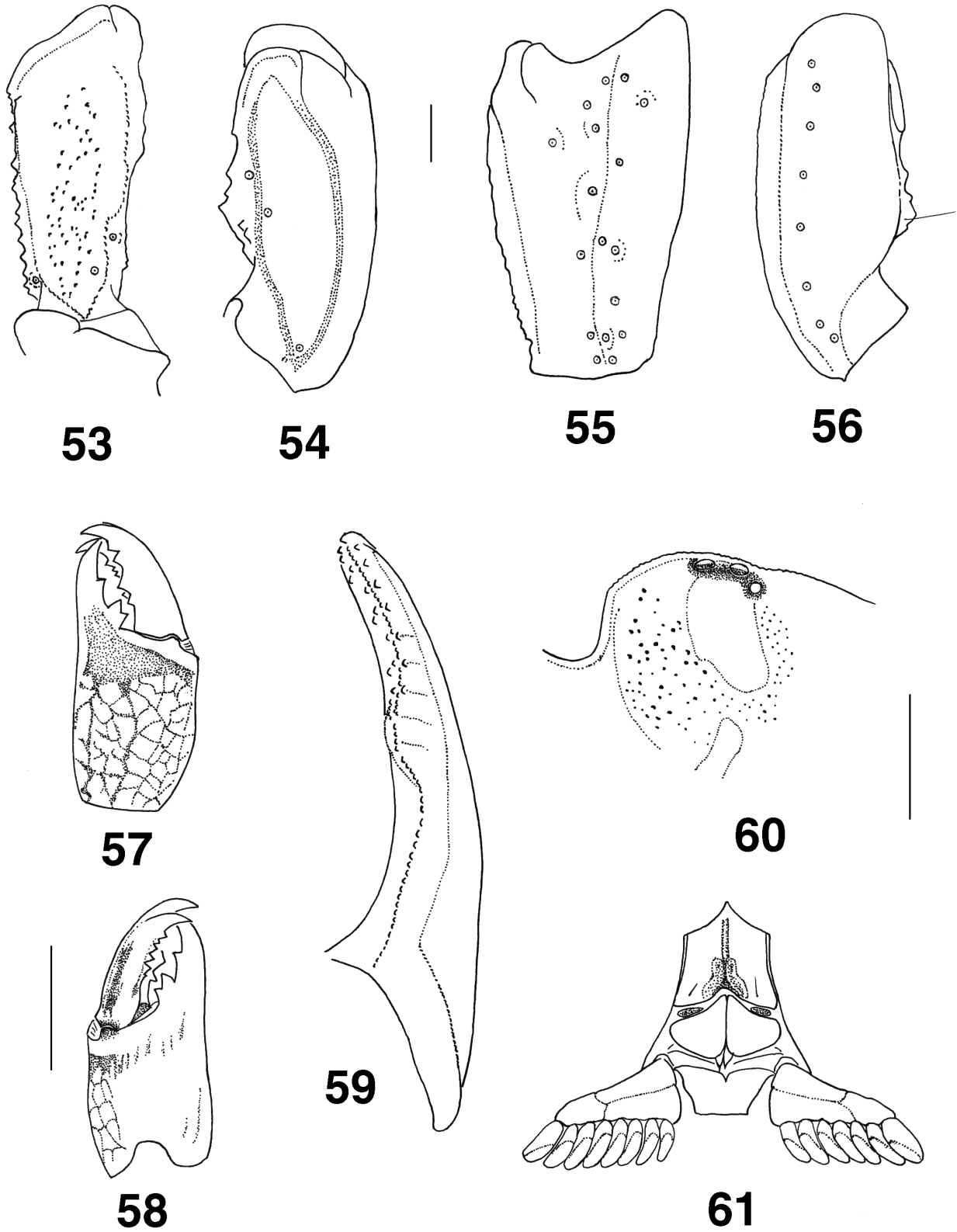
Figure 47: *Scorpions pococki* sp. n., male holotype, habitus. Total length 52.26 mm.

Diagnosis. Trichobothrium Eb_3 on the external aspect of the chela situated distally to trichobothrium Dt . Annular ring at vesicle/aculeus juncture present. Three pairs of lateral eyes. 17-21 external trichobothria on pedipalp patella. Ventral surface of patella bears 6-18 trichobothria. Ventral surface of manus bears 4 trichobothria.

Comments. Recently, Kovařík (2005b) described a new species of this genus, *Euscorpions novaki* Kovařík, 2005, based on a single male specimen, which is also the first species of *Euscorpions* recorded from Tibet (Bomi, 29°52' N, 95°45' E) as well as from China. Comparison of this species' description and distribution with our ma-



Figures 48–52: *Scorpiops pococki* sp. n., male holotype. Chela, dorsoexternal, external, ventral and internal aspects. 51 same as 52, female paratype. Scale = 1 mm.



Figures 53–61: *Scorpiops pococki* sp. n., male holotype. **53.** Femur, dorsal aspect. **54–56.** Patella, dorsal, external and ventral aspects. **57–58.** Chelicera, dorsal and ventral aspects. **59.** Disposition of granulations on the dentate margin of the pedipalp chela movable finger. **60.** Lateral ocular region, in detail, dorsal aspect. **61.** Sternum, genital operculum and pectines. Scale = 1 mm.

terial shows that *E. novaki* differs from our new species found in Tibet.

***Euscorpis vachoni* Zhu, Qi et Lourenço, sp. n.**
(Figs. 62–77)

Diagnosis. The new species has 7 to 8 pectinal teeth (Figs. 73–74). Median ocular tubercles are smooth, with a pair of small median eyes, which are almost as large as lateral eyes.

Material. 1♂ holotype, Mengla district (21°29' N, 101°33' E), Yunnan Province, 2 August 2004, Zi-Zhong Yang, Jing Li and Cai-Xia Yuan leg. (MHBU); Paratypes: 1♀, same data as holotype (MHBU), 1♂, Tibet, Nyingchi district, Bayizhen town (29°41' N, 94°21' E), 3 August 2003, Feng Zhang leg. (MNHN).

Etymology: Patronym in honor of Max Vachon, who devised the nomenclatural system for trichobothria, a landmark in the history of scorpion research.

Description (based on male holotype).

Coloration: Basically brown without any diffuse variegated fuscous spots. Carapace is dark brown, with some black area near the eyes. Tergites I–VI are dark brown, and tergite VII is pale brown; sternites are dark yellow. Metasoma: all segments are black brown and darker than tergites; vesicle is black brown with the end of the aculeus darker. Chelicerae are yellow and provided with dark brown stripes; their fingers are dark brown and gradually lighter toward the tip, which is yellow. Pedipalps are dark brown, with black carinae. Legs are brown. Venter and sternites are dark yellowish.

Morphology: Carapace is lustrous and acarinate, with dense, minute granules, of which a few granules are irregular; lateral furrow broad and flat; posterior median furrow well-expressed. Median eyes are anterior to the center of the carapace; three pairs of lateral eyes. Sternum is pentagonal, longer than wide. All tergites are acarinate, smooth and shiny with sparse small punctations except for segment VII, which has two lateral carinae. Pectinal tooth count 7–8. Sternites are smooth and shiny; segment VII with four very weak carinae. Metasoma segments II to V are longer than wide; segments I to V have 10–10–8–8–7 carinae; all carinae of segments I–IV are almost evenly granular, but inner carinae with irregular coarse granules; the tegument punctated; segment V is covered with dense, small granulation ventrally, all its carinae are weakly dentated. Vesicle is smooth, with shallow depressions.

Pedipalps: femur with dorsointernal, dorsoexternal, ventrointernal and ventroexternal crenulated carinae; patellar interior carina with irregular granules, and the external carina with scattered irregular granules; two spinoid granules present on the internal aspect, the inter-

nal-ventral spinoid granule being much larger than the internal-dorsal one; tegument punctated. Chela is short, stout and robust, covered with moderate to strong granulation; all carinae are well developed. Interior carinae are evenly granular, external ones are irregularly granular. Inner carinae are granular. Trichobothriotaxy type C (Vachon, 1974). Chela with four ventral trichobothria. Patella with 17 external and ten ventral trichobothria.

Female paratype. Coloration and morphology are very similar to that of the male holotype. Some of the segments are slightly bulkier. Pectinal tooth count 7–7. The base of the movable finger of pedipalp bears a knob matching a corresponding depression, but is not clearly expressed.

Measurements (male holotype/female paratype). Total length, 52.89/42.28. Carapace: length, 8.42/5.99; anterior width, 3.44/2.55; posterior width, 8.42/5.99. Metasomal segment I: length, 2.81/1.91; width, 3.32/2.55. Metasomal segment V: length, 6.50/4.46; width, 2.55/1.53; depth, 2.30/1.53. Vesicle: width, 2.30/1.66; depth, 2.42/1.53. Pedipalp: femur length, 7.52/5.36, width, 3.19/2.30; patella length, 6.76/4.85, width, 3.19/2.17; chela length, 8.23/6.38, width, 5.61/3.32, depth, 4.72/2.25; movable finger length, 8.16/5.61.

***Euscorpis shidian* Zhu, Qi et Lourenço, sp. n.**
(Figs. 78–93)

Diagnosis. The new species has 11 trichobothria on the ventral surface of the patella (Fig. 87). It has a pair of small median eyes, which are almost as large as lateral eyes. It has 7–8 pectinal teeth (Figs. 92 and 93). Each of the dorsal carinae on metasomal segments ends in a pair of small pointed spines (Fig. 78).

Comments. *Euscorpis shidian* sp. n., can be distinguished from other *Euscorpis* species by the following features: (a) 11 ventral trichobothria on the patella; (b) pectinal tooth count 7; (c) body basically brown; (d) all dorsal carinae of each segment end in a pair of small pointed spines.

Material. Holotype male, Yunnan Province, Shidian district (24.43°N, E. 99.09°E), Jiucheng town, 15 June 2004, Ying-Da Zhang and Zi-Zhong Yang leg. (MHBU); paratypes: 3 females, same data as holotype (one in MNHN, the others in MHBU).

Etymology. The specific name refers to Shidian district of Yunnan Province, type locality of the new species.

Description (based on male holotype):

Coloration: Basically brown without any diffuse variegated fuscous spots. Carapace is brown, with some black area near the eyes. Tergites are dark brown. Metasomal

