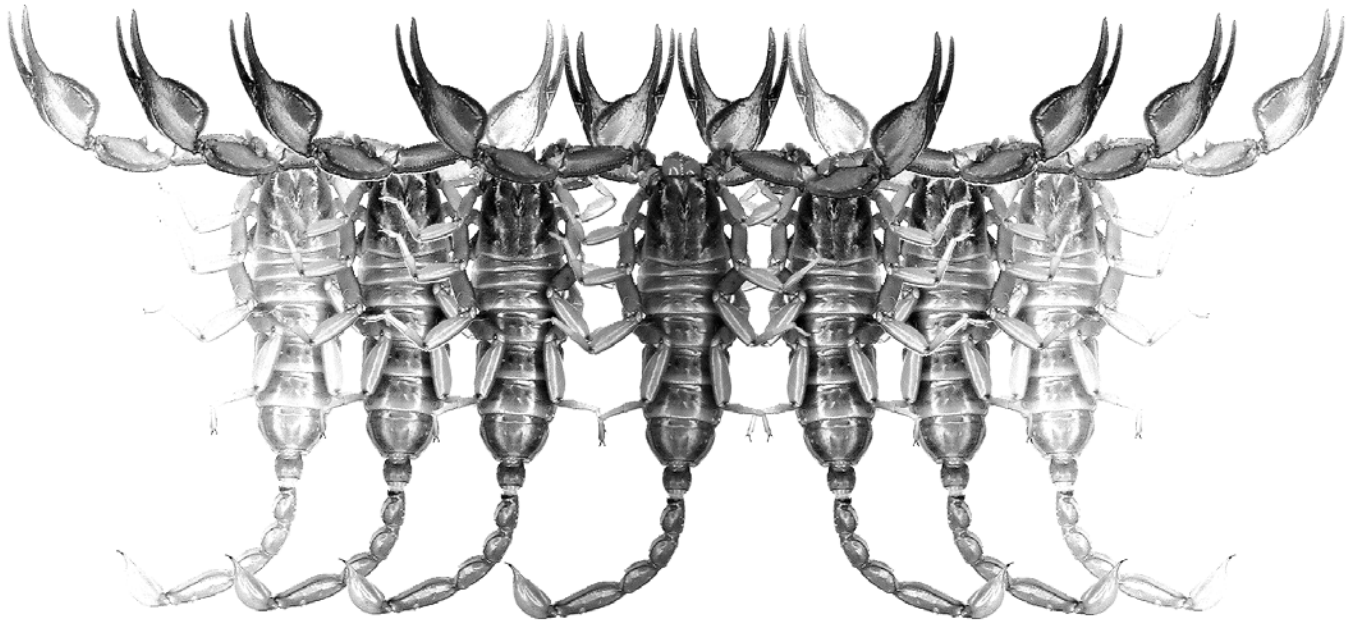


Euscorpius

Occasional Publications in Scorpiology



**A Revision of the Genus *Hottentotta* Birula, 1908, with
Descriptions of Four New Species (Scorpiones, Buthidae)**

František Kovařík

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Euscorpius

Occasional Publications in Scorpiology

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- **WAM**, Western Australian Museum, Perth, Australia
- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway

A revision of the genus *Hottentotta* Birula, 1908, with descriptions of four new species (Scorpiones, Buthidae)

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Summary

The genus *Hottentotta* is revised and a key to the species is provided. Subgenera *Balfourianus* Vachon, 1979 and *Deccanobuthus* Lourenço, 2000 are synonymized with the subgenus *Hottentotta* Birula, 1908. Four new species of *Hottentotta* are described: *H. finneganae* **sp. n.** from Pakistan, *H. jabalpurensis* **sp. n.** from India (Madhya Pradesh), *H. jalalabadensis* **sp. n.** from Afghanistan, and *H. stockwelli* **sp. n.** from India (Andhra Pradesh and Maharashtra). The following species and subspecies are synonymized: *Buthotus alticola kabulensis* (Vachon, 1958) with *H. buchariensis* (Birula, 1897) **comb. n.**; *Hottentotta caboverdensis* Lourenço & Ythier, 2006 with *H. hottentotta* (Fabricius, 1787); *H. acostai* Lourenço, 2004 with *H. minax* (L. Koch, 1875); *H. (Deccanobuthus) geffardi* Lourenço, 2000 with *H. pachyurus* (Pocock, 1897); *Buthus hendersoni* Pocock, 1900 with *H. rugiscutis* (Pocock, 1897); *Buthus tamulus concanensis* Pocock, 1900, *Buthus tamulus gangeticus* Pocock, 1900, *Buthus tamulus gujaratensis* Pocock, 1900 and *Buthus tamulus indicus* Pocock, 1900 with *H. tamulus* (Fabricius, 1798). *H. buchariensis* (Birula, 1897) **comb. n.**, *H. gentili* (Pallary, 1924) **comb. n.**, *H. penjabensis* (Birula, 1897) **comb. n.**, and *H. salei* (Vachon, 1980) **comb. n.** are recognized as valid species. Lectotypes are designated for *Buthus alticola buchariensis* Birula, 1897; *Buthus (Hottentotta) franzwerneri* Birula, 1914; *Buthus hendersoni* Pocock, 1900; *Buthus jayakari* Pocock, 1895; *Buthus pachyurus* Pocock, 1897; *Buthus rugiscutis* Pocock, 1897; *Androctonus (Prionurus) scaber* Ehrenberg, 1828; *Buthus tamulus concanensis* Pocock, 1900; *Buthus tamulus gangeticus* Pocock, 1900; *Buthus tamulus gujaratensis* Pocock, 1900; and *Buthus tamulus indicus* Pocock, 1900. Neotypes are designated for *Scorpio hottentotta* Fabricius, 1787 and *Scorpio tamulus* Fabricius, 1798. *H. buchariensis* (Birula, 1897) **comb. n.** is for the first time recorded from Pakistan, and *H. salei* (Vachon, 1980) **comb. n.** from the United Arab Emirates and Yemen. *Buthus syrticus* Borelli, 1914 from Syria is considered a *nomen dubium*.

Introduction

Hottentotta is one of the most widely distributed genera of the family Buthidae, with species present throughout Africa, the Arabian Peninsula, and in Asia to Pakistan and India. It is perhaps the main reason why this genus has never been revised and published data are scattered in many short, often faunistically oriented articles. The most extensive work, dealing with African species, was published by Vachon & Stockmann (1968). Pocock published a series of papers on the Asian species between 1889 and 1903, and Tikader & Bastawade (1983) concentrated on the Indian species, which however due to lack of comparisons with taxa from other regions they transferred to the genus *Mesobuthus* and did not even compare them with species today assigned to *Mesobuthus*. This led to problems in defining *Hottentotta*, described as a subgenus by Birula (1908). Most citations are linked with its synonym *Buthotus* Vachon, 1949, which was used for all species of *Hottentotta* Birula until 1985. More recent treatments of various populations led to formation of two other subgenera, *Buthotus (Balfourianus)* Vachon, 1979 (with the type species *Buthus socotrensis* Pocock, 1889) and

Hottentotta (Deccanobuthus) Lourenço, 2000 (with the type species *Hottentotta geffardi* Lourenço, 2000).

