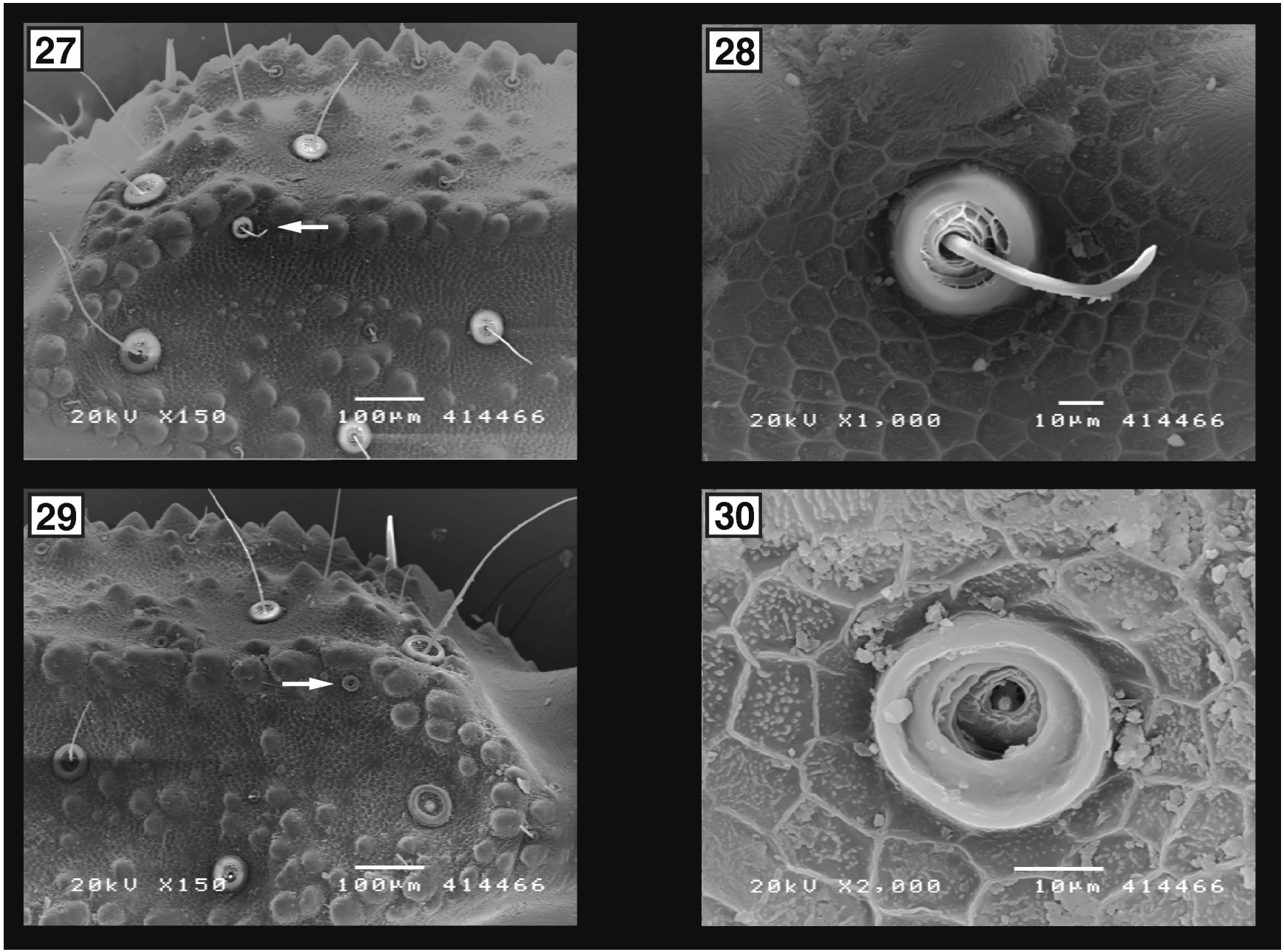


Figures 27–30: *Orthochirus iranus* Kovařík, 2004, pedipalp femur, dorsointernal view, showing development of trichobothrium d_2 (indicated by white arrow). **27-28.** Right femur showing *reduced* sized *d2*. **29-30.** Left femur showing showing *aberrant d2*.

this trichobothrium as a character separating *Paraorthochirus glabrifrons* from *P. goyffoni*. It is thus not clear whether d_2 is always present as petite or may be sometimes reduced further and become vestigial. No detailed study of its size variability has been done.

We analyzed under SEM four specimens of *O. iranus* [all from Iran, Khoozestan province, Shadegan-Toopjieh village, 30°39'33"N 48°36'44"E (Locality No. SH-1 to 4)]. For comparison, we also imaged *Paraorthochirus glabrifrons* from Oman that has d_2 (left femur; Fig. 23). Of four observed specimens of *O. iranus* one (SH.1.4) lacks d_2 on both femora (Figs. 24–26); in the other three specimens the presence of d_2 varies. The second specimen (SH.1.1) has a petite d_2 on both femora (imaged on right femur, Figs. 27–28); the third specimen (SH.1.2) is asymmetric, with a petite d_2 only on the right side (not imaged), whereas the left femur (Fig. 26) has *no* d_2 (however, there is a seta in place of d_2, and under low magnification it could be mistaken for a reduced trichobothrium). The fourth specimen (SH.1.3) has a petite d_2 on both femora; the right femur (Fig. 28) has a normally developed petite d_2, whereas on the left femur the d_2 is aberrant (Figs. 29–30); it has an aberrant areola with the lattice structure incompletely developed, and the shaft is absent (underdeveloped or broken). This teratology could be an additional indication of developmental instability of d_2 in this population.

Specimen	Diameter d_2 (µm)	Diameter d_1 (µm)	Ratio d_2/d_1
SH.1.1	36	46	0.78
SH.1.3	30	57	0.52

Table 2: Petite trichobothrium d_2 in *Orthochirus iranus* (pedipalp femur).

