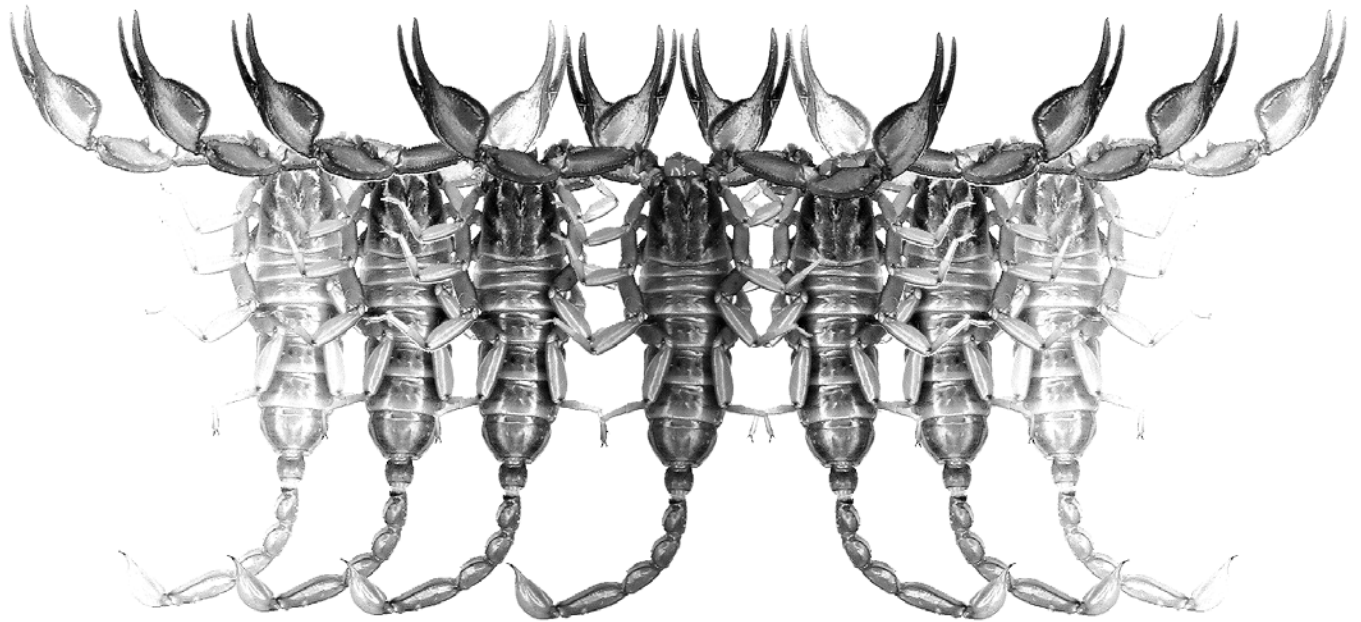


Euscorpius

Occasional Publications in Scorpiology



**Scorpions of Iran (Arachnida: Scorpiones).
Part VI. Lorestan Province**

**Shahrokh Navidpour, Hassan H. Nayebzadeh, Michael E. Soleglad, Victor Fet,
František Kovařík & Mohammad Hassan Kayedi**

June 2010 — No. 99

Euscorpius

Occasional Publications in Scorpiology

EDITOR: Victor Fet, Marshall University, ‘fet@marshall.edu’

ASSOCIATE EDITOR: Michael E. Soleglad, ‘soleglad@la.znet.com’

Euscorpius is the first research publication completely devoted to scorpions (Arachnida: Scorpiones). *Euscorpius* takes advantage of the rapidly evolving medium of quick online publication, at the same time maintaining high research standards for the burgeoning field of scorpion science (scorpiology). *Euscorpius* is an expedient and viable medium for the publication of serious papers in scorpiology, including (but not limited to): systematics, evolution, ecology, biogeography, and general biology of scorpions. Review papers, descriptions of new taxa, faunistic surveys, lists of museum collections, and book reviews are welcome.

Derivatio Nominis

The name *Euscorpius* Thorell, 1876 refers to the most common genus of scorpions in the Mediterranean region and southern Europe (family Euscorpiidae).

Euscorpius is located on Website ‘<http://www.science.marshall.edu/fet/euscorpius/>’ at Marshall University, Huntington, WV 25755-2510, USA.

The International Code of Zoological Nomenclature (ICZN, 4th Edition, 1999) does not accept online texts as published work (Article 9.8); however, it accepts CD-ROM publications (Article 8). *Euscorpius* is produced in two *identical* versions: online (ISSN 1536-9307) and CD-ROM (ISSN 1536-9293). Only copies distributed on a CD-ROM from *Euscorpius* are considered published work in compliance with the ICZN, i.e. for the purposes of new names and new nomenclatural acts. All *Euscorpius* publications are distributed on a CD-ROM medium to the following museums/libraries:

- **ZR**, Zoological Record, York, UK
- **LC**, Library of Congress, Washington, DC, USA
- **USNM**, United States National Museum of Natural History (Smithsonian Institution), Washington, DC, USA
- **AMNH**, American Museum of Natural History, New York, USA
- **CAS**, California Academy of Sciences, San Francisco, USA
- **FMNH**, Field Museum of Natural History, Chicago, USA
- **MCZ**, Museum of Comparative Zoology, Cambridge, Massachusetts, USA
- **MNHN**, Museum National d’Histoire Naturelle, Paris, France
- **NMW**, Naturhistorisches Museum Wien, Vienna, Austria
- **BMNH**, British Museum of Natural History, London, England, UK
- **MZUC**, Museo Zoologico “La Specola” dell’Universita de Firenze, Florence, Italy
- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
- **WAM**, Western Australian Museum, Perth, Australia
- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway
- **OUMNH**, Oxford University Museum of Natural History, Oxford, UK
- **NEV**, Library Netherlands Entomological Society, Amsterdam, Netherlands

Publication date: 24 June 2010

Scorpions of Iran (Arachnida: Scorpiones). Part VI. Lorestan Province

Shahrokh Navidpour¹, Hassan H. Nayebzadeh², Michael E. Soleglad³, Victor Fet⁴,
František Kovařík⁵ & Mohammad Hassan Kayedi⁶

¹Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, P.O.Box 31975/148, Department of Venomous Animals & Toxins, Hesarak, Karaj, Iran

²Department of Parasitology, School of Veterinary Medicine, Lorestan University, Khorramabad, Iran

³P.O. Box 250, Borrego Springs, CA 92004, USA

⁴Department of Biological Sciences, Marshall University, Huntington, WV 25755, USA

⁵P.O. Box 27, CZ-145 01 Praha 45, Czech Republic; www.kovarex.com/scorpio

⁶Department of Parasitology, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

Summary

Ten species of scorpions belonging to three families are reported from the Lorestan Province of Iran. Of these, five species are recorded from the province for the first time: *Hottentotta zagrosensis* Kovařík, 1997; *Mesobuthus eupeus phillipsii* (Pocock, 1889); *Orthochirus iranus* Kovařík, 2004; *Razianus zarudnyi* (Birula, 1903); and *Scorpio maurus townsendi* (Pocock, 1900). One new species is described, *Hottentotta lorestanus* sp. n.; it can be easily distinguished from the other four species of the genus known from Iran by its coloration; it is the only Iranian species which has the entire pedipalps yellow and the metasomal segments I to IV greenish gray. Also presented is a key to all species of scorpions found in the province.

Introduction

Many papers deal with the scorpions of Iran to some extent, but a comprehensive study of the scorpion fauna has been lacking. We have therefore decided to survey the scorpions of Iran thoroughly, province by province.

The Lorestan Province is the sixth region surveyed (see previous publications of our group: Navidpour et al., 2008a, 2008b, 2008c, 2008d; Pirali-Kheirabadi et al., 2009), and this publication represents the first comprehensive treatment of its scorpions. A study made by a team under Shahrokh Navidpour reveals 10 species of three families; four of these species are recorded from this province for the first time.

Lorestan is a montane province located in the southwest of Iran between 46°51'–50°03'E and 32°37'–34°32'N. It covers roughly 28,294 sq. km, and is surrounded by the Zagros Range. The neighboring provinces are Markazi and Hamadan on the north, Isfahan on the east, Ilam and Kermanshah on the west, and Khozestan and Chahar Mahal & Bakhtiyari on the south (see map in Fig. 1). The mean altitude is more than 2,200 meters, with the lowest point at 500 meters. The weather of the northern highlands is cold, snowy in the winter and mild in the summer. The southern area lacks adequate rainfall and is hot in the summer. The central parts are temperate. The climate is generally subhumid.

Abbreviations. The institutional abbreviations listed below and used throughout are mostly after Arnett, Samuelson & Nishida (1993).

BMNH – The Natural History Museum, London, United Kingdom;

FKCP – František Kovařík Collection, Praha, Czech Republic;

MNHN – Muséum national d'Histoire naturelle, Paris, France;

RRLS – Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Hesarak, Karaj, Iran;

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.

List of scorpions of Lorestan Province

Family **Buthidae** C. L. Koch, 1837

Androctonus crassicauda (Olivier, 1807)

Compsobuthus matthiesseni (Birula, 1905)

Hottentotta lorestanus sp. n.

Hottentotta sauleyi (Simon, 1880)

Hottentotta zagrosensis Kovařík, 1997 (first report)

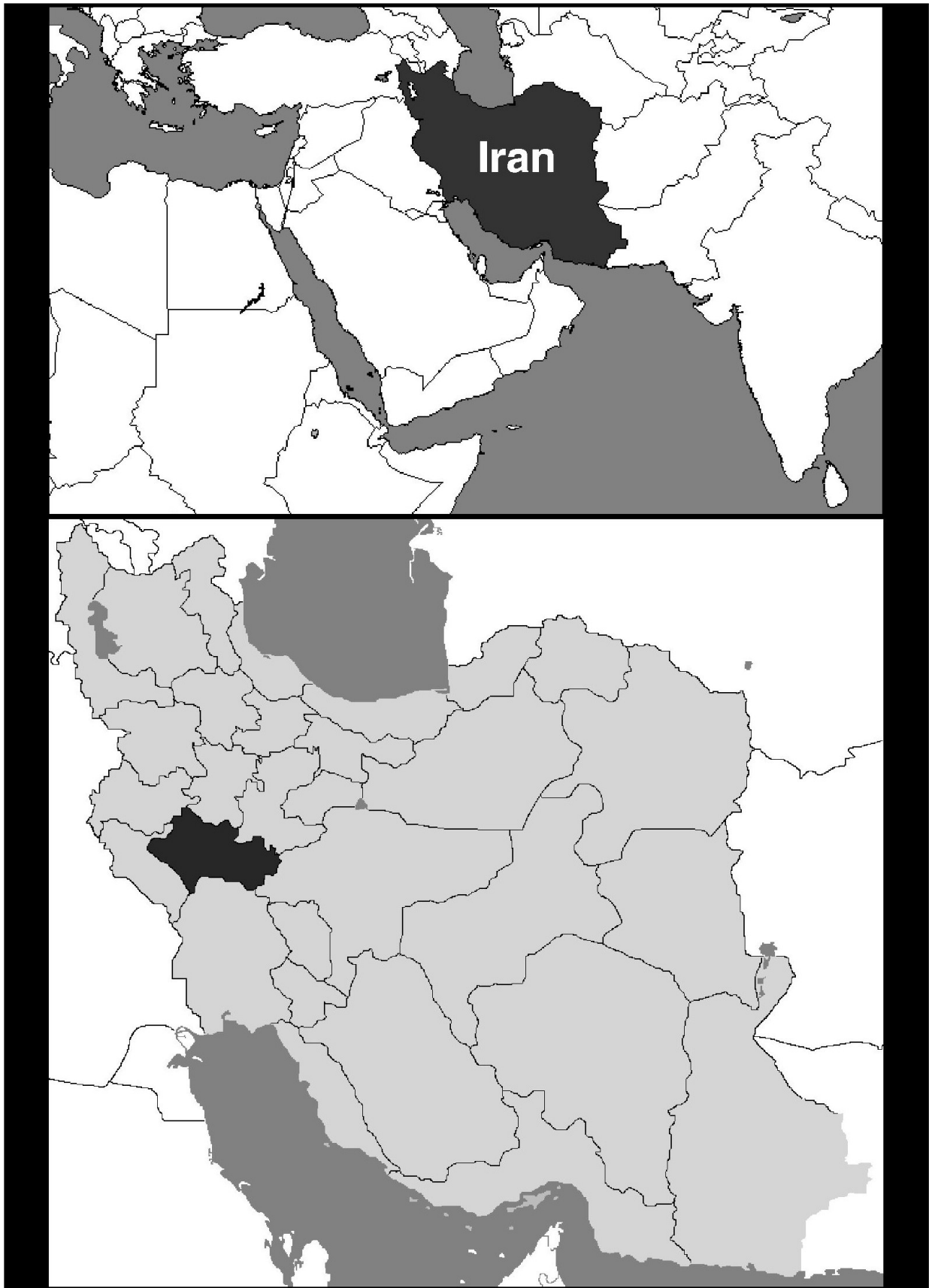


Figure 1: Map of southwestern Asia highlighting Iran (top) and closeup of Iran showing provinces, the Lorestan Province depicted in black (bottom).

Mesobuthus eupeus phillipsii (Pocock, 1889) (first report)

Orthochirus iranus Kovařík, 2004 (first report)

Razianus zarudnyi (Birula, 1903) (first report)

Family **Scorpionidae** Latreille, 1802

Scorpio maurus townsendi (Pocock, 1900) (first report)

Family **Hemiscorpiidae** Pocock, 1893

Hemiscorpius lepturus Peters, 1861

Note. Lourenco & Pézier (2002: 116) listed a single male of *Odontobuthus doriae* (Thorell, 1876) collected by T. Habibi in Borujerd (Lorestan); this locality was not listed by Habibi (1971: 43). Our field team has not yet confirmed this large and conspicuous species for Lorestan.

Systematics

Family **Buthidae** C. L. Koch, 1837

Androctonus crassicauda (Olivier, 1807)
(Fig. 4.)

Scorpio crassicauda Olivier, 1807: 97, pl. XLII, fig. 2.

Buthus crassicauda: Simon, 1872: 247 (in part); Simon, 1879: 99; Simon, 1892: 83; Kraepelin, 1899: 16; Pocock, 1902: 373; Kraepelin, 1913: 124; Lampe, 1918: 190.

