Figure 114: *Hottentotta tamulus*, dorsal view, male lectotype of *Buthus tamulus concanensis*.

Figure 115: *Hottentotta tamulus*, ventral view, male lectotype of *Buthus tamulus concanensis*.

TYPE MATERIAL EXAMINED. **India**, ***Gujarat***, Karaghora in Kattywar 1♀ (lectotype of *Buthus tamulus gujaratensis* Pocock, 1900 hereby designated, Figs. 116–117) 1♀ (paralectotype of *Buthus tamulus gujaratensis* Pocock, 1900), leg. H. Buckley, BMNH No. 1896.7.30.44–46; ***Maharashtra***, Bombay env., 1965, 1♂ (neotype of *Scorpio tamulus* Fabricius, 1793 hereby designated, Fig. 118), NMPC; Ratnágiri, South Konkan, 1♂ (lectotype of *Buthus tamulus concanensis* Pocock, 1900 hereby designated, Figs. 114–115), 1♀ (paralectotype of *Buthus tamulus concanensis* Pocock, 1900), leg. W. H. Drew, BMNH No. 1896.7.30.6–16; ***Uttar Pradesh***, Dehra Dun, 1♂ (lectotype of *Buthus tamulus gangeticus* Pocock, 1900 hereby designated) 3♀2juvs. (paralectotypes of *Buthus tamulus gangeticus* Pocock, 1900), leg. A. V. Kemball, BMNH No. 1896.10.20.34–39. **Pakistan**, Khalat frontier in Upper Sind, 1♂ (No. 946, lectotype of *Buthus tamulus sindicus*

Figure 116: *Hottentotta tamulus*, dorsal view, female lectotype of *Buthus tamulus gujaratensis*.

Figure 117: *Hottentotta tamulus*, ventral view, female lectotype of *Buthus tamulus gujaratensis*.

Pocock, 1900 hereby designated, Fig. 119) 2♂3♀ (paralectotypes of *Buthus tamulus sindicus* Pocock, 1900), leg. A. V. Kemball, BMNH No. 1896.10.20.?28–33.

OTHER MATERIAL EXAMINED. **India**, Lanooli, 1♂3♀, 10.XII.1911, leg. Löw-Beer, SMFD Nos. 5251 and 5260; Dekan, Nilgiris, 1im., SMFD No. 8851/193; Dekan, Anamalei, 1juv., SMFD No. 8852/194; mouth of

Figure 118: *Hottentotta tamulus*, ventral view, male neotype.

Figure 119: *Hottentotta tamulus*, dorsal view, male lectotype of *Buthus tamulus sindicus*.

Figure 120: *Hottentotta tamulus*, dorsal view, female from India, Behr, Mongyo Dist., FKCP.

a river Ganga, 1♂4♀, leg. Šmala, NMPC; N. India, Behr, Mongyo Dist., 2♂2♀(Fig. 120)1juv., FKCP; ***Andhra Pradesh***, 2 mi W Narkatpalli, 800 m, 7.XI.1962, 1juv., leg. E. S. Ross et D. Cavagnaro, CASC; Gandavaram, 2.IX.1966, 1♀, leg. E. Jacob, CASC; Nellore, Kovur Taluk, 11.IX.1966, 4♀, 12.IX.1966, 3♀, leg. E. Jacob, CASC; Podile, 10.VIII.1966, 1♀, 13.II.1967, 1♀20juvs before first ecdysis, 23.VIII.1967, 1♂1♀, leg. D. E. Johnson, CASC; Kandukur env., IX.1980, 2♂4♀, leg. P. Rojek, FKCP; ? ***Andhra Pradesh*** , Tharigoppula, 2.VII.1967, 1im., 3.VIII.1967, 2♀1juv., leg. A. L. Slater, CASC; Merireddy Palem, 7.VIII.1966, 1♂, 10.VIII.1966, 1♀, 12.VII.1966, 1♀, leg. D. E. Johnson, CASC; Hanamkonda, 10.VIII.1967, 1juv., leg. E. Wiebe, CASC; ***Bihar***, 3 mi. N Kodarma, 440 m., 12.XI.1961, 1♀2juvs., leg. E. S. Ross et D. Cavagnaro, CASC; ***Gujarat***, Bhuj-Hill, Desert of Kutch, X.1970, 1♀, leg. M. S. Dubale, CASC; ***Jharkhand***, 12 mi. NE Dumka, 200 m., 31.X.1961, 1♀1♀(im.)5juvs., leg. E. S. Ross et D. Cavagnaro, CASC; Dhanbad env., XI.1980, 1♀, leg. P. Rojek, FKCP; Deoghar env. X.1980, 2♀, leg. P. Rojek, FKCP; ***Madhya Pradesh***, 5 mi SW Manpur, 480 m., 13.I.1962, 2juvs, leg. E. S. Ross et D. Cavagnaro, CASC; 21 mi from Damoh, 15.VII.1965, 1♀, leg. S. N. Banerjee, CASC; ***Maharashtra***, 3 mi NW Sinnar, 700 m., 16.I.1962, 1juv., leg. E.S.Ross et D. Cavagnaro, CASC; Khandala, 500 m., 19.I.1962, 1juv, CASC; Daulatabad, 625 m., 27.I.1962, 1im., leg. E. S. Ross et D. Cavagnaro, CASC; 3 mi W Edalabad, 240 m., 28.I.1962, 2♀(ims.)1juv., leg. E. S. Ross et D. Cavagnaro, CASC; 5 mi SE Indapur, 450 m., 9.II.1962, 1♀(im.), leg. E. S. Ross & D. O. Cavagnaro, CASC; Dekan, Bombay 6♂18♀17juvs., SMFD No. 327/1; Bombay env., 1965, 1♂, FKCP; Bombay, IV.1980, 1♀(Fig. 19), leg. P. Rojek, FKCP; S. Poona, 5 km N Sartara, 11.VII.1996, 2♀, leg. Werner & Lorenz, FKCP; ***Pondichery***, Karaikal, 31.V.1951, 1juv., 16.VII.1951, 1juv., VII.1951, 1♀, III.1952, 2♂5♀, VI.1952, 3♀1juv., 22.VI.1952, 1♀, VI.1953, 1♂, VII.1953, 1♀, IV.1961, 1♀, V.1961, 1♂2♀, III.1962, 1♀, X.1962, 1♀, leg. P. Susai Nathan, CASC; Karaikal, T.R.S.N. coll., 2002, 1♂1♀, 2003, 4♀1im., 2003, 2♂2♀, FKCP; ***Rajasthan***, Dausa, 1650 ft., 5.I.1962, 2juvs., leg. E. S. Ross et D. Cavagnaro, CASC; Mahwah, 280 m., 5.I.1962, 1juv., leg. E. S. Ross et D. Cavagnaro, CASC; Barr, 450 m., 7.I.1962, 1juv., leg. E. S. Ross et D. Cavagnaro, CASC; Hill S. Pali, 275 m., 8.I.1962, 1im.1juv., leg. E. S. Ross et D. Cavagnaro, CASC; Alwar district, Naranimata env., 27°05,46 N 76°17,17 E, 380 m., VI–VIII.2002, 1♂1im.1juv., leg. P. Šrámek, FKCP; ***Tamil Nadu***, Kurumbargum, VII.1954, 1♀, II.1957, 1♀, CASC; Coimbatore, VII.1951, 1♀, 29.XII.1951, 1♀, 14.IX.1953, 1♀, V.1961, 1♀, CASC; 10 mi S Udamalpet, 450 m., 19.III.1962, 1♀, leg. E. S. Ross & D. Cavagnaro, CASC; outside of Madras (now