We measured areola diameter of petite d_2 and regular-size d_1 in two specimens using SEM images at 1000x (Table 2). Even this small sample shows that there is variability in absolute size both among petites and other trichobothria, as well as in their relative size. Observed reduction of 22 to 48% falls roughly within limits defined by Soleglad & Fet (2001). It is advisable to conduct a detailed statistical study of trichobothrial size variability to define gaps between "petite" and regular-size trichobothria.

ADDITIONAL MATERIAL FROM IRAN (all possess trichobothrium d_2). **Iran**, Hamadan Province, ca 2000 m a.s.l., 35 km SE of Hamadan, Gonbad vill. env., 7–8.V.1996, 1♂1♀1juv., leg. V. Šejna; Lorestan Province, Dorúd, 1700 m, 33°26'57"N 49°01'14"E, 2♂2♀, 8–10.X.1998, leg. P. Kabátek; Lorestan Province, Jeiugir env., 500 m a.s.l., 32°19'37"N 48°30'40"E, 1♂1♀, 10–11.X.1998, leg. P. Kabátek; Deh Bahri, 7–8.IV.2000, 29°05'370"N 57°55'539"E, 1957 m a.sl., 1♀, leg. M. Kaftan. All specimens are in FKCP.

DISTRIBUTION: Iran, Bushehr and Khoozestan Provinces (Kovařík, 2004: 13), Lorestan and Hamadan provinces (first report).

Orthochirus stockwelli (Lourenço et Vachon, 1995), **comb. n.**
Figures 2, 31, 101–102

Paraorthochirus stockwelli Lourenço & Vachon, 1995: 299; Lourenço & Vachon, 1997: 329; Kovařík, 1997a: 50; Kovařík, 1998: 117; Fet & Lowe, 2000: 212; ? Kovařík & Fet, 2006: 9.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Hormozgan Province, Bandar-Abbas; MNHN.

KHOOZESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Khoozestan Province, Dezful district, Shahyoon village, 32°36'41"N 48°33'36"E, 527 m a.s.l. (Locality No. D-103), VI.2007, 1♂ FKCP, leg. Navidpour, Masihipour & Hayader.

DISTRIBUTION: Iran, Hormozgan Province (Lourenço & Vachon, 1995: 299), Khoozestan Province (first report).

Orthochirus zagrosensis Kovařík, 2004
Figures 31, 93–96

Orthochirus sp. n. ?: Kovařík, 1997a: 47 (in part).
Orthochirus zagrosensis Kovařík, 2004: 22; Kovařík & Fet, 2006: 8.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Dasht-e-Arzhan, 29°34.644'N 51°56.889'E, 2000 m a.s.l.; FKCP.

COMMENTS: The original description (Kovařík, 2004: 22) gave the type locality as Iran, Khoozestan Province, Dasht-e-Arzhan, 29°34.644'N 51°56.889'E, 2000 m a.s.l. In actuality Dasht-e-Arzhan is in the Fars Province. So far, this species has not been found in Khoozestan; it is known from Kohkiloyeh & Boyer Ahmad, Esfahan, Fars, Kerman, and Yazd Provinces (Kovařík, 2004: 22; Kovařík & Fet, 2006: 8).

Razianus zarudnyi (Birula, 1903)
Figures 42, 89–92

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.