Androctonus crassicauda: Kraepelin, 1891: 175 (in part); Vachon, 1951: 343; Khalaf, 1962: 1; Khalaf, 1963: 60; Habibi, 1971: 42; Farzanpay & Pretzmann, 1974: 215; Pérez Minocci, 1974: 17; Vachon, 1974: 909, fig. 40; Vachon, 1979: 31, figs. 1, 2, 4; Farzanpay, 1987: 141; Farzanpay, 1988: 36; Fet, 1989: 78; Sissom, 1994: 36; Al-Safadi, 1992: 96; Amr & El-Oran, 1994: 187; Dupré et al., 1998: 59; Kovařík, 1998: 104; Crucitti, 1999: 83; Kabakibi et al., 1999: 80, fig. 3; Fet & Lowe, 2000: 72; Stathi & Mylonas, 2001: 288; Kovařík, 2002: 5; Crucitti & Vignoli, 2002: 439; Vignoli et al., 2003: 2; Fet & Kovařík, 2003: 180; Kovařík & Whitman, 2005: 105; Lourenco, 2005: 149; Hendrixson, 2006: 38, figs. 1a–f, Pl. 1; Akbari, 2007: 76, fig. p. 62; Navidpour et al., 2008a: 5, figs. 5, 12, 44–45; Navidpour et al., 2008b: 3, figs. 4, 20, 25–28; Navidpour et al., 2008c: 3, figs. 2, 3, 8, 13–16; Navidpour et al., 2008d: 3, figs. 4, 9, 15–18; Pirali-Kheirabadi et al., 2009: 3, figs. 3–4, 12–15.

Prionurus crassicauda: Pocock, 1895: 292; Tullgren, 1909: 2; Birula, 1904: 29; Birula, 1905a: 120; Masi, 1912: 91; Penther, 1912: 110.

Androctonus crassicauda crassicauda: Vachon, 1959: 124; Vachon, 1966: 210; Habibi, 1971: 42; Vachon, 1979: 34; Levy & Amitai, 1980: 23–29, figs. 30–34; Kovařík, 1997a: 49.

= *Prionurus crassicauda orientalis* Birula, 1900a: 355; Birula, 1903: 67 (syn. by Fet, 1989: 79)

Buthus (Prionurus) crassicauda orientalis: Birula, 1917: 93, 240.

Buthus crassicauda orientalis: Kraepelin, 1913: 124.

Androctonus crassicauda orientalis: Vachon, 1959: 124; Vachon, 1966: 210; Habibi, 1971: 42; Pérez Minocci, 1974: 18.

Androctonus amoreuxi baluchicus: Kovařík, 1997a: 39 (see Vignoli et al., 2003: 4).

TYPE LOCALITY AND TYPE REPOSITORY. Kashan, Persia, now Iran, Esfahan Province; MNHN.

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Koohdasht, Darbe Gonbad Village, 33°41'45"N 47°09'11"E, 1310 m a.s.l. (Locality No. LO-1361), October 2009, 1 ♂ (RRLS), 1 ♂ (FKCP), leg. A. Pahlavani, A. Bahreei & Bahreei M; Dorud, Daryab Village, 33°32'51"N 48°59'27"E, 1620 m a.s.l. (Locality No. LO-1380), October 2009, 2 ♂ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee.

DISTRIBUTION: Widespread in Iran, found in most provinces. Recorded also from Armenia (Kraepelin, 1899: 17), Azerbaijan (Fet, 1989: 79), Bahrain (Crucitti & Vignoli, 2002: 439), Egypt (Fet & Lowe, 2000: 72), Iraq (Kennedy, 1937: 745), Israel (Simon, 1872: 247; Levy & Amitai, 1980), Jordan (Amr & El-Oran, 1994: 187), Kuwait (Kettel, 1982: 6), Lebanon (El-Hennawy, 1992: 100), Oman (Birula, 1917: 229; Hendrixson, 2006: 39), Qatar (El-Hennawy, 1992: 100), Saudi Arabia (Pocock, 1895: 292; Hendrixson, 2006: 39), Syria (Birula, 1900b: 9), Tunisia (Kraepelin, 1901: 266), Turkey (Pocock, 1902: 373), United Arab Emirates (Hendrixson, 2006: 40), Yemen (Birula, 1937: 101).

Compsobuthus matthiesseni (Birula, 1905)
(Fig. 4.)

Buthus acutecarinatus matthiesseni Birula, 1905a: 142; Birula, 1937: 107.

Buthus (Buthus) acutecarinatus matthiesseni: Birula, 1917: 229, 240; Birula, 1918: 25.

Buthus (Hottentotta) acutecarinatus matthiesseni: Vachon, 1940b: 173.

Compsobuthus matthiesseni: Pringle, 1960: 77, fig. 3; Habibi, 1971: 43; Levy et al., 1973: 114; Levy &



Figures 2–3: Iran, Lorestan Province. **2.** Dorud, Gahar, 33°19'16"N 49°17'17"E, 2325 m a.s.l. (Locality No. LO-1350). Recorded occurrence of *Compsobuthus matthiesseni* (Birula, 1905), *Hottentotta saulcyi* (Simon, 1880), and *Razianus zarudnyi* (Birula, 1903). **3.** Koramabad, Nojhiyan, 33°16'14"N 48°31'38"E, 1953 m a.s.l. (Locality No. LO-1355). Recorded occurrence of *Compsobuthus matthiesseni* (Birula, 1905) and *Hottentotta saulcyi* (Simon, 1880).

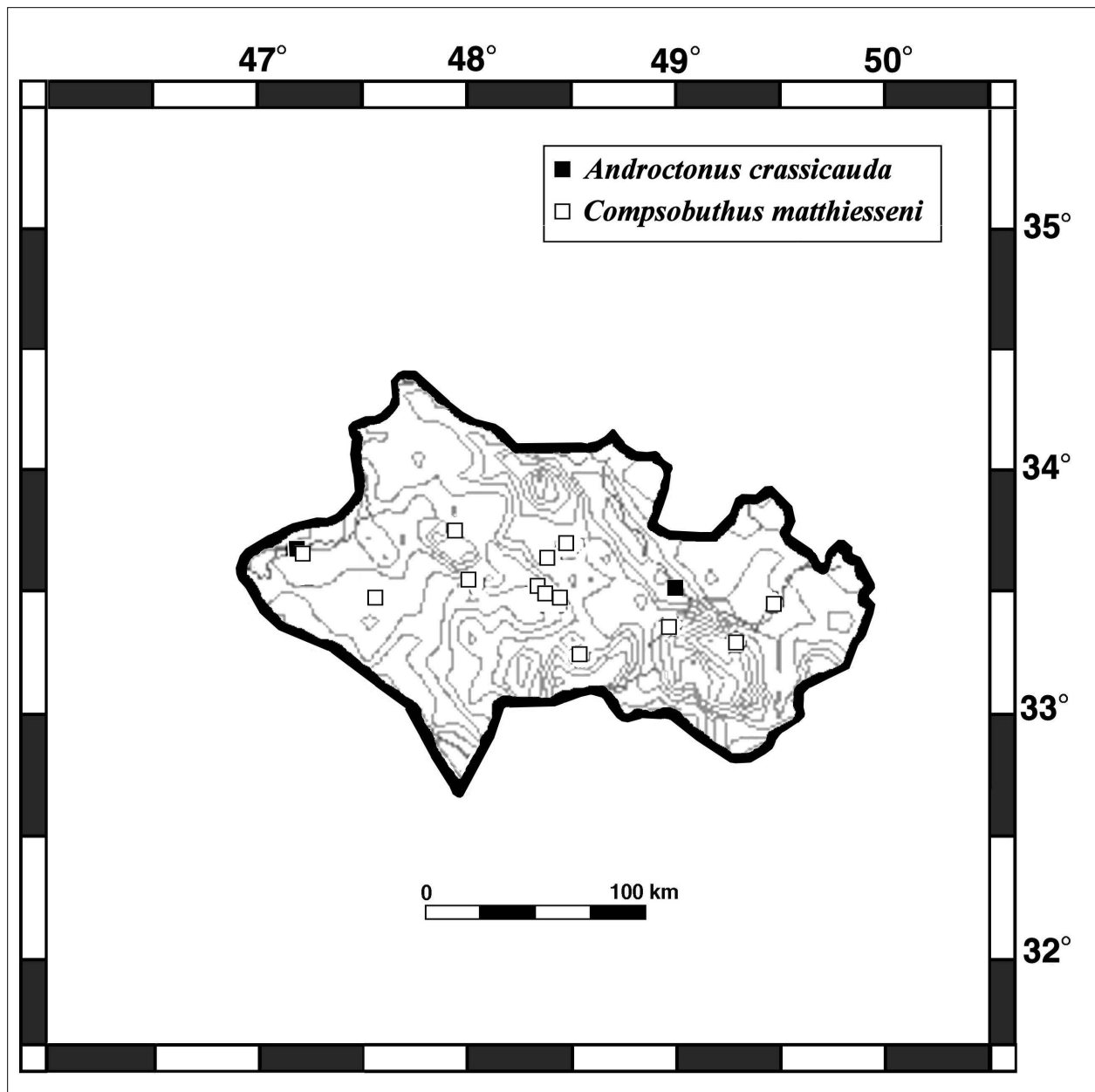


Figure 4: Map of Lorestan Province showing distribution of *Androctonus crassicauda* (Olivier, 1807) and *Compsobuthus matthiesseni* (Birula, 1905) collected in this study.

Amitai, 1980: 60; Farzanpay, 1987: 149; Farzanpay, 1988: 37; Kovařík, 1992: 183; Kovařík, 1996: 53; Kovařík, 1997a: 40, 49; Kovařík, 1997b: 179; Kovařík, 1998: 109; Sissom & Fet, 1998: 1, figs. 1–12; Crucitti, 1999: 84; Fet & Lowe, 2000: 127; Lourenço & Vachon, 2001: 180; Kovařík, 2002: 7; Crucitti & Vignoli, 2002: 441, figs. 6–7; Kovařík, 2003: 97; Vignoli et al., 2003: 2; Vignoli, 2005: 85; Akbari, 2007: 76, fig. p. 64; Kovařík & Ahmed, 2007: 6; Navidpour et al., 2008a: 9, figs. 3–4, 17, 60–63; Navidpour et al., 2008b: 9, figs. 19, 45–48; Navidpour et al., 2008c: 8, figs. 2, 4–6, 33–36;

Navidpour et al., 2008d: 3, figs. 3, 4, 7, 9, 31–34; Lowe, 2009: 11; Pirali-Kheirabadi et al., 2009: 3, figs. 4, 6, 28–31.

Compsobuthus acutecarinatus matthiesseni: Vachon & Kinzelbach, 1987: 101; El-Hennawy, 1992: 123.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, “Kum, Province Irak-Adschemi“ now Qum (Qom); ZISP.

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, 10 km SE Bavineh, 33°36'08"N 47° 11'59"E, 1100 m a.s.l, 16–17 October 1998, 1 ♂, 6 ♀,

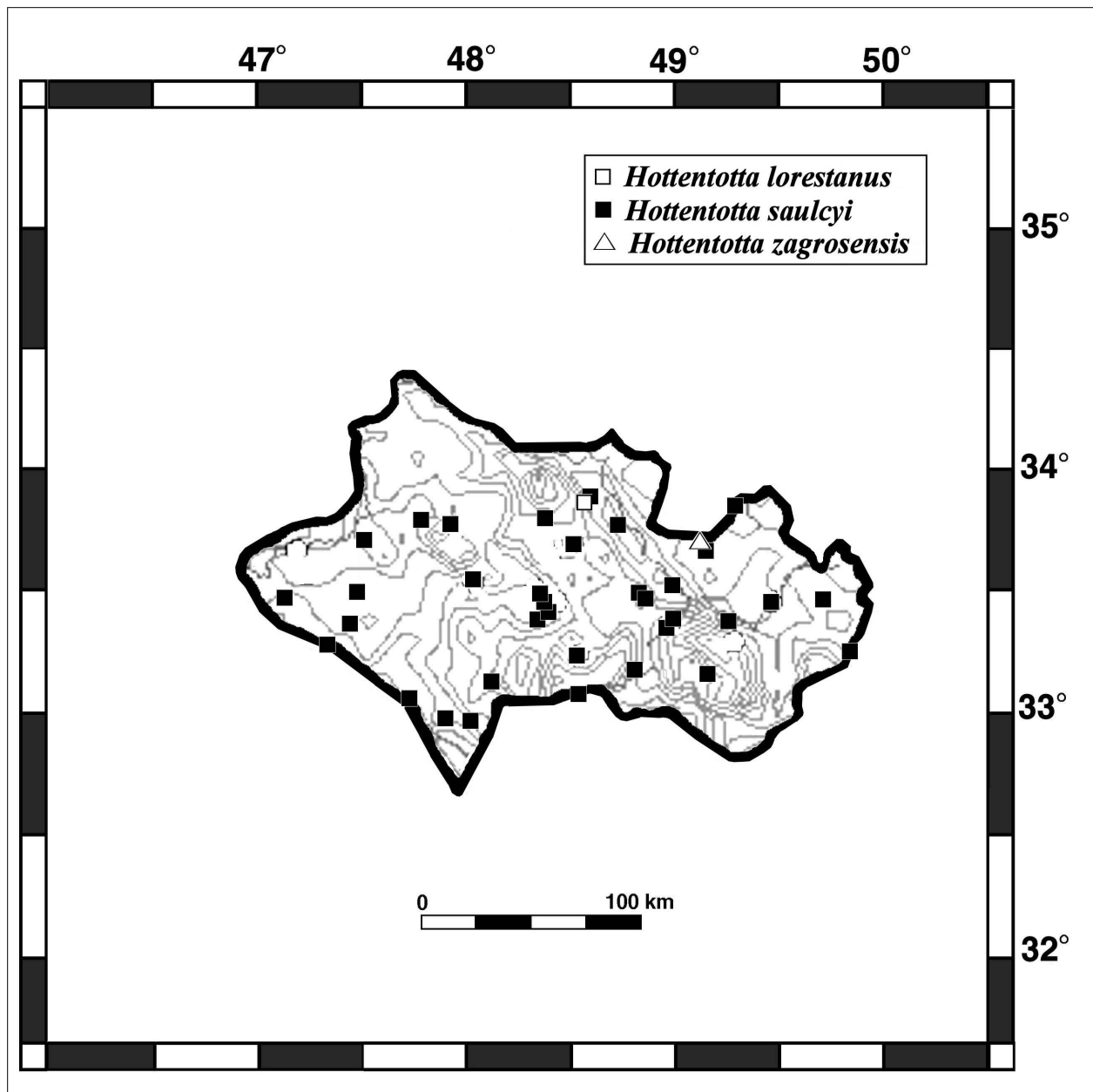


Figure 5: Map of Lorestan Province showing distribution of *Hottentotta lorestanus* sp. n., *Hottentotta saulcyi* (Simon, 1880), and *Hottentotta zagrosensis* Kovařík, 1997, collected in this study.

leg. P. Kabátek & M. Kaftan (FKCP); Dorud, Gahar, 33°19'16"N 49°17'17"E, 2325 m a.s.l. (Locality No. LO-1350), October 2009, 3 ♀ (RRLS), leg. H. H. Nayebzadeh & M. Tavakoli; Koramabad, Roodkhoshke Village, 33°43'50"N 48°29'53"E, 1717 m a.s.l. (Locality No. LO-1351), October 2009, 1 ♂ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Koramabad, Nojhiyan, 33°16'14"N 48°31'38"E, 1953 m a.s.l. (Locality No. LO-1355), October 2009, 3 ♂ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Koramabad, 33°29'36"N 48°20'45"E, 1266 m a.s.l.

