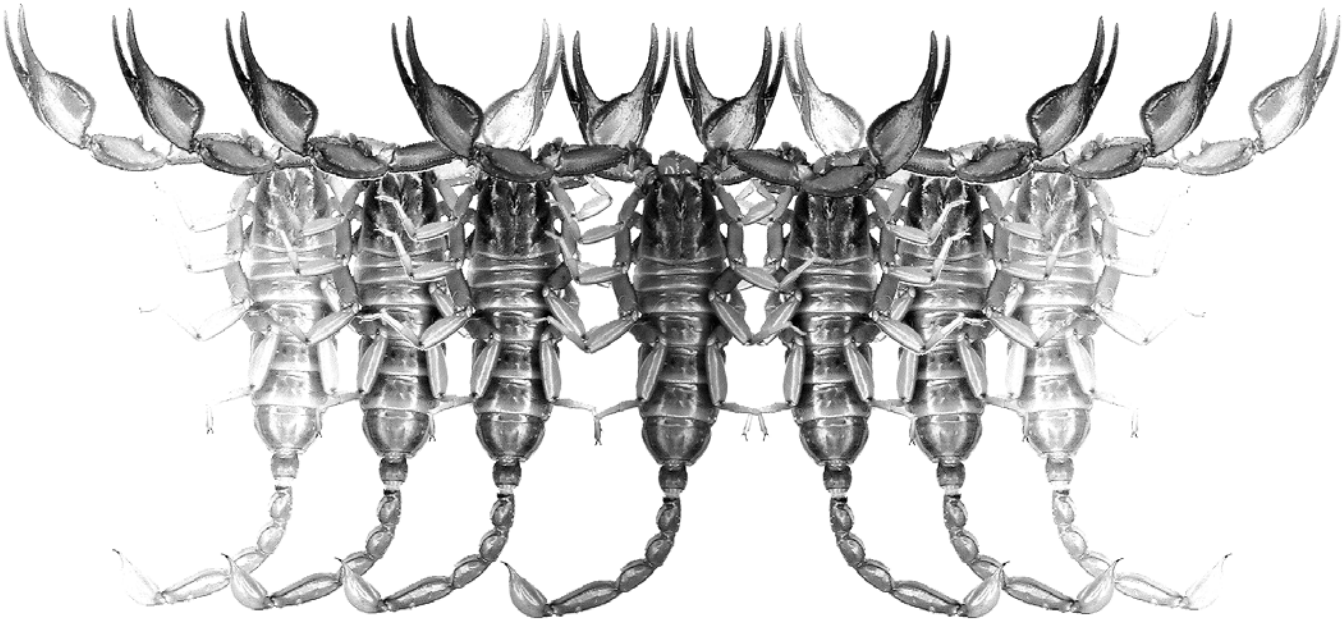
Euscorpius

Occasional Publications in Scorpiology



Scorpions of Iran (Arachnida, Scorpiones). Part III. Ilam Province

Shahrokh Navidpour, Victor Fet, František Kovařík & Michael E. Soleglad

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- **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

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Scorpions of Iran (Arachnida, Scorpiones). Part III. Ilam Province

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Summary

Seven species of scorpions belonging to three families have been previously recorded from the Ilam Province of Iran: *Androctonus crassicauda* (Olivier, 1807), *Compsobuthus matthiesseni* (Birula, 1905), *Hottentotta saulcyi* (Simon, 1880), *Mesobuthus eupeus phillipsii* (Pocock, 1889), *Razianus zarudnyi* (Birula, 1903), *Scorpio maurus townsendi* (Pocock, 1900), and *Hemiscorpius lepturus* Peters, 1861. Collections made by a team organized by Shahrokh Navidpour (Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Ahvaz, Khoozestan, Iran) reveal seven other species recorded from the province for the first time: *Apistobuthus susanae* Lourenço, 1998, *Buthacus macrocentrus* (Ehrenberg, 1828), *Compsobuthus jakesi* Kovařík, 2003, *Odontobuthus bidentatus* Lourenço et Pézier, 2002, *Orthochirus iranus* Kovařík, 2004, *Polisius persicus* Fet, Capes et Sissom, 2001, and *Vachoniolus iranus* Navidpour, Kovařík, Soleglad et Fet, 2008. 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 therefore decided to survey the scorpions of Iran thoroughly, province by province. The fieldwork was conducted by the Razi Reference Laboratory of Scorpion Research (RRLS) team under Shahrokh Navidpour and included documentation of habitat diversity, revisitation of previously known sites, some of them type localities, and sampling of all the encountered scorpion species. All specimens were collected by UV light at night. The Ilam Province is the third region surveyed, after Khoozestan (Navidpour et al., 2008a) and Bushehr (Navidpour et al., 2008b). This province has been inadequately surveyed in the past, and the first records of scorpions have been published only recently, when Kovařík (2007: 65) reported *Hottentotta saulcyi* (Simon, 1880), and Akbari (2007) found six other species. Collections made by the RRLS team revealed seven more species recorded from the province for the first time, of which the most surprising is the presence of *Polisius persicus* Fet, Capes et Sissom, 2001.

The Ilam Province is located in the west of Iran and is surrounded by three other Provinces, Khoozestan in the south, Lorestan in the east, and Kermanshah in the north; it is flanked by Iraq in the west (see map in Fig. 1). There are two major types of habitats in this part of Iran, deserts and mountains. The area adjacent to Khoozestan province is a low-altitude desert with sandy and silty hills reaching only about 100–180 m above the sea level with a climate similar to Khoozestan; hot (up to 48˚C) and humid for most of the year. The survey of localities Ein Khosh and Dashte Abbas in this part of Ilam province yielded *Apistobuthus susanae*, *Vachoniolus iranus*, *Buthacus macrocentrus*, *Compsobuthus jakesi*, *Orthochirus iranus*, and *Polisius persicus*. Montane parts of the Ilam Province with rocky substrates are adjacent to Lorestan and Kermanshah and contain localities such as Dehloran, Ayvan, Mehran, and Abdanan. Elevation range between 300 and 1500 m, and the temperatures and humidity are lower. *Hottentotta saulcyi* and *Compsobuthus matthiesseni* were captured at these localities. Our survey shows high densities and frequencies of *Mesobuthus eupeus*, *Compsobuthus matthiesseni*, and *Hemiscorpius lepturus* in the Ilam province. In contrast, densities and frequencies of *Apistobuthus susanae*, *Vachoniolus iranus*, and *Polisius persicus* were low and these species were found limited to desert areas in the southern and southwestern parts of the Province.

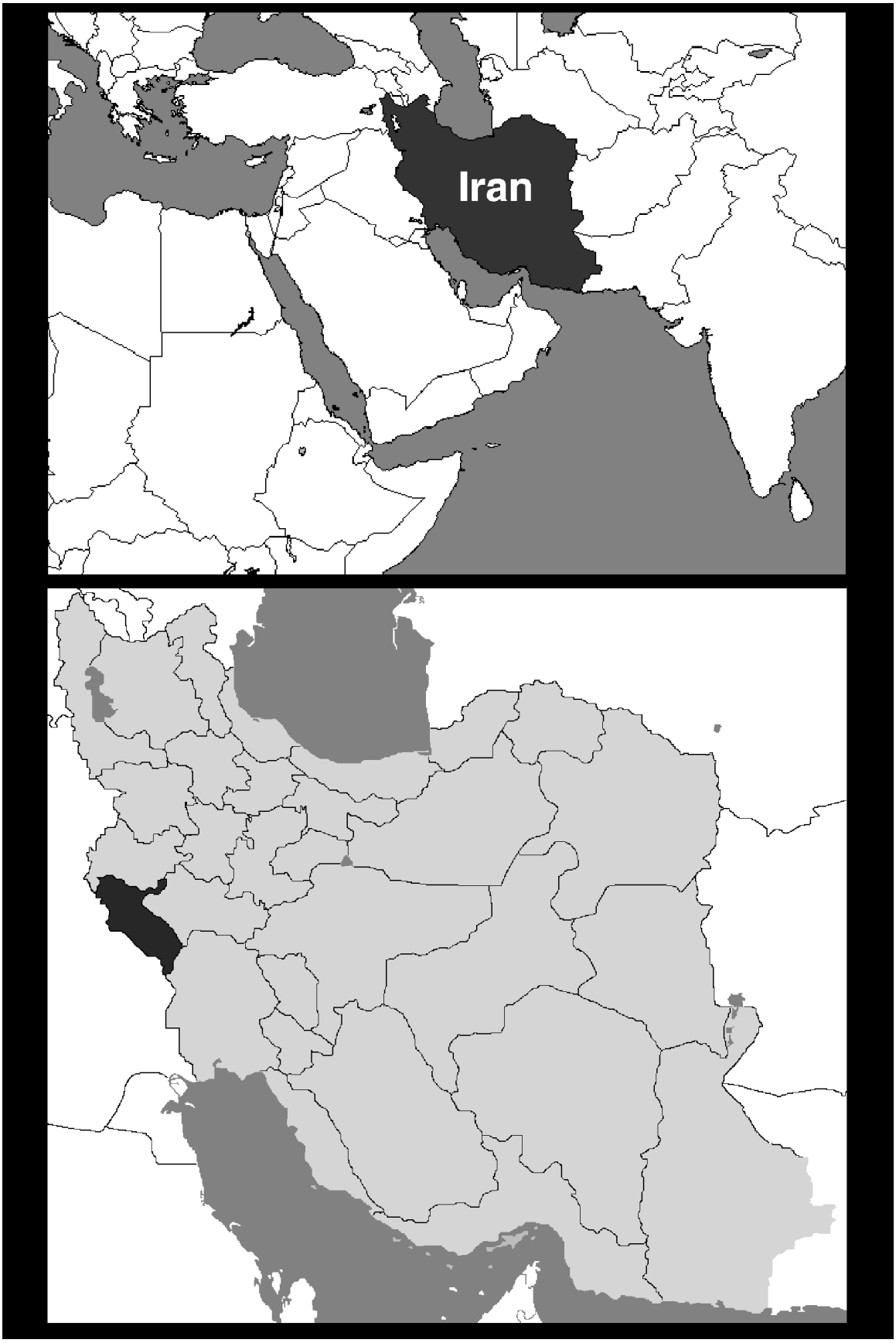


Figure 1: Map of southwestern Asia highlighting Iran (top) and closeup of Iran showing provinces, the Ilam Province depicted in black (bottom).

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

BMNH – The Natural History Museum, London, United Kingdom;
FKCP – František Kovařík Collection, Praha, Czech Republic;
MHNG – Museum d`Histoire naturelle, Geneva, Switzerland;
MNHN – Muséum National d´Histoire Naturelle, Paris, France;
RRLS – Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Sepah st., Hejrat sq., Ahvaz, Khoozestan, Iran;
USNM – United States National Museum, Washington, DC;
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 Ilam Province

Family **Buthidae** C. L. Koch, 1837
Androctonus crassicauda (Olivier, 1807)
Apistobuthus susanae Lourenço, 1998 (first report for Ilam Province)
Buthacus macrocentrus (Ehrenberg, 1828) (first report for Ilam Province)
Compsobuthus jakesi Kovařík, 2003 (first report for Ilam Province)
Compsobuthus matthiesseni (Birula, 1905)
Hottentotta saulcyi (Simon, 1880)
Mesobuthus eupeus phillipsii (Pocock, 1889)
Odontobuthus bidentatus Lourenço et Pézier, 2002 (first report for Ilam Province)
Orthochirus iranus Kovařík, 2004 (first report for Ilam Province)
Polisius persicus Fet, Capes et Sissom, 2001 (first report for Ilam Province)
Razianus zarudnyi (Birula, 1903)
Vachoniolus iranus Navidpour, Kovařík, Soleglad et Fet, 2008 (first report for Ilam Province)

Family **Scorpionidae** Latreille, 1802
Scorpio maurus townsendi (Pocock, 1900)

Family **Hemiscorpiidae** Pocock, 1893
Hemiscorpius lepturus Peters, 1861

Systematics

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

Androctonus crassicauda (Olivier, 1807)
Figures 2, 3, 8, 13–16

Scorpio crassicauda Olivier, 1807: 97.
Buthus crassicauda: Simon, 1872: 247 (in part); Simon, 1879: 99; 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; Vachon, 1979: 31; 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; 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; Lourenço, 2005: 149; Hendrixson, 2006: 38; Akbari, 2007: 76; Navidpour et al., 2008a: 5; Navidpour et al., 2008b: 3.
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: 24; Kovařík, 1997a: 49.
= *Prionurus crassicauda orientalis* Birula, 1900: 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.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Murmury, 32º46.32'N 47º39.78'E, 566 m a.s.l. (Locality No. IL-819), X.2007, 1♂4♀ RRLS, leg. Masihipour, Bahrani & Habibzadeh; Ein Khosh, 32º24.76'N 47º37.48'E, 130 m a.s.l. (Locality No. IL-826), X.2007, 1♀ RRLS, leg. Masihipour, Hayader & Bahrani; Dashte Abbas, Ein Saleh village, 32º25.24'N 47º43.86'E, 182 m

Figure 2: Iran, Ilam Province, Dashte Abbas, Ein Saleh village, 32º25.24'N 47º43.86'E, 182 m a.s.l. (Locality No. IL-828). Recorded occurence of *Androctonus crassicauda* (Olivier, 1807), *Buthacus macrocentrus* (Ehrenberg, 1828), *Compsobuthus jakesi* Kovařík, 2003, *Compsobuthus matthiesseni* (Birula, 1905), *Odontobuthus bidentatus* Lourenço et Pézier, 2002, *Orthochirus iranus* Kovařík, 2004, *Polisius persicus* Fet, Capes et Sissom, 2001, and *Razianus zarudnyi* (Birula, 1903).

a.s.l. (Locality No. IL-828), X.2007, 1♀im. RRLS, leg. Masihipour, Habibzadeh & Hayader; Dashte Abbas, Seyed Falhi Village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No.IL-829), II.2008, 3♂12♀ RRLS, leg. Navidpour, Habibzadeh & Bahrani.

