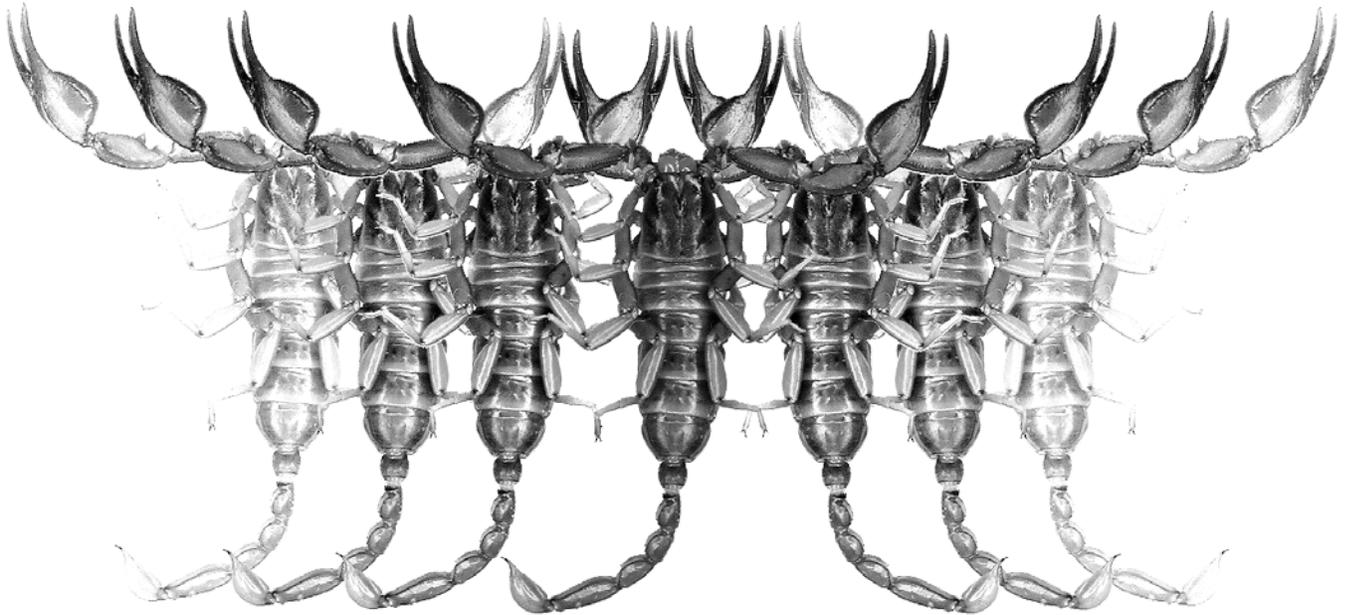


Euscorpius

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**A New *Hottentotta* Birula, 1908 from Afghanistan, with
a Note on the Generic Position of *Mesobuthus songi*
Lourenço, Qi et Zhu, 2005 (Scorpiones: Buthidae)**

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A new *Hottentotta* Birula, 1908 from Afghanistan, with a note on the generic position of *Mesobuthus songi* Lourenço, Qi et Zhu, 2005 (Scorpiones: Buthidae)

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Summary

A new species of *Hottentotta* Birula, 1908 is described from the Kabul area in Afghanistan; this addition represents the fifth species of this genus confirmed for this Middle East country. It is a member of the "Indian group" of the genus (the first one recorded from Afghanistan), and is most closely related to *Hottentotta jabalpurensis* Kovařík, 2007, *Hottentotta stockwelli* Kovařík, 2007, *Hottentotta tamulus* (Fabricius, 1798) and *Hottentotta songi* (Lourenço, Qi et Zhu, 2005) **n. comb.**, which is herein demonstrated to be a member of *Hottentotta* and is thus formally transferred to this genus.

