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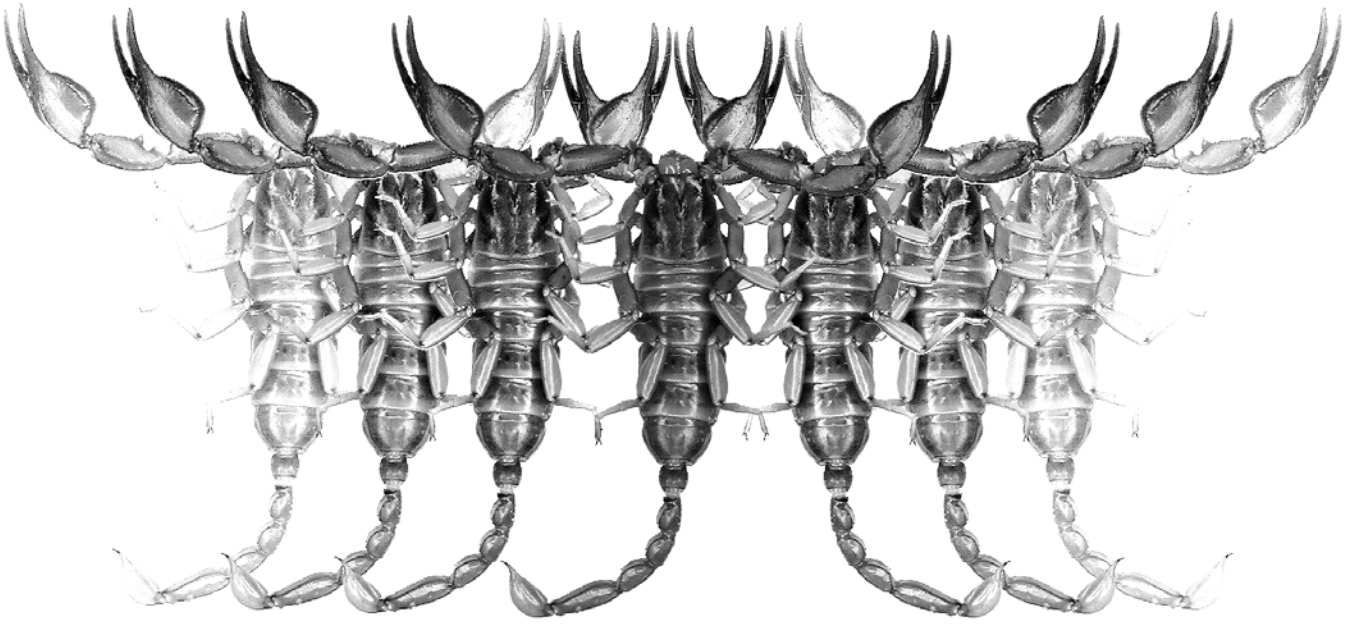

Five New Species of *Chaerilus* Simon, 1877 from China, Indonesia, Malaysia, Philippines, Thailand, and Vietnam (Scorpiones: Chaerilidae)

František Kovařík

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Euscorpius

Occasional Publications in Scorpiology

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- **MZUC**, Museo Zoologico "La Specola" dell'Universita de Firenze, Florence, Italy
- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
- **WAM**, Western Australian Museum, Perth, Australia
- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway
- **OUMNH**, Oxford University Museum of Natural History, Oxford, UK
- **NEV**, Library Netherlands Entomological Society, Amsterdam, Netherlands

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Five new species of *Chaerilus* Simon, 1877 from China, Indonesia, Malaysia, Philippines, Thailand, and Vietnam (Scorpiones: Chaerilidae)

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Summary

Chaerilus cimrmani **sp. n**. from Thailand, *C. seiteri* **sp. n**. from Philippines (Negros Island), *C. solegladi* **sp. n**. from Indonesia and Malaysia (Borneo Island), *C. terueli* **sp. n**. from Vietnam (Côn Son Island), and *C. wrzecionkoi* **sp. n**. from China (Tibet) are described. A key to all species of the genus *Chaerilus* Simon, 1877 is also presented.

Abbreviations

FKCP – František Kovařík, private collection, Praha, Czech Republic.
NMWA – Naturhistorisches Museum Wien, Vienna, Austria.
RMNH – National Museum of Natural History (Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands.

Systematics

Family Chaerilidae Pocock, 1893
(Figs. 1–77)

Chaerilini Pocock, 1893: 306.
Chaerilidae: Kraepelin, 1899: 157; Pocock, 1900: 53; Fet, 2000: 323 (complete reference list until 1998).

TYPE GENUS. *Chaerilus* Simon, 1877 (the family includes only one genus of extant scorpions)

DIAGNOSIS. Total length 15–75.4 mm. Pedipalp patella with three ventral trichobothria and pedipalp femur with 9 trichobothria, 4 of them dorsal (Type B). Fifth metasomal segment with a single ventral carina. Sternum subpentagonal (Type 1). Legs without tibial spurs, but with prolateral and retrolateral pedal spurs. Tarsi of legs bear two rows of ventral setae and a median row of spinules. Telson without a subaculear tubercle. Ventral edge of cheliceral movable finger crenulated, dorsal edge with a single subdistal denticle. Ventral surface of cheliceral fixed finger with four denticles.

Chaerilus Simon, 1877
(Figs. 1–77)

Chaerilus Simon, 1877: 238; Kraepelin, 1899: 157; Pocock, 1900: 53; Kraepelin, 1913: 138; Vachon, 1953: 10; Tikader & Bastawade, 1983: 318; Sissom, 1990: 114; Fet, 2000: 323; Kovařík, 2000: 38; Qi et al., 2005: 29.
= *Chelomachus* Thorell, 1889: 583 (syn. by Kraepelin, 1899: 157).
= *Uromachus* Pocock, 1890: 250 (syn. by Kraepelin, 1899: 157).

TYPE SPECIES. *Chaerilus variegatus* Simon, 1877.

DIAGNOSIS. Total length 15–75.4 mm. Pedipalp patella with three ventral trichobothria and pedipalp femur with 9 trichobothria, 4 of them dorsal. Fifth metasomal segment with a single ventral carina. Sternum subpentagonal. Legs without tibial spurs, but with prolateral and retrolateral pedal spurs. Tarsi of legs bear two rows of ventral setae and a median row of spinules. Telson without a subaculear tubercle. Ventral edge of cheliceral movable finger crenulated, dorsal edge with a single subdistal denticle. Ventral surface of cheliceral fixed finger with four denticles.

Key to species of genus *Chaerilus*

1. Median and lateral eyes present. .....…..... 2
– Median and lateral eyes absent. ...……..... ***C. sabinae*** Lourenço, 1995 and ***C. telnovi*** Lourenço, 2009

2. Movable finger of pedipalp with 6–8 rows of granules (Fig. 36). ……... 3
– Movable finger of pedipalp with 9–16 rows of granules (Fig. 16). ....…….....20

3. Occurs in China or India. ……..…….. 16
– Does not occur in China or India. …….…… 4

4. Metasoma very slender, fifth metasomal segment with length/width ratio higher than 2.9. ……..…….. 5
– Fifth metasomal segment with length/width ratio lower than 2.5. ..…….. 6

5. Trichobothrium *d2* and *d3* on patella of pedipalp either absent on dorsal surface but present as internal trichobotrium. …. ***C. chapmani*** Vachon et Lourenço, 1985
– Trichobothrium *d2* on patella of pedipalp on dorsal surface, trichobothrium *d3* on dorsal/internal edge…… ....…….....…….....… ***C. agilis*** Pocock, 1899