(Locality No. LO-1357), October 2009, 2 ♀, 1 imm. (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Koohtasht, Darbe Gonbad Village, 33°41'45"N 47°09'11"E, 1310 m a.s.l. (Locality No. LO-1361), October 2009, 3 ♂, 1 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Koohtasht, Nal Eshgeneh Village, 33°30'45"N 47°31'40"E, 1327 m.a.s.l. (Locality No. LO-1389), October 2009, 1 ♂ (RRLS), leg. A. Pahlavani; Aleshtar, Shineh Village, 33°47'37"N 47°55'47"E, 1355 m a.s.l. (Locality No. LO-1367), October 2009, 1 ♂, 2 ♀ (RRLS), leg. A. Bahreei, M.

Bahreei & R. Amraee; Azna, Charkheshan Village, 33°40'21"N 48°23'30"E, 2220 m a.s.l. (Locality No. LO-1369), October 2009, 1 ♂ (FKCP), leg. A. Bahreei, A. Pahlavani & R. Amraee; Azna, 33°29'13"N 49°28'10"E, 1932 m a.s.l. (Locality No. LO-1386), October 2009, 1 ♀ (FKCP), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Poldokhtar, Maemulan, 33°23'50"N 48°58'17"E, 1193 m a.s.l. (Locality No. LO-1387), October 2009, 2 ♂ (RRLS), 1 ♂, 1 ♀ (FKCP), leg. Bahreei & A. Pahlavani; Koramabad, Sarabe Doreh, 33°34'17"N 48°01'00"E, 1333 m a.s.l. (Locality No. LO-1392), October 2009, 3 ♂, 2 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh, D. Bahreei & R. Amraee; Koramabad, Papi khaldare sofla Village, 33°32'24"N 48°19'11"E, 1292 m a.s.l. (Locality No. LO-1400), October 2009, 4 ♂, 2 ♀ (RRLS), leg. R. Amraee, A. Bahreei & M. Bahreei; Koramabad, Kamalvand Village, 33°29'13"N 48°25'22"E, 1460 m a.s.l. (Locality No. LO-1401), October 2009, 4 ♂, 3 ♀ (RRLS), leg. H. Nayebzadeh, A. Bahreei & M. Bahreei.

DISTRIBUTION: Iran, known from provinces Kermanshah (formerly Bahtaran), Bushehr, Fars, Hamadan, Ilam, Khozestan, Kerman, Kordestan, Lorestan, Markazi, Qom (Sissom & Fet, 1998; Kovařík, 2003: 100; Akbari, 2007: 76), Kohgilouyeh & Boyer Ahmad (Navidpour et al., 2008d: 3), and Chahar Machal & Bakhtiyari Province (Pirali-Kheirabadi et al., 2009: 5); Iraq (Birula, 1917: 240; Pringle, 1960: 77), Syria (Kovařík, 2002: 7), Turkey (Kovařík, 1996: 53).

Hottentotta lorestanus Navidpour, Nayebzadeh, Sologlad, Fet, Kovařík et Kayedi, **sp. n.**
(Figs. 5, 6–14, Table 1)

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Lorestan Province, Borujerd, Wenoei Village, 33°54'21"N 48°35'32"E, 2006 m a.s.l. (RRLS).

TYPE MATERIAL EXAMINED. Iran, Lorestan Province, Borujerd, Wenoei Village, 33°54'21"N 48°35'32"E, 2006 m a.s.l. (Locality No. LO-1366), October 2009, 1 ♀ (holotype) (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei.

ETYMOLOGY. Named after the type locality.

DIAGNOSIS. Total length of female holotype 112.5 mm. For habitus, see Figs. 6–9. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *dt*, close to or on level with *et*. Chelicerae black, reticulate. Pectinal teeth number 28 and 29. Nearly entire body hirsute, pedipalps, dorsal surface of mesosoma, legs, lateral and ventral surfaces of metasomal segments, and vesicle densely hirsute. Color greenish grey except black anterior part of carapace, telson and

part of fifth metasomal segments. Pedipalps and legs are yellow. Femur of pedipalp with 3 carinae, patella with 8 carinae (some of them weakly indicated), chela lacks carinae. Movable fingers of pedipalps with 16 MD rows, and fixed fingers, with 13 MD rows. Mesosomal sternite VII smooth, with 4 smooth carinae. Metasomal segments I to III with 10 carinae; segment IV with 8 carinae and segment V with 5 carinae, 3 ventral (1 median, 2 lateral) and 2 dorsal. Dorsal carinae of metasomal segments bear terminal granules of size approximately equal to preceding granules. Dorsal surface smooth. All metasomal segments longer than wide.

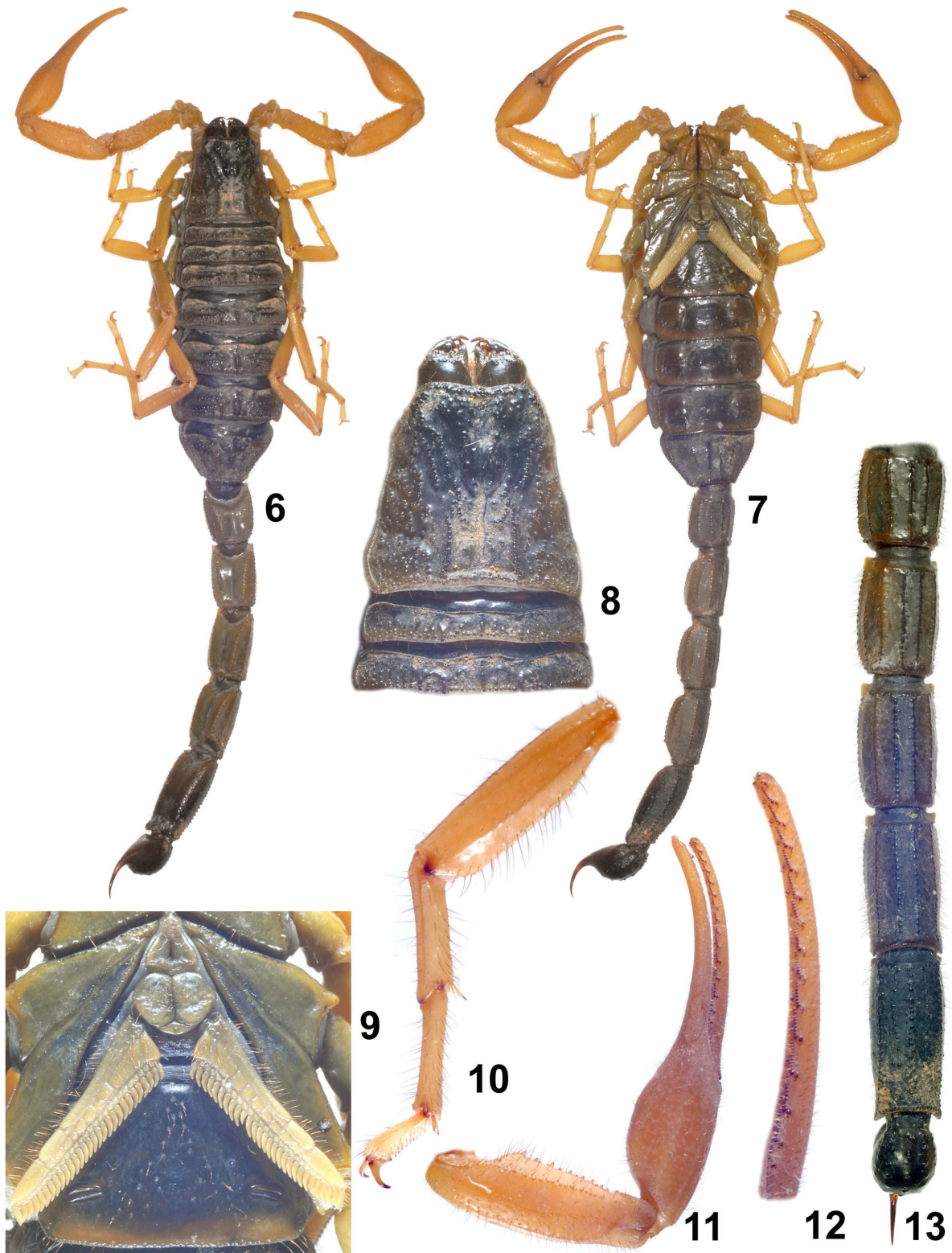
DESCRIPTION: The total length of female holotype is 119.5 mm. The habitus is shown in Figs. 6–9. Measurements of the carapace, telson, segments of the metasoma and of the pedipalps, and numbers of pectinal teeth in the holotype are given in Table 1. Trichobothrium *db* on fixed finger of pedipalp situated between trichobothria *et* and *dt*, close to or on level with *et*. (Fig. 14 and fig. 4 in Kovařík, 2007: 3). Chelicerae black, reticulate. Pectinal teeth number 28 and 29.

COLORATION: The color greenish grey except black anterior part of carapace, telson and part of fifth metasomal segments. Pedipalps and legs are entirely yellow.

MESOSOMA: The mesosoma has three dorsal and no ventral carinae, except for the seventh segment which bears four obsolete ventral carinae. The dorsal surface is granulated, whereas the ventral surface is smooth.

PEDIPALPS: The pedipalps are smooth and hirsute. The femur of pedipalp with three distinct carinae: DI and VI carinae heavily serrated, DE mediumly serrated, VE rounded/obsolete; internal surface with irregular row of 10 large spinoid granules; external surface with irregular row of 12 serrate granules. The patella with eight carinae: *Dic* crenulated; *DMc* delicately granulated; *DEc* weak and rounded; *VIc* rounded and smooth; *EMc* rounded and smooth; *VEc* rounded and smooth; *DPSc* strongly serrated; *VPSc* irregularly crenulated. The chela lacks carinae. The movable finger of both pedipalps with 16 MD rows (including a distal row with one denticle and a basal row; each row terminates with an enlarged denticle, and is flanked by a even larger OD), 16 ID, and 16 OD; distal row with two closely spaced ID, a one-denticle MD row, and an OD (Fig. 12). The fixed finger of both pedipalps with 13 MD rows, including a distal row with 5 denticles and a basal row) 15 ID (including a “doubled” basal ID), and 14 OD (with two irregularly placed basal OD). Movable finger with slight basal scalloping in the area of the basal MD row. (For carinae and finger dentition conventions, see Sologlad & Fet, 2003).

METASOMA AND TELSON: All metasomal segments are longer than wide and hirsute. Segments I to III bear 10 carinae, segment IV bears eight carinae, and segment V bears five carinae, three ventral (one median, two lat-



Figures 6–13: *Hottentotta lorestanus* sp. n., female holotype. 6–9. Dorsal and ventral views. 10. Third leg. 11. Chela and patela. 12. Movable finger of pedipalp. 13. Metasoma ventral.

