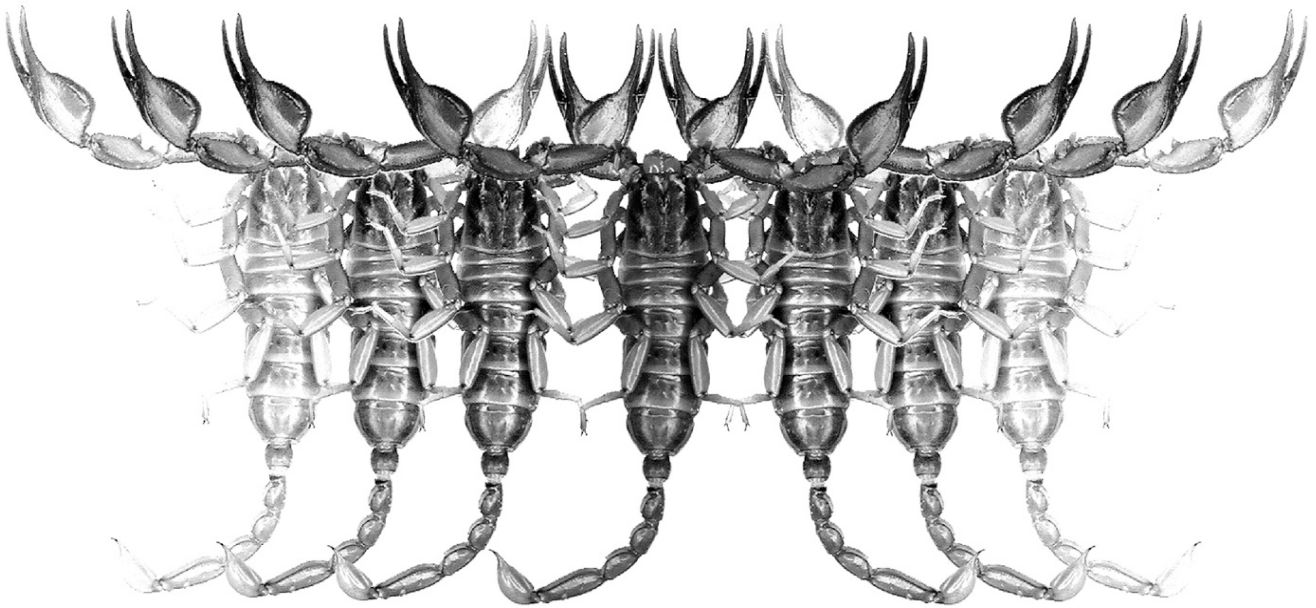


Euscorpius

Occasional Publications in Scorpiology



Orthochirus katerinae sp. n. (Scorpiones:
Buthidae) from Saudi Arabia

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November 2022 — No. 362

Euscorpius

Occasional Publications in Scorpiology

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Publication date: 19 November 2022

<http://zoobank.org/urn:lsid:zoobank.org:pub:04162025-BB1A-42C0-959B-F9DDC35B4015>

Orthochirus katerinae sp. n. (Scorpiones: Buthidae) from Saudi Arabia

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<http://zoobank.org/urn:lsid:zoobank.org:pub:04162025-BB1A-42C0-959B-F9DDC35B4015>

Summary

We describe a new species *Orthochirus katerinae* sp. n. from Saudi Arabia, previously cited as *Orthochirus innesi* Simon 1910, ssp. ?, the name many years used as an ‘umbrella’ for various *Orthochirus* from North Africa and Arabia. The new species is described based on males characterized mainly by: total length 26–30 mm; pectinal teeth number 16–20; movable finger of pedipalps with 7–8 rows of denticles, 8–9 ID and 7 OD; tarsomere I of legs I–III with 3–5 long setae; ratio length/width of metasoma V 1.13–1.16; pedipalp femur length/width ratio 3.30–3.32.

