Euscorpius

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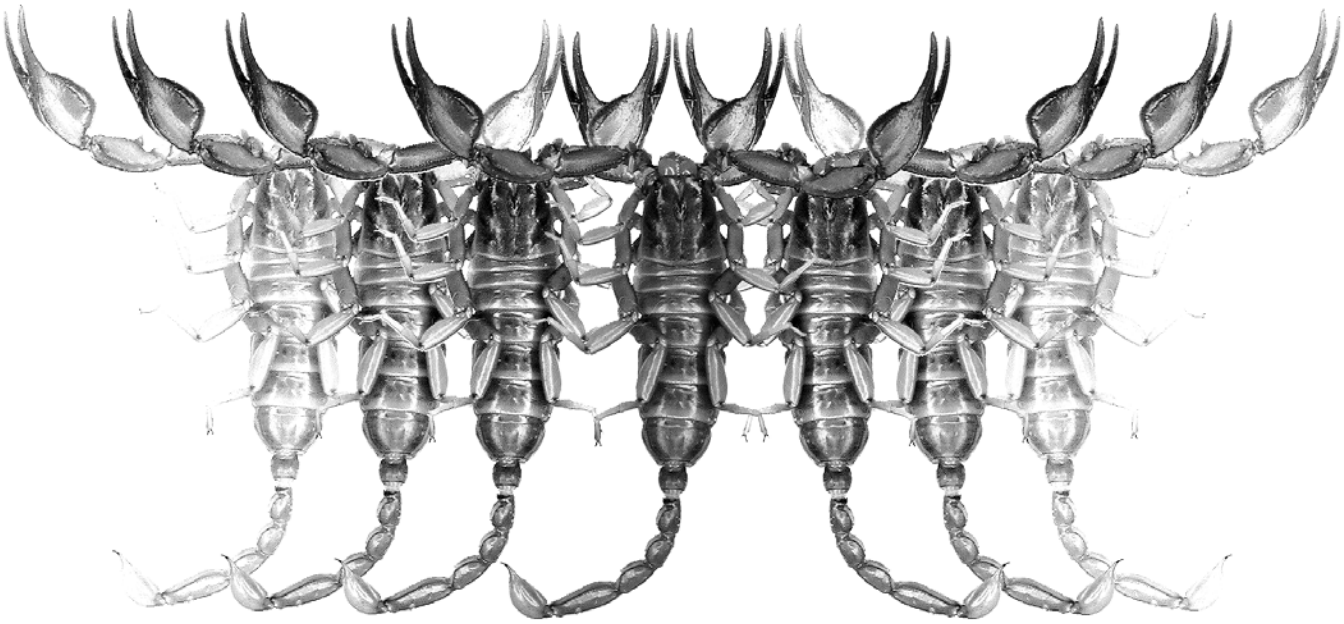

Scorpions of Iran (Arachnida, Scorpiones). Part I. Khoozestan Province

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

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Derivatio Nominis

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

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- **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

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Scorpions of Iran (Arachnida, Scorpiones). Part I. Khoozestan Province