Chennai), XII.1964, 1♂(im.), leg. F. B. Steiner, CASC; Tiruparan Kundram, 8 km SW. Madurai, 26.XII.1989, 1juv., leg. V. et B. Roth, CASC; Alagarkoil, 21 km NE Madurai, 27–28.XII.1989, 6juvs., leg. V. et B. Roth, CASC; Nagia Birbhan, 30 mi. SW Agra, 240 m., 2.I.1962, 1juv., leg. E. S. Ross et D. Cavagnaro, CASC; Dindigul Anna district, 10 km NE di Dindigul, 21.X.1997, 1♂, leg. A. Sforzi & L. Bartolozzi, MZUF No.735; Coimbatore, X.1980, 1♀, leg. P. Rojek, FKCP; ***West Bengal***, Calcutta, 13.VIII.1965, 1♂, col. Manik Lal Seth, 17.VIII.1965, 2♂3♀2juvs., VIII.1965, 1♀, leg. B. V. College, 9.VIII.1966, 1♂, 26.III.1967, 1♀, leg. Duial Mondal, IV.1967, 1♂, leg. K. N. Das, 4–15.IV.1967, 1♀, leg. D. N. Santra, 9.VII.1967, 1im.1juv., leg. Duial Mondal, 15.VII.1967, 1♀, leg. Madhab, CASC; 6 mi. NE Borio, 220 m., 30.X.1961, 1♀, leg. E. S. Ross et D. Cavagnaro, CASC; Calcutta, X.1980, 1♀, leg. P. Rojek, FKCP. **Pakistan**, 7 mi NW Las Bela dist., 2.I.1960, 1♀, leg. S. A. Minton, CASC; 7 mi NW Uthal, Las Bela dist., 2.I.1960, 1♂, leg. S. A. Minton, CASC; Tatta env., XII.1979, 1♀, 1980, 1♂, leg. P. Rojek, FKCP.

DIAGNOSIS. Total length 50–90 mm. For habitus see Figs. 114–120. Trichobothrium *db* on the fixed finger of pedipalp chela situated between trichobothria *et* and *est* or on level with trichobothrium *est*. Male with fingers proximally twisted, manus of pedipalps wider than female. Pectinal teeth number 30–39 in males, 27–34 in females. Chelicerae yellow, reticulate. Pedipalps densely hirsute, legs and metasoma sparsely hirsute. The hairs on patella of pedipalps are short. Color uniformly yellow to reddish, mesosoma dark. Ventral carinae on metasomal segments usually black. Femur of pedipalp with 5 carinae. Patella with 2 or 4 carinae on internal surface, no other carinae. Chela lacks carinae. Movable fingers of pedipalps with 13–15 rows of granules and 5 or 6 terminal granules. Seventh mesosomal sternite smooth, with 4 well marked black carinae. First to third metasomal segments with 10 carinae; fourth metasomal segment with 10 or rarely 8 carinae; fifth segment with 5 or 7 carinae. Metasoma sparsely to densely granulated between carinae. Dorsal surface densely and very finely granulated, often bears 2 short, inconspicuous marginal carinae. Telson also granulated. Dorsal carinae of metasomal segments bear terminal granules of size approximately equal to preceding granules. First metasomal segments of adult female wider than long (in male usually as long as wide), second metasomal segment longer than wide for both sexes. Second to fourth metasomal segment width ratio about 1.1. Length to width ratio of fourth metasomal segment about 1.5. Telson bulbous, especially in large females.

COMMENTS. Fixing a neotype of *H. tamulus* is important because some populations were described as subspecies which are here synonymized. Since the species is widely distributed, it is important to narrow down the type locality. For these reasons I designate a male in the NMPC collection as the neotype. It is a 72 mm long specimen that matches all characters in the above diagnosis.

The lectotypes are being designated in order to stabilize the nomenclature. Fine dorsal granulation of metasomal segments and fine ventral granulation of the mesosoma are variable and their gradation used by Pocock (1900: 23–26) and Tikader & Bastawade (1983: 187–188) to distinguish subspecies of *H. tamulus* becomes invalid as soon as a sufficient number of specimens is examined. Generally, this granulation is much weaker in males.

The variability of coloration (Figs. 114 and 120) cuts across the subspecies described by Pocock (1900: 25). It is worth mentioning that for the subspecies *H. t. gangeticus* Pocock (1900: 25) recorded both dark and light forms.

DISTRIBUTION: India (Fabricius, 1798: 295), Pakistan (Pocock, 1900a: 25; Khatoon, 1986: 645).

Hottentotta trilineatus (Peters, 1862)
(Figs. 20, 121–125)

Centrurus trilineatus Peters, 1862: 515; Pocock, 1896b: 425; Moritz & Fischer, 1980: 324.

Buthus trilineatus: Kraepelin, 1899: 21; Pocock, 1900b: 57; Kraepelin, 1901: 266; Borelli, 1904a: 1; Kraepelin, 1905: 195; Tullgren, 1907: 2; Hirst, 1911a: 1; Masi, 1912: 95; Kraepelin, 1913: 169; Hewitt, 1918: 103, 175; Loveridge, 1925: 305; Hewitt, 1935: 465; Roewer, 1952: 27; Geeraerts, 1953: 1066; Lawrence, 1955: 225; Lawrence, 1961: 153; Lawrence, 1964: 34; Lawrence, 1967: 84; Aguiar, 1978: 108.

Buthus (*Hottentotta*) *trilineatus*: Werner, 1936: 175; Caporiacco, 1941: 33; Moriggi, 1941: 85; Roewer, 1943: 207; Caporiacco, 1947: 231.

Hottentotta trilineatus trilineatus: Caporiacco, 1949: 314.

Buthotus trilineatus: Vachon & Stockmann, 1968: 103; Probst, 1973: 320; Lamoral & Reynders, 1975: 504; Stahnke & Calos, 1977: 119; Newlands & Martindale, 1980: 53; El-Hennawy, 1992: 118.

Hottentotta trilineata: Dupre & Balliet, 1997: 5.

Hottentotta (*Hottentotta*) *trilineatus*: Fet & Lowe, 2000: 144.

Hottentotta (*Hottentotta*) *trilineata*: Kovařík, 1998: 110.

Hottentotta trilineata: Kovařík, 2001b: 84; Kovařík, 2002: 8; Kovařík, 2003: 140.

Hottentotta trilineatus: Leeming, 2003: 47; Kovařík & Whitman, 2005: 108; Prendini, 2005: 66.

Figure 121: *Hottentotta trilineatus*, dorsal view, male and female from Tanzania, Arusha distr., Naberera env., FKCP.