Introduction

This contribution continues our research group’s broader study of the genus *Orthochirus* Karsch, 1892 (Buthidae), which traditionally included several apparently morphologically uniform species found in the large area from North Africa through the Middle East, Arabia, and Central Asia to India. During a recent study of scorpions of Saudi Arabia (October 2022) we identified a new species, described here.

Methods, Material & Abbreviations

Nomenclature and measurements follow Stahnke (1971), Soleglad & Sissom (2001), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974).

Specimen Depositories: FKCP (František Kovařík, private collection, Prague, Czech Republic; will in future be merged with the collections of the National Museum of Natural History, Prague, Czech Republic).

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

Movable finger dentition: ID, inner denticles; OD, outer denticles.

Systematics

Family Buthidae C. L. Koch, 1837

Orthochirus Karsch, 1892

(Figures 1–27, Table 1)

<http://zoobank.org/urn:lsid:zoobank.org:act:79D5A7E7-F14F-4D64-90ED-89BF47023562>

Orthochirus Karsch, 1892: 306; Kovařík et al., 2020: 1–73, figs. 1–352, tables 1–4 (complete reference and synonyms list until 2020).

DIAGNOSIS. Total length of adults 22–55 mm. Tergites I–VI with weak median or lateral carinae, or carinae indistinct. Patellar trichobothrium d_3 located between dorsomedian and dorsointernal carinae. Dorsal trichobothria of femur arranged in beta-configuration. Trichobothrium d_2 of pedipalp femur absent or present on dorsal surface. Chelicerae with typical buthid dentition (Vachon, 1963), ventral aspect of fixed finger with two denticles. Tibial spurs present on legs III and IV; in all legs, mid-ventral aspect of tarsomere II sparsely setose with 1 or 2 rows of short spiniform setae. Pectines with fulcra, densely hirsute. Proximal dentate margins of pedipalp fingers not strongly undulate; movable fingers of pedipalps with 7–10 rows of denticles and 2–5 subterminal denticles. Carapace strongly trapezoidal, lacking distinct carinae; in lateral view distinctly inclined downward from median eyes to anterior margin; 5 pairs of lateral eyes. First and second metasomal segments with carinae. Metasoma posteriorly widened; metasomal segments IV and V ventrally punctate. Telson elongate with subaculear tubercle absent, aculeus robust, as long as or longer than vesicle; hemispermatophore capsule with 3 laminate lobes + 1 hook-like basal lobe; spiracles slit-like.

Orthochirus katerinae sp. n.

(Figures 1–27, Table 1)

<http://zoobank.org/urn:lsid:zoobank.org:act:D0609699-D022-4A3C-B277-59EF092E8152>

Orthochirus innesi, ssp. ?: Vachon, 1979: 53–55, figs. 36, 38.

Orthochirus scrobiculosus (? in part): Alqahtani et al., 2019: 23, fig. 3i.

Orthochirus sp. (? in part): Alqahtani & Badry, 2021: 7, fig. 4.

TYPE LOCALITY AND TYPE DEPOSITORY. Saudi Arabia, Hajrah District, 5 km NW of At-Tinah, 20.1107947°N 40.8434278°E, 1400 m a. s. l.; FKCP.



Figure 1. *Orthochirus katerinae* sp. n., paratype male in vivo habitus.

TYPE MATERIAL EXAMINED. Saudi Arabia, Hajrah District, 5 km NW of At-Tinah, 20.1107947°N 40.8434278°E, 1400 m a. s. l., 24–25 October 2022, 12♂ (holotype and paratypes) 2♂ juveniles (paratypes) leg. F. Kovařík & P. Just.

ETYMOLOGY. The specific epithet is a patronym honoring Kateřina Rosová, a zoologist who assisted us during many field trips, helped to collect the material and supported us in our research.