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, 1892: 83), 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 (Simon, 1872: 247), Tunis (Kraepelin, 1901: 266), Turkey (Pocock, 1902: 373), United Arab Emirates (Hendrixson, 2006: 40), and Yemen (Birula, 1937: 101).

Apistobuthus susanae Lourenço, 1998
Figures 3, 45–49

Apistobuthus pterygocercus: Farzanpay, 1987: 141.
Apistobuthus susanae Lourenço, 1998: 238; Kovařík, 1998: 104; Fet & Lowe, 2000: 76; Navidpour et al., 2008a: 7.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Khoozestan Province, Ahvaz; ZMUH.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Ein Khosh, 32°24.76'N 47°37.48'E, 130 m a.s.l. (Locality No**.** IL-826), X.2007, 1♂1♀ FKCP 8♂3♀ RRLS, leg. Hayader, Masihipour & Bahrani.

DISTRIBUTION: Iran, Khoozestan Province (Lourenço, 1998: 238), Ilam Province (first report).

Buthacus macrocentrus (Ehrenberg, 1828)
Figures 2, 3, 8, 25–28

Androctonus (*Leiurus*) *macrocentrus* Ehrenberg in Hemprich & Ehrenberg, 1828: pl. 1, fig. 6; Ehrenberg in Hemprich & Ehrenberg, 1829: 355 (in part); Hemprich & Ehrenberg, 1831: 5 (in part); Moritz & Fischer, 1980: 317 (in part); Braunwalder & Fet, 1998: 32 (in part).
Buthacus macrocentrus: Kovařík, 2005: 7; Navidpour et al., 2008a: 7; Navidpour et al., 2008b: 5.
= *Buthus tadmorensis* Simon, 1892: 84; Kraepelin, 1895: 83; Birula, 1905a: 136; Habibi, 1971: 43 (syn. by Kovařík, 2005: 8).
Buthus (*Buthacus*) *tadmorensis*: Birula, 1910: 172; Birula, 1917: 229.
Buthacus tadmorensis: Simon, 1910: 76; Vachon, 1966: 210; Farzanpay, 1987: 144; Farzanpay, 1988: 36; Kovařík, 1997a: 49; Kovařík, 1998: 105; Kovařík, 2001: 80; Fet & Kovařík, 2003: 180.
= *Buthus pietschmanni* Penther, 1912: 112 (syn. by Birula, 1917: 229).
Mesobuthus pietschmanni: El-Hennawy, 1992: 128.
= *Buthacus yotvatensis* Levy, Amitai & Shulov, 1973: 130; Levy & Amitai, 1980: 90; Kinzelbach, 1984: 99; Vachon & Kinzelbach, 1987: 100; Fet & Lowe, 2000: 85; Crucitti & Vignoli, 2002: 439 (syn. by Kovařík, 2001: 80).
Buthacus yotvatensis yotvatensis: Vachon, 1979: 36; Fet & Lowe, 2000: 85.
Buthacus tadmorensis tadmorensis: Vachon & Kinzelbach, 1987: 101; Kovařík, 2002: 5;
Buthacus tadmorensis yotvatensis: Vachon & Kinzelbach, 1987: 101; Amr et al., 1988: 374; El-Hennawy, 1992: 114; Kabakibi et al., 1999: 82.
Mesobuthus pietschmanni: El-Hennawy, 1992: 128.

TYPE LOCALITY AND TYPE REPOSITORY. Sinai; ZMHB. Type locality "Sinai" (Ehrenberg in Hemprich & Ehrenberg, 1829: 355 and onlabel) must be regarded as erroneous (Kovařík, 2005).

TYPE MATERIAL EXAMINED. Sinai (labeled as *Androctonus macrocentrus*, Sinai, No. 153), 1♀, lectotype of *Androctonus* (*Leiurus*) *macrocentrus* Ehrenberg in Hemprich & Ehrenberg, 1828, ZMHB.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Dashte Abbas, Ein saleh Village, 32°25.24'N 47°43.86'E, 182 m a.s.l. (Locality No. IL-828), X.2007, 2♂3♀ RRLS 1♀ FKCP, leg. Navidpour; Dashte Abbas, Seyed Falhi Village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No.IL-829), II.2008, 3♂1♀ RRLS, leg. Navidpour, Bahrani & Hayader.

DISTRIBUTION: Iran, known from Bushehr Province (Kovařík, 2005: 8, as "Chamak Province") and Khoozestan Province (Navidpour et al., 2008a: 7), Ilam Province (first report); Iraq (Penther, 1912: 112), Israel (Vachon, 1966: 210), Jordan (Pérez Minocci, 1974: 19), Syria (Simon, 1892: 84), Turkey (Crucitti & Vignoli, 2002: 439).

Compsobuthus jakesi Kovařík, 2003
Figures 2, 6, 7–8, 29–32

Compsobuthus acutecarinatus: Kovařík, 1998: 109 (in part); Kovařík, 2001: 79 (in part).
Compsobuthus jakesi Kovařík, 2003: 91; Kovařík & Ahmed, 2007: 5; Navidpour et al., 2008a: 9; Navidpour et al., 2008b: 5.
Compsobuthus sp.: Fet & Kovařík, 2003: 180.

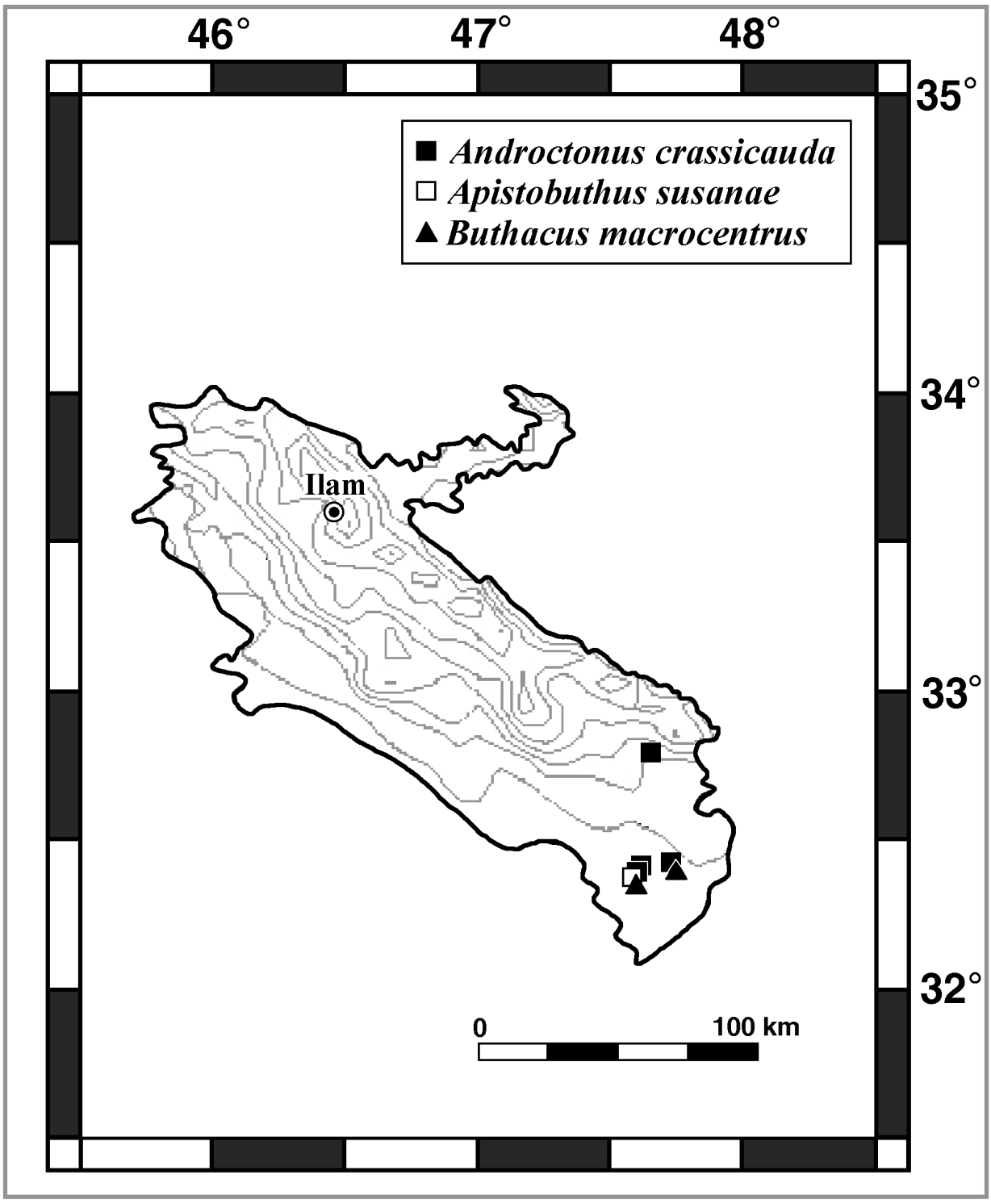
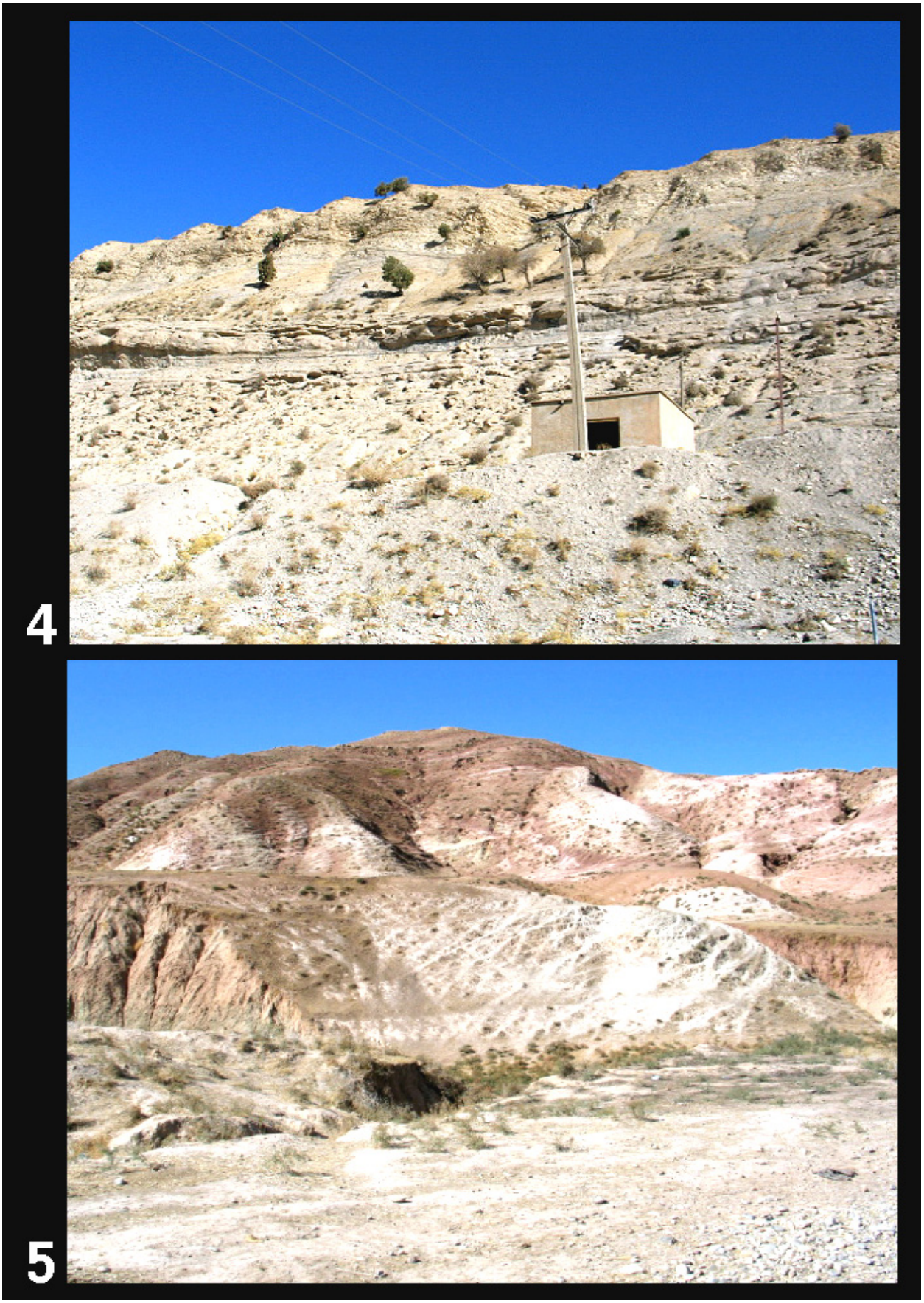


Figure 3: Map of Ilam Province showing distribution of *Androctonus crassicauda*, *Apistobuthus susanae* and *Buthacus macrocentrus* collected in this study.