Introduction

The genus *Hottentotta* Birula, 1908 has long known to be well represented in Afghanistan (Vachon, 1958), and according to the most recent revision (Kovařík, 2007), four species are currently confirmed to occur in this Middle East country: *Hottentotta alticola* (Pocock, 1895), *Hottentotta buchariensis* (Birula, 1897), *Hottentotta jalalabadensis* Kovařík, 2007, and *Hottentotta saulcyi* (Simon, 1880); all these species are morphologically similar and probably closely related.

In 2003, Robrecht Nollet collected a few specimens of *Hottentotta* in the Kabul area and donated them to one of us (JOR). Taken into account the collecting locality and the state of knowledge prevailing then about the systematics of this genus, these specimens were initially thought to belong to *H. alticola*. However, when the well-illustrated generic revision of *Hottentotta* was published (Kovařík, 2007), it became obvious that this taxon was actually a typical member of the "Indian group" of *Hottentotta*, which had not been ever recorded from Afghanistan.

Detailed study of the specimens from Kabul revealed that they represent an undescribed species closely related to *Hottentotta jabalpurensis* Kovařík, 2007, *Hottentotta stockwelli* Kovařík, 2007, and *Hottentotta tamulus* (Fabricius, 1798). Also during the process we discovered that *Mesobuthus songi* Lourenço, Qi et Zhu, 2005 (described from a single locality in southern China, close to the Nepal border) is in fact another member of this group.

The description of the new species and the official transfer of *M. songi* to the genus *Hottentotta* are the main objectives of the present paper.

Methods & Material

The specimens were studied, measured and photographed under a Zeiss Stemi 2000-C stereomicroscope, equipped with line scale and grid ocular micrometers, and a Canon PowerShot A620 digital camera, all calibrated to 20x. Digital images were slightly processed with Adobe Photoshop® 8.0, only to optimize brightness and contrast. Nomenclature and measurements follow Stahnke (1970), except for trichobotriotaxy (Vachon, 1974), metasomal carinae (Francke, 1977) and sternum (Soleglad & Fet, 2003). In table 1 all measurements are given in millimeters as length /width/depth except for the carapace, where these correspond to length/posterior width. Both type specimens are deposited in the personal collection of the first author (RTO), with collecting and identification labels originally written in Spanish.

Systematics

Hottentotta flavidulus Teruel et Rein, sp. nov.

Figures 1–4, Table 1

Diagnosis (adult females only, males and juveniles unknown): species of moderately large size (66–76 mm)