DIAGNOSIS (♂). Total length 26–30 mm in males. Trichobothrium d_2 on dorsal surface of pedipalp femur absent. Pectinal teeth number 16–20 in males. Movable finger of pedipalps with 7–8 rows of denticles, 8–9 ID and 7 OD. Dorsal carinae on pedipalp patella developed and smooth. Pedipalp femur granulated. Metasoma V dorsal surface mesially finely granulated. Metasoma I–II with 10 carinae, metasoma III with 8 carinae, metasoma IV–V with 2 dorsolateral carinae; complete ventrolateral carinae present also on metasoma V. Ventral carinae of metasoma I–III

consist of small granules irregularly in wide row. Metasoma IV–V ventrally and laterally with fine punctation developed, spaces among punctae rather smooth in central part and partly granulated mainly on margins; metasoma I–III ventrally and laterally granulated and bumpy with punctation reduced. Tergites roughly to finely granulated. Sternite VII densely granulated, with four irregularly granulated carinae present. Pedipalp, metasoma and telson glabrous. Moderate to strong tibial spurs present on legs III and IV. Tarsomere I of legs I–III with 3–5 long setae. Ratio length/width of metasoma V 1.13–1.16 in males. Pedipalp femur length/width ratio 3.30–3.32 in males.

DESCRIPTION. Total length of adult males 26–30 mm. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 1. For habitus, see Figures 1–3.

Coloration (Figs. 1–3). Carapace, tergites, and metasoma black. Femur of pedipalps black and patella of pedipalps black to reddish black, chela of pedipalps yellow. Femur of

		<i>Orthochirus katerinae</i> sp. n.
Dimensions (MM)		♂ holotype
Carapace	L / W	3.30 / 3.70
Mesosoma	L	7.78
Tergite VII	L / W	1.91 / 3.88
Metasoma + telson	L	17.31
Segment I	L / W / D	2.06 / 2.87 / 2.19
Segment II	L / W / D	2.38 / 3.04 / 2.35
Segment III	L / W / D	2.80 / 3.24 / 2.55
Segment IV	L / W / D	3.75 / 3.35 / 2.77
Segment V	L / W / D	3.77 / 3.29 / 2.62
Telson	L / W / D	2.55 / 1.26 / 0.95
Pedipalp	L	9.54
Femur	L / W	2.41 / 0.73
Patella	L / W	2.97 / 1.01
Chela	L	4.16
Manus	W / D	0.74 / 0.78
Movable finger	L	2.81
Total	L	28.39

Table 1. Comparative measurements of *Orthochirus katerinae* sp. n. male holotype. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

legs black and patella of legs black to reddish black, other segments of legs yellowish brown. Sternites black with yellow median area in posterior margin of sternites IV–VI, mainly on sternite V. Telson black to reddish brown.

Mesosoma and carapace (Figs. 21–22). Mesosoma with a median reduced carina and is roughly to finely granulated. Carapace without carinae, roughly granulated except smooth interocular area. Seventh sternite densely granulated and with four irregularly granulated carinae, the other sternites densely granulated but smooth in middle and posteriorly. Pectinal teeth number 16–20 (4 x 16, 5 x 17, 10 x 18, 4 x 19, 1 x 20) in males.

Metasoma and telson (Figs. 15–20). Metasoma I–II with 10 granulated carinae. Metasoma III lacks lateral and metasoma IV lacks lateral and ventromedian carinae. Ventrolateral carinae are developed on metasoma I–III, V and indicated on metasoma IV, dorsolateral carinae are present on all metasomal segments. Ventral carinae of metasoma I–III consist of small granules irregularly in wide row. Metasoma I–IV and partly metasoma V are granulated laterally, metasoma III–V laterally punctate; granulation present on dorsal surfaces of metasoma I and V and absent on metasoma II–IV except several solitary granules mainly on metasoma II. Fine punctation on metasoma IV–V ventrally developed, spaces among punctae rather smooth in central part and partly granulated mainly on margins. Entire metasoma and telson glabrous. Telson without punctation and granulation.