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Summary

Collections made by a team of Shahrokh Navidpour (Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Ahvaz, Khoozestan, Iran) include 17 of the 19 species known to inhabit Khoozestan Province, and form the basis of this paper. Among them are two new species (*Hottentotta khoozestanus* **sp. n.** and *Vachoniolus iranus* **sp. n.**), *Compsobuthus jakesi* Kovařík, 2003 previously known only from Iraq, and five species representing first records for the province: *Buthacus macrocentrus* (Ehrenberg, 1828); *Odontobuthus bidentatus* Lourenço & Pézier, 2002; *Orthochirus farzanpayi* (Vachon et Farzanpay, 1987); *Orthochirus stockwelli* (Lourenço et Vachon, 1995) **comb. n.**; and *Scorpio maurus townsendi* (Pocock, 1900). In contrast, *Orthochirus zagrosensis* Kovařík, 2004, as described from Khoozestan, stands corrected to Kohkiloye & Boyer Ahmad, Esfahan, Fars, Kerman, and Yazd Provinces. Occurrences of *Hottentotta schach* (Birula, 1905) and *Compsobuthus garyi* Lourenço et Vachon, 2001 could not be verified for Khoozestan, but are nevertheless included, and the uncertain taxonomic position of the latter is discussed. A large collection of *Orthochirus iranus* Kovařík, 2004 allowed the study of intraspecific variation and resulted in the observation that trichobothrium d_2 on the dorsal surface of pedipalp femur may be fully developed, reduced, or absent. Since the presence or absence of trichobothrium d_2 is the only character separating *Orthochirus* Karsch, 1892 from *Paraorthochirus* Lourenço et Vachon, 1995, it follows that *Paraorthochirus* is a synonym of *Orthochirus*, **syn. n**. 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 fieldwork is conducted by the RRLS team under Shahrokh Navidpour and includes documentation of habitat diversity, revisitation of previously known sites, some of them type localities, and sampling of all the encountered scorpion species. All specimens are collected by UV light at night. The pilot survey in Khoozestan Province shows how much can be learned from such systematically conducted surveys, as it reveals the presence of 17 from 19 species of which 5 have not been previously known to occur in this province, one is a new country record, and two are new taxa described below. The extensive new material allows to assess intraspecific variation that has not been available to previous authors, resulting in refined taxonomy and, predictably, in synonymization of some taxa. Moreover, the taxonomic and faunistic work contributes also to toxicology, as some of the recorded species are of medical importance. Scorpions, scorpionism, and human envenomation cases are common in Khoozestan due to its geographical location and climate. This province is located in the Southwest of Iran and borders five other provinces: Lorestan in the north, Ilam in the northwest, Chahar Mahal & Bakhtiyari and Kohkiloye & Boyer Ahmad in the east, and Bushehr in the southeast; it is limited by the Persian Gulf in the south (see map in Fig. 1). Khoozestan is one of the large provinces of Iran, with 63,236 km^2 of land area. Humidity varies from 10 to 90% and temperature from 60˚C in deserts during summers to 0˚C in eastern montane areas during winters.

The habitats and ecological niches in this part of Iran are diverse (Figs. 2–4). Lowland deserts (3–70 meters altitude) with sandy substrate prevail in the western and some central parts of Khoozestan (e.g. Albaji, Bostan, Shadegan and Omidiyeh), whereas the eastern parts of the province (150–650 m a.s.l., e.g. Lali, Masjedsoleyman, Izeh, and Ramhormoz) are hilly and montane with dominant rocky substrates. The team