6. Total length of adults under 40 mm. ……. 8
– Total length of adults over 40 mm. 7

7. Manus of pedipalp in male narrow. Chela length/width ratio in male higher than 3…… .....……..... ***C. laevimanus*** Pocock, 1899
– Manus of pedipalp in male robust (Fig. 38). Chela length/width ratio in adults lower than 2.2……..…….. .....…….... ***C. solegladi*** Kovařík, **sp. n.**

8. Ventral sides of seventh sternite smooth (granules may be present on margins of seventh sternite) (Fig. 29). .....……..... 9
– Ventral sides of first metasomal segment and seventh sternite granulated. ……...……..... ***C. petrzelkai*** Kovařík, 2000 and ***C. phami*** Lourenço, 2011

9. Male has chela of pedipalp much narrower than female (Fig. 18 versus Fig. 30). ……….. 10
– Male has chela of pedipalp wide and ampullar (Fig. 50). ……...…… 13

10. Chela length/width ratio in male is higher than 4. .....……..... 12
– Chela length/width ratio in male is lower than 3.7. .....……..... 11

11. First to third metasomal segments are wider than long in both sexes. Telson is spotted (Fig. 29)……. .....……..... ***C. seiteri*** Kovařík, **sp. n.**
– Third metasomal segment is longer than wide or as long as wide. Telson is yellow without spots……. .....……..... ***C. sejnai*** Kovařík, 2005

12. Male with shorter fingers of chela. Chela length to finger length ratio in male higher than 2.6. Occurs in Laos. ……...….. ***C. laoticus*** Lourenço et Zhu, 2008
– Chela length to finger length ratio in male lower than 2.2. Occurs in Malaysia. .... ***C. rectimanus*** Pocock, 1899

13. Adult male has fingers flexed (Fig. 51). ……..... ……..…… ***C. terueli*** Kovařík, **sp. n.**
– Male has fingers straight (Fig. 69). .....…..... 14

14. All metasomal segments dorsally with a pair rows of granules, which may form incomplete carinae. ……..… ……..…. … ***C. ojangureni*** Kovařík, 2005
– Metasomal segments dorsally without granules, at least fourth and fifth segments dorsally quite smooth. …….. 15

15. Total length 17–30 mm. Pectinal teeth number 3–5. Chela ampullar. Fingers of chela short. Chela length to movable finger length ratio in male higher than 2….. …… ***C. celebensis*** Pocock, 1894, ***C. philippinus*** Lourenço et Ythier, 2008, ***C. thai*** Lourenço et al., 2010, and ***C. spinatus*** Lourenço et Duhem, 2010
– Total length 27–35 mm. Pectinal teeth number 5–7. Chela not ampullar. Chela length to movable finger length ratio in male lower than 2. ……..… …….. ***C. borneensis*** Simon, 1880

16. Anterior margin of carapace straight or weakly concave in both sexes. ……. 17
– Anterior margin of male carapace arched. ……. …… ***C. assamensis*** Kraepelin, 1913

17. Second metasomal segment with 10 carinae…… ……..….. ***C. conchiformus*** Zhu et al., 2008
– Second metasomal segment with 8 carinae. ……..… 18

18. Seventh sternite with 4 distinct carinae. ……....…***C. mainlingensis*** Di et Zhu, 2009
– Seventh sternite granulated but without carinae. ….. 19

19. Manus of pedipalp in male narrow and long. Chela length/width ratio in male higher than 3. .....…..... ***C. tryznai*** Kovařík, 2000
– Manus of pedipalp in male robust (Fig. 68). Chela length/width ratio in adults lower than 2.6. .....……..... ***C. wrzecionkoi*** Kovařík, **sp. n.**

20. Chela of pedipalp with 9 carinae. Fingers very short. ……...…. ***C. ceylonensis*** Pocock, 1894
– Chela of pedipalp with 8 carinae or less. Fingers not markedly short. ...……..... 21

21. Manus of pedipalp lobate and very wide. Adult male has fingers flexed. ……..... 22

– Manus of pedipalp non-lobate and not as wide. Adult male has fingers straight. ……..... 23

22. Movable finger of pedipalp with 11 rows of granules. ……... ***C. robinsoni*** Hirst, 1911
– Movable finger of pedipalp with 13–14 rows of granules. ……...***C. variegatus*** Simon, 1880

23. Male telson very long and narrow. Aculeus short. ....……..... ***C. pictus*** (Pocock, 1890)
– Aculeus of both sexes similar, ampular…….... 24

24. Chela lacking one dorsal and one internal carina. Total of 6 carinae on chela of pedipalp. ……..... ……..... ***C. tricostatus*** Pocock, 1899
– Chela with full number of dorsal carinae, internal carina may or may not be developed. Total of 7 or 8 carinae on chela of pedipalp. ……..... 25

25. Pectinal teeth number 10. Movable finger of pedipalp with 15 or 16 rows of granules…… ....……..... ***C. tichyi*** Kovařík, 2000
– Pectinal teeth number 3–8. Movable finger of pedipalp with 9–14 rows of granules. ……... 26

26. Manus of pedipalp narrow and long. Chela length/width ratio in adults higher than 3.3…….. .....……..... ***C. insignis*** Pocock, 1894
– Chela length/width ratio in adults lower than 3.2. .....……..... 27

27. Total length of adults 45–68 mm. Occurs in China, India and Nepal. ……..…… 31
– Total length of adults 46 mm or less. Occurs in Andaman Islands, Indonesia, Malaysia, Thailand, and Vietnam. …….. 28

28. Total length of adult 25 mm. Pectinal teeth number 8 (male). Occurs in Andaman Islands. …… …….. ***C. andamanensis*** Lourenço et al., 2011
– Total length of adults 25–46 mm. Pectinal teeth number 4–7. Occurs in Indonesia, Malaysia, Thailand, and Vietnam. ……..…. 29

29. Movable finger of pedipalp with 12–14 cutting edges……..... ***C. cavernicola*** Pocock, 1894
– Movable finger of pedipalps with 10–11 cutting edges. .....……..... 30

30. Chela length/width ratio in adult male 3.13....…..... ……..….. ***C. julietteae*** Lourenço, 2011
– Chela length/width ratio in both sexes lower than 2.2. ……..... ***C. cimrmani*** Kovařík, **sp. n.**

31. Third metasomal segment with 8 carinae. …...….. 32
– Third metasomal segment with 10 carinae. …..... ……. ***C. tessellatus*** Qi et al., 2005

32. Male telson strongly depressed dorsally. ……...… ……..…….. ***C. annapurna*** Lourenço et Duhem, 2010
– Male telson straight dorsally. …….. ……..……. ***C. truncatus*** Karsch, 1879

Chaerilus cimrmani Kovařík, **sp. n.**
(Figs. 1–17)

Chaerilus cavernicola (misidentification): Kovařík, 2000: 42 (in part).