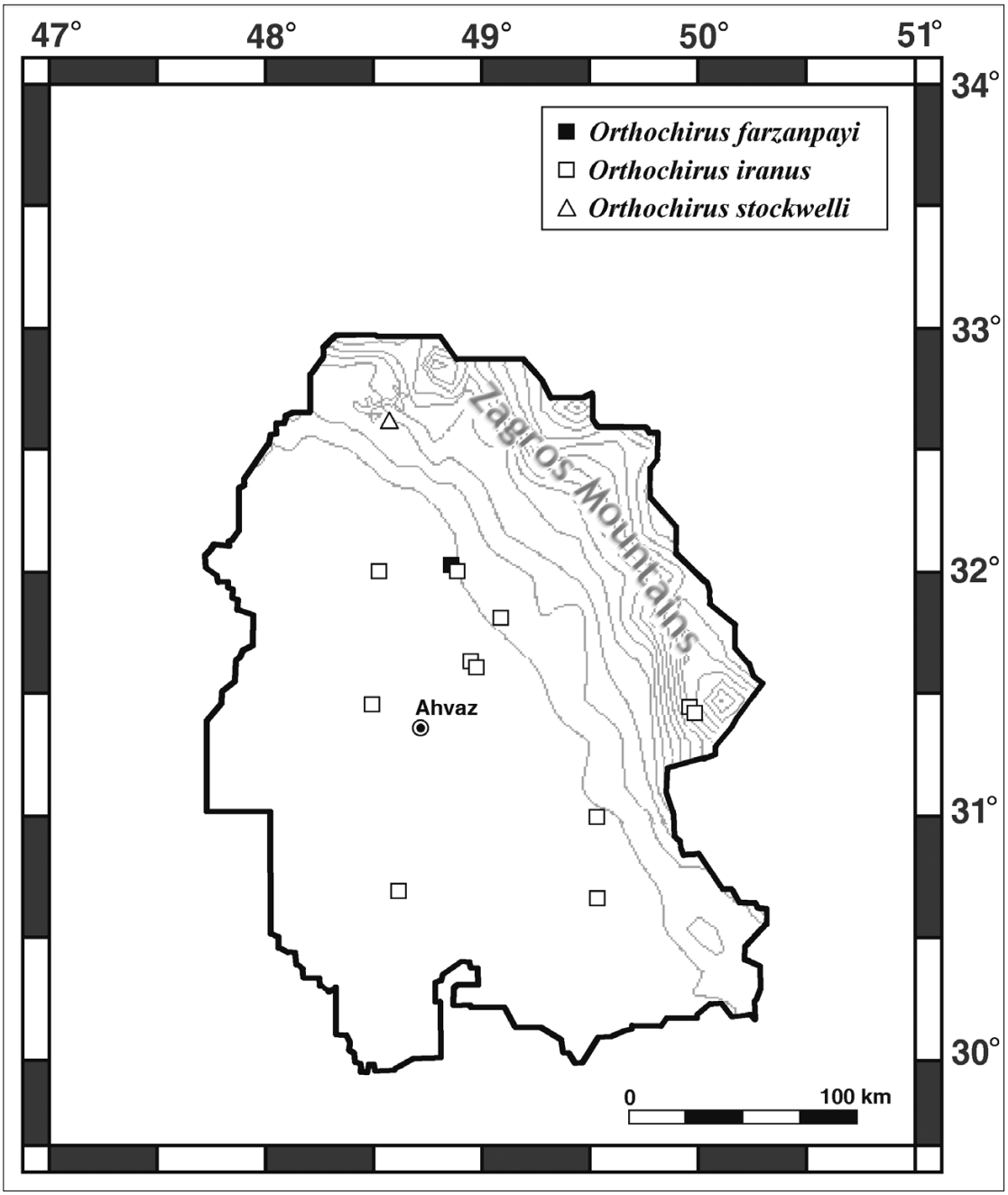


Figure 31: Map of Khoozestan province showing distribution of *Orthochirus farzanpayi, O. iranus* and *O. stockwelli* collected in this study.

= *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, 1997); ZISP.

KHOOZESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Khoozestan Province, Baghmalek, 31°55'17"N 49°22'15"E, 185 m a.s.l. (Locality No. Ba-103), I.2007, 110♂25♀ RRLS, 14♀ FKCP, leg. Kazemi; Chogha Zanbil (zikkurat), 32°00'55"N 48°31'04"E, 68.5 m a.s.l. (Locality No. Ch-101), VI.2007, 11♂4juvs RRLS, 3♂1♀ FKCP, leg. Navidpour & Masihipour; Andimeshk district, Bidrooyeh, Jahangiri village, 32°46'15"N 48°15'26"E, 504 m a.s.l. (Locality No. Bi 813-2), X.2007, 20 specimens RRLS, leg. Masihipour &

Hayader; 45 km NW of Masdjedsoleyman, Lali, 31°18'33"N 49°03'39"E, 329 m a.s.l. (Locality No. La-815-3), X.2007, 2♂2♀ FKCP, leg. Masihipour & Hayader; Shushtar, 2007, 1♀ RRLS, leg. Hayader, Bahrani & Habibzadeh; Gotvand–Shushtar road, 2007, 6♂3♀ RRLS, leg. Masihipour, Hayader & Bahrani; Behbahan–Bibihakimeh road, 30°13'48"N 50°12'16"E, 128 m a.s.l., 2007, 3♂10♀ RRLS, leg. Masihipour, Bahrani & Habibzadeh; Ahvaz–Masjedsoleyman road, Hadam village, 2007, 1♂ RRLS, leg. Masihipour, Bahrani & Habibzadeh; Ahvaz–Masjedsoleyman road, Zoveyer village, 31°35'20"N 48°57'01"E, 345 m a.s.l., 2007, 4♂1♀ RRLS, leg. Navidpour, Masihipour, Habibzadeh & Bahrani; Ahvaz–Masjedsoleyman road, Mayah village, 31°46'31"N 49°06'01"E, 48 m a.s.l., 2007, 1♂3♀ RRLS, leg. Masihipour, Hayader; Fakeh, 32°19'33"N 49°07'52E", 99 m a.s.l., 2007, 1♀ RRLS, leg. Masihipour, Habibzadeh & Bahrani.

DISTRIBUTION: Iran: Bushehr Province (Akbari, 2007: 76), Chahar Machal & Bakhtiyari Province (Fet, 1997: 67); Fars Province (Fet, 1997: 68); Khoozestan Province (Lourenço, 1996: 94; Fet, 1997: 67-68); Sistan & Baluchistan Province (Fet, 1997: 66).

Vachoniolus iranus Navidpour, Kovařík, Soleglad et Fet, **sp. n.**

Figures 3, 32–38, 39–41, 42, 85–88; Table 1

TYPE LOCALITY AND TYPE REPOSITORY. **Iran**, Khoozestan Province, near Masdjedsoleyman, 31°38'40"N 48°56'41"E, 53 m; RRLS.

TYPE MATERIAL. **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 collection of Graeme Lowe.

ETYMOLOGY. Named after the country of occurrence.

DIAGNOSIS: Dorsal trichobothria of femur arranged in beta-configuration with d_2 situated on dorsal surface. External surface of pedipalp patella with 8 (rarely 7 or 9) trichobothria, pedipalp femoral trichobothrium d_5 distal to e_2. Dentate margin of the movable finger of the pedipalp with distinct granules divided into 8 or 9 rows and 4 to 6 terminal granules. Cheliceral fixed finger with two ventral accessory denticles. Tergites I–VI of mesosoma each with one carina. Carapace granulated, without distinct carinae. Legs with distinct bristlecombs, third and fourth legs with tibial spurs in all examined specimens. Male pedipalp chela robust and inflated, densely granulated, completely devoid of carinae. Aculeus long. Pectines with fulcra. Stigmata large, slitlike. Total length 34 to 42.5 mm.