Buthus hottentotta (in part): Kraepelin, 1891: 185 (see Kraepelin, 1899: 21).
= *Buthus eminii* Pocock, 1890c: 98; Kraepelin, 1895: 83; Pocock, 1896b: 425; Pocock, 1897b: 402; Pocock, 1898a: 430; Pocock, 1898b: 499; Pocock, 1900b: 57; Kraepelin, 1903: 559; Hirst, 1911b: 217; Birula, 1915a: 121; Birula, 1916: 60; Borelli, 1919: 362; Loveridge, 1925: 305; Borelli, 1925a: 9; Caporiacco, 1936: 135 (syn. by Kraepelin, 1899: 21).
Buthus (*Buthus*) *eminii*: Pocock, 1890a: 126.
Buthus (*Hottentotta*) *emini*: Birula, 1915a: 123; Birula, 1915b: f11; Werner, 1934: 269; Caporiacco, 1939: 304; Moriggi, 1941: 86; Caporiacco, 1947: 231.
Buthus hottentotta emini: Kraepelin, 1929: 88.
Buthotus emini: Vachon & Stockmann, 1968: 107; Probst, 1973: 321.
Hottentotta (*Hottentotta*) *eminii*: Fet & Lowe, 2000: 137.
= *Buthus trilineatus fuscatus* Masi, 1912: 95 (syn. by Vachon & Stockmann, 1968: 106).
Buthus hottentotta minax fuscata: Caporiacco, 1937: 358.
Hottentotta (*Hottentotta*) *trilineata fuscata*: Kovařík, 1998: 111.
= *Buthus fuscitruncus* Caporiacco, 1936: 136; Caporiacco, 1937: 358; Vachon, 1949: 162 (1952: 248) (syn. by Kovařík, 2003: 140).
Buthus (*Hottentotta*) *fuscitruncus*: Caporiacco, 1939: 304; Moriggi, 1941: 87.
Buthotus fuscitruncus: Vachon & Stockmann, 1968: 110; Probst, 1973: 329; Lamoral & Reynders, 1975: 500; El-Hennawy, 1992: 116.
Hottentotta (*Hottentotta*) *fuscitruncus*: Kovařík, 1998: 110; Fet & Lowe, 2000: 138.
Hottentotta cf. *polystictus*: Kovařík, 1997b: 180.

TYPE LOCALITY AND TYPE REPOSITORY. Mozambique, Tette; ZMHB.

TYPE MATERIAL EXAMINED. **Mozambique**, Tette, 1♀ (holotype), leg. W. Peters, ZMHB No. 2328. **Kenya**, South shore of Victoria Nyanza, 1♀ (holotype of *Buthus eminii* Pocock, 1890, Fig. 125), BMNH No. 90.4.15.2. **Somalia**, Belet Amin, 1♂ (holotype of *Buthus fuscitruncus* Caporiacco, 1936), VII.1934, MCSN.

OTHER MATERIAL EXAMINED. **Botswana**, bor., Kasane env., 29.XII.1996–7.I.1997, 1♀1juv., leg. M. Snížek, FKCP. **Egypt**, ? probably locality error, 1♀, SMFD No. 5246. **Eritrea**, Assab, 1882–1884, Bouturlin, 1♂3♀1juv. before first ecdysis, MZUF No. 653; Ghenafena (8 km from Serae), V.1901, 1♂1♀ 1juv., V. 1901, MZUF Nos. 660 and 646. **Ethiopia**, Aegyptem vagy Abyssinia, 1898, 2ims., leg. Frundsberg, HNHM No. 1183; Dongollo, 20–30.XII.1900, 1♀, leg. A.

Figure 122: *Hottentotta trilineatus*, dorsal view, male from Kenya, Magadi, Lake Magadi env., FKCP.

Figure 123: *Hottentotta trilineatus*, ventral view, male from Kenya, Magadi, Lake Magadi env., FKCP.

Figure 124: *Hottentotta trilineatus*, dorsal view, male from Kenya, between Madogo and Garissa, west of Tana river, FKCP.

Figure 125: *Hottentotta trilineatus*, dorsal view, female lectotype of *Buthus eminii*.

Andreini, MZUF No. 654; Amba Mussolinii, 12.II.1937, 1♂, leg. U. Ignesti, MZUF No. 655; Neghelli, Borana, 1938, 1♀, leg. E. Zavattari, MZUF No. 652; Sagan Omo, Dande, 23.III.1939, 1♀, leg. Zavattari, MZUF No. 651; Sagan Omo, El Bano, 1juv., 30.IV.1939, 2♂1♀2juvs., 2.V.1939, 1♀, 5.V.1939, 1♂4♀1juv., 9.V.1939, 2juvs., 30.V.1939, 1♀, 7.VI.1939, 2♂1♀1juv., 10.VI.1939, 2♀, VI.1939, leg. E. Zavattari, MZUF Nos. 637–643, 656; Sagan Omo, El Meti, 1♂1♀2juvs., 14.V.1939, leg. E. Zavattari, MZUF No. 645; Sagan Omo, El Dire, 15–18.V.1939, 1♂1♀2juvs., leg. E. Zavattari, MZUF No. 644; Sagan Omo, Gondaraba, 1juv., 2.VI.1939, 1♂1juv., 10.VI.1939, 1♀, 13.VI.1939, 1♂2juvs., 18.VI.1939, leg. E. Zavattari, MZUF Nos. 647–9, 657; Sagan Omo, Gongabacno [= Gonga Bainu ?], 17.VI.1939, 1♂2 juvs., leg. E. Zavattari, MZUF No. 650; Caschei, 10.VII.1939, 1♂3♀, leg. E. Zavattari, MZUF No. 658; Yambo, 2♂2♀, IV.1995, leg. R. Lízler, FKCP; Kersabor, V. 1996, 1♀, leg. R. Lízler, FKCP; Gemu Gofa, Arba Minch, 2–3.V.1997, 2♀, leg. Werner, FKCP; Sidamo, near Negele borana, 7–8.V.1997, 1♂1juv., leg. Werner & Lízler, FKCP; Wachile-Yavello, Sidamo, 1♂, 28–29.IV.1998, leg. Werner, FKCP; Parco Nazionale Awash, Harerge Region, Habro, boscaglia, 25.VII.2002, 1♀, leg. Sforzi & L. Bartolozzi. MZUF No. 659. **Kenya**, O. A. Afrika, Mombasa, 1♀, 25.XII.1969, leg. M. Grasshoff, SMFD; Voi, 1♀, XI.1978, leg. M. Grasshoff, SMFD; Sangala Hills, 1♀1♂(im.), XII.1993, leg. Werner, FKCP; Babati, XII.1993, 1♀, leg. Werner, NMPC; Taita district, surroundings of Voi, 31.V–03.VI.1994, 1♀, leg. L. Bartolozzi, B. Cecchi & A. Sforzi, MZUF No. 1107; Voi (Tsavo), 1♂1♀, 24–28.I.1996, 2♂1juv., 10.XII.1999, leg. M. Snížek, 22.XI–2.XII.1996, 4♂5♀1juv., leg. M. Snížek, 3♀, 1.VI.1997, leg. O. Bužga, 13–17.XII.1997, 8♂12♀, leg. M. Snížek, 3♂, 2001, leg. M. Snížek, FKCP; Lodwar, 2♀1juv., 20.XII.1995, leg. M. Snížek & Smrž, FKCP; 50 km N of Namanga, Ilbisil env., 18.XI.1997, 3♂3♀1juv., leg. M. Snížek, FKCP; Eastern Mwingi env., 4.XII.1997, 1♀, leg. M. Snížek, FKCP; S. Magadi, Lake Magadi env., 6.XII.1997, 19♂(Figs. 122–123)26♀4juvs.10juvs. before first ecdysis, leg. M. Snížek, FKCP; Nairobi env., 36°62'E 01°30'S, 2000 m., 7.XII.1997, 5♂15♀, leg. M. Snížek, FKCP; Katutu-Kithioko, 27.XI.1999, 5♂7♀1juv., leg. M. Snížek, FKCP; between Isiola and Turkana lake, IX.2003, 1♂1juv., leg. T. Mazuch, FKCP; between Madogo and Garissa, west of Tana river, VIII.2005, 1♂(Fig. 124)2♀, leg. T. Mazuch, FKCP. **Mozambique**, Tete, 1♂3♀4juvs, IV.1947, SMFD; Tette, 2juvs.(♀ and ♂), IV.1980, FKCP. **Somalia**, 1♂8♀, circa 1970, MZUF Nos. 870 and 1170; Afgoi, 1.V.1937, 1♀, 13.VII.1959, 1♀, 1960, 1♂, 1970, 1♂, leg. A. Simonetta, MZUF Nos. 846, 850, 1166; Gelib, d. Missione Cattolica, 1962, 1♂, MZUF No. 847; Belet Amin, VII.1934, 2♂1♀, leg. S. Patrizi MZUF No. 844; Bur Dinsor, 300–370 m., 19.VII.1962, 1♂1juv., 3.VI.1978, 1♂1♀1juv., leg. B. Lanza, MZUF Nos. 848, 866 and 1104; 2 km dopo Mahas, 3.VIII.1969, 1juv., S.B.S., MZUF No. 849; Giohar, 8.VIII.1970, 1♂4♀, S.B.S., MZUF No. 851; ca 50 km da Chisimaio venendo da Badadda, 19.VIII.1970, 3♀1juv., MZUF No. 852; Chisimajo, duna, 20.VIII.1970, 1♀, leg. F. Ferrara & B. Lanza MZUF No. 853; Sar Uanle, 1♂, 31.XI.1971, 2♂, XI.1971, 1♂1♀, IX.1972, 2♀, V.1973, 1♀, 7.VI.1973, 4♀, 1.VIII.1975, 2♀, 11.VIII.1975, 1♀, 14.VIII.1975, MZUF Nos. 854–863, 871; Baidoa, 12–28.VI.1978, 3♂4♀, MZUF No. 867; Berdale, 13.VI.1978, 1♂4♀1im., MZUF No. 868; El Ure, 16 km da Vegit sulla pista per Lug, 16.VI.1978, 1♂1♀, MZUF No. 865; Edain Caboda, 18.VI.1978, 2♂1♀2juvs., MZUF No. 864; Arbasala, 56 km NW di Iscia Baidoa, 25.VI.1978, 1♀1juv., MZUF No. 869. **South Africa**, Transvaal, Southpansberg env., Steinen, XI.1970, 1♂1♀, leg. Lamoral, SMFD No. 29296; 1998, 1♂1♀, FKCP. **Tanzania**, O. Afrika, Tanga, 1♀, SMFD No. 6674/81; Laiverere, 1♂, 28.I.1960, leg. J. Szunyeghy, HNHM; Mto Wa Mbu, IV.1997, 5♂8♀2juvs., leg. P. Senft, FKCP; Arusha distr., Naberera env., 8–13.IV.1997, 10♂15♀2juvs.(Figs. 20 and 121), leg. J. Rolčík & P. Senft, FKCP; Arusha distr. Mto Wa Mbu env., 15.-20.IV.1997, 1♂, leg. J. Stolarczyk, FKCP; near Babati, 6.XII.1997, 1♂4♀ , leg. Werner & Lízler, FKCP; near Babati, 6.XII.1997, 1♂4♀, leg. Werner & Lízler, FKCP; E. Usambara Mts, dint. di Amani, 17–20.VI.1998, 1♂3♀, leg L. Bartolozzi & A. Sforzi, MZUF No. 882; 20 km a SE di Mto Wa Mbu sulla strada per Makuyuni, 1100 m., 10–25.IV.1999, 2♂3♀1juv., leg. L. Bartolozzi, B. Carletti, B. Cecchi, L. Dapporto, F. Fabiano & A. Sforzi, MZUF No. 881. **? Tanzania**, O. Afrika, Iraku-Landschaft, Kohl-Larsen, 1939, 1♂1♀, SMFD No. 5388; O. Afrika, Matelebach, Kohl-Larsen, 2♀, SMFD No. 5389; D. O. Afrika, 2♂, leg. F. Kinkelin, SMFD No. 5219. **Zimbabwe**, NW, 70 km W of Karoi, Masanga env., 20.XII.1998, 1♀, leg. S. Bečvář, FKCP; Victoria Falls, 6.I.2002, 1♀, leg. L. Adámek, FKCP.