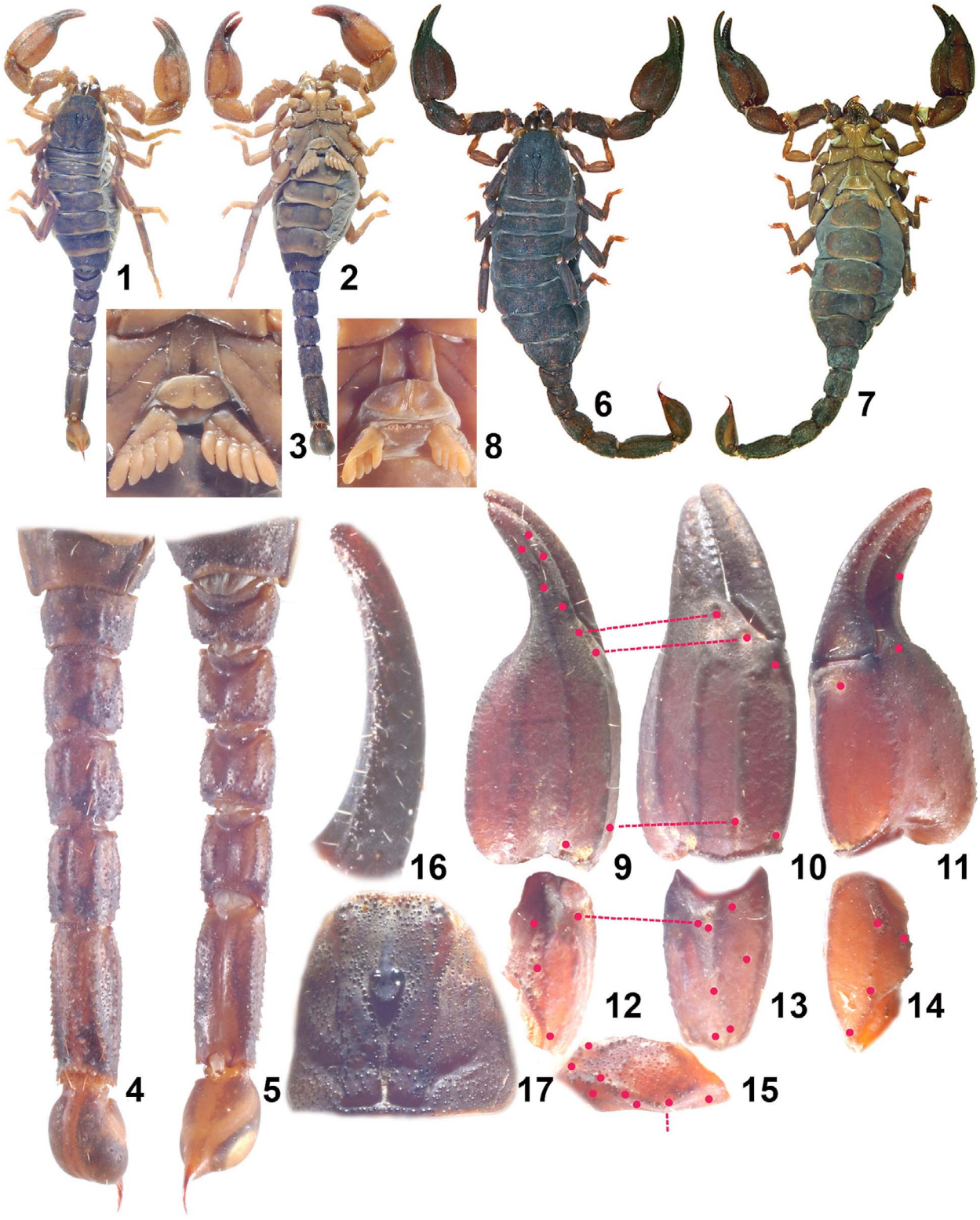
TYPE LOCALITY AND TYPE REPOSITORY. Thailand, Phetchaburi Province, 2 km N of Ban Sa Yai Non, 12°56' 58"N 99°47'44"E, 40 m a.s.l.; FKCP.

TYPE MATERIAL. Thailand, Phetchaburi Province, 2 km N of Ban Sa Yai Non, 12°56'58"N 99°47'44"E, 40 m a.s.l., 16.-18.I.2006, 1♂ (holotype) 1♀ (allotype) 1im. (paratype), leg. S. Bečvář and R. Fouqué, FKCP; Trang Province, 20 km E of Trang, XI.1998, 1♀ (paratype), leg. Kozmík, FKCP.

ETYMOLOGY. Named after Jára Cimrman, a well known Czech renaissance man.

DIAGNOSIS. Total length 31–38 mm. Two pairs of lateral eyes and one pair of median eyes. Chela of pedipalp wide and ampullar, identical in both sexes. Movable finger of pedipalp with 10 or 11 cutting edges. Chela of pedipalp with 7 or 8 granulated carinae. Patella with 5 carinae, femur with 4 or 5 carinae. Pectinal teeth number 4–5. Carapace granulated. Anterior margin of carapace straight to weakly concave. Mesosomal tergites granulated. All sternites smooth, without carinae. First metasomal segment with 6 to 10 carinae, second with 8 to 10 carinae, third and fourth segments with 8 carinae, fifth segment with 7 carinae. Dorsal surfaces of all metasomal segments granulated.

DESCRIPTION. Total length 31–38 mm. Two pairs of lateral eyes and one pair of median eyes. The male has relatively larger pectens. The chela of pedipalp is wide and ampullar, identical in both sexes. Pectinal teeth number 4–5. For the position and distribution of trichobothria see Figs. 9–15. Trichobothrium *d2* of pedipalp patella is located on edge between the dorsal and internal surfaces, and trichobothrium *d3* is located on the internal surface (Fig. 12).
COLORATION. The color is reddish to black, spotted. Legs, pedipalps and telson are red to yellow, lighter than the mesosoma, and spotted.
MESOSOMA AND CARAPACE. The entire carapace is covered by large granules, the larger of which form two longitudinal, symmetrical carinae. The anterior margin of the carapace is straight to weakly concave. The mesosomal tergites are granulated, less so in the male



Figures 1–17: ***Chaerilus cimrmani*** Kovařík, **sp. n. 1–5.** Dorsal (1) and ventral (2) views, pectens (3), metasoma dorsal (4) and ventral (5), ♂ (31 mm) holotype. **6–8.** Dorsal (6) and ventral (7) views, and pectens (8), ♀ (38 mm) allotype. **9–17.** Trichobothrial pattern of pedipalp (9–15), movable finger (16), and carapace (17), ♀ (37 mm) paratype.

holotype and more densely in larger females. All sternites are smooth, without carinae.

METASOMA AND TELSON. The first metasomal segment bears 6 to 10 carinae, the second bears 8 to 10 carinae, the third and fourth segments bear eight carinae, and the fifth segment bears seven carinae of which one ventral carina posteriorly branches to form the letter "Y". All carinae are composed of sparse and denticulate granules. The spaces between carinae are irregularly granulated on all surfaces. Granules on the dorsal surface may form a pair of carinae. All segments are sparsely hirsute. The telson is elongate, smooth and sparsely hirsute.

PEDIPALPS. The movable finger has 10 (male holotype) or 11 (female allotype) cutting edges (Fig. 16). The chela has seven or eight granulated carinae. The carina on the externolateral surface of chela may be incomplete. The patella has five carinae and the femur has four or five carinae. All carinae consist of granules. The spaces between carinae are covered by unevenly spaced small granules that form a reticulate pattern on the dorsal surface of the chela.

LEGS. The legs are hirsute, without bristlecombs and carinae. The femora are granulated, and solitary granules may be present also on the patella.

MEASUREMENTS IN MM. Total length of *male holotype* 31; carapace length 4.3, width 4.3; metasoma and telson length 16; first metasomal segment length 1.8, width 2.1; second metasomal segment length 1.9, width 1.9; third metasomal segment length 1.9, width 1.9; fourth metasomal segment length 2.2, width 1.8; fifth metasomal segment length 3.8, width 1.7; telson length 4.3; pedipalp femur length 2.9, width 1.4; pedipalp patella length 3.2, width 1.6; chela length 6.7; manus width 3.1; movable finger length 3.5.

Total length of *female allotype* 38; carapace length 5.1, width 5.2; metasoma and telson length 17.7; first metasomal segment length 1.6, width 2.7; second metasomal segment length 2.1, width 2.3; third metasomal segment length 2.2, width 2.2; fourth metasomal segment length 2.4, width 2.1; fifth metasomal segment length 4.4, width 2; telson length 5; pedipalp femur length 3.5, width 1.7; pedipalp patella length 3.6, width 1.9; chela length 7.7; manus width 3.9; movable finger length 4.3.