It is possible to trace several complexes of *Hottentotta* that, without knowledge of other species, look like separate subgenera. However, a comprehensive study of all the species leads me to conclude that subgeneric divisions of *Hottentotta* are not justified. It is clear that *Hottentotta* is close to *Mesobuthus*, and only a future revision of the latter will enable us to more accurately determine the mutual relationship of these two genera.

The noted historical problems are reflected in published catalogues, which often contain species records only by country, without any data on localities and deposition of voucher specimens that would enable verification. In this revision such country records are included with the stipulation that the occurrence must be considered dubious. The same applies to some isolated older records for which accidentally switched or otherwise erroneous locality labels are a distinct possibility.

ABBREVIATIONS. The institutional abbreviations listed below and used throughout are mostly after Arnett et al. (1993).

BMNH – The Natural History Museum, London, United Kingdom;
 CASC – California Academy of Sciences, San Francisco, California, USA;
 FKCP – František Kovařík Collection, Praha, Czech Republic;
 HNHM – Hungarian Natural History Museum, Budapest, Hungary;
 JBCP – Jan Batelka Collection, Praha, Czech Republic;
 MCSN – Museo Civico de Storia Naturale "Giacomo Doria", Genua, Italy;
 MMBC – Moravian Museum, Brno, Czech Republic;
 MNHN – Muséum National d'Histoire Naturelle, Paris, France;
 MZUF – Museo Zoologico de "La Specola", Firenze, Italy;
 NHMW – Naturhistorisches Museum Wien, Vienna, Austria;
 NMPC – National Museum (Natural History), Praha, Czech Republic;
 NRHS – National Museum of Natural History, Leiden, Netherlands;
 SAMC – South African Museum, Cape Town, South Africa;
 SMFD – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany;
 ZISP – Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia;
 ZMHB – Museum für Naturkunde der Humboldt-Universität zu Berlin, Germany;
 ZMUH – Zoologisches Institut und Zoologisches Museum, Universität Hamburg, Germany.

Systematics

Hottentotta Birula, 1908
 (Figs. 1–153, Table 1)

Androctonus: C. L. Koch, 1838a: 45 (in part).

Buthus: Kraepelin, 1898: 3; Kraepelin, 1899: 9; Pocock, 1903a: 178.

Buthus (in part): Thorell, 1876: 103; Kraepelin, 1891: 185; Kraepelin, 1895: 80; Pocock, 1897a: 104; Pocock, 1899: 834; Pocock, 1900b: 56; Pocock, 1900a: 13; Kraepelin, 1903: 558; Kraepelin, 1913: 123; Werner, 1934: 269.

Buthus (*Buthus*) (in part): Pocock, 1890a: 126; Birula, 1897: 377.

Buthus (*Hottentotta*) Birula, 1908: 141; Birula, 1917: 22; Simon, 1910: 71 (in part).

Hottentotta: Werner, 1934: 269; Fet, 1989: 81; Sissom, 1990: 101; Fet & Lowe, 2000: 133.

= *Dasyscorpia* Pallary, 1938: 279; type species *Buthus* (*Hottentotta*) *lutaui* Pallary, 1924 [= *Hottentotta*

franzwernerii (Birula, 1914)] (syn. by Vachon, 1949: 146).

= *Buthus* Vachon, 1949: 143 (1952: 229); type species *Buthus judaicus* Simon, 1872 [= *Hottentotta judaicus* (Simon, 1872)]; Pérez Minocci, 1974: 20; Vachon, 1979: 233; Tikader & Bastawade, 1983: 164 (syn. by Francke, 1985: 4).

Buthus (*Buthus*): Vachon, 1979: 236.

Hottentotta (*Hottentotta*): Francke, 1985: 4.

= *Buthus* (*Balfourianus*) Vachon, 1979: 236; type species *Buthus socotrensis* Pocock, 1889 [= *Hottentotta socotrensis* (Pocock, 1889)]. **Syn. n.**

Hottentotta (*Balfourianus*): Francke, 1985: 4; Fet & Lowe, 2000: 145.

= *Hottentotta* (*Deccanobuthus*) Lourenço, 2000: 192; type species *Hottentotta geffardi* Lourenço, 2000: 192 [= *Hottentotta pachyurus* (Pocock, 1897)]. **Syn. n.**

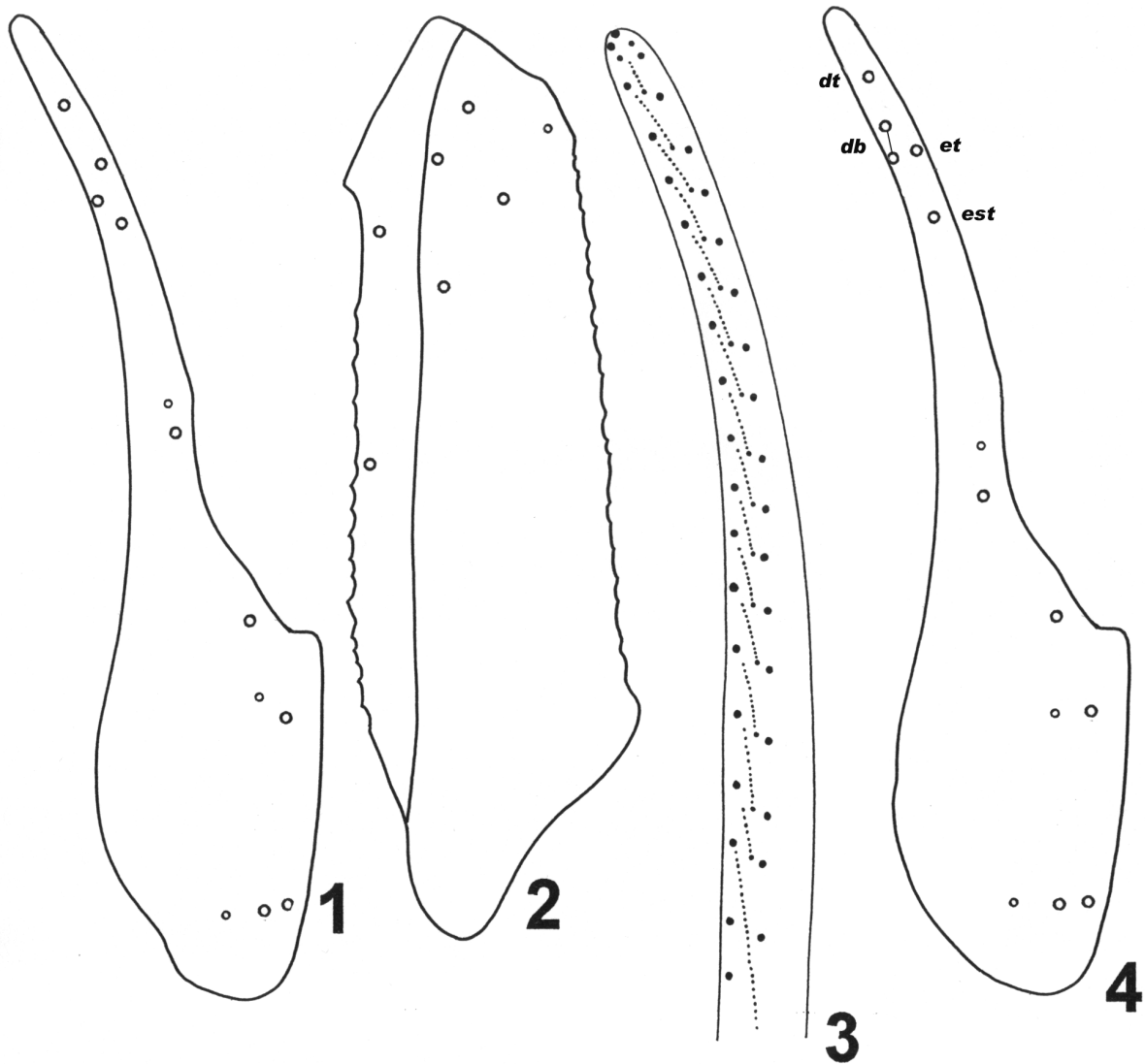
Mesobuthus: Tikader & Bastawade, 1983: 186.