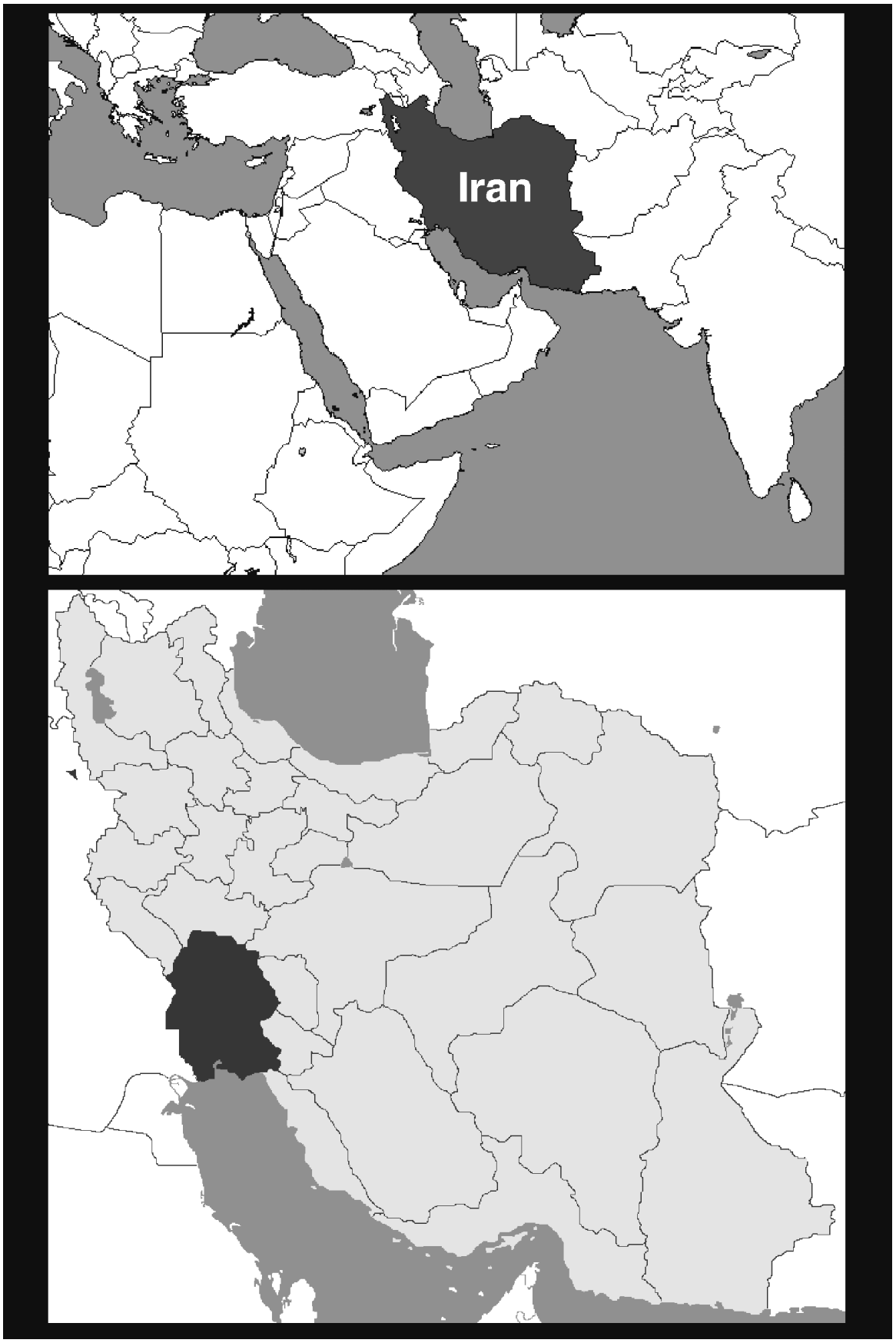


Figure 1: Map of southwestern Asia highlighting Iran (top) and closeup of Iran showing provinces, the Khoozestan province depicted in black (bottom).