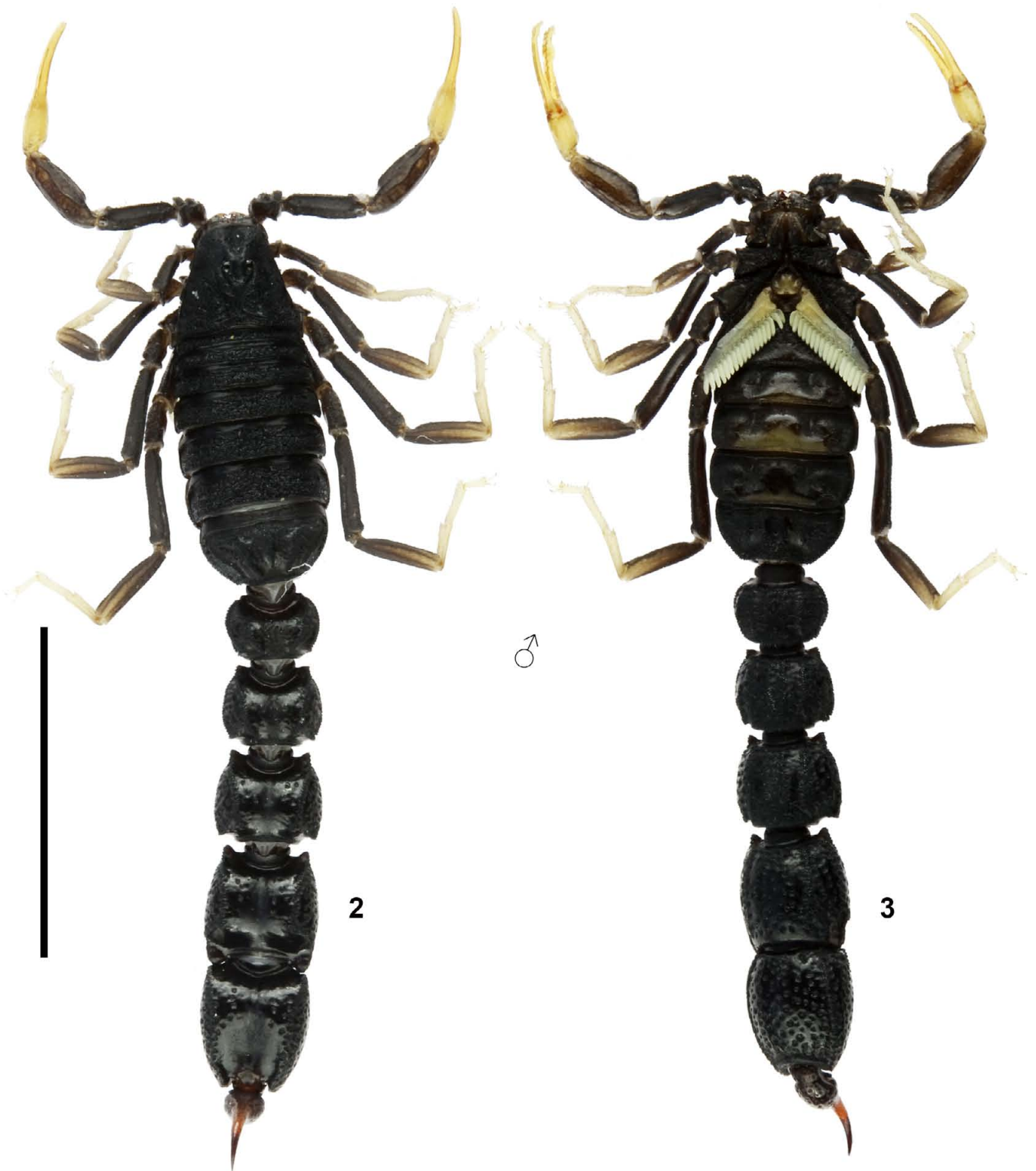
Pedipalps (Figs. 4–14). Trichobothrium d_2 on dorsal surface of pedipalp femur absent; trichobothrium e_1 is situated at level with d_4 . Femur of pedipalps with five granulated carinae and

is granulated. Patella has seven smooth carinae, and the chela has smooth carinae which may be discernible throughout the length of the fixed finger. The entire pedipalps are glabrous, with several short setae only. Movable fingers with 7–8 rows of denticles, 8–9 ID and 7 OD.