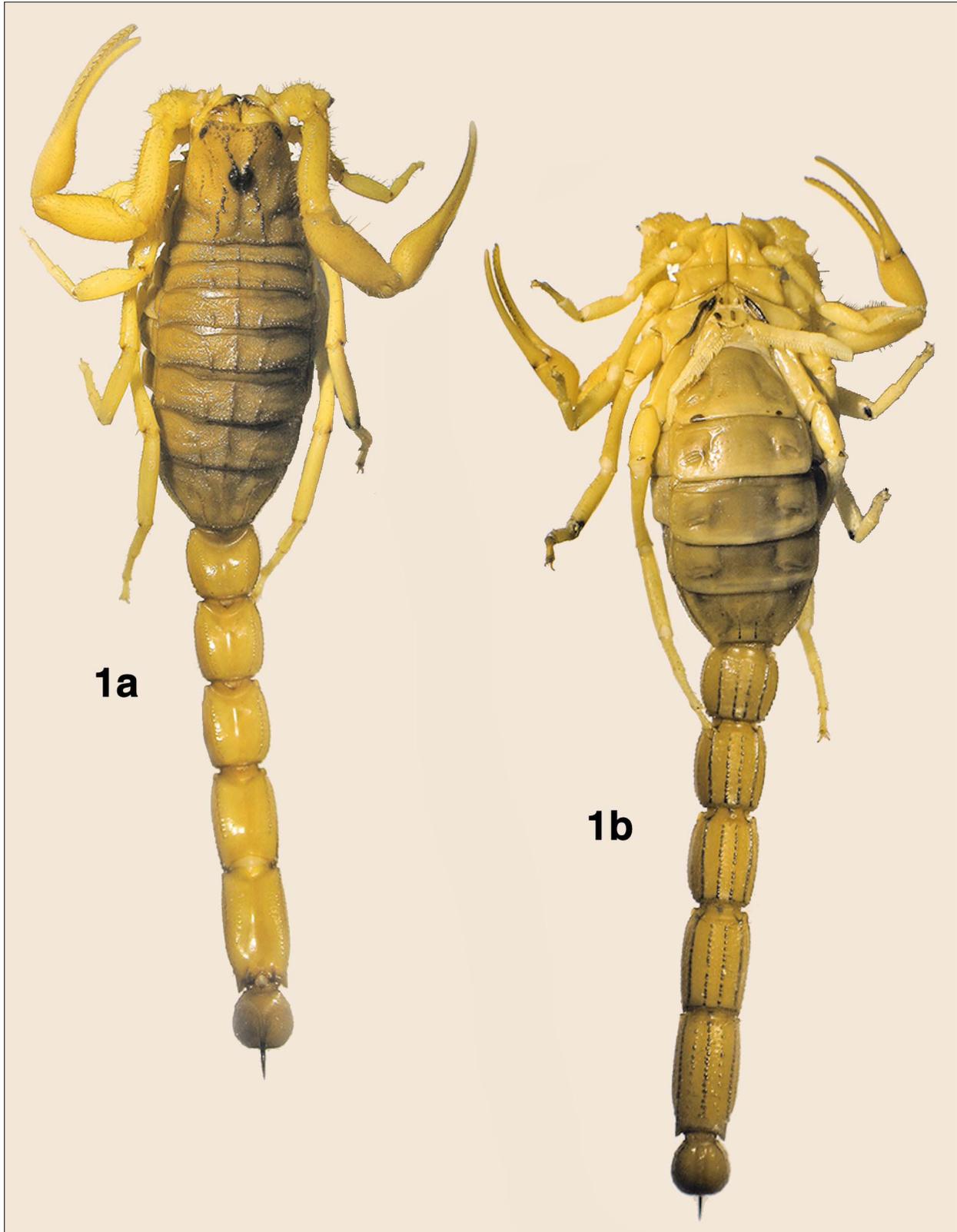


Figure 1: Adult female holotype of *Hottentotta flavidulus* sp. n.: (a) entire dorsal view; (b) entire ventral view.

Dimensions		♀ holotype	♀ paratype
Carapace	L / Wp	8.4 / 9.8	7.2 / 7.9
Mesosoma	L	22.7	20.0
Tergite VII	L	5.5 / 9.7	4.4 / 4.9
Metasoma	L	44.6	38.5*
Segment I	L / W	5.4 / 5.6	4.8 / 4.9
Segment II	L / W	6.4 / 5.2	5.5 / 4.6
Segment III	L / W	6.8 / 5.1	5.7 / 4.5
Segment IV	L / W	7.0 / 5.0	6.7 / 4.3
Segment V	L / W	9.2 / 5.0	8.2 / 4.3
Telson	L	9.8	7.6*
Vesicle	L / W / D	5.8 / 4.4 / 4.0	5.0 / 3.6 / 3.4
Aculeus	L	4.0	2.6*
Pedipalp	L	29.3	26.6
Femur	L / W	7.0 / 2.3	6.3 / 2.0
Patella	L / W	8.5 / 3.0	7.5 / 2.7
Chela	L	13.8	12.8
Hand	L / W / D	4.2 / 2.5 / 2.5	3.8 / 2.2 / 2.2
Movable finger	L	9.6	9.0
Total	L	75.7	65.7*

Table 1: Measurements of the types of *Hottentotta flavidulus* sp. n. Abbreviations: length (L), width (W), posterior width (Wp), depth (D), broken tip of aculeus not included (*).