DIAGNOSIS. Total length 35–65 mm. For habitus see Figs. 121–125. Trichobothrium *db* on the fixed finger of pedipalp situated between trichobothria *et* and *est* or on level with trichobothrium *est*, or rarely between *est* and *esb*. Male with fingers proximally twisted and manus and metasomal segments wider than female. Pectinal teeth number 22–28 in males, 17–25 in females. Chelicerae yellow, without reticulation. Nearly entire body hirsute, but not densely. Color uniformly yellow to reddish brown, mesosomal segments and carapace usually with orange spots and longitudinal black stripes. Metasomal carinae may be black as well. Femur of pedipalp with 3 complete and 2 incomplete carinae. Patella with 8 carinae, of which some are smooth, without granules and obsolete. Chela lacks carinae.

Movable fingers of pedipalps with 11–13 rows of granules and 5 terminal granules. Seventh metasomal segment with 4 well marked ventral carinae. First to third metasomal segments with 10 carinae; fourth segment with 8 or 10 carinae; fifth segment with 5 carinae and two ventral rows of granules. All carinae granulated, dorsal carinae bear larger terminal granules. In males granules usually larger and more pronounced than in females. First metasomal segment of adults wider than long, second metasomal segment usually longer than wide, but in males may be wider than long. Second to fourth metasomal segment width ratio less than 1.1. Length to width ratio of fourth metasomal segment less than 1.6.

COMMENTS. This widely distributed and very common species enabled me to study variation within the taxon. I have examined many specimens brought by Czech entomologists from Kenya and Tanzania, as well as those from Somalia and Ethiopia deposited in Italian museums. Some smaller males have only slightly widened manus of pedipalp and their metasomal segments are only as wide (in relation to body width) as in females. Conversely, some larger males have extremely wide manus, very conspicuously granulated metasomal carinae, and their fourth and fifth metasomal segments are often wider and more bulging than in smaller males. In the largest females the morphology approaches that of males, especially in the granulation of metasomal carinae and the relative width of metasomal segments. Color is also variable, lighter in specimens from drier areas of Somalia, Ethiopia and northern Kenya (Fig. 124). As in other widely distributed species, it is likely that the color (Figs. 121–124) is influenced by the color and texture of the substrate (see Hendrixson, 2006: 84). The described variation has resulted in a surplus of names, as small samples from disparate areas may easily give the impression of separate species.

DISTRIBUTION: Botswana (Probst, 1973: 320), Democratic Republic of Congo (Fet & Lowe, 2000: 144), Djibouti (Kraepelin, 1901: 266), Eritrea, Ethiopia (Borelli, 1901: 1; Kraepelin, 1903: 560), Kenya (Pocock, 1890c: 99), Mozambique (Peters, 1862: 516), Somalia (Pocock, 1897b: 402), South Africa (Hewitt, 1918: 103), Tanzania (Pocock, 1898a: 430), Uganda (Fage & Simon, 1936: 301), Zambia (Newlands & Martindale, 1980: 72), Zimbabwe (Hirst, 1911a: 12). Records from Egypt (see Kraepelin, 1901: 266 and the SMFD female above) and Namibia must be considered dubious, see also Vachon & Stockmann (1968: 103) and Fet & Lowe (2000: 144).

Hottentotta zagrosensis Kovařík, 1997
(Figs 1–3, 126–129)

Hottentotta zagrosensis Kovařík, 1997a: 41; Kovařík, 1998: 111; Fet & Lowe, 2000: 144.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Fars prov., alt. ca. 1000 m, Zagros Mts., Abshar vill. env., 30°23'N 51°30'E; FKCP.