TYPE SPECIES. *Scorpio hottentotta* Fabricius, 1787.

DIAGNOSIS: Dorsal trichobothria of femur arranged in beta-configuration with d_2 situated on dorsal surface. Trichobothrium d_3 of patella situated dorsal of dorso-median carina. Trichobothrium db on the fixed finger of pedipalp 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 rows and 5–7 terminal granules. Cheliceral fixed finger with two ventral accessory denticles. Tergites I–VI of mesosoma bear three carinae. Carapace with distinct carinae, entire dorsal surface nearly planate. Third and fourth legs with well developed tibial spurs, first and second tarsomeres with paired ventral setae. First sternite with two granulated lateral stridulatory areas, which however may be reduced in some species (e. g. in *H. pachyurus* and *H. trilineatus*). Ventrolateral carinae of fifth metasomal segment with all granules more or less equal in size and never lobate. Total length 30–130 mm.

COMMENTS. Most *Hottentotta* species are morphologically and colorwise sufficiently distinct and their distributions rarely overlap, which makes identifications relatively easy. In contrast, generic-level characters remain to be clearly defined, which has caused erroneous transfers of Indian species to the genus *Mesobuthus* and the creation of two subgenera that are hereby synonymized.

The genera *Hottentotta* and *Mesobuthus* have been often separated on unstable characters such as density of pubescence, shape (lyriform configuration) and definition of carinae on the carapace, and the number of terminal granules on movable fingers of pedipalps. It



Figures 1–4: 1–3. *H. zagrosensis*, holotype. 1. chela external, 2. femur dorsal, 3. movable finger. 4. *H. socotrensis*, chela external.

appears that the stable character that permits a clearcut separation of the two genera is the position of trichobothrium *db* on the fixed finger of pedipalp in relation to trichobothrium *est*. In *Hottentotta* the trichobothrium *db* is between *est* and *et* (Figs. 1 and 4), whereas in *Mesobuthus* it is always between *est* and *esb* (see fig. 3 in Vachon, 1958: 127). Vachon & Stockmann (1968: 102, figs. 18 and 19) found variation in the position of this trichobothrium in the African species *H. minax occidentalis*, in which one specimen had the *db* on the fixed finger between *est* and *esb*, and another had it between *est* and *et*. I found the same variation in another African species, *H. trilineatus*. Here it is important to note that the genus *Mesobuthus* is not known to occur in Africa. I therefore believe that the position of trichobothrium *db* is a reliable primary

character for distinguishing between *Hottentotta* and *Mesobuthus*, and that any possible exceptions can be satisfactorily resolved by other, secondary characters (*Hottentotta* has ventrolateral carinae on the fifth metasomal segment with all granules more or less equal in size and never lobate and different carination of the carapace).

Vachon (1978: 236) erected the subgenus *Balfourianus* with the type species *Buthus socotrensis* Pocock, 1889 and again used as the chief character the position of trichobothrium *db*, this time in relation to trichobothrium *et* (see figs. 7 and 8 in Vachon, 1978: 236). I had an opportunity to examine many specimens of this species and found that in some specimens the trichobothrium *db* is between trichobothria *et* and *dt*, as Vachon says, but in other specimens it is on the same



Figures 5–8: Carapace and chelicerae. **5.** *H. buchariensis*, female from Afghanistan, prov. Kabul, Poli Charky, FKCP. **6.** *H. conspersus*, male from Angola, Naulila env., FKCP. **7.** *H. franzwerner*, male lectotype. **8.** *H. gentili*, female from Morocco, Bouizakame, Timoulye, FKCP.



Figures 9–12: Carapace and chelicerae. **9.** *H. hottentotta*, female from Ghana, FKCP. **10.** *H. hottentotta*, male from Burkina Faso (Volta Haute), Garango, 11°48'N 00°33'W, SMFD No. 39339. **11.** *H. jalalabadensis*, sp. nov., female paratype. **12.** *H. jayakari*, female from Oman, Wadi Bani Auf, on Salma Rd, shale scree in wadi, 23°13'N 57°22'E, FKCP.



Figures 13–16: Carapace and chelicerae. **13.** *H. judaicus*, female from Jordan, Zoubia, FKCP. **14.** *H. niloticus*, male from Sudan, Khartoum, Sunt Forest, FKCP. **15.** *H. pachyurus*, female from India, Tamil Nadu, Deccan, FKCP. **16.** *H. polystictus*, female from Kenya, North Horr, FKCP.



