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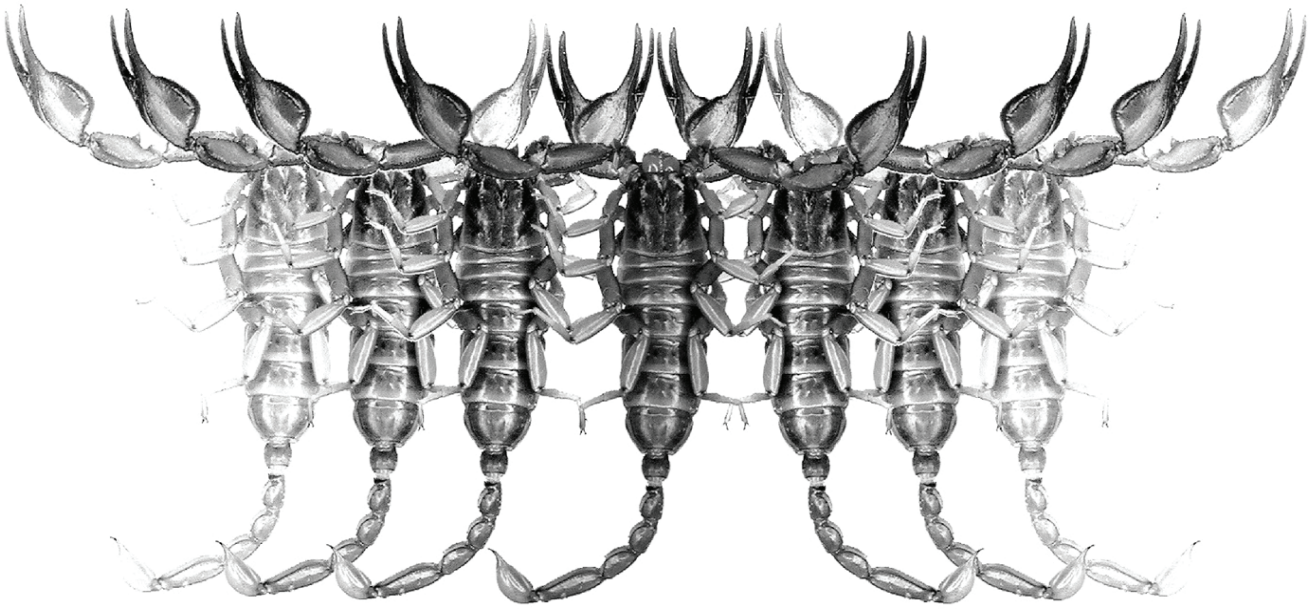

Review of *Hottentotta* described by A. A. Birula, with descriptions of two new species and comments on Birula's collection (Scorpiones: Buthidae)

František Kovařík, Ersen Aydin Yağmur & Victor Fet

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Euscorpius — Occasional Publications in Scorpiology. 2019, No. 282

Review of *Hottentotta* described by A. A. Birula, with descriptions of two new species and comments on Birula's collection (Scorpiones: Buthidae)

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Summary

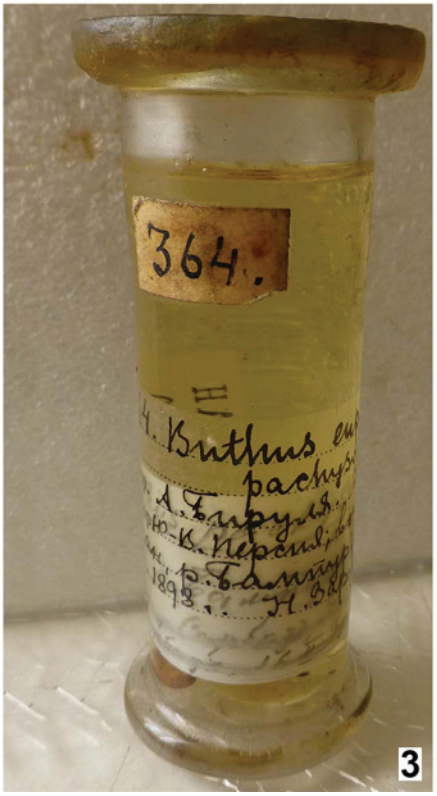
The types of *Hottentotta* species described by A. A. Birula and deposited in the Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia are revised. The types of *H. buchariensis* (Birula, 1897), *H. niloticus* (Birula, 1928), *H. penjabensis* (Birula, 1897) **stat**. **nov**. and *H. schach* (Birula, 1905) are fully illustrated with color photographs of morphology. Their taxonomic position is discussed. Lectotypes are designated for *H. niloticus* and *H. schach*. We confirm synonymy of *Buthus* (*Hottentotta*) *minax niloticus* Birula, 1928 (Sudan) with *Buthus minax* L. Koch, 1875, **syn**. **n**. Two new species, *Hottentotta juliae* **sp**. **n**. from Iran (Fars Province) and *H. krivokhatskyi* **sp**. **n**. from Pakistan (Balochistan Province), are described, based on specimens which were in previous publications incorrectly identified as *H. schach* and *H. penjabensis*

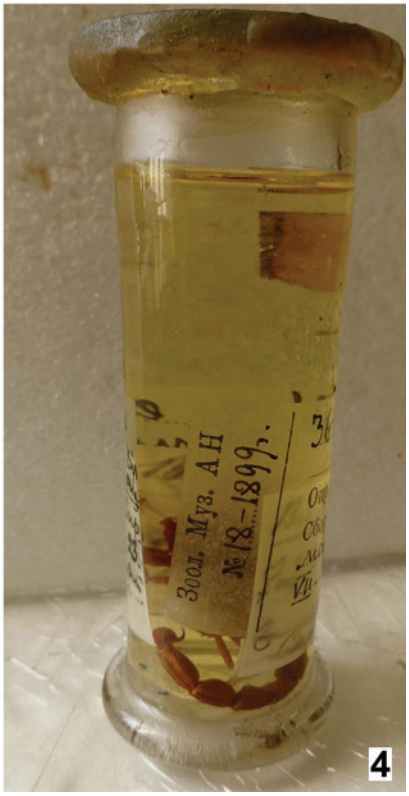
Introduction

Alexei A. Byalynitskii-Birulya (or A. A. Birula) (1864–1937) was a famous Russian zoologist and arachnologist (specializing in scorpions and solpugids). His life story is representative for his generation. As an adventurous young zoologist, he survived a polar expedition of the Baron Eduard Toll (1902–1903), along with A. Kolchak, the future leader of the White Army. Birula has worked for decades in the Imperial Zollogical Museum at St. Petersburg, Russia (now Zoological Institute, Russian Academy of Sciences; below, ZISP) where he became one of the prominent early scorpiologists. He described 60 species and subspecies of scorpions (mostly Buthidae) in 1896–1928, covering mainly the fauna of the Russian Empire and the adjacent regions of Asia (especially Iran), as well as specimens brought by Russian researchers from the Middle East, Africa, and even Australia. His seminal first part of the *Fauna of Scorpions of Russia* (Birula, 1917) was published in September 1917; the second part was never published. Birula remained an active researcher, published important scorpion work (Birula, 1918, 1928). He served as the Director of ZISP, to be dismissed and jailed in 1931. At age 70, after three years in the Beltbaltlag concentration camp, Birula was exiled to Kazakhstan. He died (or possibly was shot) on 18 July 1937 in Leningrad. His definitive monograph on the Solifugae of the USSR (Birula, 1938) was published posthumously.

Most of Birula's scorpion types are deposited in ZISP; however, they have not been studied by most authors who have cited Birula's taxa, although the original descriptions do not contain important information according to current taxonomic standards, and many were published in Russian. The problem was usually approached in three ways: (a) by simply ignoring Birula's species; (b) by assuming that the specimens which they studied are members of a taxon described by Birula (see, e.g., the comments under *Hottentotta penjabensis* below); or (c) by synonymizing Birula's taxa. Such solutions were not necessarily wrong since often there was no other choice. For example, Kovařík (2004) in a revision of the genus *Orthochirus* wrote: "... it has unfortunately not been possible to examine the types of taxons described by Birula, which have hitherto been regarded as subspecies of *O. scrobiculosus*. It concerns *O. s. concolor* Birula, 1898, *O. s. dentatus* (Birula, 1900), *O. s. mesopotamicus* Birula, 1918, and *O. s. persa* (Birula, 1900). In order to complete the revision, I thus have no choice but to leave the taxonomic positions of those taxons unresolved, and hope that the situation can be corrected in a near future." (Kovařík, 2004: 20). Recently, a redescription of *O. mesopotamicus* Birula, 1918 has been published (Kovařík et al., 2019), and a further paper with resdescriptions of other *Orthochirus* described by Birula is in preparation.

According to the notes existing in ZISP, only a few scorpiologists studied some Birula's types. Herbert L. Stahnke borrowed several buthid types in the 1960s but unfortunately did not publish any information about these species. In July 1969, Max Vachon borrowed the types of *Calchas nordmanni* Birula, 1899, *Kraepelinia palpator* (Birula, 1903), *Liobuthus kessleri* Birula, 1898, *Sassanidotus gracilis* (Birula, 1900), *Sassanidotus zarudnyi* (Birula, 1900), *Razianus zarudnyi* (Birula, 1903), and *Urodacus yaschenkoi* (Birula, 1903) as well





Figures 1–**4**. Scorpions collection in ZISP. **Figure 1**. The cabinet containing Birula´s collection. **Figure 2**. The original vial with syntypes of *Hottentotta schach*. **Figures 3**–**4**. The original vial with holotype of *Mesobuthus eupeus pachysoma*.

as non-type specimens of *Anomalobuthus rickmersi* Kraepelin, 1901 and *Pandinurus* sp. (labelled as *Pandinus platycheles*). From this loan Vachon obtained the information used in several important papers (e.g. Vachon, 1971, 1974). W. David Sissom borrowed *Sassanidotus gracilis* (Birula, 1900) and *S. zarudnyi* (Birula, 1900) in 1994. In the 1980s, almost the entire collection was studied personally by Victor Fet and Alexander Gromov. Victor Fet published important information about types of species described by Birula in the *Catalog of the Scorpions of the World* (Fet et al., 2000); he also listed numerous type and non-type specimens from Birula's collection in his catalog of scorpions of the USSR (Fet, 1989).

Two of the authors (F. K. and E. A. Y.) visited ZISP and studied the Birula's collection personally in 2019; they took detailed photographs of the types of 38 species which they also measured directly in the depository in the Zoological Institute. As Figs. 2–4 show, some of the types were still in the original vials sealed by Birula, and we were the first who opened these vials.

This paper addresses four taxa of the genus *Hottentotta* described by Birula, types of which are deposited in ZISP: *H. buchariensis* (Birula, 1897), *H. niloticus* (Birula, 1928), *H. penjabensis* (Birula, 1897), and *H. schach* (Birula, 1905). In addition, Birula described *H. franzwerneri* (Birula, 1914); its types are deposited in Naturhistorisches Museum Wien, Austria (Fet & Lowe, 2000: 137–138) and the species is well-known (Kovařík & Ojanguren, 2013: 163).

Methods, Material & Abbreviatons

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

Specimens studied herein are preserved in 80% ethanol or dry (several paratypes of *Hottentotta krivokhatskyi* **sp. n.**). *Specimen depositories*: BMNH, The Natural History Museum, London, United Kingdom; FKCP, František Kovařík, private collection, Prague, Czech Republic; RRLS, Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Karaj, Iran; ZISP, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Systematics

Family Buthidae C. L. Koch, 1837

Genus *Hottentotta* Birula, 1908
(Figs. 2, 5–178, Tables 1–3)

Hottentotta: Fet & Lowe, 2000: 133–144 (complete reference and synonymy list until 1998); Kovařík & Ojanguren Affilastro, 2013: 159–180, figs. 942–1250 (complete reference and synonymy list until 2013); Kovařík et al., 2018: 1–14, figs. 1–76, Tab. 1.

Diagnosis. Medium to large buthids, adults 30–130 mm. Sternum type 1 (Soleglad & Fet, 2003), triangular in shape. Pedipalps orthobothriotaxic, type Aβ (Vachon, 1974, 1975), femur trichobothrium d_2 dorsal, patella d_3 dorsal of dorsomedian carina. Chelal trichobothrium *db* usually located between *est* and *et*, or may be on level with trichobothrium *est*, rarely between *est* and *esb*. Trichobothrium *eb* clearly on fixed finger of pedipalp. Pectines with fulcra. Dentate margin of pedipalp-chela movable finger with distinct granules divided into 11–16 linear rows and (4) 5–7 terminal granules. Chelicerae with typical buthid dentition (Vachon, 1963), fixed finger armed with two denticles on ventral surface. Tergites I–VI granular, with three carinae, tergite VII with 5 carinae. Carapace with distinct carinae, entire dorsal surface nearly planate. First sternite with two granulated lateral stridulatory areas, which, however, may be reduced in some species (e.g. in *H. pachyurus* and *H. trilineatus*). Metasoma elongate, segment I with 10 carinae, segments II-IV with 8–10 carinae. Ventrolateral carinae of fifth metasomal segment with all granules more or less equal in size and never lobate. Telson bulbous, lumpy and granulated, without subaculear tooth. Legs III and IV with well developed tibial spurs, first and second tarsomeres with paired ventral setae.