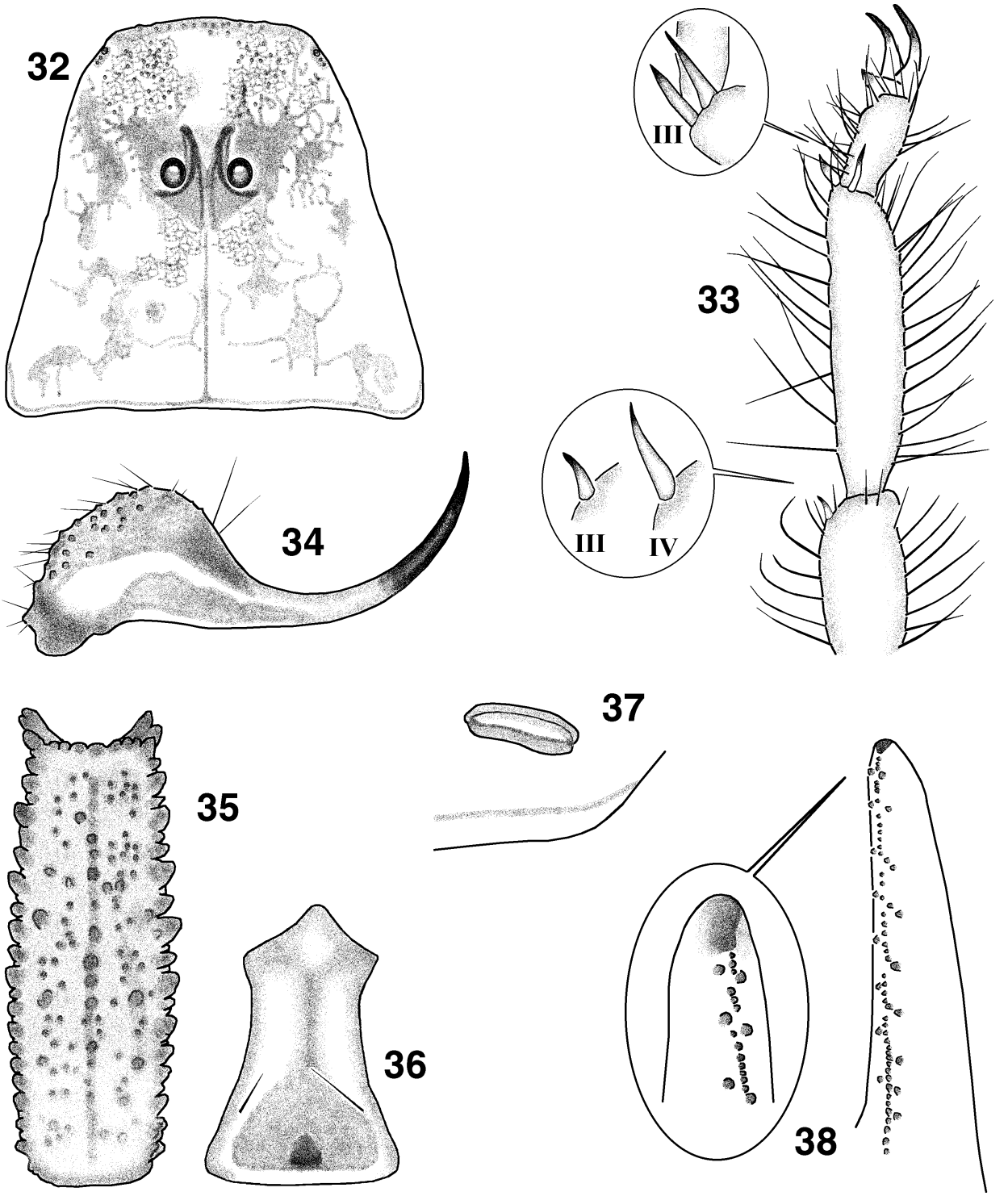
DESCRIPTION: The total length is 34 to 42.5 mm. The habitus is shown in Figs. 85–88. Measurements of the carapace, telson, segments of the metasoma and of the pedipalps, and numbers of pectinal teeth in the holotype are given in Table 1. For trichobothrial pattern see Figs. 39–41. External surface of pedipalp patella usually with 8 trichobothria (Fig. 41). One female has 7 trichobothria on the right patella (*et* is absent) but 8 trichobothria on the left, and one male has 9 trichobothria on both patellae (an additional smaller esb_a trichobothrium between *eb* and *esb*). Pedipalp femoral trichobothrium d_5 distal to e_2. Pectinal teeth number 20–22 in males and 14–15 in females. The male has pedipalp chela distinctly swollen. Female chela is narrower than in the male (Figs. 85–88).

COLORATION: The color is uniformly pale yellow to yellowish green. The median ocular tubercle black, the anterior part of carapace (Fig. 32) is gray to black, the distal fourth to fifth of the fourth metasomal segment, the fifth metasomal segment (Fig. 35) and the telson (Fig. 34) are yellowish green to black. Carinae carinae on femur and patella of pedipalps are gray (Figs. 40–41). The chelicerae are yellow, without reticulation.

MESOSOMA AND CARAPACE: The anterior margin of carapace (Fig. 32) is straight or very slightly convex. The entire carapace is densely granulated but devoid of carinae. Granules in front of the median ocular tubercle are bigger and rounded, elsewhere they are smaller and pointed.

The mesosoma is smooth to shagreened and has one carina on the dorsal surface. The sternum (Fig. 36), Type 1, is elongate with a deep concave area and anterior depression. The sternites are smooth, sternite VII bears four smooth or granulate carinae. Stigmata large, slitlike (Fig. 37).

