

**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)**

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Abstract. Distribution data are presented for *Androctonus amoreuxi baluchicus* (Pocock, 1900), *Compsobuthus matthiesseni* (Birula, 1905), *Hottentotta saulcyi* (Simon, 1880), *Hottentotta schach* (Birula, 1905), *Mesobuthus eupeus* (C. L. Koch, 1839), *Odontobuthus doriae* (Thorell, 1876), *Odontobuthus odonturus* Pocock, 1897, *Orthochirus* sp. n.?, *Paraorthochirus glabrifrons* (Kraepelin, 1903), *Paraorthochirus goyffoni* Lourenço & Vachon, 1995, and *Hemiscorpius lepturus* Peters, 1862, all collected by members of the Czech Biological Expedition Iran 1996. *Iranobuthus* gen. n. with the type species *I. krali* sp. n. is described. The new genus is related to the genera *Androctonus* Hemprich & Ehrenberg, 1828, *Buthus* Leach, 1815, *Hottentotta* Birula, 1908, and *Mesobuthus* Vachon, 1950 by the presence of central medial and posterior medial carinae on the carapace that merge and form a continuous linear series of granules at the posterior margin. It differs from genera possessing similar characters, such as *Compsobuthus* Vachon, 1949 and *Darchenia* Vachon, 1977, in size (total length of 82 mm) and in having dorsal granulated keels only on the second through fourth metasomal segments. *Hottentotta zagrosensis* sp. n. is described. Its black coloration differentiates it from all other species of *Hottentotta* Birula, 1908 known from Iran. A list of all 32 species known and believed to occur in Iran is given.

Taxonomy, descriptions, new genus, new species, distribution, Scorpiones, Buthidae, *Iranobuthus* gen. n., *Hottentotta*, Palearctic region

INTRODUCTION

Thanks to organizational efforts of Mrs Zdena Hodková of Prague, the Czech Biological Expedition Iran 1996 took place between 20.IV. and 20.V.1996 (for details see Frynta et al. 1997). Members of the expedition collected 153 scorpions belonging to 13 species, 9 genera, and two families. The last comprehensive study of Iranian scorpions (Farzanpay 1988) lists 23 species, 17 genera (of which, however four are nomina nuda), and two families. For the map includes all localities that produced insects and arachnids see Frynta et al. 1997.

Explanatory notes: M = male, F = female, A = specimens preserved in 75% alcohol, E = dry-mounted specimens. Unless noted otherwise, the material is deposited in the author's collection.

RESULTS

Androctonus amoreuxi baluchicus (Pocock, 1900)

MATERIAL. Iran, Esfahan prov., alt. ca 800 m, SEE of Kashan, Jafar Abad vill. env., 33° 55' N 51° 53' E, Loc. No. 2, 26.–27.IV.1996, 1 immature MA, leg. M. Kaftan.

COMMENTS. This subspecies was described from Pakistan, northern Baluchistan (Pocock 1900: 16), and was subsequently found in Afghanistan (Vachon 1959: 125, Kovařík 1993: 201) and

Iran (Vachon 1959: 125, Vachon 1966: 209, Habibi 1971: 42). Farzanpay (1988: 35) doubted the presence of *A. amoreuxi* (Audouin, 1825) in Iran and thought that specimens identified by Habibi as *A. amoreuxi* are only a local form of *A. crassicauda*. Therefore, he did not include *A. amoreuxi* among the Iranian taxa.

The immature male examined is 58 mm long and has 28 and 30 pectinal teeth.

Vachon and Habibi (Vachon 1966: 209, Habibi 1971: 42) listed also the subspecies *A. amoreuxi finitimus* (Pocock, 1897) from Iran. However, I concur with Farzanpay (1988) in that this subspecies most likely does not occur in Iran, and therefore it is not included in the checklist below.

