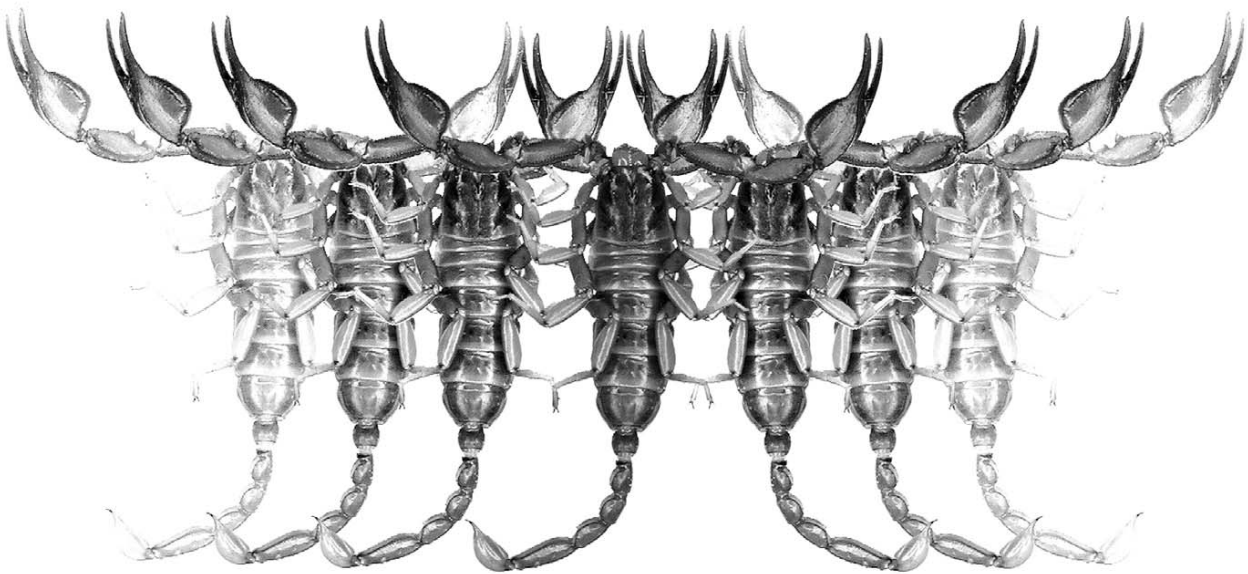


Euscorpius

Occasional Publications in Scorpiology



Chaerilus alberti sp. n. from Malaysia
(Scorpiones: Chaerilidae)

František Kovařík

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Euscorpius

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Chaerilus alberti sp. n. from Malaysia (Scorpiones: Chaerilidae)

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Summary

Chaerilus alberti sp. n. from Malaysia (Cameron Highlands) is described and fully illustrated with color photographs of preserved specimens, as well as of their habitat. Males of *C. alberti* sp. n. have a unique shape of chela which is stout with the manus swollen anteriorly. They are compared to other species from Southeast Asia from all of which *C. alberti* sp. n. differs by the shape of pedipalp chela parallel or swollen posteriorly or medially. Pedipalp chela is illustrated with color photographs of 21 of these species.

Introduction

Chaerilidae comprise a small, rather homogeneous, monotypic family of scorpions widely distributed across the continent and archipelagoes of tropical southern Asia (Kovařík et al., 2018). Here, another new species is described, characterised by a unique shape of the pedipalp chela in male, which has a manus swollen anteriorly. Presented Figures 37–58 show that this sole character distinguishes *Chaerilus alberti* sp. n. from all other species of genus *Chaerilus*. These figures also show that the shape of chela helps to recognize individual species or species groups in combination with three other characters which are extremely variable within the genus *Chaerilus* in comparison with other scorpion genera. These characters are: total length from 16 mm (*C. sejnai* Kovařík, 2005) to 80 mm (*C. tichyi* Kovařík, 2000); pedipalp chela movable fingers with 7 (*C. celebensis* Pocock, 1894) to 16 (*C. majkusi* Kovařík et al., 2018) imbricated rows of granules; pedipalp chela fingers in males straight (as in *C. solegladi* Kovařík, 2012) or flexed (as in *C. robinsoni* Hirst, 1911).