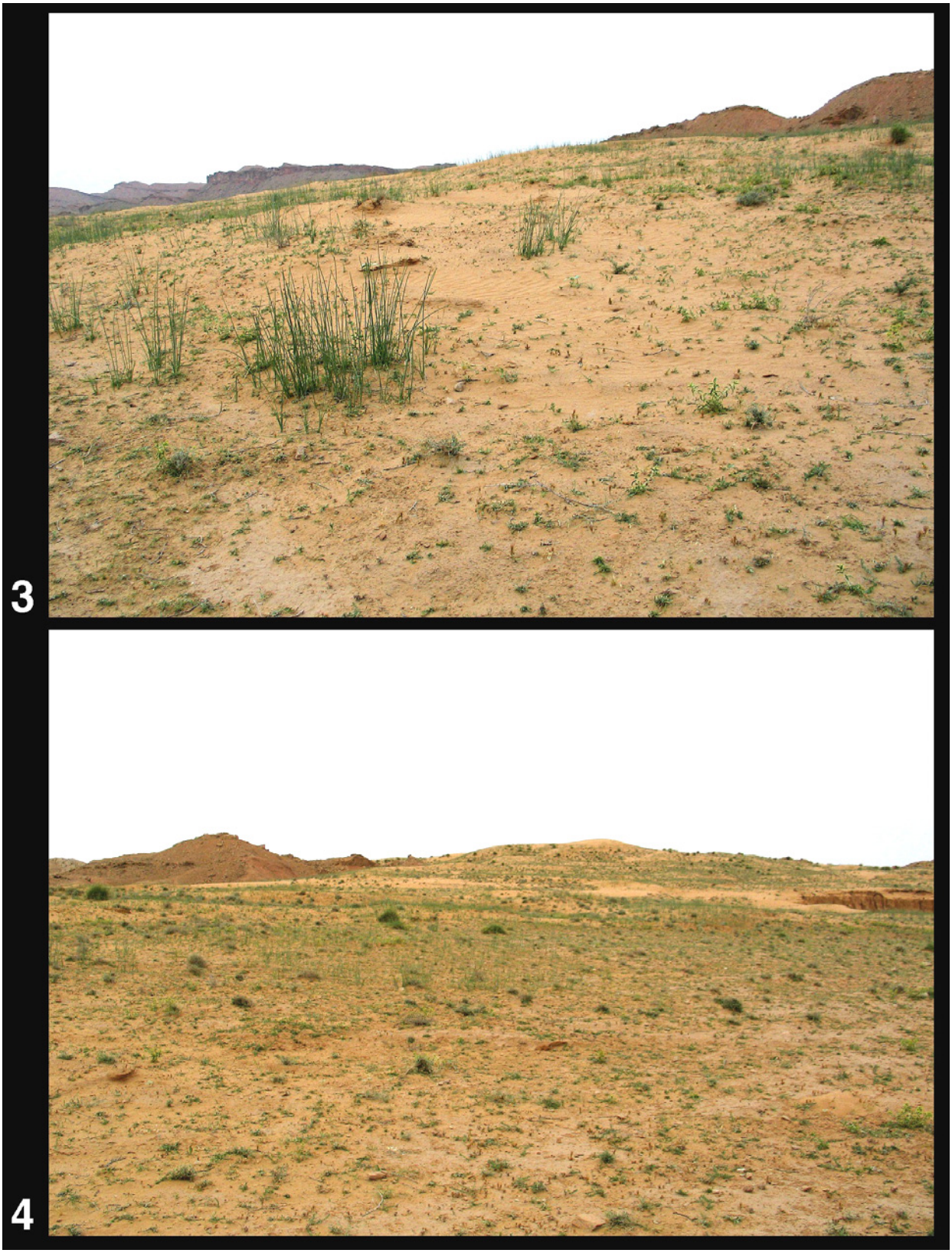
Figure 2: Iran, Khoozestan Province, Dezful district, Shahyoon village, 32°36'41"N 48°33'36"E, 527 m a.s.l. (Locality No. D-103). Recorded occurrence of *Orthochirus stockwelli* (Lourenço et Vachon, 1995), **comb. n.,** *Hottentotta saulcyi* (Simon, 1880), and *Scorpio maurus townsendi* (Pocock, 1900).

surveyed and collected scorpion species belonging to three families, Buthidae, Scorpionidae, and Hemiscorpiidae.

Apistobuthus susanae occurs in lowland sandy areas at 10–35 m a.s.l., e.g. at Omidiyeh, Shadegan, Bostan, and Albaji. In surrounding areas we collected *Orthochirus iranus, Vachoniolus iranus*, and *Buthacus macrocentrus. Hemiscorpius lepturus*, *Compsobuthus matthiesseni*, and *Hottentotta saulcyi* occur in montane areas such as around Masjedsoleyman, Izeh, Baghmalek, and Ramhormoz. In lowland areas (1–5 m) with soft clays were found *Odontobuthus bientatus* and *Scorpio murus townsendi*, both burrowing species. In the mountains of eastern Khoozestan (Baghmalek) at 650–730 m a.s.l. we captured *Hottentotta zagrosensis. Mesobuthus eupeus* and *Androctonus crassicauda* are present everywhere except in desert areas with sandy substrata. *Mesobuthus eupeus, Hemiscorpius lepturus, Scorpio maurus,* and *Compsobuthus matthiesseni* are common and have high densities in Khoozestan, whereas *Orthochirus stockwelli, Hottentotta khoozestanus*, and *Compsobuthus jakesi* are rare.