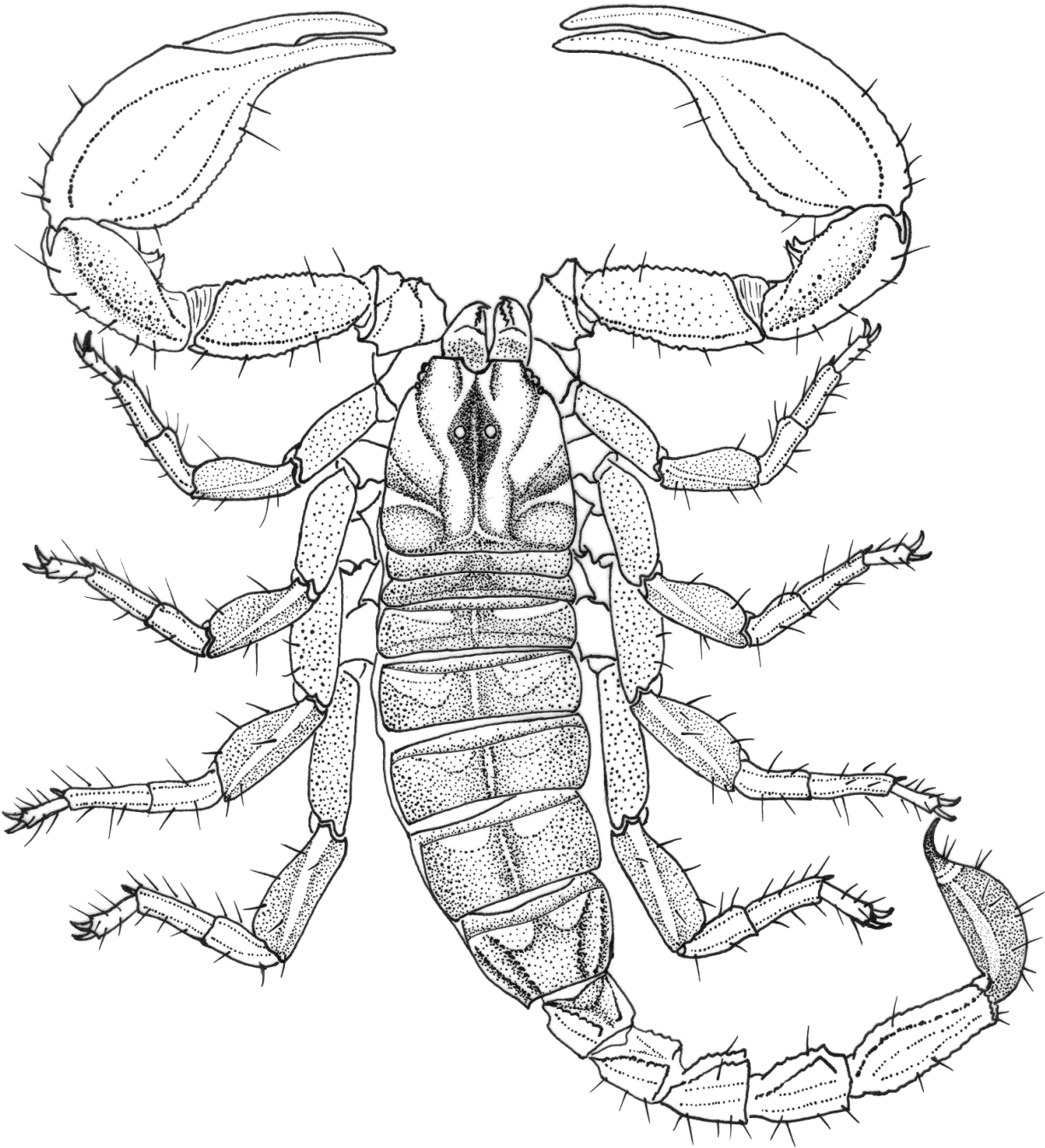
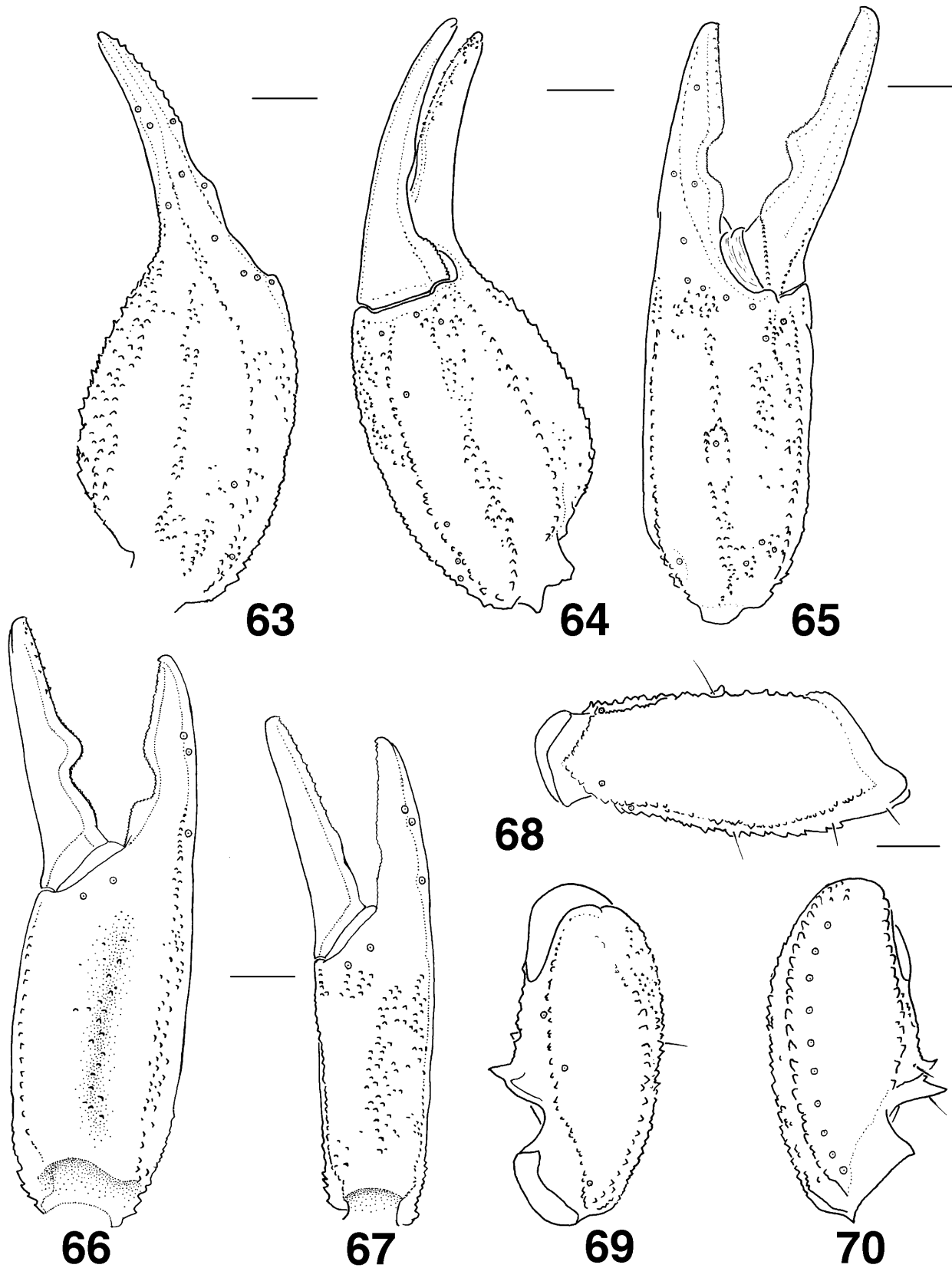


Figure 62: *Euscorplops vachoni* sp. n., male holotype, habitus. Total length 52.9 mm.

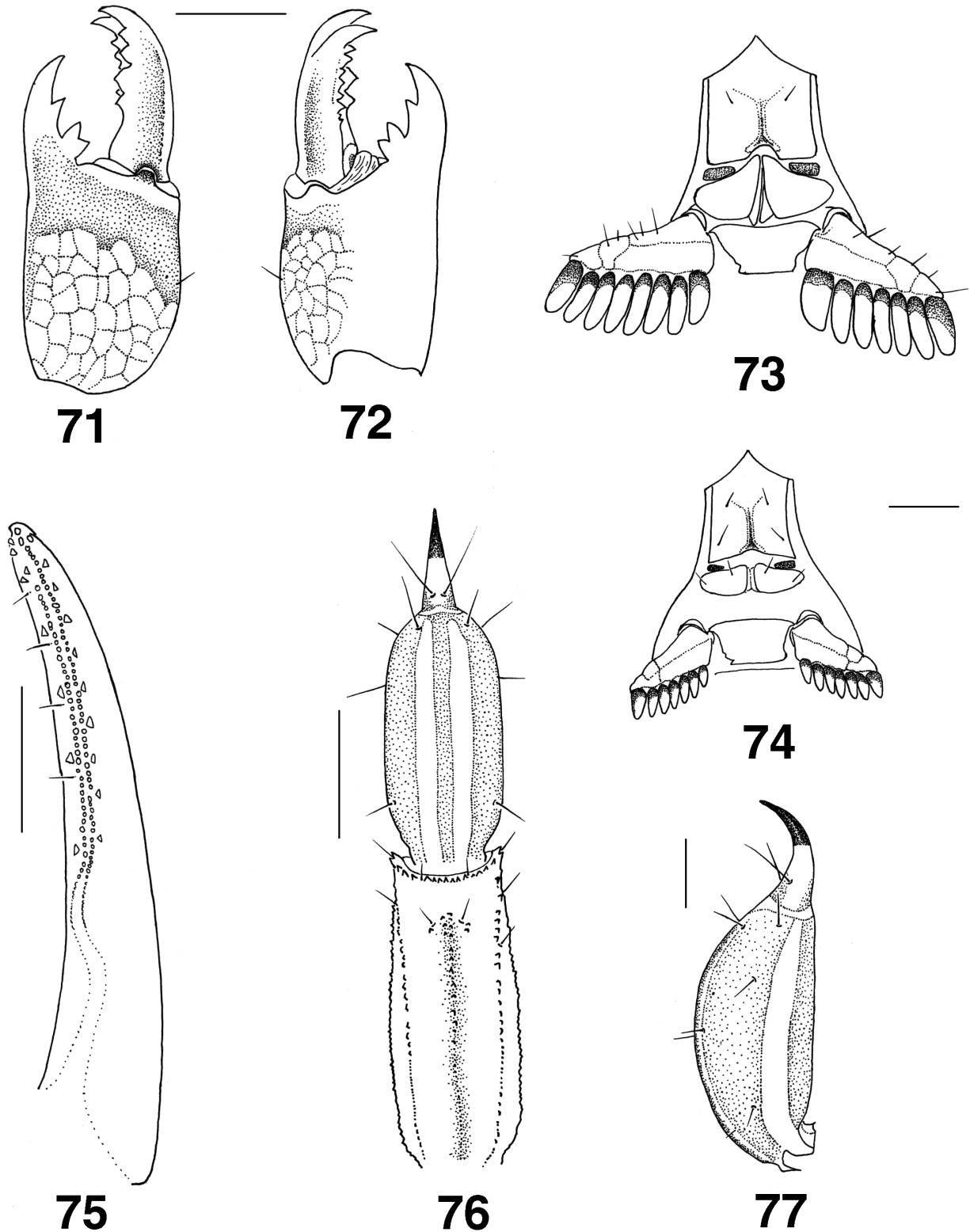
segments are black brown; vesicle is reddish-brown, with the end of the aculeus dark reddish. Chelicerae is yellow and its fingers uniformly dark reddish. Pedipalps are dark reddish-brown. The claws of legs are light reddish-brown. Venter and sternites are yellow.

Morphology: Carapace is lustrous; lateral furrow broad and flat; posterior median furrow shallow, slit-shaped; dorsal surface is finely granular; anteromedian carinae

are irregularly granular; three pairs of lateral eyes. Median ocular tubercle is smooth and forms an obvious promontory with a pair of small median eyes, located anterior to the center of the carapace. Sternum is pentagonal and longer than wide. Tergites are almost acinate, with sparse small punctations except for tergite VII which has a median and two pair of lateral carinae. Pectinal tooth count 7. Sternites are smooth, sternite VII has



Figures 63–70: *Euscorplops vachoni* sp. n., male holotype. 63–67. Chela, dorsoexternal, ventral, external and internal aspects. 67 same as 66, female paratype. 68. Femur dorsal aspect. 69–70. Patella dorsal and ventral aspects. Scales = 1 mm.



Figures 71–77: *Euscorplops vachoni* sp. n., male holotype. 71–72. Chelicera, dorsal and ventral aspects. 73. Sternum, genital operculum and pectines. 74 same as 73, female paratype. 75. Dentate margin of the pedipalp chela movable finger. 76. Metasomal segment V and telson, ventral aspect. 77. Telson, lateral aspect. Scales = 1 mm.