Figures 17–20: Carapace and chelicerae. **17.** *H. saulcyi*, female from Iran, prov. Bachtarán, Bisotul, 34°23'31"N 47°26'05"E, FKCP. **18.** *H. schach*, female from Iran, prov. Fars, 10 km E of Sivand vill., FKCP. **19.** *H. tamulus*, female from India, Maharashtra, Bombay, FKCP. **20.** *H. trilineatus*, male from Tanzania, Arusha distr., Naberera env., FKCP.

level as *et* (Fig. 4). *H. socotrensis* is morphologically similar to Afghan and Pakistan species (*H. alticola* complex), and I am not convinced that it deserves to be placed in a separate subgenus. There definitely are other, more distinct groups of *Hottentotta*, for instance the south African *H. arenaceus* and *H. conspersus* with extremely inflated vesicles (Fig. 28), or large and densely hirsute Asian species (e.g. *H. schach*, Fig. 105) versus smaller and much less hirsute but conspicuously granulate species that occur in both Africa and Asia (Figs. 121 and 77). For these reasons I consider the subgenus *Balfourianus* synonymous with the nominotypical subgenus. It is important to note that *H. socotrensis* is not the only species of the genus which has the trichobothrium *db* situated between trichobothria *et* and *dt*. The same position of trichobothrium *db* occurs in two South African species, *H. arenaceus* and *H. conspersus* (fig. 45 in Lamoral, 1979: 543 and diagnosis below), which are morphologically very different from *H. socotrensis*. Already noted have been the extremely inflated vesicles, and another difference is in the expression of sexual dimorphism.

Lourenço (2000: 192) erected the subgenus *Deccanobuthus* with the type species *Hottentotta* (*Deccanobuthus*) *geffardi* Lourenço, 2000 and characterized the subgenus by:

(1) “**The keels of the carapace are feeble; the anterior median being almost absent**”. This is a gradational, hard-to-evaluate character without much of taxonomic value. I have examined the holotype of *H. (D.) geffardi* Lourenço, 2000 and disagree that the carinae (keels) of the carapace are feeble (Fig. 79).

(2) “**The dentition on the distal part of pedipalpal-chela movable finger, present four terminal denticles**”. The holotype of *H. (D.) geffardi* has five terminal denticles (granules) on both movable fingers of pedipalps (Fig. 3).

This discrepancy in interpretation is evidently due to the way in which terminal granules have been counted. Some authors considered the presence of the so-called terminal granule (which they called “terminal denticle”) natural and counted only the other granules, which they called simply “granules” (for example Sissom, 1990: 98 and 100). For clarity, I give the total number of granules. However, the noted discrepancy does not change the fact that in *Hottentotta* we can find specimens that have five (four and one) terminal granules, but none that would have only four (three and one – which is characteristic of the genus *Buthus*) terminal granules (see Sissom, 1990: 98 and 100). The variation in the number of granules thus is exclusively upward, when in some species apart from specimens with five granules there are also specimens with six or seven granules (always one basal terminal granule, two internal terminal granules and a row from two to four external terminal granules).

(3) “**Metasomal segment I with 12 keels; II to IV with 10 keels and V with 7 keels**”.

The fifth metasomal segment with seven carinae, of which five are ventral (three median and two lateral), is the usual condition also in other species including e. g. *H. socotrensis*, that is in the so far accepted subgenus *Balfourianus* (Fig. 111). Unfortunately, this character cannot be utilized even on the species level because the ventral carinae are poorly developed in some specimens and the variation in their development cannot be attributed to sexual dimorphism. As to the 12 keels (carinae) on the first metasomal segment, Vachon (1978: 235) wrote of *H. socotrensis*: “According to R. I. Pocock (1903), because of the presence of a paired keel on the upper surface of the segment, the fourth segment bears 12 keels (which is unusual). Its existence could be settled. The keel consists of a row of granulae which may also occur (but less regularly) on the dorsal groove of almost all the segments, including the last one. It seems not to be a true keel.” A similar situation can be seen in the holotype of *H. (D.) geffardi*, where two carinae on the first metasomal segment are incomplete and consist of only a few granules; the same condition is present also in *H. pachyurus* (Pocock, 1897).

Finally it needs to be noted that when proposing *H. (D.) geffardi*, Lourenço accepted that all Indian species of *Hottentotta* belong in *Mesobuthus* and, therefore, did not compare the new species with any of them. Upon examination of his holotype I am convinced that *H. (D.) geffardi* Lourenço, 2000 is a synonym of *H. pachyurus* (Pocock, 1897) (see below). I therefore conclude that the subgenus *Deccanobuthus* is synonymous with the nominotypical subgenus.

Fet & Lowe (2000: 134) considered the generic name *Hottentotta* a masculine noun in apposition. This name was used as a species epithet for *Scorpio* by Fabricius and for *Buthus* or *Buthotus* by most of subsequent authors (except Gervais, 1844, who changed it to *hottentottus*).

List of species-group names in the genus

Hottentotta Birula, 1908

Hottentotta alticola (Pocock, 1895)

Hottentotta alticola minusalta (Vachon, 1958)

Hottentotta alticola nigrifrons (Pocock, 1900)

Hottentotta arenaceus (Purcell, 1902)

Hottentotta buchariensis (Birula, 1897) **comb. n.**

= *Buthotus alticola kabulensis* (Vachon, 1958) **syn. n.**

Hottentotta conspersus (Thorell, 1876)

= *Buthus conspersus aeratus* Lawrence, 1927 (syn. by Lamoral, 1979).

= *Buthus angolensis* Monard, 1930 (syn. by Vachon & Stockmann, 1968).

Hottentotta finneganae sp. n.

Hottentotta franzwernerii (Birula, 1914)

		<i>H. finneganae</i> sp. n.	<i>H. jabalpurensis</i> sp. n.	<i>H. jalalabadensis</i> sp. n.	<i>H. stockwelli</i> sp. n.			
		male HT	male HT	female AT	male HT	female AT	male AT	female HT
Total	length	53.8	60	65	87	88	41.2	50
Carapace	length	5.7	6.6	7.3	9.2	10.7	4.7	6.2
	width	5.8	6.9	8.5	9.3	11.5	4.7	7.1
Metasoma								
and telson	length	31.0	36.1	36.6	51.9	53	24.7	31.1
segment I	length	3.7	4.7	4.5	6.4	6.7	2.8	3.5
	width	3.9	4.6	4.8	6.7	8.0	3.0	4.1
segment II	length	4.2	5.4	5.1	7.5	7.7	3.2	4.1
	width	3.9	4.2	4.5	6.3	7.8	2.9	3.8
segment III	length	4.6	5.5	5.5	7.8	8.0	3.4	4.3
	width	3.9	4.1	4.4	5.6	7.1	2.8	3.7
segment IV	length	5.2	6.3	6.5	9.0	8.9	4.1	5.3
	width	3.9	3.9	4.1	5.0	6.1	2.7	3.7
segment V	length	6.5	7.2	7.1	10.6	10.7	5.4	6.7
	width	3.7	3.9	4.0	5.1	5.5	2.7	3.7
telson	length	6.5	7.0	7.6	10.1	10.5	5.4	6.9
Pedipalp								
femur	length	4.7	6.1	6.0	9.6	9.6	4.0	5.2
	width	1.6	1.9	1.9	2.5	2.8	1.2	1.5
patella	length	5.9	7.5	7.0	10.9	10.6	4.9	6.4
	width	2.1	2.6	2.7	3.3	3.7	1.8	2.5
tibia	length	9.9	12.2	11.9	18.5	17.6	8.5	10.2
	width	2.5	3.5	2.3	4.1	3.9	2.4	2.3
finger mov.	length	6.2	7.4	8.0	12.0	12.4	5.2	6.8
Pectinal teeth		25:26	31:32	26:29	35:35	26:26	25:24	24:24

Table 1: Measurements (in millimeters) of type specimens of new *Hottentotta* species. Note, “metasoma and telson length” includes intersegment membranes.