Hottentotta buchariensis (Birula, 1897)
(Figs. 5–22, Table 1)

Buthus alticola buchariensis Birula, 1897: 378; Kraepelin, 1899: 21.

Hottentotta (*Hottentotta*) *alticola buchariensis*: Kovařík, 1998: 109; Fet & Lowe, 2000: 135.

Hottentotta buchariensis: Kovařík, 2007: 12, Figs. 5, 23–25; Kovařík & Ojanguren, 2013: 161–162, Figs. 956–959, 1128–1130, 1151–1152, 1154–1155.

= *Buthotus alticola kabulensis* Vachon, 1959: 136–138, figs. 10–18, 20 (syn. by Kovařík, 2007: 12).

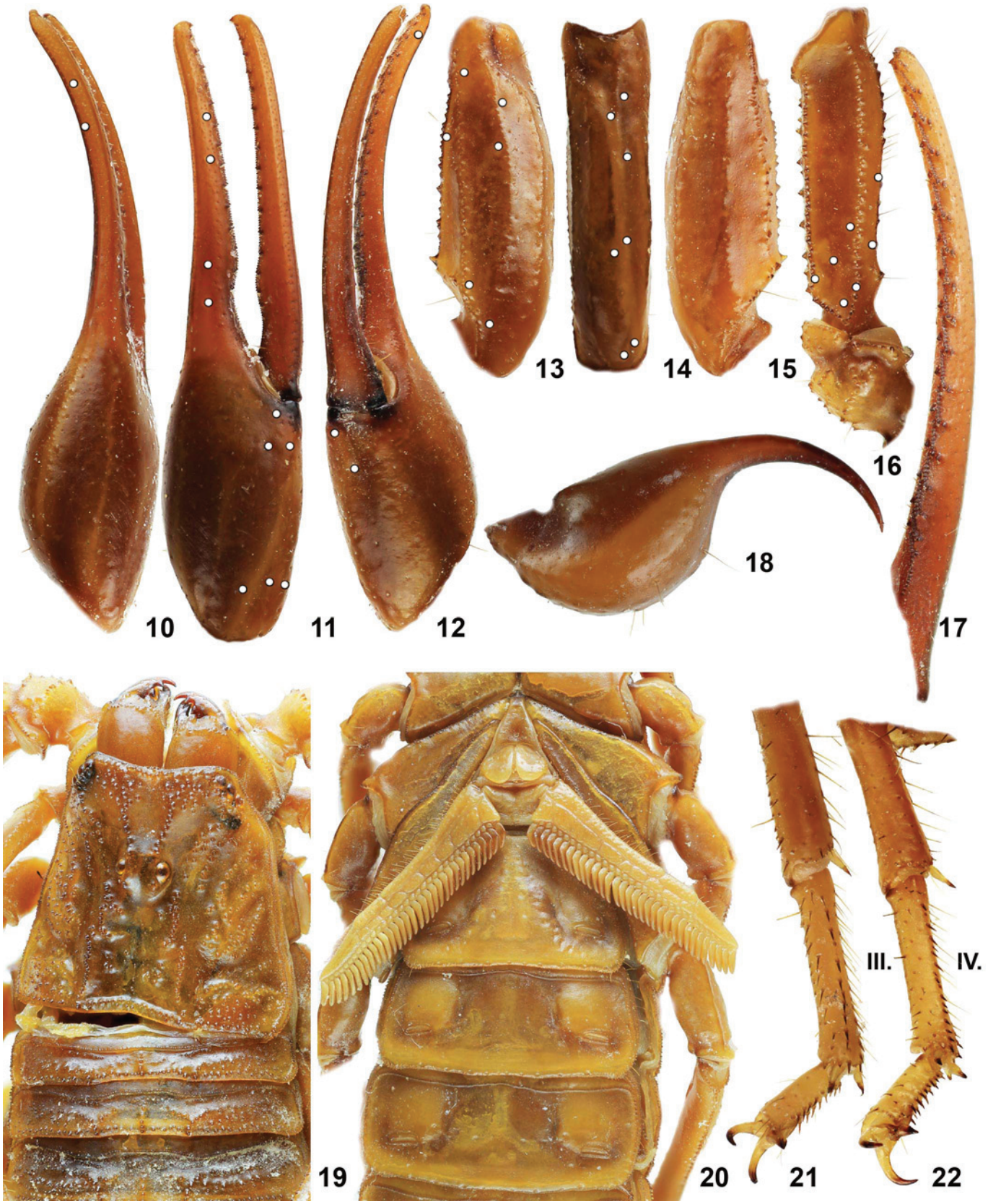
Hottentotta (*Hottentotta*) *alticola kabulensis*: Kovařík, 1998: 109; Fet & Lowe, 2000: 135.

Type locality and type repository. **Tajikistan**: *Dushanbe Province*, Regar (now Tursunzoda), 1♂ lectotype (designated by Kovařík, 2007: 12), 1888, coll. Lidsky, ZISP No. 210(68); Gissar, 1♂ (paralectotype, Figs. 5–22), 1888, coll. Lidsky, ZISP No. 209(67).

Type material Examined. "Buchara", now **Tajikistan**: *Dushanbe Province*, Gissar, 1♂ (paralectotype, Figs. 5–22), 1888, coll. Lidsky; ZISP No. 209(67).

Diagnosis. Total length 65–90 mm. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *est*. Chelicerae yellow to black, reticulate. Male with slightly longer and narrower metasomal segments, width of pedipalp chela same in both sexes. Pectinal teeth number

Figures 5–**9**: *Hottentotta buchariensis*, paralectotype male. **Figures 5**–**6**. Dorsal (5) and ventral (6) views. **Figures 7**–**9**. Metasoma and telson, lateral (7), ventral (8), and dorsal (9) views. Scale bars = 10 mm.



Figures 10–22: *Hottentotta buchariensis*, paralectotype male. **Figures 10–17**: Pedipalp segments, chela dorsal (10), external (11) and ventral (12) views, patella dorsal (13), external (14) and ventral (15) views, femur and trochanter dorsal (16), movable finger (17). **Figure 18**: Telson lateral. **Figures 19–22**: Chelicerae, carapace and tergites I–III (19), sternopectinal region and sternites III–V (20), and distal segments of legs III–IV (21–22), retrolateral view. The trichobothrial pattern is indicated in Figures 10–14, 16.

Dimensions (MM)		*H. buchariensis* ♂ paralectotype	*H. niloticus* ♂ lectotype	*H. niloticus* ♀ paralectotype	*H. penjabensis* ♀ holotype
Carapace	L / W	7.812 / 8.718	5.574 / 5.989	6.815 / 7.330	9.266 / 10.157
Mesosoma	L	20.098	16.576	18.891	28.296
Tergite VII	L / W	6.017 / 8.978	3.548 / 5.910	3.953 / 7.428	6.341 / 10.121
Metasoma + telson	L	43.617	30.244	33.080	46.790
Segment I	L / W / D	5.472 / 5.468 / 4.084	3.899 / 4.231 / 3.623	4.291 / 4.518 / 4.184	5.902 / 7.002 / 5.469
Segment II	L / W / D	6.366 / 5.210 / 4.170	4.613 / 4.313 / 3.582	4.662 / 4.302 / 4.075	6.758 / 6.529 / 4.722
Segment III	L / W / D	6.697 / 4.964 / 3.826	4.751 / 4.173 / 3.529	4.971 / 4.282 / 3.990	6.820 / 5.966 / 4.842
Segment IV	L / W / D	7.623 / 4.301 / 4.091	5.262 / 4.102 / 3.543	5.557 / 4.252 / 3.842	8.324 / 5.370 / 4.482
Segment V	L / W / D	8.997 / 4.051 / 3.740	6.165 / 3.991 / 3.396	6.663 / 4.175 / 3.703	9.705 / 4.832 / 4.543
Telson	L / W / D	8.562 / 3.807 / 3.370	5.554 / 2.768 / 2.455	6.936 / 3.354 / 3.025	9.281 / 3.956 / 3.870
Pedipalp	L	34.186	20.464	22.754	33.881
Femur	L / W	8.274 / 2.161	5.068 / 1.704	5.436 / 1.889	8.077 / 2.691
Patella	L / W	9.528 / 3.152	5.856 / 2.297	6.396 / 2.746	9.864 / 3.125
Chela	L	16.384	9.540	10.922	15.940
Manus	W / D	3.662 / 3.573	3.082 / 3.192	3.045 / 2.925	2.864 / 2.793
Movable finger	L	10.477	5.677	10.922	11.260
Total	**L**	**71.527**	**52.394**	**58.786**	**84.352**

Table 1. Comparative measurements of *Hottentotta buchariensis*, *H. niloticus* and *H. penjabensis* types. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

29–33 in males, 24–27 in females. Pedipalps and metasoma very sparsely hirsute. Carapace and mesosoma black except seventh tergite that is yellow to brown. Metasoma, legs and pedipalps yellow to yellowish red. Fingers of pedipalps in adults darker than chela. Femur of pedipalp with 5 carinae, patella with 8 carinae, chela lacks carinae. Movable fingers of pedipalps with 14–16 rows of granules and 5 or 6 terminal granules. Seventh sternite with 4 granulated carinae. First metasomal segment with 10 carinae; second and third with 8 or 10 carinae; fourth with 8 carinae; fifth with 5 carinae, 3 ventral (one median, two lateral) and two dorsal. Dorsal carinae of metasomal segments bear larger terminal granules. Spaces between carinae of metasomal segments on ventral and lateral surfaces usually smooth to bumpy, without granules (except ventral surface of fifth metasomal segment). Dorsal surfaces of first through fourth metasomal segments smooth, without granules. First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.212.

Comments. No one studied types of this taxon between 1897 and 2007 in detail. When Vachon (1959) described *Buthotus alticola kabulensis*, he did not compare it with the original *Hottentotta buchariensis* specimens. In 2007, Kovařík redescribed the male lectotype of *H. buchariensis* (fig. 25 in Kovařík, 2007: 14) and synonymized *Buthotus alticola kabulensis* with *H. buchariensis*. Here, we present detailed photographs (Figs. 5–22) and measurements (Table 1) for the male paralectotype of *H. buchariensis*.