Methods, Material & Abbreviations

Nomenclature and measurements follow Stahnke (1971), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974).

Depositories: AMNH (American Museum of Natural History, New York, USA); BMNH (The Natural History Museum, London, United Kingdom); FKCP (František Kovařík, private collection, Prague, Czech Republic); NHRS (Naturhistoriska Riksmuseet, Stockholm, Sweden).

Biometrics: L, length; W, width; D, depth.

Systematics

Family **Chaerilidae** Pocock, 1893

Chaerilus Simon, 1877
(Figs. 1–58, Table 1)

Chaerilus Simon, 1877: 238; Kovařík & Ojanguren, 2013: 131–145, figs. 617–776 (complete reference list until 2013); Kovařík et al, 2015: 1–21, figs. 1–91, tables 1–3; Kovařík et al, 2018: 1–27, figs. 1–125, table 1.
= *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 16–80 mm; Orthobothriotaxy type B; pedipalp femoral d_3 – d_4 trichobothria configuration points toward dorsoexternal carina; pedipalp patella with three ventral trichobothria and pedipalp femur with 9 trichobothria, 4 of them dorsal; cheliceral fixed finger with median and basal denticles flush on surface, not fused into bicuspid; ventral edge of cheliceral movable finger crenulated, dorsal edge with single subdistal denticle; ventral surface of cheliceral fixed finger with four denticles; dorsal edge of cheliceral movable finger with a single subdistal denticle; ventral surface of cheliceral fixed finger with denticles; sternum, *type 1*, exhibits subtle wide horizontal compression; maxillary lobes I spatulate; hemispermatophore is *fusiform*; median denticle row (MD) of pedipalp chela finger arranged in *oblique* groups; pedipalp



Figures 1–4: *Chaerilus alberti* sp. n. **Figures 1–2.** Holotype male, dorsal (1) and ventral (2) views. **Figures 3–4.** Paratype female, dorsal (3) and ventral (4) views. Scale bar: 10 mm.

Dimensions (MM)		<i>C. alberti</i> sp. n. ♂ holotype	<i>C. alberti</i> sp. n. ♀j. paratype
Carapace	L / W	3.609 / 3.585	3.241 / 3.240
Mesosoma	L	6.377	6.165
Tergite VII	L / W	1.558 / 3.067	1.404 / 2.736
Metasoma + telson	L	15.233	11.782
Segment I	L / W / D	1.666 / 2.040 / 1.782	1.133 / 1.847 / 1.413
Segment II	L / W / D	1.727 / 1.856 / 1.636	1.385 / 1.550 / 1.350
Segment III	L / W / D	1.839 / 1.779 / 1.536	1.431 / 1.389 / 1.325
Segment IV	L / W / D	2.047 / 1.709 / 1.443	1.608 / 1.380 / 1.300
Segment V	L / W / D	3.617 / 1.736 / 1.423	2.889 / 1.350 / 1.226
Telson	L / W / D	4.337 / 1.770 / 1.613	3.336 / 1.405 / 1.250
Pedipalp	L	12.337	10.313
Femur	L / W	3.028 / 1.239	2.596 / 1.123
Patella	L / W	3.067 / 1.345	2.506 / 1.188
Chela	L	6.242	5.211
Manus	W / D	2.755 / 1.930	1.767 / 1.720
Movable finger	L	3.364	2.984
Total	L	25.219	21.188

Table 1. Comparative measurements of *Chaerilus alberti* sp. n. types. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

chela exhibits “8-carina” configuration; legs without tibial spurs, but with prolateral and retrolateral pedal spurs; tarsi of legs bear two or four rows of ventral setae and median row of spinules; fifth metasomal segment with a single ventral carina; telson without subaculear tubercle.

***Chaerilus alberti* sp. n.**
(Figs. 1–37, Table 1)

<http://zoobank.org/urn:lsid:zoobank.org:act:D8EF4C6E-2130-49C9-B910-AC2C08454D08>

TYPE LOCALITY AND TYPE REPOSITORY. Malaysia, Perak, Cameron Highlands, Tanah Rata env., Gunung Jasar, 04°28'41.876"N 101°21'37.141"E, ca 1600 m a. s. l., FKCP.