= *Buthus (Hottentotta) lutaui* Pallary, 1924 (syn. by Vachon, 1949).

***Hottentotta gentili* (Pallary, 1924) comb. n.**

= *Hottentotta gentili tazerouallensis* Pallary, 1937 (syn. by Vachon, 1949).

***Hottentotta hottentotta* (Fabricius, 1787)**

Hottentotta hottentotta nigrocarinatus (Simon, 1874)

= *Androctonus margarelon* C. L. Koch, 1838 (syn. by Kraepelin, 1891).

= *Androctonus pandarus* C. L. Koch, 1838 (syn. by Simon, 1885).

= ? *Androctonus panopeus* C. L. Koch, 1839 (syn. by Kraepelin, 1899).

= *Androctonus thessandrus* C. L. Koch, 1840 (syn. by Kraepelin, 1891).

= *Hottentotta caboverdensis* Lourenço & Ythier, 2006 **syn. n.**

***Hottentotta jabalpurensis* sp. n.**

***Hottentotta jalalabadensis* sp. n.**

***Hottentotta jayakari* (Pocock, 1895)**

***Hottentotta judaicus* (Simon, 1872)**

= *Buthus hedenborgii* Thorell, 1876 (syn. by Simon, 1879).

***Hottentotta minax* (L. Koch, 1875)**

Hottentotta minax occidentalis (Vachon & Stockmann, 1968)

= *Buthus isselii* Pavesi, 1883 (*nomen nudum*) (syn. by Pavesi, 1895).

= *Buthus hottentotta tigrinus* Caporiacco, 1937 (syn. by Kovařík, 2003).

= *Hottentotta acostai* Lourenço, 2004 **syn. n.**

***Hottentotta niloticus* (Birula, 1928)**

***Hottentotta pachyurus* (Pocock, 1897)**

= *Hemibuthus kraepelini* Roewer, 1943 (syn. by Kovařík, 1999).

= *Hottentotta (Deccanobuthus) geffardi* Lourenço, 2000 **syn. n.**

***Hottentotta penjabensis* (Birula, 1897) comb. n.**

***Hottentotta polysiactis* (Pocock, 1896)**

***Hottentotta rugiscutis* (Pocock, 1897)**

= *Buthus hendersoni* Pocock, 1900 **syn. n.**

= *Buthus rugiscutis nigritus* Pocock, 1900 (syn. by Tikader & Bastawade, 1983).

***Hottentotta salei* (Vachon, 1980) comb. n.**

***Hottentotta sauleyi* (Simon, 1880)**

***Hottentotta scaber* (Ehrenberg, 1828)**

= *Buthus dimidiatus* Simon, 1882 (syn. by Pocock, 1891).

Hottentotta schach (Birula, 1905)

Hottentotta socotrensensis (Pocock, 1889)

Hottentotta stockwelli sp. n.

Hottentotta tamulus (Fabricius, 1798)

= *Buthus tamulus concanensis* Pocock, 1900 **syn. n.**

= *Buthus tamulus indicus* Pocock, 1900 **syn. n.**

= *Buthus tamulus gujaratensis* Pocock, 1900 **syn. n.**

= *Buthus tamulus gangeticus* Pocock, 1900 **syn. n.**

Hottentotta trilineatus (Peters, 1861)

= *Buthus eminii* Pocock, 1890 (syn. by Kraepelin, 1899).

= *Buthus trilineatus fuscatus* Masi, 1912 (syn. by Vachon & Stockmann, 1968).

= *Buthus fuscitruncus* Caporiacco, 1936 (syn. by Kovařík, 2003: 140).

Hottentotta zagrosensis Kovařík, 1997

Hottentotta alticola (Pocock, 1895)

(Figs. 21–22)

Buthus alticola Pocock, 1895: 302; Birula, 1897: 377; Kraepelin, 1899: 21; Pocock, 1900a: 21; Birula, 1905: 136; Kraepelin, 1913: 127; Takashima, 1945: 76; ? Mani, 1959: 11.

Buthus (Hottentotta) alticola: Birula, 1917: 214.

Buthotus alticola: Vachon, 1949: 147 (1952: 233); Serfaty & Vachon, 1950: 215; Alexander, 1957: 531; Vachon, 1958: 129; Vachon & Stockmann, 1968: 91; Pérez Minocci, 1974: 21; Francke & Sissom, 1984: 12; Farzanpay, 1988: 37.

Hottentotta alticola: Fet, 1989: 81; Khatoon, 1999: 211.

Hottentotta (Hottentotta) alticola: Kovařík, 1998: 109; Fet & Lowe, 2000: 134.

Buthus alticola forma alpha (typica): Birula, 1897: 382.

Buthus alticola (typicus): Kraepelin, 1899: 21.

Buthus (Hottentotta) alticola alticola: Birula, 1914: 654; Birula, 1917: 240; Fet & Lowe, 2000: 135.

Buthotus alticola alticola: Vachon, 1958: 135.

Buthotus alticola minusalta Vachon, 1958: 138; Pérez Minocci, 1974: 21; Vachon & Kinzelbach, 1987: 102.

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

Buthus nigrifrons Pocock, 1900a: 22; Kraepelin, 1913: 127; Pérez Minocci, 1974: 43.

Buthus (Hottentotta) nigrifrons: Birula, 1914: 654; Birula, 1917: 214, 241.

Buthotus alticola nigrifrons: Vachon, 1958: 134–135.

Hottentotta (Hottentotta) alticola nigrifrons: Kovařík, 1998: 109; Fet & Lowe, 2000: 136.

Hottentotta alticola nigrifrons: Capes & Fet, 2001: 303.

TYPE LOCALITY AND TYPE REPOSITORY. Chitrāl, now Pakistan; BMNH.

MATERIAL EXAMINED. **Pakistan**, Chitrāl, VI.2006, 1♂ (Figs. 21–22), leg. Zubair Ahmed, FKCP; Kalash

valleys, Bumburet valley, Brun vill., 5.VIII.1998, 1♂1♀, leg. L. Černý, FKCP.