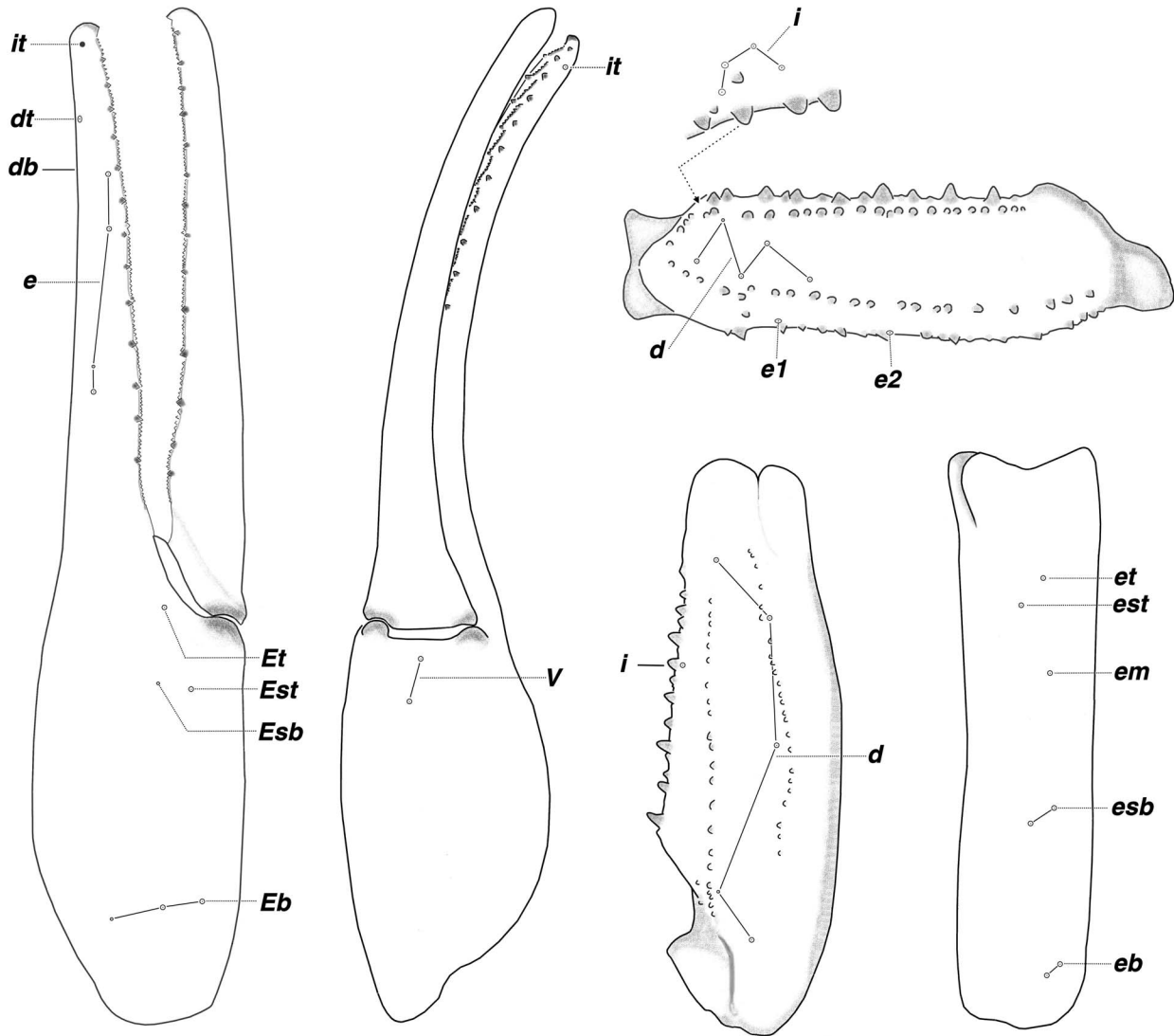


Figure 14: *Hottentotta lorestanus* sp. n., female holotype. Trichobothrial pattern (notation according to Vachon, 1974).

eral) and two dorsal. The dorsal surface of metasoma is smooth and glossy. The ventral carinae on metasomal segments I to IV are smooth and bear obsolete granules. The lateral carinae are smooth and bear obsolete granules, whereas dorsal carinae of all segments bear granules of even size. The intervals between carinae are smooth, with only several granules, only the ventral surface of the segment V bears additional rows of granules. A subaculear tooth is absent; the telson is hirsute, elongate, essentially smooth, with only a few scattered granules.

AFFINITIES. The described features distinguish *H. lorestanus* sp. n. from all other species of the genus. They are recounted in the key below. Together with *H. khoozestanus* Navidpour et al., 2008, *H. saulcyi* (Simon, 1880), and *H. schach* (Birula, 1905), the new species is

among the largest in the genus. *H. lorestanus* sp. n. can be easily distinguished from *H. khoozestanus* Navidpour et al., 2008 by its nearly entire body being hirsute. *H. lorestanus* sp. n. can be easily distinguished from the other abovenamed three species by coloration; whereas only *H. lorestanus* sp. n. has pedipalps entirely yellow (*H. zagrosensis* has pedipalps entirely black, and *H. schach* has a black chela of pedipalps) and metasomal segments I to IV are greenish gray (in *H. saulcyi*, these segments are yellow).

NOTE. Type locality, Wenoiei, lies north of Bourjerd city, in the northern part of Lorestan Province. The surrounding area is mountainous and rocky, with altitudes from 890-4250 m a.s.l and temperature ranging from 30 °C in summer to -20 °C in winter. Two other scorpion species found in the same area are *Hottentotta saulcyi* and *Mesobuthus eupeus*.

<i>Hottentotta lorestanus</i> sp.n. Female Holotype		
Total	length	112.5
Carapace	length	11.1
	width	12.0
Metasoma		
and telson	length	62.2
segment I	length	8.1
	width	6.6
segment II	length	9.1
	width	6.1
segment III	length	9.9
	width	5.9
segment IV	length	11.0
	width	5.8
segment V	length	12.3
	width	5.6
telson	length	12.2
	width	4.9
	depth	4.9
Pedipalp		
femur	length	10.5
	width	3.0
patella	length	12.9
	width	4.0
chela	length	21.5
	width	4.6
finger mov.	length	13.4
Pectines	length	
	right	9.5
	left	10.2
Pectinal teeth		29:28

Table 1: Measurements (in millimeters) of type specimens of *Hottentotta lorestanus* sp. n.

Hottentotta saulcyi (Simon, 1880)

(Fig. 5, 15)

Buthus saulcyi Simon, 1880a: 378; Simon, 1880b: 29; Kraepelin, 1899: 18; Kraepelin, 1901: 267; Weidner, 1959: 99.

Buthus (Hottentotta) saulcyi: Birula, 1905a: 136; Birula, 1917: 214; Birula, 1918: 30; Vachon, 1940b: 255.

Buthotus saulcyi: Vachon, 1949: 147 (1952: 233); Vachon, 1959: 134; Pringle, 1960: 79, fig. 5; Khalaf, 1962: 2; Khalaf, 1963: 64; Vachon, 1966: 210; Vachon & Stockmann, 1968: 91; Habibi, 1971: 43; Pérez Minocci, 1974: 21; Farzanpay, 1987: 148; Farzanpay, 1988: 37; El-Hennawy, 1992: 118; Kovařík, 1992: 183; Dupré, Lambert & Gérard, 1998: 70; Akbari et al., 1997: 112; Akbari, 2007: 76, fig. p. 63.

Hottentotta saulcyi: Kovařík, 1997a: 40; Crucitti & Vignoli, 2002: 446, figs. 8–10; Vignoli et al., 2003: 4; Karataş, 2003: 315; Kovařík, 2007: 61, figs. 17, 95–99; Navidpour et al., 2008b: 13, figs. 2, 22, 29–32; Navidpour et al., 2008c: 8, figs. 9, 17–20; Navidpour et al., 2008d: 5, figs. 4, 7, 19–22; Pirali-Kheirabadi et al., 2009: 6, figs. 9, 16–19.

Hottentotta (Hottentotta) saulcyi: Kovařík, 1998: 110; Fet & Lowe, 2000: 143.

Buthus hottentotta: Kraepelin, 1891: 185 (in part).

TYPE LOCALITY AND TYPE REPOSITORY. Iraq, Mosul; MNHN, ZMUH.

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Dorud, 80 km E Horramabad, 33°27'N 49°01'E, 10 June 1999, 1 ♂, leg. P. Kabátek (FKCP); Koramabad, Roodkhoshke Village, 33°43'50"N 48°29'

- 53°E, 1717 m a.s.l. (Locality No. LO-1351), October 2009, 4 ♂, 3 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Aleshtar, Parmake Olya Village, 33°49'10N 48°22'52E, 1834 m a.s.l. (Locality No. LO-1353), October 2009, 1 ♂, 6 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Azna, Ghale Rostam Village, 33°24'54"N 49°15'46"E, 1970 m a.s.l. (Locality No. LO-1354), October 2009, 4 ♂, 2 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Koramabad, Nojhiyan, 33°16'14"N 48°31'38"E, 1953 m a.s.l. (Locality No. LO-1355), October 2009, 8 ♂, 4 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Poldokhtar, Valiyeasr Village, 33°05'22"N 47°42'39"E, 735 m a.s.l. (Locality No. LO-1356), October 2009, 2 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Poldokhtar, Zirtang Village, 33°14'12"N 48°12'33"E, 1477 m a.s.l. (Locality No. LO-1358), October 2009, 1 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Koramabad, Shahshah Village, 33°24'39"N 48°18'16"E, 1288 m a.s.l. (Locality No. LO-1359), October 2009, 1 ♂ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Noorabad, Zaliabad Village, 34°00'35"N 48°01'39"E, 1890 m a.s.l. (Locality No. LO-1360), October 2009, 1 ♂ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Koramabad, Haftcheshmeh Village, 33°48'39"N 47°46'03"E, 1398 m a.s.l. (Locality No. LO-1362), October 2009, 4 ♂, 1 ♀ (RRLS), 1 ♀ (FKCP), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Aligudarz, Shoolabad Village, 33°11'44"N 49°11'31"E, 1755 m a.s.l. (Locality No. LO-1363), October 2009, 5 ♂, 4 ♀ (RRLS), 1 ♀ (FKCP), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Sepiddasht, Dareashkaft Village, 33°13'46"N 48°49'18"E, 1144 m a.s.l. (Locality No. LO-1364), October 2009, 2 ♂, 1 ♀, 1 im. (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Aligudarz, Gandomineh Village, 33°17'05"N 49°54'33"E, 2316 m a.s.l. (Locality No. LO-1365), October 2009, 2 ♂ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Borujerd, Wenoeei Village, 33°54'21"N 48°35'32"E, 2006 m a.s.l. (Locality No. LO-1366), October 2009, 7 ♂, 6 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Aleshtar, Shineh Village, 33°47'37"N 47°55'47"E, 1355 m a.s.l. (Locality No. LO-1367), October 2009, 1 ♂, 2 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Dorud, Papiun Village, 33°43'15"N 49°10'21"E, 1653 m a.s.l. (Locality No. LO-1370), October 2009, 9 ♂, 9 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Dorud, Daryab Village, 33°32'51"N 48°59'27"E, 1620 m a.s.l. (Locality No. LO-1380), October 2009, 1 ♀ (RRLS), 1 juv. (FKCP), leg. A. Bahreei, M. Bahreei & R. Amraee; Kohdasht, Namjoo Olad Village, 33°44'22"N 47°28'28"E, 1317 m a.s.l. (Locality No. LO-1373), October 2009, 1 ♂, 1 im. (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Kohdasht, Shoorabeh Sofla Village, 33°23'25"N 47°23'40"E, 1128 m a.s.l. (Locality No. LO-1375), October 2009, 1 ♂, 1 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Kohdasht, Damavand Sofla Village, 33°15'33"N 47°15'46"E, 829 m a.s.l. (Locality No. LO-1376), October 2009, 2 ♂, 5 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Kohdasht, Naveh Basat Village, 33°31'22"N 47°27'06"E, 1350 m a.s.l. (Locality No. LO-1377), October 2009, 1 ♂ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Koramabad, Razan, 33°33'07"N 48°50'19"E, 1993 m a.s.l. (Locality No. LO-1378), October 2009, 1 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Borujerd, Dareh Chapi Village, 33°47'44"N 48°44'11"E, 1614 m a.s.l. (Locality No. LO-1379), October 2009, 3 ♂, 2 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Koramabad, Hossein Abad Village, 33°27'35"N 48°21'30"E, 1164 m a.s.l. (Locality No. LO-1381), October 2009, 1 ♂, 2 ♀ (RRLS), 1 juv. (FKCP), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Kohdasht, Chahpit Village, 33°30'18"N 47°05'30"E, 1064 m a.s.l. (Locality No. LO-1382), October 2009, 6 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Borujerd, Cheshmeh Sardeh Village, 33°00'24"N 48°31'54"E, 2035 m a.s.l. (Locality No. LO-1383), October 2009, 3 ♂, 2 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Poldokhtar, Absard Village, 33°09'39"N 48°05'52"E, 1433 m a.s.l. (Locality No. LO-1354a), October 2009, 2 ♂, 2 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Koramabad, Cheshmeh zamzam Village, 33°30'52"N 48°51'44"E, 1330 m a.s.l. (Locality No. LO-1385), October 2009, 3 ♂, 5 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Azna, 33°29'13"N 49°28'10"E, 1932 m a.s.l. (Locality No. LO-1386), October 2009, 3 ♂ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Poldokhtar, Maemulan, 33°23'50"N 48°58'17"E, 1193 m a.s.l. (Locality No. LO-1387), October 2009, 2 ♂, 3 ♀ (RRLS), 1 juv. (FKCP), leg. Bahreei & A. Pahlavani; Aligudarz, Khyemeh Sofla Village, 33°29'44"N 49°43'33"E, 1956 m a.s.l. (Locality No. LO-1390), October 2009, 1 ♂, 2 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Poldokhtar, Asar road, 33°01'22"N 47°54'15"E, 1427 m a.s.l. (Locality No. LO-1391), October 2009, 3 ♂, 3 ♀ (RRLS), 1 ♀ im. (FKCP), leg. Bahreei, A. Pahlavani & R. Amraee; Dorud, Tanur Dareh Village, 33°34'39"N 48°03'51"E, 1817 m a.s.l. (Locality No. LO-1393), October 2009, 6 ♂, 4 ♀, 5 ims. (RRLS), leg. A. Bahreei, Bahreei M. & R. Amraee; Aleshtar, Dareh tang Village, 33°56'33"N 49°18'59"E, 1813 m a.s.l. (Locality No. LO-1398), October 2009, 6 ♂, 1 ♀, 7 ims. (RRLS), leg. Bahreei & A. Pahlavani; Leshtar, Dareh Kakareza Village, 33°43'41"N 48°15'33"E, 2100 m a.s.l. (Locality No. LO-1399), October 2009, 7 ♂, 5 ♀, 2 ims. (RRLS), leg. Bahreei & A. Pahlavani; Koramabad, Papi khaldare Sofla Village, 33°32'24"N 48°19'11"E, 1292 m a.s.l.



15



16



17



18

Figures 15–18: Females of *Hottentotta* species from Iran, dorsal view. **15.** *H. saulcyi* (Simon, 1880), ♀ (94 mm), Iran, Ilam Province, 30 km NW Ilam, 33°43'N 46°41'E (FKCP). **16.** *H. schach* (Birula, 1905), ♀ (112 mm), Iran, Fars Province, ca 1700 m a.s.l., 10 km E of Sivand vill. (FKCP). **17.** *H. khoozestanus* Navidpour et al, 2008, ♀ (119 mm) holotype, Iran, southeastern Khoozestan Province, Behbahan–Dailam road, 31°55'N 49°44'E (RRLS). **18.** *H. zagrosensis* Kovařík, 1997, ♀ (103 mm) alotype, Iran, Fars Province, Zagros Mts., Abshar vill. env. (FKCP).

(Locality No. LO-1400), October 2009, 4 ♂, 3 ♀ (RRLS), leg. R. Amraee, A. Bahreei & M. Bahreei.