TYPE LOCALITY AND TYPE REPOSITORY. Iraq, Najaf Province, Ash-Shabakah (Shabachah, Shabicha), Geophysics Brno base camp, 150 km SW of An-Najaf (Najaf), 262 m a.s.l., 31°06'N 43°95'E; FKCP.



Figures 4–5: Iran, Ilam Prov. **4.** Mehran to Dehloran road, 32º55.42'N 46º41.32'E, 327 m a.s.l. (Locality No. IL-822. Recorded occurence of *Compsobuthus matthiesseni* (Birula, 1905), *Mesobuthus eupeus phillipsii* (Pocock, 1889), *Razianus zarudnyi* (Birula, 1903), and *Hemiscorpius lepturus* Peters, 1861. **5.** Ilam to Ayvan road, 33º41.95'N 46º23.28'E, 1466 m a.s.l. (Locality No. IL-817). Recorded occurence of *Compsobuthus matthiesseni* (Birula, 1905).

TYPE MATERIAL EXAMINED. **Iraq**, Najaf Province, Ash-Shabakah (Shabachah, Shabicha), Geophysics Brno base camp, 150 km SW of An-Najaf (Najaf), 262 m a.s.l., 31°06'N 43°95'E, X.-XII.1978, 2♂3♀2juvs. (holotype, allotype, and paratypes), leg. O. Jakeš, FKCP.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Ein Khosh, 32°24.76'N 47°37.48'E, 130 m a.s.l. (Locality No. IL-826), X.2007, 1♂1♀ FKCP, leg. Hayader, Masihipour & Bahrani; Dashte Abbas, Ein Saleh Village, 32°25.24'N 47°43.68'E, 182 m a.s.l. (Locality No. IL-828), X.2007, 1♂2♀ RRLS, leg. Masihipour, Bahrani & Hayader; Dashte Abbas, Seyed Falhi Village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No. IL-829), X.2007, 2♀ RRLS, leg.Masihipour, Habibzadeh & Hayader; Dehloran, 32° 36.36'N 47°20.26'E, 146 m a.s.l. (Locality No. IL-825), X.2007, 1♀im. RRLS, leg. Masihipour, Hayader, Habibzadeh & Bahrani.

DISTRIBUTION: Iran, Bushehr Province (Navidpour et al., 2008b: 9), Khoozestan Province (Navidpour et al., 2008a: 9), Ilam Province (first report); Iraq (Kovařík, 2003: 91).

Compsobuthus matthiesseni (Birula, 1905)
Figures 2, 4–5, 6, 33–36

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; Habibi, 1971: 43; Levy et al., 1973: 114; Levy & 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; Crucitti, 1999: 84; Fet & Lowe, 2000: 127; Lourenço & Vachon, 2001: 180; Kovařík, 2002: 7; Crucitti & Vignoli, 2002; Kovařík, 2003: 97; Vignoli et al., 2003: 2; Vignoli, 2005: 85; Akbari, 2007: 76; Kovařík & Ahmed, 2007: 6; Navidpour et al., 2008a: 9; Navidpour et al., 2008a: 9.

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.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Murmury, 32°46.32'N 47°39.78'E, 566 m a.s.l. (Locality No**.** IL-819), X.2007, 1♂1♀ FKCP, leg. Masihipour, Navidpour & Bahrani; Ilam to Ayvan road, 33º41.95'N 46º23.28'E, 1466 m a.s.l. (Locality No. IL-817), X.2007, 1♀ RRLS, leg.Masihipour, Hayder & Habibzadeh; Mehran to Dehloran road, 32º55.42'N 46º41.32'E, 327 m a.s.l. (Locality No. IL-822), X.2007, 1♂ RRLS, leg. Masihipour, Hayader & Habibzadeh; Ein Saleh Village, 32°25.24'N 47°43.86'E, 182 m a.s.l. (Locality No**.** IL-828), X.2007, 2♂1♀ FKCP, 4♂5♀ RRLS, leg. Navidpour, Masihipour & Bahrani; Dashte Abbas, Seyed Falhi Village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No. Il-829), II.2008, 2♀ RRLS, leg. Navidpour, Hayder & Bahrani; Andimeshk to Dashte Abbas road, 32º21.46'N 47º57.27'E, 190 m a.s.l. (Locality No. IL-830), II.2008, 8♂32♀ RRLS, leg. Navidpour, Hayader & Bahrani.

DISTRIBUTION: Iran, known from provinces Kermanshah (formerly Bachtaran), Bushehr, Fars, Hamadan, Ilam, Khoozestan, Kerman, Kordestan, Lorestan, Markazi, and Qom (Sissom & Fet, 1998, Kovařík, 2003: 100, Akbari, 2007: 76); Iraq (Birula, 1917: 240; Pringle, 1960: 77), Syria (Kovařík, 2002: 7), Turkey (Kovařík, 1996: 53).

Hottentotta saulcyi (Simon, 1880)
Figures 9, 17–20

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; 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: 90; Kovařík, 1992: 183; Akbari, 2007: 76; Akbari et al., 1997: 112; Dupré, Lambert & Gérard, 1998: 70.

Hottentotta saulcyi: Kovařík, 1997a: 40; Crucitti & Vignoli, 2002: 446; Vignoli et al., 2003: 4; Karatas, 2003: 315; Kovařík, 2007: 61; Navidpour et al., 2008a: 10; Navidpour et al., 2008b: 13.

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.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Murmury, 32°46.32'N 47°39.78'E, 566 m a.s.l. (Locality No**.** IL-819), X.2007, 1♂im. FKCP, 1♂ RRLS, leg. Masihipour, Navidpour & Bahrani.

DISTRIBUTION: Iran, known from Kermanshah (formerly Bachtaran), Fars, Hamadan, Hormozgan, Ilam, and

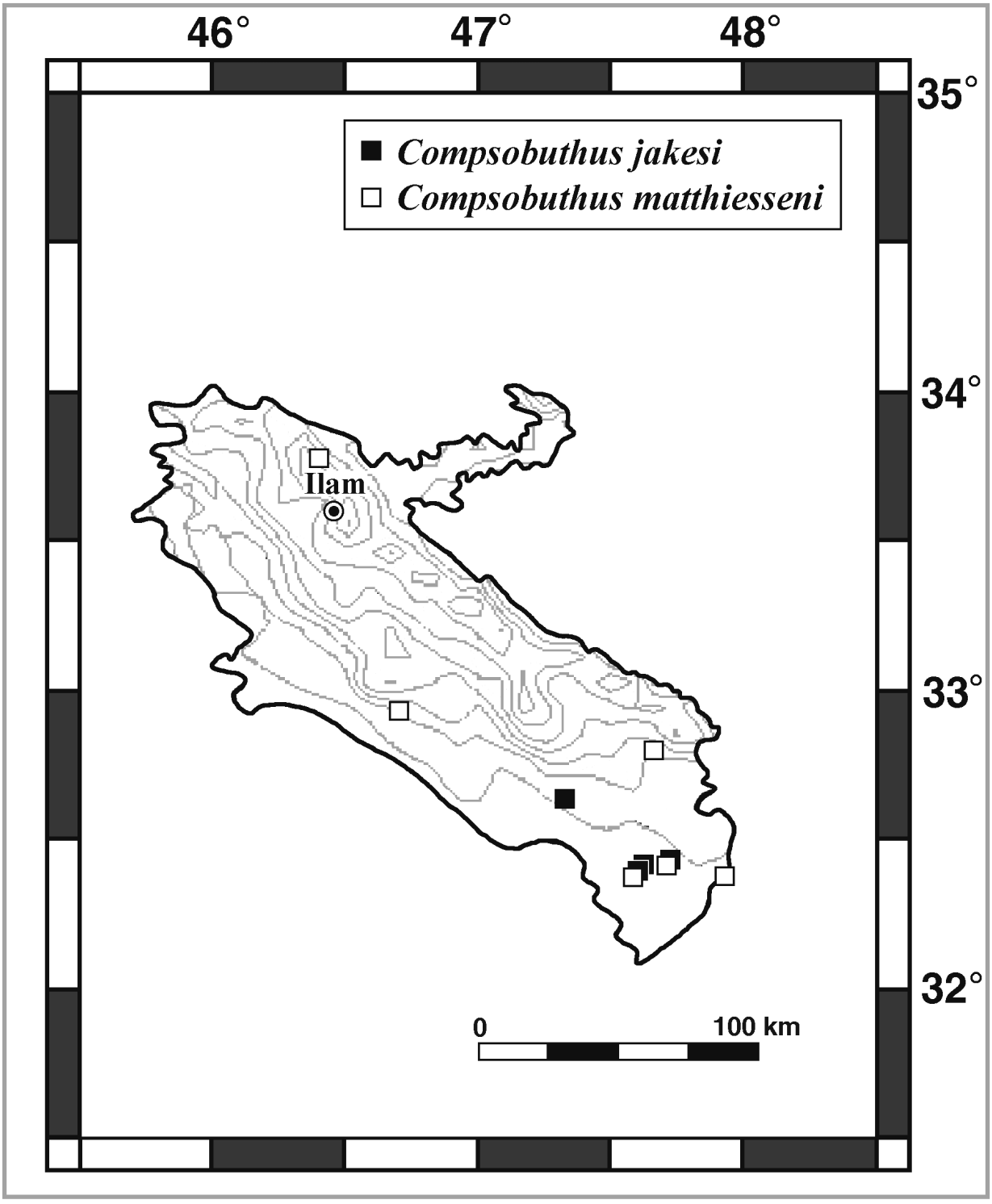
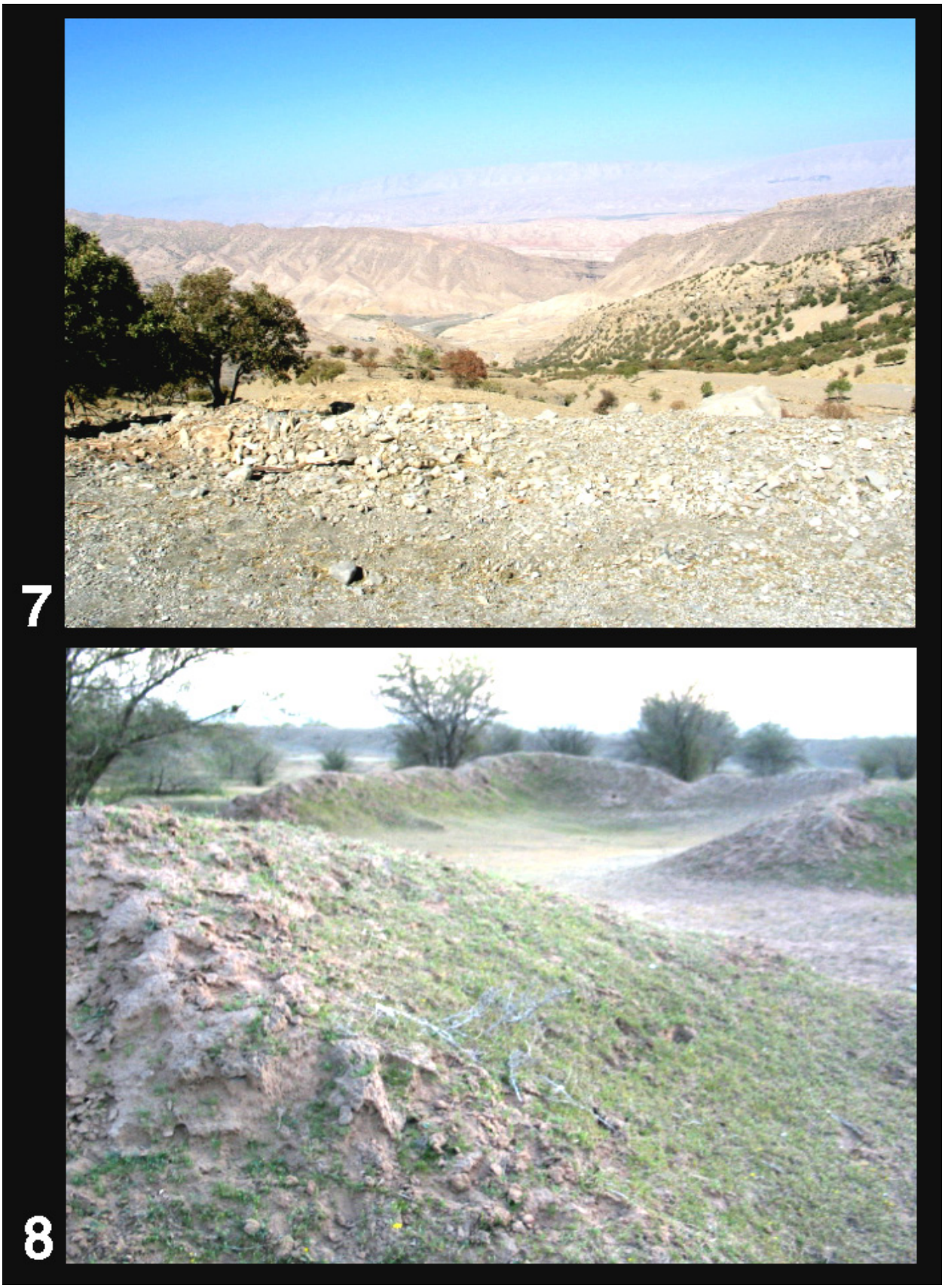


Figure 6: Map of Ilam Province showing distribution of *Compsobuthus jakesi* and *C. matthiesseni* collected in this study.