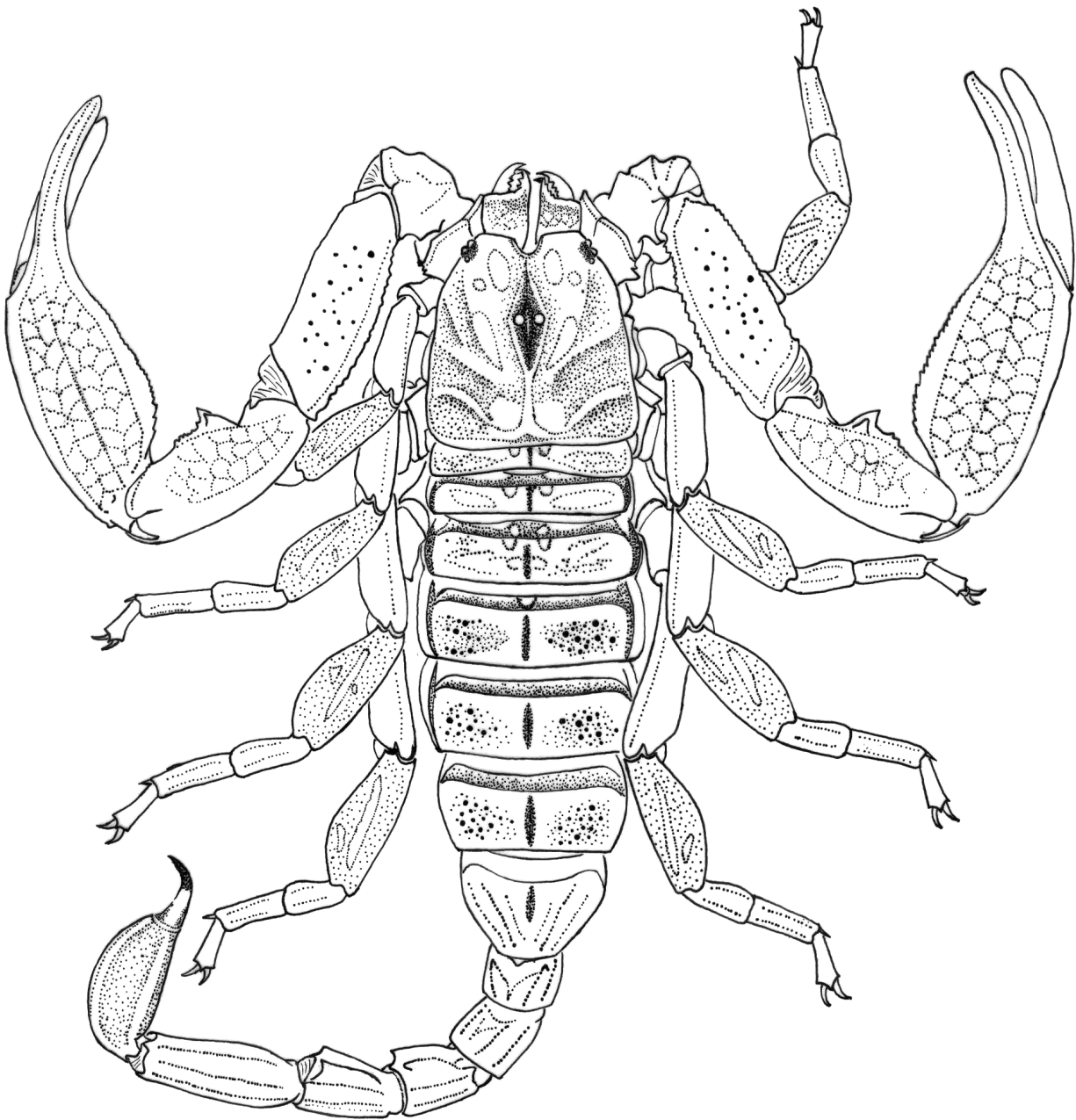
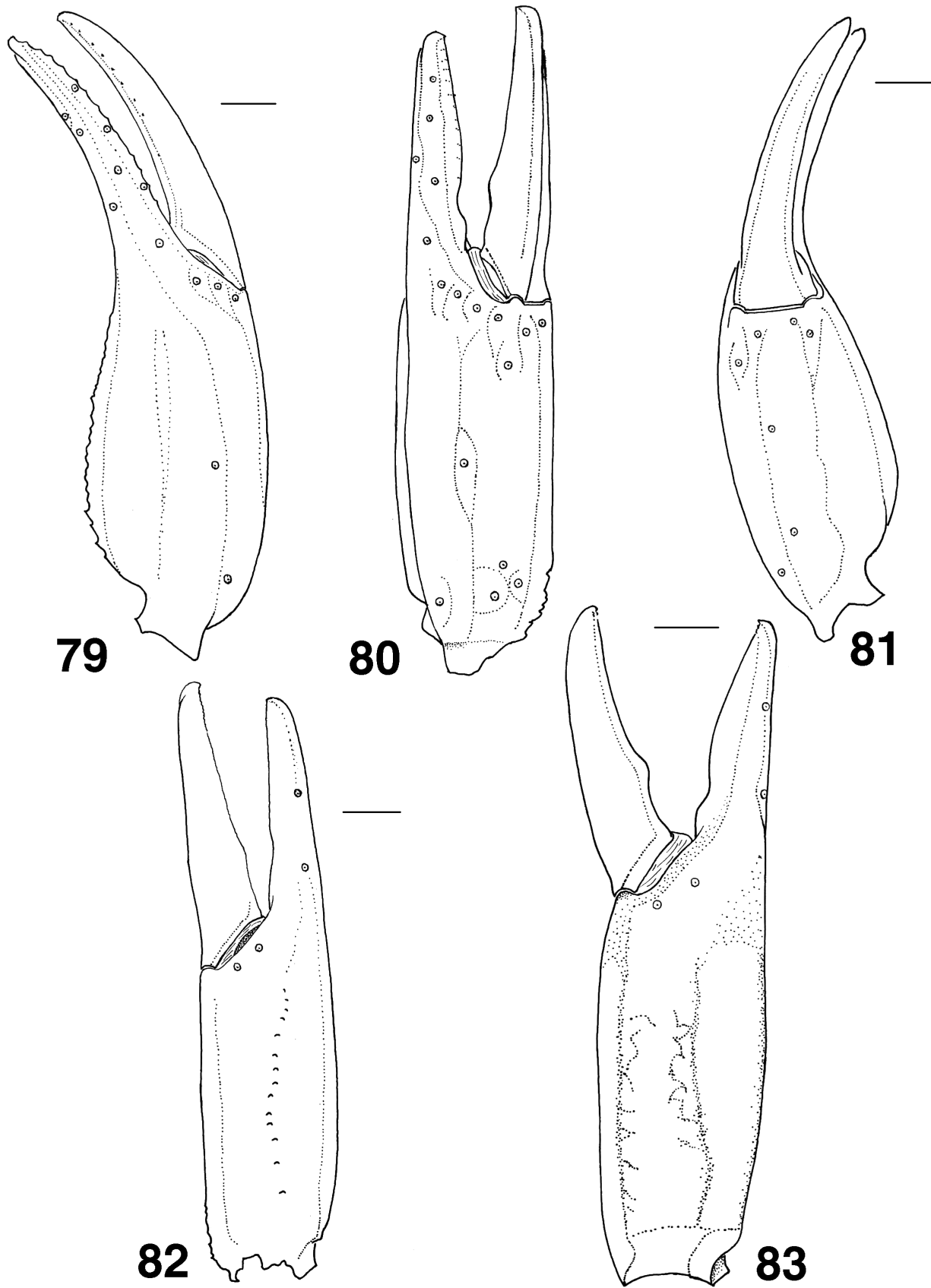


Figure 78: *Euscorpilus shidian* sp. n., male holotype, habitus. Total length 48.85 mm.

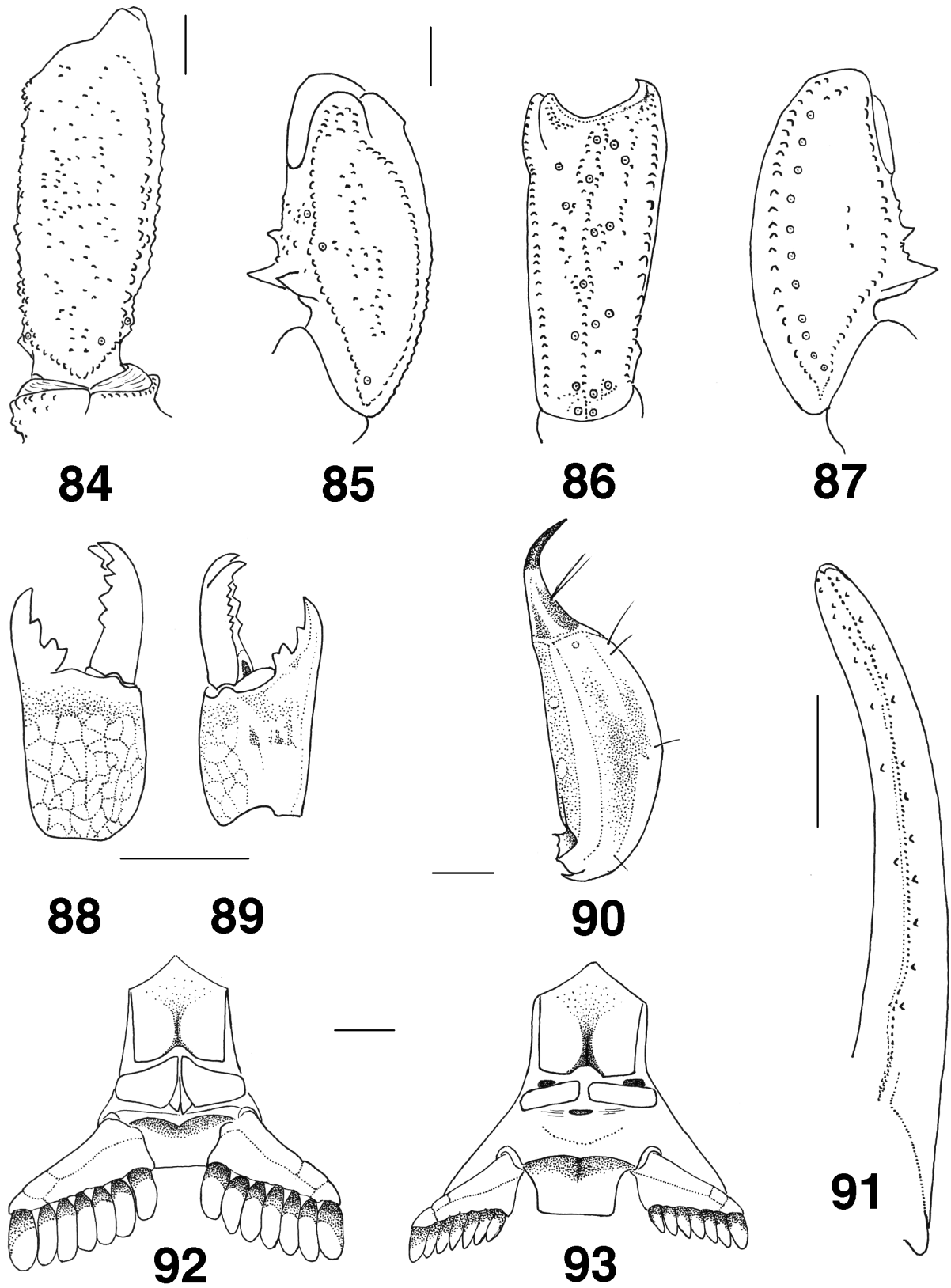
four coarsely granular, weak carinae. Metasomal segments II to V are longer than wide; segments I to V have 10-8-8-8-7 carinae; the dorsal carinae on segments I to IV is a single spinoid posterior granule; the tegument punctated; dorsal carinae of segment V are minutely granular. Vesicle surface is coarse.

Pedipalps: each segment is flat. Femur with dorsal internal and dorsal external carinae coarsely granular, ventral internal and ventral external carinae, which are crenulate; tegument bears pale stripes. Patella with dor-

sal internal, ventral internal, ventral external and external carinae, which are smooth; two spinoid granules present on the internal aspect, the internal-ventral spinoid granule being much larger than the internal-dorsal one; tegument is coarsely granular dorsally and smooth ventrally. Chela with dorsal marginal, external secondary, and ventral internal carinae, which are coarsely granular; ventral median carina is strong; other carinae are vestigial or absent; tegument is granulated dorsally and punctated ventrally, with pale reticulation stripes.



Figures 79–83: *Euscorplops shidian* sp. n., male holotype. Chela, dorsoexternal, external, ventral and internal aspects. 83 same as 82, female paratype. Scales = 1 mm.



Figures 84–93: *Euscorpilus shidian* sp. n., male holotype. 84. Femur, dorsal aspect. 85–87. Patella, dorsal, external and ventral aspects. 88–89. Chelicera, dorsal and ventral aspects. 90. Telson, lateral aspect. 91. Dentate margin of the pedipalp chela movable finger. 92. Sternum, genital operculum and pectines. 93 same as 92, female paratype. Scales = 1 mm.