Hottentotta niloticus (Birula, 1928)

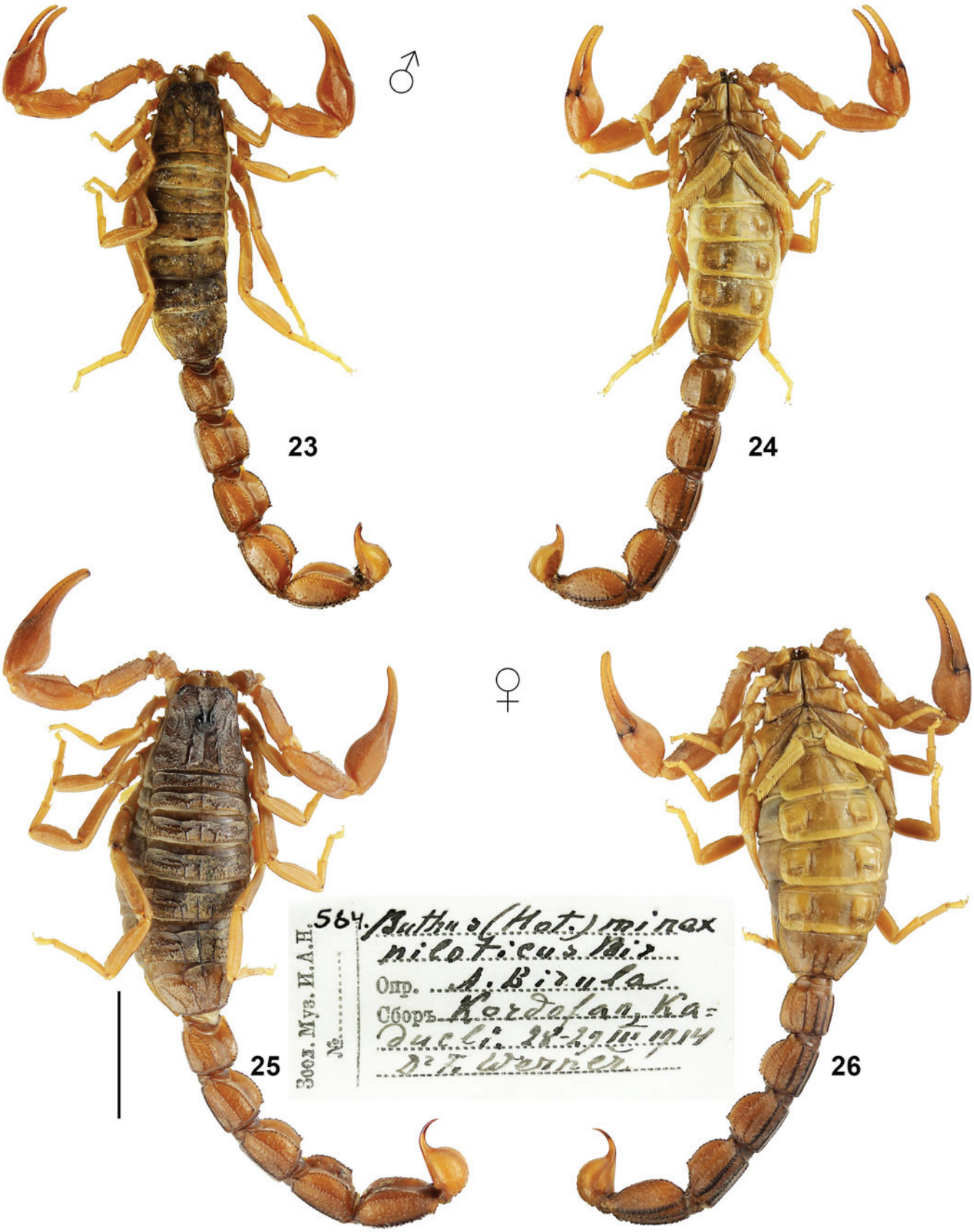
(Figs. 23–49, Table 1)

Buthus (*Hottentotta*) *minax niloticus* Birula, 1928: 82.
Hottentotta (*Hottentotta*) *minax niloticus*: Kovařík, 1998: 110; Fet & Lowe, 2000: 142.
Hottentotta niloticus: Kovařík, 2003: 140; Kovařík, 2007: 48; Kovařík & Ojanguren, 2013: 170, figs. 1093–1094.

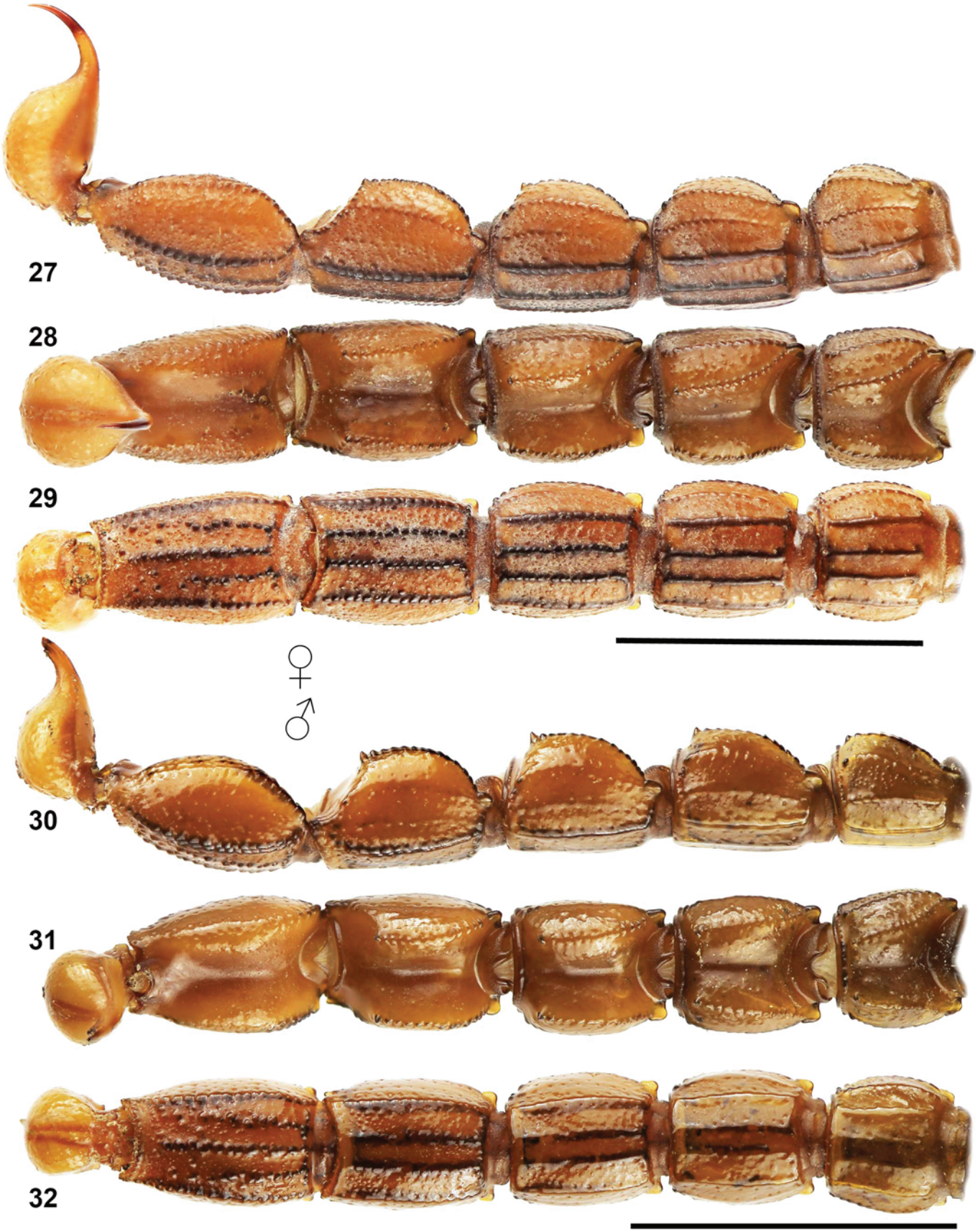
Type locality and type repository. **Sudan**: *Kordofan*, Kaducli (now *South Kordofan*, Kaduqli); ZISP.

Type material Examined. **Sudan**: *Kordofan*, Kaducli (now *South Kordofan*, Kaduqli), 28-29.III.1914, 1♂ (lectotype hereby designated, Figs. 23–24, 30–32, 35–44, 46, 48–49) 1♀ (paralectotype, Figs. 25–29, 33–34, 45, 47), leg. F. Werner, ZISP No. 564.

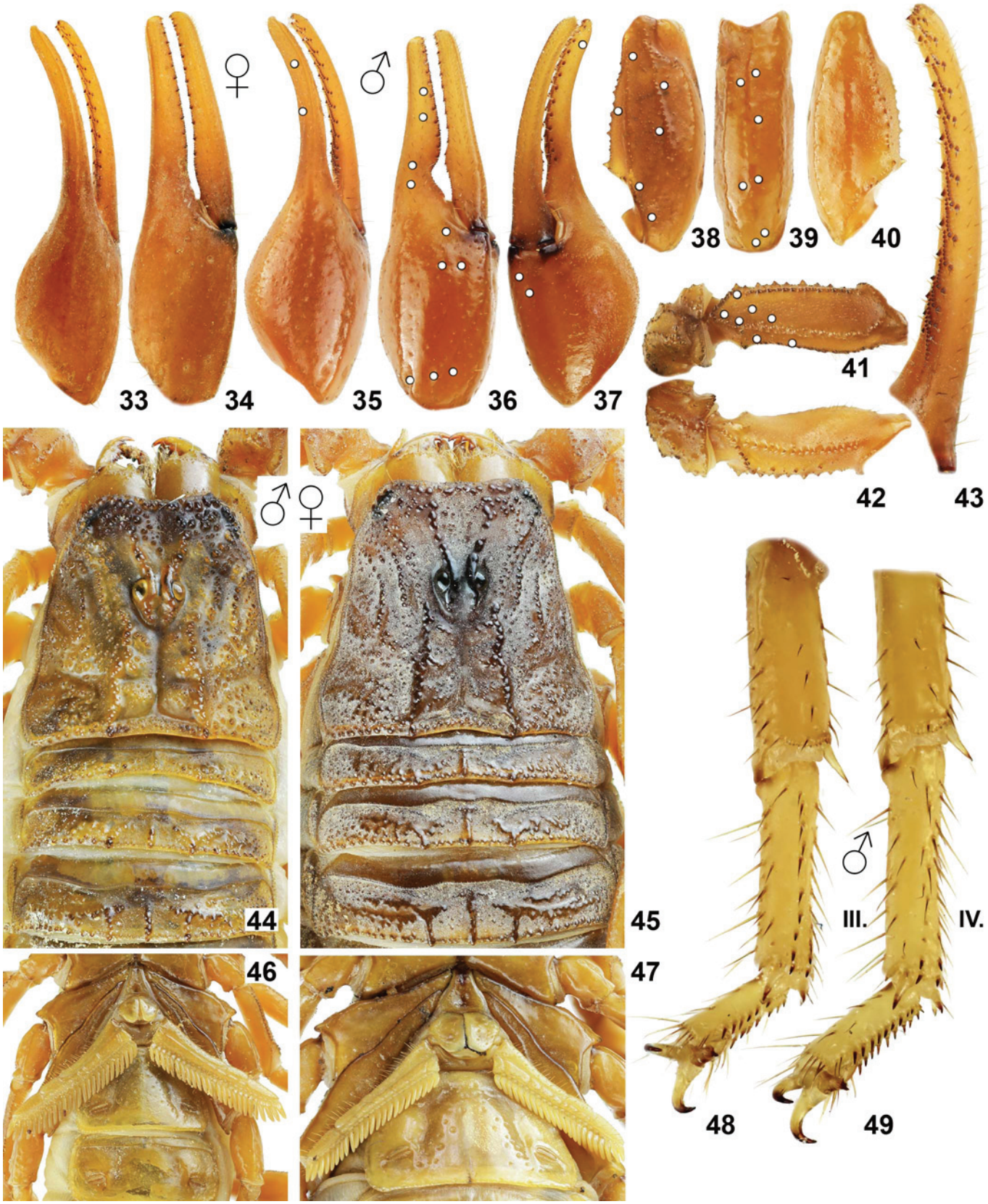
Diagnosis. Total length 45–70 mm. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *est*, may be on level with *est*. Manus of pedipalp usually of same width in both sexes, but males have fingers twisted whereas females have them straight. Pectinal teeth number 19–28. Chelicerae yellow, without reticulation, only tips of teeth on cheliceral fingers are black. Pedipalps sparsely hirsute. Metasoma bears only a few setae. Color usually uniformly yellowish brown, only ventral carinae of metasoma black; mesosoma and carapace may be black in some specimens. Femur of pedipalps with 5 carinae that may be incomplete.



Figures 23–**26**: *Hottentotta niloticus*. **Figures 23**–**24**. Lectotype male, dorsal (23) and ventral (24) views. **Figures 25**–26. Paralectotype female, dorsal (25) and ventral (26) views. Scale bar = 10 mm.



Figures 27–32: *Hottentotta niloticus*. **Figures 27–29**. Paralectotype female, metasoma and telson, lateral (27), dorsal (28), and ventral (29) views. **Figures 30–32**. Lectotype male, metasoma and telson, lateral (30), dorsal (31), and ventral (32) views. Scale bars = 10 mm.



Figures 33–49: *Hottentotta niloticus*. **Figures 33–43**: Pedipalp segments. **Figures 33–34**. Paralectotype female, pedipalp chela dorsal (33) and external (34) views. **Figures 35–43**. Lectotype male, pedipalp chela dorsal (35), external (36) and vental (37) views, patella dorsal (38), external (39) and ventral (40) views, femur and trochanter dorsal (41) and ventral (42), movable finger (43). The trichobothrial pattern is indicated in Figures 35–39, 41. **Figures 44**, **46**, **48–49**. Lectotype male, chelicerae, carapace and tergites I–III (44), sternopectinal region and sternites III–IV (46), and distal segments of legs III–IV (48–49), retrolateral view. **Figures 45**, **47**. Paralectotype female, chelicerae, carapace and tergites I–III (45), sternopectinal region and sternite III (47).

Figures 50–51. *Hottentotta penjabensis*, holotype female, dorsal (50) and ventral (51) views. Scale bar = 10 mm.