Lorestan Provinces (Kovařík, 2007: 65), Bushehr and Khoozestan Provinces (Akbari, 2007: 76, Akbari et al., 1997: 112); Afghanistan (Kovařík, 1997a: 40), Iraq (Simon, 1880a: 379), Turkey (Crucitti & Vignoli, 2002: 446). Record for Syria (Kinzelbach, 1985; El-Hennawy, 1992: 118) must be considered dubious (Kovařík, 2007)



Figures 7–8: Iran, Ilam Prov. **7.** Dehloran, 32° 36.36'N 47°20.26'E, 146 m a.s.l. (Locality No. IL-825). Recorded occurence of *Compsobuthus jakesi* Kovařík, 2003 and *Mesobuthus eupeus phillipsii* (Pocock, 1889). **8.** Dashte Abbas, Seyed Falhi Village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No.IL-829). Recorded occurence of *Androctonus crassicauda* (Olivier, 1807), *Buthacus macrocentrus* (Ehrenberg, 1828), *Compsobuthus jakesi* Kovařík, 2003, *Compsobuthus matthiesseni* (Birula, 1905) and *Mesobuthus eupeus phillipsii* (Pocock, 1889), and *Orthochirus iranus* Kovařík, 2004.

Mesobuthus eupeus phillipsii (Pocock, 1889)
Figures 4, 7–8, 9, 37–40

Buthus phillipsii Pocock, 1889: 341; Weidner, 1959: 99.
Buthus phillipsi: Kraepelin, 1899: 24; Birula, 1905a: 131; Borelli, 1915: 460; Werner, 1916: 80; Lampe, 1918: 191.
Mesobuthus phillipsi: Vachon, 1950: 153 (1952: 325); Pérez Minocci, 1974: 25.
Buthus (*Buthus*) *eupeus phillipsi*: Birula, 1917: 228.
Mesobuthus eupeus phillipsi: 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; Navidpour et al., 2008b: 13.
Mesobuthus eupeus: Akbari, 2007: 76.
Buthus hottentotta: Kraepelin, 1891: 185 (part?).

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Bushir Province; BMNH.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Ilam to Mehran road, Saleh Abad Village, 33º32.40'N 46º08.74'E, 683 m a.s.l. (Locality No. IL-821), X.2007, 3♂1♀im. RRLS, leg. Masihipour & Hayader; Mehran to Dehloran road, 32°55.42'N 46°41.32'E, 375 m a.s.l. (Locality No**.** IL-822), X.2007, 2♀1juv. FKCP, 4♂1 ♀1juv. RRLS, leg. Hayader, Masihipour & Bahrani; Dehloran road, 33º02.33'N 46º34.94'E, 280 m a.s.l. (Locality No. IL-823), X.2007, 1♀ RRLS, leg. Masihipour, Habibzadeh & Bahrani; Dehloran, 32°36.36'N 47°20.26'E, 146 m a.s.l. (Locality No.IL-825), X.2007, 1♀im. RRLS, leg. Masihipour, Hayader, Habibzadeh & Bahrani; Murmury to Dehloran road, 32°25.72'N 47°48.32'E, 171 m a.s.l. (Locality No. IL-827), X.2007, 1♀ RRLS, leg. Mashipour, Habibzadeh & Hayader; Dashte Abbas, Seyed Falhi village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No. IL-829), 2008, 1♂ RRLS, leg. Navidpour, Hayader & Bahrani; Ein Saleh Village, 32°25.24'N 47°43.68'E, 182 m a.s.l. (Locality No. IL-828), X.2007,1♂2♀ RRLS, leg. Masihipour, Bahrani & Hayader.

DISTRIBUTION: Iran, Bushehr Province (Pocock, 1889: 341, Khoozestan Province (Navidpour et al., 2008a: 9), Kohgiloueyeh & Boyer Ahmad (Kovařík, 1997a); Ilam Province (Akbari, 2007: 76); Iraq (Vachon, 1966: 213; Habibi, 1971: 44; Fet & Lowe, 2000: 175).

Odontobuthus bidentatus Lourenço et Pézier, 2002
Figures 2, 9, 21–24

Odontobuthus odonturus: Habibi, 1971: 44 (in part); Farzanpay, 1987: 155; Farzanpay, 1988: 39; Kovařík, 1997a: 47; Kovařík, 1998: 115 (in part); Fet & Lowe, 2000: 188 (in part); Akbari, 2007: 76.
Odontobuthus bidentatus Lourenço & Pézier, 2002: 118; Navidpour et al., 2008a: 13; Navidpour et al., 2008b: 15.

TYPE LOCALITY AND TYPE REPOSITORY. Iraq, 180 km north of Bagdad, Khanagin-Dyala; MHNG.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., 70 kms. to Dehloran, 33º01.74'N 46º35.87'E, 319 m a.s.l. (Locality No. IL-824), X.2007, 4♂5♀ims. RRLS, leg. Masihipour, Hayader & Habibzadeh; Dashte Abbas, Ein Saleh Village, 32º25.24'N 47º43.86'E, 182 m a.s.l. (Locality No. IL-828), X.2007, 1♂1♀1juv. FKCP, 19♂14♀26♀ims. RRLS, leg. Navidpour, Masihipour & Bahrani; Andimeshk to Dashte Abbas road, 32º21.46'N 47º57.27'E, 190 m a.s.l. (Locality No. IL-830), II.2008, 1♂1♀ RRLS, leg. Navidpour, Hayader & Bahrani.

DISTRIBUTION: Iran, Bushehr Province (Lourenço & Pézier, 2002: 118), Khoozestan Province (Navidpour et al., 2008a: 13), Ilam Provimce (first report); Iraq (Lourenço & Pézier, 2002: 118).

Orthochirus iranus Kovařík, 2004
Figures 2, 8, 10, 50–53

Orthochirus sp. n.?: Kovařík, 1997a: 47 (in part).
Orthochirus iranus Kovařík, 2004: 13; Kovařík & Fet, 2006: 8; Navidpour et al., 2008a: 15; Navidpour et al., 2008b: 17.

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

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Dashte Abbas, Ein Saleh village, 32º25.24'N 47º43.86'E, 182 m a.s.l. (Locality No. IL-828), X.2007, 2♂2♀ FKCP, 11♂9♀ RRLS, leg. Navidpour, Masihipour & Bahrani; Dashte Abbas, Seyed Falhi village, 32º24.105'N 47º36.922'E, 115 m a.s.l. (Locality No. IL-829), II.2008, 13♀7♂2♀ims. RRLS, leg. Navidpour, Bahrani & Hayader.

DISTRIBUTION: Iran, Bushehr and Khoozestan Provinces (Kovařík, 2004: 13), Lorestan and Hamadan Provinces (Navidpour et al., 2008a: 20), Ilam Province (first report).

Polisius persicus Fet, Capes et Sissom, 2001
Figures 10, 54–57

Polisius persicus Fet et al., 2001: 187; Soleglad & Fet, 2003: 7; Vignoli, Kovařík & Crucitti, 2003: 5; Soleglad & Fet, 2003b: 5.

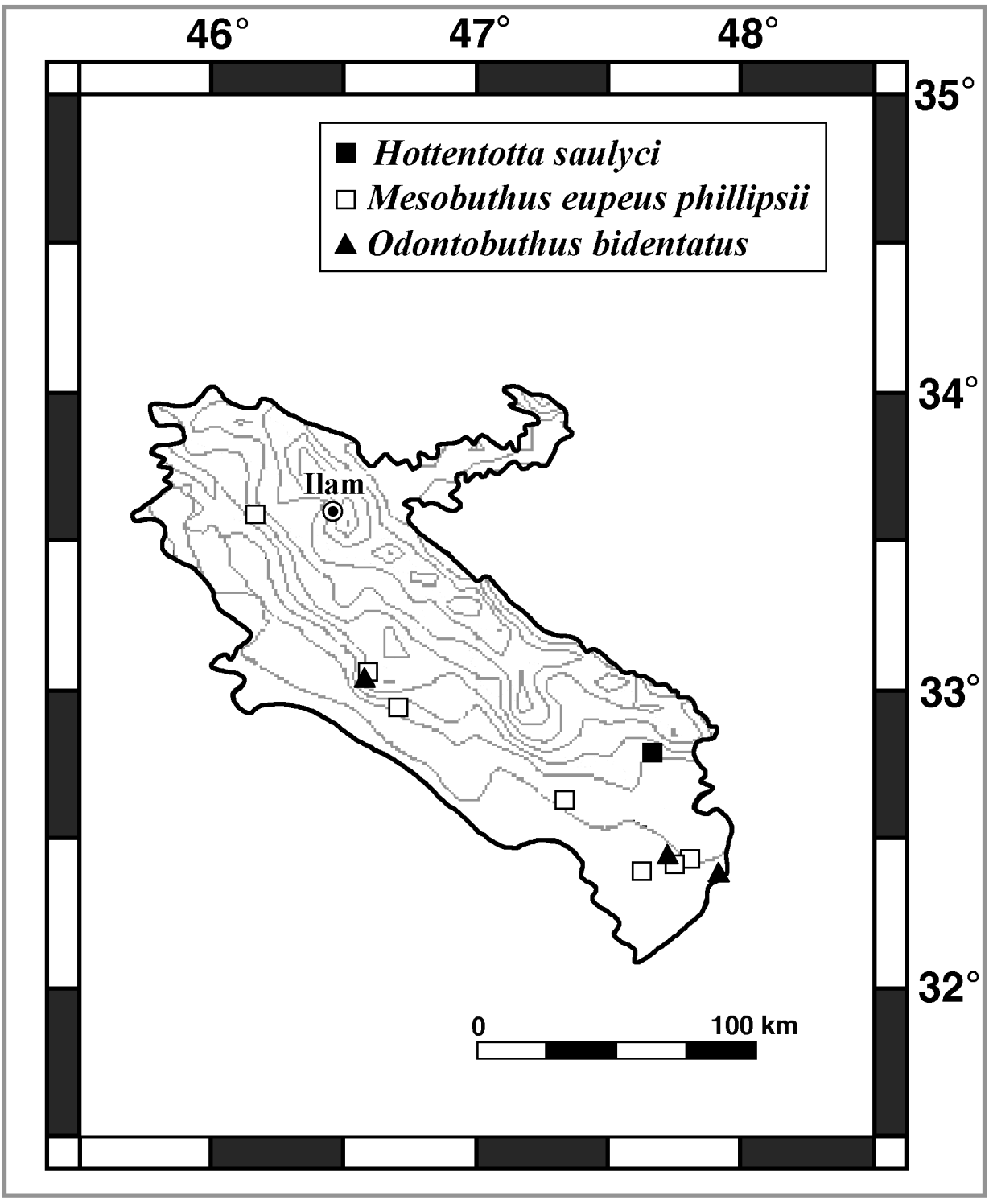


Figure 9: Map of Ilam Province showing distribution of *Hottentotta saulyci*, *Mesobuthus eupeus phillipsii* and *Odontobuthus bidentatus* collected in this study.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Sistan & Baluchistan Province, 85 km N of Zahedan; USNM.

TYPE MATERIAL EXAMINED. **Iran**, Sistan & Baluchistan Province, 85 km N of Zahedan, II.1963, 1♀ (holotype) USNM, leg. L. H. Herman.