Trichobothriotaxy type C (Vachon, 1974). Chela with 4 ventral trichobothria. Patella with 17 external and 11 ventral trichobothria.

Female paratype. Coloration and morphology are very similar to that of the male holotype. Some of the segments are slightly bulkier. Pectinal tooth count 7-7. Telson is smaller than that of the male.

Measurements (male holotype/female paratype). Total length, 48.85/59.81. Carapace: length, 7.40/7.78; anterior width, 3.32/3.44; posterior width, 7.40/8.29. Metasomal segment I: length, 2.30/2.42; width, 2.81/3.06. Metasomal segment V: length, 9.56/6.38; width, 2.68/1.91; depth, 2.81/2.17. Vesicle: width, 3.95/2.30; depth, 3.83/2.17. Pedipalp: femur length, 8.93/7.65, width, 3.70/3.19; patella length, 8.296.38/6.38, width, 4.08/3.70; chela length, 10.20/9.05, width, 6.38/3.83, depth, 4.59/3.95; movable finger length, 9.82/7.91.

Euscorpions karschi Lourenço, Zhu et Qi, **sp. n.**
(Figs. 94–108)

Diagnosis: The new species is of moderate size (Fig. 94) and also differs from the other members of the group in possessing evenly scattered coarse granules of moderate size on carapace. Body color is 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.

Material: 1 ♀ holotype, Tibet, Zayü district, Xia Zayü town (28°30' N, 97°00' E), 8 August 2002, Ming-Sheng Zhu leg. (MHBU). Paratypes: 2 ♀ and 2 immature ♂, same data as holotype (one in MHBU, one in MNHN).

Etymology: Patronym in honor of Friedrich Karsch who first described *Mesobuthus martensii* (Buthidae), a widespread scorpion species in China.

Description (based on female holotype):

Coloration: Basically brown without any diffuse variegated fuscous spots. Carapace is brown, and some black area near the eyes. Tergites are dark brown, fuscous. Pedipalps dorsally are dark reddish-brown and ventral yellow. The top of aculeus is reddish brown. Tarsal claw is dark brown. Venter and sternites are yellowish.

Morphology: Carapace is evenly covered with coarse sparse granules and bears anteromedian lateral carinae, which are granular and weak; lateral furrow broad and flat, posterior median furrow shallow, slit-shaped. Median eyes are anterior to the center of the carapace; three pairs of lateral eyes, the third ones being vestigial and situated behind the first two. Sternum is pentagonal and

longer than wide. Tergites are coarsely granular; tergite I is almost acarinate; segments II-V have a pair of marked lateral carinae; segments VII bears a very weak median and two pair of lateral carinae. Sternum is pentagonal, smooth and longer than wide. Pectinal tooth count 7-7. Sternites are smooth and shiny; segment VII has four weak carinae, which are coarsely granular. Metasoma segments II to V are longer than wide; segments I to V have 10-10-10-8-7 carinae. Dorsal carinae are serrated, and all end in a pair of pointed spines; those on segment VI end in a pair of lobes; dorsal carinae of segment V are weak, other carinae are granular. Vesicle is smooth.

Pedipalps: femur is scattered with irregularly coarse granules on dorsal surface, interior aspect with serrated carinae; tegument is weakly granular. Patella: external carinae crenulate; interior carinae armed with two pointed protuberances and several small ones; tegument coarsely granular dorsally and smooth ventrally. Chela with dorsal marginal and external secondary carinae, which are granular; ventral internal is dentated; ventral median carina is strong; other carinae are vestigial or absent. Trichobothriotaxy type C (Vachon, 1974). Chela with four ventral trichobothria. Patella with 17 external and eight ventral trichobothria.

Male paratype. Morphology is very similar to that of the female holotype. Coloration is darker than that of female. Pectinal tooth count 9-9.

Measurements (in mm) (female holotype). Total length, 48.18. Carapace: length, 7.65; anterior width, 3.32; posterior width, 7.40. Metasomal segment I: length, 2.30; width, 3.06. Metasomal segment V: length, 6.38; width, 2.04; depth, 2.04. Vesicle: width, 2.30; depth, 2.42. Pedipalp: femur length, 7.78, width, 2.93; patella length, 6.38, width, 3.40; chela length, 8.93, width, 4.59, depth, 4.02; movable finger length, 7.40.

List of the known Chinese species of Scorpiopinae (tribe Scorpiopini)

1. *Scorpiops atomatus* Qi, Zhu et Lourenço, **sp. n.**
2. *Scorpiops hardwickii* (Gervais, 1843)
3. *Scorpiops jendeki* Kovařík, 1994
4. *Scorpiops langxian* Zhu, Qi et Lourenço, **sp. n.**
5. *Scorpiops luridus* Zhu, Lourenço et Qi, **sp. n.**
6. *Scorpiops margerisonae* Kovařík, 2000
7. *Scorpiops petersii* Pocock, 1893
8. *Scorpiops tibetanus* Hirst, 1911
9. *Scorpiops pococki* Zhu, Qi et Lourenço, **sp. n.**
10. *Euscorpions vachoni* Zhu, Qi et Lourenço, **sp. n.**
11. *Euscorpions novaki* Kovařík, 2005
12. *Euscorpions karschi* Lourenço, Zhu et Qi, **sp. n.**
13. *Euscorpions shidian* Zhu, Qi et Lourenço, **sp. n.**

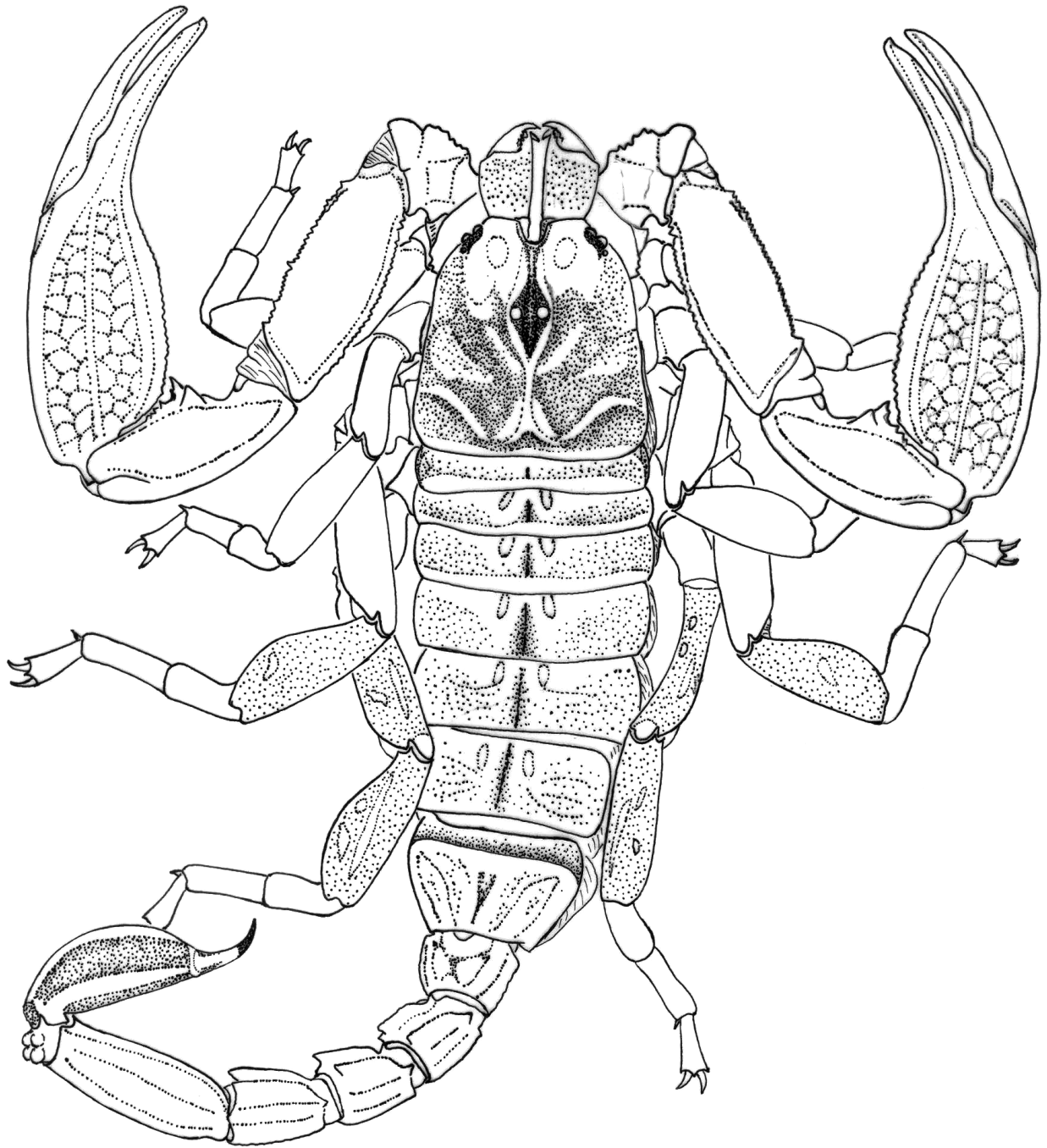
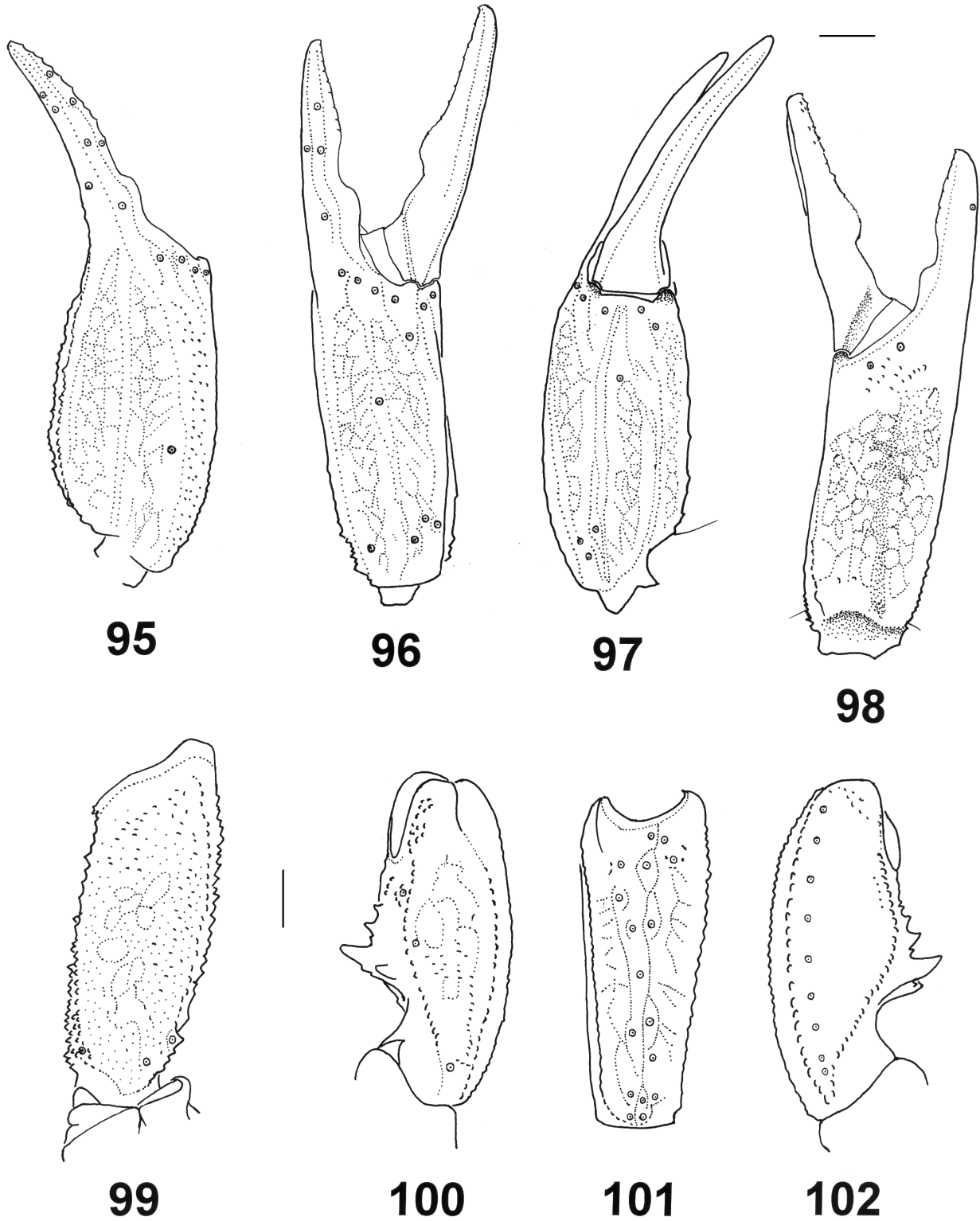
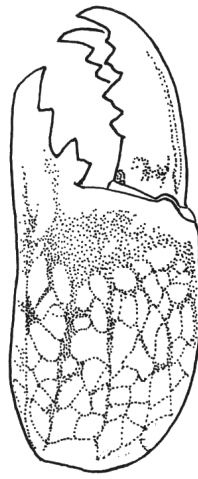
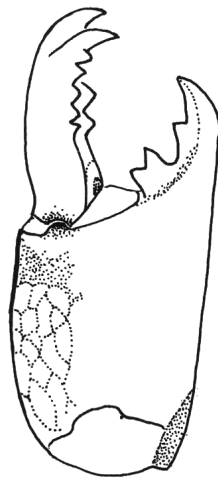
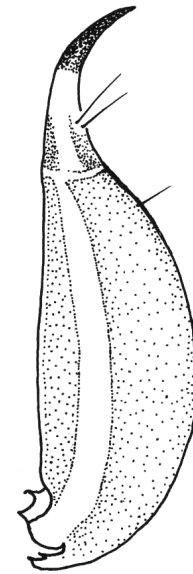
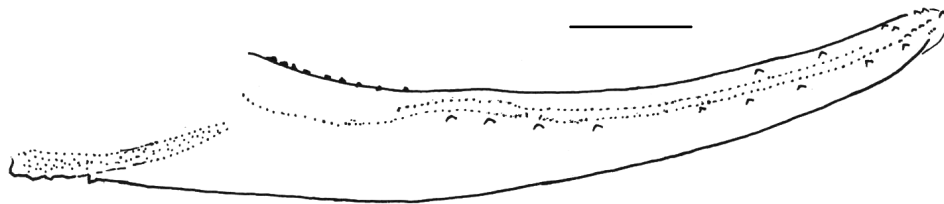
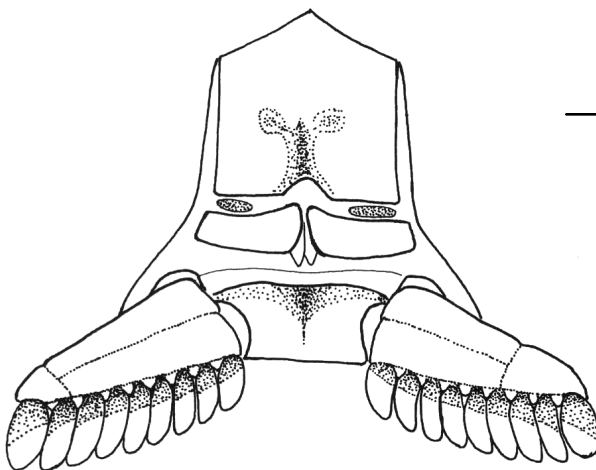
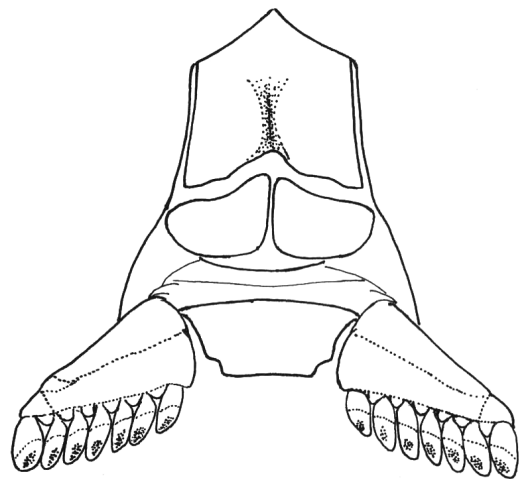