for the genus. Coloration basically light yellowish-brown, with chelicerae, pedipalps, legs and coxosternal region light yellow, immaculate; carapace and tergites with carinae infuscate; ventral surface of metasomal segments with all carinae blackish; pectines whitish. Pedipalps densely hirsute and very slender, with hand narrower than patella and without carinae; fingers with basal lobe/notch combination vestigial; fingers with 13–14 principal rows of granules and four terminal granules; trichobothrium *db* on fixed finger situated between *et* and *est*. Carapace and tergites strongly granulose. Sternite V without smooth patch. Metasomal segments robust (II–IV with length/width ratio 1.2–1.6), very sparsely setose and with 10-10-10-10-5 complete carinae, all moderately granulose to crenulate and without enlarged terminal granules, intercarinal spaces moderately granulose; telson vesicle very large and bulbous, subaculear tubercle absent, aculeus conspicuously shorter than vesicle. Pectines with 31–32 teeth.

Holotype: adult ♀ (RTO: Sco.0402): AFGHANISTAN, Kabul area; 2003; R. Nollet.

Paratypes: adult ♀ (RTO: Sco.0403), with same data as holotype.

Etymology: the selected name is a Latin adjective that alludes to the light yellowish coloration of this species, which is an unusual character amongst Asian members of this genus.

Distribution (Fig. 4): this scorpion has been collected only in the Kabul area in east Afghanistan, but its distribution possibly extends further northwards because after seeing our high-quality color photographs, the scorpion specialist Scott A. Stockwell wrote to one of us (JOR) that he observed this species to be common in the Kabul to Bagram area.

Description (adult female holotype). **Coloration** (Figs. 1–3) essentially uniform light yellowish-brown, with reddish-yellow telson and blackish carinae on carapace, tergites, sternite VII and ventral surface of metasoma. Chelicerae, pedipalps, legs and coxosternal region light yellow, immaculate. Ocular tubercles, eyes and distal part