TYPE MATERIAL EXAMINED. **Iran**, Fars prov., alt. ca. 1000 m., Zagros Mts., Abshar vill. env., 2–3.V.1996 1♂ (holotype, Figs. 126–127) 1♂(im.) and its ecdysis (paratype No. 1), leg. J. Pitulová, 1♀ (allotype, Fig. 129) 2juvs. (paratypes No. 2 and No. 3), leg. V. Šejna, 1juv. (paratype No. 4), leg. D. Král, FKCP.

OTHER MATERIAL EXAMINED. **Iran**, West Azerbaijan prov., Bastan, 1270 m., 38°54'40"N 44°59'39"E, 1♀, 30.IX–1.X.1998, leg. P. Kabátek, FKCP; Húzestán prov., 10km W. Ize, 900 m, 31°45'19"N 49°48'18"E, 1♂(Fig. 128) 1♀1juv., 12–13.X.1998, leg. P. Kabátek, FKCP; 5 km SE of Posht Chenár, 20.4.2000, 29°12'941"N 53°20'014"E, alt. 1692 m., 1♀, leg. M. Kaftan, FKCP.

DIAGNOSIS. Male holotype 102 mm long, female allotype 103 mm long. For habitus see Figs. 126–129. Trichobothrium *db* on the fixed finger of pedipalp located between trichobothria *et* and *est* (Fig. 1). Male with slightly longer and narrower metasomal segments, width of pedipalp chela same in both sexes. Pectinal teeth number 34–36 in males, 27–33 in females. Nearly entire body hirsute, pedipalps, dorsal surface of mesosoma, legs, lateral and ventral surfaces of metasomal segments, and vesicle densely hirsute. The hairs 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 (Fig. 128). Femur of pedipalps with 5 carinae and a row of granules in middle part of internal surface. Ventral surfaces of femur and patella smooth to glossy. Patella with 8 carinae. Chela lacks carinae. Movable fingers of pedipalps with 16 rows of granules and 5 terminal granules. Seventh metasomal segment with 4 well marked ventral carinae. First and second metasomal segments with 10 carinae; third segment with 8 or 10 carinae; fourth segment with 8 carinae; fifth segment with 5 carinae, 3 ventral (1 median, 2 lateral) and 2 dorsal, smooth and sometimes indistinct. Dorsal surface smooth and glossy, fifth segment bears 2 short, inconspicuous carinae. First metasomal segment of female may be wider than long, in male is always longer than wide. Second metasomal segment always longer than wide. Second to fourth metasomal segment width ratio less than 1.1.

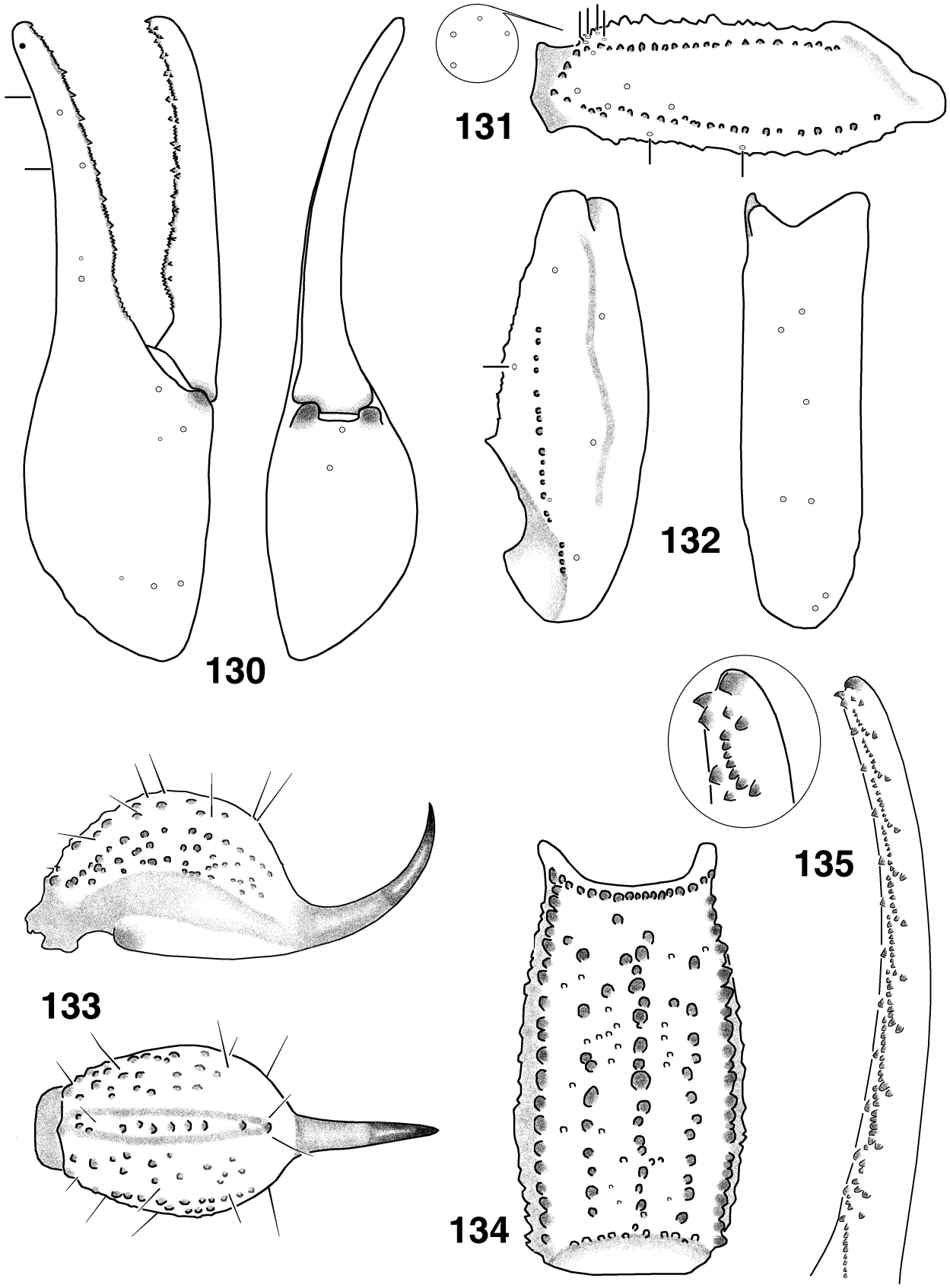
DISTRIBUTION: Iran (Kovařík, 1997a: 41).

Figure 126: *Hottentotta zagrosensis*, dorsal view, male holotype.