Figure 94: *Euscorpilus karschi* sp. n., female holotype, habitus. Total length 48.18 mm.



Figures 95–102: *Euscorpiops karschi* sp. n., female holotype. 95–98. Chela, dorsoexternal, external, ventral and internal aspects. 99. Femur dorsal aspect. 100–102. Patella dorsal, external and ventral aspects. Scale = 1 mm.

**103****104****105****106****107****108**

Figures 103–108: *Euscorplops karschi* sp. n., female holotype. **103–104.** Chelicera, dorsal and ventral aspects. **105.** Telson, lateral aspect. **106.** Dentate margin of the pedipalp chela movable finger. **107–108.** Sternum, genital operculum and pectines. **107.** male paratype. **108.** female holotype.

**Key to the known Chinese species
of Scorpioninae (tribe Scorpionini)**

1. Trichobothria *Eb*₃ on the external aspect of the chela located basally to trichobothrium *Dt*. Annular ring at vesicle/aculeus juncture absent ... 2 (genus *Scorpiops*)
- Trichobothria *Eb*₃ on the external aspect of the chela located distally to trichobothrium *Dt*. Annular ring at vesicle/aculeus juncture present ... 11 (genus *Euscorpions*)
2. Fingers of pedipalps in both males and females straight, not flexed; 6 or 7 ventral trichobothria on the patella (generally 6, rarely 7) *Scorpiops jendeki*
- Fingers of pedipalps clearly flexed 4
4. Pedipalp chela manus almost as long as wide; six to eight ventral trichobothria on the patella (generally six or seven, rarely eight) *S. hardwickii*
- Pedipalp chela manus usually longer than its width .. 5
5. Eight to nine ventral trichobothria on the patella; pectinal teeth number 12 to 13; shorter metasoma and smaller telson *S. margerisonae*
- Number of pectinal teeth less than or equal to 11 ... 6
6. Body color from yellowish to yellow *S. luridus*, **sp. n.**
- Body color from dark brown to black 7
7. Body size less than 40 mm *S. atomatus*, **sp. n.**
- Body size more than 50 mm 8
8. Distance between median eyes much more than their diameter *S. langxian*, **sp. n.**
- Distance between median eyes only slightly more than their diameter 9
9. Smooth oval region found behind lateral ocular tubercles; 8 ventral trichobothria on the patella *S. pococki*, **sp. n.**
- Smooth oval region behind lateral ocular tubercles not present 10
10. Carapace is granulated, but not densely; usually 7 (rarely 6 to 8) ventral trichobothria on the patella; pectinal teeth number 4 to 7 *S. petersii*
- 7 to 10 (usually 9, sometimes 7) ventral trichobothria on the patella *S. tibetanus*
11. 11 ventral trichobothria on the patella; pectinal teeth number 7 *Euscorpions shidian*, **sp. n.**
- Less than 11 ventral trichobothria on the patella ... 12
12. 10 ventral trichobothria on the patella
E. vachoni, **sp. n.**

- Less than 10 ventral trichobothria on the patella ... 13

13. 9 ventral trichobothria on the patella; pectinal teeth number 8 (male) *E. novaki*

- 8 ventral trichobothria on the patella; pectinal teeth number 9 (male), 7 (female) *E. karschi*, **sp. n.**

**Family Chaerilidae Pocock, 1893
Subfamily Chaerilinae Pocock, 1893**

Comments. According to the *Catalog of Scorpions of the World* (Fet, 2000a), this monotypic family includes 21 species, all belonging to the genus *Chaerilus* Simon, 1877. In a recent revision, Kovařík (2000) defined 18 species as valid, and added two more species most recently (Kovařík, 2005a). This genus was originally described and placed in the family Chactidae; subsequently it was moved to its own subfamily Chaerilinae, and placed in the family Iuridae by Pocock (1893). A few years later, Laurie (1896) moved the Chaerilinae as a subfamily to the family Buthidae. Finally, Kraepelin (1899) raised the Chaerilinae to the rank of family. Vachon (1963) defined a unique pattern of cheliceral dentition for the Chaerilidae. Some years later, the same author (Vachon, 1974) characterized the unique trichobothrial pattern of Chaerilidae, defined as Type B, a totally different type from both Buthidae (type A) and all other families (type C).

The family Chaerilidae is distributed only in South and Southeast Asia. To explain this pattern of distribution, Lamoral (1980) suggested that the ancestors of the chaerilids originated in Pangaeian times as an eastern Laurasian relic that moved into the Oriental Region after the Indian plate connected with Eurasia. They became isolated in the Oriental Region as the Himalayas formed (Sissom, 1990). Santiago-Blay et al. (2004) described a fossil genus *Electrochaerilus* and subfamily Electrochaerilinae from the Cretaceous amber of Myanmar (Burma). In China, representatives of this family were poorly known until now. The only one known species and another, new species are both from the Tibet region.

Genus *Chaerilus* Simon, 1877

Chaerilus Simon, 1877: 238; Kraepelin, 1899: 157; Pocock, 1900: 53; Vachon, 1974: 912; Tikader & Bastawade, 1983: 317; Fet, 2000a: 323; Kovařík, 2000b: 38; Kovařík, 2005a: 1.

Diagnosis. All four teeth on fixed finger of chelicera are distinct (i.e., the median and basal teeth do not form a bicuspid). The movable finger has one subdistal and one basal tooth on the external margin; external distal tooth smaller than the internal distal; internal margin with distinct serration or a row of small teeth. Trichobothrial pattern is of Type B. All species possess the fundamental number and pattern of Type B (Vachon 1974). The

coxapophyses have broadly expanded anterior lobes. The sternum is subpentagonal. The legs lack tibial spurs, but both prolateral and retrolateral pedal spurs are present. Tarsi bear two rows of ventral setae and a median row of spinules. The telson is without a subaculear tubercle.

***Chaerilus tessellatus* Qi, Zhu et Lourenço, sp. n.**
(Figs. 109–125)

Diagnosis: The new species is of moderate size and smooth median ocular tubercles with a pair of small median eyes, which are almost as large as lateral eyes (Fig. 118). The new species also has two pairs of dentated carinae on sternites V. Mesosomal tergites carinated, with a pair of median circular spots and transverse yellow spots (Fig. 109).

Comments. *Chaerilus tessellatus* sp. n., can be distinguished from other *Chaerilus* species, and in particular from *Chaerilus truncatus* Karsch, 1879, the most geographically close species of the genus, by the following features: (a) basal segment of chelicerae is not lustrous but without granules on dorsal surface; (b) lateral eye tubercles are almost absent; (c) mesosomal tergites are not lustrous but without granules, (d) sternite V bears two pairs of dentated carinae.

Material. 1 ♀ holotype: China: Tibet, Mêdog district (29°02'N, 95°03'E), Beibeng town, 22 August 2003, Feng Zhang leg. (MHBU). Paratypes: 2 ♀, Tibet, Bomi district (29°08'N, 95°07'E), 14 August 2002, Ming-Sheng Zhu leg. (one in MHBU and one in MNHN); 1 ♀, Tibet, Mêdog district, 108K-8K, 17 August 2003, Feng Zhang leg. (MHBU).

Etymology: The specific name refers to the spots on tergites.

Description (based on male holotype):

Coloration: Basically dark brown. Carapace is reddish-brown. Tergites are reddish-brown and darker than carapace, with a yellow stripe. Metasoma: all segments are dark brown, with some dark pigment on carinae. Telson is brown; aculeus is yellow at the base and black at the extremity. Chelicerae are yellowish with variegated brown spots; the fingers have darker denticles. Pedipalps: femur is brown; patella and chela are reddish-brown. Legs are sandy beige on proximal segments and yellowish on distal segments. Venter and sternites are pale brown. Sternite VII is darker than the others.