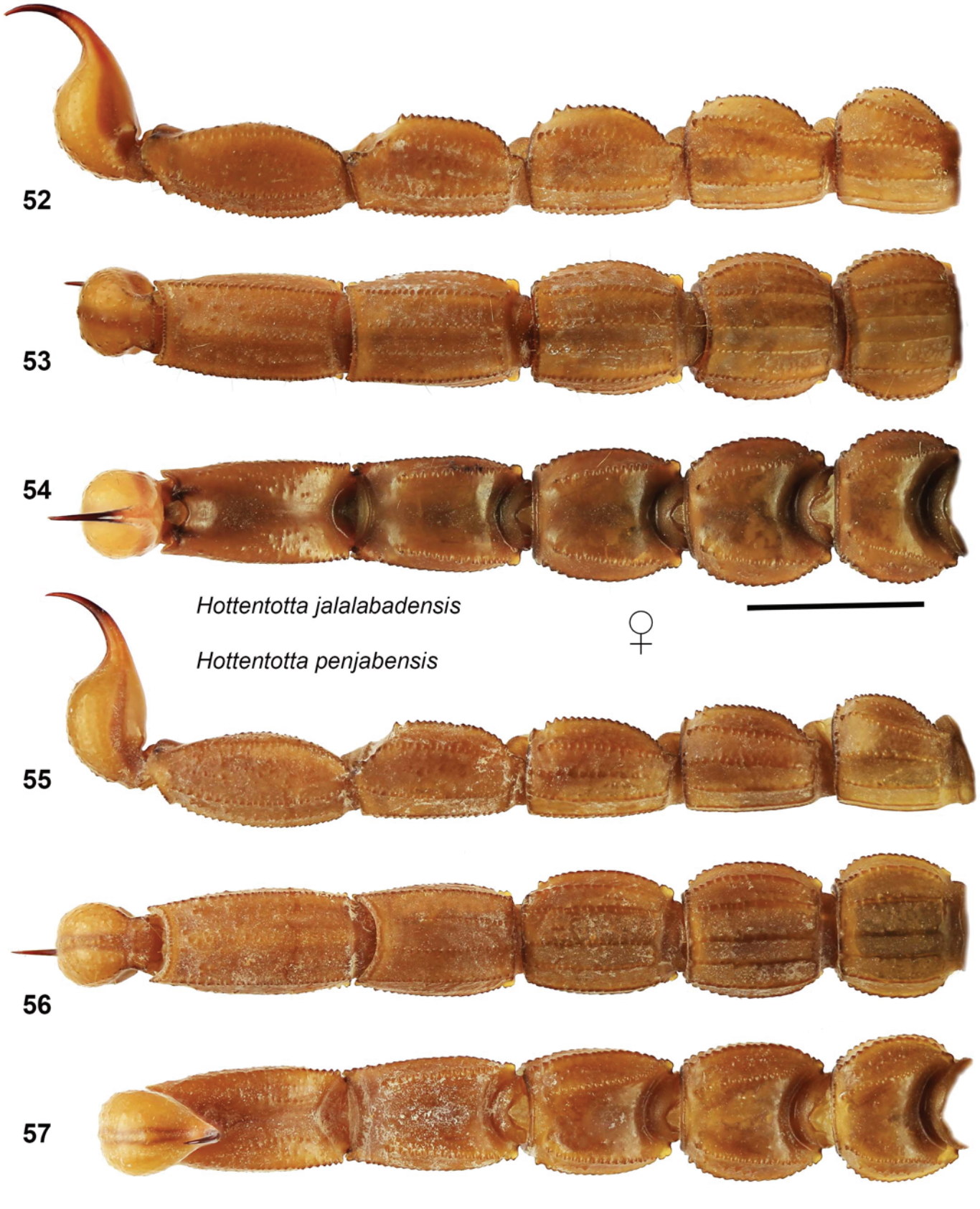
Patella with 8 carinae, of which some are smooth, without granules and obsolete. Chela lacks carinae. Movable fingers of pedipalps with 12–13 rows of granules and 5 terminal granules. Seventh sternite with 4 well marked carinae. First to third metasomal segments with 10 carinae; fourth with 8 or 10 carinae; fifth segment with 5 carinae. Lateral carinae may not be discernible in some males. All carinae granulated, dorsal carinae bear larger terminal granules. Metasoma strongly granulated, accessoric rows of granules present on dorsal surfaces of segments as well as on ventral surface of fifth segment. First metasomal segment of adults always wider than long; second metasomal segment usually also wider than long but may be longer than wide. Second to fourth metasomal segment width ratio less than 1.2.

Comments. Kovařík in Kovařík & Ojanguren (2013: 168) assumed that *H. niloticus* could be a valid species different from *H. minax* and that studying the types can solve the problem. Studying the types of *H. minax* (male lectotype from Egypt) and types of *H. niloticus* (lectotype and paralectotypes from Sudan) show agreement in the following key characters: trichobothrial pattern, pedipalp finger dentation, pectinal tooth count and lamellar structure, proportions, setation, carination and sculpture of pedipalps, carapace, tergites, sternites, and metasoma, shape of the telson, as well as armature of chelicerae and pedipalp fingers. The logical conclusion is that *Buthus* (*Hottentotta*) *minax niloticus* Birula, 1928 is a junior synonym of *Buthus minax* L. Koch, 1875, **syn**. **n**.

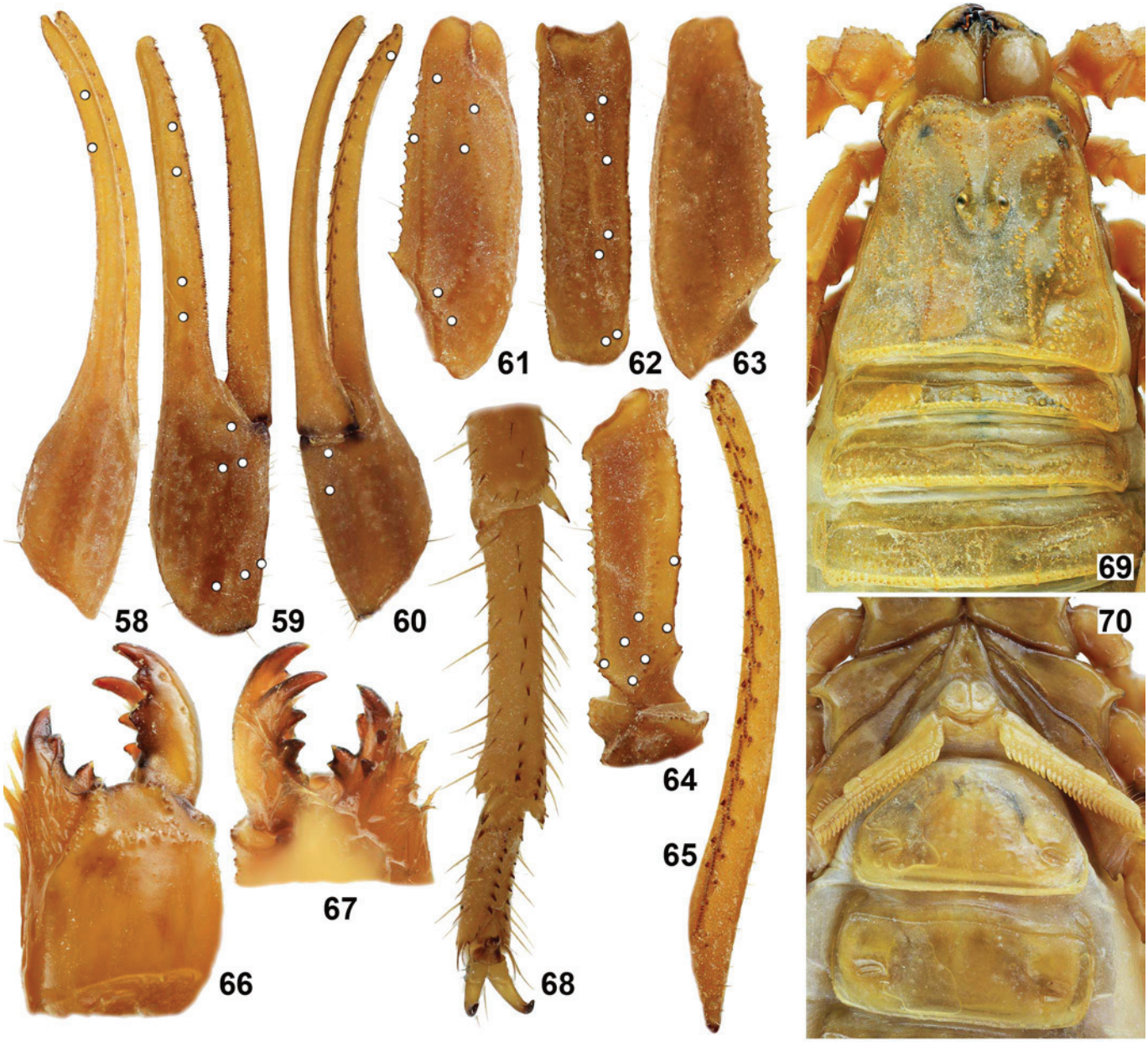
Hottentotta penjabensis (Birula, 1897), **stat**. **nov**.
(Figs. 50–51, 55–70, Table 1)

Buthus hottentotta (in part): Kraepelin, 1891: 192 (Birula, 1897: 377).
Buthus alticola forma beta (*penjabensis*) Birula, 1897: 382.
Hottentotta (*Hottentotta*) *alticola penjabensis*: Kovařík, 1998: 109; Fet & Lowe, 2000: 136.

Type locality and type repository. “Northern Punjab”, no exact locality; now Pakistan or India; ZISP.



Figures 52–**57**: **Figures 52**–**54**. *Hottentotta jalalabadensis*, paratype female, metasoma and telson, lateral (52), ventral (53), and dorsal (54) views. **Figures 55**–**57**. *H. penjabensis*, holotype female, metasoma and telson, lateral (55), ventral (56), and dorsal (57) views. Scale bars = 10 mm.



71

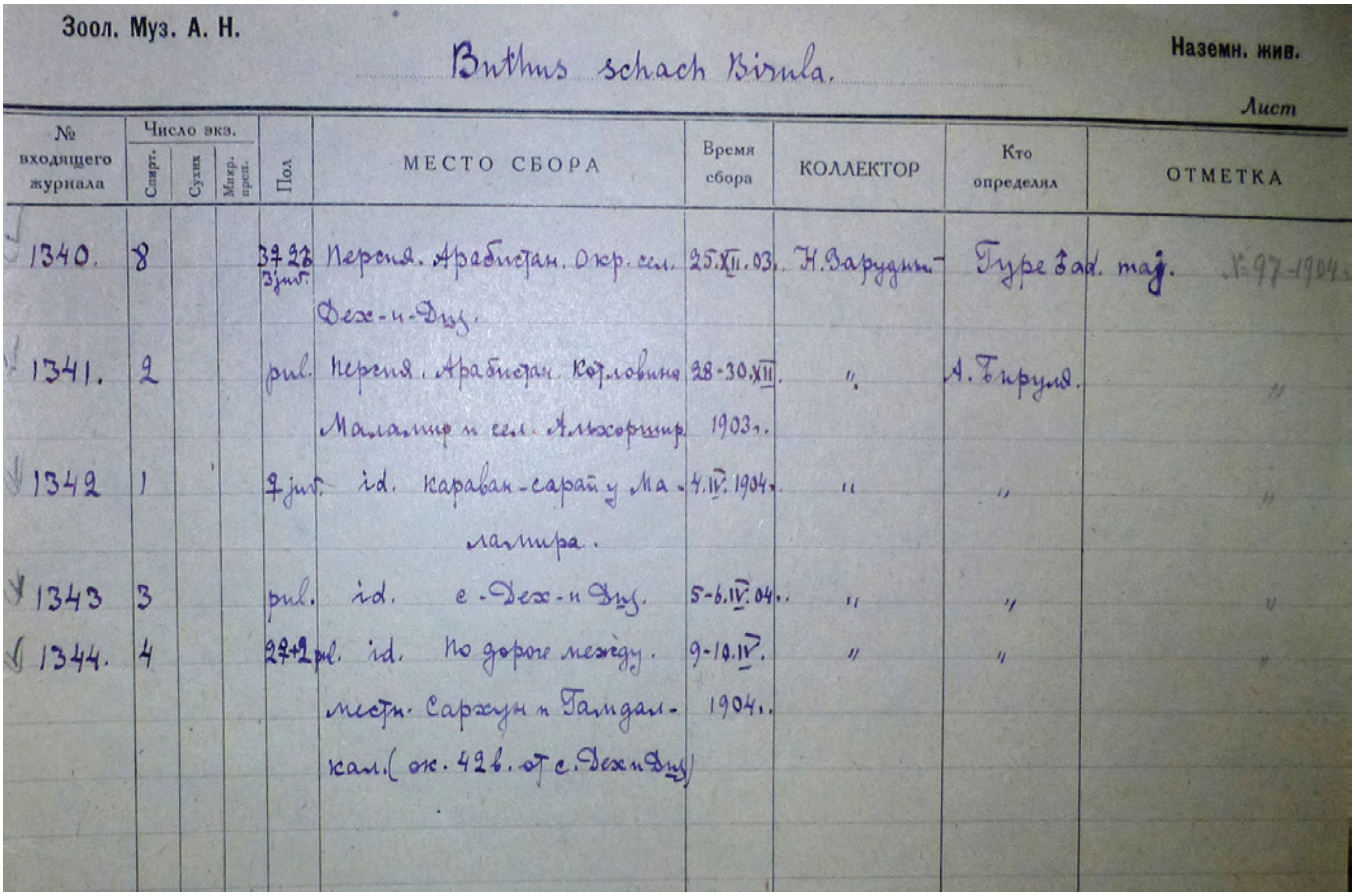
Buthus alticola Roc. pyndjabensis B.z.

