Euscorpius

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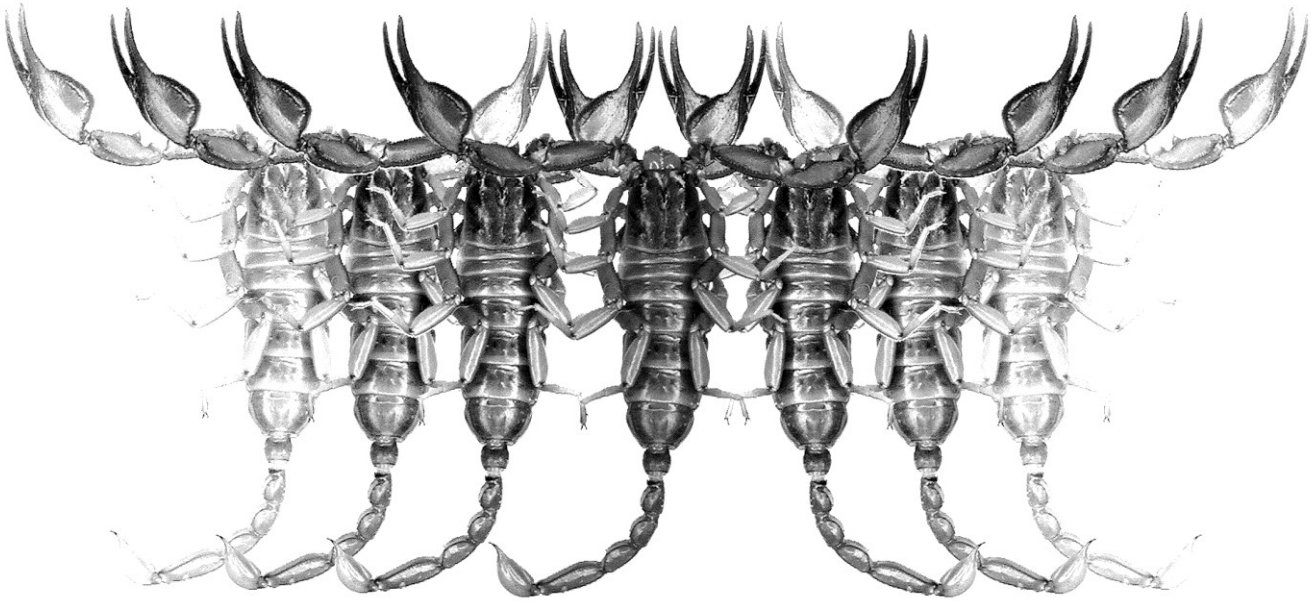

Chaerilus hofereki sp. n. from Vietnam (Scorpiones: Chaerilidae)

František Kovařík, Jiří Král, Tereza Kořínková & Azucena Claudia Reyes Lerma

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Chaerilus hofereki sp. n. from Vietnam (Scorpiones: Chaerilidae)

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Summary

Chaerilus hofereki **sp. n.** from Vietnam is described and compared with *C. cimrmani* Kovařík, 2012 from Thailand. *C. hofereki* **sp. n.** is characterized mainly by sexual dimorphism. Chela of pedipalp is wide and ampullar, fingers shorter in male than in female. Ratio of chela length to movable finger length 2.2 in males and 1.7–2 in females. Movable finger of pedipalp with 9 or 10 cutting edges. Our study brings the first data on chromosomes of chaerilid scorpions. The karyotype of male paratype of *C. hofereki* **sp. n.** consists of high number of chromosomes (2n = 90).

Systematics

Family **Chaerilidae** Pocock, 1893
(Figs. 1–35)

Chaerilini Pocock, 1893: 306.
Chaerilidae: Kraepelin, 1899: 157; Fet, 2000: 323–328 (complete reference list until 1998); Soleglad & Fet, 2003a: 5, 19–21, 25, 28, 30; Soleglad & Fet: 2003b: 7, 11, 12, 13, 17, 19, 20, 29–34, 67, 71–79, 84, 88, 91–94, 120; Kovařík & Ojanguren, 2013: 131–145.

TYPE GENUS. *Chaerilus* Simon, 1877 (one genus of extant scorpions).