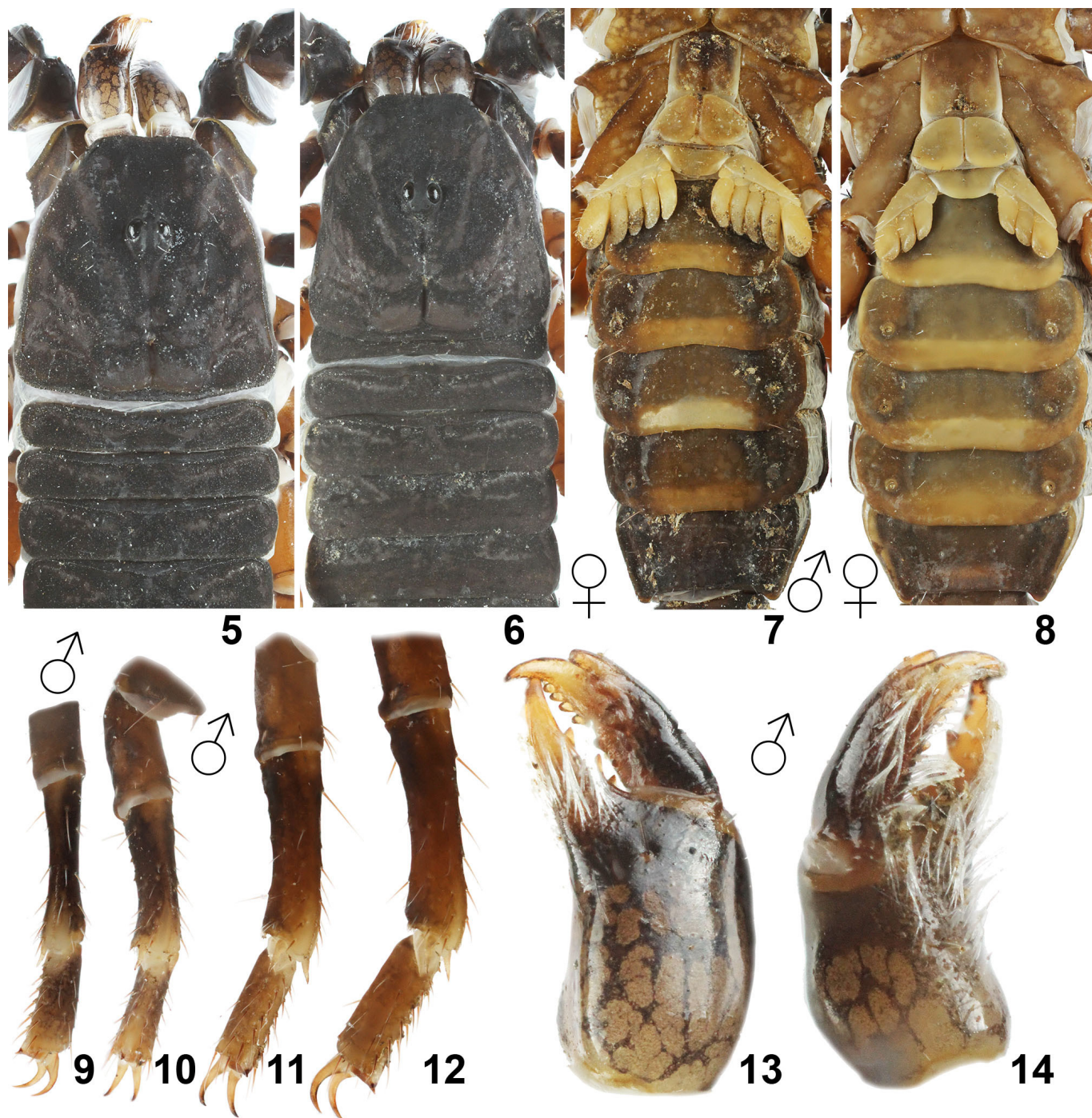
TYPE MATERIAL. **Malaysia**, Perak, Cameron Highlands, Tanah Rata env., Gunung Jasar, 04°28'41.876"N 101°21'37.141"E, ca 1600 m a. s. l. (Figs. 34–35), 12.X.2018, 2♂ (holotype and paratype, No. 1585), sifting montane cloud forest, leg. A. Albert, FKCP; Pahang/Perak border, Cameron Highlands, Tanah Rata env., Gunung Brinchang, 04°31'17.8"N 101°22'53.9"E, ca 2000 m a. s. l. (Fig. 36), 14.X.2018, 1♀ (paratype), sifting montane cloud forest, leg. A. Albert, FKCP.