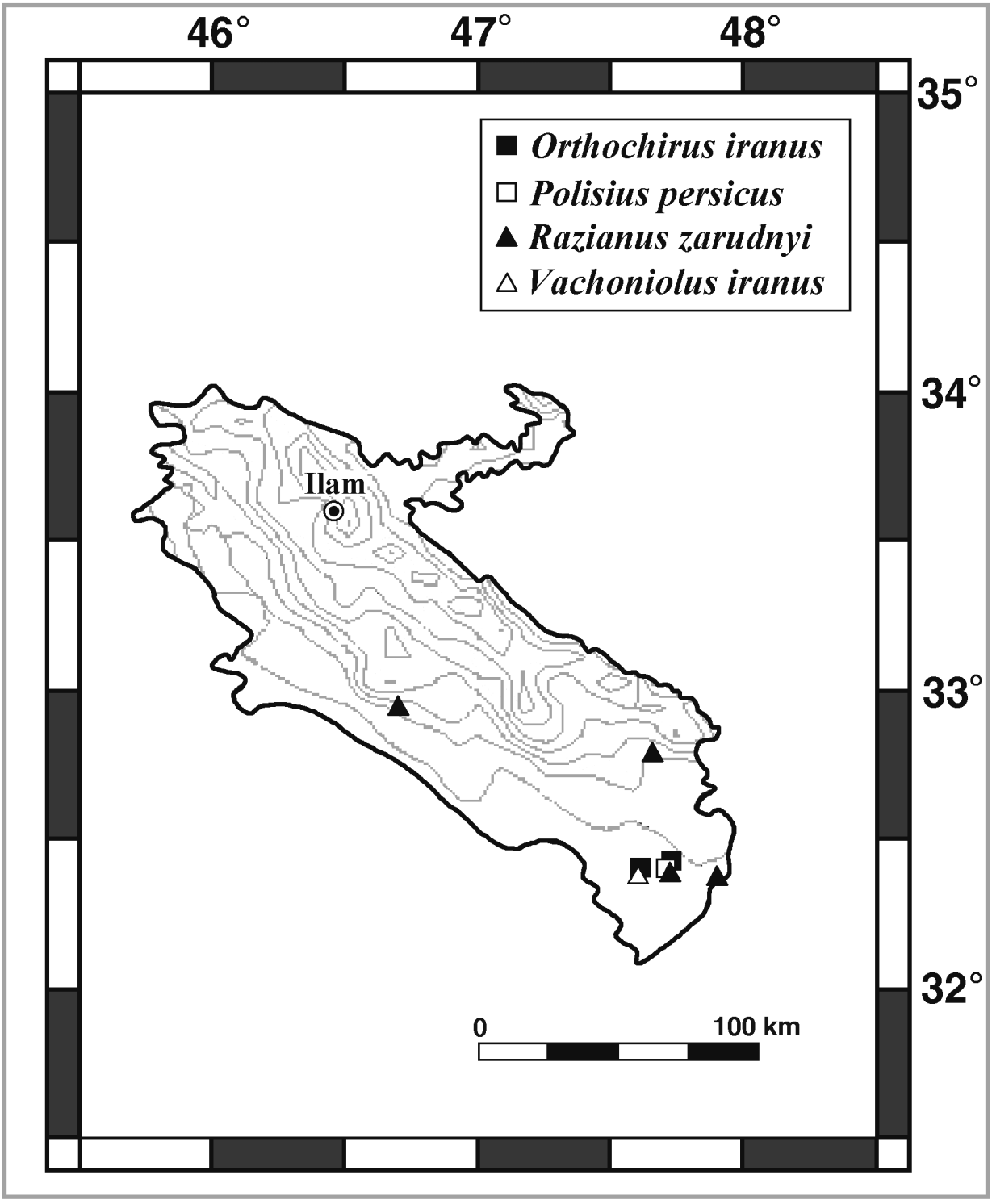


Figure 10: Map of Ilam Province showing distribution of *Orthochirus iranus*, *Polisius persicus*, *Razianus zarudnyi* and *Vachoniolus iranus* collected in this study.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Dashte Abbas, Ein Saleh village, 32°25.24'N 47°43.86'E, 182 m a.s.l. (Locality No. IL-828), X.2007, 1♀im. FKCP, leg. Navidpour, Masihipour & Bahrani.

DISTRIBUTION: Iran, Sistan & Baluchistan Province (Fet et al., 2001: 187), Esfahan Province (Vignoli, Kovařík & Crucitti, 2003: 5), Ilam Province (first report).

Razianus zarudnyi (Birula, 1903)
Figures 2, 4, 10, 58–61

Hemibuthus zarudnyi Birula, 1903: 75; Roewer, 1943: 216; Vachon, 1966: 211.
Razianus zarudnyi: Farzanpay, 1987: 159; Farzanpay, 1988: 41; Fet & Lowe, 2000: 216; Akbari, 2007: 76; Navidpour et al., 2008a: 20; Navidpour et al., 2008b: 17.
= *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; 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.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Murmury, 32º46.32'N 47º39.78'E, 566 m a.s.l. (Locality No. IL-819), X.2007, 2♀ RRLS, leg. Masihipour, Bahrani & Habibzadeh; 32°55.42'N 46°41.32'E, 375 m a.s.l. (Locality No**.** IL-822), X.2007, 1♂ RRLS, 2♀ FKCP, leg. Masihipour, Hayader & Habibzadeh; Dashte Abbas, Ein Saleh village, 32º25.24'N 47º43.86'E, 182 m a.s.l. (Locality No. IL-828), X.2007, 1♂3♀ RRLS, leg. Navidpour, Bahrani & Habibzadeh; Andimeshk to Dashte Abbas road, 32º21.46'N 47º57.27'E, 190 m a.s.l. (Locality No. IL-830), II.2008, 3♂2♀ RRLS, leg. Navidpour, Bahrani & Hayader.

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), and Sistan & Baluchistan Province (Fet, 1997: 66).

Vachoniolus iranus Navidpour, Kovařík, Soleglad et Fet, 2008
Figures 10, 41–44

Vachoniolus iranus Navidpour et al., 2008a: 22.

TYPE LOCALITY AND TYPE REPOSITORY. **Iran**, Khoozestan Province, near Masdjedsoleyman, 31°38'31"N 48°56'68"E, 53 m; RRLS.

TYPE MATERIAL EXAMINED. **Iran**, Khoozestan Province, near Masdjedsoleyman, 31°38'40"N 48°56'41"E, 53 m a.s.l. (Locality No. A-Ma 806-1), VIII.2007, 8♂25 ♀13juvs. (holotype and paratypes), leg. Navidpour & Masihipour; Ahvaz–Masjedsoleyman road, 31°35'44"N 48°57'19"E, 35 m a.s.l. (Locality No. A-Ma-810), IX.2007, 12♂27♀7juvs. (paratypes), leg. Navidpour & Masihipour. Holotype and most of paratypes are in RRLS, 2♂2♀ paratypes are in FKCP and one male paratype is in the personal collection of Graeme Lowe.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Ein Khosh, 32º24.76'N 47º37.48'E, 130 m a.s.l. (Locality No**.** IL-826), X.2007, 1♀1im. FKCP, 1♀im. RRLS, leg. Hayader, Masihipour & Bahrani.

DISTRIBUTION: Iran, Khoozestan Province (Navidpour et al, 2008a: 22), Ilam Province (first report).

Family **Scorpionidae** Latreille, 1802

Scorpio maurus townsendi (Pocock, 1900)
Figures 11, 12, 62–66

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; Navidpour et al., 2008b: 20.
Scorpio maurus: Farzanpay, 1987: 165; Farzanpay, 1988: 42; Akbari, 2007: 76.

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.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Abadanan road, Fazl Abad village, 33°12.56'N 47°17.57'E, 623 m a.s.l. (Locality No. IL-818), X.2007, 1♂1♀ FKCP, 1♀ RRLS, leg. Navidpour, Masihipour & Hayader.; 70 kms. to Dehloran, 33º01.74'N,46º35.87'E, 319 m a.s.l. (Locality No. IL-824), X.2007, 1♂3♀ RRLS, leg. Masihipour, Bahrani & Habibzadeh; Ein Khosh, 32º24.76'N 47º37.48'E, 130 m a.s.l. (Locality No.IL-826), X.2007, 6♂2♀ RRLS, leg. Navidpour, Masihipour & Habibzadeh.

Figure 11: *Scorpio maurus townsendi* (Pocock, 1900), dorsal, ventral views, label, and pedipalp of female holotype (59 mm), Iran, Bushehr Province, Fort Reshire near Bushire, Persia, leg. F. W. Townsend, BMNH No. 1900.5.9.1.

DISTRIBUTION: Iran, Bushehr Province (Pocock, 1900: 364), Ilam Province (Akbari, 2007: 76), Khoozestan Province (Navidpour et al., 2008a: 26).

Family **Hemiscorpiidae** Pocock, 1893

Hemiscorpius lepturus Peters, 1861
Figures 4, 12, 67–70

Hemiscorpius lepturus Peters, 1861a: 426; Karsch, 1879: 15, 21; Birula, 1905a: 146; Birula, 1917: 215; Birula, 1918: 42; Weidner, 1959: 100; Pringle, 1960: 84; 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; Akbari, 2007: 76; Navidpour et al., 2008a: 26; Navidpour et al., 2008b: 20.

Hemiscorpion 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.

ILAM PROVINCE MATERIAL EXAMINED. **Iran**, Ilam Prov., Murmury, 32°46.32'N 47°39.78'E, 566 m a.s.l. (Locality No. IL-819), X.2007, 1♂1♀ FKCP, 7♂13♀ RRLS, leg. Masihipour, Navidpour & Bahrani; Abdanan to Murmury road, 32º51.82'N 47º25.26'E, 870 m a.s.l. (Locality No. IL-820), X.2007, 1♀ RRLS, leg. Masihipour, Bahrani & Hayader; Mehran to Dehloran road, 32º55.42'N 46º41.32'E, 327 m a.s.l. (Locality No. IL-822), X.2007, 2♂3♀ RRLS, leg. Masihipour Hayader & Bahrani; Andimeshk to Dashte Abbas road, 32º21.46'N 47º57.27'E, 190 m a.s.l. (Locality No. IL-830), 2008, 2♀1♀im. RRLS, leg. Navidpour, Hayader & Bahrani.

DISTRIBUTION: Iran, Kohgiloueyeh & Boyerahmad, Fars, Hormozgan, and Lorestan Provinces (Kovařík, 1997a: 48), Bushehr, Ilam, and Khoozestan Province (Far- zanpay, 1987: 141, Monod & Lourenço, 2005: 902, and Akbari, 2007: 76); Iraq (Peters, 1861a: 426).

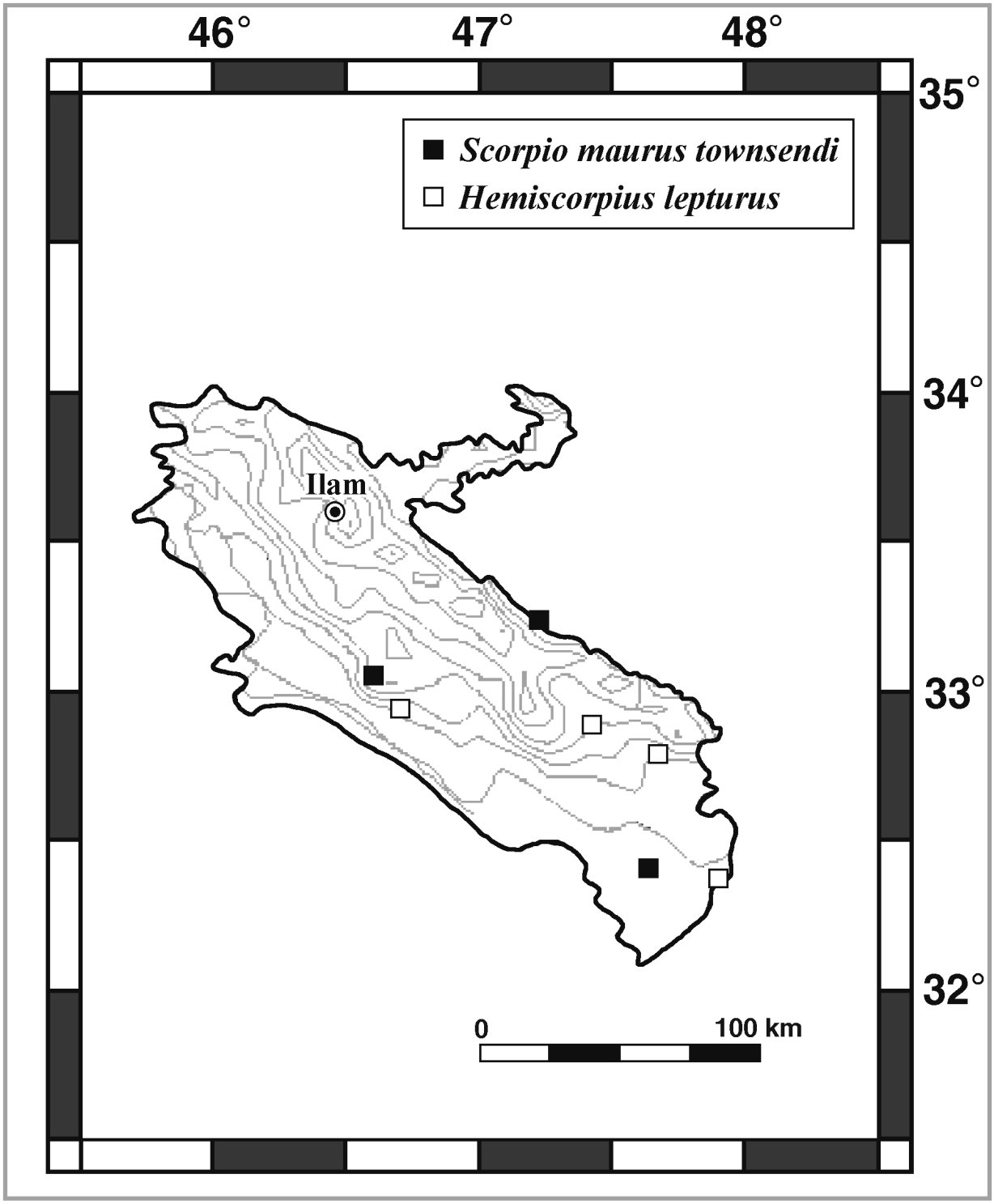


Figure 12: Map of Ilam Province showing distribution of *Scorpio maurus townsendi* and *Hemiscorpius lepturus* collected in this study.