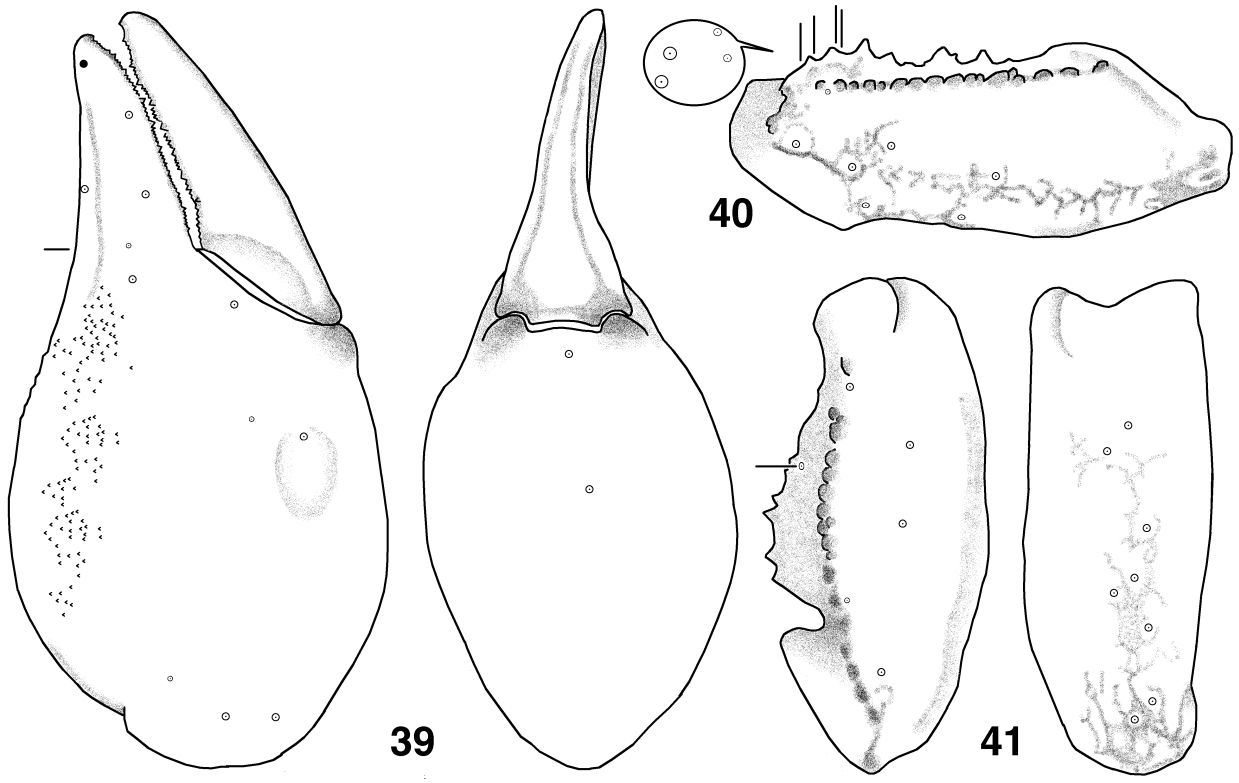
METASOMA AND TELSON: All metasomal segments are longer than wide. The first segment has a total of 10 carinae, the second through fourth segments have eight carinae, and the fifth segment has five carinae. Intermediate carinae of the second to fourth segments are replaced by less than 10 granules situated mainly in the posterior half. Ventral carinae are moderate to strong, coarsely serrate. The surface between the carinae is sparsely to densely granulated. The segments bear



Figures 32–38: *Vachoniolus iranus* **sp. n.**, male paratype. **32.** Carapace. **33.** Left leg III showing setal brush on basitarsus and tibia; enlarged circled areas show uneven lengthed pedal spurs of leg III and tibial spurs of leg III and IV. **34.** Telson, lateral view. **35.** Metasomal segment V, ventral view. **36.** Sternum. **37.** Fourth right stigma. **38.** Chelal movable finger dentition; enlarged circled area shows distal tip.

only a few bristles. The telson is elongate, with the vesicle shorter than the aculeus and the surface nearly smooth, with only a few large granules and setae. There is no subaculear tubercle.

PEDIPALPS: The femur has dorsal carinae strong and granulose, no ventroexternal carina, and the internal surface bears a few coarse granules; the surfaces are shagreened and sometimes bear a few randomly situated



Figures 39–41: *Vachoniolus iranus*, **sp. n.**, male paratype, showing trichobothrial pattern. **39.** Chela, external and ventral views. Closed circle on chelal fixed finger external view indicates trichobohtrium *i*. **40.** Femur, dorsal view. Circled area shows internal trichobothria from an internal perspective. **41.** Patella, dorsal and external views. In external view note neobothriotaxy, an accessory trichobothrium present in the *esb* series. Note, these figures are of the left pedipalp, the images have been *reversed* for easy comparison to other right pedipalp illustrations.

coarse granules. The patella has dorsal carinae moderate, granular, and ventrointernal carina strong, granulose. Other carinae are inconspicuous or absent. The male chela is robust, inflated and completely devoid of carinae. The fingers are quite short. The entire surface is finely granulated, especially the dorsum of chela (Fig. 39). The female chela is smooth and narrower than in the male (Figs. 85–88). The dentate margin of the pedipalp-chela movable finger bears distinct granules divided into 8 or 9 rows and 4 to 6 terminal granules (Fig. 38).

LEGS: Leg III basitarsus and tarsus with conspicuous setal brush (Fig. 33); pedal spurs unequal in length. Tibial spurs present, elongate on leg IV and reduced on leg III.

COMMENTS: All examined specimens have tibial spurs on the third and fourth legs, the spur of leg III more reduced than that of leg IV. Presumbly this may be as variable as in *Vachoniolus globimanus*, in which some specimens possess the spurs and others lack them.