ETYMOLOGY. The selected epithet is a patronym honoring A. Albert, the collector of types of the new species. He is also the author of the photographs of localities (Figs. 34–36).

DIAGNOSIS. Total length 21–25.2 mm. Two or three pairs of lateral eyes and one pair of median eyes. Male differs from female in having pedipalp chela much wider with manus swollen anteriorly. Chela length/width ratio in male 2.265; in female 2.95. Movable finger of pedipalp with 7–8 imbricated granule rows. Fingers straight in both sexes. Chela of pedipalp with 8 carinae. Pectinal teeth number 5 in males, 3 in female. Carapace and mesosomal tergites granulated. All sternites smooth without carinae and granules. Glabrous zone on posterior part of sternite V present medially. First metasomal segment with 10 carinae, second to fourth segments with 8 carinae, but all carinae are smooth, several solitary granules can be present only on dorsal carinae. Metasoma I–IV smooth.

DESCRIPTION. Total length 21 (female, probably subadult) – 25.2 mm (male holotype). Two or three well developed pairs of lateral eyes and one pair of median eyes. The chelicerae (Figs. 13–14) are typical for genus, smooth, and strongly reticulate, anteriorly black. The male differs from the female in having pedipalp chela much wider and having lobe in anterior part of chela. The chela length/width ratio in the male 2.265; in female 2.95. There is no sexual dimorphism in shape of metasoma and telson. For the position and distribution of trichobothria, see Figs. 23–30. For measurements, see Table 1. **Coloration** (Figs. 1–4). The color is reddish black to black, legs and telson yellowish brown.

Carapace and mesosoma (Figs. 5–8). The carapace is partly covered by granules that do not form carinae and are absent