DIAGNOSIS. Total length 70–90 mm. For habitus see Figs. 21–22. Trichobothrium *db* on the fixed finger of pedipalp situated between trichobothria *et* and *est* (Fig. 1). Chelicerae yellow to black, reticulate. Male with slightly longer and narrower metasomal segments, width of pedipalp chela same in both sexes. Pectinal teeth number 28–29 in males, 24–26 in females. Pedipalps and metasoma sparsely hirsute. The hairs on patella of pedipalps are long. Carapace and mesosoma black except seventh tergite that may be black. First to third metasomal segments brown, first usually lighter than third, fifth segment and telson entirely black. Pedipalps yellow to brown, chela usually slightly darker than femur. Legs yellow, rarely yellowish brown. 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 terminal granules. Seventh metasomal segment with 4 well marked ventral carinae. First metasomal segment with 10 carinae; second and third segments with 8 or 10 carinae; fourth segment with 8 carinae; fifth segment with 5 carinae, 3 ventral (1 median, 2 lateral) and 2 dorsal. Dorsal carinae on metasomal segments bear larger terminal granules. Spaces between carinae of metasomal segments on ventral and lateral surfaces rugate and usually granulate. Dorsal surface smooth, but metasomal segments usually bear 2 short, inconspicuous carinae (see fig. 19 in Vachon, 1958: 137). First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.1.

COMMENTS. Unfortunately, I have not been able to see any specimens of *H. alticola minusalta* (Vachon, 1958) (type locality and type repository: Afghanistan, Herat, Lashkari-Bazar, Dilaram; MNHN), because MNHN would not lend types (see Kovařík, 2004: 27) and no other specimens are known. Therefore, data in the diagnosis and key below describe only examined specimens of *H. alticola alticola* from Pakistan. It is possible that a future examination of types of *H. alticola minusalta* reveals this taxon to be a separate species, not just a subspecies. The black telson links this taxon with *H. alticola alticola* and at the same time differentiates it from all other taxa of the *H. alticola* complex, which are here elevated to species.

Regrettably, I have not been able to see any specimens of *H. alticola nigrifrons* (Pocock, 1900) (type locality and type repository: Pakistan, Northern Baluchistan; BMNH), because its types cannot be found and no other specimens are known. Therefore, the data in the diagnosis and key below describe only examined specimens of *H. alticola alticola* from Pakistan. It is possible that a future examination of types of *H. alticola*



Figure 21: *Hottentotta alticola*, dorsal view, male from Pakistan, Chitrāl, FKCP.



Figure 22: *Hottentotta alticola*, ventral view, male from Pakistan, Chitrāl, FKCP.

nigrifrons reveals this taxon to be a separate species or a synonym of *H. penjabensis* (Birula, 1897) comb. n. *Buthus nigrifrons* was based on a 58 mm long female (Pocock, 1900a: 22–23) and Pocock distinguished it from *H. alticola alticola* by color (see Pocock, 1900a: 15).

DISTRIBUTION: Afghanistan (see Vachon, 1958: 138 for *H. alticola minusalta*), Pakistan (see Pocock, 1895: 302 for *H. alticola alticola* and Pocock, 1900a: 23 for *H. alticola nigrifrons*). Some records from Afghanistan, Iran and Pakistan should be understood only as referring to *H. alticola* complex. The one record for India (Mani, 1959: 11) must be considered incorrect.

***Hottentotta arenaceus* (Purcell, 1902)**

Buthus arenaceus Purcell, 1902: 137; Kraepelin, 1914: 109; Hewitt, 1918: 104; Lawrence, 1927: 71; Lawrence, 1955: 225; Lawrence, 1972: 8.
Buthotus arenaceus: Vachon & Stockmann, 1968: 97; Lamoral & Reynders, 1975: 500; Lamoral, 1979: 541.
Hottentotta (Hottentotta) arenaceus: Kovařík, 1998: 110.
Hottentotta arenaceus: Fet & Lowe, 2000: 136; Leeming, 2003: 48; Prendini, 2005: 66.

TYPE LOCALITY AND TYPE REPOSITORY. RSA, between Henkries and Wolftoon, Little Bushmanland, Namaqualand; SAMC.

DIAGNOSIS. Total length 32 mm (male) to 43 mm (female). Trichobothrium *db* on the fixed finger of pedipalp situated between trichobothria *et* and *dt*, close to or on level with *et*. Sexual dimorphism not readily apparent, width of pedipalp chela same in both sexes. Pectinal teeth number 21–24 in males, 16–19 in females. Entire body only very sparsely hirsute, especially metasomal segments. Color yellow to yellowish brown. Carinae on mesosoma and metasoma may be black. Chelicerae yellow, without reticulation, only tips of teeth on fingers of chelicerae are black. Femur of pedipalp with five carinae, patella with eight carinae. Chela very narrow and with dorsal carinae incomplete. Seventh metasomal segment with 4 well defined ventral carinae. First to fourth metasomal segments with 10 carinae. Fifth metasomal segment with 5 carinae. First metasomal segment width to length ratio 0.95–1.05 in males, 1.03–1.14 in females. Telson extremely bulbous.

COMMENTS. I have not been able to examine any specimens of this species. The above diagnosis is primarily after Lamoral (1979: 541–548), who adequately defined it. In contrast to Asian species, south African species of *Hottentotta* do not present taxonomic problems. This species can be confused only with *H.*

conspersus, which may be regarded as its sister species. Both species are very well characterized by the telson, which is extremely bulbous. *H. arenaceus* is smaller than *H. conspersus*, reaching at most 43 mm; a male only 32 mm long (see Lamoral, 1979: 541) is together with males of *H. rugiscutis* from India, of which the smallest in my collection (FKCP) measures 30 mm, the smallest adult specimen recorded for the genus.

DISTRIBUTION: Namibia (Kraepelin, 1914: 109), South Africa (Purcell, 1902: 139).

***Hottentotta buchariensis* (Birula, 1897) comb. n.**
 (Figs. 5, 23–25)

Buthus alticola buchariensis Birula, 1897: 378; Kraepelin, 1899: 21; Birula, 1904: 30.
Buthus alticola forma gamma (*buchariensis*): Birula, 1897: 382.
Buthus (Hottentotta) alticola buchariensis: Birula, 1914: 654; Birula, 1917: 240.
Hottentotta alticola buchariensis: Fet, 1989: 82.
Buthotus alticola buchariensis: Vachon, 1958: 134.
Buthotus buchariensis: Vachon, 1949: 147 (1952: 233); Vachon & Stockmann, 1968: 91; Pérez Minocci, 1974: 21.
Hottentotta (Hottentotta) alticola buchariensis: Kovařík, 1998: 109; Fet & Lowe, 2000: 135.
 = *Buthotus alticola kabulensis* Vachon, 1958: 136; Pérez Minocci, 1974: 21; Vachon & Kinzelbach, 1987: 102.
Syn. n.
Hottentotta (Hottentotta) alticola kabulensis: Kovařík, 1998: 109; Fet & Lowe, 2000: 135.
Hottentotta alticola: Kovařík, 1993: 201 (in part); Kovařík, 2002: 7.