Morphology: Carapace is carinated, with densely coarse granules; lateral furrow is not prominent but posterior lateral furrow is more deep and distinct; median furrows are shallow at median eye level but deeper in the middle and posterior portion and bifurcated backwards. Lateral carinae are well developed; they are granular up to the lateral ocular tubercles. There is a pair of lateral eyes. A pair of small median eyes is same size as lateral eyes, and are located anterior to the center of the carapace. Tergites are coarsely granular. Each of tergites I-VI bears a pair of obsolete granular carinae on posterior margin. Tergite VII has two pairs of granular carinae developed only on posterior portion. Sternum is pentagonal and slightly longer than wide. Pectinal tooth count 5-5. Sternites are smooth; segment VII has two pairs of dentated carinae. Metasoma is about three times as long as carapace. Segment I is always wider than long; segments I to V have 10-10-10-8-7 carinae; segment V bears a ventromedian carina posteriorly bifurcated, all carinae are dentated. Vesicle is smooth. Chelicerae are small with elongated fingers; basal segment bears retiform dark brown pigmentation and smooth on ventral surface; thickly covered with numerous short, silky hairs, extending on ventral and dorsal portions of both fingers; the fingers are long and slender; their dentition characteristic for family and genus, but ventral inner edge of movable finger is provided with six minute teeth and immovable finger finely serrated.

Pedipalps: femur with dorsal internal and dorsal external carinae, which are minutely granular; ventral internal and ventral external carinae are smooth. Patella with dorsal and external carinae, which are granular; ventral carinae are smooth. Chela is rather narrow, with dorsal marginal, external secondary, and ventral internal carinae, which are moderately granular; ventral median carina is strong; tegument is granulated dorsally and punctated ventrally. Fingers are almost as long as manus and not flexed. Trichobothriotaxy of type B; orthobothriotaxic (Vachon, 1974); femur bears nine trichobothria, patella with 14, and chela with 14. Femur, patella, and tibia of leg all have yellow stripes. The legs are without tibial spur. Tarsus is provided with a pair of pedal spurs below with a row of long paired bristles. A single median row of short spinules is situated between the two rows of lateral setae on the ventral surface of leg tarsus.

Measurements (in mm) (female holotype). Total length, 48.93. Carapace: length, 7.01; anterior width, 2.68; posterior width, 7.01. Metasomal segment I: length, 2.68; width, 3.83. Metasomal segment V: length, 6.76; width, 2.30; depth, 2.30. Vesicle: width, 2.55; depth, 2.30. Pedipalp: femur length, 5.10, width, 2.42; patella length,

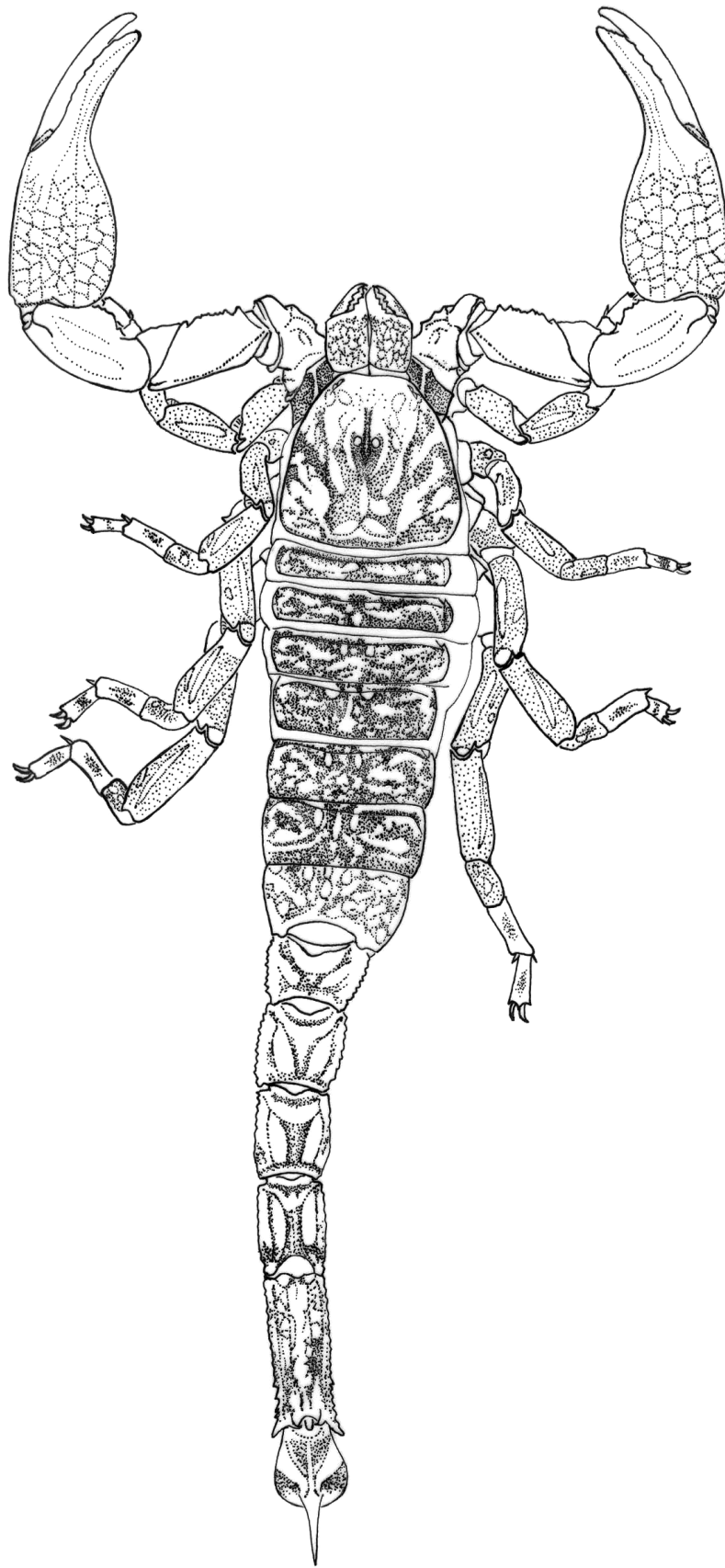
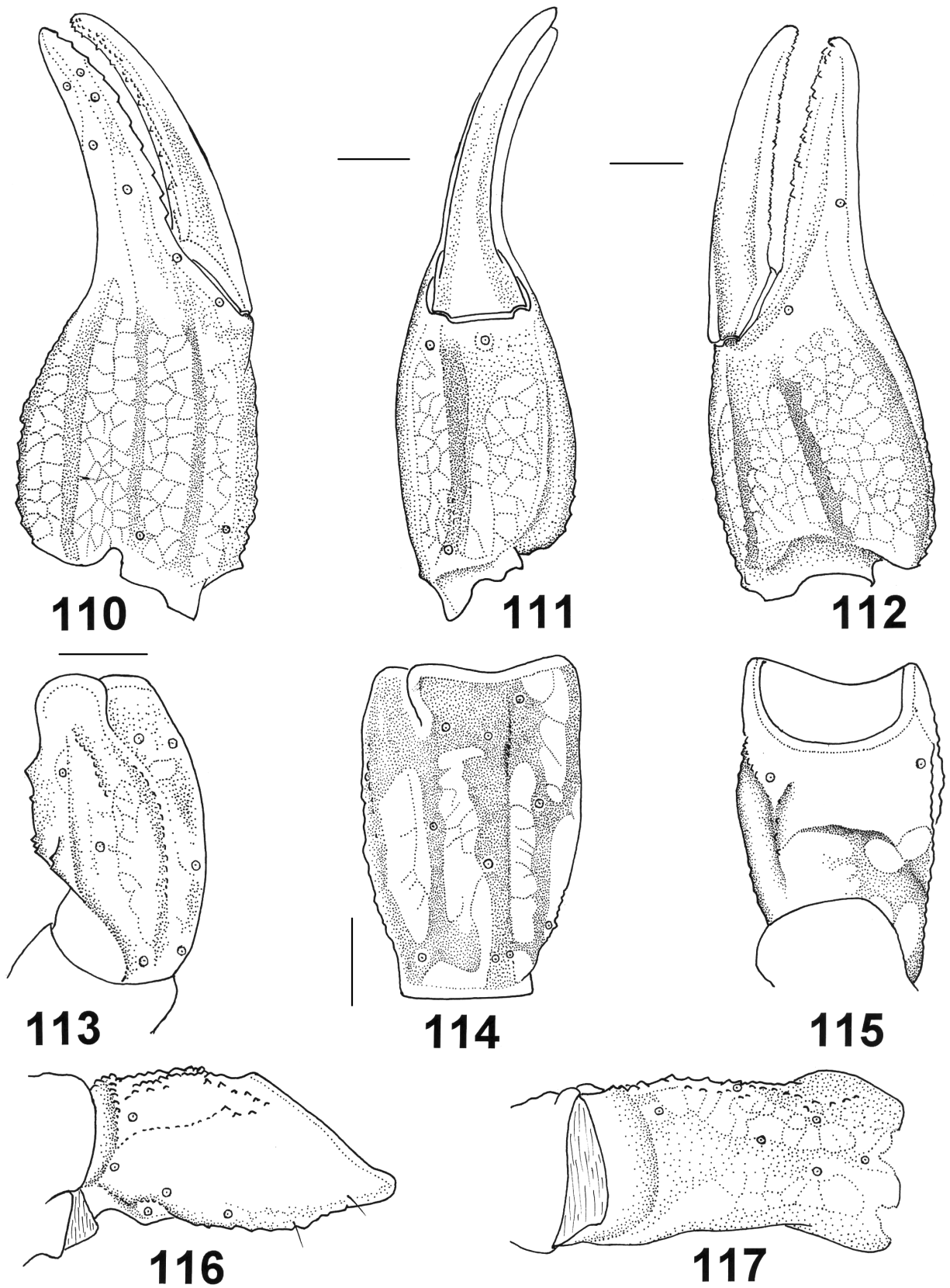
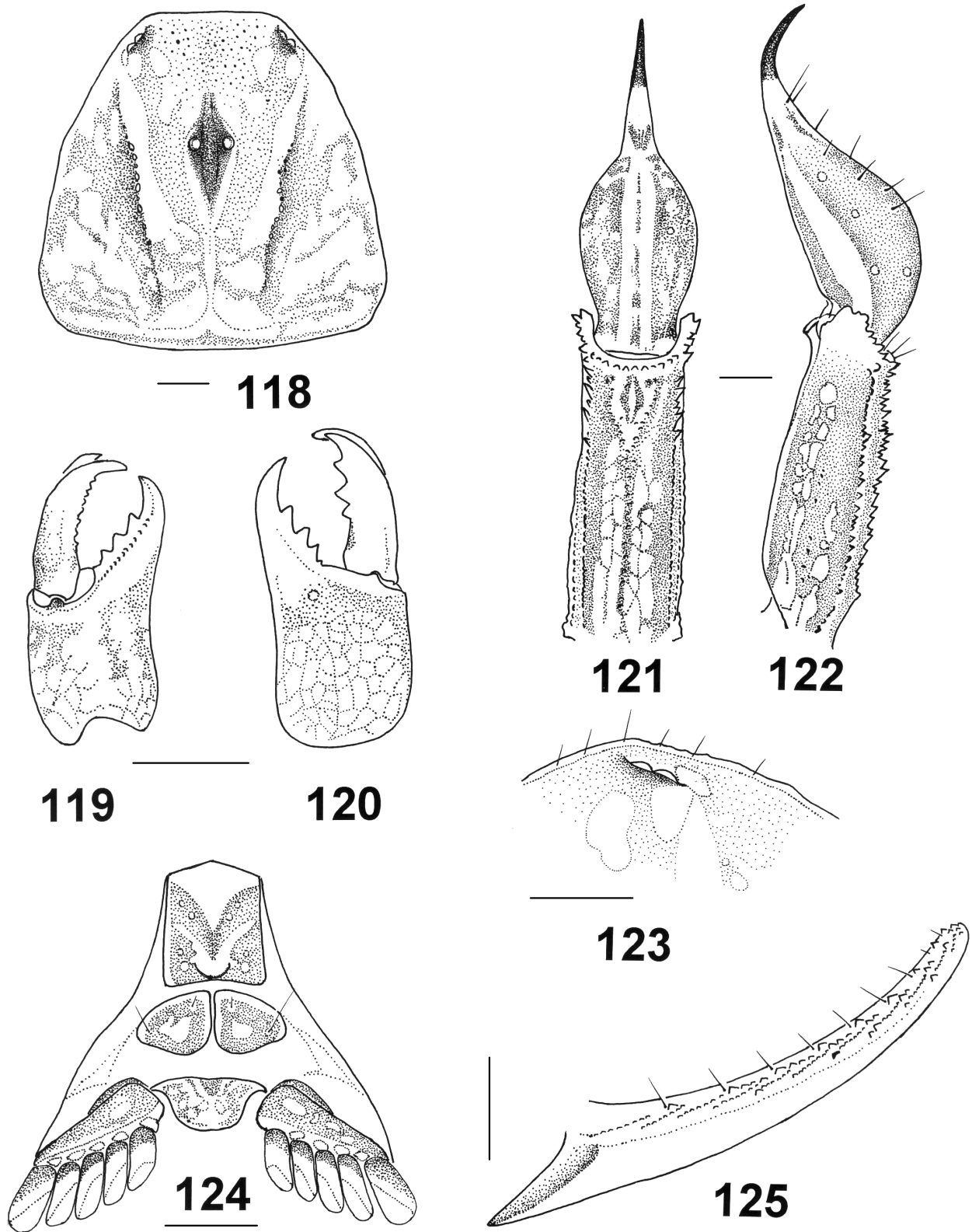


Figure 109: *Chaerilus tessellatus* sp. n., female holotype, habitus. Total length 48.93 mm.