DISTRIBUTION: Iran, known from Kermanshah (formerly Bachtaran), Fars, Hamadan, Hormozgan, Ilam, Lorestan Provinces (Kovařík, 2007: 65), Bushehr and Khoozestan Provinces (Akbari, 2007: 76, Akbari et al., 1997: 112), Kohgiluyeh & Boyer Ahmad (Navidpour et al., 2008d: 5), and Chahar Machal & Bakhtiyari Province (Pirali-Kheirabadi et al., 2009: 6); Afghanistan (Kovařík, 1997a: 40), Iraq (Simon, 1880a: 379), Turkey (Crucitti & Vignoli, 2002: 446).

***Hottentotta zagrosensis* Kovařík, 1997**
(Fig. 5, 18)

Hottentotta zagrosensis Kovařík, 1997a: 41, figs. 1–3, 14; Kovařík, 1998: 111; Fet & Lowe, 2000: 144, Kovařík, 2007: 86, figs. 1–3, 126–129; Navidpour et al., 2008a: 10, figs. 11, 17, 77–80; Navidpour et al., 2008d: 5, figs. 3–4, 23–26; Pirali-Kheirabadi et al., 2009: 6, figs. 2, 6–7, 9, 20–23.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Fars Province, ca. 1000 m a.s.l., Zagros Mts., near Abshar Village, 30°23'N 51°30'E; FKCP.

TYPE MATERIAL EXAMINED. **Iran**, Fars Province, ca. 1000 m a.s.l., Zagros Mts., near Abshar Village, 2–3 May 1996, 1 ♂ (holotype), 1 ♂(im.) and its ecdysis (paratype No. 1), leg. J. Pitulová, 1 ♀ (allotype, Fig. 129), 2 juvs. (paratypes No. 2 and No. 3), leg. V. Šejna, 1 juv. (paratype No. 4), leg. D. Král (FKCP).

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Dorud, Papiun Village, 33°43'15"N 49°10'21"E, 1653 m a.s.l. (Locality No. LO-1370), October 2009, 2 ♂ (RRLS), 1 juv. (FKCP), leg. A. Bahreei, M. Bahreei & R. Amraee.

DISTRIBUTION: Iran, known from provinces Fars, West Azerbaijan, Khoozestan (see Kovařík, 2007: 86; Navidpour et al., 2008a: 10), Kohgiluyeh & Boyer Ahmad (Navidpour et al., 2008d: 5), Lorestan (first report), and Chahar Machal & Bakhtiyari (Pirali-Kheirabadi et al., 2009: 6).

***Mesobuthus eupeus phillipsii* (Pocock, 1889)**
(Fig. 19)

Buthus phillipsii Pocock, 1889: 341, pl. XV, fig. 6; Weidner, 1959: 99.

Buthus phillipsii: Kraepelin, 1899: 24; Birula, 1905a: 131; Borelli, 1915: 460; Werner, 1916: 80; Lampe, 1918: 191.

Mesobuthus phillipsii: Vachon, 1950: 153 (1952: 325); Pérez Minocci, 1974: 25.

Buthus (Buthus) eupeus phillipsii: Birula, 1917: 228.

Mesobuthus eupeus phillipsii: Vachon, 1959: 148; Vachon, 1966: 213; Habibi, 1971: 44; Farzanpay, 1986: 334; Fet, 1994: 527; Kovařík, 1997a: 49; Kovařík, 1998: 114; Fet & Lowe, 2000: 175.

Mesobuthus eupeus phillipsii: Farzanpay, 1987: 150; Farzanpay, 1988: 38; Navidpour et al., 2008a: 11, figs. 22, 81–84; Navidpour et al., 2008b: 13, figs. 2–3, 5, 21–22, 49–52; Navidpour et al., 2008c: 11, figs. 4, 7–9, 37–40; Navidpour et al., 2008d: 5, figs. 2–3, 5–9, 35–38; Pirali-Kheirabadi et al., 2009: 6, figs. 5, 10, 32–35.

Mesobuthus eupeus: Akbari, 2007: 76.

Buthus hottentotta: Kraepelin, 1891: 185 (part?).

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Bushir (now Bushehr) Province; BMNH.

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Noorabad, Nosratabad Village, 34°12'13"N 47°45'30"E, 1750 m a.s.l. (Locality No. LO-1352), October 2009, 4 ♂ (RRLS), leg. Bahreei, A. Pahlavani & R. Amraee; Noorabad, Zaliabad Village, 34°00'35"N 48°01'39"E, 1890 m a.s.l. (Locality No. LO-1360), X, 2009, 9 ♂3 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Borujerd, Weneoi Village, 33°54'21"N 48°35'32"E, 2006 m a.s.l. (Locality No. LO-1366), October 2009, 4 ♂3 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Aleshtar, Shineh Village, 33°47'37"N 47°55'47"E, 1355 m a.s.l. (Locality No. LO-1367), October 2009, 1 ♂ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Borujerd, Ghalah Kamurkhan Village, 33°53'34"N 48°59'35"E, 2220 m a.s.l. (Locality No. LO-1368), October 2009, 1 ♂3 ♀ (RRLS), leg. Bahreei, A. Pahlavani & R. Amraee; Azna, Charkheshan Village, 33°40'21"N 48°23'30"E, 2220 m a.s.l. (Locality No. LO-1369), October 2009, 6 ♂2 ♀ 1 juv. (RRLS), leg. Bahreei, A. Pahlavani & R. Amraee; Dorud, Papiun Village, 33°43'15"N 49°10'21"E, 1653 m a.s.l. (Locality No. LO-1370), October 2009, 1 ♀ (RRLS), 1 ♀ (FKCP), leg. A. Bahreei, M. Bahreei & R. Amraee; Koramabad, Razan, 33°33'07"N 48°50'19"E, 1993 m a.s.l. (Locality No. LO-1378), October 2009, 1 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Borujerd, Cheshmeh sardeh Village, 33°00'24"N 48°31'54"E, 2035 m a.s.l. (Locality No. LO-1383), October 2009, 3 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Azna, 33°29'13"N 49°28'10"E, 1932 m a.s.l. (Locality No. LO-1386), October 2009, 1 ♂ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Aligudarz, Khyemeh Sofla Village, 33°29'44"N 49°43'33"E, 1956 m a.s.l. (Locality No. LO-1390),

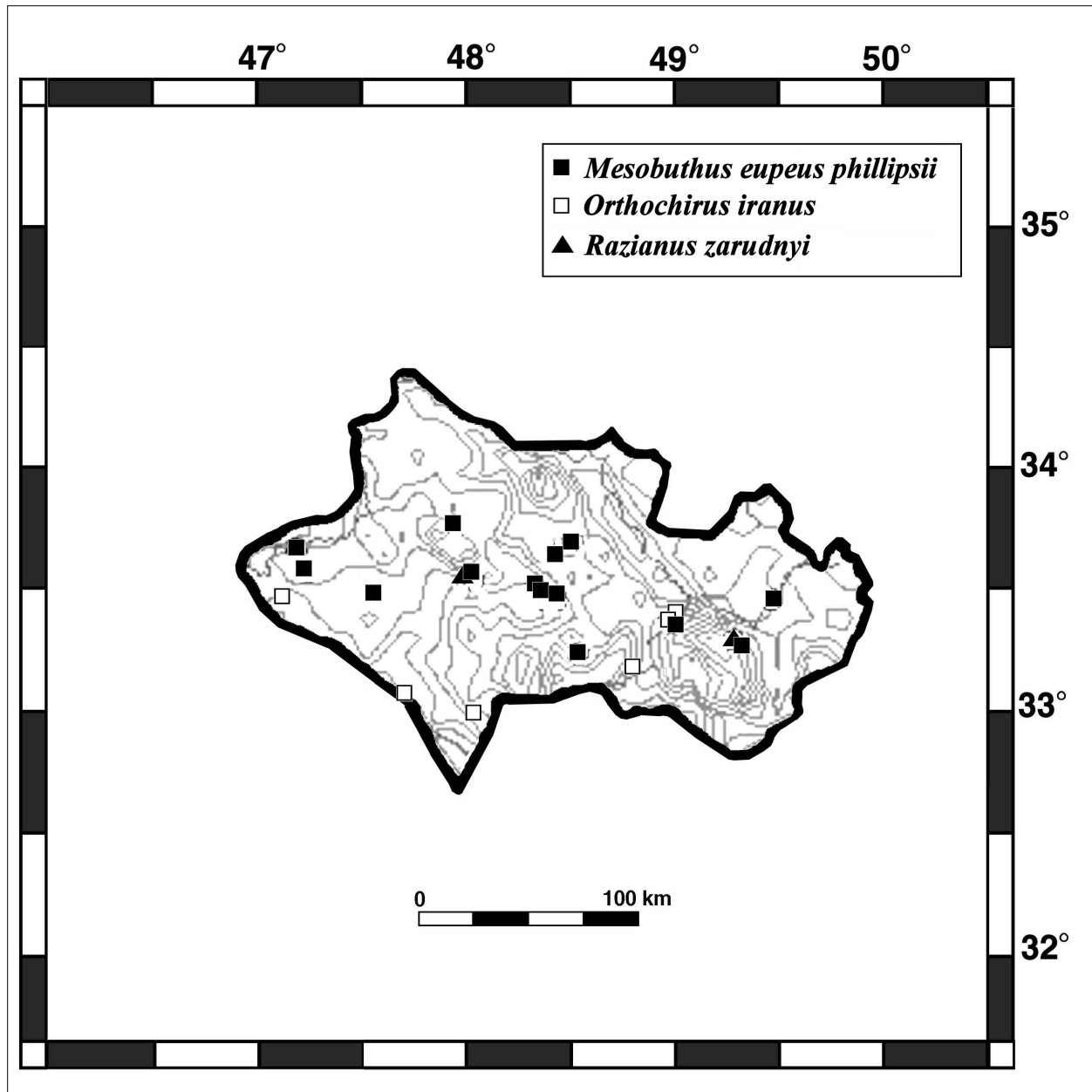


Figure 19: Map of Lorestan Province showing distribution of *Mesobuthus eupeus phillipsii* (Pocock, 1889), *Orthochirus iranus* Kovařík, 2004, and *Razianus zarudnyi* (Birula, 1903) collected in this study.

October 2009, 2♂ (FKCP), leg. A. Bahreei, M. Bahreei & R. Amraee; Poldokhtar, Asar road, 33°01'22"N 47°54'15"E, 1427 m a.s.l. (Locality No. LO-1391), October 2009, 3♂ (RRLS), leg. Bahreei, A. Pahlavani & R. Amraee; Doreh, 33°34'17"N 48°01'00"E, 1333 m a.s.l. (Locality No. LO-1392), October 2009, 1juv. (FKCP), leg. M. H. Kayedi, H. Nayebzadeh, D. Bahreei & R. Amraee; Aleshtar, Darehtang Village, 33°56'33"N 49°18'59"E, 1813 m a.s.l. (Locality No. LO-1398), October 2009, 9♂7♀ (RRLS), 1♂1♀ (FKCP), leg. Bahreei & A. Pahlavani; Koramabad, Kamalvand Vil-

lage, 33°29'13"N 48°25'22"E, 1460 m a.s.l. (Locality No. LO-1401), October 2009, 1♂1♀ (FKCP), leg. H. Nayebzadeh, A. Bahreei & M. Bahreei

DISTRIBUTION: Iran, Bushehr Province (Pocock, 1889: 341), Chahar Machal & Bakhtiyari Province (Pirali-Kheirabadi et al., 2009: 6), Ilam Province (Akbari, 2007: 76), Khoozestan Province (Navidpour et al., 2008a: 9), Kohgilouyeh & Boyer Ahmad (Kovařík, 1997), and Lorestan (first report); Iraq (Vachon, 1966: 213; Fet & Lowe, 2000: 175).



Figure 20: Iran, Lorestan Province, Poldokhtar, Valiyeasr Village, 33°05'22"N 47°42'39"E, 735 m a.s.l. (Locality No. LO-1356). Recorded occurrence of *Hottentotta sauleyi* (Simon, 1880), *Orthochirus iranus* Kovařík, 2004, and *Hemiscorpius lepturus* Peters, 1861.

***Orthochirus iranus* Kovařík, 2004**

Orthochirus sp. n.?: Kovařík, 1997a: 47 (in part).

Orthochirus iranus Kovařík, 2004: 13; Kovařík & Fet, 2006: 8; Navidpour et al., 2008a: 15, figs. 4, 19, 24–31, 97–100; Navidpour et al., 2008b: 17, figs. 8, 23, 65–68; Navidpour et al., 2008c: 11, figs. 2, 8, 10, 50–53; Navidpour et al., 2008d: 7, figs. 3, 10, 13, 39–42.

TYPE LOCALITY AND TYPE REPOSITORY. **Iran**, Bushehr Province, ca. 17 km NW. Bandar-e Gonárer, 29°38'32"N 50°26'56"E, 10 m a.s.l. (FKCP).

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Dorud, 33°26'57"N 49°01'14"E, 1700 m a.s.l., 8.-10.X.1998, 2♂2♀, leg. P. Kabátek (FKCP); Poldokhtar, Valiyeasr Village, 33°05'22"N 47°42'39"E, 735 m a.s.l. (Locality No. LO-1356), October 2009, 4♂2♀, leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Koramabad, Haftcheshmeh Village, 33°48'39"N 47°46'03"E, 1398 m a.s.l. (Locality No. LO-1362), October 2009, 1♂1 ♀ (FKCP), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Sepiddasht, Darea-

shkaft Village, 33°13'46"N 48°49'18"E, 1144 m a.s.l. (Locality No. LO-1364), October 2009, 1♂1 ♀ (RRLS), 1 ♀ (FKCP), leg. A. Bahreei, M. Bahreei & R. Amraee; Kohdasht, Chahpit Village, 33°30'18"N 47°05'30"E, 1064 m a.s.l. (Locality No. LO-1382), October 2009, 1 ♀ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Poldokhtar, Maemulan, 33°23'50"N 48°58'17"E, 1193 m a.s.l. (Locality No. LO-1387), October 2009, 2♂ (RRLS), 1♂ (FKCP), leg. Bahreei & A. Pahlavani.

DISTRIBUTION: Iran, Bushehr and Khozestan Provinces (Kovařík, 2004: 13), Hamadan Province (Navidpour et al., 2008a: 20), Ilam Province (Navidpour et al., 2008c: 11), Kohgilouyeh & Boyer Ahmad Province (Navidpour et al., 2008d: 7), and Lorestan Province (first report).