DIAGNOSIS. Orthobothriotaxy type B; pedipalp femoral *d3–d4* trichobothria configuration points toward dorso-external carina; cheliceral fixed finger with median and basal denticles flush on surface, not conjoined on common trunk; sternum, *type 1*, exhibits subtle wide horizontal compression; maxillary lobes I spatulate; hemispermatophore is *fusiform*; pedipalp patella with "6-carinae" configuration. Median denticle row (MD) of pedipalp chelal finger arranged in *oblique* groups; pedipalp chela exhibits "8-carinae" configuration; ventral edge of cheliceral movable finger crenulated; dorsal edge of cheliceral movable finger with a single subdistal denticle; ventral surface of cheliceral fixed finger with denticles; leg tibial spurs absent.

Chaerilus Simon, 1877
(Figs.1–35)

Chaerilus Simon, 1877: 238; Kovařík & Ojanguren, 2013: 131–145 (complete reference list until 2013).
= *Chelomachus* Thorell, 1889: 583 (syn. by Kraepelin, 1899: 157).
= *Uromachus* Pocock, 1890: 250 (syn. by Kraepelin, 1899: 157).

TYPE SPECIES. *Chaerilus variegatus* Simon, 1877.

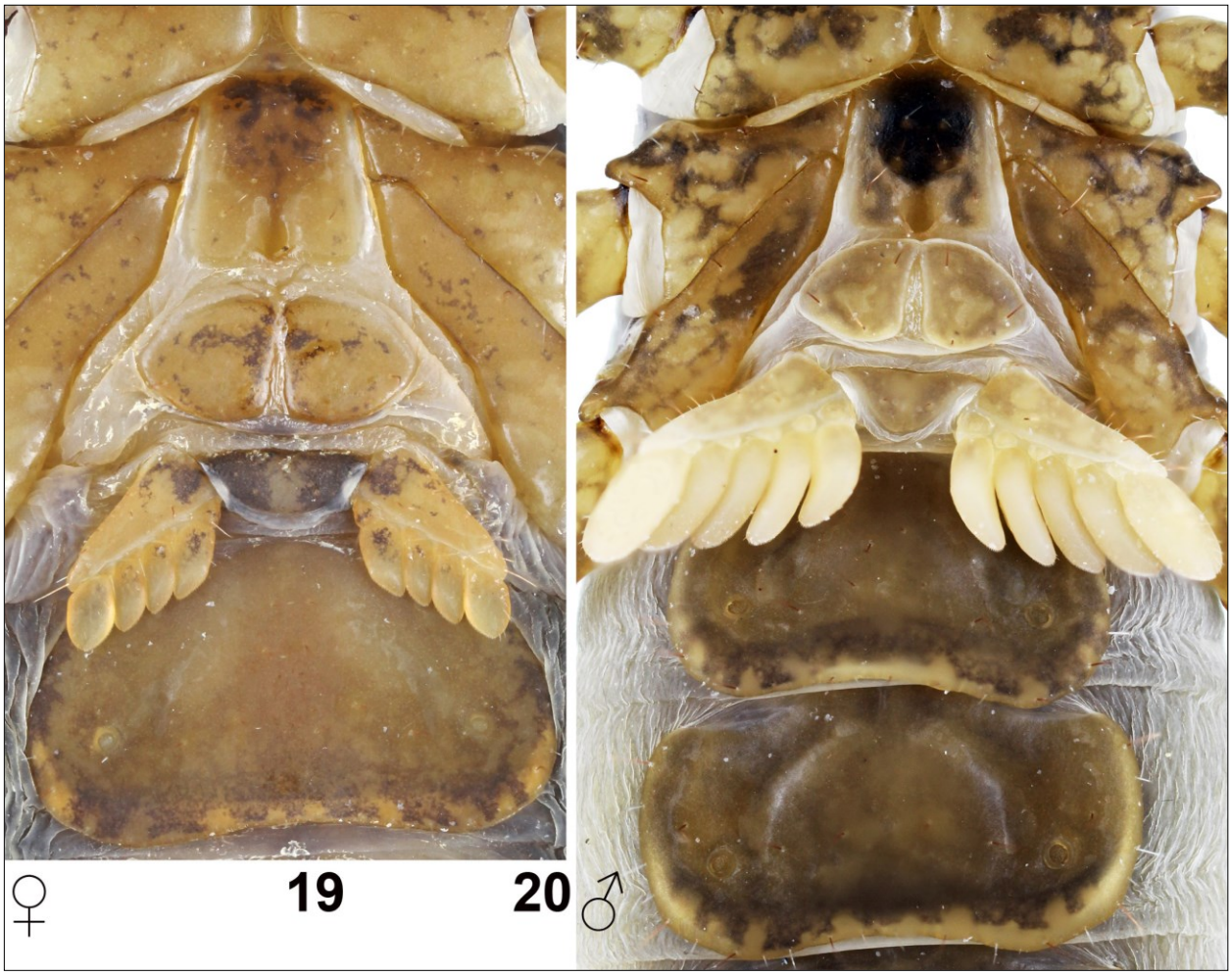
DIAGNOSIS. Total length 15–75.4 mm. Pedipalp patella with three ventral trichobothria and pedipalp femur with 9 trichobothria, 4 of them dorsal. Fifth metasomal segment with a single ventral carina. Legs without tibial spurs, but with prolateral and retrolateral pedal spurs. Tarsi of legs bear two rows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