AFFINITIES. The described features distinguish *C. cimrmani* **sp. n.** from all other species of the genus. They are recounted in the key. Morphologically closest is *C. cavernicola*, with which the female paratype was formerly confused (see Kovařík, 2000: 42). However, these two species can be easily separated, because *C. cavernicola* has the dorsal surfaces of metasomal segments smooth, especially the fourth and fifth segments, whereas *C. cimrmani* **sp. n.** has all metasomal segments dorsally granulated. The movable finger of pedipalp has 12–14 cutting edges in *C. cavernicola* and only 10–11 cutting edges in *C. cimrmani* **sp. n.**

Chaerilus seiteri Kovařík, **sp. n.**
(Figs. 18–33)

TYPE LOCALITY AND TYPE REPOSITORY. Philippines, Negros Island; NMWA.

TYPE MATERIAL. Philippines, Negros Island, 1♂ (holotype), NMWA, 1♂1♀ (paratypes), FKCP, reared by Michael Seiter in 2011-2012.

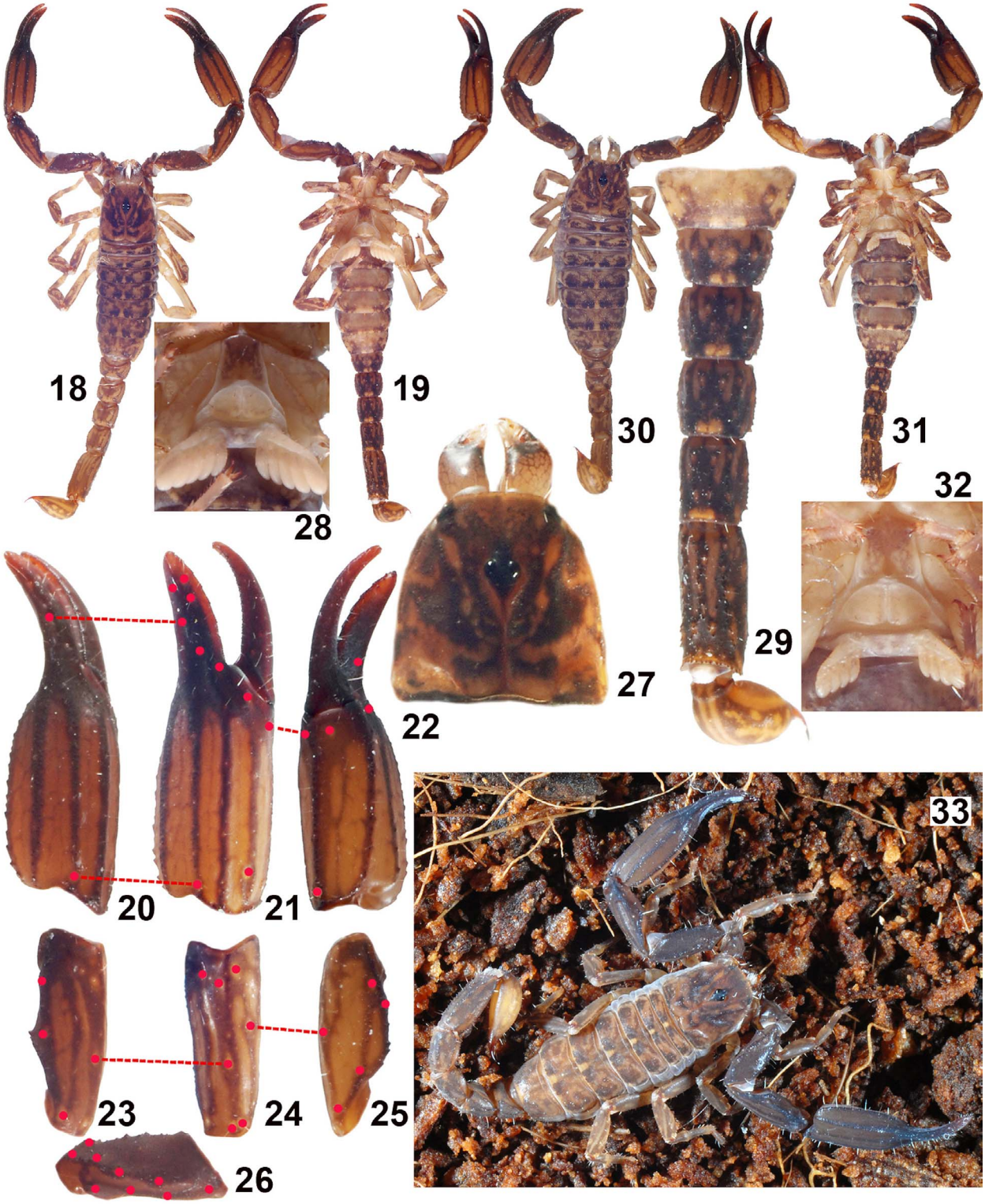
ETYMOLOGY. Named after Michael Seiter, an Austrian arachnologist.

DIAGNOSIS. Total length 23–25 mm. Two pairs of lateral eyes and one pair of median eyes. Movable finger of pedipalp with 7 edges composed of granules. Fingers straight in both sexes. Chela of pedipalp with 8 carinae, patella with 5 carinae, femur with 4 carinae. Patella of pedipalp bears an internal tubercle. Pectinal teeth number 5 in males and 4 in female. Male differs from female in having pedipalp chela much narrower. Chela length/width ratio in males = 3.2–3.5. Carapace and mesosomal tergites sparsely covered by granules. Sternites smooth, without carinae. Carinae of metasomal segments consist of large, pointed, widely spaced granules. First to fourth metasomal segments with 4 to 6 carinae of which lateral can be incomplete or missing. First metasomal segment with ventral side smooth, devoid of granules. Second to fourth segments may or may not have 2 ventral carinae and lack lateral carinae. Fifth metasomal segment with 7 carinae. Spaces between carinae smooth. Color yellow or reddish to black, spotted including telson.

DESCRIPTION. Total length 23–25 mm. Two pairs of lateral eyes and one pair of median eyes. The male has relatively larger pectens. The chela of pedipalp is narrow. Male differs from female in having pedipalp chela much narrower. Fingers straight in both sexes. Pectinal teeth number 5 in male and 4 in female. For the position and distribution of trichobothria see Figs. 20–26.

COLORATION. The color is yellow or reddish to black, spotted including telson. Younger specimens have lighter ornament. The manus of chela is reddish to brown with black carinae.

MESOSOMA AND CARAPACE. The carapace lacks carinae, is sparsely covered by granules, and its anterior margin is straight to weakly concave. The mesosomal tergites are sparsely granulated, less so in the male than in the female. All sternites are smooth, without carinae. Each sternite bears less than 10 red setae. The marginal lamellae of pectines bear five red setae. Numerous white setae are on teeth of pectines.



Figures 18–33: ***Chaerilus seiteri*** Kovařík, **sp. n. 18–29.** Dorsal (18) and ventral (19) views, trichobothrial pattern of pedipalp (20–26), carapace and chelicerae (27), pectens, and metasoma (together with seventh sternite and telson) ventral (29), ♂ (24 mm) paratype. **30–32.** Dorsal (30) and ventral (31) views, and pectens (32), ♀ (38 mm) allotype. **33**. Male holotype.