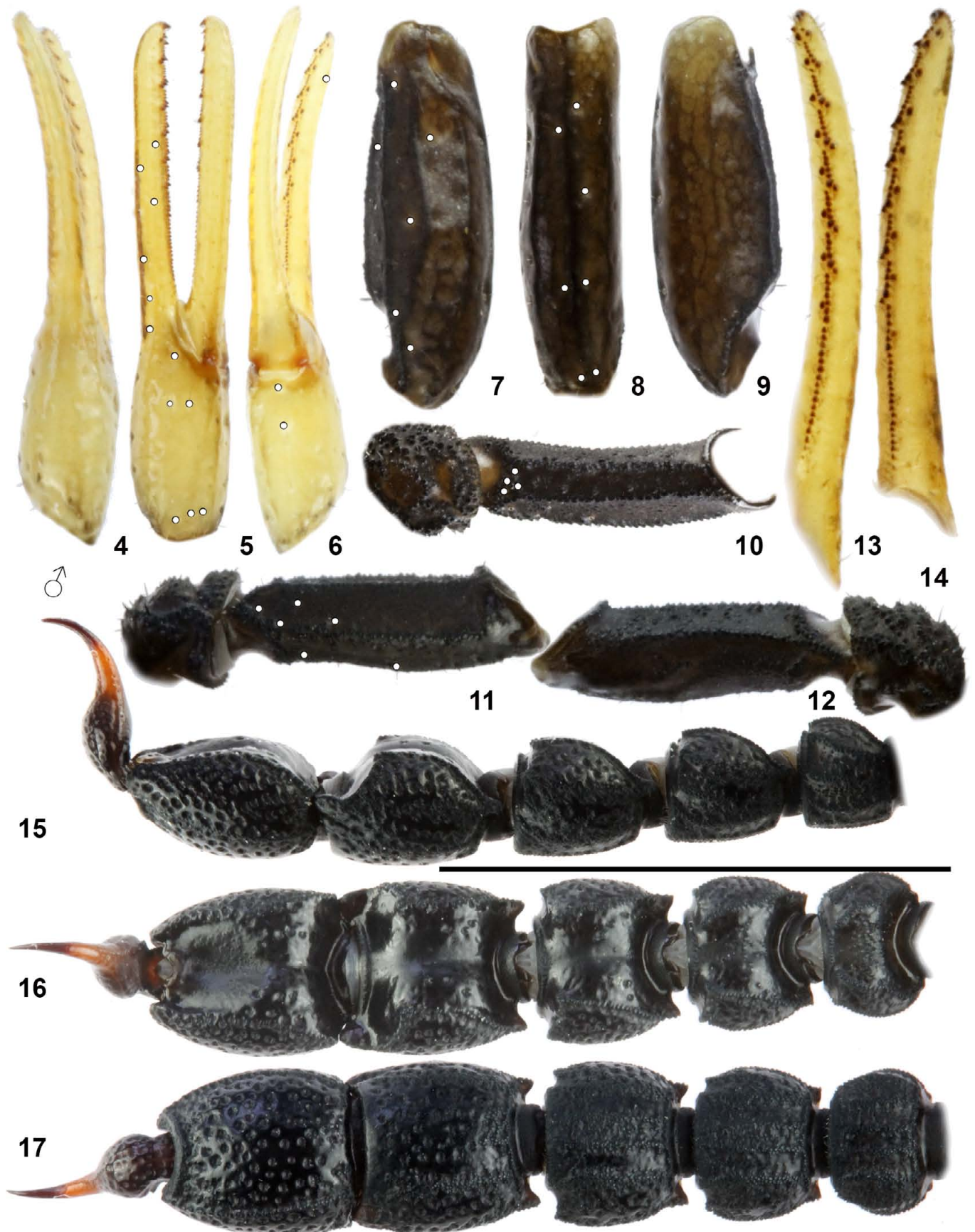
Legs (Figs. 23–26). Moderate to strong tibial spurs present on legs III and IV. Femur with four partly granulated carinae; patella with five rather smooth carinae; tibia smooth. Patella with only a few setae. Tibia with several short setae. Tarsomere I of legs I–III with 3–5 long setae, legs IV without these setae. Tarsomeres I–II of all legs internal with two rather irregular rows of setae.