Key of scorpions of Ilam 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*** Kovařík, 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. Second metasomal segment of adults widely flattened, much wider than other metasomal segments ....…….....***Apistobuthus susanae*** Lourenço, 1998
- Second metasomal segment similar in width to other metasomal segments .....……..... 6

6. Carapace granulated but without carinae 7
- Carapace with carinae 8

7. Patella of pedipalp with 8 (rarely 7 or 9) external trichobothria. .....……***Vachoniolus iranus*** Navidpour, Kovařík, Soleglad et Fet, 2008
- Patella of pedipalp with 7 external trichobothria. ... …….***Buthacus macrocentrus*** (Ehrenberg, 1828)

8. Ventral carinae of second and third metasomal segments and ventral transverse carina of fourth segment armed with very strong denticles. ……. ……***Odontobuthus bidentatus*** Lourenço et Pézier, 2002
- Ventral carinae of metasomal segments without very strong denticles.....……..... 9

9. Dentate margin of pedipalp chela movable finger with 4 terminal granules (3 terminal and one basal terminal). 10
- Dentate margin of pedipalp chela movable finger with 5-7 terminal granules (4–6 terminal and one basal terminal)..... 11

10. Total adult length less than 50 mm. Color yellow to brown..…... ***Polisius persicus*** Fet, Capes et Sissom, 2001
- Total adult length more than 50 mm. Color usually entirely black..***Androctonus crassicauda*** (Olivier, 1807)

11. Central median and posterior median carinae of carapace joined to form a continuous linear series of granules to posterior margin ***Compsobuthus*** ...…….. 12
- Central median and posterior median carinae of carapace not joined to form a continuous linear series of granules to posterior margin .....……..... 13

12. Male has longer metasoma than female. Width of pedipalp manus the same in both sexes .....…..... ……..***C. matthiesseni*** (Birula, 1905)
- Length of metasoma the same in both sexes. Male has much wider and shorter pedipalp chela ..... ……..***C. jakesi*** Kovařík, 2003

13. Trichobothrium *db* on patella of pedipalp 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 saulcyi*** (Simon, 1880)
- Trichobothrium *db* on patella of pedipalp 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)