Наземн. жив.

Листъ 1

№ входящаго журн.	Число экз. Сшрт.	Сухихъ.	Микр. преп.	Полъ.	МѢСТО СБОРА.	Время сбора.	КОЛЛЕКТОРЪ.	Кто опредѣлялъ.	ОТМѢТКА.
V(614) 69.	1			♀	Сѣв. Пенджабъ		Mus. Stuttg.	A. Birula	sub B. hottentotta teste Kraepelin. — У Бакалова VI. 76.

Figures 58–**71**: *Hottentotta penjabensis*, holotype female. **Figures 58**–**65**: Pedipalp segments, chela dorsal (58), external (59) and ventral (60) views, patella dorsal (61), external (62) and ventral (63) views, femur and trochanter dorsal (64), movable finger (65). The trichobothrial pattern is indicated in Figures 58–62, 64. **Figures 66**–**70**. Right chelicera dorsal (66) and ventral (67) views, distal segments of leg III (68), retrolateral view, carapace and tergites I–III (69), sternopectinal region and sternites III–IV (70). **Figure 71**. Original Birula´s registered card.


Зоол. Муз. А. Н.

Buthus schach Birula.

Наземн. жив.

Лист

№ входящего журнала	Число экз. Спирт.	Сухих	Микр. преп.	Пол	МЕСТО СБОРА	Время сбора	КОЛЛЕКТОР	Кто определял	ОТМЕТКА
1340.	8			3♂ 2♀ 3juv.	Персия. Арабистан. Окр. сел. Дех-и-Диз.	25.XII.03.	Н. Зарудный	Гуре Зад.	maj. №97-1904
1341.	2			pul.	Персия. Арабистан. Котловина Маламир и сел. Алъхоршир	28-30.XII. 1903.	"	А. Бируля.	"
1342	1			♀ juv.	id. караван-сарай у Маламира.	4.IV.1904.	"	"	"
1343	3			pul.	id. с. Дех-и-Диз.	5-6.IV.04.	"	"	"
1344.	4			2♀+2 pul.	id. по дороге между местн. Сархун и Галгадал-кал. (ок. 42 в. от с. Дех-и-Диз)	9-10.IV. 1904.	"	"	

Figure 72. *Hottentotta schach*, original Birula's registration card.

Type material Examined. Northern Punjab, 1♀ (holotype, Figs. 50–51, 55–70) ("from Stuttgart Museum"), ZISP No. 69(614).

Diagnosis. Female holotype is 84.35 mm long, male unknown. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *est*. Pectinal teeth number 24–25 in female. Pedipalps and metasoma very sparsely hirsute. Femur of pedipalp with 5 carinae, patella with 8 carinae, chela with carinae indicate only. Movable fingers of pedipalps with 15 rows of granules and 6 terminal granules. Seventh sternite with 4 well marked carinae. Metasoma I–III with 10 carinae; fourth with 8 carinae; fifth with 5 carinae, 3 ventral (one median, two lateral) and two dorsal. Dorsal carinae of metasomal segments bear larger terminal granules. Dorsal surface of metasoma smooth, fifth segment bears two short, inconspicuous carinae. Metasoma I–III wider than long. For measurements see Table 1.

Affinities. *H. penjabensis,* which we elevate here to species rank, is very similar to *H. jalalabadensis* Kovařík, 2007 from Afghanistan. Combination of three characters, (1) metasoma I wider than long; (2) total length of females more than 80 mm; and (3) pedipalps and metasoma very sparsely hirsute, distinguishes these two species from other Asian *Hottentotta*. Figures 52–57 show that these two species differ in shape of metasomal segments when female holotype of *H. penjabensis* has metasoma II little longer than wide while metasoma II in females of *H. jalalabadensis* is wider than long. On metasoma III, *H. penjabensis* has 10 carinae while in *H. jalalabadensis* there are 8 carinae and sometimes a short incomplete row of granules in the center of lateral part.

Comments. Under the name of "*Buthotus alticola punjabensis* (Birula)", Tikader & Bastawade (1983: 164–168, figs. 453–462) redescribed two probably immature males 46 or 50 mm long from BMNH (No. 1900.8.12.1–4), which could have been identifed by Pocock and studied also by Vachon in 1951 (see Vachon, 1959: 139–141, fig. 22). However, according to the characters cited in their redescription, we can assume that these two specimens represent a different species, which is here described as *H. krivokhatskyi* **sp**. **n**. and neither Pocock, nor Tikader & Bastawade, nor Vachon studied the real specimen of *H. penjabensis*.

In two notes, Fet & Lowe (2000: 136) commented on the original description and the type locality of *H. penjabensis* but incorrectly cited ZISP reg. No. 649. The original Birula's registration card (Fig. 71) shows that in the ZISP collection there is only one specimen (holotype) of this species, which was originally marked as No. 614 and later changed to No. 69.

Dimensions (MM)		*H. schach* ♂ lectotype	*H. schach* ♀ paralectotype	*H. zagrosensis* ♂ holotype	*H. zagrosensis* ♀ alotype
Carapace	L / W	10.020 / 10.343	13.530 / 14.884	10.945 / 11.707	10.787 / 12.483
Mesosoma	L	26.197	42.768	27.699	32.844
Tergite VII	L / W	8.002 / 10.468	8.654 / 14.747	6.907 / 10.900	7.874 / 12.104
Metasoma + telson	L	62.003	70.520	62.495	58.685
Segment I	L / W / D	7.900 / 5.921 / 5.281	8.700 / 7.839 / 6.818	7.710 / 6.561 / 5.350	6.784 / 6.731 / 6.142
Segment II	L / W / D	9.167 / 5.887 / 4.941	10.26 / 7.521 / 6.381	8.869 / 6.335 / 5.363	8.194 / 6.882 / 5.687
Segment III	L / W / D	9.706 / 5.819 /4.781	10.40 / 7.447 / 6.418	9.906 / 6.415 / 4.941	8.797 / 6.734 / 5.612
Segment IV	L / W / D	11.17 / 5.240 / 4.722	12.32 / 6.907 / 6.078	11.39 / 5.914 / 4.781	10.24 / 6.378 / 5.361
Segment V	L / W / D	12.57 / 4.860 / 4.357	14.26 / 6.398 / 5.859	12.91 / 5.871 / 4.823	11.98 / 5.898 / 5.187
Telson	L / W / D	11.49 / 4.119 / 3.610	14.58 / 5.738 / 5.325	11.71 / 5.596 / 4.730	12.69 / 5.279 / 4.955
Pedipalp	L	25.689	45.154	45.885	43.244
Femur	L / W	10.825 / 2.589	10.020 / 2.986	11.690 / 2.866	10.399 / 2.987
Patella	L / W	12.432 / 3.556	11.214 / 3.562	12.907 / 3.654	11.840 / 4.064
Chela	L	20.432	23.920	21.288	21.005
Manus	W / D	4.018 / 4.018	5.896/ 6.001	4.596 / 4.914	4.573 / 4.784
Movable finger	L	12.983	15.712	14.486	14.260
Total	**L**	**98.22**	**126.82**	**101.14**	**103.32**

Table 2. Comparative measurements of *Hottentotta schach* and *H. zagrosensis* types. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

Hottentotta schach (Birula, 1905)

(Figs. 2, 73–74, 77–84, 87–110, Table 2)

Buthus schach Birula, 1905: 134.
Buthus (*Hottentotta*) *schach*: Birula, 1917: 214.
Hottentotta (*Hottentotta*) *schach*: Kovařík, 1998: 110; Fet & Lowe, 2000: 143.

Type locality and type repository. **Iran**: *Khoozestan Province*, Dech-i-Dis (now Dehdez); ZISP.

Type material Examined. **Iran**: *Khoozestan Province*, Dech-i-Dis (now Dehdez), 25.XII.1903 ('Old Style' here and below), 1♂ (lectotype hereby designated, Figs. 73–74, 77, 82–84, 87–95, 103–104, 107–110) 1♀ (paralectotype, Figs. 78–81, 96–102, 105–106), leg. N. Zarudny, ZISP No. 1340. Other paralectotypes (all from Khoozestan Province): 1♂2♀3 juvs., ZISP No. 1340, same label as lectotype; Malamir Depression and Alhorshir Village, 28-30.XII.1903, 2juvs., leg. N. Zarudny, ZISP No. 1341; caravan-serai near Malamir, 4.IV.1904, 1♀juv., leg. N. Zarudny, ZISP No. 1342; Dech-i-Dis (now Dehdez), 5-6.IV.1904, 1♀juv., leg. N. Zarudny, ZISP No. 1343; between Sarkhun and Gamdalkal, 42 verst from Dech-i-Dis (now Dehdez), 9-10. IV.1904, 2♀2juvs., leg. N. Zarudny, ZISP No. 1344.

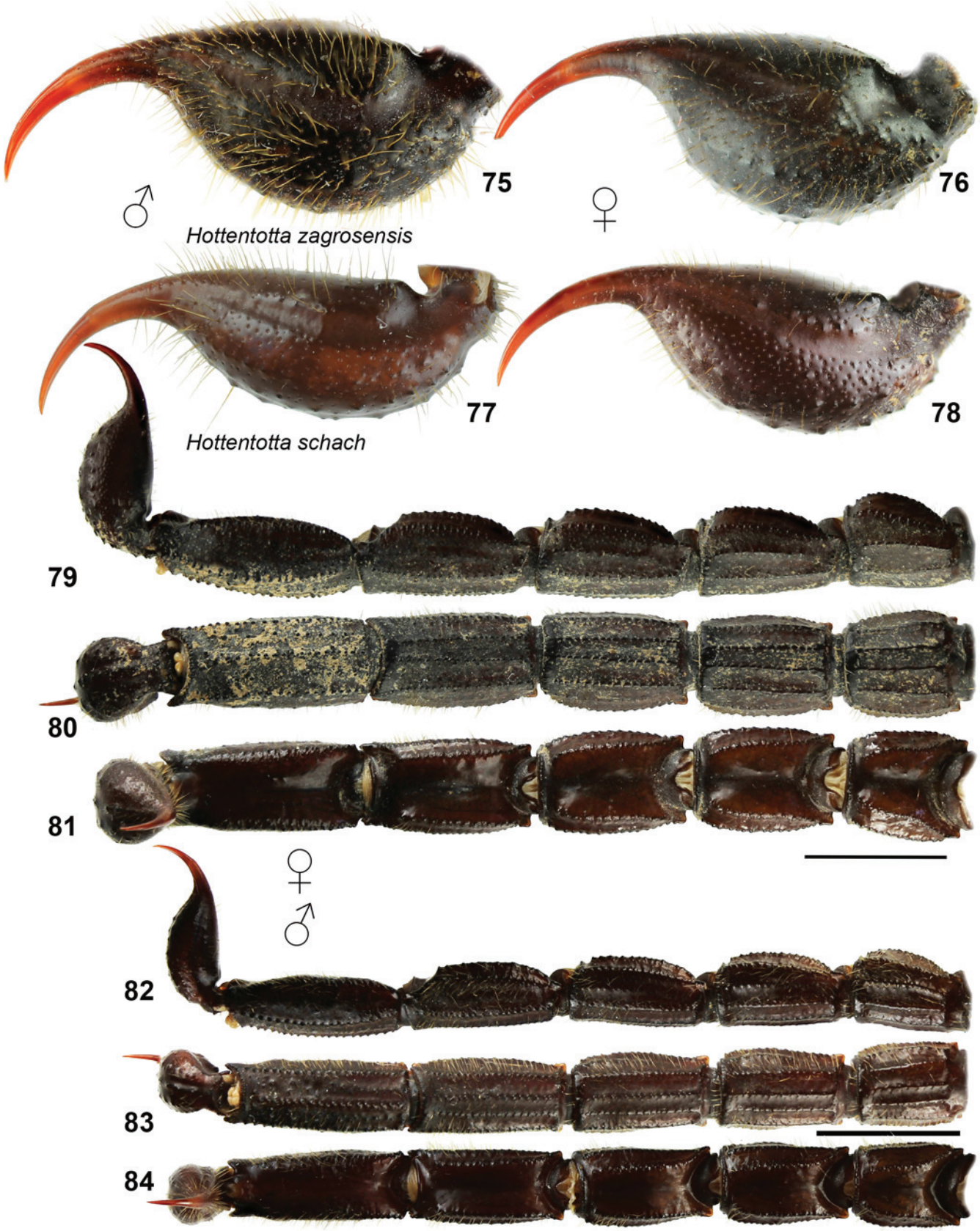
Diagnosis. Total length 90–130 mm. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *est*, may be on level with *est*. Male with slightly longer and narrower metasomal and pedipalp segments, width of pedipalp chela same in both sexes. Pectinal teeth number 31–35 in males, 26–29 in females. Nearly entire body hirsute, pedipalps, dorsal surface of mesosoma, legs, lateral and ventral surfaces of metasomal segments, and vesicle rather densely hirsute. Setae on patella of pedipalps are long. Color black except reddish brown chela of pedipalps; sometimes ends of first and second tarsomeres yellow, coxa and trochanter on ventral side of mesosoma marbled, and pectens yellowish brown. Femur of pedipalp with 5 carinae. Patella with 8 carinae. Chela lacks carinae. Movable fingers of pedipalps with 15–16 rows of granules and 5–6 terminal granules. Seventh sternite with 4 well marked carinae. First metasomal segment with 10 carinae; second with 8 or 10 carinae; fourth with 8 carinae; fifth with 5 carinae, 3 ventral (one median, two lateral) and two dorsal. Dorsal surfaces of metasomal segment smooth without carinae. First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.2.