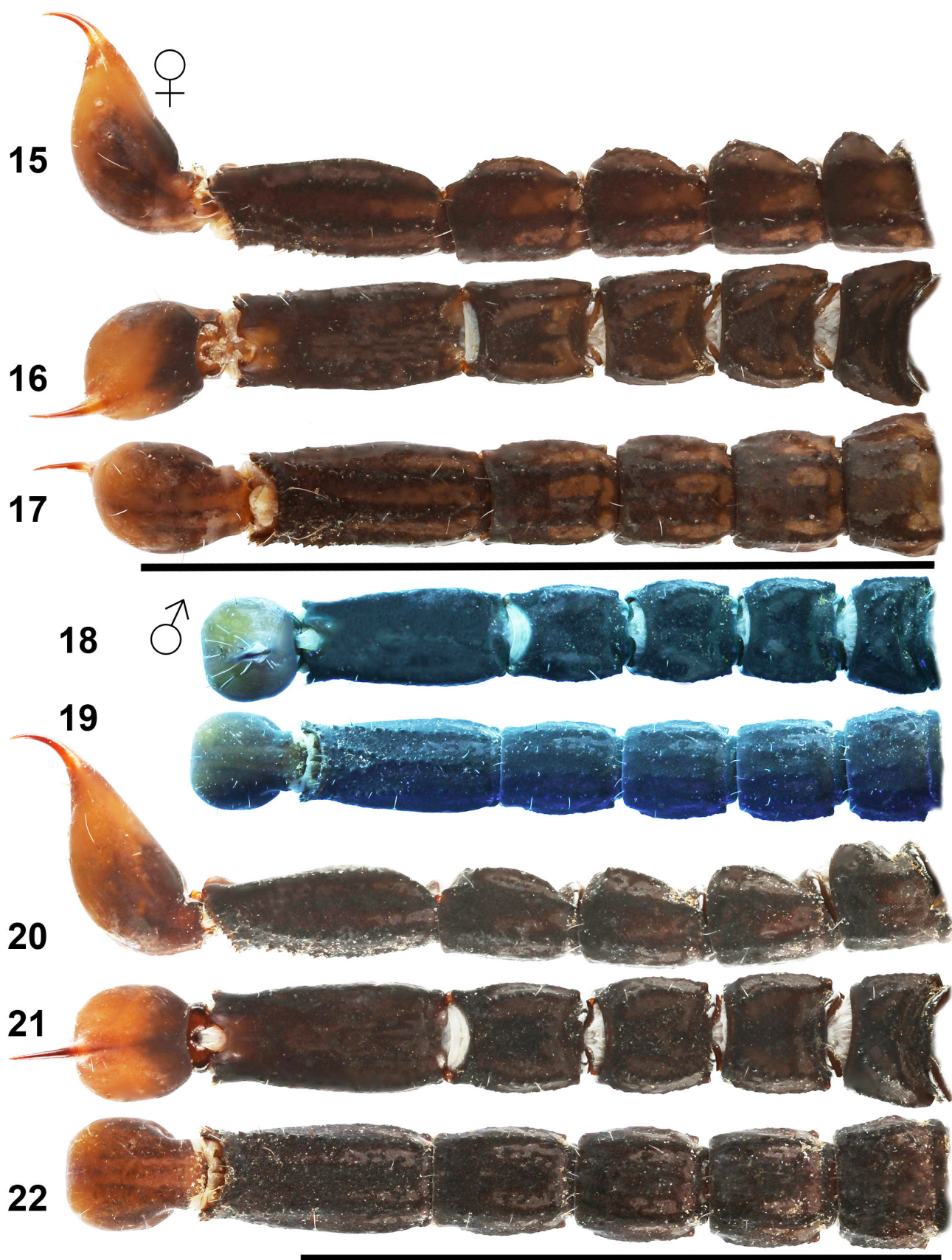


Figures 5–14: *Chaerilus alberti* sp. n. **Figures 5, 9–14.** Holotype male, carapace and tergites I–IV (5), left legs I–IV, retrolateral aspect (9–12), right chelicera dorsal (13) and ventral (14) views. **Figure 7.** Holotype male, sternopectinal region and sternites, **Figures 6, 8.** Paratype female, carapace and tergites I–III (6), sternopectinal region and sternites III–V (8).

from two strips in the median area. The anterior margin of the carapace is almost straight to weakly concave. The mesosomal tergites are irregularly granulated. All sternites are smooth without carinae and granulation. Sternite V with glabrous zone on posterior part of sternite V present medially. Pectinal teeth number 5 in males, 3 in female.

Metasoma and telson (Figs. 15–22). The first metasomal segment bears 10 carinae, the metasoma II–IV bear eight