TYPE LOCALITY AND TYPE REPOSITORY. Regar (now Tursunzoda), Tajikistan; ZISP.

TYPE MATERIAL EXAMINED. **Tajikistan** [formerly Buchará], Dushanbe region, Regar (now Tursunzoda), 1887, 1♂ (lectotype hereby designated, Fig. 25), leg. Lidski, ZISP No. 210.

OTHER MATERIAL EXAMINED. **Afghanistan**, Kabul, 1962, 1♂(im.), FKCP; prov. Kabul, Poli Charky, 1♂1♀, FKCP, 1♂1♀(Figs. 5, 23–24), MMBC, 25.XI.1966, leg. Šimek; Kabul, 1800 m., collected at night around houses and garages, VII–IX.1977, 4♂2♀2juvs., collector unknown, CASC; Kabul, VIII.1987, 1♂, leg. Turtervaldová, FKCP. **Pakistan**, 1 mi E Saidu Sharif, Swat State, 8.III.1959, 2juvs., leg. S. Minton, CASC.

DIAGNOSIS. Total length 65–90 mm. For habitus see Figs. 23–25 and fig. 10 in Vachon (1959: 130). Trichobothrium *db* on the fixed finger of pedipalp



Figure 23: *Hottentotta buchariensis*, dorsal view, male from Afghanistan, prov. Kabul, Poli Charky, FKCP.



Figure 24: *Hottentotta buchariensis*, dorsal view, female from Afghanistan, prov. Kabul, Poli Charky, FKCP.

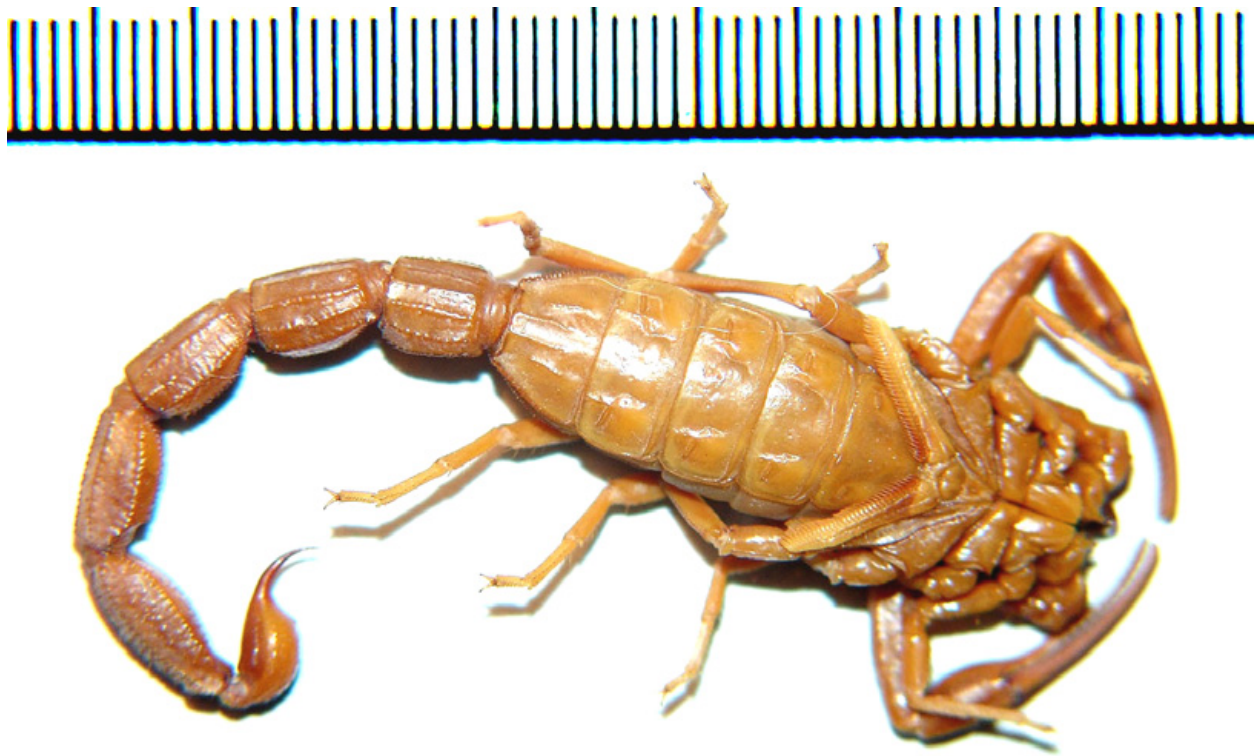


Figure 25: *Hottentotta buchariensis*, ventral view, male lectotype.

situated between trichobothria *et* and *est* (Fig. 1). Chelicerae yellow to black, reticulate. Male with longer and narrower metasomal segments, width of pedipalp chela same in both sexes. Pectinal teeth number 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 metasomal segment with 4 well marked ventral granulated carinae. First metasomal segment with 10 carinae; second and third segments with 8 or 10 carinae; fourth segment with 8 carinae; fifth segment with 5 carinae, 3 ventral (1 median, 2 lateral) and 2 dorsal. Dorsal carinae of metasomal segments bear larger terminal granules. Spaces between carinae of metasomal segments on ventral and lateral surfaces usually smooth, without granules (except ventral surface of fifth metasomal segment). Dorsal surfaces of first through fourth metasomal segments smooth, without granules (see fig. 20 in Vachon, 1958: 137). First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.2.

COMMENTS. The lectotype is being designated in order to stabilize the nomenclature. It was photographed by Alexander Koval (see Fig. 25), and I have compared his photos and remarks with other cited specimens. Unfortunately, I have not been able to see the type of *Buthotus alticola kabulensis* Vachon, 1958 (type locality and type repository: Afghanistan, Kabul; MNHN) because MNHN would not lend types (see Kovářik, 2004: 27). However, examination of other specimens from the type locality and their comparison with the characters published by Vachon (1959: 136) and Birula (1897: 378) lead me to the conclusion that *Buthotus alticola kabulensis* Vachon, 1958 is a synonym of *H. buchariensis* (Birula, 1897) **comb. n.** The characters of this species are very similar to those of *H. penjabensis* (Birula, 1897) from Pakistan, in which, however, the metasomal and pedipalp segments of both sexes are markedly longer and narrower.

DISTRIBUTION: Afghanistan (Vachon, 1958: 136), Tajikistan (Birula, 1897: 381), Pakistan (first report).

***Hottentotta conspersus* (Thorell, 1876)**
(Figs. 6, 26–29)

Buthus conspersus Thorell, 1876: 115; Kraepelin, 1895: 81; Pavesi, 1895b: 38; Pavesi, 1897: 156; Kraepelin, 1905: 195; Hewitt, 1918: 103; Lawrence, 1955: 225.