Figures 110–117: *Chaerilus tessellatus* sp. n., female holotype. 110–112. Chela, dorsoexternal, ventral and internal aspects. 113–115. Patella, dorsal, external and internal aspects. 116–117. Femur, dorsal and external aspects. Scales = 1 mm.



Figures 118–125: *Chaerilus tessellatus* sp. n., female holotype. **118.** Carapace, dorsal aspect. **119–120.** Chelicera, ventral and dorsal aspects. **121–122.** Metasomal segment V and telson, ventral and lateral aspects. **123.** Lateral ocular region, in detail, dorsal aspect. **124.** Sternum, genital operculum and pectines. **125.** Dentate margin of the pedipalp chela movable finger. Scales = 1 mm.

5.23, width, 2.55; chela length, 6.38, width, 4.21, depth, 4.08; movable finger length, 6.12.

***Chaerilus pictus* (Pocock, 1890)**
 (= *C. gemmifer* Pocock, 1894)
 (Figs. 126–143)

Uromachus pictus Pocock, 1890: 250.

Chaerilus pictus: Kraepelin, 1899: 159; Pocock, 1900: 61; Tikader & Bastawade, 1983: 332; Fet, 2000a: 327; Kovařík, 2000b: 53.

Chaerilus gemmifer Pocock, 1894: 81; Kraepelin, 1899: 159; Pocock, 1900: 61; Tikader & Bastawade, 1983: 346; Fet, 2000a: 326.

Diagnosis. The species is slightly smaller than the previous one (Fig. 126). It also differs from other species of the genus in possessing short, stout pedipalps with a more robust manus and smooth sternites. Its aculeus is very short, less than half of vesicle length and slightly curved (Figs. 139–140).

Comments. *Chaerilus gemmifer* Pocock, 1894, can be distinguished from other *Chaerilus* species, and in particular from *Chaerilus pictus* (Pocock, 1890), the most geographically related species of the genus by the following features: (a) body color dark brown to black, legs light brown to brown; (b) chela palm is longer than patella; (c) granules arranged in ridges and very closely grouped on distal portion of the base of fingers; (d) aculeus is short, less curved, and almost one-fourth of vesicular length.

Material: 1♀: Tibet, Nyingchi district, Bayizhen town (29°41' N, 94°21' E), 17 August 2002, Ming-Sheng Zhu leg. 1 juv., Bayi town, Linzhi district, Tibet, 2 August 2002, Ming-Sheng Zhu leg.; 1 juv., Bayi town, Linzhi district, Tibet, 6 August 2003, Feng Zhang leg. (All specimens are deposited in MHBUS).

Coloration: Body color is dark brown to black. Ventral side of body is light brown to yellow. Metasoma is dark except for the light vesicle; aculeus is reddish. Chelicerae is light brown but reddish on fingers. Pedipalp is dark brown, and darker on carinae. Legs are from light brown to brown.

Morphology: The surface of carapace is covered with sparse coarse granules, and which are more coarse and dense on posterior lateral portion. Interocular portion bears less coarse weak granules and the granulation is even less expressed on posterior portion near median ocular tubercles. Lateral carinae are granular but the granules are almost obsolete, bordering the median flat portion. Median ocular furrows are not distinct; lateral median furrows are also less distinct and shallow; poste-

rior lateral furrows are distinct and smooth; posterior median furrows are narrow, distinct, deep and bifurcated posteriorly. Lateral ocular tubercles are small and smooth, behind each are two lateral eyes accompanied by a ventrolateral amber colored circular spot. Median ocular tubercles are smooth and not elevated much, with a pair of median eyes situated anteriorly with the ratio 1: 1.9. Mesosoma: all tergites with sparse coarse granules, tergites I–VI are without distinct carinae, tergite VII has two pairs of granular lateral carinae, and the inner pair is short and developed only on middle portion. Sternites are smooth; spiracles are circular; lateral and posterior margin are smooth. Sternum is pentagonal and slightly longer than wide. Pectines are weakly developed. Genital operculum are fused. Metasoma is comparatively short with elongated telson and very short aculeus. All segments are granular, carinated and almost flat on dorsal surface. Basal segment of metasoma is always wider than long. Metasomal segments I–IV have ten carinae; on segments II–IV, a pair of lateral carinae weakens downwards and gradually disappears. Segment V bears seven carinae, and its ventromedian carina is posteriorly bifurcated and completely dentated. Chelicerae are small with elongated fingers; basal segment is granular on dorsal surface but smooth on ventral; thickly covered with numerous short, silky hairs, extending on ventral and dorsal portions of both fingers; the fingers are long and slender; their dentition characteristic for family and genus, but ventral inner edges of movable and immovable fingers with eight minute teeth, and finely serrated, respectively.

Pedipalps are short, stout and with robust manus, all digits are carinated. Femur is much shorter than carapace, carinated but dorsal inner carina granular and more distinct than dorsal outer carina; dorsal and ventral surfaces are finely granular. Patella is longer than femur but shorter than carapace; inner carinae are distinctly granular, outer carinae are smooth and obsolete. Chela manus is not very broad, with two finely granular carinae, one distinct and one weak. Finger is almost as long as manus and not curved. Trichobothriotaxy of type B; orthobothriotic (Vachon, 1974); femur with nine trichobothria, patella with 14, and chela with 14. Legs have smooth carinae, except on femur and patella of legs III and IV where carinae are weakly granular on outer or dorsal portion; no tibial spur. Tarsus has a pair of pedal spurs; ventrally with two paired rows of long setae. A single median row of short spinules is situated between the two rows of lateral setae on the ventral surface of leg tarsus.

Measurements (in mm) (female specimen). Total length, 39.89. Carapace: length, 4.85; anterior width, 2.04; posterior width, 5.48. Metasomal segment I: length, 2.42; width, 3.06. Metasomal segment V: length, 5.10; width, 1.79; depth, 1.79. Vesicle: width, 2.17; depth, 1.91.