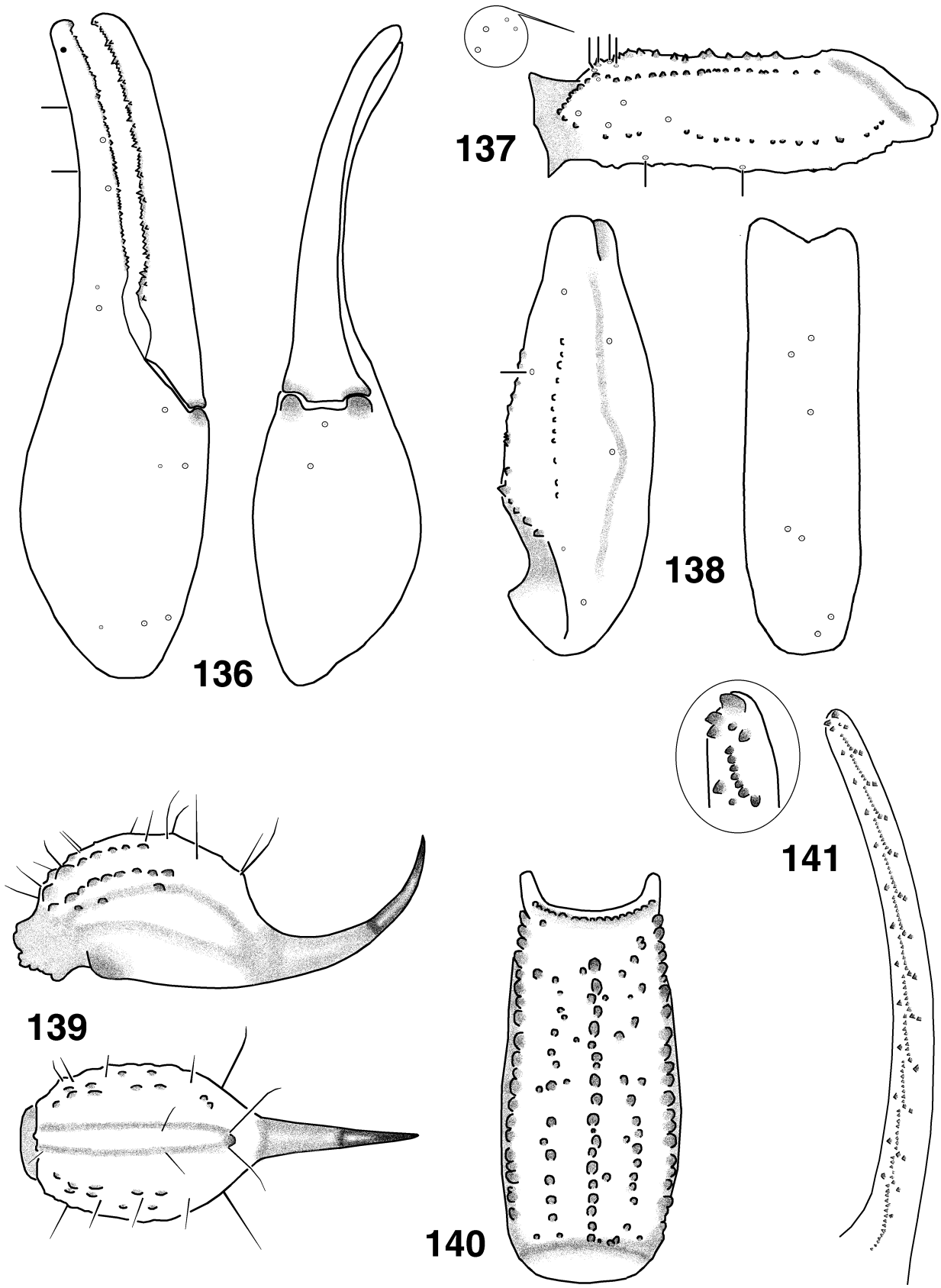
Figure 127: *Hottentotta zagrosensis*, ventral view, male holotype.

Figure 128: *Hottentotta zagrosensis*, dorsal view, male from Iran, prov. Húzestán, 10 km W Ize, 31°45'19"N 49°48'18"E, FKCP.

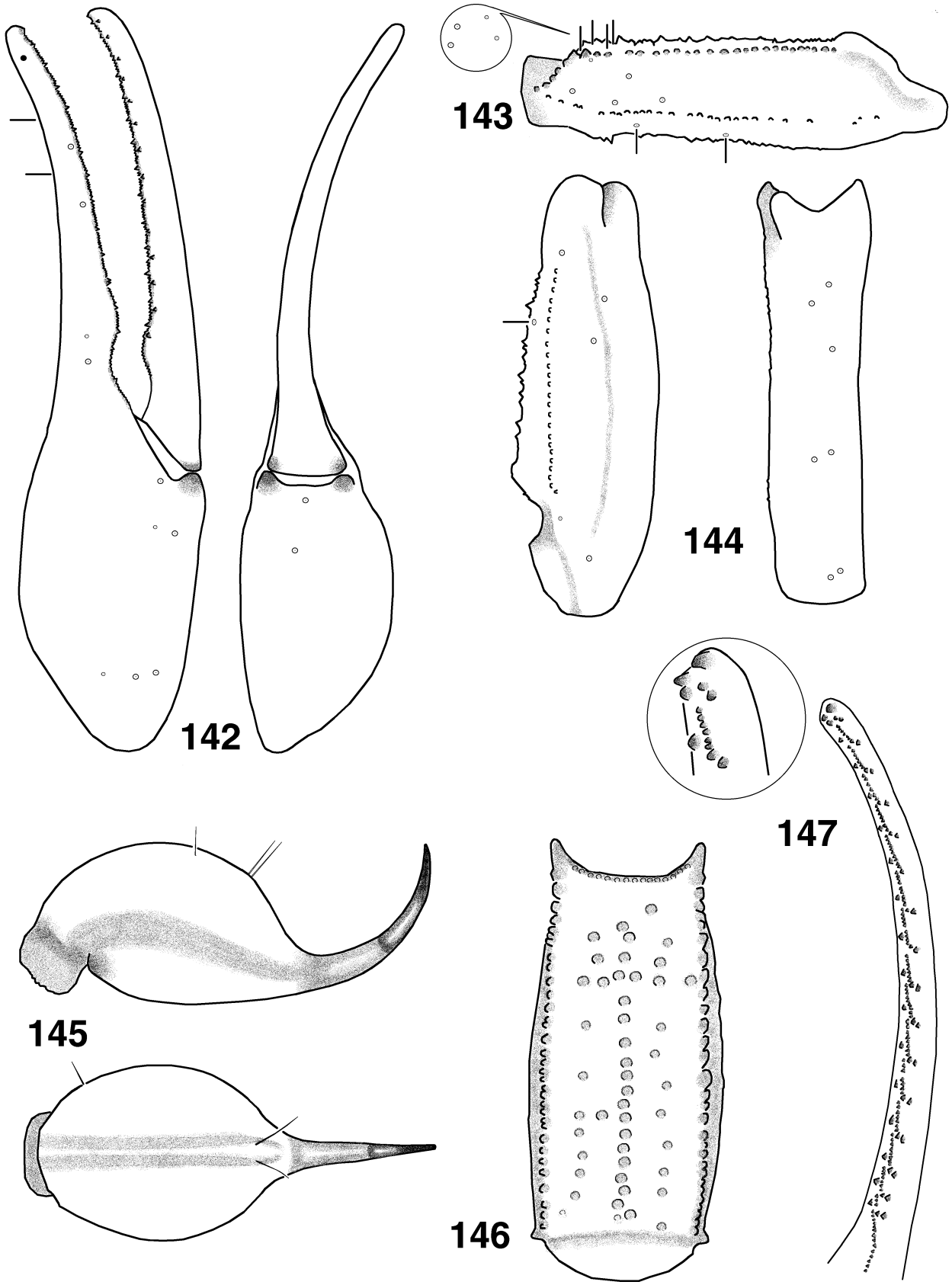
Figure 129: *Hottentotta zagrosensis*, dorsal view, female allotype.