Measurements. See Table 1.

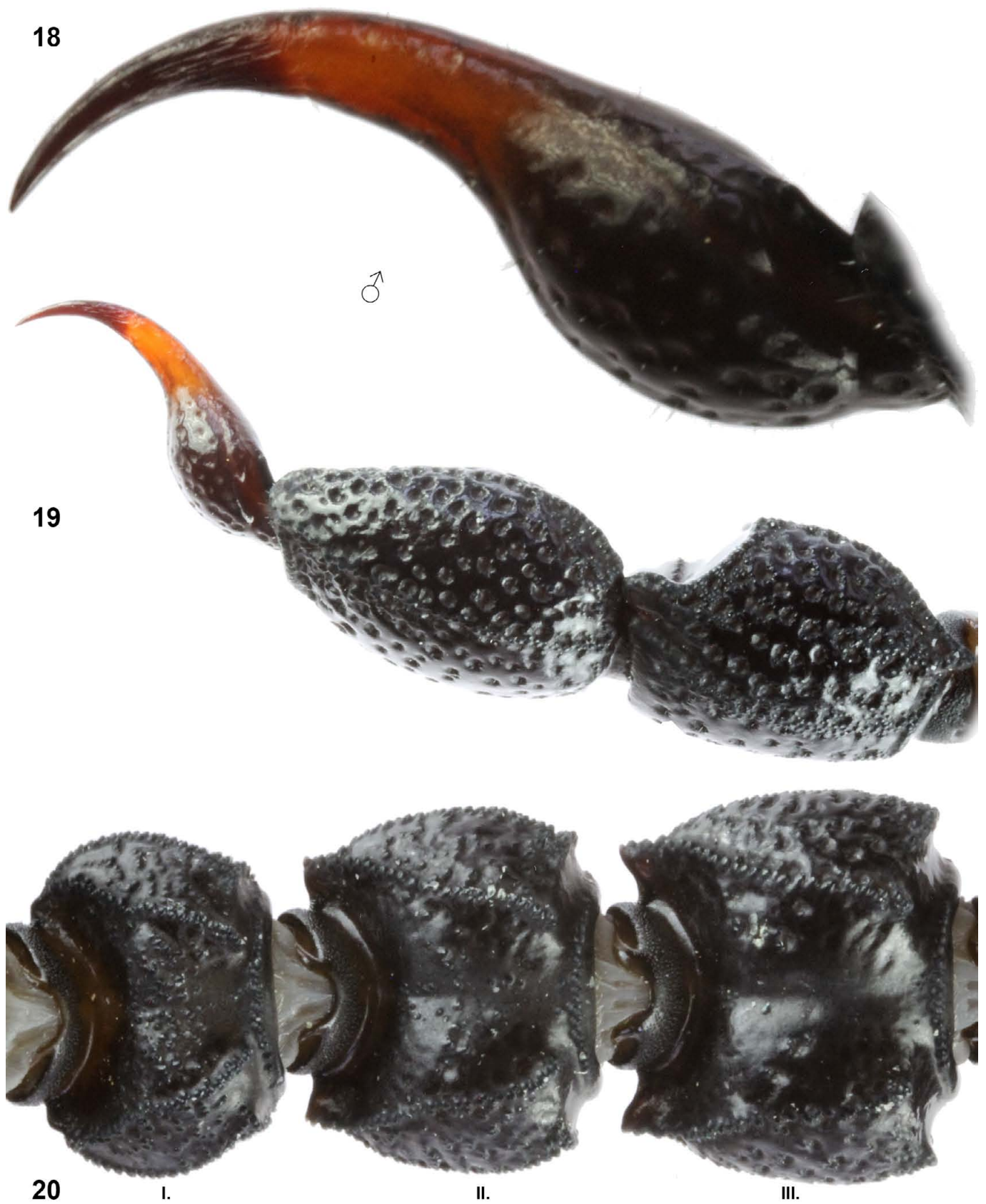
AFFINITIES. The described features distinguish *O. katerinae* sp. n. from all other species of the genus. Vachon (1979, fig. 36) cited several widely spread populations from Saudi Arabia as “*Orthochirus innesi* Simon 1910, ssp. ?” but did not further pursue their taxonomy. In reality, the type locality of *O. innesi* is in Egypt (Djebel Mokattam). Vachon probably assumed similarity with *O. innesi negebensis* Shulov & Amitai, 1960 described from Israel (Wadi Nafha, Central Negev), which is currently considered as valid species, *Orthochirus negebensis* (see, e.g., Lourenço, 2007: 477). Validity of *O. katerinae* sp. n. is confirmed also by our DNA analysis (paper in preparation), which identified these taxa as related but separate species. Morphologically, *O. katerinae* sp. n., based on the males, is characterized mainly by the total length of 26–30 mm; pectinal teeth number 16–20; movable finger of pedipalps with 7–8 rows of denticles, 8–9 ID and 7 OD; tarsomere I of