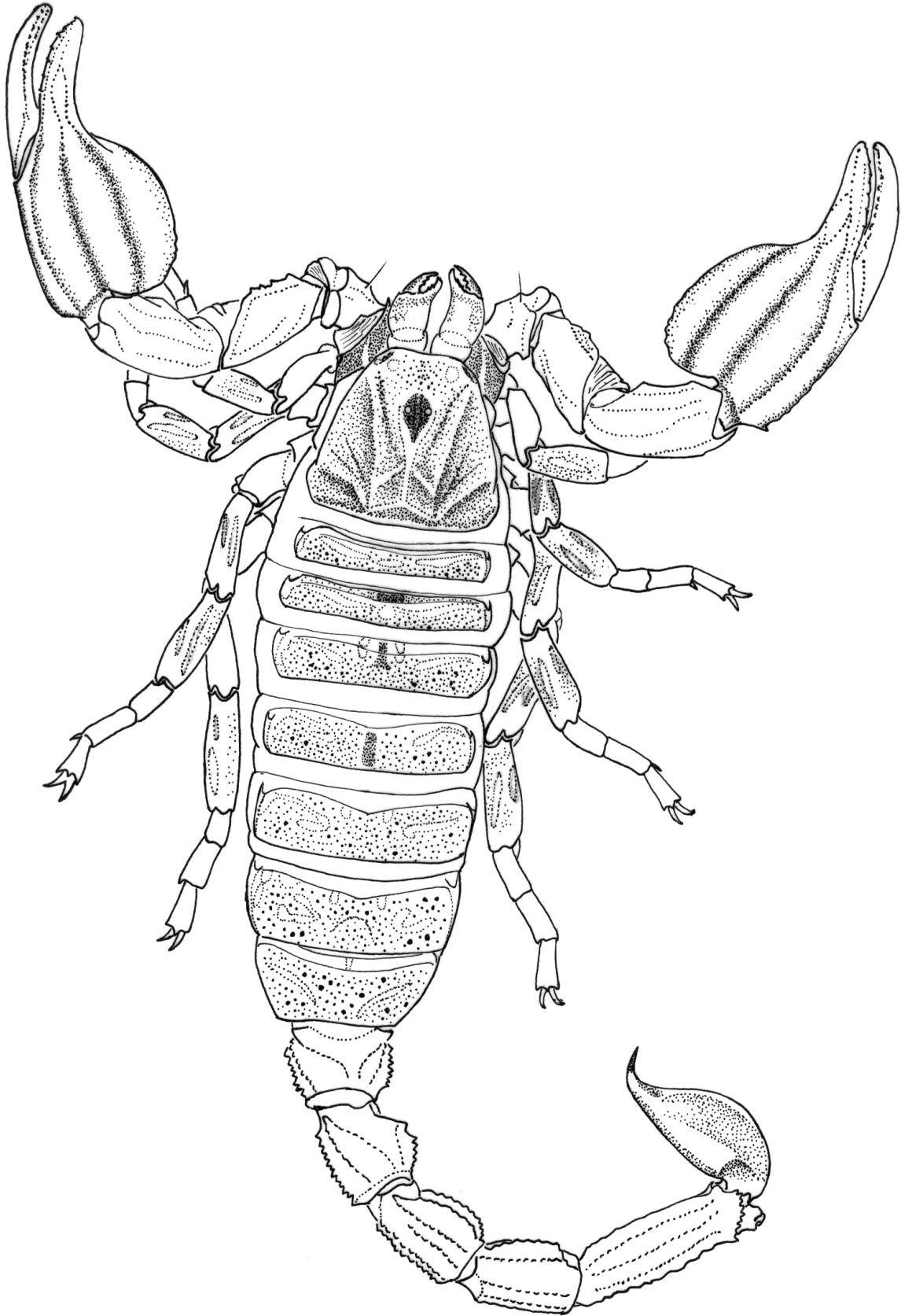
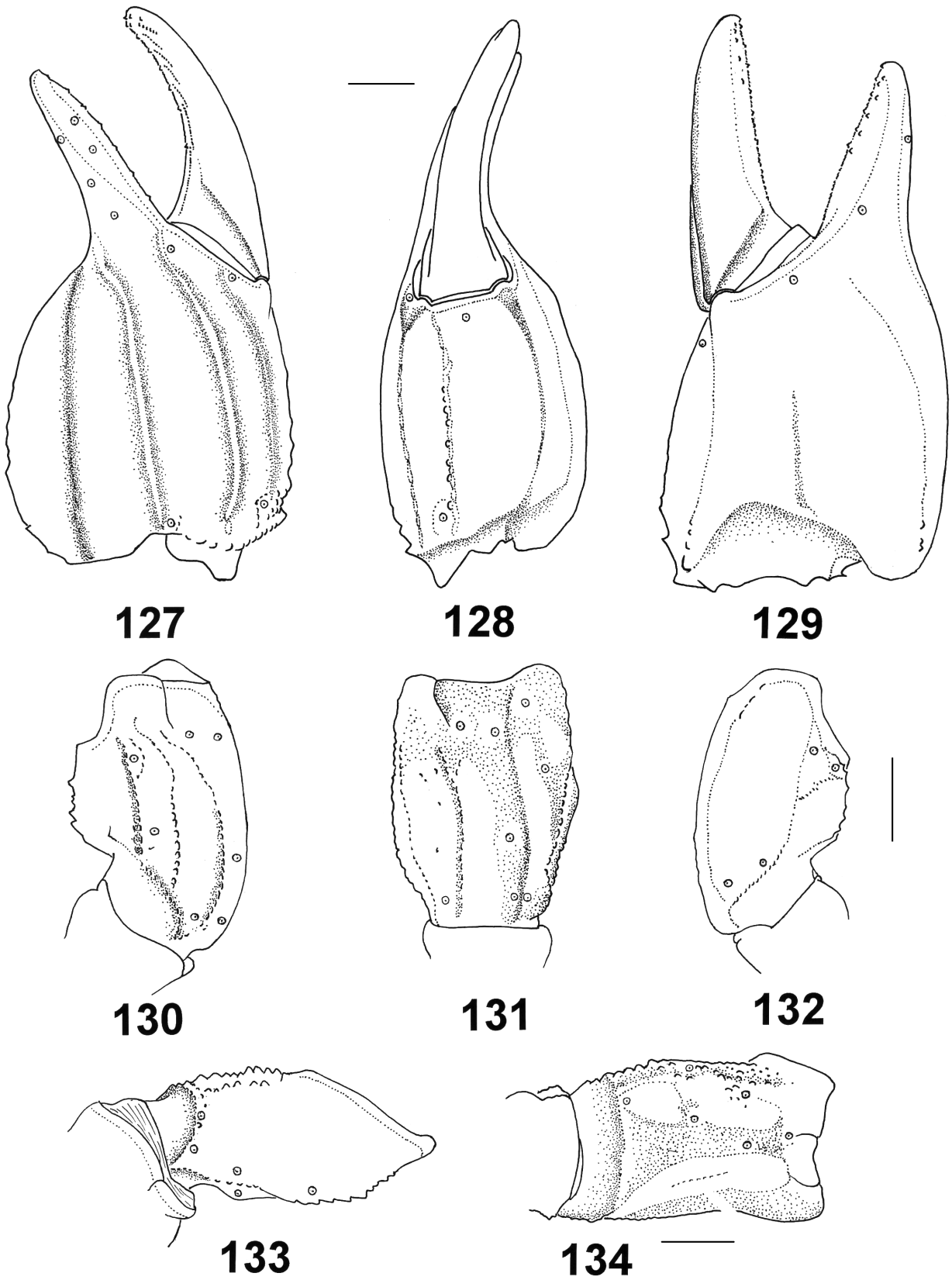
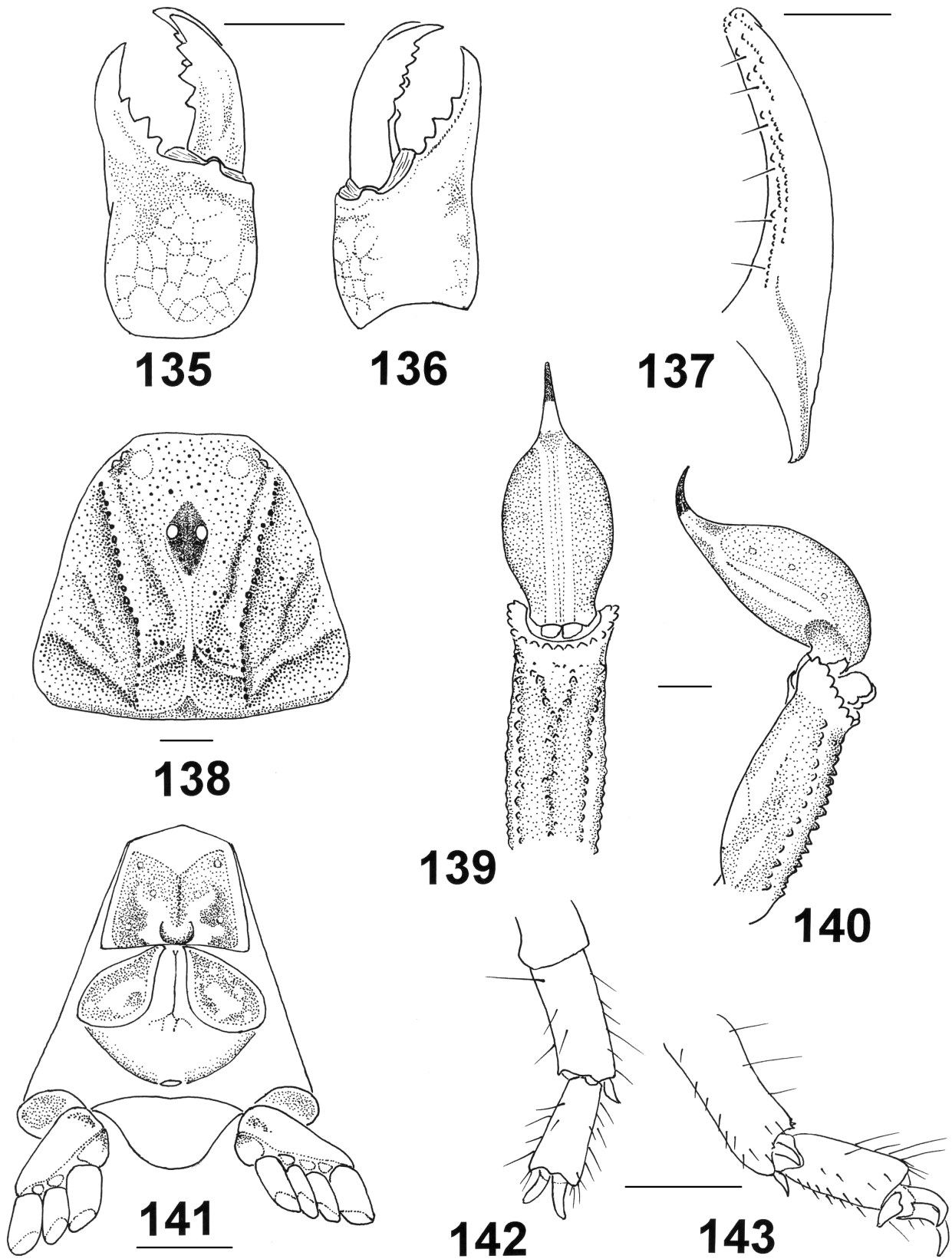


Figure 126: *Chaerilus pictus* Pocock, 1890, female, habitus. Total length 39.89 mm.



Figures 127–134: *Chaerilus pictus* Pocock, 1890, female. 127–129. Chela, dorsoexternal, ventral and internal aspects. 130–132. Patella, dorsal, external and ventral aspects. 133–134. Femur, dorsal and external aspects. Scale = 1 mm.



Figures 135–143: *Chaerilus pictus* Pocock, 1890, female. 135–136. Chelicera, dorsal and ventral aspects. 137. Disposition of granulations on the dentate margins of the pedipalp chela movable finger. 138. Carapace dorsal aspect. 139–140. Metasomal segment V and telson, ventral and lateral aspects. 141. Sternum, genital operculum and pectines. 142–143. Legs III and IV, lateral and dorsal aspects. 131. Scales = 1 mm.

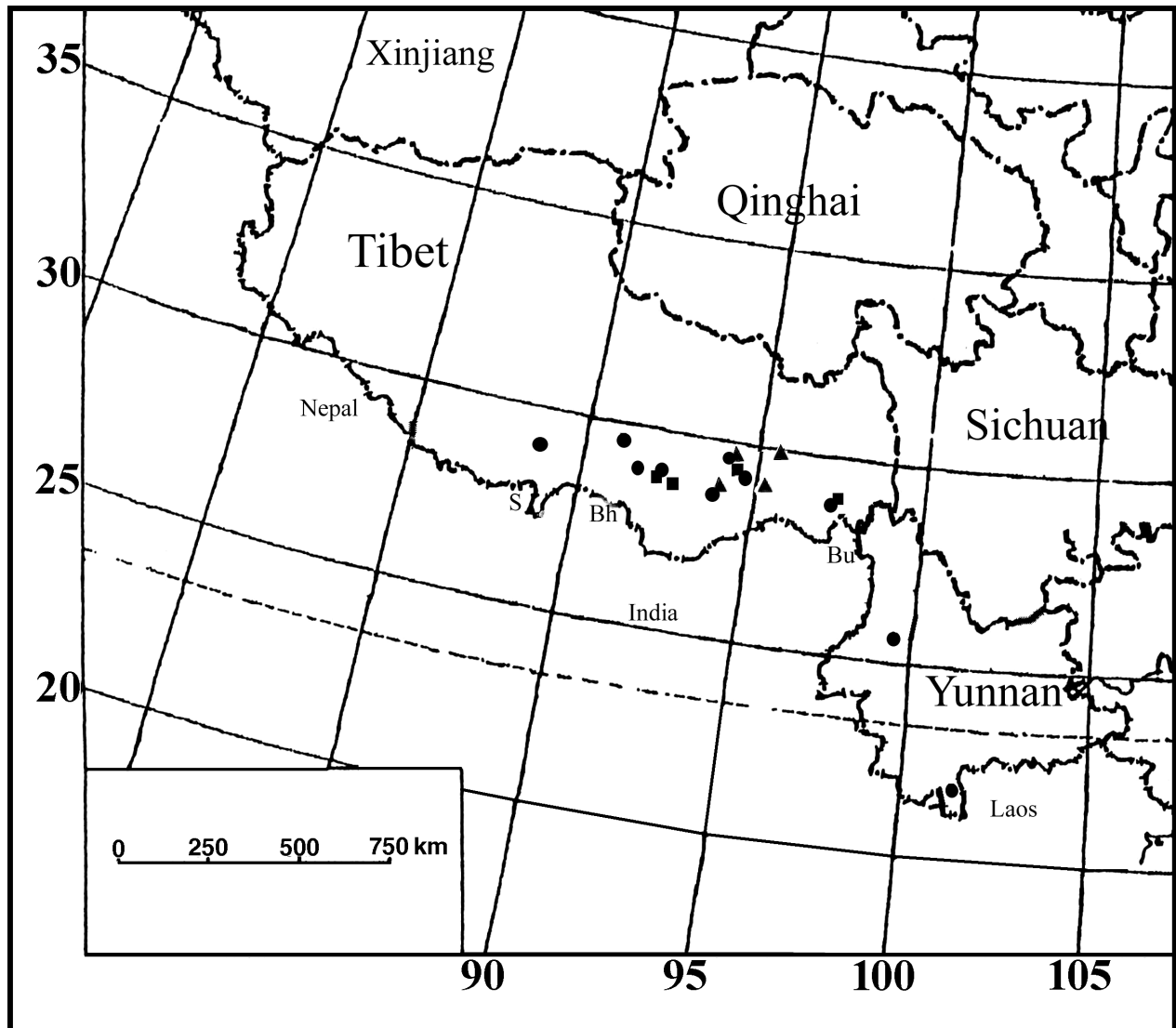


Figure 144: Map of China (Tibet), showing the type localities of the new species, and the new records of known species for Tibet. Map abbreviations: ▲ –*Chaerilus*, ■ –*Scorpiops*, ● –*Euscorpiops*; S –Sikkim, Bh –Bhutan, Bu –Burma.

Pedipalp: femur length, 3.32, width, 1.79; patella length, 3.70, width, 2.17; chela length, 4.34, width, 4.21, depth, 2.93; movable finger length, 4.08.

List of the known Chinese species of the genus *Chaerilus*:

Chaerilus pictus (Pocock, 1890) (= *Chaerilus gemmifer* Pocock, 1894)
Chaerilus tessellatus Qi, Zhu et Lourenço, **sp. n.**

**Key to the known Chinese species
of the genus *Chaerilus***

Manus is short, broad and robust with carinae well-expressed; carinae of metasoma crenulated *C. pictus* (= *C. gemmifer*)
 Manus is not too broad, with carinae well-expressed; carinae of metasoma serrated *C. tessellatus*, **sp. n.**

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