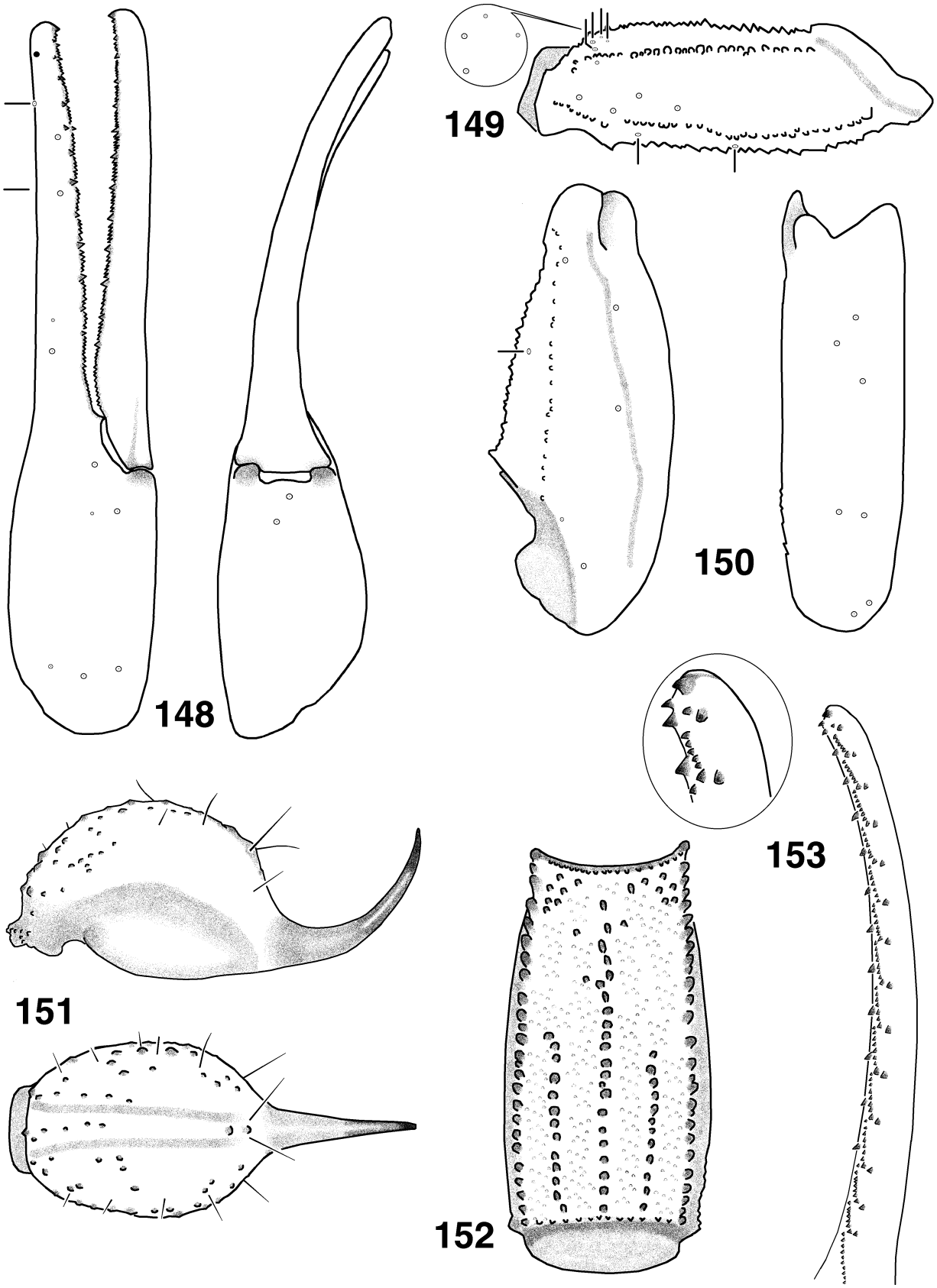
Figures 130–135: *Hottentotta finneganae*, **sp. nov.**, male holotype. **130–132.** Pedipalp trichobothrial pattern. **130.** Chela, external and ventral views; closed circle on chelal fixed finger external view designates internal trichobothrium *i*. **131.** Femur, dorsal view; circled area shows internal trichobothria of femur from an internal perspective. **132.** Patella, dorsal and external views. **133.** Telson, lateral and ventral views. **134.** Metasomal segment V, ventral view. **135.** Chelal movable finger showing dentition; closeup of finger tip shown in ellipse.



Figures 136–141: *Hottentotta jabalpurensis*, **sp. nov.**, male paratype. **136–138.** Pedipalp trichobothrial pattern. **136.** Chela, external and ventral views; closed circle on chelal fixed finger external view designates internal trichobothrium *i*. **137.** Femur, dorsal view; circled area shows internal trichobothria of femur from an internal perspective. **138.** Patella, dorsal and external views. **139.** Telson, lateral and ventral views. **140.** Metasomal segment V, ventral view. **141.** Chelal movable finger showing dentition; closeup of finger tip shown in ellipse.



Figures 142–147: *Hottentotta jalalabadensis*, **sp. nov.**, male paratype. **142–144.** Pedipalp trichobothrial pattern. **142.** Chela, external and ventral views; closed circle on chelal fixed finger external view designates internal trichobothrium *i*. **143.** Femur, dorsal view; circled area shows internal trichobothria of femur from an internal perspective. **144.** Patella, dorsal and external views. **145.** Telson, lateral and ventral views. **146.** Metasomal segment V, ventral view. **147.** Chelal movable finger showing dentition; closeup of finger tip shown in ellipse.



Figures 148–153: *Hottentotta stockwelli*, **sp. nov.**, male holotype. **148–150.** Pedipalp trichobothrial pattern. **148.** Chela, external and ventral views; closed circle on chelal fixed finger external view designates internal trichobothrium *i*. **149.** Femur, dorsal view; circled area shows internal trichobothria of femur from an internal perspective. **150.** Patella, dorsal and external views. **151.** Telson, lateral and ventral views. **152.** Metasomal segment V, ventral view. **153.** Chelal movable finger showing dentition; closeup of finger tip shown in ellipse.

Key to species of the genus *Hottentotta* Birula, 1908 occurring in Asia

1. Color black except reddish brown chela of pedipalp. Legs may also be reddish-brown. Does not occur in India ……..... 2
- Color not entirely black except for specimens from India which may be entirely brown to black ……..... 3

2. Movable fingers of pedipalps with 16 cutting edges. Ventral surfaces of metasomal segments and vesicle densely hirsute. Occurs in Iran ……. ***H. zagrosensis*** Kovařík, 1997
- Movable fingers of pedipalps with 13–14 cutting edges. Metasoma bears only a few hairs. Does not occur in Iran ……..... ***H. judaicus*** (Simon, 1872)

3. Chela of pedipalp always darker than femur of pedipalp ……..... ***H. schach*** (Birula, 1905)
- Chela of pedipalp of same color as femur of pedipalp, not darker 4

4. Male has markedly broader manus than female ……..... 6
- Width of manus of pedipalp same in both sexes ……..... 5

5. Ventral surfaces of metasomal segments and vesicle densely hirsute ……..…***H. saulcyi*** (Simon, 1880)
- Metasoma only sparsely hirsute ……..... 7

6. Ventral surfaces of metasomal segments and vesicle densely hirsute ……..... 13
- Metasoma only sparsely hirsute …..... 10

7. Telson black ……..... ***H. alticola*** (Pocock, 1895)
- Telson yellow to yellowish brown ……..... 8

8. First metasomal segment of both sexes always wider than long, in female also second metasomal segment wider than long. Second to fourth metasomal segment width ratio in females 1.26–1.29…….. ……..... ***H. jalalabadensis*** **sp.n.**
- First and second metasomal segments of both sexes longer than wide. Second to fourth metasomal segment width ratio less than 1.2 ……..... 9