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;
NHMW – Naturhistorisches Museum Wien, Vienna, Austria;
RRLS – Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Sepah St., Hejrat Sq., Ahvaz, Khoozestan, Iran;
ZISP – Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia;
ZMHB – Museum für Naturkunde der Humboldt-Universität zu Berlin, Germany;



Figures 3–4: Iran, Khoozestan Province. **3.** Near Masdjedsoleyman, 31°38'40"N 48°56'41"E, 53 m a.s.l. (Locality No. A-Ma 806-1). Type locality of *Vachoniolus iranus* **sp. n.** Also found *Buthacus macrocentrus* (Ehrenberg, 1828), *Compsobuthus jakesi* Kovařík, 2003, and *Orthochirus iranus* Kovařík, 2004. **4.** Ahvaz-Omidiyeh road (40 km to Omidiyeh), 30°37'49"N 49°31'47"E (Locality No. 812). Recorded occurrence of *Apistobuthus susanae* Lourenço, 1998, *Buthacus macrocentrus* (Ehrenberg, 1828), *Compsobuthus jakesi* Kovařík, 2003, and *Orthochirus iranus* Kovařík, 2004.

ZMUH – Zoologisches Institut und Zoologisches Museum, Universität Hamburg, Germany.

List of Scorpions of Khoozestan Province

Family **Buthidae** C. L. Koch, 1837
Androctonus crassicauda (Olivier, 1807)
Apistobuthus susanae Lourenço, 1998
Buthacus macrocentrus (Ehrenberg, 1828) (first report for Khoozestan Province)
Compsobuthus garyi Lourenço et Vachon, 2001
Compsobuthus jakesi Kovařík, 2003 (first report for Iran)
Compsobuthus matthiesseni (Birula, 1905)
Hottentotta saulcyi (Simon, 1880)
Hottentotta schach (Birula, 1905)
Hottentotta zagrosensis Kovařík, 1997
***Hottentotta khoozestanus* sp. n.**
Mesobuthus eupeus phillipsii (Pocock, 1889)
Odontobuthus bidentatus Lourenço et Pézier, 2002 (first report for Khoozestan Province)
Orthochirus farzanpayi (Vachon et Farzanpay, 1987) (first report for Khoozestan Province)
Orthochirus iranus Kovařík, 2004
Orthochirus stockwelli (Lourenço et Vachon, 1995) **comb. n.** (first report for Khoozestan Province)
Razianus zarudnyi (Birula, 1903)
***Vachoniolus iranus* sp. n.**

Family **Scorpionidae** Latreille, 1802
Scorpio maurus townsendi (Pocock, 1900) (first report for Khoozestan Province)