AFFINITIES. The described features distinguish *Vachoniolus iranus* **sp. n.** from all other species known to occur in Khoozestan Province. The genus *Vachoniolus* Levy, Amitai et Shulov, 1973 has so far included only one species, *V. globimanus* Levy, Amitai et Shulov, 1973, which occurs in the United Arab Emirates, Saudi Arabia, and Oman. The new species thus represents the first record of this genus in Iran. The two species can be distinguished from one another by the males of *V. globimanus* having the chela of pedipalp smooth and carapace smooth to shagreened, whereas in the males of *V. iranus* **sp. n.** these parts are densely granulated. Other differences between *V. iranus* **sp. n.** and *V. globimanus* include the following (variation is to be expected in some). *V. iranus* **sp. n.** has strong fuscous patterns on carapace, internal and external surfaces of pedipalp femur and internal surface of pedipalp patella, whereas in the *V. globimanus* pigmentation is much weaker on carapace and absent on pedipalps. *V. iranus* **sp. n.** is smaller, total length is 34 to 42.5 mm (adult *V. globimanus* may reach 65 mm). *V. iranus* **sp. n.** has metasoma II and III dorsal carinae serrate, with larger denticles arrayed uniformly, closely spaced and mostly separated by one denticle width or less (in *V. globimanus* these carinae are denticulate, with smaller denticles, most separated by two denticle widths or

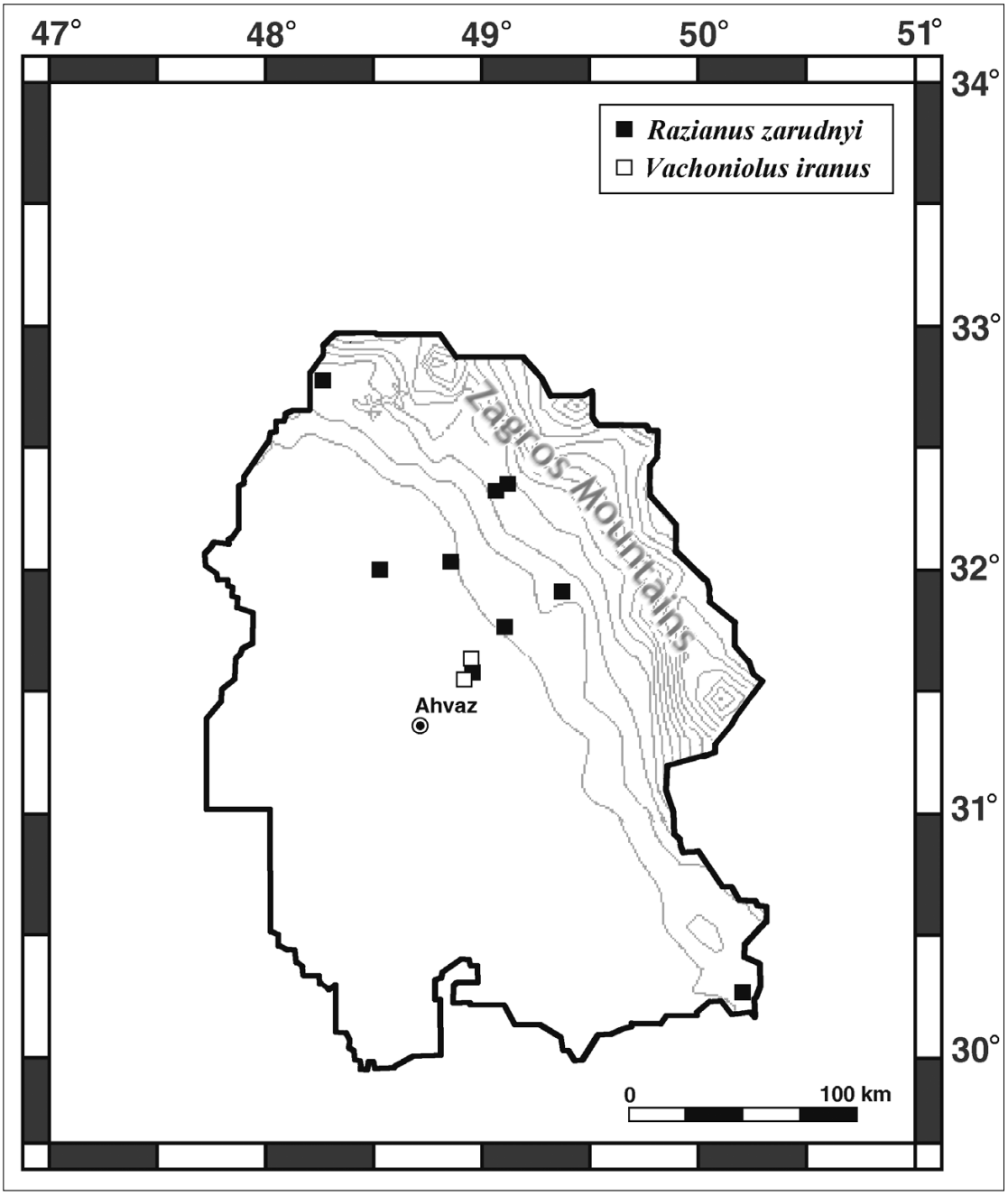


Figure 42: Map of Khoozestan province showing distribution of *Razianus zarudnyi* and *Vachoniolus iranus* collected in this study.

more). *V. iranus* **sp. n.** has fewer denticles on metasomal carinae, e.g. metasoma II and III ventral carinae with 6 denticles on posterior half of segment (*V. globimanus* with 7–13). *V. iranus* **sp. n.** has pedipalp patella with dorsointernal carina prominently developed, with robust granules or denticles (weaker with smaller granules or denticles in *V. globimanus*). *V. iranus* **sp. n.** has tergites III–VI lateral carina positions marked by paired posterolateral longitudinal rows of 2–3 distinct granules (only one weak granule, if any, in *V. globimanus*), and median carina bearing 1–3 granules (none in *V. globimanus*). *V. iranus* **sp. n.** has heavier granulation on anterior interocular area of carapace (*V. globimanus* with finer granulation). *V. iranus* **sp. n.** has posterior portions of tergites finely granular (smooth in *V. globimanus*). *V. iranus* **sp. n.** Has metasoma I and II with dorsolateral

surfaces granulated (smooth to finely shagreened in *V. globimanus*).