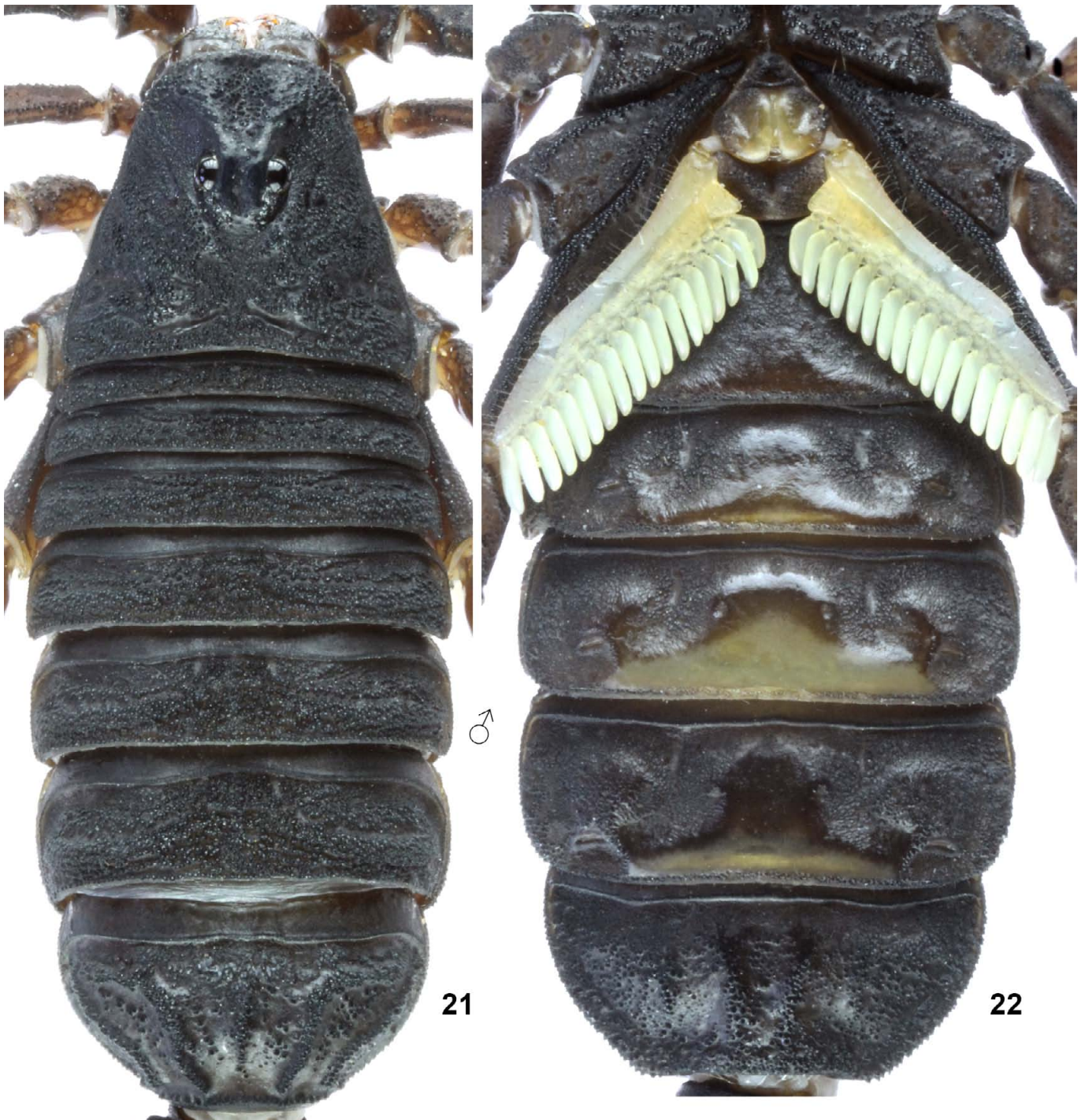
Figures 2–3. *Orthochirus katerinae* sp. n., holotype male, dorsal (2) and ventral (3) views. Scale bar: 10 mm.