***Compsobuthus matthiesseni* (Birula, 1905)**

MATERIAL. Iran, Fars prov., alt. ca 1700 m, 10 km E of Sivand vill., 30° 05' N 52° 55' E, Loc. No. 10, 29.–30.IV.1996, 1FA, leg. M. Kaftan, 1FA, leg. D. Král, 3FA, leg. J. Pitulová; alt. ca 1000 m, Zagros Mts., Abshar vill. env., 30° 23' N 51° 30' E, Loc. No. 14, 2.–3.V.1996, 1FA 1FE, leg. M. Kaftan; Lorestan prov., alt. ca 1000 m, Zagros Mts., 30 km W of Khorram Abad, Gholaman vill. env., 33° 25' N 48° 12' E, Loc. No. 22, 6.–7.V.1996, 2M 6FA, leg. D. Král; Hamadan prov., ca 2000 m, 35 km SE of Hamadan, Gonbad vill. env., 34° 40' N 48° 45' E, Loc. No. 23, 7.–8.V.1996, 1M 3FA, leg. M. Kaftan, 8M 17FA 1ME, leg. V. Šejna.

COMMENTS. *Compsobuthus matthiesseni* was described by Birula (Birula 1905: 142) as a subspecies of *C. acutecarinatus*. The species is well characterized by the pronounced difference in length of the metasoma between males and females, which is present also in immature specimens. This character unequivocally differentiates *C. matthiesseni* from *C. acutecarinatus*. In the latter the metasoma is of approximately the same length in both sexes. In contrast to *C. rugosulus*, in *C. matthiesseni* the cutting edges on movable fingers of the pedipalps lack external granules.

C. matthiesseni occurs in Iraq and Iran (Vachon 1966: 211), and in Turkey (Kovařík 1996: 53).

***Hottentotta saulcyi* (Simon, 1880)**

MATERIAL. Iran, Lorestan prov., alt. ca 1000 m, Zagros Mts., 30 km W of Khorram Abad, Gholaman vill. env., 33° 25' N 48° 12' E, Loc. No. 22, 6.–7.V.1996, 1FA, leg. I. Hrdý; Hamadan prov., ca 2000 m, 35 km SE of Hamadan, Gonbad vill. env., 34° 40' N 48° 45' E, Loc. No. 23, 7.–8.V.1996, 1FE 2juvs A, leg. M. Kaftan.

COMMENTS. *Hottentotta saulcyi* was described by Simon (1880: 378) as *Buthus saulcyi*. Simon gave total length of 93 mm and 29–33 pectinal teeth. The females I have examined are 75 and 93 mm long and have 24–27 pectinal teeth. The two immatures are 32 mm long and have 28–32 pectinal teeth.

This species has been so far known from Iraq and Iran (Kovařík 1992: 183), but there is also one male from Afghanistan (labelled as from: „Djebel us Saraj“) in my collection.

***Hottentotta schach* (Birula, 1905)**

MATERIAL. Iran, Fars prov., alt. ca 1700 m, 10 km E of Sivand vill., 30° 05' N 52° 55' E, Loc. No. 10, 29.–30.IV.1996, 1FA, leg. M. Kaftan, 1ME, leg. V. Šejna.

COMMENTS. *Hottentotta schach* was described by Birula (Birula 1905: 134) as *Buthus schach*. Birula gave total length of 130 mm and 29 pectinal teeth for the female and 101 mm and 34–35 pectinal teeth for the male. The female examined is 120 mm long and has 26 and 27 pectinal teeth, whereas the male is 110 mm long and has 33 and 34 pectinal teeth.

This species is known only from Iraq and Iran.