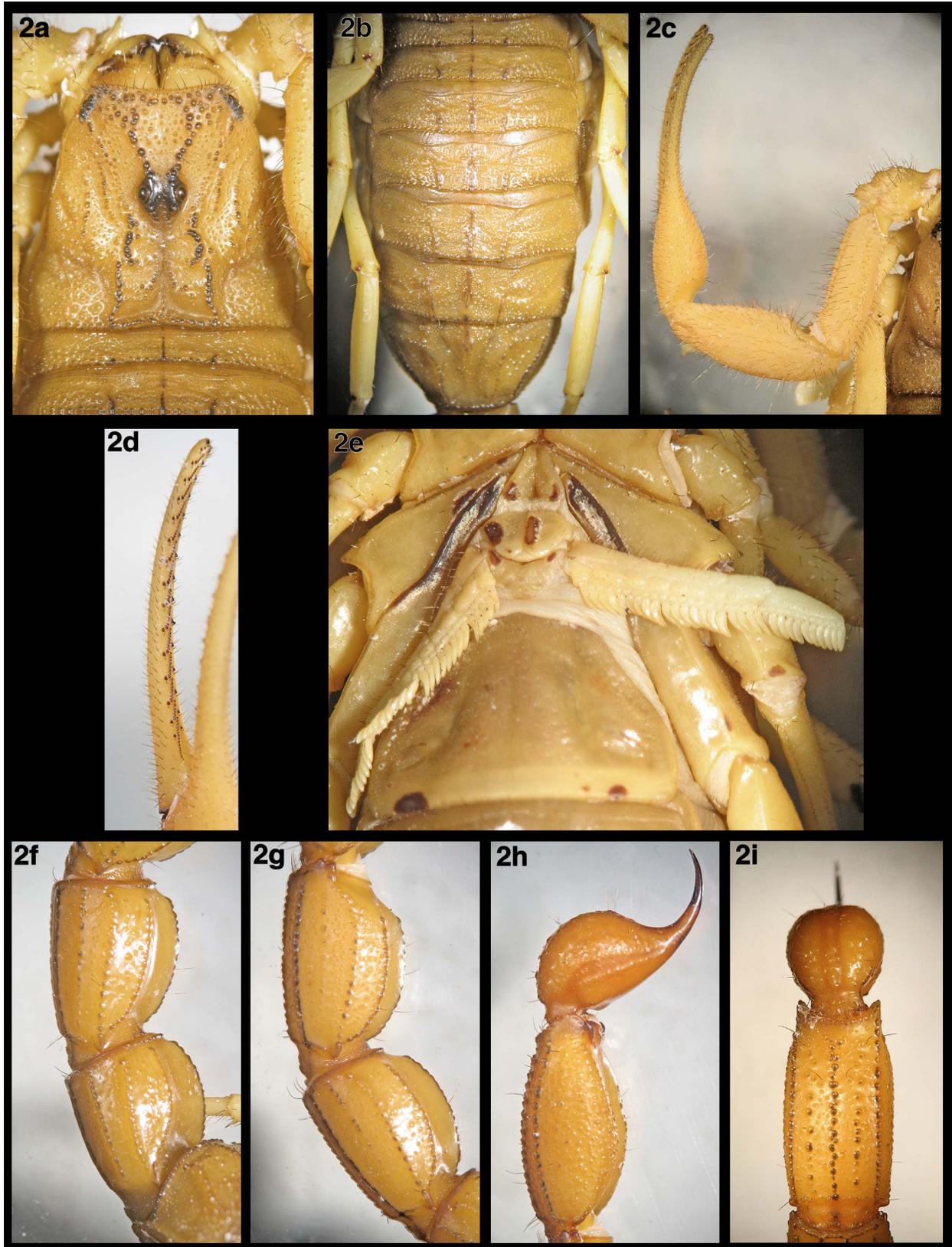


Figure 2: Adult female holotype of *Hottentotta flavidulus* sp. n.: (a) carapace; (b) tergites; (c) left pedipalp, dorsal view; (d) left movable finger, dorsal view; (e) sternoplectinal region; (f) metasomal segments I–II, lateral view; (g) metasomal segments III–IV, lateral view; (h) metasomal segment V and telson, lateral view; (i) metasomal segment V and telson, ventral view.



Figure 3: Adult female holotype of *Hottentotta flavidulus* sp. n., still alive in captivity when photographed.

of aculeus blackish. **Carapace** (Fig. 2a) trapezoidal, slightly wider than long and with all carinae present and coarsely granulose, but not fused into any particular configuration; tegument coriaceous with many granules of different sizes scattered; anterior margin shallowly concave, with more than 10 pairs of stout macrosetae; median eyes separate by more than one ocular diameter; five pairs of lateral eyes: three large and aligned, plus two small and slightly offset. **Tergites** (Fig. 2b) with the same sculpture as on carapace; median and lateral carinae moderate and coarsely subgranulose in all tergites, projecting slightly as blunt tubercles beyond posterior margin in I–VI; VII with two pairs of coarsely granulose lateral carinae. **Chelicerae** (Fig. 2a) with dentition typical for the genus; tegument polished and smooth except on dorsodistal portion of manus, which possesses coarse granules arranged in longitudinal ridges. **Pedipalps** (Figs. 1a–b, 2c–d) orthobothriotaxic A- β , with trichobothrium *db* on fixed finger situated between *et* and *est*. Femur densely covered by long reddish macrosetae and with all carinae weak and coarsely granulose, intercarinal tegument coriaceous with small granules scat-