METASOMA AND TELSON. The first to fourth metasomal segments bear four to six carinae of which the lateral ones can be incomplete or missing. The first metasomal segment has the ventral side smooth, devoid of granules. The second to fourth segments may or may not have two ventral carinae and lack lateral carinae. The fifth metasomal segment bears seven carinae of which one ventral carina posteriorly branches to form the letter "Y". All carinae are composed of sparse and denticulate granules. Spaces between carinae are smooth. All segments are sparsely covered by white hairs. The telson is elongate, smooth and sparsely hirsute, mainly in ventral part.
PEDIPALPS. The movable finger has seven edges. The chela bears eight granulated carinae, the carina on the externolateral surface may be incomplete. The patella bears five carinae and the femur bears four or five carinae. All carinae consist of granules and are black. The spaces between carinae are covered by unevenly spaced small granules that can form a reticulate pattern on the dorsal surface of the chela. The patella of pedipalp bears an internal tubercle.
LEGS. The legs are hirsute, without bristlecombs and carinae. The femora are sparsely granulated, and solitary granules may be present also on the patella.
MEASUREMENTS IN MM. Total length of *male paratype* 24.2; carapace length 3.6, width 3.6; metasoma and telson length 12.2; first metasomal segment length 1.2, width 1.85; second metasomal segment length 1.35, width 1.65 third metasomal segment length 1.4, width 1.55; fourth metasomal segment length 1.6, width 1.45; fifth metasomal segment length 2.95, width 1.4; telson length 3.7; pedipalp femur length 3.4, width 1.15; pedipalp patella length 3.75, width 1.3; chela length 6.95; manus width 2.0; movable finger length 3.45.
Total length of *female paratype* 23; carapace length 3.4, width 3.8; metasoma and telson length 11.9; first metasomal segment length 1.05, width 1.95; second metasomal segment length 1.3, width 1.55; third metasomal segment length 1.4, width 1.45; fourth metasomal segment length 1.55, width 1.35; fifth metasomal segment length 2.8, width 1.4; telson length 3.8; pedipalp femur length 2.75, width 1.25; pedipalp patella length 3.1, width 1.4; chela length 6.3; manus width 2.28; movable finger length 3.35.

AFFINITIES. The described features distinguish *C. seiteri* **sp. n.** from all other species of the genus. They are recounted in the key. Morphologically closest are *C. rectimanus*, *C. sejnai*, *C. phami* and probably *C. petrzelkai*. The smooth ventral sides of the seventh sternite distinguish *C. seiteri* **sp. n.** from *C. phami* and *C. petrzelkai*, which have the ventral sides of the first metasomal segment and the seventh sternite granulated. The male of *C. rectimanus* has longer and narrower chela of pedipalps. The chela length/width ratio in male *C. rectimanus* is higher than 4, whereas in *C. seiteri* **sp. n.** the ratio in the males 3.2 to 3.5 similar as *C. sejnai*, in which the male chela length/width ratio is 3.2 to 3.6. It appears that *C. sejnai* is the species most closely related to *C. seiteri* **sp. n.** These two species differ in the shape of the metasomal segments; in *C. seiteri* **sp. n.** the first to third metasomal segments are wider than long in both sexes, whereas in *C. sejnai* the third metasomal segment is longer than wide or as long as wide. Another difference can be seen in the color of the telson, which in *C. sejnai* is yellow without spots and contrasts with coloration of other body parts, whereas in *C. seiteri* **sp. n.** it is spotted (Fig. 32).

Chaerilus solegladi Kovařík, **sp. n.**
(Figs. 34–47)

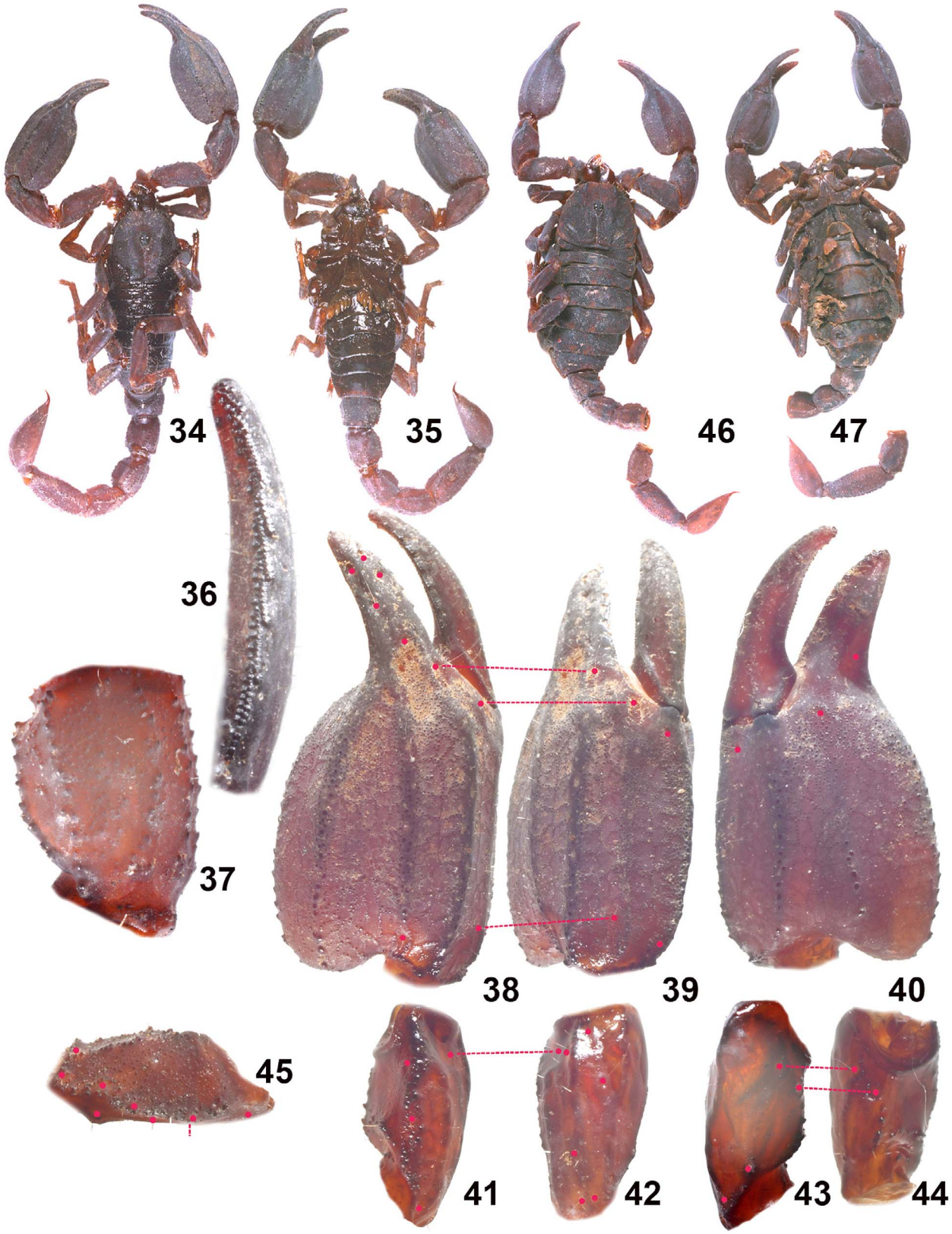
TYPE LOCALITY AND TYPE REPOSITORY. Indonesia, Borneo Island; RMNH.

TYPE MATERIAL. Indonesia, Borneo Island, Exped. Dr. Nieuwenhuis, 1894, 2♂1♀3juvs. (holotype, allotype and paratypes), RMNH Nos. 279 and 280; Malaysia, Borneo Island, Sabah, Sepilok, 1♂ (paratype), III.2012, leg. M. Černička, FKCP; Malaysia, Borneo Island, Sabah, Kinabatangan, 1♂1♀12 juveniles (paratypes, still alive), III.2012, leg. J. Severa, FKCP.

ETYMOLOGY. Named after my colleague and friend Michael Soleglad, who has contributed to our knowledge of scorpions in many ways.