***Razianus zarudnyi* (Birula, 1903)**

Hemibuthus zarudnyi Birula, 1903: 75; Vachon, 1966: 211.

Razianus zarudnyi: Farzanpay, 1987: 159; Farzanpay, 1988: 41; Fet & Lowe, 2000: 216; Akbari, 2007: 76, fig. p. 66; Navidpour et al., 2008a: 20, figs. 42, 89–

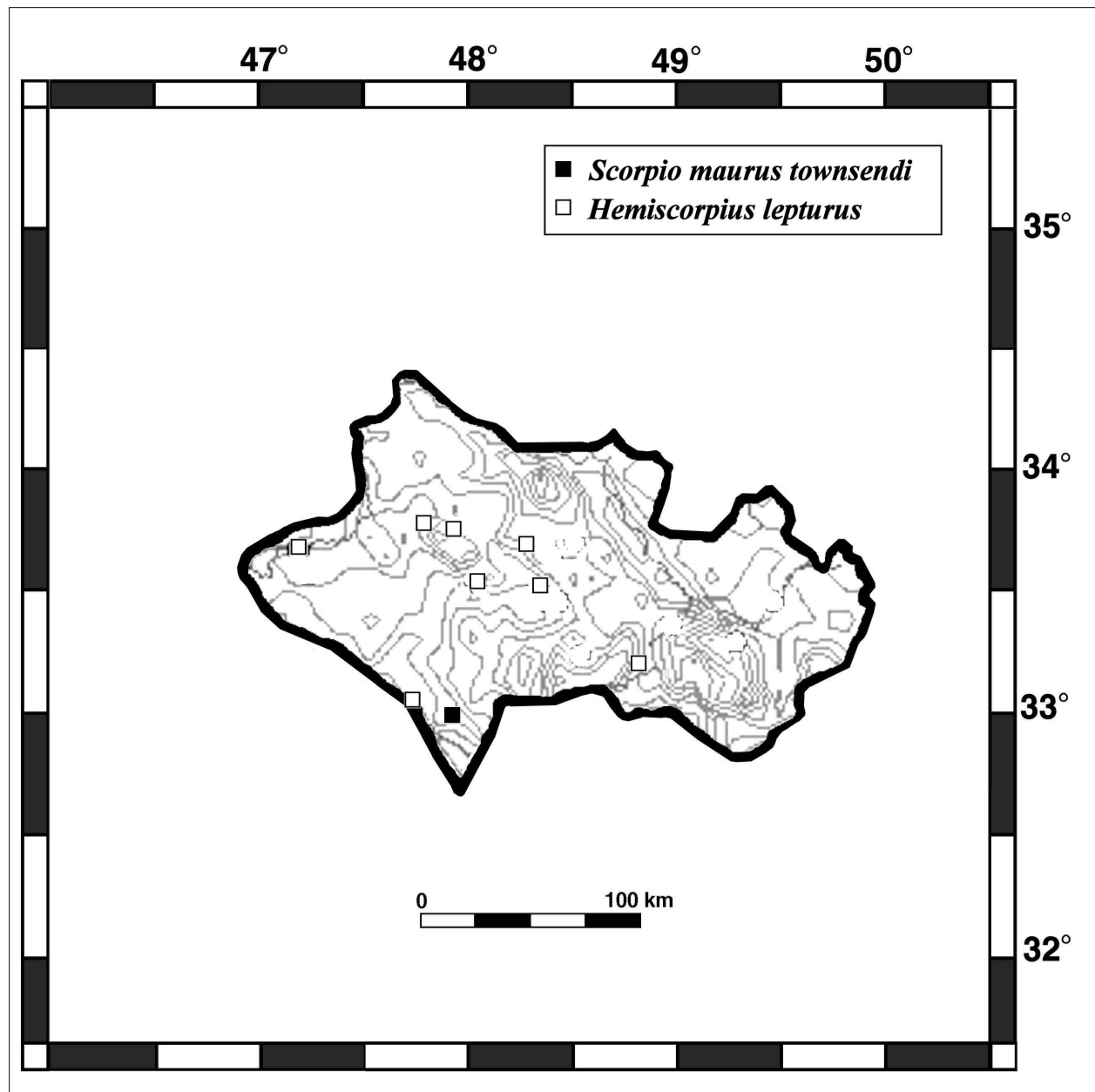


Figure 21: Map of Lorestan Province showing distribution of *Scorpio maurus townsendi* (Pocock, 1900) and *Hemiscorpius lepturus* Peters, 1861 collected in this study.

92; Navidpour et al., 2008b: 17, figs. 2, 5, 23, 57–60; Navidpour et al., 2008c: 14, figs. 2, 4, 10, 58–61; Navidpour et al., 2008d: 11, figs. 3, 9, 13, 47–50; Khodadad Pirali-Kheirabadi et al., 2009: 10, figs. 2, 11, 40–43.
 = *Buthus zarudnianus* Birula, 1905a: 144; Birula, 1905b: 450; Kraepelin, 1913: 127; Vachon, 1966: 211; Habibi, 1971: 43 (syn. by Fet, 1997: 66).
 = *Neohemibuthus kinzelbachi* Lourenço, 1996: 94, figs. 2–8; Kovařík, 1997a: 49 (syn. by Fet, 1997: 66).
Neohemibuthus zarudnyi: Fet, 1997: 65; Kovařík, 1998: 115.

TYPE LOCALITY AND TYPE REPOSITORY. “Persia, Kalagan Prov., Beludjistan, and Geh Prov., Makran“, now Sistan & Baluchistan Prov., Iran (Fet, 1977); ZISP.

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Dorud, Gahar, 33°19'16"N 49°17'17"E, 2325 m a.s.l. (Locality No. LO-1350), October 2009, 1 ♀ (FKCP), leg. H. Nayebzadeh & M. Tavakoli; Koramabad, Sarabe Doreh, 33°34'17"N 48°01'00"E, 1333 m a.s.l. (Locality No. LO-1392), October 2009, 2 ♂, 1 ♀ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh, D. Bahreei & R. Amraee.

DISTRIBUTION: Iran, Bushehr Province (Akbari, 2007: 76), Chahar Machal & Bakhtiyari Province (Fet, 1997: 67), Fars Province (Fet, 1997: 68), Ilam Province (Akbari, 2007: 76), Khoozestan Province (Lourenço, 1996: 94; Fet, 1997: 67-68), Kohgiluyeh & Boyer Ahmad (Navidpour et al., 2008d: 11), Lorestan Province (first report), and Sistan & Baluchistan Province (Fet, 1997: 66).

Family **Scorpionidae** Latreille, 1802

Scorpio maurus townsendi (Pocock, 1900)

Heterometrus townsendi Pocock, 1900: 364.

? *Scorpio townsendi*: Birula, 1905a: 147 (Birula, 1910: 184).

Scorpio maurus townsendi: Birula, 1910: 184; Birula, 1917: 231; Vachon, 1950: 164 (1952: 336); Vachon, 1966: 215; Habibi, 1971: 44; Pérez Minocci, 1974: 40; Kovařík, 1997a: 50; Kovařík, 1998: 141; Fet, 2000: 479; Navidpour et al., 2008a: 26, figs. 2, 43, 103–106; Navidpour et al., 2008b: 20, figs. 20–21, 24, 73–77; Navidpour et al., 2008c: 14, figs. 11, 12, 62–66; Navidpour et al., 2008d: 12, figs. 2, 14, 51–55; Kovařík, 2009: 62–63, figs. 436–440 and p. 63; Pirali-Kheirabadi et al., 2009: 10, figs. 11, 44–48.

Scorpio maurus: Farzanpay, 1987: 165; Farzanpay, 1988: 42; Akbari, 2007: 76, fig. p. 67.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Bushehr Province, Fort Reshire near Bushire, Persian Gulf, Iran; BMNH.

TYPE MATERIAL EXAMINED. **Iran**, Bushehr Province, Fort Reshire near Bushire, Persia, 1 ♀ (holotype) leg. F. W. Townsend, BMNH No. 1900.5.9.1. (see photograph in Kovařík, 2009: 63).

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Poldokhtar, Asar road, 33°01'22"N 47°54'15"E, 1427 m a.s.l. (Locality No. LO-1391), October 2009, 3♂3♀ (RRLS), 1 ♀ (FKCP), leg. Bahreei, A. Pahlavani & R. Amraee.

DISTRIBUTION: Iran, Bushehr Province (Pocock, 1900: 364), Chahar Machal & Bakhtiyari Province (Pirali-Kheirabadi et al., 2009: 10), Ilam Province (Akbari, 2007: 76), Khoozestan Province (Navidpour et al., 2008a: 26), Kohgiluyeh & Boyer Ahmad Province (Navidpour et al., 2008d: 12), and Lorestan Province (first report).

Family **Hemiscorpiidae** Pocock, 1893

Hemiscorpius lepturus Peters, 1861

Hemiscorpius lepturus Peters, 1861a: 426, 8 figs.; Karsch, 1879: 15, 21; Birula, 1905a: 146; Birula,

1917: 215; Birula, 1918: 42, fig. 7; Weidner, 1959: 100; Pringle, 1960: 84, fig. 9; Khalaf, 1962: 2; Khalaf, 1963: 68; Vachon, 1966: 214; Habibi, 1971: 44; Farzanpay & Pretzmann, 1974: 217; Pérez Minocci, 1974: 36; Vachon, 1977: 213; Vachon, 1979: 59; Farzanpay, 1987: 141, 168; Farzanpay, 1988: 42; Simard & Watt, 1990: 441; Sissom, 1990: 75; El-Hennawy, 1992: 135; Kovařík, 1997a: 48; Kovařík, 1998: 136; Fet, 2000: 429; Prendini, 2000: 44; Capes & Fet, 2001: 303; Monod & Lourenço, 2005: 902, figs. 1a–b, 16–21, 27e–f, 36; Akbari, 2007: 76, fig. p. 68; Navidpour et al., 2008a, figs. 20–21, 43, 107–110: 26; Navidpour et al., 2008b: 20, figs. 2, 5, 7, 24, 78–81; Navidpour et al., 2008c: 15, figs. 4, 12, 67–70; Navidpour et al., 2008d: 14, figs. 3, 6–7, 9, 14, 56–59; Pirali-Kheirabadi et al., 2009: 12, figs. 3, 11, 49–52; Lowe, 2010: 22.

Hemiscorpius lepturus: Peters, 1861b: 511; Ausserer, 1880: 466; Kraepelin, 1899: 142; Werner, 1934: 276; Moritz & Fischer, 1980: 317; Kovařík, 2002: 14.

Hemiscorpio lepturus: Simon, 1880b: 29.

TYPE LOCALITY AND TYPE REPOSITORY. Iraq, “Mendeli bei Baghdad” (Mendeli near Baghdad); ZMHB.

TYPE MATERIAL EXAMINED. Iraq, Mendeli bei Baghdad, 2♂2♀ (syntypes), leg. Petermann, ZMHB 43a–d.

LORESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Lorestan Province, Zagros Mts., 30 km W of Khorram Abad (Koramabad), near Gholaman Village, ca 1000 m a.s.l., 6–7 May 1996, 1♂1 ♀, leg. D. Král (FKCP); Poldokhtar, Valiyeasr Village, 33°05'22"N 47°42'39"E, 735 m a.s.l. (Locality No. LO-1356), October 2009, 2♂, 1♂1 ♀ (FKCP), leg. M. H. Kayedi, H. Nayebzadeh & D. Bahreei; Koohdasht, Darbe Gonbad Village, 33°41'45"N 47°09'11"E, 1310 m a.s.l. (Locality No. LO-1361), October 2009, 1♂ (RRLS), leg. A. Pahlavani, A. Bahreei & M. Bahreei; Koramabad, Haftcheshmeh Village, 33°48'39"N 47°46'03"E, 1398 m a.s.l. (Locality No. LO-1362), October 2009, 3♂2♀ (RRLS), leg. A. Pahlavani, A. Bahreei, M. Bahreei & R. Amraee; Sepiddasht, Dareashkaft Village, 33°13'46"N 48°49'18"E, 1144 m a.s.l. (Locality No. LO-1364), October 2009, 1♂ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Aleshtar, Shineh Village, 33°47'37"N 47°55'47"E, 1355 m a.s.l. (Locality No. LO-1367), October 2009, 4♂1 ♀ (RRLS), leg. A. Bahreei, M. Bahreei & R. Amraee; Koramabad, Sarabe Doreh, 33°34'17"N 48°01'00"E, 1333 m a.s.l. (Locality No. LO-1392), October 2009, 2♂ (RRLS), leg. M. H. Kayedi, H. Nayebzadeh, D. Bahreei & R. Amraee; Leshtar, Dareh Kakareza Village, 33°43'41"N 48°15'33"E, 2100 m a.s.l. (Locality No. LO-1399), October 2009, 2♀ (RRLS), leg. Bahreei & A. Pahlavani; Koramabad, Papi Khaldare Sofla Village,

33°32'24"N 48°19'11"E, 1292 m a.s.l. (Locality No. LO-1400), October 2009, ♂ (RRLS), leg. R. Amraee, A. Bahreei & M. Bahreei;

DISTRIBUTION: Iran, Fars, Hormozgan, Kohgiluyeh & Boyer Ahmad, Lorestan Provinces (Kovářik, 1997a: 48), Bushehr, Ilam, Khozestan Province (Farzanpay, 1987: 141; Monod & Lourenço, 2005: 902; Akbari, 2007: 76), and Chahar Machal & Bakhtiyari Province (Pirali-Kheirabadi et al., 2009: 12); Iraq (Peters, 1861a: 426).