tered. Patella densely covered by medium-sized reddish macrosetae and essentially acarinate (only the dorso-internal carinae is present and weakly granulose), intercarinal tegument coriaceous except on the internal surface which exhibits small granules scattered. Chela densely covered by short reddish macrosetae; hand conspicuously narrower than patella, oval slender (1.7 times longer than wide) and completely acarinate, intercarinal tegument coriaceous; fingers very slender (movable finger 3.8 times longer than underhand), densely covered by short reddish macrosetae (denser on apical portion) and essentially without basal lobe/notch combination. Both fixed fingers with 13 principal rows of granules, of which the basalmost is almost divided into two rows; left movable finger with 14 principal rows of granules and four terminal granules (large terminal denticle not included), right movable finger teratological with aberrant dentition. **Legs** (Figs. 1a–b) without bristlecombs but densely covered by stout macrosetae; all carinae weakly subgranulose to costate, intercarinal tegument finely granulose on trochanter and femur and coriaceous in the remaining segments; tibial spurs very

large on III–IV, prolateral pedal spur large and basally bifurcate and bare on all legs, retrolateral pedal spur large on all legs; ventral surface of all tarsomere II with two ventrosubmedian rows of 6–8 short spiniform setae and without median row of spinules. **Sternum** (Fig. 2e) type 1 and strongly triangular, typical for the genus. **Pectines** (Fig. 2e) elongate (extending beyond coxa-trochanter joint of leg IV), narrow and densely setose; tooth count 31/32; basal plate wider than long, anterior margin with strong median indentation. **Sternites** (Figs. 1b, 2e) III–VI smooth, shiny and sparsely setose, spiracles very elongate and slit-like; III with lateral granulose areas ("stridulatory areas of first sternite" *sensu* Kovařík, 2007: 3) greatly reduced, vestigial; posterior margin of V without smooth patch; sternite VII sparsely granulose, with two pairs of weakly subcostate to subcrenulate lateral carinae. **Metasoma** (Figs. 1a–b, 2f–i) very sparsely setose, with all segments noticeably robust (segment I slightly wider than long, II–V progressively longer than wide); intercarinal tegument coriaceous with many low granules of different sizes scattered on ventral and lateral surfaces (denser on V), shiny and smooth to sparsely granulose on dorsal surface, dorsal furrow very deep and wide; segments I–IV with ten complete carinae (even though lateral inframedian carinae becomes progressively weaker from II–IV), V with five (even though the ventrosubmedian carinae are well-defined on proximal third and become weaker and irregular through the distal portion of the segment), all moderately developed and coarsely granulose to subcrenulate, the dorsolaterals without enlarged granules. Telson with vesicle very large and bulbous (1.3 times longer than wide, 1.1 times wider than deep), weakly granulose; subaculear tubercle absent; aculeus thick, conspicuously shorter than vesicle and shallowly curved.

Variation: the adult female paratype is one size class smaller than the holotype and thus, its pedipalps and metasoma are slightly more slender (Table 1). Otherwise, both specimens are essentially identical in coloration, pectinal tooth count, carinal structure, intercarinal granulation, general setation and dentition of left pedipalp fingers (both right pedipalp fingers of this specimen are also teratological, with similar aberrant dentition as described above for the holotype).

Comparisons: according to the recent revision of Kovařík (2007), four members of this genus have been recorded and confirmed from Afghanistan: *Hottentotta alticola* (Pocock, 1895), *Hottentotta buchariensis* (Birula, 1897), *Hottentotta jalalabadensis* Kovařík, 2007, and *Hottentotta saulcyi* (Simon, 1880). All these species are closely related to each other, but differ remarkably from *H. flavidulus* sp.n. by their larger size (65–120 mm), much more slender body and appendages, metasomal carinae stronger (the dorsolaterals with at least the terminal

granules enlarged or even spinoid), pedipalps with different setation (covered with long setae, either sparse or dense), and a totally different color pattern on dorsum (with blackish infuscation covering from just the interocular triangle to the entire surface of carapace and tergites I–VI). Vachon (1958) described *Hottentotta alticola kabulensis* also from Kabul but this subspecies was synonymized under *H. alticola* by Kovařík (2007); this decision appears to be correct, but even in the case this taxon might be regarded as valid again, it can be easily separated from *H. flavidulus* sp.n. using the same diagnostic characters as discussed above for the other four species.