DIAGNOSIS. Total length 42–45 mm. Two pairs of lateral eyes and one pair of median eyes. Movable finger of pedipalp with 7 or 8 cutting edges composed of granules. Fingers straight in both sexes. Manus of pedipalp in male robust. Chela of pedipalp with 7 or 8 carinae, patella with 5 carinae, femur with 4 carinae. Pectinal teeth number 4–5. Chela of pedipalp wide and ampullar, identical in both sexes or wider in male than in female. Entire carapace granulated. Even larger granules form two symmetrical, longitudinal carinae, which may reach posterior margin of carapace. Mesosomal tergites granulated, but without carinae. Sternites smooth, without carinae. First metasomal segments lack ventral carinae; ventral side of first metasomal segment usually smooth, but may bear several solitary granules. First through fourth metasomal segments with 6–8 carinae. All metasomal segments dorsally with a pair of rows of granules, which may form incomplete carinae. Fifth metasomal segment bears 7 carinae and is densely granulated.

DESCRIPTION. Total length 42–45 mm. Two pairs of lateral eyes and one pair of median eyes. The male has relatively larger pectens. Pectinal teeth number four (female) or five (male). For the position and distribution of trichobothria see Figs. 38–45. Trichobothrium *d2* of



Figures 34–47: ***Chaerilus solegladi*** Kovařík, **sp. n.. 34–44.** Dorsal (34) and ventral (35) views, movable finger (36), second metasomal segment lateral (37), and trichobothrial pattern of pedipalp (38–45), ♂ (45 mm) holotype. **46–47.** Dorsal (46) and ventral (47) views, ♀ (42 mm) allotype.

the pedipalp patella is located on the edge between dorsal and internal surfaces. Trichobothrium *d3* is located on the internal surface. (Fig. 41). The chelicerae are granulated.

COLORATION. The color is dark brown to black.

MESOSOMA AND CARAPACE. The entire carapace is covered by large granules, the larger of which form two longitudinal, symmetrical carinae. The anterior margin of carapace is straight. The mesosomal tergites are granulated, but without carinae. The sternites are smooth, without carinae and without glossy zones in the middle of the posterior margin.

METASOMA AND TELSON. The first through fourth metasomal segments bear six to eight carinae (two ventral carinae and main lateral carinae may be poorly developed or absent); the fifth segment bears seven carinae of which one ventral carina posteriorly branches to form the letter "Y". All carinae are composed of posteriorly inclined, denticulate granules. The spaces between carinae are irregularly granulated on lateral and ventral surfaces; the dorsal surface is smooth but bears pair rows of granules, which may form incomplete carinae. All segments are sparsely hirsute. The telson is elongate, smooth and sparsely hirsute.

PEDIPALPS. The movable finger has seven or eight cutting edges composed of granules. The chela has seven or eight granulated carinae. The patella has five carinae and the femur has four carinae. All carinae consist of widely spaced, rounded granules. The spaces between carinae are covered by unevenly spaced small granules, which on the chela form a reticulate pattern.

LEGS. The legs are hirsute, without bristlecombs and carinae.

MEASUREMENTS IN MM. Total length of *male holotype* 45; carapace length 6.4, width 6.6; metasoma and telson length 26.9; first metasomal segment length 2.7, width 3.7; second metasomal segment length 3.3, width 3.3; third metasomal segment length 3.4, width 3.3; fourth metasomal segment length 3.6, width 3; fifth metasomal segment length 6.7, width 2.9; telson length 7.2; pedipalp femur length 5.2, width 2.3; pedipalp patella length 5.6, width 2.7; chela length 12.2; manus width 6.1; movable finger length 6.3.

Total length of *female allotype* 42; carapace length 5.2, width 6.3; metasoma and telson length 23.5; first metasomal segment length 2.3, width 2.6; second metasomal segment length 2.4, width 2.5; third metasomal segment length 2.4, width 2.4; fourth metasomal segment length 3.5, width 2.8; fifth metasomal segment length 6.2, width 2.7; telson length 6.7; pedipalp femur length 4.5, width 1.9; pedipalp patella length 4.8, width 2.2; chela length 9.3; manus width 4; movable finger length 4.6.

AFFINITIES. The described features distinguish *C. solegladi* **sp. n.** from all other species of the genus. They are recounted in the key. The female of *C. solegladi* **sp. n.** is very similar to *C. laevimanus*, but the males of these two species are quite different. Whereas the male of *C. laevimanus* has longer and narower chela of pedipalps, the male of *C. solegladi* **sp. n.** has the chela robust (Fig. 38) like the male of *C. variegatus*. However, these two species cannot be confused, because *C. variegatus* has the movable finger of pedipalp with 13–15 cutting edges composed of granules, whereas *C. solegladi* **sp. n.** has the movable finger with 7 or 8 cutting edges composed of granules.

Chaerilus terueli Kovařík, **sp. n.**

(Figs. 48–61)

TYPE LOCALITY AND TYPE REPOSITORY. Vietnam, Côn Son Island (Poulo Condore); FKCP.

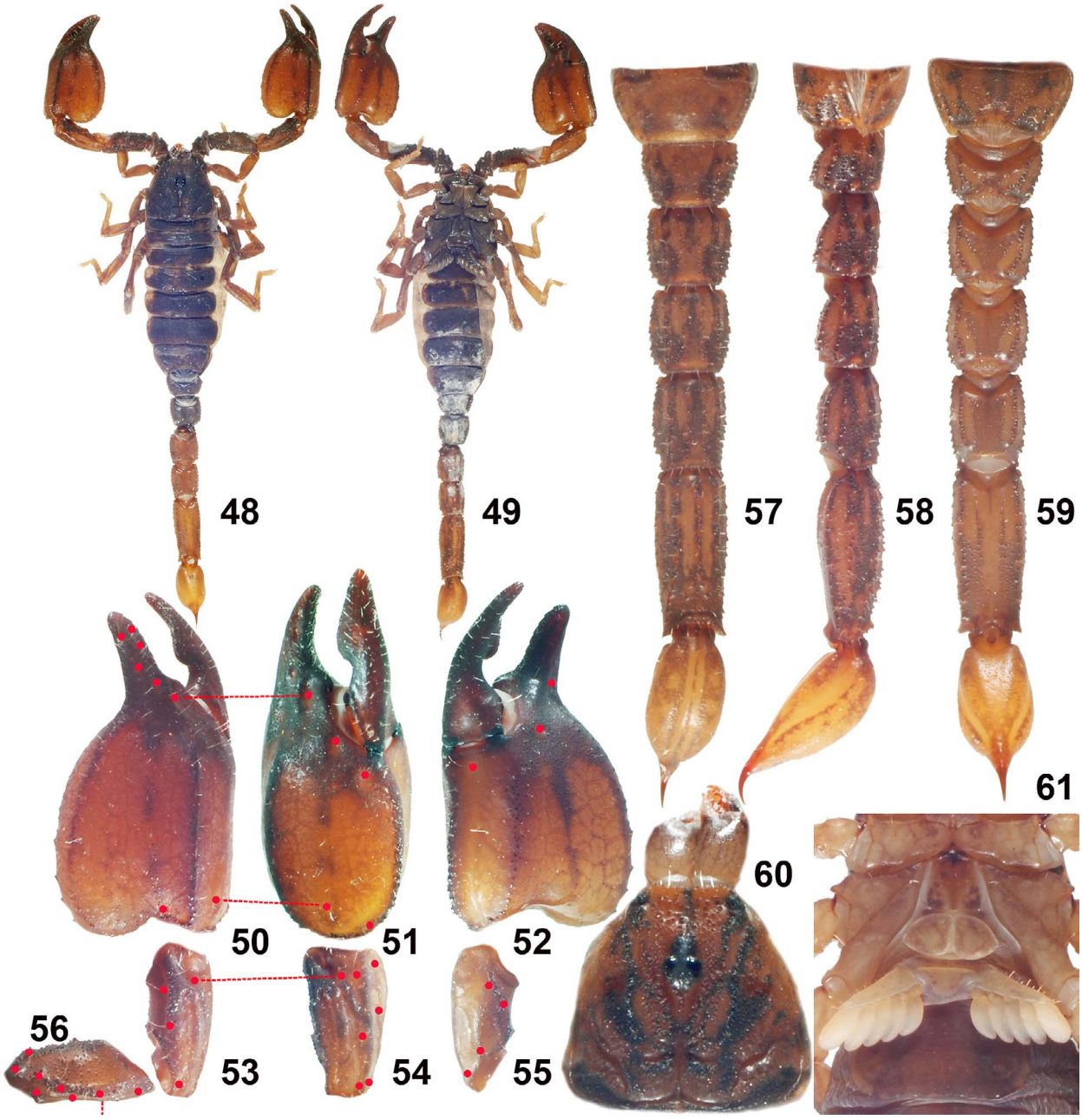
TYPE MATERIAL. Vietnam, Côn Son Island (Poulo Condore), III.2012, 1♂ (holotype) 2♂ (paratypes), leg. V. Fura, FKCP.