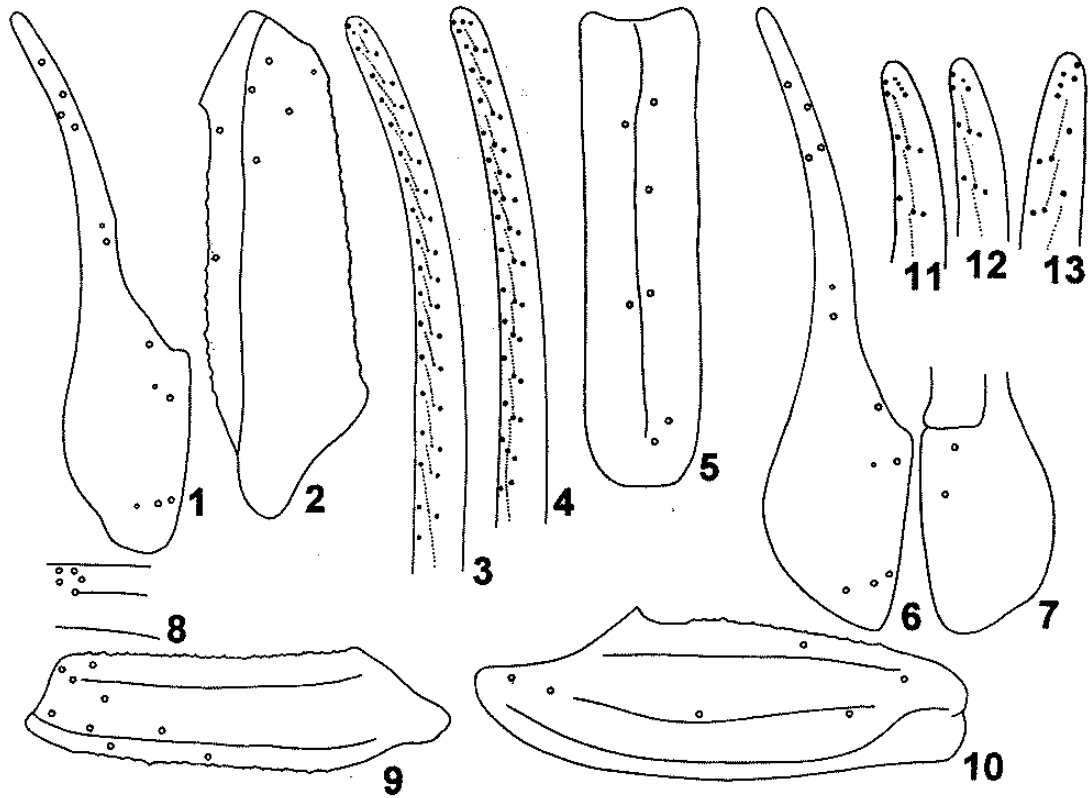
***Hottentotta zagrosensis* sp. n.**
(Figs 1–3, 14, Table 1)

TYPE MATERIAL. Holotype – male, allotype and paratypes Nos 1–4 labelled: Iran, Fars prov., alt. ca 1000 m, Zagros Mts., Abshar vill. env., 30° 23' N 51° 30' E, Loc. No. 14, 2.–3.V.1996; holotype and paratype No. 1 leg. J. Pitulová, allotype and paratypes No. 2 and No. 3 leg. V. Šejna, paratype No. 4 leg. D. Král. Paratype No. 1 and its ecdysis mounted dry, other type specimens preserved in 75 % alcohol. Type specimens currently housed in the author's collection, will be deposited in the Department of Invertebrate Zoology, National Museum (Natural History), Prague.

TYPE LOCALITY. Iran, Fars prov., alt. ca 1000 m, Zagros Mts., Abshar vill. env., 30° 23' N 51° 30' E. Specimens were collected in a dry river bed with rocky banks, fields, and scattered oaks cf. *Quercus brantii*.

ETYMOLOGY. Named after the Zagros Mts., to which the species appears to be restricted.

DESCRIPTION. The total length is 102 mm in the male holotype, 103 mm in the female allotype, and 83 mm in the immature male paratype No. 1, whose ecdysis measures 63 mm. Paratypes Nos 2–4 measure 62, 66, and 50 mm, respectively. The habitus is shown in Fig. 14. Measure-