Key to the scorpions of Lorestan Province

1. Pedipalp patella without ventral trichobothria.....
..... **Buthidae** 3
- Pedipalp patella with ventral trichobothria 2
2. Lateroapical margins of leg tarsi shaped into rounded lobes. *Scorpio maurus townsendi* (Pocock, 1900)
- Lateroapical margins of leg tarsi straight
..... *Hemiscorpius lepturus* Peters, 1861
3. Carapace in lateral view distinctly inclined downward from median eyes to anterior margin. Total length less than 50 mm. *Orthochirus iranus* Kovářik, 2004
- Carapace in lateral view with entire dorsal surface horizontal or nearly so (possibly with a slight anterior decline) 4
4. Cheliceral fixed finger with a single ventral denticle *Razianus zarudnyi* (Birula, 1903)
- Cheliceral fixed finger with two ventral denticles 5
5. Dentate margin of pedipalp chela movable finger with 4 terminal granules (3 terminal and one basal terminal).
..... *Androctonus crassicauda* (Olivier, 1807)
- Dentate margin of pedipalp chela movable finger with 5–7 terminal granules (4–6 terminal and one basal terminal)..... 6
6. Central median and posterior median carinae of carapace joined to form a continuous linear series of granules to posterior margin
..... *Compsobuthus matthiesseni* (Birula, 1905)
- Central median and posterior median carinae of carapace not joined to form a continuous linear series of granules to posterior margin 7
7. Trichobothrium *db* on fixed finger of pedipalp chela located usually between *est* and *dt*. Trichobothrium *db* may be on level with trichobothrium *est* or rarely between *est* and *esb*. Carinae of carapace not forming a lyre-shaped configuration. Ventrolateral carinae on the fifth metasomal segment with all granules more or less equal in size. *Hottentotta* 8

- Trichobothrium *db* on fixed finger of pedipalp chela always located between *est* and *esb*. Carinae of carapace forming a lyre-shaped configuration. Ventrolateral carinae on the fifth metasomal segment with irregular granules. *Mesobuthus eupeus phillipsii* (Pocock, 1889)

8. Pedipalps are black (Fig. 18)
..... *Hottentotta zagrosensis* Kovářik, 1997
- Pedipalps are yellow (Fig. 6). 9
9. Metasoma and mesosoma yellow to reddish brown; only anterior part of carapace, fifth metasomal segment and telson may be black (Fig. 15).
..... *Hottentotta sauleyi* (Simon, 1880)
- Metasoma and mesosoma entirely blackish green (Fig. 6). *Hottentotta lorestanus* Navidpour, Nayeibzadeh, Soleglad, Fet, Kovářik et Kayedi, **sp. n.**

Acknowledgments

This study was financially supported by the Lorestan University of Medical Sciences and by the Lorestan University. We thank Behzad Masihipour, Hamid Bahrani and Aliakbar Habibzadeh for their valuable contributions, and all those who helped us in collecting samples. We also thank two anonymous reviewers for their comments.

References

- AKBARI, A. 2007 (1836). [Study of scorpion fauna of Iran]. *Project Report Publication of Razi Vaccine & Serum Research Institute*, 2007: 96 (in Farsi).
- AKBARI, A., M. TABATABAI, A. HEDAYAT, H. MODIRROOSTA, M. H. ALIZADEH & M. KAMAL ZARE. 1997 (1826). [Study of the geographical distribution of the scorpions in south of Iran]. *Pajoohesh and Sazandegi*, 34: 112–115 (in Farsi).
- AL-SAFADI, M. M. 1992. Additions to the scorpion fauna of Yemen. *Zoology in the Middle East*, 6: 95–99.
- AMR, Z. S. & R. EL-ORAN. 1994. Systematics and distribution of scorpions (Arachnida, Scorpionida) in Jordan. *Bolletino di Zoologia*, 61(2): 185–190.
- ARNETT, H. R. JR., G. A. SAMUELSON & G. M. NISHIDA. 1993. *The Insect and Spider Collections of the World. Flora & Fauna Handbook No. 11, 2nd Ed.*. Gainesville: Sandhill Crane Press, 308 pp.

- AUSSERER, A. 1880. Arachnida. *Zoologischer Jahresbericht*, 1879: 430–470.
- BIRULA, A. A. 1900a. Beiträge zur Kenntniss der Scorpionenfauna Ost-Persiens. *Bulletin de l'Académie Impériale des Sciences de St.-Petersbourg*, 12(1): 355–375.
- BIRULA, A. A. 1900b. Scorpiones mediterranei Musei Zoologici mosquensis. *Izvestiya Imperatorskogo Obshchestva Lyubitelei Prirody, Istorii, Antropologii i Etnografii*, 98, 3(1): 8–20 (in Russian).
- BIRULA, A. A. 1903. Beiträge zur Kenntniss der Scorpionenfauna Persiens (Zweiter Beitrag). *Bulletin de l'Académie Impériale des Sciences de St.-Petersbourg*, 19: 67–80.
- BIRULA, A. A. 1904. Miscellanea scorpologica. VII. Synopsis der russischen Skorpione. *Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St.-Petersbourg*, 9: 28–38.
- BIRULA, A. A. 1905a. Beiträge zur Kenntniss der Scorpionenfauna Persiens (Dritter Beiträge). *Bulletin de l'Académie Impériale des Sciences de St.-Petersbourg*, 23: 119–148.
- BIRULA, A. A. 1905b. 4. Skorpiologische Beiträge, 1.-3. *Microbuthus littoralis* (Pavesi), *Anomalobuthus rickmersi* Kraepelin und *Buthus zarudnianus* n. nom. *Zoologischer Anzeiger*, 29(14): 445–450.
- BIRULA, A. A. 1910. Ueber *Scorpio maurus* Linné und seine Unterarten. *Horae Societatis Entomologicae Rossicae*, 39: 115–192.
- BIRULA, A. A. 1914. Ergebnisse einer von Prof. Franz Werner im Sommer 1910 mit Unterstützung aus dem Legate Wedl ausgeführten zoologischen Forschungsreise nach Algerien. VI. Skorpione und Solifugen. *Sitzungsberichte der Kaiserlich-Königlichen Akademie der Wissenschaften*, Wien, 123(1): 633–668.
- (BIRULA, A. A.) BYALYNITSKII-BIRULYA, A. A. 1917. Arachnoidea Arthrogastra Caucasica. Pars I. Scorpiones. *Zapiski Kavkazskogo Muzeya (Mémoires du Musée du Caucase)*, Tiflis: Imprimerie de la Chancellerie du Comité pour la Transcaucasie, A(5), 253 pp. (in Russian; published August 1917). English translation: Byalynitskii-Birulya, A. A. 1964. *Arthrogastric Arachnids of Caucasia. I. Scorpions*. Jerusalem: Israel Program for Scientific Translations, 170 pp. (in Russian).
- BIRULA, A. A. 1918. Miscellanea scorpologica. XI. Materialy k skorpiofaune nizhnei Mesopotamii, Kurdistana i Severnoi Persii (Matériaux pour servir à la scorpiofaune de la Mésopotamie inférieure, du Kurdistan et de la Perse septentrionale). *Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St.-Petersbourg*, 22(1917): 1–44 (in Russian).
- BIRULA, A. A. 1937. Zametki o kollektzii skorpionov iz Yemena (Yu. V. Arabia). (Notes sur les collections des scorpions recueillis dans le Jémen (Arabie S. E.)). *Archives du Musée Zoologique de l'Université de Moscou*, 4: 101–110 (in Russian).
- BORELLI, A. 1915. Gli Scorpioni del Museo Civico di Storia naturale di Milano. *Atti della Società Italiana di Scienze Naturali*, 53: 456–464.
- CAPES, E. M. & V. FET. 2001. A redescription of the scorpion genus *Plesiobuthus* Pocock, 1900 (Scorpiones: Buthidae) from Pakistan. *Entomologische Mitteilungen aus dem Zoologischen Museum Hamburg*, 13(164): 295–304.
- CRUCITTI, P. 1999. The scorpions of Anatolia: biogeographical patterns. *Biogeographia*, 20: 81–94.
- CRUCITTI, P. & V. VIGNOLI. 2002. Gli Scorpioni (Scorpiones) dell'Anatolia sud-orientale (Turchia). *Bollettino della Museo Scienze Naturali in Torino*, 19(2): 433–474.
- DUPRÉ, G., N. LAMBERT & P. GÉRARD. 1998. *Les Scorpions. Biologie. Élevage*. Paris, 82 pp.
- EL-HENNAWY, H. K. 1992. A catalogue of the scorpions described from the Arab countries (1758–1990) (Arachnida: Scorpionida). *Serket*, 2(4): 95–153.
- FARZANPAY, R. 1986. *Mesobuthus eupeus*, an indigenous scorpion from Iran. Origin and its geographical distribution. In Barrientos, J. A. (ed.), *Actas X. Congreso Internacional de Aracnologia. Jaca (España) Septiembre 1986*, 1: 333–335.
- FARZANPAY, R. 1987 (1366). *[Knowing Scorpions]*. Teheran: Central University Publications, No. 312, Biology 4, 231 pp. (in Farsi, with Latin index).
- FARZANPAY, R. 1988. A catalogue of the scorpions occurring in Iran, up to January 1986. *Revue Arachnologique*, 8(2): 33–44.

- FARZANPAY, R. & G. PRETZMANN. 1974. Ergebnisse einiger Sammelreisen nach Vorderasien 4. Teil: Skorpione aus Iran. *Annalen des Naturhistorischen Museums in Wien*, 78: 215–217.
- FET, V. 1989. A catalogue of scorpions (Chelicerata: Scorpiones) of the USSR. *Rivista del Museo Civico di Scienze Naturali "Enrico Caffi"* (Bergamo), 13(1998): 73–171.
- FET, V. 1994. Fauna and zoogeography of scorpions (Arachnida: Scorpiones) in Turkmenistan. Pp. 525–534 in Fet V. & K. I. Atamuradov (eds.), *Biogeography and Ecology of Turkmenistan*. Boston–Dordrecht: Kluwer Academic Publishers.
- FET, V. 1997. *Neohemibuthus zarudnyi* (Birula, 1903) from Iran, a senior synonym of *N. kinzelbachi* Lourenço, 1996 (Scorpiones, Buthidae). *Revue Arachnologique*, 12(6): 65–68.
- FET, V. 2000. Family Scorpionidae Latreille, 1802. Pp. 427–486 in Fet, V., W. D. Sissom, G. Lowe & M. E. Braunwalder. *Catalog of the Scorpions of the World (1758–1998)*. New York: The New York Entomological Society, 689 pp.
- FET, V. & F. KOVAŘÍK. 2003. First record of *Euscorpius (Polytrichobothrius) italicus* (Scorpiones: Euscorpiidae) from Iraq. *Acta Societatis Zoologicae Bohemicae*, 67: 179–181.
- FET, V. & G. LOWE. 2000. Family Buthidae C. L. Koch, 1837. Pp. 54–286 in Fet, V., W. D. Sissom, G. Lowe & M. E. Braunwalder. *Catalog of the Scorpions of the World (1758–1998)*. New York: The New York Entomological Society, 689 pp.
- HABIBI, T. 1971. Liste de Scorpions de l'Iran. *Bulletin of the Faculty of Science, Teheran University*, 2(4): 42–47.
- HENDRIXSON, B. E. 2006. Buthid scorpions of Saudi Arabia, with notes on other families (Scorpiones: Buthidae, Liochelidae, Scorpionidae). *Fauna of Arabia*, 21: 33–120.
- KABAKIBI, M. M., N. KHALIL & Z. AMR. 1999. Scorpions of southern Syria. *Zoology in the Middle East*, 17: 79–89.
- KARSCH, F. 1879. Skorpionologische Beiträge I. and II. *Mitteilungen des Münchener Entomologischen Vereins*, 3: 6–22, 97–136.
- KHALAF, K. I. 1963. Scorpions reported from Iraq. *Bulletin of Endemic Diseases (Baghdad)*, 5(1–2): 59–70.
- KHALAF, L. 1962. A small collection of scorpions from Iraq. *Bulletin of the Iraq Natural History Institute*, 2(4): 1–3.
- KOVAŘÍK, F. 1992. A check list of scorpions (Arachnida: Scorpiones) in the collections of the Zoological Department, National Museum in Prague. *Acta Societatis Zoologicae Bohemoslovacae*, 56: 181–186.
- KOVAŘÍK, F. 1996. First report of *Compsobuthus matthiesseni* (Scorpiones: Buthidae) from Turkey. První zpráva o štíru *Compsobuthus matthiesseni* z Turecka. *Klapalekiana*, 32: 53–55.
- KOVAŘÍK, F. 1997a. Results of the Czech Biological Expedition to Iran. Part 2. Arachnida: Scorpiones with descriptions of *Iranobuthus krali* gen. n. et sp. n. and *Hottentotta zagrosensis* sp. n. (Buthidae). *Acta Societatis Zoologicae Bohemicae*, 61: 39–52.
- KOVAŘÍK, F. 1997b. A check-list of scorpions (Arachnida) in the collections of the Hungarian Natural History Museum, Budapest. *Annales Historico-Naturales Musei Nationalis Hungarici*, 89: 177–185.
- KOVAŘÍK, F. 1998. *Štíři [Scorpiones]*. Jihlava (Czech Republic): Publishing House "Madagaskar", 176 pp (in Czech).
- KOVAŘÍK, F. 2002. A checklist of scorpions (Arachnida) in the collection of the Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany. *Serket*, 8(1): 1–23.
- KOVAŘÍK, F. 2003. Eight new species of *Compsobuthus* Vachon, 1949 from Africa and Asia (Scorpiones: Buthidae). *Serket*, 8(3): 87–112.
- KOVAŘÍK, F. 2004. Revision and taxonomic position of genera *Afghanorthochirus* Lourenço & Vachon, *Baloorthochirus* Kovařík, *Butheolus* Simon, *Nanobuthus* Pocock, *Orthochiroides* Kovařík, *Pakistanorthochirus* Lourenço, and Asian *Orthochirus* Karsch, with descriptions of twelve new species (Scorpiones, Buthidae). *Euscorpius*, 16: 1–33.
- KOVAŘÍK, F. 2007. A revision of the genus *Hottentotta* Birula, 1908, with descriptions of four new species (Scorpiones, Buthidae). *Euscorpius*, 58: 1–107.