Chaerilus hofereki Kovařík, Král, Kořínková et Reyes Lerma, **sp. n.**
(Figs. 1–35)
http://zoobank.org/urn:lsid:zoobank.org:act:0600D645-728F-4631-B032-B9EBF62082CF

Figures 1–4: ***Chaerilus hofereki*****, sp. n. 1**–**2.** Dorsal and ventral views, ♂ holotype. 3–**4.** Dorsal and ventral views, ♀ paratype.

Figures 5–12: ***Chaerilus hofereki*****, sp. n. Figures 5–11**. Right pedipalp chela dorsal (5), external (6) and ventral (7), pedipalp patella dorsal (8), external (9) and ventral (10), pedipalp femur and trochanter (11), ♀ paratype. The trichobothrial pattern is indicated in Figures 6–11. **Figure 12**. Right pedipalp chela dorsal, ♂ holotype.

Figures 13–18: ***Chaerilus hofereki*, sp. n.**, metasoma and telson. **Figures 13–15**. Ventral (13), dorsal (14) and lateral (15) views, ♂ holotype. **Figures 16–18**. Ventral (16), dorsal (17) and lateral (18) views, ♀ paratype.



Figures 19–20: ***Chaerilus hofereki*, sp. n.**, pectinal area. **Figure 19**. ♀ paratype. **Figure 20**. ♂ holotype.

TYPE LOCALITY AND TYPE REPOSITORY. Vietnam, Binh Thuan Province, Phan Thiet, approx. 10º56'N 108º06'E; FKCP (The first author collection).

TYPE MATERIAL. Vietnam, Binh Thuan Province, Phan Thiet, approximately 10º56'N 108º06'E, III.2014, leg. V. Fura, breeding F. Kovařík, 1♂ holotype (ecdysis 4.V. 2014 and maturity ecdysis 6.VII.2014), 1♂ paratype (maturity ecdysis 5.VI.2014, used for chromosomal analysis), 2♀ paratypes, 40 juvenile paratypes born 16.VI.2014, first ecdysis 21.VI.2014, second ecdysis 1-18.VIII.2014 and 28 juvenile paratypes born 28.VII. 2014, first ecdysis 2.VIII.2014. Both adult males and both adult females are in 75% alcohol in the first author's collection (FKCP), except for 68 juvenile paratypes which are alive.

ETYMOLOGY. Named after David Hoferek (Vigantice, Czech Republic), the best worldwide scorpion breeder.

DIAGNOSIS. Total length 25–31 mm. Two pairs of lateral eyes and one pair of median eyes. Chela of pedipalp wide and ampullar, fingers markedly shorter in male than in female. Ratio of chela length to width 1.84–1.98 in males and 2.06–2.1 in females. Ratio of chela length to movable finger length 2.21–2.23 in males and 1.7–2 in females. Movable finger of pedipalp with 9 or 10 cutting edges. Fingers straight in both sexes. Chela of pedipalp with 7 or 8 granulated carinae. Patella with 5 or 6 carinae, femur with 4 or 5 carinae. Pectinal teeth number 5 in males, 3–4 in females. Carapace granulated. Anterior margin of carapace weakly concave. Mesosomal tergites granulated. All sternites smooth, without carinae. First metasomal segment with 8 or 10 carinae, second to fourth segments with 8 carinae. Dorsal surfaces of all metasomal segments granulated.