Family **Hemiscorpiidae** Pocock, 1893
Hemiscorpius lepturus Peters, 1862

Systematics

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

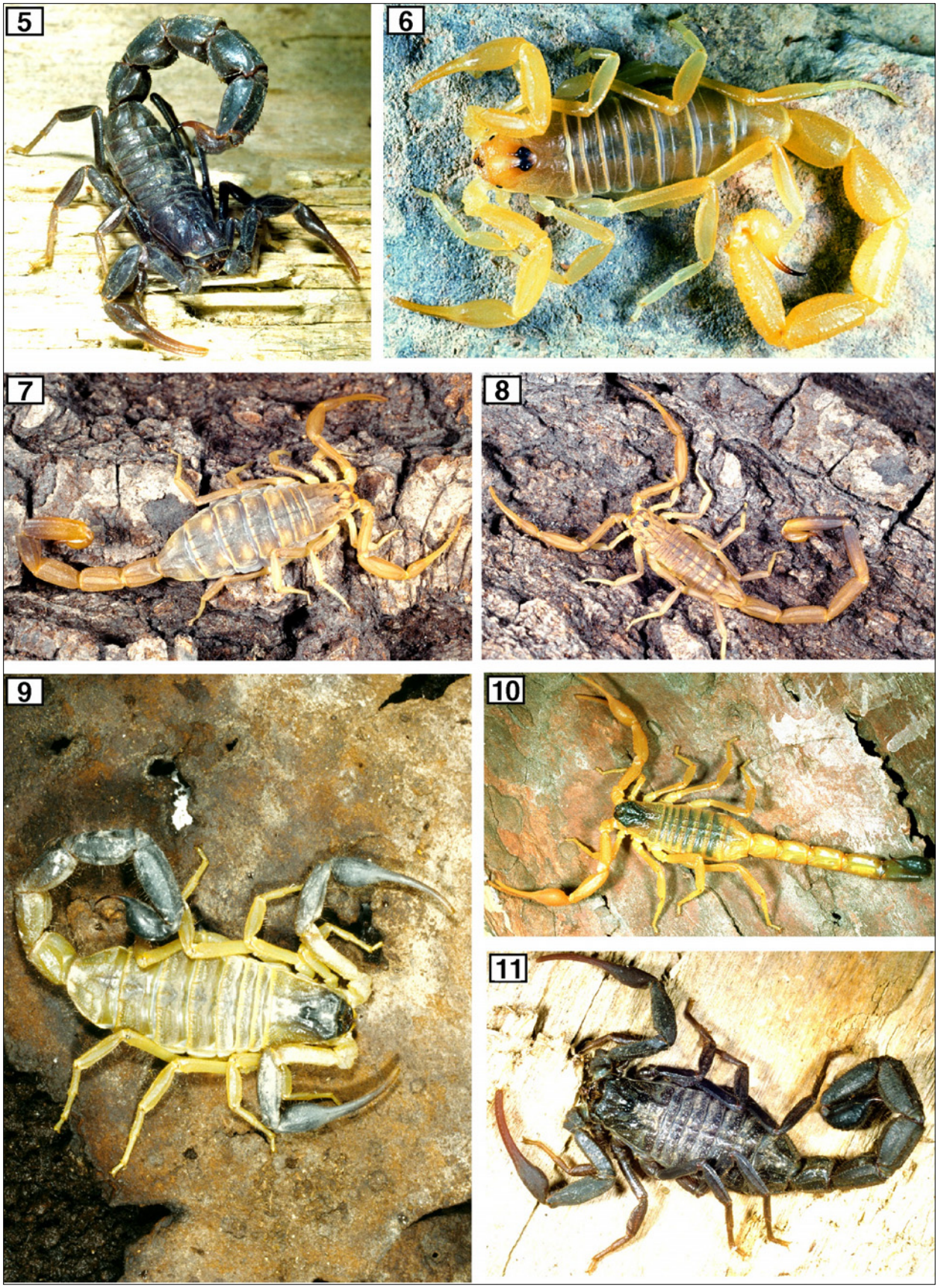
Androctonus crassicauda (Olivier, 1807)
Figures 5, 12, 44–45

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; Hendrixson, 2006: 38 Akbari, 2007: 76.
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.

KHOOZESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Khoozestan Province, Baghmalek, 31°55'17"N 49°22'15"E, 185 m a.s.l. (Locality No. Ba-102), I.2007, 10♂13♀2juvs. RRLS, leg. Kazemi; Ahvaz–Haftgel road (40 km to Haftgel), 44 m a.s.l. (Locality No. Ha-1), XII.2006, 2♀ RRLS, 4juvs. FKCP, leg. Hayader & Masihipour; Andimeshk district, Bidrooyeh, Jahangiri village, 32°46'15"N 48°15'26"E (Locality No. Bi 813-1), X.2007, 2♂1♀ RRLS, 2juvs. FKCP, leg. Masihipour & Hayader; Ramhormoz road (20 km to Ramhormoz), 31°13'55"N 49°14'26"E, 50 m a.s.l., V.2007, 10♀ RRLS, leg. Masihipour & Tofigh; Dagh Mishan–Abdelkhan road, Razihassan village, 31°51'16"N 48°19'07"E, 42 m, 2007, 10♂18♀ RRLS.

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), Yemen (Birula, 1937: 101).



Figures 5–11: 5. *Androctonus crassicauda* (Olivier, 1807), female. **6.** *Buthacus macrocentrus* (Ehrenberg, 1828), male. **7.** *Compsobuthus matthiesseni* (Birula, 1905), female. **8.** *Compsobuthus matthiesseni* (Birula, 1905), male. **9.** *Hottentotta schach* (Birula, 1905), female. **10.** *Hottentotta saulcyi* (Simon, 1880), male. **11.** *Hottentotta zagrosensis* Kovařík, 1997, female paratype.