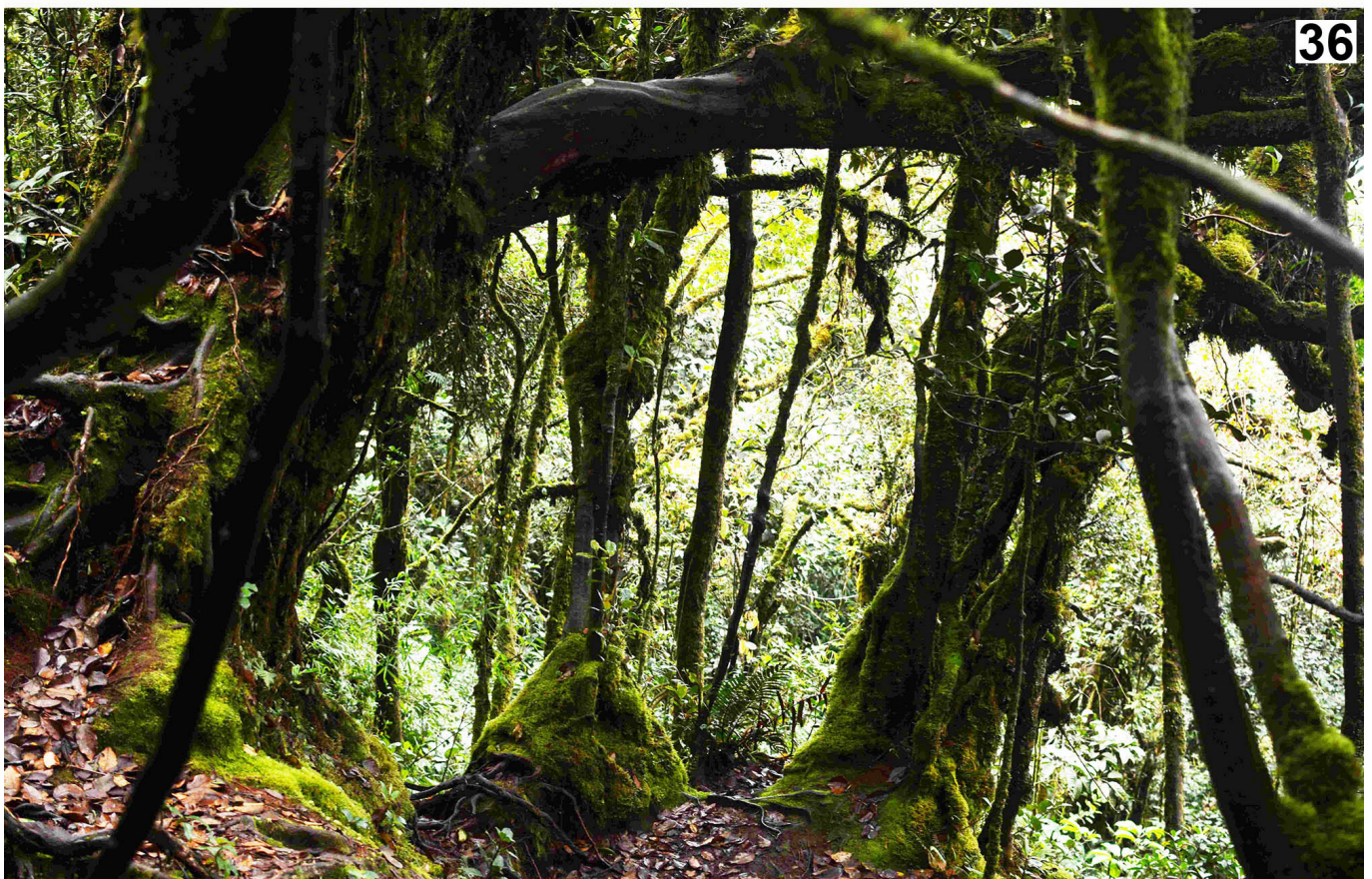
carinae, and the fifth segment bears five carinae. All carinae except metasoma V ventral are smooth and weak without granules. Several solitary granules can be only on dorsal carinae. The three ventral carinae on metasoma V granulated; the ventral median carina posteriorly branches in a “Y” configuration. The spaces between carinae are smooth, only ventral surface of metasoma V is partly granulated. All segments are very sparsely hirsute. The telson is elongate, smooth and very sparsely hirsute.



Figures 15–22: *Chaerilus alberti* sp. n. **Figures 15–17.** Paratype female, metasoma and telson, lateral (15), dorsal (16) and ventral (17) views. **Figures 18–22.** Holotype male, metasoma and telson, lateral (20), dorsal (18, UV fluorescence and 21), and ventral (19, UV fluorescence and 22) views. Scale bars: 10 mm (15–17, 20–22).



Figures 23–34: *Chaerilus alberti* sp. n. **Figures 23–24.** Paratype female, pedipalp chela, dorsal (23) and externodorsal (24) views. **Figures 25–33.** Holotype male, pedipalp chela, dorsal (25), externodorsal (26), and ventrointernal (27) views. Pedipalp femur and trochanter, dorsal view (28). Pedipalp patella, dorsal (29), external (30) and ventral (31) views. Movable (32) and fixed (33) fingers. **Figure 34:** Type locality.