Affinities. *H. schach* is most similar to *H. zagrosensis*. Both species occur in Iran, Khoozestan Province and are entirely black in color (Figs. 73–74). However, *H. zagrosensis* is more densely hirsute and has deeper metasomal segments mainly in males (Table 2). Both species are easy to differentiate according to the telson which is in *H. zagrosensis* more densely hirsute and bulbous while in *H. schach* the telson is elongate (see Figs. 75–78). Telson length/depth ratio is 3.18 in the male of *H. schach* and 2.48 in the male of *H. zagrosensis* (Figs. 77 versus 75).

Figures 73–74. *Hottentotta schach*, lectotype male, dorsal (73) and ventral (74) views. Scale bar = 10 mm.

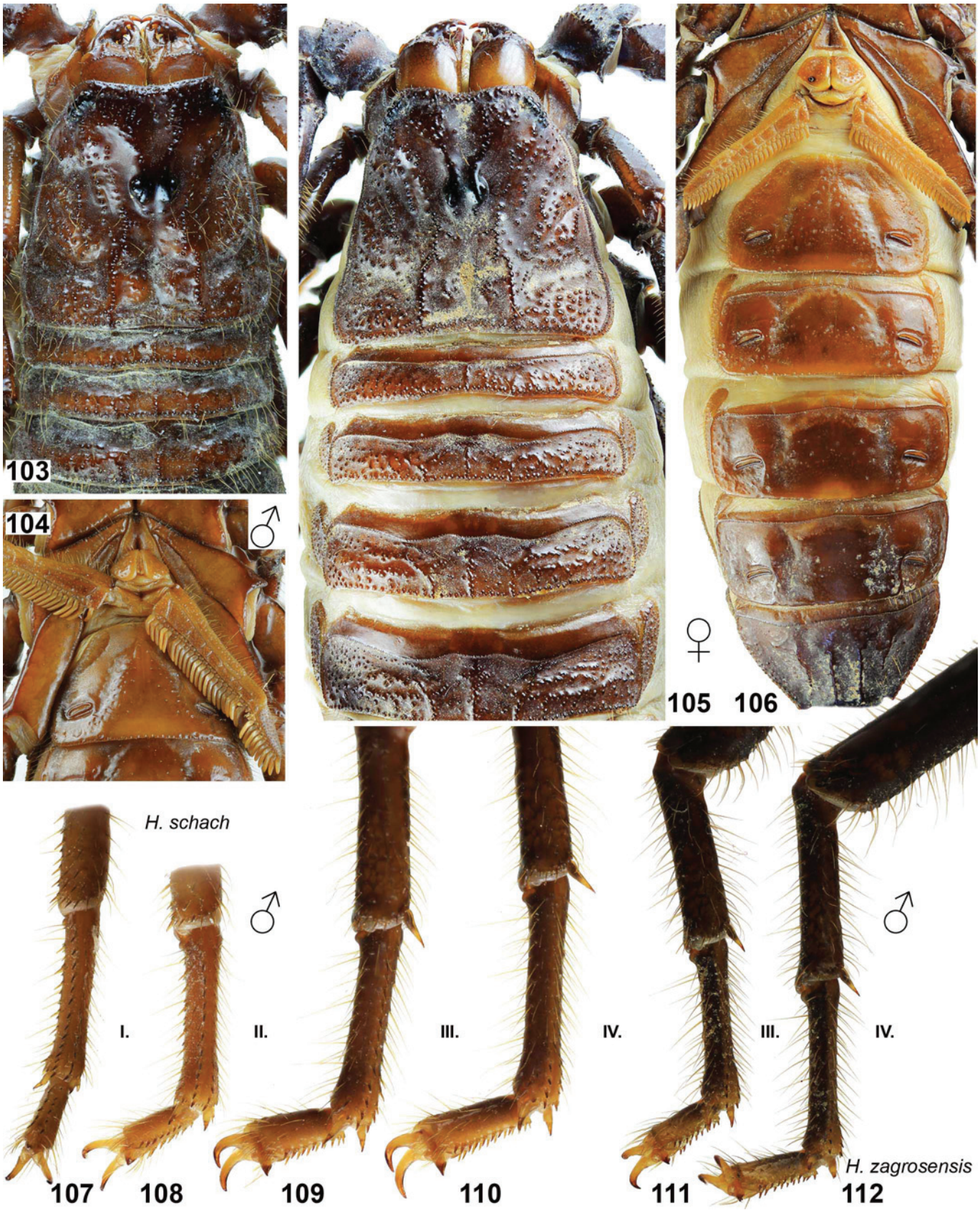
Comments. The type series is represented by 18 specimens, collected in 1903-1904 by the famous Russian ortnothologist Nikolay A. Zarudny (1859–1919), who also collected many other scorpion types from Iran described by Birula. From these syntypes, we designated as the lectotype the exact male marked by Birula as "Type ♂ad." in the registration card (Fig. 72). The dates of Zarudny's travels are given according to the Old Style (Julian) calendar used in Russia before 1918.

When Kovařík (2007) published the revision of *Hottentotta*, he incorrectly identified as *H. schach* another Iranian species, which is described below as *H. juliae* **sp. n**. Only the study of the types of *H. schach* showed its real taxonomic position and morphological similarity with *H. zagrosensis*.



Figures 75–84: **Figures 75–76**. *Hottentotta zagrosensis* Kovařík, 1997, telson lateral of male holotype (75) and female alotype (76). **Figures 77, 82–84**. *Hottentotta schach*, lectotype male, telson lateral (77), metasoma and telson, lateral (82), ventral (83), and dorsal (84) views. **Figures 78–81**. *Hottentotta schach*, paralectotype female, telson lateral (78), metasoma and telson, lateral (79), ventral (80), and dorsal (81) views. Scale bars = 10 mm (79–81 and 82–84).

Figures 85–**102**: Pedipalp segments. **Figures 85**–**86**. *Hottentotta zagrosensis* Kovařík, 1997, pedipalp chela dorsal of male holotype (85) and female alotype (86). **Figures 87**–**95**. *Hottentotta schach*, lectotype male, chela dorsal (87), external (88) and ventral (89) views, patella dorsal (90), external (91) and ventral (92) views, femur and trochanter dorsal (93) and ventral (94) views, movable finger (95). The trichobothrial pattern is indicated in Figures 87–91, 93. **Figures 96**–**102**. *Hottentotta schach*, paralectotype female, chela dorsal (96), external (97) and ventral (98) views, patella dorsal (99), external (100) and ventral (101) views, femur and trochanter dorsal (102).



Figures 103–**112**: **Figures 103**–**104**, **107**–**110**. *Hottentotta schach*, lectotype male, chelicerae, carapace and tergites I–III (103), sternopectinal region and sternite III (104), and distal segments of legs I–IV (107–110), retrolateral view. **Figures 105**–**106**. *H. schach*, paralectotype female, chelicerae, carapace and tergites I–IV (105), sternopectinal region and sternites (106). **Figures 111**–**112**. *H. zagrosensis* Kovařík, 1997, distal segments of legs III–IV, retrolateral view.

Figures 113–**114**. *Hottentotta juliae* **sp. n.**, holotype female, dorsal (113) and ventral (114) views. Scale bar = 10 mm.

Hottentotta juliae sp. n.

(Figs. 113–144, Table 3)

http://zoobank.org/urn:lsid:zoobank.org:act:CD51A090-88C6-4BF7-893B-BDCB338B1EC7

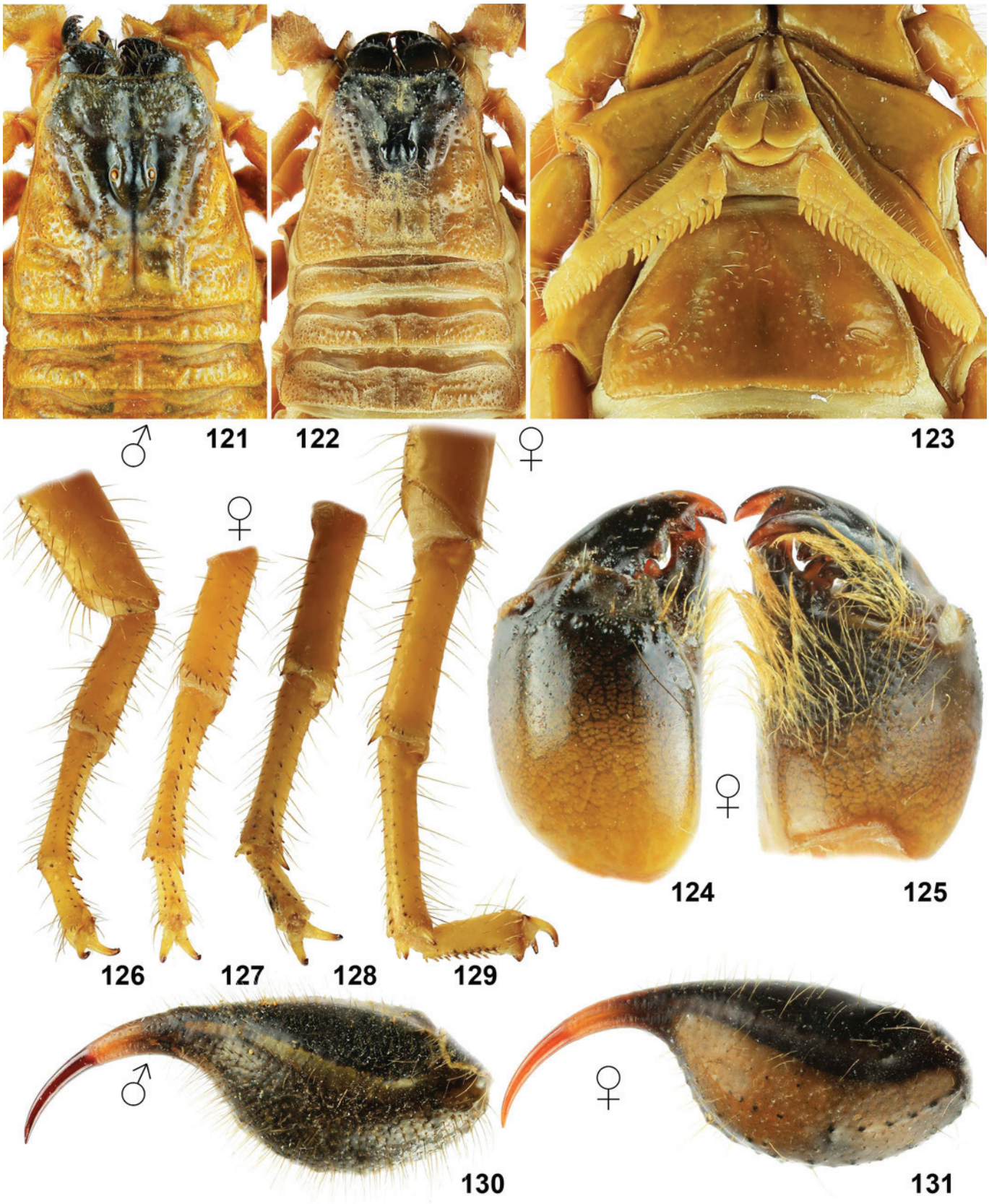
Hottentotta schach: Kovařík, 2007: 69, figs. 18, 105–106; Navidpour et al., 2008: 10, figs. 9, 72–73); Navidpour et al., 2010: 12, fig. 16; Karataş et al., 2012: 114; Navidpour et al., 2012: 9, figs. 3–4, 8; Navidpour, 2012: 96–97, fig. 4; Kovařík & Ojanguren Affilastro, 2013: 174, figs. 983–984, 1132.