Figures 4–17: *Orthochirus katerinae* sp. n., holotype male. **Figures 4–14.** Segments of pedipalps. Pedipalp chela, dorsal (4), external (5), and ventral (6) views. Pedipalp patella, dorsal (7), external (8), and ventral (9) views. Pedipalp femur and trochanter, internal (10), dorsal (11), and ventral (12) views. Pedipalp chela, movable (13) and fixed (14) fingers dentate margins. The trichobothrial pattern is indicated in Figures 5–8, 10–11 (white circles). **Figures 15–17.** Metasoma and telson, lateral (15), dorsal (16) and ventral (17). Scale bar: 10 mm (15–17).



Figures 18–20: *Orthochirus katerinae* sp. n., holotype male. **Figure 18.** Telson lateral. **Figure 19.** Metasoma IV–V and telson in lateral view. **Figure 20.** Metasoma I–III in dorsal view.



Figures 21–22. *Orthochirus katerinae* sp. n., holotype male, carapace and tergites (21), and sternopectinal region and sternites (22).

legs I–III with 3–5 long setae; ratio length/width of metasoma V 1.13–1.16; pedipalp femur length/width ratio 3.30–3.32 and granulation present on dorsal surfaces of metasoma I and V and absent on metasoma II–IV except several solitary granules mainly on metasoma II.

Acknowledgments

We are grateful to Petr Kabátek (Czech Republic) who participated and helped in the expeditions to Saudi Arabia. We thank two anonymous reviewers for their comments.

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Figures 23–26. *Orthochirus katerinae* sp. n., holotype male, left legs I–IV, retrolateral aspect.



Figure 27. Type locality of *Orthochirus katerinae* sp. n.

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