DESCRIPTION. Total length 25–31 mm. Two pairs of lateral eyes and one pair of median eyes (Fig. 21). Chelicerae (Fig. 24) are granulated, yellow and reticulate,

Figures 21–24: ***Chaerilus hofereki*, sp. n**. **Figures 21** and **23**. Carapace with chelicerae (21) and external surface of movable finger (23), ♀ paratype. **Figures 22** and **24**. External surface of movable finger (22), and chelicerae dorsal and ventral views (24), ♂ holotype.

posteriorly black. The male has relatively larger pectens (Figs. 19 and 20). Male has markedly shorter fingers of pedipalp chela than female (Figs. 5 and 12). For the position and distribution of trichobothria, see Figs. 6–11.

COLORATION. The color is reddish brown to black, spotted. Legs, metasoma and telson are orange to light brown with dark spots. Older specimens are darker. The male holotype is light because it was sacrificed and photographed (Figs. 1–2) one month after adulthood ecdysis. The oldest female paratype is almost black.

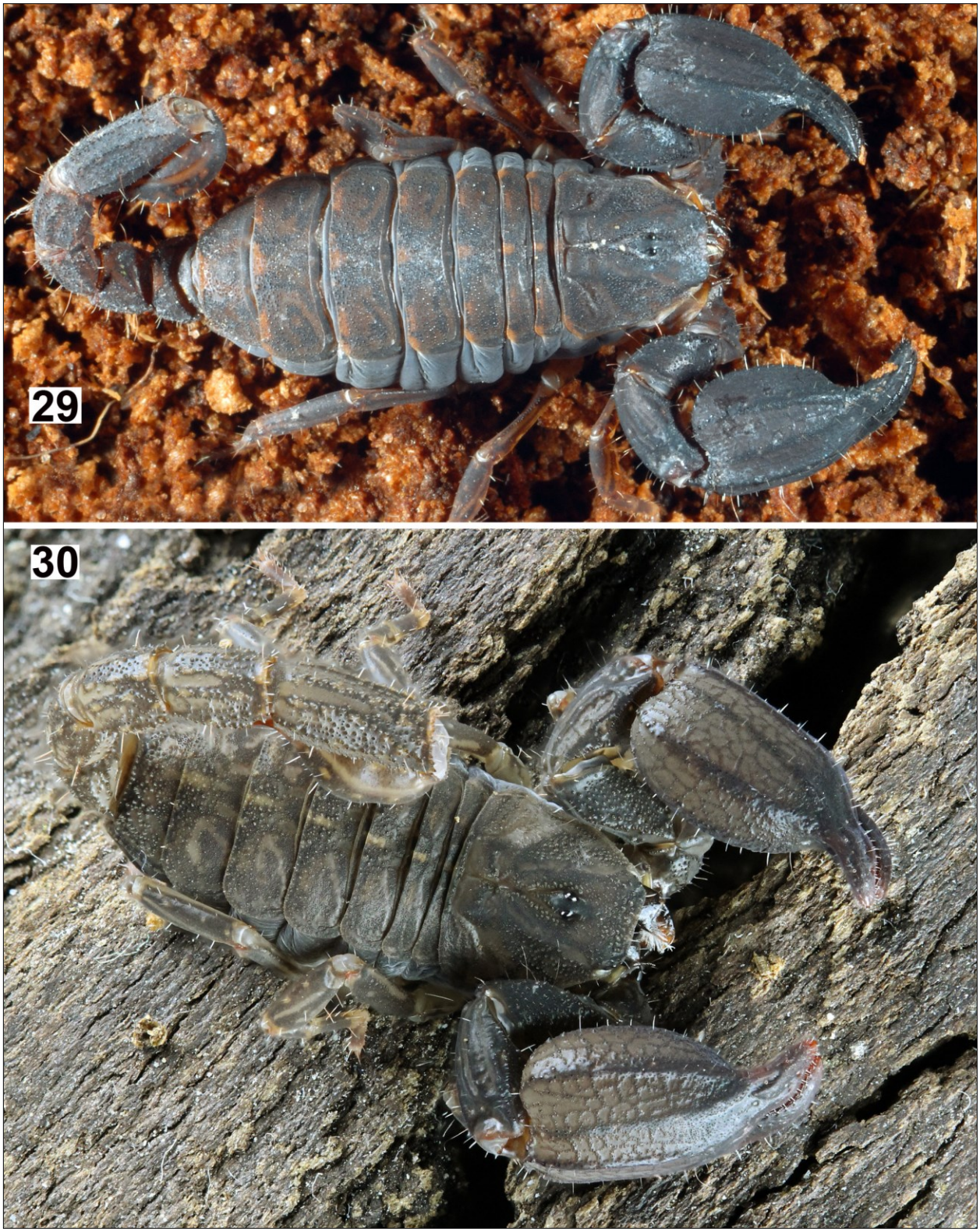
MESOSOMA AND CARAPACE (Figs. 1–4, 21). The entire carapace is covered by large granules which do not form carinae. The anterior margin of the carapace is almost straight to weakly concave. The mesosomal tergites are granulated, less so in the females and more densely in

Figures 25–28: ***Chaerilus hofereki*, sp. n.**, tarsomeres and tibia of first (25), second (26), third (27) and fourth right legs, ♂ holotype.