Type locality and type repository. **Iran**: *Fars Province*, ca 1700 m a.s.l., 10 km E of Sivand Village, FKCP.

Type material (FKCP). **Iran**: *Fars Province*, ca 1700 m a.s.l., 10 km E of Sivand Village, 29-30.IV.1996, 2♀ (holotype and paratype), leg. M. Kaftan, 2♂ (paratypes), leg. V. Šejna; Marvdasht, 29°58'20"N 52°55'50"E, 1467 m a.s.l. (Locality No. Fa-860), IX.2008, 1♀(paratype), leg. Hayader, Bahrani, Masihipour & Habibzadeh.

Other material (RRLS). **Iran**: *Fars Province*, Marvdasht,

Figures 115–120: *Hottentotta juliae* **sp. n. Figures 115–117**. Holotype female, metasoma and telson, dorsal (115), ventral (116), and lateral (117) views. **Figures 118–120**. Paratype male, metasoma and telson, dorsal (118), ventral (119), and lateral (120) views. Scale bar = 10 mm.



Figures 121–131: *Hottentotta juliae* **sp. n. Figures 121, 130**. Paratype male, chelicerae, carapace and tergites I–II (121) and telson lateral (130). **Figures 122–129, 131**. Holotype female, chelicerae, carapace and tergites I–III (122), sternopectinal region and sternite III (123), left chelicera dorsal (124) and ventral (125) views, distal segments of legs I–IV (126–129), retrolateral view, and telson lateral (131).

Figures 132–144: *Hottentotta juliae* **sp. n.**, pedipalp segments. **Figures 132–141**. Holotype female, chela dorsal (132), external (133) and ventral (134) views, patella dorsal (135), external (136) and ventral (137) views, femur and trochanter dorsal (138) and ventral (139) views, fixed (140) and movable (141) fingers. The trichobothrial pattern is indicated in Figures 132–136, 138. **Figures 142–144**. Paratype male, chela dorsal (142), patella dorsal (143), and femur and trochanter dorsal (144) views.

29°58'20"N 52°55'50"E, 1467 m a.s.l. (Locality No. Fa-860), IX.2008, 2♂2♀, leg. Hayader, Bahrani, Masihipour & Habibzadeh; Marvdasht-Shiraz road, 29°57'59"N 51°55'41"E, 1632 m a.s.l. (Locality No. Fa-861), IX.2008, 1♀, leg. Masihipour, Bahrani & Habibzadeh.

Etymology. A patronym in honor of Julia V. Samartseva (ZISP), for her help with studying Birula's collection.

Diagnosis. Total length of adults 100–115 mm. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *est*, may be on level with *est*. Male with slightly longer and narrower metasomal and pedipalp segments, width of pedipalp chela same in both sexes. Pectinal teeth number 33–35 in males, 26–29 in females. Nearly entire body hirsute, pedipalps, dorsal surface of mesosoma, legs, lateral and ventral surfaces of metasomal segments, and vesicle densely hirsute. Setae on patella of pedipalps are long. Color yellowish green except black patella and chela of pedipalps, anterior part of carapace, telson and fourth and fifth metasomal segments. Ventral surfaces of second and third metasomal segments may be also black. Chelicerae black anteriorly, reticulate. Femur of pedipalp with 5 carinae. Patella with 8 carinae. Chela lacks carinae. Movable fingers of pedipalps with 15–16 rows of granules and 5–6 terminal granules. Seventh sternite with

4 well marked carinae. First metasomal segment with 10 carinae; second with 8 or 10 carinae; third with 8 carinae and a short row of granules in center of lateral part; fourth with 8 carinae; fifth with 5 carinae, 3 ventral (one median, two lateral) and two dorsal. Dorsal surface smooth, fifth metasomal segment bears two short, inconspicuous carinae. First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.1.

Description. The total length is 100–115 mm. Chelal trichobothrium *db* usually located between *est* and *et*, or may be on level with trichobothrium *est*. Male has the fingers proximally straight, there is not sexual dimorphism in shape of chela of pedipalp. Chelicerae are black anteriorly and yellow with reticulation posteriorly (Figs. 124–125). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 3. For the position and distribution of trichobothria see Figs. 132–136, 138.

Coloration (Figs. 113–114). The basic color is yellow to yellowish green or brown, except black triangle of carapace and chela of pedipalp. Dark may be also patella dorsal and partly external (Figs. 135–136). The telson and the fourth and the fifth metasomal segments are black. Ventral surfaces of the second and the third metasomal segments may be also black. Legs and femur of pedipalp are uniformly yellow to yellowish green. The tarsomeres of legs are yellow.

Mesosoma and carapace (Figs. 113–114, 121–123). The carapace is carinate and unevenly covered by granules of varying size; much of the granulation is fine, but some granules are larger and distinctly rounded. Tergites I–VI bear three carinae and are granulated, with some intercarinal granules small and others larger and rounded. Tergite VII is pentacarinate. The pectinal tooth count is 33–35 in males and 26–29 in females. The pectinal marginal tips extend to end of the third sternite in female and end of the fourth sternite in male. The pectines have three marginal lamellae and eight to nine middle lamellae. The lamellae bear numerous long setae, each fulcrum with two to three setae. All sternites are smooth and sparsely hirsute. The seventh sternite bears four usually granulate carinae. The other sternites bear two furrows.

Metasoma and telson (Figs. 115–120). All metasomal segments are densely hirsute. All metasomal segments of both sexes longer than wide. The segment I bears 10 carinae; segment II bears 8 or 10 carinae; segment III with 8 carinae and a short row of granules in center of lateral part; segment IV with 8 carinae; and segment V bears five complete carinae, three ventral and two dorsal and two other indicate on ventral surface. All carinae are with consistent denticles. The telson is hirsute, rather elongate, and smooth.

Pedipalps (Figs. 132–144). The pedipalps are densely hirsute and almost smooth. The femur bears four granulated carinae. The patella bears eight carinae, ventral and external are smooth, without granules and obsolete; dorsal and internal are granulate. The chela is without carinae. The movable fingers of pedipalps bear 15–16 rows of granules and five or six terminal granules.

Legs (Figs. 126–129). The tarsomeres bear two rows of short and strong spiniform setae on the ventral surface and numerous macrosetae on the other surfaces. Pedal spur of legs without setae. Femur and patella with carinae indicated. Tibial spurs moderate on third legs, long on fourth legs and absent in the other legs.

Affinities. The described features distinguish *H. juliae* **sp**. **n**. from all other species of the genus. For distinguishing from other *Hottentotta* species, see key in Kovařík & Ojanguren Affilastro, 2013: 159–160. From a diferently colored *H. schach* (see Figs. 73–74 versus Figs. 113–114) *H. juliae* **sp**. **n**. differs also morphometrically (see Tables 2 and 3). *H. schach* is characterized mainly by elongate telson in males. Telson length/depth ratio is 3.18 in male of *H. schach* and 2.81 in male of *H. juliae* **sp**. **n**. (Figs. 77 versus 130).

Hottentotta krivokhatskyi **sp**. **n**.

(Figs. 145–174, Table 3)

http://zoobank.org/urn:lsid:zoobank.org:act:81B9278F-DEAF-4EBA-89DC-A6B51C9D12E4

?*Buthus alticola penjabensis*: Vachon, 1959: 139–141, fig. 22.

?*Buthotus alticola punjabensis* [incorrect spelling]: Tikader & Bastawade, 1983: 164–168, figs. 453–462

Hottentotta penjabensis: Kovařík, 2007: 50–52, figs. 82–83; Kovařík & Ojanguren Affilastro, 2013: 171, figs. 952–955.

Type locality and type repository. **Pakistan**: *Balochistan Province*, Zhob, FKCP.

Type material (FKCP). **Pakistan**: *Balochistan Province*, Hazarganji Chiltan National Park, 10 km W from Quetta, 18.VII.1998, 2♂1♀ (paratypes, dry), leg. L. Černý; *Balochistan Province*, Zhob, VI. 2006, 2♂ (holotype and paratype), leg. Zubair Ahmed; *Balochistan Province*, Quetta, 13.V.2008, 3juvs.(♂♀♀) (paratypes), leg. Zubair Ahmed.

Etymology. A patronym in honor of Viktor A. Krivokhatsky (ZISP), for his help with studying Birula's collection.

Diagnosis. Total length 60–90 mm. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *est*. Chelicerae yellow to black, reticulate. Male with slightly longer and narrower metasomal segments, width of pedipalp chela same in both sexes. Pectinal teeth number 29–34 in males, 23–30 in females. Pedipalps and metasoma sparsely hirsute. Setae on patella of pedipalps are long. Color yellow to yellowish brown except black anterior part of carapace and fingers of pedipalps; in some specimens, entire carapace and mesosomal segments except seventh tergite may be black. Femur of pedipalp with 4 carinae, patella with 8 carinae, chela lacks carinae. Movable fingers of pedipalps with 14–15 rows of granules and 6 terminal granules. Seventh sternite with 4 well marked carinae. First metasomal segment with 10 carinae;

Dimensions (MM)		*H. juliae* **sp. n.** ♀ **holotype**	*H. juliae* **sp. n.** ♂ **paratype**	*H. krivokhatskyi* **sp. n.** ♂ **holotype**	*H. krivokhatskyi* **sp. n.** ♀ **paratype**
Carapace	L / W	11.882 / 13.636	12.110 / 11.650	9.107 / 8.378	8.335 / 9.467
Mesosoma	L	36.940	26.351	21.138	18.723
Tergite VII	L / W	7.326 / 13.064	7.550 / 11.561	5.888 / 8.766	4.908 / 9.429
Metasoma + telson	L	64.225	70.773	51.770	45.790
Segment I	L / W / D	8.114 / 7.298 / 5.950	8.893 / 6.451 / 5.965	6.990 / 6.245 / 4.633	5.722 / 5.435 / 4.602
Segment II	L / W / D	9.444 / 6.559 / 5.088	10.63 / 6.121 / 5.015	7.583 / 5.740 / 4.730	6.519 / 5.146 / 4.502
Segment III	L / W / D	9.607 / 6.535 / 5.604	11.09 / 6.036 / 4.753	7.926 / 5.180 / 4.291	7.213 / 4.875 / 4.344
Segment IV	L / W / D	10.65 / 6.453 / 5.332	12.55 / 5.670 / 4.809	9.074 / 4.567 / 4.331	8.139 / 4.345 / 4.013
Segment V	L / W / D	13.22 / 6.191 / 4.884	15.14 / 5.430 / 4.565	10.68 / 4.208 / 4.114	9.253 / 4.469 / 3.911
Telson	L / W / D	13.19 / 5.463 / 4.833	12.47 / 4.675 / 4.437	9.517 / 3.828 / 3.523	8.944 / 4.017 / 4.044
Pedipalp	L	47.549	50.158	36.661	33.888
Femur	L / W	11.62 / 2.821	12.86 / 2.772	8.997 / 2.253	8.092 / 2.285
Patella	L / W	13.42 / 4.291	13.74 / 3.732	10.636 / 3.293	9.253 / 3.001
Chela	L	22.509	23.558	17.028	16.543
Manus	W / D	4.914 / 4.796	4.313 / 4.602	4.340 / 4.052	3.515 / 3.084
Movable finger	L	14.798	14.788	12.088	11.105
Total	**L**	**113.047**	**109.234**	**82.015**	**72.848**

Table 3. Comparative measurements of *Hottentotta juliae* **sp**. **n**. and *H. krivokhatskyi* **sp**. **n**. types.

second with 8 or 10 carinae; third and fourth with 8 carinae; fifth with 5 carinae, 3 ventral (one median, two lateral) and two dorsal. Dorsal carinae of metasomal segments bear larger terminal granules. Dorsal surface of metasoma smooth, but fourth and fifth segments bear 2 short, inconspicuous carinae each. First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.26.