ETYMOLOGY. Named after my colleague and friend Rolando Teruel Ochoa, who has contributed to our knowledge of scorpions in many ways.

DIAGNOSIS. Total length 31–37 mm. Two pairs of lateral eyes and one pair of median eyes. Movable finger of pedipalp with 7–8 cutting edges composed of granules. Chela of pedipalp wide and ampullar, adult male has fingers strongly flexed. Manus of pedipalp in male robust. Chela of pedipalp with 4 complete carinae, patella with 4 or 5 carinae, femur with 4 carinae. Pectinal teeth 5–6 in males. Entire carapace granulated. Larger granules form two symmetrical, longitudinal carinae. Mesosomal tergites granulated. Several large, symmetrical granules on posterior margins of tergites II–VI may be interpreted as incomplete carinae. Sternites smooth, without carinae. First metasomal segments lack ventral carinae; ventral side of first metasomal segment smooth, but may bear several solitary granules. First through third metasomal segments with 6–8 carinae; dorsally with a pair of rows of granules, which may form incomplete carinae. Fourth metasomal segment with 8 carinae and irregular granules on lateral surface.

DESCRIPTION. Total males length 31–37 mm. Two pairs of lateral eyes and one pair of median eyes. Pectinal teeth number 5–6 (3x5, 3x6) in males. For the position and distribution of trichobothria see Fig. 50–56. Trichobothrium *d2* of the pedipalp patella is located on the edge between dorsal and internal surfaces. Trichobothrium *d3* is located on the internal surface. (Fig. 53). The chelicerae are granulated.

COLORATION. The color is reddish to black, spotted. Younger specimens are lighter-colored. Legs, pedipalps



Figures 48–61: ***Chaerilus terueli*** Kovařík, **sp. n.**. **48–56.** Dorsal (48) and ventral (49) views, and trichobothrial pattern of pedipalp (50–56), ♂ (33.7 mm) holotype. **57–61.** Telson, metasoma, and first mesosomal segment ventral (57), lateral (58), and dorsal (59) views, carapace and chelicerae (60), and pectinal area (61), ♂ (32 mm) paratype.

(mainly chela) and telson are red to yellow, lighter than the mesosoma.

MESOSOMA AND CARAPACE. The entire carapace is covered by large granules, the larger of which form two longitudinal, symmetrical carinae. The anterior margin of the carapace is straight to weakly concave. The mesosomal tergites are granulated. Several large, symmetrical granules on the posterior margins of tergites II–VI may be interpreted as incomplete carinae. The sternites are smooth, without carinae and without glossy zones in the middle of the posterior margin.

METASOMA AND TELSON. The first through third metasomal segments bear six to eight carinae (two ventral carinae and main lateral carinae may be poorly developed or absent); the fourth metasomal segment bears eight carinae and irregular granules on lateral surface. the fifth segment bears five to seven carinae of which one ventral carina posteriorly branches to form the letter

"Y". All carinae are composed of posteriorly inclined, denticulate granules. The spaces between carinae are irregularly granulated on lateral, ventral and dorsal surfaces; the dorsal surface bears a double row of granules, which may form incomplete carinae. All segments are sparsely hirsute. The telson is elongate, finely granulate and sparsely hirsute.

PEDIPALPS. The chela of pedipalp is wide and ampullar, the adult male has fingers strongly flexed (Fig. 51). The male manus of pedipalp is robust. The movable finger of pedipalp has seven to eight cutting edges and the fixed finger has six to seven cutting edges composed of granules. The chela of pedipalp has four complete carinae, the patella has four or five carinae and the femur has four carinae. All carinae consist of widely spaced, rounded granules. The spaces between carinae are covered by unevenly spaced small granules, which on the chela form a reticulate pattern.

LEGS. The legs are hirsute, without bristlecombs and carinae but with macrosetae.

MEASUREMENTS IN MM. Total length of *male holotype* 33.7; carapace length 4.5, width 4.6; metasoma and telson length 17.7; first metasomal segment length 1.6, width 2.5; second metasomal segment length 2.0, width 2.3; third metasomal segment length 2.1, width 2.2; fourth metasomal segment length 2.4, width 1.9; fifth metasomal segment length 4.5, width 1.9; telson length 5.1; pedipalp femur length 3.6, width 1.4; pedipalp patella length 3.6, width 1.6; chela length 7.9; manus width 4.3; movable finger length 4.1.

AFFINITIES. The described features distinguish *C. terueli* **sp. n.** from all other species of the genus. They are recounted in the key. The male of *C. terueli* **sp. n.** has the chela robust (Fig. 50) like the male of *C. solegladi* **sp. n.**, *C. robinsoni* and *C. variegatus*. Of these species only *C. solegladi* **sp. n.** has the movable finger with seven or eight cutting edges composed of granules (Fig. 36), like *C. terueli* **sp. n.**. *C. robinsoni* has the movable finger with 11 cutting edges and *C. variegatus* with 13–15 cutting edges. However, *C. solegladi* **sp. n.** and *C. terueli* **sp. n.** cannot be confused, because *C. solegladi* **sp. n.** has the fingers straight in both sexes (Fig. 39), whereas the adult male of *C. terueli* **sp. n.** has the fingers strongly flexed (Fig. 51).

Chaerilus wrzecionkoi Kovařík, **sp. n.**
(Figs. 62–77)

TYPE LOCALITY AND TYPE REPOSITORY. China, Tibet, Tomi (Tangmai), 30 km W of Donjung, 2075 m a.s.l.; FKCP.

TYPE MATERIAL. China, Tibet, Tomi (Tangmai), 30 km W of Donjung, 2075 m a.s.l., 23.VI.2007, 2♂2♀ (holotype, allotype and paratypes), leg. A. Wrzecionko; FKCP.

ETYMOLOGY. Named after Antonin Wrzecionko, who collected the type series.

DIAGNOSIS. Total length 33–41 mm. Two pairs of lateral eyes and one pair of median eyes. Male has a slightly longer pedipalp chela. Color dark brown to black. Manus of male pedipalp robust (Fig. 68). Chela length/width ratio in adults lower than 2.6. Movable finger of pedipalp with 8 cutting edges. Chela of pedipalp with 7 or 8 granulated carinae. Patella with 5 carinae, femur with 4 or 5 carinae. Pectinal teeth number 3–5. Carapace granulated. Anterior margin of carapace straight. Mesosomal tergites granulated. Seventh sternite granular, without carinae, other sternites smooth. First metasomal segment with 10 carinae, second thought fourth segments with 8 carinae, fifth segment with 7 carinae.