Acknowledgments

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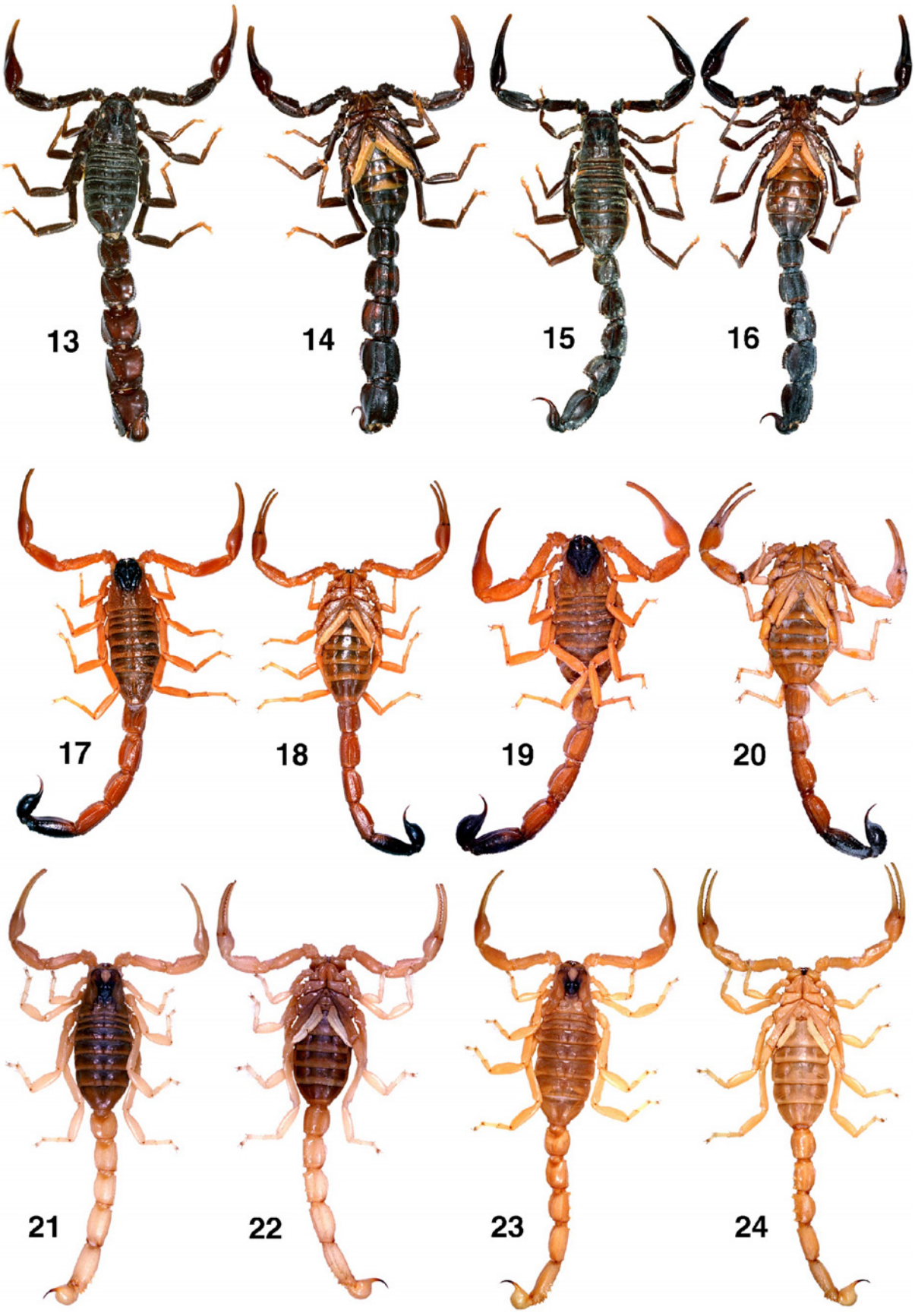
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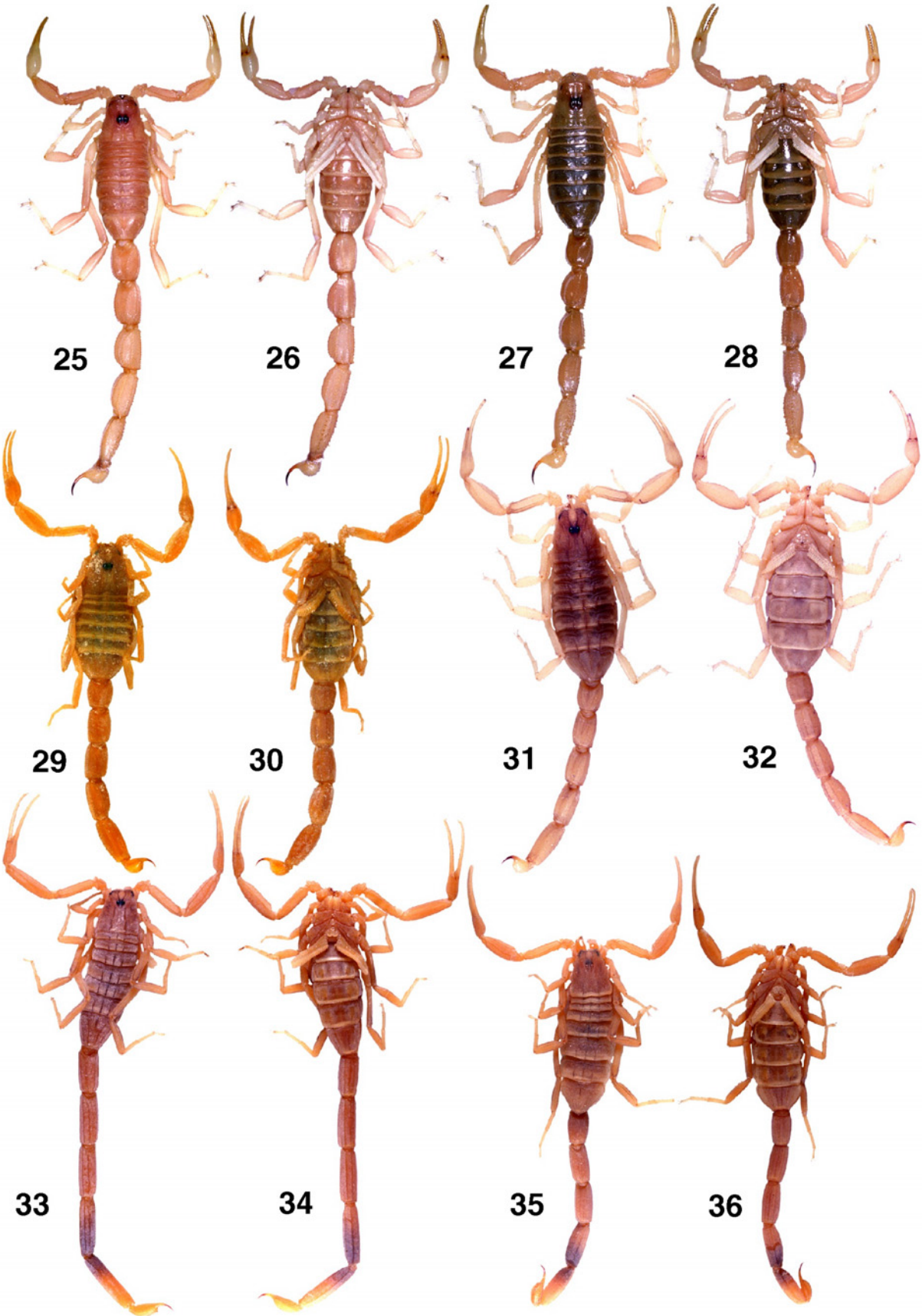
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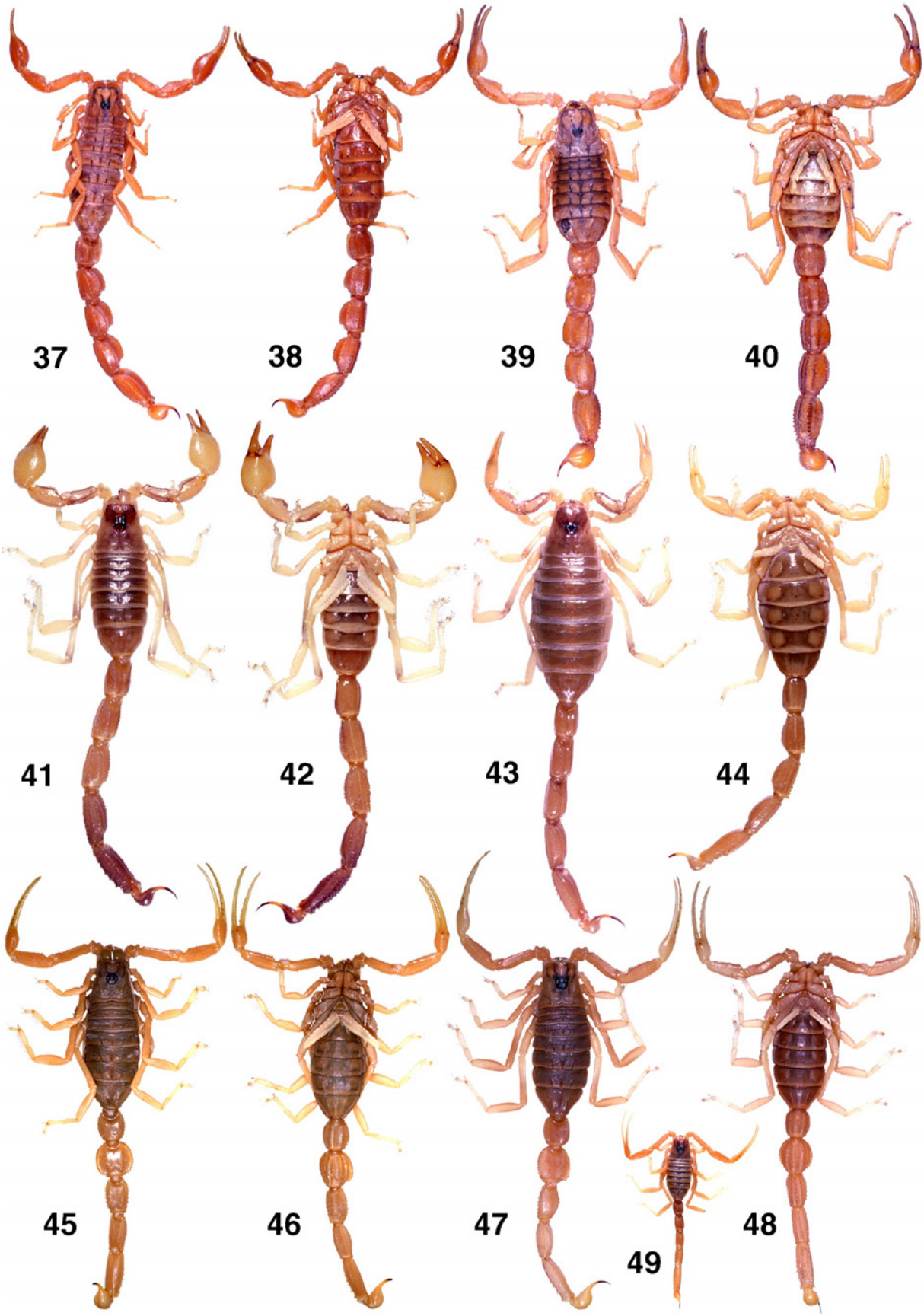
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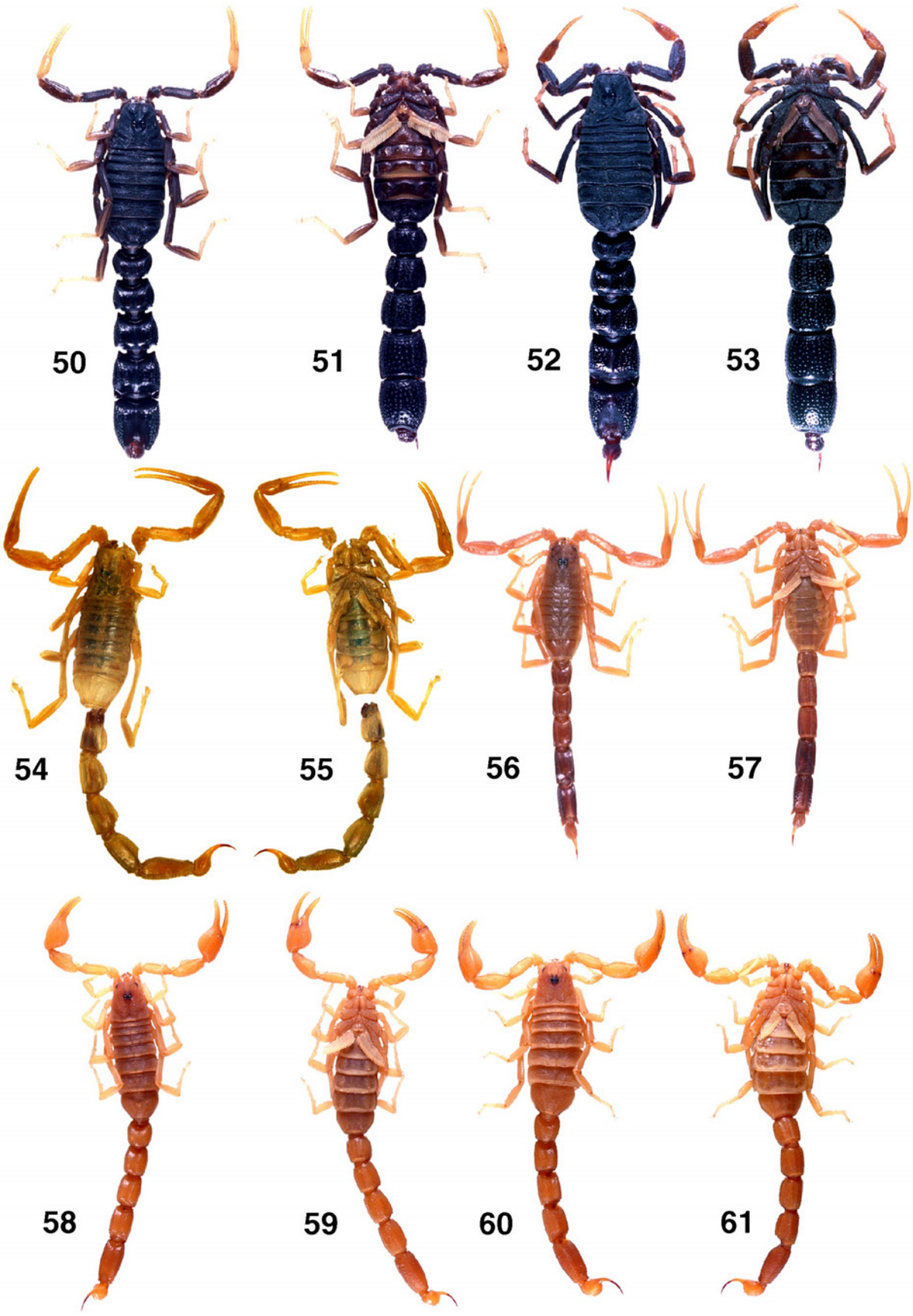
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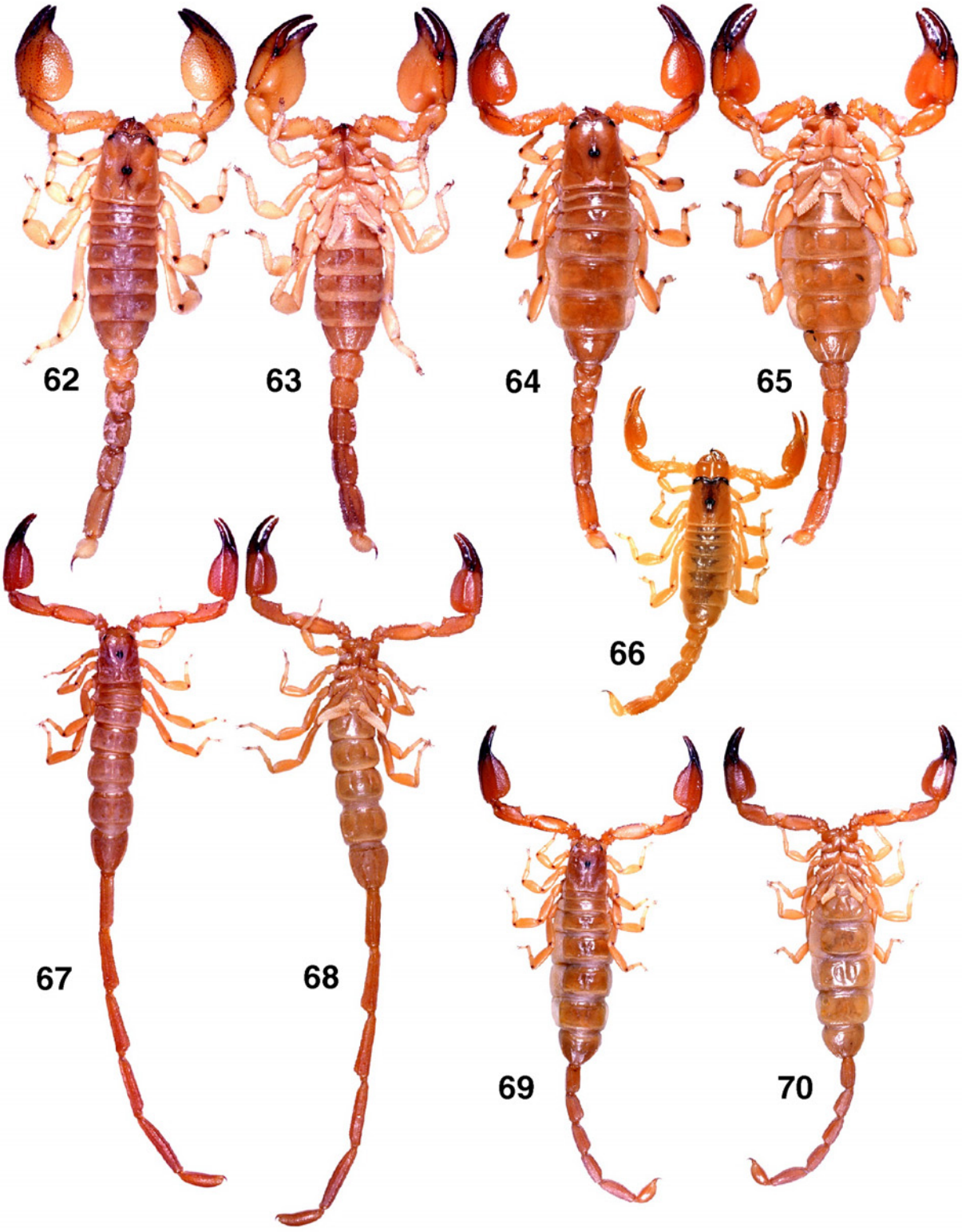
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Figures 13–24: 13–14. *Androctonus crassicauda* (Olivier, 1807), dorsal and ventral views, ♂ (73 mm), Iran, Bushehr Province, Chahak district, 29°38'32"N 50°26'56"E, FKCP. **15–16.** *Androctonus crassicauda* (Olivier, 1807), dorsal and ventral views, ♀ (85 mm), Egypt, FKCP. **17–18.** *Hottentotta saulcyi* (Simon, 1880), dorsal and ventral views, ♂ (82 mm), Iran, Kermanshah Province (formerly Bachtaran), Hasrouabad, 34°10'09"N 46°21'56"E, 1300 m a.s.l., FKCP. **19–20.** *Hottentotta saulcyi* (Simon, 1880), dorsal and ventral views, ♀ (94 mm), Iran, Ilam Province, 30 km NW Ilam, 33°43'N 46°41'E, FKCP. **21–22.** *Odontobuthus bidentatus* Lourenço et Pézier, 2002, dorsal and ventral views, ♂ (63 mm), Iran, Khoozestan Province, 45 km NW of Masdjedsoleyman, Lali, 31°18'33"N 49°03'39"E, 329 m a.s.l. (Locality No. La-815-2), FKCP. **23–24.** *Odontobuthus bidentatus* Lourenço et Pézier, 2002, dorsal and ventral views, ♀ (68 mm), Iran, Bushehr Province, Bushehr to Dayer road, Jeirani village, 27°50'47"N 51°45'33"E (Locality No. Bu-22), FKCP.

Figures 25–36: 25–26. *Buthacus macrocentrus* (Ehrenberg, 1828), dorsal and ventral views, ♂ (69 mm), Iran, Khoozestan Province, Hamidiyeh, 31°27'57"N 48°29'18"E, 13 m a.s.l. (Locality No. A-Ham-812-2), FKCP. **27–28.** *Buthacus macrocentrus* (Ehrenberg, 1828), dorsal and ventral views, ♀ (58 mm), Iran, Khoozestan Province, Hamidiyeh, same locality as in Figs. 25–26, FKCP. **29–30.** *Compsobuthus jakesi* Kovařík, 2003, dorsal and ventral views, ♂ (28 mm) paratype, Iraq, Najaf Province, Ash-Shabakah (Shabachah, Shabicha), 262 m a.s.l., 31°06'N 43°95'E, FKCP. **31–32.** *Compsobuthus jakesi* Kovařík, 2003, dorsal and ventral views, ♀ (27 mm), Iran, Khoozestan Province, FKCP. **33–34.** *Compsobuthus matthiesseni* (Birula, 1905), dorsal and ventral views, ♂ (38 mm), Iran, Lorestan Province, 10 km SE Bavineh, 1100 m a.s.l., 33°36'08"N 47°11'59"E, FKCP. **35–36.** *Compsobuthus matthiesseni* (Birula, 1905), dorsal and ventral views, ♀ (38 mm), Iran, Lorestan Province, same locality as in Figs. 33–34, FKCP.