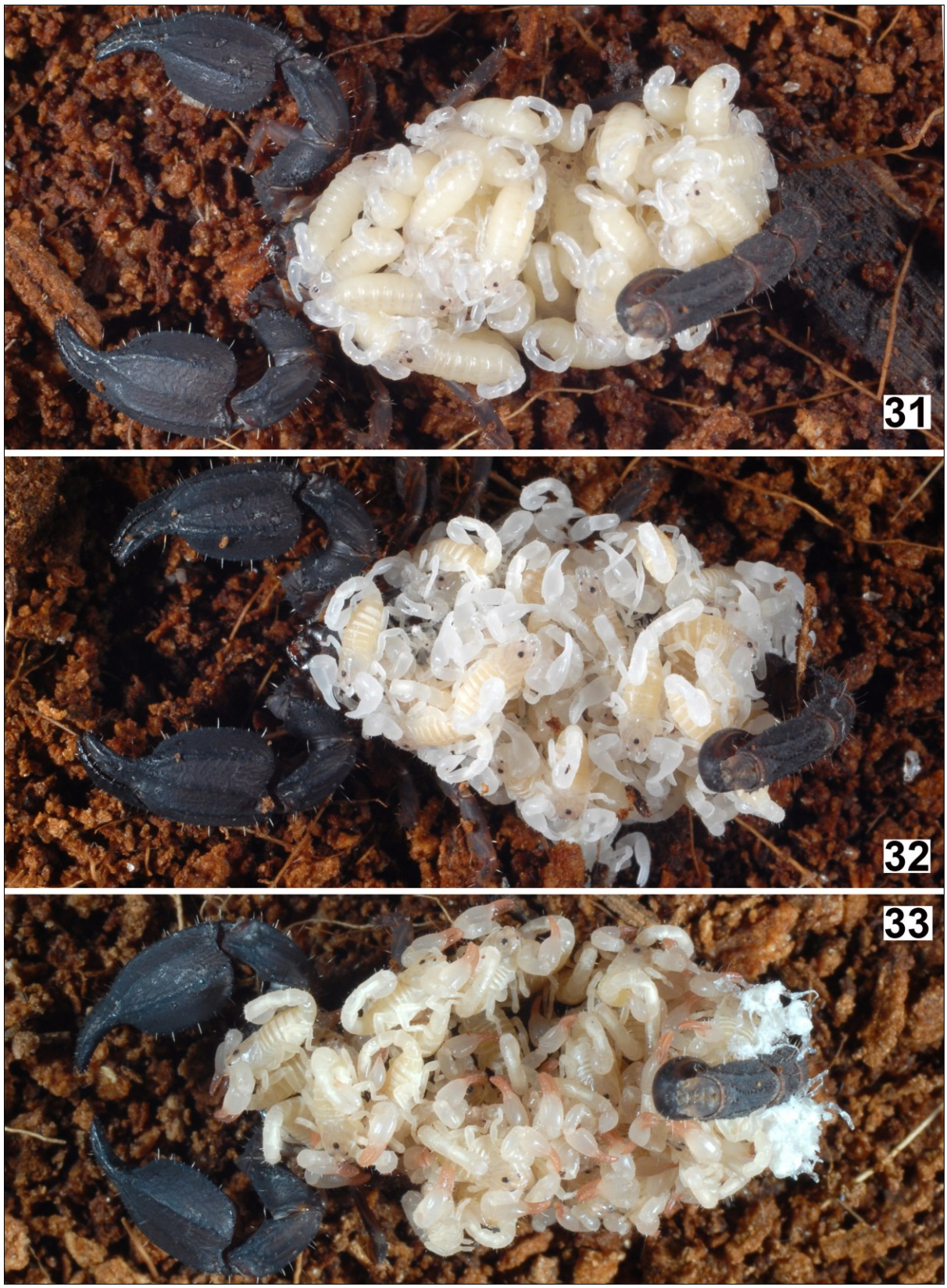
males. All sternites are smooth, without carinae (Figs. 19–20). Pectinal teeth number 5 in males, 3–4 in females.