In fact, *H. flavidulus* sp.n. is most similar to three mostly Indian species: *Hottentotta jabalpurensis* Kovařík, 2007 from Madhya Pradesh, *Hottentotta stockwelli* Kovařík, 2007 from Andhra Pradesh and Maharashtra, and *Hottentotta tamulus* (Fabricius, 1798), which is widely distributed throughout India and neighboring Pakistan; in fact, running the Kabul specimens through the key provided by Kovařík (2007) leads to identify them as *H. tamulus*. A detailed comparison is provided as follow: **a)** according to specimens herein examined (see details below), females of *H. tamulus* have coloration variable but always with reticulate chelicerae, carapace and tergites with weaker granulation, and metasoma with stronger carinae and denser setation; **b)** according to Kovařík (2007: 31–33, figs. 50–51), females of *H. jabalpurensis* have darker coloration with reticulate chelicerae, pedipalps densely covered with long setae, metasoma densely setose and with stronger carinae, and pedipalps and metasoma slightly less robust; **c)** according to Kovařík (2007: 74–76, figs. 112–113), the single available female of *H. stockwelli* has smaller size (50 mm), darker coloration, much lower pectinal tooth count (24/24), pedipalps only sparsely setose, and dorsolateral carinae of metasoma with enlarged terminal granules.

Recently, Lourenço, Qi & Zhu (2005) described *Mesobuthus songi* from a single locality close to the border with Nepal in southern Chinese Tibet, in a paper following the generic concepts of Tikader & Bastawade (1983), who had transferred all Indian species of *Hottentotta* to *Mesobuthus* without a satisfactory justification. Thus, *M. songi* was explicitly associated by Lourenço, Qi & Zhu (2005: 4) to a "*Mesobuthus tamulus*" species-group, which means nothing else than the "Indian group" of *Hottentotta* previously recognized by other authors (i.e., Vachon & Stockmann, 1968). Then, when the taxonomic revision of *Hottentotta* was published by Kovařík (2007), all those Indian species were placed back in this genus, but no mention was made about *M. songi* despite its close relationship to these taxa as declared in the original description. Based upon the detailed text and figures of Lourenço, Qi & Zhu (2005), this relationship is correct and *M. songi* unequivocally exhibits the combination of characters currently regarded as diag-



Figure 4: Type locality of *Hottentotta flavidulus* sp. n.

nostic for *Hottentotta* against *Mesobuthus*: pedipalp fixed finger with trichobothrium *db* located between trichobothria *est* and *et* (see Lourenço, Qi & Zhu, 2005: fig. 12), carapace with carinae not defining a lyre-configuration (see Lourenço, Qi & Zhu, 2005: figs. 1–3), and metasomal segment V with ventrolateral carinae evenly granulated, i.e., without any enlarged or lobate granules (see Lourenço, Qi & Zhu 2005: figs. 1–2, 8–9). Thus, the following taxonomic arrangement is accordingly proposed: *Mesobuthus songi* Lourenço, Qi et Zhu, 2005 = *Hottentotta songi* (Lourenço, Qi et Zhu, 2005), **new combination**. After this placement and the confirmation that this species indeed belongs to the same morphological group as *H. tamulus* and its closest relatives, and according to the detailed original description and figures of Lourenço, Qi & Zhu (2005), females of *H. songi* comb.n. can be easily distinguished from *H. flavidulus* sp.n. by their coloration being conspicuously darker and much more densely patterned with blackish, chelicerae densely reticulated, pectines with lower tooth count (27–29), and metasomal segments

and telson with carinae and intercarinal granulation markedly stronger.

Comparative material examined

Hottentotta tamulus: INDIA, Jharkhand, between Dhanbād and Bokāro Steel City; 2004; 2♂♂, 1 juvenile ♂ (RTO: Sco.0408). INDIA, Pondicherry, Kāraikāl; 2003; T. R. S. N.; 1♂, 3♀♀, 1 juvenile ♂ (RTO: Sco.0434).

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