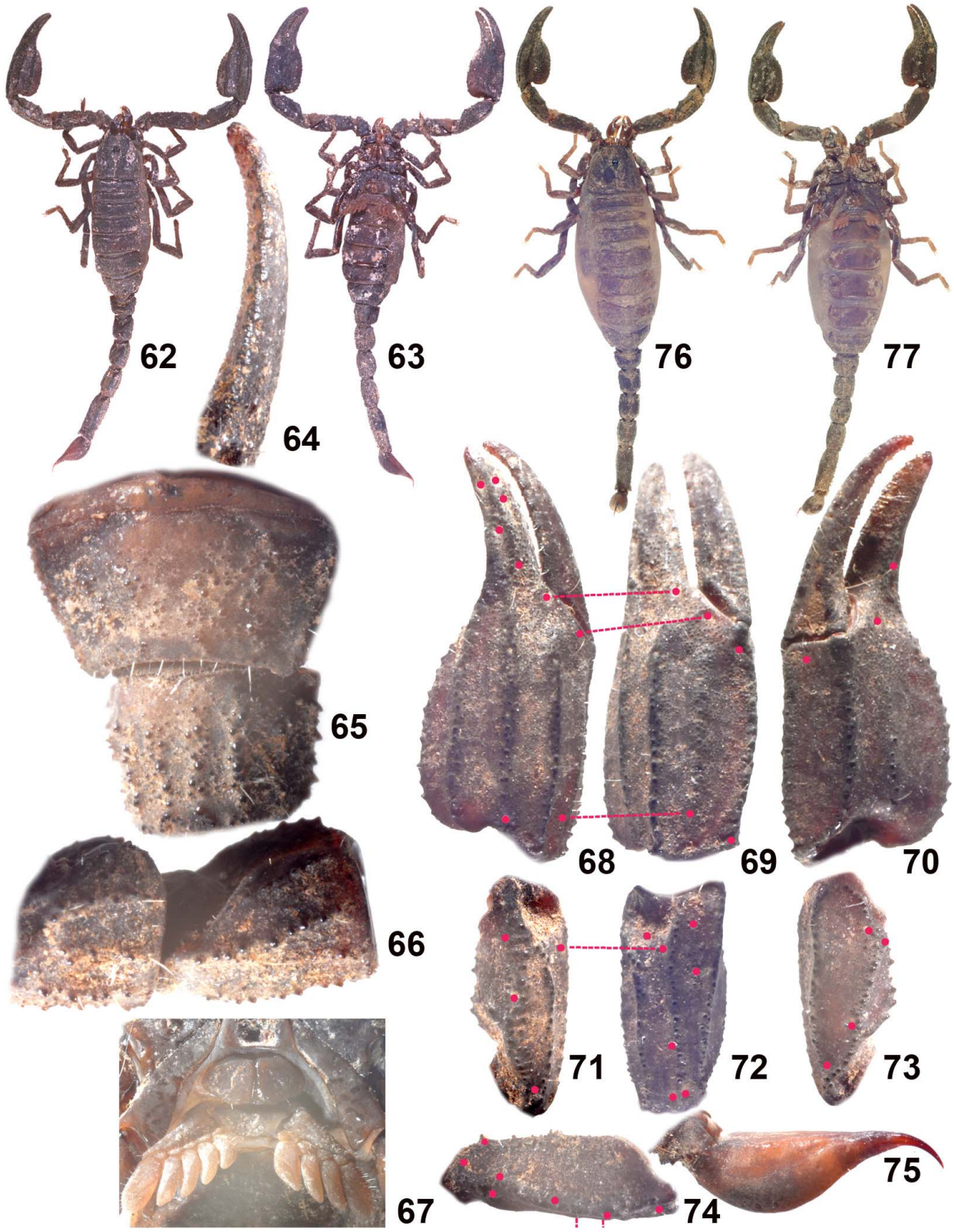
DESCRIPTION. Total length 33–41 mm. Two pairs of lateral eyes and one pair of median eyes present. The male has relatively larger pectens and telson, and differs from the female also in shape of the pedipalp manus and in having a slightly longer pedipalp chela. Pectinal teeth number 3–5 (females 3x4, 1x4; males 1x4, 3x5). For the position and distribution of trichobothria see Figs. 68–74. Trichobothrium *d2* is situated on the dorsal surface and *d3* on the internal surface of the patella (Fig. 69).

COLORATION. The color is dark brown to black.

MESOSOMA AND CARAPACE. The entire carapace is sparsely covered by large granules, the larger of which form two longitudinal, symmetrical carinae. The anterior margin of carapace is straight. The mesosomal tergites are granulated, the first to third segments weakly and the last segment densely. The seventh sternite lacks carinae and is covered by granules of unequal size, several of them large and hemispherical (Fig. 65). Other sternites are smooth. The fifth sternite has a glossy zone in the middle of posterior margin.

METASOMA AND TELSON. The first metasomal segment bears 10 carinae, the second thought fourth segments bear eight carinae, and the fifth segment bears seven carinae of which one ventral carina posteriorly branches to form the letter "Y". All carinae are composed of sparse and denticulate granules. The spaces between carinae are irregularly granulated on lateral surfaces; the dorsal surface is smooth. All segments are sparsely hirsute. The telson is elongate, smooth and sparsely hirsute.

PEDIPALPS. The movable finger has eight cutting edges. The chela has seven or eight granulated carinae. The carina on the externolateral surface of chela may be incomplete. The patella has five carinae and the femur has four or five carinae. All carinae consist of widely



Figures 62–77: ***Chaerilus wrzecionkoi*** Kovařík, **sp. n.**. **62–75.** Dorsal (62) and ventral (63) views, movable finger (64), seventh sternite and first metasomal segment ventral (65), first and second metasomal segments lateral (66), pectens (67), trichobothrial pattern of pedipalp (68–74), and telson (75), ♂ (37 mm) holotype. **76-77.** Dorsal (76) and ventral (77) views, ♀ (39 mm) allotype.

spaced rounded granules. The spaces between carinae are covered by unevenly spaced small granules.

LEGS. The legs are hirsute, without bristlecombs and carinae. The femora bear solitary granules.

MEASUREMENTS IN MM. Total length of *male holotype* 37; carapace length 4.3, width 4.4; metasoma and telson length 19.1; first metasomal segment length 2.0, width 2.4; second metasomal segment length 2.4, width 2.0; third metasomal segment length 2.4, width 2; fourth metasomal segment length 2.7, width 1.9; fifth metasomal segment length 4.7, width 1.8; telson length 4.9; pedipalp femur length 4.5, width 1.6; pedipalp patella length 4.8, width 1.7; chela length 9; manus width 3.5; movable finger length 5.

Total length of *female allotype* 39; carapace length 4.5, width 5.1; metasoma and telson length 18.2; first metasomal segment length 1.8, width 2.7; second metasomal segment length 2.2, width 2.2; third metasomal segment length 2.2, width 2; fourth metasomal segment length 2.7, width 1.8; fifth metasomal segment length 4.4, width 1.6; telson length 4.9; pedipalp femur length 3.7, width 1.7; pedipalp patella length 4, width 2.2; chela length 8.3; manus width 3.5; movable finger length 4.5.

AFFINITIES. The described features distinguish *C. wrzecionkoi* **sp. n.** from all other species of the genus. They are recounted in the key. Morphologically closest are *C. mainlingensis* Di et Zhu, 2009 and *C. tryznai* Kovařík, 2000. Both these species have manus and patella of pedipalp narrower and longer. *C. mainlingensis* Di et Zhu, 2009 also differs in having four distinct carinae on the seventh sternite; *C. wrzecionkoi* **sp. n.** has the seventh sternite granulated but without carinae (Fig. 65).

Acknowledgments

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