Figs 1–13. Figs 1–3. *Hottentotta zagrosensis* sp. n. (holotype). Fig. 1. Tibia external, Fig. 2. Femur dorsal, Fig. 3. Movable finger. Figs 4–10. *Iranobuthus králi* gen. n. et sp. n. (holotype) Fig. 4. Movable finger, Fig. 5. Patella external, Fig. 6. Tibia external, Fig. 7. Tibia ventral, Fig. 8. Femur internal, Fig. 9. Femur dorsal, Fig. 10. Patella dorsal. Fig. 11. *Odontobuthus doriae* (male from Iran). Movable finger. Figs 12–13. *Odontobuthus odonturus* (female from Iran). Fig. 12. Right movable finger, Fig. 13. Left movable finger. Designation and description of trichobothria according to Vachon (1974).

ments of the carapace, telson, segments of the metasoma and of the pedipalps, and numbers of pectinal teeth in the holotype and allotype are given in Table 1. The male has 34 and 35 pectinal teeth, the female (allotype) has 31 and 33 pectinal teeth, and immature specimens (paratypes Nos 1-4) have 27-36 pectinal teeth. For the position and distribution of trichobothria on the pedipalps see Figs 1-2. The position of the trichobothrium Esb on the manus of the tibia (Fig. 1) is variable. Fig. 1 shows its position in the holotype. The allotype and paratypes have this trichobothrium situated in the same plane as trichobothrium Est or closer to trichobothrium Eb. Trichobothria Eb3, Esb, esb of tibia (Fig. 1), and d2 of femur (Fig. 2) are smaller than others.

Nearly the entire animal is hirsute. Pedipalps, the dorsal surface of the mesosoma, legs, lateral and ventral surfaces of metasomal segments, and the vesicle are densely hirsute, whereas the ventral surface of the mesosoma is hirsute only sparsely and the dorsal surface of the metasoma, ventral surface of femur and patella of pedipalps, and aculeus of telson lack hair cover. The male has longer and narrower metasomal segments than the female (Tab. 1).