9. Dorsal surface of fourth metasomal segment bears 2 short, inconspicuous carinae (see fig. 19 in Vachon, 1958: 137) …..... ***H. penjabensis*** (Birula, 1897)
- Dorsal surface of fourth metasomal segment smooth, without granules and carinae (see fig. 20 in Vachon, 1958: 137) ……..... ***H. buchariensis*** (Birula, 1897)

10. Total length 30–60 mm. Pectinal teeth number 23–29 in males, 19–26 in females ……..... 11
- Total length 50–90 mm. Pectinal teeth number 30–39 in males, 27–34 in females ……. ……... ***H. tamulus*** (Fabricius, 1798)

11. Second metasomal segment of female wider than long ..... ***H. rugiscutis*** (Pocock, 1897)
- Second metasomal segment in adults of both sexes always longer than wide ……..... 12

12. Movable fingers of pedipalp with 12 cutting edges. Hairs on patella of pedipalp long. Occurs in Pakistan ……..…..... ***H. finneganae*** **sp. n.**
- Movable fingers of pedipalp with 14 cutting edges. Hairs on patella of pedipalp short. Occurs in India …….....***H. stockwelli*** **sp. n.**

13. Total length 35–50 mm. Pectinal teeth number 20–24 ..... ***H. pachyurus*** (Pocock, 1897)
- Total length 50–80 mm. Pectinal teeth number 26–36 ……..... ***H. jabalpurensis*** **sp. n.**

Key to species of the genus *Hottentotta* Birula, 1908 occurring in Africa and Arabia

1. All metasomal segments uniformly colored ……..... 4
– First two or three metasomal segments yellow, fifth segment and telson black ……..... 2

2. All segments of pedipalps uniformly colored …..... ***H. scaber*** (Ehrenberg, 1828)
– Femur of pedipalp yellow to yellowish brown, chela dark ……..……..... 3

3. Patella of pedipalp as dark as chela ……..…. ……..... ***H. jayakari*** (Pocock, 1895)
– Patella of pedipalp as yellow to yellowish brown as femur …..... ***H. salei*** (Vachon, 1980)

4. Telson extremely inflated (Fig. 28), both sexes with very narrow chelae. Occurs only in Angola, South Africa, and Namibia ….....…..... 5
- Telson much less inflated ……..... 6

5. Total length 32–43 mm. First metasomal segment width/length ratio 0.95–1.05 in males, 1.03–1.14 in females ……..... ***H. arenaceus*** (Purcell, 1902)
- Total length 40–65 mm. First metasomal segment width/length ratio 1.22–1.42 in males, 1.28–1.47 in females ……... ***H. conspersus*** (Thorell, 1876)

6. Ventral surfaces of metasomal segments and vesicle of female densely hirsute ……..... 7
- Metasoma of both sexes bears only a few hairs …..... 8

7. Legs yellow ……..... ***H. gentili*** (Pallary, 1924)

- Legs black or reddish brown …… ……... ***H. franzwerneri*** (Birula, 1914)

8. Trichobothrium *db* on the fixed finger of pedipalp located between trichobothria *et* and *dt* or on level with trichobothrium *et* (Fig. 4). Occurs in Socotra ……..... ***H. socotrensis*** (Pocock, 1889)
- Trichobothrium *db* on the fixed finger of pedipalp located between trichobothria *et* and *est* or *esb* (Fig. 1). Does not occur in Socotra …..... 9

9. Entire body black, does not occur in Africa ……..... ***H. judaicus*** (Simon, 1872)
- Usually uniformly reddish brown, some populations yellowish brown to black. Occurs in Africa …..... 10

10. Chelicerae of both sexes yellow, without reticulation ……..... 11
- Chelicerae always reticulated in females, reticulation may be absent in males ……. …….. ***H. hottentotta*** (Fabricius, 1787)

11. Metasoma wide. First metasomal segment of adults always wider than long, second metasomal segment usually wider than long 12
– Metasoma narrow. First metasomal segment usually longer than wide or as wide as long (except for some males of *H. trilineata*) …….....……..... 13

12. Male with manus of pedipalp markedly broader than in female …….. ***H. niloticus*** (Birula, 1928)
- Width of manus of pedipalp same in both sexes …….…….. ***H. minax*** (L. Koch, 1875)

13. Metasoma very narrow. Fourth metasomal segment length/width ratio higher than 1.6 …… ……..... ***H. polystictus*** (Pocock, 1896)
– Fourth metasomal segment length/width ratio less than 1.6 …….. ***H. trilineatus*** (Peters, 1861)

DISCUSSION. Most species of *Hottentotta* are uniform yellowish brown, sometimes with a dark mesosoma or at least a dark spot on the anterior part of the carapace. Four species, ***H. franzwerneri*** (Birula, 1914) (Fig. 32), ***H. gentili*** (Pallary, 1924) **comb. n.** (Fig. 37), ***H. judaicus*** (Simon, 1872) (Fig. 64) and ***H. zagrosensis*** Kovařík, 1997 (Fig. 129), are black; in ***H. franzwerneri*** with yellow legs (Fig. 32) and in the other species with legs often lighter than the body, often reddish brown (Figs. 64 and 128). In other four species, ***H. salei*** (Vachon, 1980) **comb. n.** (Fig. 93), ***H. saulcyi*** (Simon, 1880) (Fig. 95), ***H. scaber*** (Ehrenberg, 1828) (Fig. 100) and ***H. schach*** (Birula, 1905) (Fig. 105), the color pattern contrasts alternating black and yellow segments of pedipalps or/and metasoma, and intraspecific variation in this regard is negligible. Close to this group is ***H. jayakari*** (Pocock, 1895), in which however the base color cannot be unequivocally described as yellow but rather ranges from yellow to brown (Fig. 62).

Color-wise the most interesting group of species comprises ***H. hottentotta*** (Fabricius, 1787) (Figs. 42 and 43), ***H. rugiscutis*** (Pocock, 1897) (Figs. 92 and 91), ***H. tamulus*** (Fabricius, 1798) (Figs. 114 and 120) and ***H. trilineatus*** (Peters, 1862) (Figs. 124 and 122). They lack contrasting colors, but in all of them some specimens are pale yellow (Fig. 124), some nearly black (Fig. 43), and many range from shades of yellowish green to reddish brown (Fig. 42). Despite inhabiting two continents and being allopatric, these four species have much in common and appear to belong to the same species complex. Their sexual dimorphism is similar, males have fingers proximally twisted and the manus of pedipalp wider than females (Figs. 114 and 116), and they are highly variable in the position of trichobothrium *db* on the fixed finger of pedipalp in relation to trichobothrium *est*. Their habitus is similar and they are often confused with the genus *Mesobuthus*, to which they seem to be much closer than other species of *Hottentotta*. All of them can also be characterized as adaptable and thus having wide geographic distributions (in comparison with other species of *Hottentotta*), and usually being quite common (in comparison with other scorpion genera). These attributes make the group taxonomically difficult and endowed by the most synonyms, as descriptions are often based on small samples that do not permit recognition of intraspecific variability.

Examination of a large number of specimens has allowed me to discern variation in the width to length ratio of some metasomal segments, i.e. a character which is generally regarded as stable and which in case of the first and second segments I use in the simplified key to differentiate species with broader metasomas (***H. niloticus*** (Birula, 1928) and ***H. minax*** (L. Koch, 1875)) from those with narrower metasomas (***H. polystictus*** (Pocock, 1896) and ***H. trilineatus*** (Peters, 1861)). All these species show a degree of variation, namely in the width of the fourth metasomal segment, which crosses population boundaries and does not appear to be related to individual size, and this must be taken into account in species determinations. I have not found any discernible variation in the width to length ratio of the first metasomal segment, however.

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