Figure 26: *Hottentotta conspersus*, dorsal view, male from Angola, Naulila env., FKCP.



Figure 27: *Hottentotta conspersus*, ventral view, male from Angola, Naulila env., FKCP.



Figure 28: *Hottentotta conspersus*, dorsal view, female from Angola, Naulila env., FKCP.



Figure 29: *Hottentotta conspersus*, ventral view, female from Angola, Naulila env., FKCP.

Buthotus conspersus: Vachon & Stockmann, 1968: 96; Lamoral & Reynders, 1975: 500; Lamoral, 1979: 549; Newlands, 1987: 38; El-Hennawy, 1992: 115.
Hottentotta conspersa: Sissom, 1990: 90; Kovařík, 2001b: 79; Kovařík, 2002: 7.
Hottentotta conspersus: Kovařík, 1998: 110; Fet & Lowe, 2000: 136; Prendini, 2000: 110; Leeming, 2003: 47; Prendini, 2005: 66.
Buthus trilineatus: Kraepelin, 1899: 21 (in part).
Buthus hottentotta: Kraepelin, 1891: 185 (in part).
 = *Buthus conspersus aeratus* Lawrence, 1927: 69; Lawrence, 1928: 269 (syn. by Lamoral, 1979: 549).
Buthus aeratus: Lawrence, 1955: 207, 225; Lawrence, 1959: 384; Lawrence, 1962: 220; Lawrence, 1972: 8.
Buthotus aeratus: Vachon & Stockmann, 1968: 94; Lamoral & Reynders, 1975: 500.
 = *Buthus angolensis* Monard, 1930: 38; Monard, 1937: 253 (syn. by Vachon & Stockmann 1968: 94).
Buthotus angolensis: Vachon, 1949: 147 (1952: 233).

TYPE LOCALITY AND TYPE REPOSITORY. Caffraria; NRHS.

MATERIAL EXAMINED. **Angola**, Naulila env., 1985, 1♂1♀ (Figs. 6, 26–29), leg. J. Cimrman, FKCP. **Namibia**, 1938, 2♀ 1 im., leg. G. Boss, SMFD No. 5393; Farm Okatji Komu, 2♀, 27.X.1952, SMFD; 1 juv., 1956, leg. F. Gardes, SMFD; near Sesfontein, Kaoko, 2♀, IX.1965, FKCP, 24.I.2002, 1♀, leg. Werner, FKCP; 28 mi. N Outjo, 1200 m., 22.XII.1966, 1♀, leg. E. S. Ross & A. R. Stephen, CASC; Namib desert, Garob Mine, 750 m., 10.X.1967, 1♀ (im.), leg. E. S. Ross & A. R. Stephen, CASC; Farm Glucksburg 152 nr. Outjo, 23.IV.1980, 1♀, leg. A. Harington, CASC; 13 mi. SE Welwitschia, 800 m., 22.XII.1966, 1♂1♀, leg. E. S. Ross & A. R. Stephen, CASC.

DIAGNOSIS. Total length 40–65 mm. For habitus see Figs. 26–29. Trichobothrium *db* on the fixed finger of pedipalp situated between trichobothria *et* and *dt*, close to or on level with *et*. Sexual dimorphism not readily apparent, width of pedipalp chela same in both sexes. Pectinal teeth number 19–28 in males, 13–20 in females. Entire body only very sparsely hirsute, especially metasomal segments. Color yellow to yellowish brown. Carapace and carinae on mesosoma and metasoma may be black. As blackish may be the fifth metasomal segment and telson. Chelicerae yellow without reticulation, only tips of teeth on fingers of chelicerae are black. Femur of pedipalps with five carinae, patella with eight carinae. Dorsal surfaces of femur and patella usually granulated. Chela very narrow and with dorsal carinae incomplete. Movable fingers of pedipalps with 11–14 rows of granules and 5 or 6 terminal granules. Seventh metasomal segment with 4 well defined ventral carinae. Mesosoma and carapace granulated. First

fourth metasomal segments with 10 carinae. Fifth metasomal segment with 5 carinae and two ventral rows of granules. Metasoma densely granulated between carinae. First metasomal segment width to length ratio 1.22–1.42 in males, 1.28–1.47 in females. Telson granulated and extremely bulbous.

DISTRIBUTION: Angola (Monard, 1930: 38), Namibia (Lawrence, 1927: 69). Reports from South Africa (Thorell, 1876: 118; Vachon & Stockmann, 1968: 94) are regarded as dubious, and definitely erroneous are also reports from Somalia (Pavesi, 1895b: 38; Pavesi, 1897: 156). Specimens from Somalia were most likely confused with *H. polystictus*, which has a telson usually more inflated than *Hottentotta* but smaller than *H. conspersus* and *H. arenaceus*. The latter species has been erroneously reported from South Africa.

***Hottentotta finneganae* sp. n.**
 (Figs. 30–31, 130–135, Table 1)

TYPE LOCALITY AND TYPE REPOSITORY. **Pakistan**, 15 km north of Rawalpindi; FKCP.

TYPE MATERIAL. **Pakistan**, 15 km north of Rawalpindi, 1962, 1♂ (holotype, Figs. 30–31) 1 im. (paratype), collector unknown, FKCP.

ETYMOLOGY. Named after Dr. Susan Finnegan who described the scorpion genus *Apistobuthus* in 1932.

DIAGNOSIS. Total length 54 mm. For habitus see Figs. 30–31. Trichobothrium *db* on the fixed finger of pedipalp situated on level with trichobothrium *est*. Male with fingers proximally slightly twisted, manus wider than female. Pectinal teeth number 25–26. Chelicerae yellow to yellowish brown, with reticulate only in anterior part. Entire body only sparsely hirsute. The hairs on pedipalps and metasoma are long. Color uniformly yellow to yellowish brown. Metasomal carinae may be black. Femur of pedipalp with 5 carinae. Patella with 8 carinae, of which some are indistinct. Dorsal surfaces of femur and all patella granulated. Chela lacks carinae. Movable fingers of pedipalps with 12 rows of granules and 5 terminal granules. Seventh metasomal segment with 4 well marked ventral granulated carinae. Dorsal surfaces of mesosoma and carapace granulated (granules are smaller than the spaces between them). First to fourth metasomal segments with 10 carinae; fifth segment with 5 carinae. Metasoma granulated between carinae except dorsal surface, which is sparsely granulated, usually smooth at center and often bears 2 short, inconspicuous carinae. Telson also granulated. Dorsal carinae of metasomal segments bear slightly larger terminal granules. First metasomal segment of adults wider than long, but



Figure 30: *Hottentotta finneganae*, sp. nov., dorsal view, male holotype.



Figure 31: *Hottentotta finneganae*, sp. nov., ventral view, male holotype.