Figures 37–49: 37–38. *Mesobuthus eupeus phillipsii* (Pocock, 1889), dorsal and ventral views, ♂(52 mm), Iran, Khoozestan Province, near Choga Zanbil (zikkurat) ca. 100 m a.s.l., FKCP. **39–40.** *Mesobuthus eupeus phillipsii* (Pocock, 1889), dorsal and ventral views, ♀(53 mm), Iran, Khoozestan Province, Baghmalek district, Hore village, 31°55'30"N 49°31'47"E, 185 m a.s.l.,, FKCP. **41–42.** *Vachoniolus iranus* Navidpour, Kovařík, Soleglad et Fet, 2008, dorsal and ventral views, ♂ (42 mm) holotype, Iran, Khoozestan Province, near Masdjedsoleyman, 31°38.40´N 48°56.41´E, RRLS. **43–44.** *Vachoniolus iranus* Navidpour, Kovařík, Soleglad et Fet, 2008, dorsal and ventral views, ♀(40 mm) allotype, Iran, Khoozestan Province, Ahvaz–Masjedsoleyman road, 31°35'44"N 48°57'19"E, 35 m a.s.l. (Locality No. A-Ma-810), FKCP. **45–46.** *Apistobuthus susanae* Lourenço, 1998, dorsal and ventral views, ♂(76 mm), Iran, Ilam Prov., Ein Khosh, 32°24.76'N 47°37.48'E, 130 m a.s.l., (Locality No**.** IL-826), FKCP. **47–48.** *Apistobuthus susanae* Lourenço, 1998, dorsal and ventral views, ♀ (69 mm), Iran, Khoozestan Province, Hamidiyeh, 31°27'57"N 48°29'18"E, 13 m a.s.l. (Locality No. A-Ham-812-1), FKCP. **49.** *Apistobuthus susanae* Lourenço, 1998, dorsal views, juv. (27 mm), Iran, Khoozestan Province, Hamidiyeh, same locality as in Fig. 47–48, FKCP.

Figures 50–61: 50–51. *Orthochirus iranus* Kovařík, 2004, dorsal and ventral views, ♂(29 mm), Iran, Bushehr Province, Delvar, 28°42'59"N 51°04'52"E, 4 m a.s.l. (Locality No. Bu-20), FKCP. **52–53.** *Orthochirus iranus* Kovařík, 2004, dorsal and ventral views, ♀ (38 mm), Iran, Khoozestan Province, Shadegan district, Toopjieh village, 30°39'33"N 48°36'44"E, 33 m a.s.l., FKCP. **54–55.** *Polisius persicus* Fet, Capes et Sissom, 2001, dorsal and ventral views, ♀(41 mm) holotype, Iran, Sistan & Baluchistan Province, 85 km N of Zahedan, USNM. **56–57.** *Polisius persicus* Fet, Capes & Sissom, 2001, dorsal and ventral views, ♀im. (22 mm), Iran, Ilam Prov., Dashte Abbas, Ein Saleh village, 32°25.24'N 47°43.86'E, 182 m a.s.l., (Locality No. IL-828), FKCP. **58–59.** *Razianus zarudnyi* (Birula, 1903), dorsal and ventral views, ♂ (22 mm), Iran, Khoozestan Province, near Chogha Zanbil (zikkurat), 32°00'55"N 48°31'04"E, 68.5 m a.s.l. (Locality No. Ch-101), FKCP. **60–61.** *Razianus zarudnyi* (Birula, 1903), dorsal and ventral views, ♀(24 mm), Iran, Khoozestan Province, same locality as in Figs. 58–59, FKCP.

Figures 62–70: 62–63. *Scorpio maurus townsendi* (Pocock, 1900), dorsal and ventral views, ♂ (55 mm), Iran, Khoozestan Province, Ahvaz–Omidiyeh road, Chombeh village, 31°11'54"N 49°11'41"E, 44 m a.s.l., FKCP. **64–65.** *Scorpio maurus townsendi* (Pocock, 1900), dorsal and ventral views, ♀(54 mm), Iran, Khoozestan Province, Hayader and Bahrani; Ramhormoz, 31°11'54"N 49°11'41"E, 44 m a.s.l. (Locality No. A-Ra 807), FKCP. **66.** *Scorpio maurus townsendi* (Pocock, 1900), dorsal view, juv. (25 mm), Iran, Bushehr Province, Tangestan, Farshanbeh, 28º52'53"N 51°18'43"E, 95 m a.s.l. (Locality No. Bu-35), FKCP. **67–68.** *Hemiscorpius lepturus* Peters, 1861, dorsal and ventral views, ♂ (72 mm), Iran, Khoozestan Province, Chogha Zanbil (zikkurat), 32°00'55"N 48°31'04"E, 68.5 m a.s.l. (Locality No. Ch-102), FKCP. **69–70.** *Hemiscorpius lepturus* Peters, 1861, dorsal and ventral views, ♀ (58 mm), Iran, Khoozestan Province, same locality as in Figs. 67–68. FKCP.

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.

AMR, Z.S, K. E. HYLAND, R. KINZELBACH, S. S. AMR & D. DEFOSSE. 1988. Scorpions et piqûres de scorpions en Jordanie. *Bulletin de la Société de Pathologie Exotique*, 81(3): 369–379.

ARNETT, H.R. JR., G.A. SAMUELSON & G.M. NISHIDA. 1993. *The Insect and Spider Collections of the World. Flora & Fauna Handbook No. 11, Second edition*. Gainesville: Sandhill Crane Press, 308 pp.

AUSSERER A. 1880. Arachnida. *Zoologischer Jahresbericht*, 1879: 430–470.

BIRULA, A. A. 1900. Beiträge zur Kenntniss der Scorpionenfauna Ost-Persiens. *Bulletin de l´Aca- démie Impériale des Sciences de St.-Pétersbourg*, 12(1): 355–375.

BIRULA, A. A. 1903. Beiträge zur Kenntniss der Scorpionenfauna Persiens (Zweiter Beiträg). *Bulletin de l´Académie Impériale des Sciences de St.-Pétersbourg*, 19: 67–80.

BIRULA, A. A. 1904. Miscellanea scorpiologica. VII. Synopsis der russischen Skorpione. *Annuaire du Musée Zoologique de l´Académie Impériale des Sciences de St.-Pétersbourg*, 9: 28–38.

BIRULA, A. A. 1905a. Beiträge zur Kenntniss der Scorpionenfauna Persiens (Dritter Beiträge). *Bulletin de l´Académie Impériale des Sciences de St.-Pétersbourg*, 23: 119–148.

BIRULA, A. A. 1905b. 4. Skorpiologische Beiträge, 1.-3. *Microbuthus littoralis* (Pavesi), *Anomalobuthus rickmersi* Kraepelin und *Buthus zarudnianus* n. nom. *Zoologisher 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. 1. Scorpions.* Jerusalem: Israel Program for Scientific Translations, 170 pp. (in Russian).

BIRULA, A. A. 1918. Miscellanea scorpiologica. XI. Materialy k skorpiofaune nizhnei Mesopotamii, Kurdistana i Severnoi Persii (Matériaux pour servir á 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.-Pétersbourg*, 22(1917): 1–44 (in Russian).

BIRULA, A. A. 1937. Zametki o kollektsii 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 Societá Italiana di Scienze Naturali*, 53: 456–464.

BRAUNWALDER, M. E. & V. FET. 1998. On publications about scorpions (Arachnida, Scorpiones) by Hemprich and Ehrenberg (1828–1831). *Bulletin of the British Arachnological Society*, 11(1): 29–35.

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). *Bolletino 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 (Espaňa) 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 occuring 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 Museuns 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: Scorpions) in Turkmenistan. Pp. 525–534 In: Fet V. & K. I. Atamuradov K. I. (eds.), *Biogeography and Ecology of Turkmenistan*. Kluwer Academic Publishers: Boston–Dordrecht.

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., Sissom, W. D., G. Lowe & M. E. Braunwalder. 2000. *Catalog of the Scorpions of the World (1758–1998).* The New York Entomological Society, New York, 689 pp.

FET, V., CAPES E. M. & SISSOM W. D. 2001. A new genus and species of psammophilic scorpions from Eastern Iran (Scorpiones: Buthidae). Pp. 183–189 *in*: Fet, V. & P. A. Selden (eds.), *Scorpions 2001. In Memoriam Gary A. Polis.* British Arachnological Society: Burhnam Beeches, Bucks.

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., Sissom, W. D., G. Lowe & M. E. Braunwalder. 2000. *Catalog of the Scorpions of the World (1758–1998).* The New York Entomological Society, New York, 689 pp.

HABIBI, T. 1971. Liste de Scorpions de l'Iran. *Bulletin of the Faculty of Science, Teheran University*, 2(4): 42–47.

HEMPRICH, F. G. & C. G. EHRENBERG. 1828: Animalia articulata. Arachnoidea, Scorpiones africani et asiatici. In: *Symbolae physicae seu icones et descriptiones Animalium evertebratorum sepositis insectis quae ex itinere per Africam Borealem et Asiam Occidentalem*. Berolini: Officina Academica, Decas Prima, Plates IX et X.

HEMPRICH, F. G. & C. G. EHRENBERG. 1829. Vorläufige Uebersicht der in Nord-Afrika und West-Asien einheimischen Scorpione und deren geographischen Verbreitung, nach den eigenen Beobachtungen. *Verhandlungen der Gesellschaft Naturforschende Freunde in Berlin*, 1: 348–362.

HEMPRICH, F. G. & C. G. EHRENBERG. 1831. Animalia Articulata, Arachnoidea, Scorpiones. In *Symbolae physicae animalia evertebrata, exclusis insectis, series prima, tabularum decade prima.* Berolini: Officina Academica, 12 pp.

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.

KARATAŞ, A. 2003. New records on the occurrence of *Hottentotta saulcyi* (Simon, 1880) (Scorpiones: Buthidae) in Turkey. *Israel Journal of Zoology*, 49(4): 315–316.

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.

KINZELBACH, R. 1984. Die Skorpionssammlung des Naturhistorischen Museums der Stadt Mainz – Teil II: Vorderasien. *Mainzer Naturwisserschaftliches Archiv*, 22: 97–106.

KOVAŘÍK, F. 1992. A check list of scorpions (Arachnida: Scorpiones) in the collections of the Zoological Depertment, National Museum in Prague. *Acta Societatis Zoologicae Bohemoslovaca*, 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. 2001. *Catalog of the Scorpions of the World* (1758–1998) by V. Fet, W. D. Sissom, G. Lowe, and M. Braunwalder (New York Entomological Society, 2000: pp. 690). Discussion and supplement for 1999 and part of 2000. *Serket*, 7(3): 78–93.

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. 2005. Taxonomic position of species of the genus *Buthacus* Birula, 1908 described by Ehrenberg and Lourenço, and description of a new species (Scorpiones: Buthidae). *Euscorpius*, 28: 1–13.

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. & 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. 1895. Nachtrag zu Theil I der Revision der Skorpione. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, 12(1894): 73–96.

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 Residentzstadt 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. 1998. A new species of *Apistobuthus* Finnegan, 1932 (Chelicerata, Scorpiones, Buthidae) from Iran. *Entomologische Mitteilungen aus dem Zoologischen Museum Hamburg*, 12(157): 237–244.

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 descripion 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: Burhnam Beeches, Bucks.

MASI, L. 1912. Note sugli Scorpioni appartenenti al R. Museo Zoologico di Roma. *Memorie della Societá 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.

OLIVIER, G. A. 1807. *Voyage dans l`Empire Othoman, l`Égypte et la Perse*. Henri Agasse, Paris, 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 Scorpionen, Hemiscorpion lepturus. *Monatsberichte der Königlichen 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 Königlichen Preussischen Akademie der Wissenschaften zu Berlin*, 1861: 507–520.

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.

ROEWER, C. F. 1943. Über eine neuerworbene Sammlung von Skorpionen des Natur-Museums Senckenberg. *Senckenbergiana*, 26(4): 205–244.

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 Sociéte 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 Espéces de l`orde des Scorpiones. *Annales de la Sociéte Entomologique de France*, 5(10)1880: 377–398.

SIMON, E. 1880b. Quelques Scorpions qui lui ont été donnés par notre confrére M. Reiche, de la part de M. F. de Saulcy, qui les a recus de Mossoul (ancienne Ninive), sur le Tigre, en Mésopotamie. *Annales de la Sociéte 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.

SIMON, E. 1910. Révision des Scorpions d'Egypte. *Bulletin de la Société Entomologique d´Egypte*, 1910: 57–87.

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 matthiesseni* (Scorpiones, Buthidae) from southwestern Asia. *The Journal of Arachnology*, 26: 1-8.

SOLEGLAD M. E. & FET. V. 2003. The scorpion sternum: structure and phylogeny (Scorpiones: Orthosterni). *Euscorpius*, 5: 1–34.

SOLEGLAD M. E. & FET. V. 2003b. High-level systematics and phylogeny of the extant scorpions (Scorpiones: Orthosterni). *Euscorpius*, 11: 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 tarafindan Türkiyede toplanan akrepler hakkinda. 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`Afganistan. The 3rd Danish Expedition to central Asia (Zoological Results 23). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kobehavn*, 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.

VACHON, M. & R. STOCKMANN. 1968. Contribution á l`étude des Scorpions africains appartenant au genre *Buthotus* Vachon 1949 et étude de la variabilité. *Monitore Zoologico Italiano*, (N. S.) (2. supplemento): 81–149.

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 Verlaggesellschaft, Leipzig. 5(IV) 8 (Scorpiones pp. 1–316): 1–490.