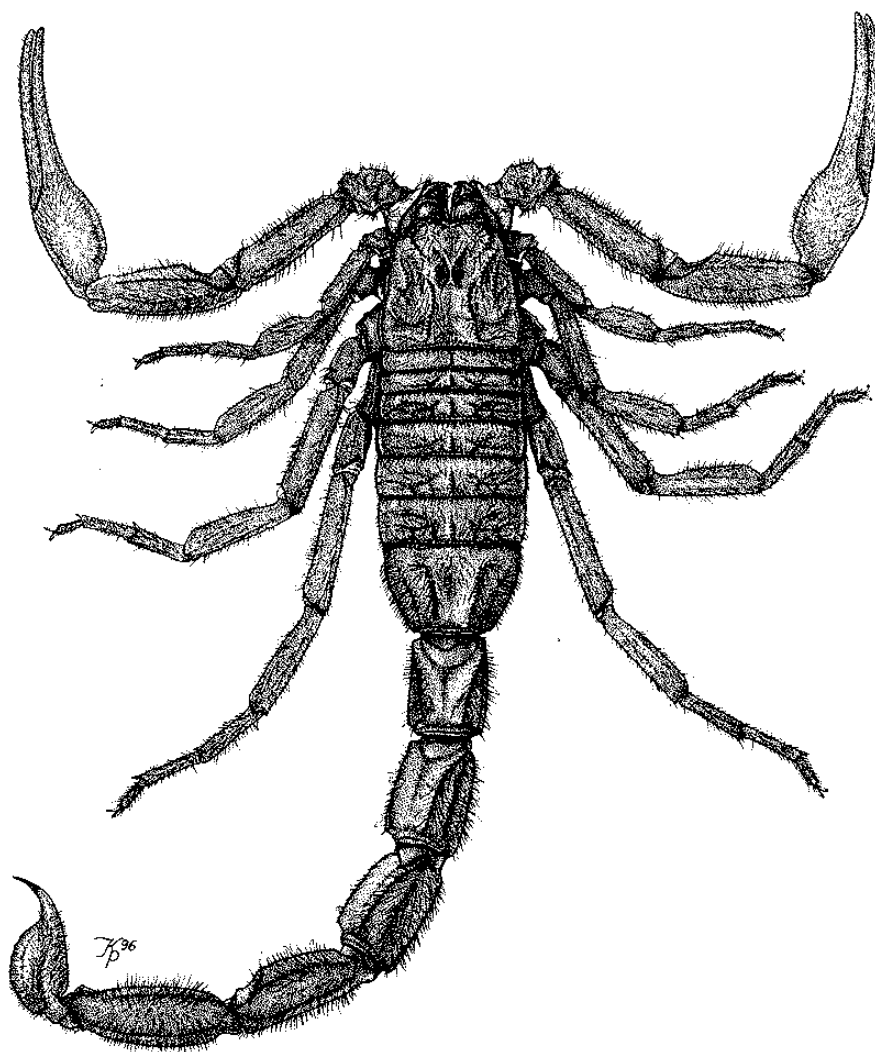


Fig. 14. *Hottentotta zagrosensis* sp. n. (holotype). Dorsal aspect.

Color is black except reddish brown tibia of pedipalps. Sometimes yellow ends of the first and second tarsomeres, marbled coxa and trochanter on the ventral side of mesosoma, and yellowish-brown pecten.

The chelicera has dorsal protuberances which are less conspicuous in immature specimens. The posterodorsal part of the chelicera is smooth and black, but in immature specimens it is reticulated.

The femur of pedipalps has five keels and a row of granules in the middle part of the internal surface. The ventral surfaces of femur and patella are smooth to glossy. The patella has eight keels. The tibia lacks keels. The movable fingers of the pedipalps have 16 cutting edges (Fig. 3).

The mesosoma has three keels on the dorsal surface and two keels on the ventral surface with the exception of the seventh segment, whose ventral surface bears four well marked keels.

The first and second segments of metasoma bear 10 keels, the third segment bears 8 or 10 keels, the fourth segment bears 8 keels, and the fifth segment bears only 5 keels. The dorsal surface is smooth and glossy, with the fifth segment bearing two short, inconspicuous keels. A subaculear tooth is absent, but the ventral surface of the aculeus bears five rows of granules.

AFFINITIES. The described features distinguish *Hottentotta zagrosensis* sp. n. from all other species of the genus. The uniformly black color differentiates *Hottentotta zagrosensis* sp. n. from all other Iranian *Hottentotta* Birula, 1908 and most other species of the genus. The same coloration is present only in *H. franzwernerii gentili* (Pallary, 1924) from Morocco and *H. judaicus* (Simon, 1872) from Israel, the Jordan and Syria.

H. judaicus is easily distinguished from *Hottentotta zagrosensis* sp. n. by its sparse hair cover, by having only 13–14 cutting edges on the pedipalps (Levy & Amitai 1980: 57), and by the number of pectinal teeth that in *H. judaicus* number 22–27 in the female and 27–32 in the male (Levy & Amitai 1980: 55). Another difference is in the dorsolateral keels of the first through fourth metasomal segments, which in *Hottentotta zagrosensis* sp. n. consist of minute, low, and always apically rounded granules of even size. In *H. judaicus* as well as *H. f. gentili* these keels consist of taller granules that increase in size posteriorly, with the second through fourth granules tall and pointed.

Of these black species of *Hottentotta*, the new species *H. zagrosensis* sp. n. is most similar to *H. f. gentili*, namely in the hair cover. However, *H. f. gentili* is less hirsute on the aculeus of telson and on the dorsal surface of the mesosoma. In *H. f. gentili* the movable fingers of the pedipalps have 14–15 cutting edges, and there are 26–31 pectinal teeth in females and 32–38 in males (Vachon 1952: 236).

***Iranobuthus* gen. n.**
(Figs 4–10, 15, Table 1)

TYPE SPECIES. *Iranobuthus kralli* sp. n.

ETYMOLOGY. The generic name combines relationship to the genera of the *Buthus* type and the geographic distribution and it is a masculinum in gender.