Family **Scorpionidae** Latreille, 1802

Scorpio maurus townsendi (Pocock, 1900)
Figures 2, 43, 103–106

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; Akbari, 2007: 76.

Scorpio maurus: Farzanpay, 1987: 165; Farzanpay, 1988: 42.

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

KHOOZESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Khoozestan Province, Ahvaz– Ramhormoz road, 31°11'54"N 49°11'41"E, 44 m a.s.l. (Locality No. 016-1), VIII.2007, 10♀1im. RRLS, 1♂1im. FKCP, leg. Navidpour & Masihipour; Ahvaz– Ramhormoz road, 31°11'54"N 49°11'41"E, 44 m a.s.l. (Locality No. A-Ra 807), VIII.2007, 4♀ RRLS, 1♂1♀ FKCP, leg. Masihipour & Hayader; Shushtar–Gotvand road (Locality No. 016-2), VII.2007, 12♂32♀3ims. RRLS, leg. Masihipour, Hayader & Bahrani; Dezful district, Shahyoon village, 32°36'41"N 48°33'36"E, 527 m a.s.l. (Locality No. D-SH), VI.2007, 2♂12♀1im. RRLS, leg. Navidpour & Masihipour; 45 km NW of Masdjedsoleyman, Lali, 31°18'33"N 49°03'39"E, 329 m a.s.l. (Locality No. La-815-4), X.2007, 8♀1im.1juv. RRLS, leg. Masihipour & Hayader; Shush (Apadana Palace), 32°10'55"N 48°15'39"E, 75 m a.s.l., X.2007, 3♂2♀6 juvs. RRLS, leg. Masihipour, Habibzadeh & Hayader; Sardasht (Dezful), 2006, 2♀3juvs. RRLS, leg. Navidpour.

DISTRIBUTION: Iran, Bushehr Province (Pocock, 1900: 364), Khoozestan Province (first report).

Family **Hemiscorpiidae** Pocock, 1893

Hemiscorpius lepturus Peters, 1862
Figures 20-21, 43, 107–110

Hemiscorpius lepturus Peters, 1862a: 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.

Hemiscorpion lepturus: Peters, 1862b: 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.

KHOOZESTAN PROVINCE MATERIAL EXAMINED. **Iran**, Khoozestan Province, Baghmalek, 31°55'17"N 49°22'15"E, 185 m a.s.l. (Locality No. Ba-100), I.2007, 51♂39♀10♀ims. RRLS, leg. Kazemi; Baghmalek, 31°55'17"N 49°22'15"E, 185 m a.s.l. (Locality No. Ba-101), I.2007, 26ims. RRLS, 4♂ FKCP, leg. Kazemi; Chogha Zanbil (zikkurat), 32°00'55"N 48°31'04"E, 68.5 m a.s.l. (Locality No. Ch-102), VI.2007, 1♂1♀ FKCP, leg. Navidpour & Masihipour; Behbahan–Bibihkimeh road, 30°13'48"N 50°12'16"E, 128 m a.s.l. (Locality No. B-Bi 805), VI.2007, 3 specimens, 3♂ RRLS, leg. Masihipour & Hayader; 45 km NW of Masdjedsoleyman, Lali, 31°18'33"N 49°03'39"E, 329 m a.s.l. (Locality No. La-815-1 and 5), X.2007, 263♂183♀111ims RRLS, 1♂3♀1juv. FKCP, leg. Masihipour & Hayader; Ahvaz-Masjedsoleyman road, Hadam village, X.2007, 8♂1♀ RRLS, leg. Navidpour, Masihipour, Bahrani & Habibzadeh; Ahvaz–Masjedsoleyman road, Mayah village, 31°46'31"N 49°00'36"E, 48.4 m a.s.l., 2007, 3♂5♀ RRLS, leg. Hayader, Habibzadeh & Masihipour.

DISTRIBUTION: Iran, Kohkiloyeh & Boyerahmad, Fars, Hormozgan, and Lorestan Provinces (Kovařík, 1997a: 48), Bushehr and Khoozestan Provinces (Farzanpay, 1987: 141, Monod & Lourenço, 2005: 902; Akbari, 2007: 76); Iraq (Peters, 1862a: 426).