Figures 35–36: *Chaerilus alberti* sp. n., collection localities. **Figure 35.** Type locality, Malaysia, Perak, Cameron Highlands, Tanah Rata env., Gunung Jasar, 04°28'41.876"N 101°21'37.141"E , ca 1600 m a.s.l.. **Figure 36.** Malaysia, Pahang/Perak border, Cameron Highlands, Tanah Rata env., Gunung Brinchang, 04°31'17.8"N 101°22'53.9"E , ca 2000 m a.s.l.



Figures 37–58: Comparison of shapes of pedipalp chela in males of *Chaerilus* from South East Asia. **Figure 37.** *C. alberti* sp. n., holotype, FKCP. **Figure 38.** *C. borneensis* Simon, 1880, Borneo, NHRS. **Figure 39.** *C. cavernicola* Pocock, 1894, Malaysia, Pahang/Johor, Endau-Rompin n. Park, 100 m a.s.l., Salendang, FKCP. **Figure 40.** *C. ceylonensis* Pocock, 1894, Sri Lanka, District Polonnaruwa, ca 35 km from Dambula, 07°57'15.1"N 080°54'45.4"E, 132 m a.s.l., FKCP. **Figure 41.** *C. cimrmani* Kovařík, 2012, Thailand, 50 km W of Phetchaburi, FKCP. **Figure 42.** *C. celebensis* Pocock, 1894, Philippines, North of Luzon, Region of Appari, FKCP. **Figure 43.** *C. granulatus* Kovařík et al., 2015, holotype, FKCP. **Figure 44.** *C. hofereki* Kovařík, 2014, paratype, FKCP. **Figure 45.** *C. laevimanus* Pocock, 1899, Malaysia, Kalimantan, Kota Kinabalu, Sapulut, FKCP. **Figure 46.** *C. longimanus* Kovařík et al., 2015, holotype, FKCP. **Figure 47.** *C. majkusi* Kovařík et al., 2018, holotype, FKCP. **Figure 48.** *C. neradorum* Kovařík et al., 2018, holotype, FKCP. **Figure 49.** *C. ojangureni* Kovařík, 2005, holotype, FKCP. **Figure 50.** *C. rectimanus* Pocock, 1899, Malaysia, Bukit Fraser, FKCP. **Figure 51.** *C. robinsoni*, holotype, BMNH. **Figure 52.** *C. seiteri* Kovařík, 2012, holotype, FKCP. **Figure 53.** *C. sejnai* Kovařík, 2005, paratype, FKCP. **Figure 54.** *C. solegladi* Kovařík, 2012, holotype, FKCP. **Figure 55.** *C. stockmannorum* Kovařík et al., 2018, holotype, FKCP. **Figure 56.** *C. terueli* Kovařík, 2012, holotype, FKCP. **Figure 57.** *C. tichyi* Kovařík, 2000, topotype, FKCP. **Figure 58.** *C. variegatus* Simon, 1877, Borneo, FKCP.

Pedipalps (Figs. 23–32). The pedipalp chela is stout, with anteriorly swollen manus in the male. The movable and fixed fingers bear 7–8 imbricated rows of granules. Fingers are straight in both sexes. The chela has eight mostly granulated carinae. The surfaces of chela with reticulate granulation patterns. The patella is smooth with dorsal carina developed and granulated, other carinae are absent or weakly indicated. The femur has four carinae and is finely granulated mainly on dorsal surface.

Legs (Figs. 9–12). The legs are smooth, sparsely hirsute, without bristlecombs and carinae. The tarsomeres bear four rows of spiniform setae. Spiniform setal formula of inner rows is 7–8/7–8: 8–9/8–10 : 8–9/8–10 : 9–10/9–10; of outer rows is 6–9/6–9 on all legs.

AFFINITIES. *Chaerilus alberti* sp. n. is reliably distinguished from all other *Chaerilus* species by the unique shape of chela which is stout with anteriorly swollen manus in the male (Fig. 37). Other *Chaerilus* species have manus of pedipalp chela parallel-sided in shape or swollen posteriorly or medially (Figs. 38–58). Other main taxonomically important characters are total length 21–25.2 mm; chela length/width ratio in males 2.265; movable and fixed fingers with 7–8 imbricated rows of granules; fingers are straight in both sexes; metasoma I–IV smooth without granules; sternite V with glabrous zone on the posterior part of sternite V in male; the measurements cited in Table 1.

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