METASOMA AND TELSON (Figs. 13–18). The first metasomal segment bears 8 or 10 carinae, the second to fourth 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 large granules. The spaces between carinae are irregularly granulated on all surfaces, less on the dorsal surface. Granules on the dorsal surface can form a pair of carinae. All segments are sparsely hirsute. The telson is elongate, smooth and sparsely hirsute.

PEDIPALPS (Figs. 5–12). The chela of pedipalp is wide and ampullar. The movable finger has 9 (male) or 10 (female) cutting edges (Figs. 22–23). The chela has seven or eight granulated carinae. The carina on the externolateral surface of chela can be incomplete. The patella has five or six carinae and the femur has four or five carinae. All carinae consist of granules. The spaces



Figures 29–30: ***Chaerilus hofereki*, sp. n**. **Figure 29**. ♀ paratype. **Figure 30**. ♂ paratype.



Figures 31–33: ***Chaerilus hofereki*, sp. n**. **Figure 31**. ♀ paratype with newborn before first ecdysis. **Figure 32**. ♀ paratype with juveniles shortly after first ecdysis. **Figure 33**. ♀ paratype with juveniles later after first ecdysis.

Figures 34–35: Type locality of ***Chaerilus hofereki*, sp. n.**, Vietnam, Phan Thiet.

between carinae are covered by unevenly spaced small granules that form a reticulate pattern on the dorsal surface of the chela (Fig. 6).

LEGS (Figs. 25–28). The legs are sparsely hirsute, without bristlecombs and carinae. The femora are granulated, and solitary granules can be present also on the patella.

The tarsomeres bear two rows of spiniform setae and 2 to 4 outer spiniform setae. Spiniform setae formula is 5–7/5–7 : 6–7/5–6 : 7–8/6–7 : 7–9/7–9 without the outer spiniform setae.

MEASUREMENTS IN MM. Total length of *male holotype* 30.5; carapace length 3.95, width 4.15; metasoma and telson length 15.9; first metasomal segment length 1.6, width 2.2; second metasomal segment length 1.8, width 1.95; third metasomal segment length 1.85, width 1.85; fourth metasomal segment length 2.2, width 1.8; fifth metasomal segment length 3.95, width 1.8; telson length 4.5; telson depth 1.65; pedipalp femur length 3, width 1.3; pedipalp patella length 3.1, width 1.55; chela length 6.65; manus width 3.6; movable finger length 3.

Total length of *female paratype* 31; carapace length 4.1, width 4.65; metasoma and telson length 14.55; first metasomal segment length 1.6, width 2.35; second metasomal segment length 1.6, width 2.1; third metasomal segment length 1.65, width 1.95; fourth metasomal segment length 1.85, width 1.8; fifth metasomal segment length 3.45, width 1.7; telson length 4.4; telson depth 1.8; pedipalp femur length 2.9, width 1.4; pedipalp patella length 3.1, width 1.55; chela length 6.7; manus width 3.25; movable finger length 3.85.

CYTOGENETIC DATA. The chromosome complement of the male paratype comprised 90 chromosomes. Four chromosome pairs were considerably longer than the other ones.

AFFINITIES. In the recently published key to the *Chaerilus* species, *C. hofereki* sp. n. was categorized under the closest relative species *C. cimrmani* Kovařík, 2012 from Thailand (see Kovařík & Ojanguren, 2013: 131–132, couplet 30). The two species differ mainly in sexual dimorphism. The male of *C. hofereki* sp. n. has markedly shorter fingers of pedipalp chela than the female (Figs. 5, 12, 22–23). In *C. cimrmani* the fingers are approximately of the same length, identical in both sexes (figs. 699 and 701 in Kovařík & Ojanguren, 2013: 282). The ratio of chela length to width is 1.84–1.98 in males and 2.06–2.1 in females of *C. hofereki* sp. n.; 2.16 in males and 1.97 in females of *C. cimrmani*. The ratio of chela length to movable finger length 2.21–2.23 in males and 1.7–2 in females of *C. hofereki* sp. n.; 1.9 in males and 1.8 in females of *C. cimrmani*. Other differences are in the granulation of pedipalps (see Figs. 5–11 versus figs. 701–703 in Kovařík & Ojanguren, 2013: 282) and the shape of metasomal segments.

Acknowledgments

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