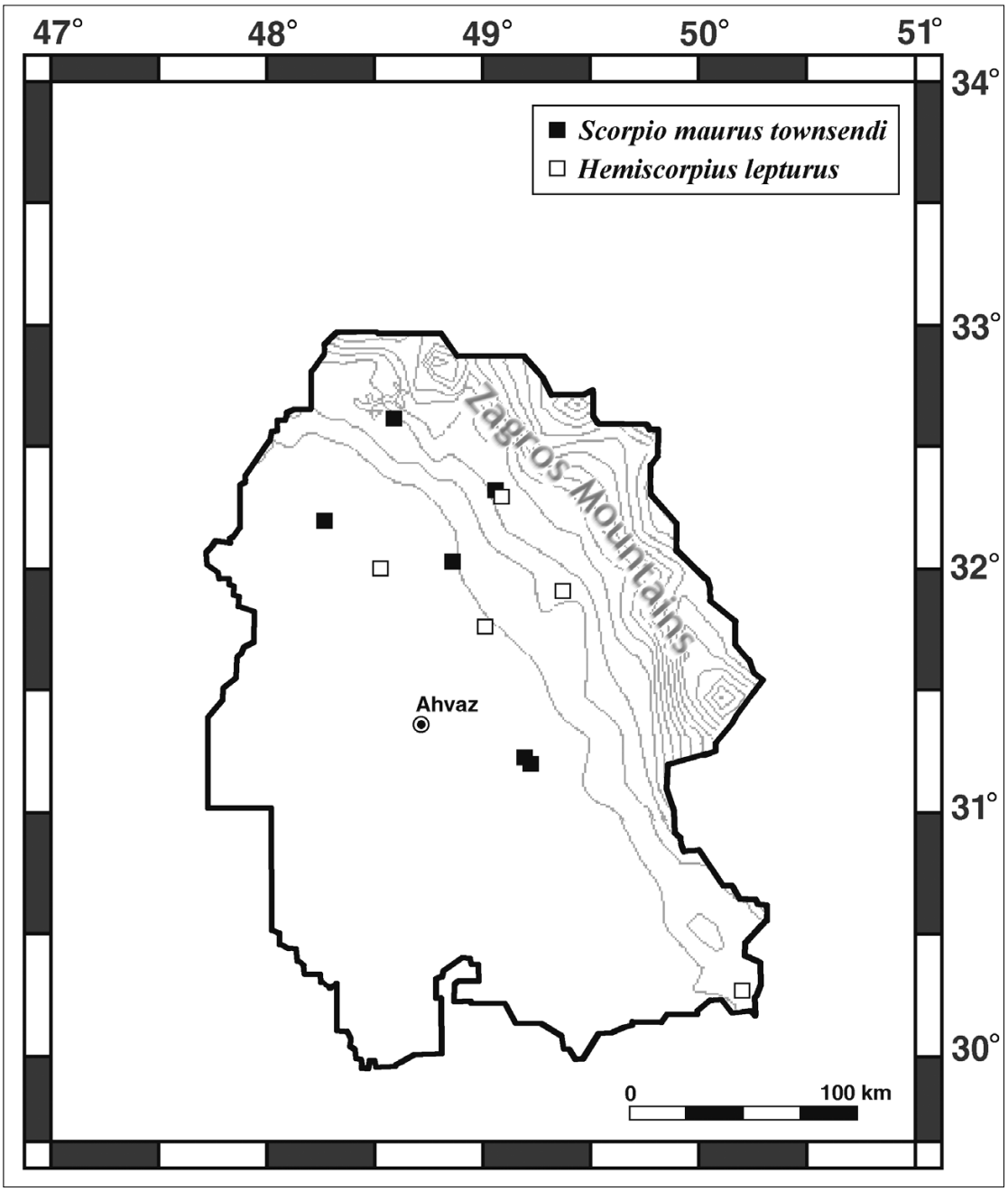


Figure 43: Map of Khoozestan province showing distribution of *Scorpio maurus townsendi* and *Hemiscorpius lepturus* collected in this study.

Key to scorpions of Khoozestan 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, 1862

3. Carapace in lateral view distinctly inclined downward from median eyes to anterior margin. Total length less than 50 mm. ..... ***Orthochirus***..... 4
- Carapace in lateral view with entire dorsal surface horizontal or nearly so (possibly with a slight anterior deeline) 6

4. Metasoma densely hirsute. ..... ***Orthochirus stockwelli*** (Lourenço et Vachon, 1995)
- Entire metasoma glabrous (short, thin setae may issue from some punctae)..... 5

5. Dorsal surface of fifth metasomal segment mesially densely granulated..... ***Orthochirus iranus*** Kovařík, 2004
- Dorsal surface of fifth metasomal segment mesially smooth. ..... ***Orthochirus farzanpayi*** (Vachon & Farzanpay, 1987)

6. Cheliceral fixed finger with a single ventral denticle .....***Razianus zarudnyi*** (Birula, 1903)
- Cheliceral fixed finger with two ventral denticles 7

7. 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 8

8. Carapace granulated but without carinae 9
- Carapace with carinae 10

9. Patella of pedipalp with 8 (rarely 7 or 9) external trichobothria. ..... ***Vachoniolus iranus*** **sp. n.**
- Patella of pedipalp with 7 external trichobothria. ... . ***Buthacus macrocentrus*** (Ehrenberg, 1828)

10. 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..... 11

11. 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)..... 12

12. Central lateral and posterior lateral carinae of carapace joined to form a continuous linear series of granules to posterior margin ..... ***Compsobuthus*** 13
- Central lateral and posterior lateral carinae of carapace not joined to form a continuous linear series of granules to posterior margin 15

13. Rows of granules on movable finger without internal granules (see fig. 2 in Lourenço & Vachon, 2001: 181) ..... ***C. garyi*** Lourenço & Vachon, 2001
- Rows of granules on movable finger with internal granules 14

14. 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

15. 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*** 16
- 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 sized granules. .....***Mesobuthus eupeus phillipsii*** (Pocock, 1889)

16. Color black except reddish brown chela of pedipalp. Legs may also be reddish-brown. - Color not entirely black, usually yellowish green ……..... 17

17. Chela of pedipalp always darker than femur of pedipalp …..... ***Hottentotta schach*** (Birula, 1905)
- Chela of pedipalp of same color as femur of pedipalp, not darker 18

18. Ventral surfaces of metasomal segments and vesicle densely hirsute …..... ***Hottentotta saulcyi*** (Simon, 1880)
- Metasoma glabrous or only very sparsely hirsute ….....…***Hottentotta khoozestanus*** **sp. n.**

Acknowledgments

We thank Graeme Lowe (USA) for his expertise help in assessing the taxonomic position of *Vachoniolus iranus* **sp. n.** and a gift of valuable specimens of *Orthochirus glabrifrons* from Oman. We are grateful to Dr. Taheri, Mrs. Jahanifard, Mr. Masihipour, Mr. Hadiyan, Mr. Hayader, Mr. Habibzadeh, and Mr. Bahrani (Iran) for their kind support. We thank David P. A. Neff (Marshall University, Huntington, West Virginia, USA) for his skilled SEM assistance that allowed us to clarify important issues with *Orthochirus* trichobothrial variation. We also thank two anonymous reviewers for their comments.