Euscorpius

Occasional Publications in Scorpiology

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

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

September 2014 — No. 189
Euscorpius

Occasional Publications in Scorpiology

EDITOR: Victor Fet, Marshall University, ‘fet@marshall.edu’
ASSOCIATE EDITOR: Michael E. Soleglad, ‘soleglad@znet.com’

Euscorpius is the first research publication completely devoted to scorpions (Arachnida: Scorpionidae). Euscorpius takes advantage of the rapidly evolving medium of quick online publication, at the same time maintaining high research standards for the burgeoning field of scorpion science (scorpiology). Euscorpius is an expedient and viable medium for the publication of serious papers in scorpiology, including (but not limited to): systematics, evolution, ecology, biogeography, and general biology of scorpions. Review papers, descriptions of new taxa, faunistic surveys, lists of museum collections, and book reviews are welcome.

Derivatio Nominis

The name Euscorpius Thorell, 1876 refers to the most common genus of scorpions in the Mediterranean region and southern Europe (family Euscorpiidae).

Euscorpius is located at: http://www.science.marshall.edu/fet/Euscorpius
(Marshall University, Huntington, West Virginia 25755-2510, USA)

ICZN COMPLIANCE OF ELECTRONIC PUBLICATIONS:

Electronic ("e-only") publications are fully compliant with ICZN (International Code of Zoological Nomenclature) (i.e. for the purposes of new names and new nomenclatural acts) when properly archived and registered. All Euscorpius issues starting from No. 156 (2013) are archived in two electronic archives:

- Biotaxa, http://biotaxa.org/Euscorpius (ICZN-approved and ZooBank-enabled)
- Marshall Digital Scholar, http://mds.marshall.edu/euscorpius/. (This website also archives all Euscorpius issues previously published on CD-ROMs.)

Between 2000 and 2013, ICZN did not accept online texts as "published work" (Article 9.8). At this time, Euscorpius was produced in two identical versions: online (ISSN 1536-9307) and CD-ROM (ISSN 1536-9293) (laser disk) in archive-quality, read-only format. Both versions had the identical date of publication, as well as identical page and figure numbers. Only copies distributed on a CD-ROM from Euscorpius in 2001-2012 represent published work in compliance with the ICZN, i.e. for the purposes of new names and new nomenclatural acts.

In September 2012, ICZN Article 8. What constitutes published work, has been amended and allowed for electronic publications, disallowing publication on optical discs. From January 2013, Euscorpius discontinued CD-ROM production; only online electronic version (ISSN 1536-9307) is published. For further details on the new ICZN amendment, see http://www.pensoft.net/journals/zookeys/article/3944/.

Publication date: 3 September 2014

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

František Kovařík 1, Jiří Král 2, Tereza Kořínková 2 & Azucena Claudia Reyes Lerma 2

1 P. O. Box 27, CZ - 145 01 Praha 45, Czech Republic. www.kovarex.com/scorpio
2 Laboratory of Arachnid Cytogenetics, Department of Genetics and Microbiology, Faculty of Science, Charles University in Prague, CZ-128 44 Prague 2, Czech Republic. e-mail: spider@natur.cuni.cz


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.

Type genus. Chaerilus Simon, 1877 (one genus of extant scorpions).

Diagnosis. Orthobothriotaxy type B; pedipalp femoral d3–d4 trichobothria configuration points toward dorsoexternal carina; cheliceral fixed finger with median and basal denticles flush on surface, not conjoined on common trunk; sternum, type I, 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)


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 retroroteral 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)
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 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. 10°56’N 108°06’E; FKCP (The first author collection).


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. Meso-somal 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,
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
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.

Cyto genetic 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. cimmeri 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. cimmeri 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 1.84–1.85 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. cimmeri. 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. cimmeri. Other differences are in the granulation of pedipalp (see Figs. 5–11 versus figs. 701–703 in Kovařík & Ojanguren, 2013: 282) and the shape of metasomal segments.

Acknowledgments

Thanks are due to Vladimir Fura for the type specimens and photos in Figures 34 and 35; to two projects of the Charles University in Prague (1246214, SVV-2014-260081); to two anonymous reviewers for their comments; and to Victor Fet and Michael Soleglad for their help in processing the manuscript.

References