Description. The total length is 60–90 mm. Chelal trichobothrium *db* usually located between *est* and *et*. Fingers proximally a little bit twisted in both sexes (Figs. 156, 158), there is not sexual dimorphism in shape of chela of pedipalp. Chelicerae are yellow with reticulation and darker anteriorly (Figs. 167–168). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 3. For the position and distribution of trichobothria see Figs. 157–161, 164.

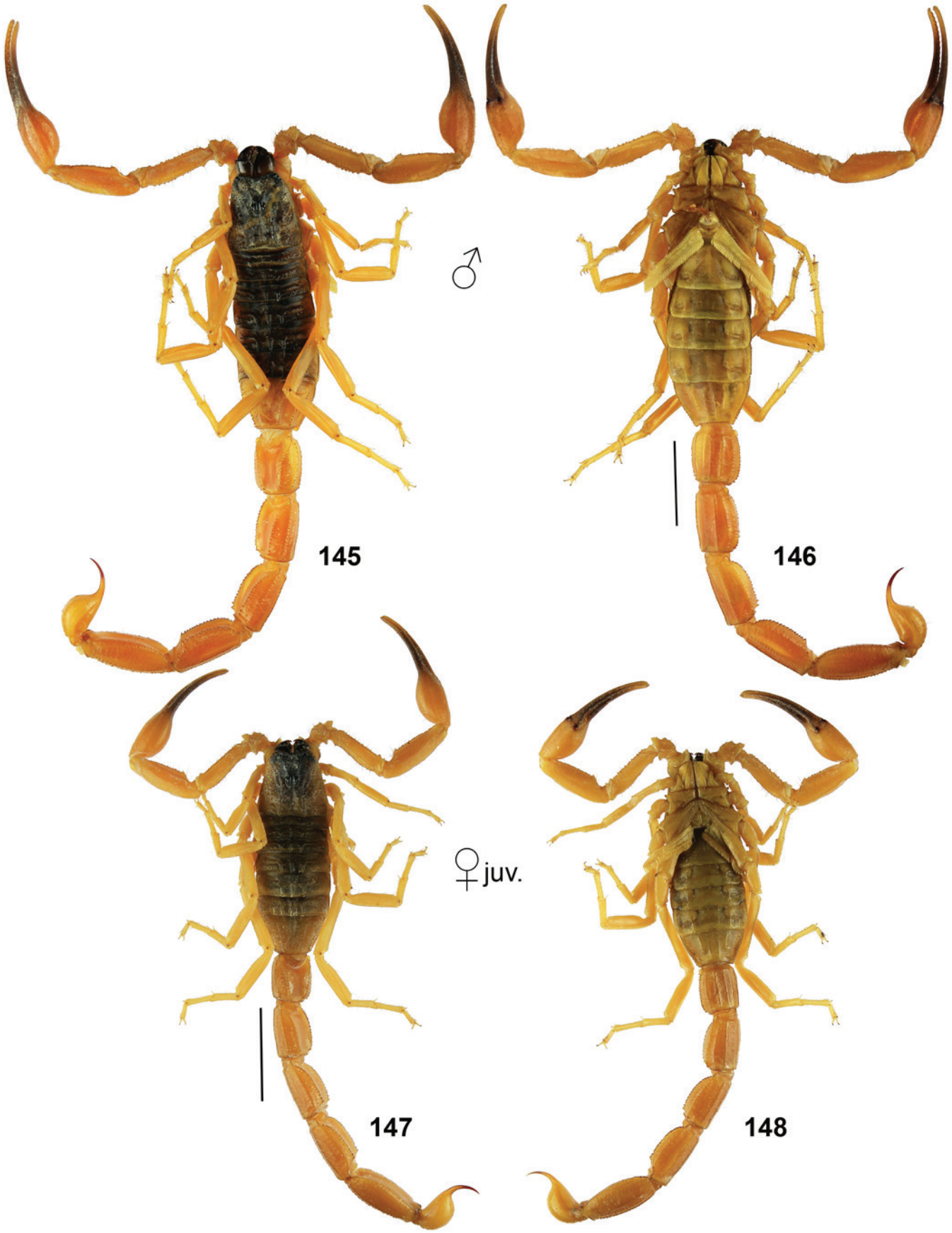
Coloration (Figs. 145–148). The basic color is yellow to yellowish brown, except black anterior part of carapace and fingers of pedipalps; in some specimens entire carapace and mesosomal segments except seventh tergite may be black. Legs, metasoma and femur and patella of pedipalp are uniformly yellow to yellowish brown. The tarsomeres of legs are yellow.

Mesosoma and carapace (Figs. 145–148, 171–174). The carapace is carinate and unevenly covered by granules of varying size; much of the granulation is fine, but some granules are larger and distinctly rounded. Tergites I–VI bear three carinae and are granulated, with some intercarinal granules small and others larger and rounded. Tergite VII is pentacarinate. The pectinal tooth count is 29–34 in males and 23–30 in females. The pectinal marginal tips extend to approximately half of the fourth sternite in both sexes. The pectines have three marginal lamellae and eight to nine middle lamellae. The lamellae bear numerous long setae, each fulcrum with two to three setae. All sternites are smooth and sparsely hirsute. The seventh sternite bears four usually granulate carinae. The other sternites bear two furrows.

Metasoma and telson (Figs. 149–154). All metasomal segments are sparsely hirsute. All metasomal segments of both sexes longer than wide. The segment I bears 10 carinae; segment II bears 8 or 10 carinae; segments III–IV bear 8 carinae; and segment V bears five carinae, three ventral and two dorsal. Dorsal carinae of metasomal segments bear larger terminal granules. Dorsal surface of metasoma smooth, but fourth and fifth segments bear 2 short, inconspicuous carinae each.

Pedipalps (Figs. 155–166). The pedipalps are sparsely hirsute and smooth. The femur bears four granulated carinae. The patella bears eight carinae, ventral and external are smooth, without granules and obsolete; dorsal and internal are granulate. The chela is without carinae. The movable fingers of pedipalps bear 14–15 rows of granules and six terminal granules.

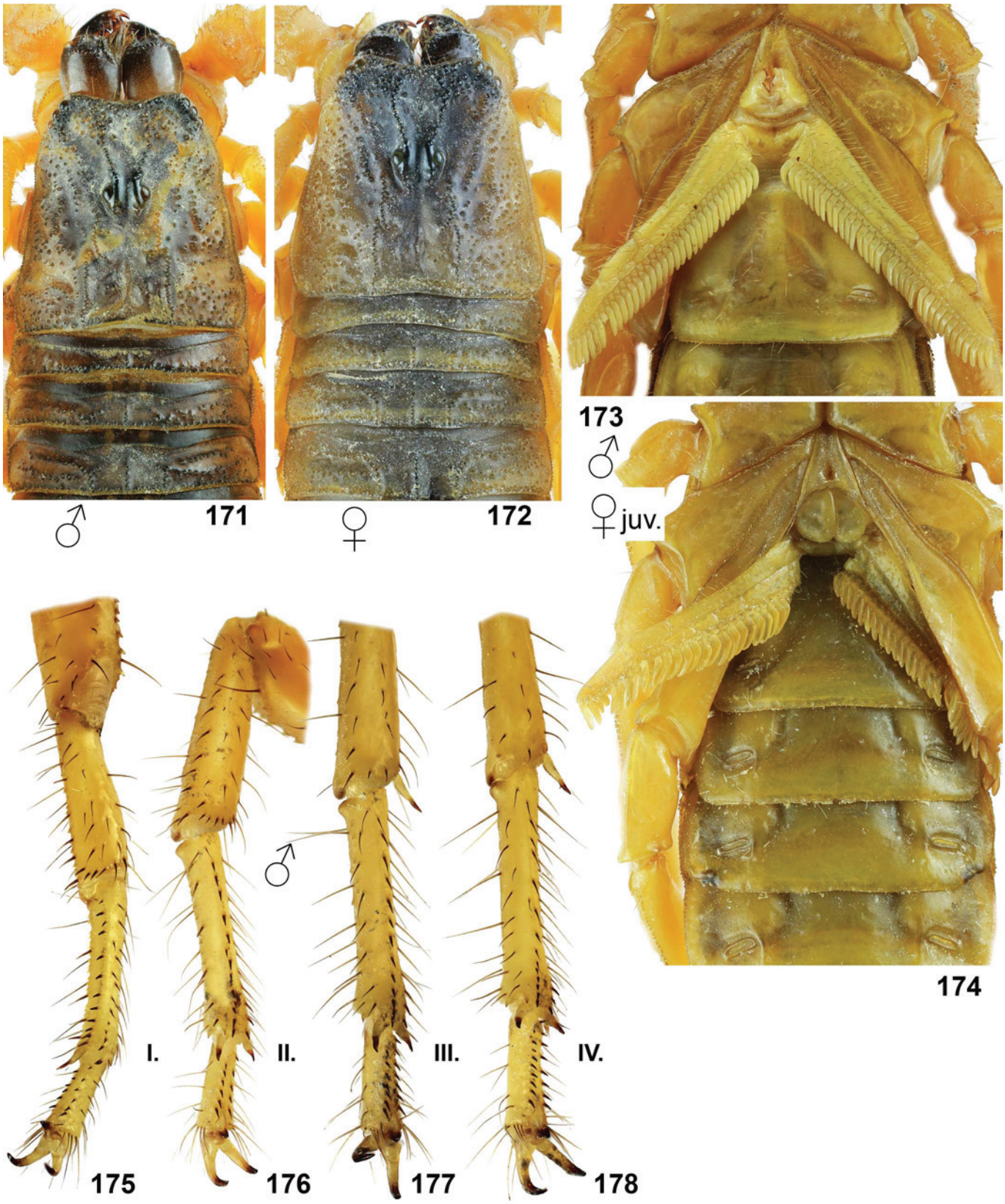
Legs (Figs. 175–178). The tarsomeres bear two rows of short and strong spiniform setae on the ventral surface and numerous macrosetae on the other surfaces. Pedal spur of legs without setae. Femur and patella with carinae indicated. Tibial spurs long on third and fourth legs and absent in the other legs.



Figures 145–**148**. *Hottentotta krivokhatskyi* **sp**. **n**. **Figures 145**–**146**. Holotype male, dorsal (145) and ventral (146) views. **Figures 147**–**148**. Paratype female juvenile, dorsal (147) and ventral (148) views. Scale bars = 10 mm.

Figures 149–154: *Hottentotta krivokhatskyi* **sp. n. Figures 149–151**. Holotype male, metasoma and telson, dorsal (149), ventral (150), and lateral (151) views. **Figures 152–154**. Paratype female, metasoma and telson, dorsal (152), ventral (153), and lateral (154) views. Scale bars = 10 mm.

Figures 155–**170**: *Hottentotta krivokhatskyi* **sp**. **n**. **Figures 155**–**156**, **170**. Paratype female juvenile, pedipalp chela dorsal (155) and external (156) views, telson lateral (170). **Figures 157**–**166**. Holotype male, pedipalp chela dorsal (157), external (158) and ventral (159) views, patella dorsal (160), external (161) and ventral (162) views, femur and trochanter ventral (163) and dorsal (164) views, movable (165) and fixed (166) fingers. The trichobothrial pattern is indicated in Figures 157–161, 164. **Figures 167**–**169**. Holotype male, right chelicera dorsal (167) and ventral (168) views, and telson lateral (169).



Figures 171–178: *Hottentotta krivokhatskyi* **sp. n. Figures 171**, **173**, **175–178**. Holotype male, chelicerae, carapace and tergites I–III (171), sternopectinal region and sternite III (173), and distal segments of legs I–IV (175–178), retrolateral view. **Figure 172**. Paratype female, chelicerae, carapace and tergites I–IV. **Figure 174**. Paratype female juvenile, sternopectinal region and sternite III–VI.

Affinities. The described features distinguish *H. krivokhatskyi* **sp**. **n**. from all other species of the genus. For distinguishing from other *Hottentotta* species, see key in Kovařík & Ojanguren Affilastro, 2013: 159–160.

H. krivokhatskyi **sp**. **n**. differs from the true *H. penjabensis* mainly in morphometric ratios (see Tables 1 and 3). *H. penjabensis* has metasoma I wider than long and in *H. krivokhatskyi* **sp**. **n**. all metasomal segments of both sexes are longer than wide (see Figs. 55–57 versus 149–154).

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