- KOVAŘÍK, F. 2009. *Illustrated Catalog of Scorpions. Part I. Introductory Remarks: Keys to Families and Genera; Subfamily Scorpionidae With Keys to Heterometrus and Pandinus Species*. Prague: Clairon Production, 170 pp.
- KOVAŘÍK F. & Z. AHMED. 2007. Two new species of the genus *Compsobuthus* Vachon, 1949 from Afghanistan and Pakistan (Scorpiones: Buthidae). *Euscorpius*, 53: 1–6.
- KOVAŘÍK, F. & V. FET. 2006. Taxonomic position of the genus *Simonoides* Vachon et Farzanpay, 1987, and description of a new species of *Orthochirus* Karsch from Iran (Scorpiones, Buthidae). *Euscorpius*, 38: 1–10.
- KOVAŘÍK, F. & S. WHITMAN. 2005. Cataloghi del Museo di Storia Naturale dell'Università di Firenze – sezione di zoologia «La Specola» XXII. Arachnida Scorpiones. Tipi. Addenda (1998–2004) e checklist della collezione (Euscorpiinae esclusi). *Atti della Società Toscana di Scienze Naturali, Memorie, serie B*, 111 (2004): 103–119.
- KRAEPELIN, K. 1891. Revision der Skorpione. I. Die Familie des Androctonidae. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, 8(1890): 144–286 (1–144).
- KRAEPELIN, K. 1899. Scorpiones und Pedipalpi. In F. Dahl (ed.), *Das Tierreich. Herausgegeben von der Deutschen Zoologischen Gesellschaft*. Berlin: R. Friedländer und Sohn Verlag, 8. Lieferung. 265 pp.
- KRAEPELIN, K. 1901. Catalogue des Scorpions des collections du Muséum d'Histoire Naturelle de Paris. *Bulletin du Muséum national d'Histoire naturelle, Paris*, 7: 265–274.
- KRAEPELIN, K. 1913. Neue Beiträge zur Systematik der Gliederspinnen. III. A. Bemerkungen zur Skorpionenfauna Indiens. B. Die Skorpione, Pedipalpen und Solifugen Deutsch-Ostafrikas. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, 30: 123–196.
- LAMPE, E. 1918. Katalog der Skorpione, Pedipalpen und Solifugen des Naturhistorischen Museums der Residenzstadt Wiesbaden. *Jahrbücher des Nassauischen Verein für Naturkunde*, 70(1): 185–203.
- LEVY, G. & P. AMITAI. 1980. *Fauna Palaestina, Arachnida I.– Scorpiones*. The Israel Academy of Sciences and Humanities, 132 pp.
- LEVY, G., P. AMITAI & A. SHULOV. 1973. New scorpions from Israel, Jordan and Arabia. *Zoological Journal of the Linnaean Society*, 52: 113–140.
- LOURENÇO, W. R. 1996. A new genus and a new species of scorpion (Buthidae) from Iran. *Zoology in the Middle East*, 12: 93–98.
- LOURENÇO, W. R. 2005. Nouvelles considérations taxonomiques sur les espèces du genre *Androctonus* Ehrenberg, 1828 et description de deux nouvelles espèces (Scorpiones, Buthidae). *Revue suisse de Zoologie*, 112(1): 145–171.
- LOURENÇO, W. R. & A. PÉZIER. 2002. Taxonomic consideration of the genus *Odontobuthus* Vachon (Scorpiones, Buthidae), with description of a new species. *Revue suisse de Zoologie*, 109(1): 115–125.
- LOURENÇO, W. R. & M. VACHON. 2001. A new species of *Compsobuthus* Vachon, 1949 from Iran (Scorpiones: Buthidae). Pp. 179–182 in: Fet, V. & P. A. Selden (eds.), *Scorpions 2001. In Memoriam Gary A. Polis*. British Arachnological Society: Bournemouth, Bucks.
- LOWE, G. 2009. A new lithophilic *Compsobuthus* Vachon, 1949 (Scorpiones: Buthidae) from northern Oman. *Euscorpius*, 90: 1–13.
- LOWE, G. 2010. Two new *Hemiscorpius* Peters, 1861 (Scorpiones: Hemiscorpiidae) from northern Oman. *Euscorpius*, 91: 1–24.
- MASI, L. 1912. Note sugli Scorpioni appartenenti al R. Museo Zoologico di Roma. *Memorie della Società Entomologica Italiana*, 1(3): 88–108, 120–144.
- MONOD, L. & W. R. LOURENÇO. 2005. Hemiscorpiidae (Scorpiones) from Iran, with descriptions of two new species and notes on biogeography and phylogenetic relationships. *Revue suisse de Zoologie*, 112(4): 869–941.
- MORITZ, M. & S.-CH. FISCHER. 1980. Die Typen der Arachniden-Sammlung des zoologischen Museums Berlin. III. Scorpiones. *Mitteilungen aus dem Zoologischen Museum in Berlin*, 56: 309–326.
- NAVIDPOUR, S., F. KOVAŘÍK, M. E. SOLEGLAD & V. FET. 2008a. Scorpions of Iran (Arachnida, Scorpiones). Part I. Khoozestan Province. *Euscorpius*, 65: 1–41.

- NAVIDPOUR, S., M. E. SOLEGLAD, V. FET & F. KOVAŘÍK, 2008b. Scorpions of Iran (Arachnida, Scorpiones). Part II. Bushehr Province. *Euscorpius*, 67: 1–33.
- NAVIDPOUR, S., V. FET, F. KOVAŘÍK & M. E. SOLEGLAD. 2008c. Scorpions of Iran (Arachnida, Scorpiones). Part III. Ilam Province. *Euscorpius*, 69: 1–29.
- NAVIDPOUR, S., F. KOVAŘÍK, M. E. SOLEGLAD & V. FET. 2008d. Scorpions of Iran (Arachnida, Scorpiones). Part IV. Kohgiluyeh & Boyer Ahmad Province. *Euscorpius*, 74: 1–24.
- OLIVIER, G. A. 1807. *Voyage dans l'Empire Othoman, l'Égypte et la Perse*. Paris: Henri Agasse, Vol. 3: 96–97, fig. 2.
- PENTHER, A. 1912. Wissenschaftliche Ergebnisse der Expedition nach Mesopotamien, 1910. Scorpiones. *Annalen des Kaiserlich-Königlichen Naturhistorischen Hofmuseums in Wien*, 26(1/2): 109–115.
- PÉREZ MINNOCCI, S. 1974. Un inventario preliminar de los escorpiones de la región Paleártica y claves para la identificación de los géneros de la región Paleártica Occidental. *Madrid: Universidad Complutense de Madrid, Facultad de Ciencias, Departamento de Zoología, Cátedra de Artrópodos*, 7: 1–45.
- PETERS, W. 1861a. Eine neue Untergattung von Skorpionen, *Hemiscorpion lepturus*. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1861: 426–427.
- PETERS, W. 1861b. Über eine neue Eintheilung der Skorpione und über die von ihm in Mossambique gesammelten Arten von Skorpionen. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1861: 507–520.
- PIRALI-KHEIRABADI, K., S. NAVIDPOUR, V. FET, F. KOVAŘÍK & M. E. SOLEGLAD. 2009. Scorpions of Iran (Arachnida, Scorpiones). Part V. Chahar Mahal & Bakhtiyari Province. *Euscorpius*, 78: 1–23.
- POCOCK, R. I. 1889. Notes on some Buthidae, new and old. *Annals and Magazine of Natural History*, 6(3): 334–351.
- POCOCK, R. I. 1895. On the Arachnida and Myriapoda obtained by Dr. Anderson's collector during Mr. T. Bent's expedition to the Hadramaut, South Arabia; with a supplement upon the scorpions obtained by Dr. Anderson in Egypt and the Eastern Soudan. *Journal of the Linnaean Society*, 25: 292–316.
- POCOCK, R. I. 1900. The scorpions of the genus *Heterometrus*. *Annals and Magazine of Natural History*, 7(6): 362–365.
- POCOCK, R. I. 1902. A contribution to the systematics of scorpions. *Annals and Magazine of Natural History*, 7(10): 364–380.
- PRENDINI, L. 2000. Phylogeny and classification of the superfamily Scorpionoidea Latreille 1802 (Chelicerata, Scorpiones): an exemplar approach. *Cladistics*, 16: 1–78.
- PRINGLE, G. 1960. Notes on the scorpions of Iraq. *Bulletin of Endemic Diseases*, 3(3–4): 73–87.
- SIMARD, J. M. & D. D. WATT. 1990. Venoms and toxins. Pp. 414–444 in Polis, G. A. (ed.), *The Biology of Scorpions*. Stanford: Stanford University Press, 587 pp.
- SIMON, E. 1872. Arachnides de Syrie, rapportés par M. Charles Piochard de la Brulerie (Scorpions et Galéodes). *Annales de la Société Entomologique de France*, (5)2: 245–266.
- SIMON, E. 1879. 3e Ordre. Scorpiones. Pp. 79–115 in : *Les Arachnides de France. VII. Contenant les Ordres des Chernetes, Scorpiones et Opiliones*. Paris: Roret.
- SIMON, E. 1880a. Études Arachnologiques 12e Mémoire. Part XVIII. Descriptions de Genres et Espèces de l'ordre des Scorpiones. *Annales de la Société Entomologique de France*, 5(10)1880: 377–398.
- SIMON, E. 1880b. Quelques Scorpions qui lui ont été donnés par notre confrère M. Reiche, de la part de M. F. de Sauley, qui les a recus de Mossoul (ancienne Ninive), sur le Tigre, en Mésopotamie. *Annales de la Société Entomologique de France*, 5(10): 29.
- SIMON, E. 1892. Liste des Arachnides recueillis en Syrie par M. le Dr Théod. Barrois. *Revue Biologique du Nord de la France*, 5: 80–84.
- SISSOM, W. D. 1990. Systematics, biogeography and paleontology. Pp. 64–160 in Polis, G. A. (ed.), *The Biology of Scorpions*. Stanford: Stanford University Press, 587 pp.

- SISSOM, W. D. 1994. Descriptions of new and poorly known scorpions of Yemen (Scorpiones: Buthidae, Diplocentridae, Scorpionidae). *Fauna of Saudi Arabia*, 14: 3–39.
- SISSOM, W. D. & V. FET. 1998. Redescription of *Compsobuthus mathiesseni* (Scorpiones, Buthidae) from southwestern Asia. *Journal of Arachnology*, 26: 1–8.
- SOLEGLAD, M. E. & V. FET. 2003. High-level systematics and phylogeny of the extant scorpions (Scorpiones: Orthosterni). *Euscorpius*, 11, pp. 1–175.
- STATHI, I. & M. MYLONAS. 2001. New records of scorpions from the central-eastern Mediterranean area: biogeographical comments, with a special reference to the Greek species. Pp. 287–295 in: Fet, V. & P. A. Selden (eds.), *Scorpions 2001. In Memoriam Gary A. Polis*. British Arachnological Society. Burnham Beeches, Bucks.
- TULLGREN, A. 1909. Solifugae, Scorpiones und Chelonethi aus Ägypten und dem Sudan. Pp. 1–12 in: Jägerskiöld, L. A. (ed.), *Results of the Swedish Zoological Expedition to Egypt, 1901*, Uppsala, 3(21).
- VACHON, M. 1940a. Voyage en A. O. F. de L. Berland et J. Millot. Scorpions. V. *Bulletin de la Société Zoologique de France*, 65: 170–184.
- VACHON, M. 1940b. Sur la systématique des scorpions. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 13(2): 241–259.
- VACHON, M. 1951. Prof. Kosswig tarafından Türkiye'de toplanan akrepler hakkında. Á propos de quelques Scorpions de Turquie collectés par M. le Professeur Dr. Curt Kosswig. *Revue de la Faculté des Sciences de l'Université d'Istanbul, ser. B*, 16(4): 341–344.
- VACHON, M. 1952. *Études sur les Scorpions*. Institut Pasteur d'Algérie, Alger, 482 pp. (published 1948–1951 in *Archives de l'Institut Pasteur d'Algérie*, 1948, 26: 25–90, 162–208, 288–316, 441–481. 1949, 27: 66–100, 134–169, 281–288, 334–396. 1950, 28: 152–216, 383–413. 1951, 29: 46–104).
- VACHON, M. 1959. Scorpionidea (Chelicerata) de l'Afghanistan. The 3rd Danish Expedition to central Asia (Zoological Results 23). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kobenhavn*, 120: 121–187.
- VACHON, M. 1966. Liste des scorpions connus en Égypte, Arabie, Israël, Liban, Syrie, Jordanie, Turquie, Irak, Iran. *Toxicon*, 4: 209–218.
- VACHON, M. 1974. Étude des caractères utilisés pour classer les familles et les genres de Scorpions (Arachnides). 1. La trichobothriotaxie en Arachnologie, Sigles trichobothriaux et types de trichobothriotaxie chez les Scorpions. *Bulletin du Muséum National d'Histoire Naturelle Paris*, 140: 857–958.
- VACHON, M. 1977. Scorpions. In The scientific results of the Oman flora and fauna survey 1975. *Journal of the Oman Studies*, 1: 209–218.
- VACHON, M. 1979. Arachnids of Saudi Arabia, Scorpiones. *Fauna Saudi Arabia* 1: 30–66.
- VACHON, M. & R. KINZELBACH. 1987. On the taxonomy and distribution of the scorpions of the Middle East. In Krupp, F., W. Schneider & R. Kinzelbach (eds.), *Proceedings of the Symposium on the Fauna and Zoogeography of the Middle East, Mainz (TAVO)*, 28(1985): 91–103.
- VIGNOLI, V. 2005. Description of a new species of *Compsobuthus* Vachon, 1949 (Scorpiones: Buthidae) from southern Iran. *Zoology in the Middle East*, 34: 79–86.
- VIGNOLI, V., F. KOVAŘÍK & P. CRUCITTI. 2003. Scorpiofauna of Kashan (Esfahan Province, Iran) (Arachnida: Scorpiones). *Euscorpius*, 9: 1–7.
- WEIDNER, H. 1959. Die Entomologischen Sammlungen des Zoologischen Staatsinstituts und Zoologischen Museums Hamburg, I. Teil, Pararthropoda und Chelicerata I. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 57: 89–142.
- WERNER, F. 1916. Über einige Skorpione und Gliederspinnen des Naturhistorischen Museum in Wiesbaden. *Jahrbücher des Nassauischen Verein für Naturkunde*, 69: 79–97.
- WERNER, F. 1934. Scorpiones, Pedipalpi. In H. G. Bronns *Klassen und Ordnungen des Tierreichs*. Akademische Verlagsgesellschaft, Leipzig. 5(IV) 8 (Scorpiones pp. 1–316): 1–490.