DESCRIPTION. A combination of characters differentiates this genus from all other genera of the family Buthidae. The basic trichobothrial pattern is beta (Fig. 9 and Sissom 1990: 70, fig. 3.3). The third and fourth legs bear tibial spurs (Sissom 1990: 74, fig. 3.8). The pectines bear fulcra (Sissom 1990: 93, fig. 3.17 D). The movable fingers of pedipalps have cutting edges and four proximal to terminal granules (Fig. 4). The fixed finger of the chelicera has two ventral denticles. The dorsal surface of mesosomal segments bears three keels (Fig. 15). The carapace has distinct carinae (Fig. 15). The trichobothrium eb is situated on the fixed finger of pedipalps and

Tab. 1. Measurements in millimeters of *Iranobuthus krali* gen. et sp. n. and *Hottentotta zagrosensis* sp. n. Line denoted „pectinal teeth“ contains numbers of both left and right teeth separated by a colon

		<i>Iranobuthus krali</i> gen. n. et sp. n. holotype	<i>Hottentotta zagrosensis</i> sp. n. holotype, male	<i>Hottentotta zagrosensis</i> sp. n. allotype, female
Total	length	82.0	102.0	103.0
Carapace	length	8.5	10.9	10.7
	width	9.0	11.7	12.0
Metasoma segment I	length	50	64	58
	length	7.1	7.6	6.6
segment II	width	4.8	6.5	6.9
	length	7.4	8.7	8.0
segment III	width	4.4	6.4	6.8
	length	7.6	10.0	8.6
segment IV	width	4.4	6.4	6.8
	length	8.4	11.3	10.1
segment V	width	4.2	6.0	6.4
	length	9.6	12.9	12.0
telson	width	4.0	5.6	5.6
	length	8.7	12.0	12.0
Pedipalp femur	length	9.4	11.5	10.3
	width	2.2	2.6	3.0
patella	length	10.0	13.0	12.0
	width	3.2	3.7	4.0
tibia	length	16.2	20.0	20.0
manus	width	3.3	4.5	4.5
movable finger	length	11.1	14.4	14.1
Pectinal teeth		31:31	35:34	33:31

does not reach on the manus as in genus *Kraepelinia* Vachon, 1974 (Fig. 6 and Vachon 1974: 950, fig. 238). The ventral surface of the metasoma lacks protuberances characteristic of the genus *Odontobuthus* Vachon, 1950 (Pocock 1900: 17, fig. 8b). The central medial and posterior medial carinae on the carapace join to form a continuous linear series of granules at the posterior margin. The carapace lacks posterior lateral keels (Fig. 15 and Sissom 1990: 92, figs 3.17 a–c).

Iranobuthus gen. n. is further characterized by the number and distribution of trichobothria on the pedipalps (Figs 5–10), size (total length of 82 mm), the presence of only dorsal granulated keels on the second through fourth metasomal segments, and other features included in the description of *Iranobuthus krali* sp. n. below.

AFFINITIES. *Iranobuthus* gen. n. is easily distinguished from *Compsobuthus* Vachon, 1949 and *Darchenia* Vachon, 1977 by its size. The holotype of *Iranobuthus krali* sp. n. is 82 mm long, whereas *Darchenia* from Africa (Lourenço 1995: 197) is only 20.5 mm long (Vachon 1977: 289) and *Compsobuthus* species range between 20 and 50 mm. Moreover, *Darchenia* has the trichobothrium db of pedipalps situated between trichobothria et and est (Vachon 1977: 289), whereas *Iranobuthus* gen. n. has this trichobothrium situated between trichobothria est and esb (Fig. 6). *Compsobuthus* has trichobothrium db in a position similar to *Iranobuthus* gen. n., but farther away from trichobothrium est. In *Compsobuthus* the cutting edges on movable fingers of the pedipalps range from 9 to 12 and pectinal teeth range from 12 to 29, but most species have

less than 20. *Iranobuthus* gen. n. has 14 cutting edges (Fig. 4) and 31 pectinal teeth. Marked differences can be discerned also in the habitus.

The genera *Androctonus* Hemprich & Ehrenberg, 1828, *Buthus* Leach, 1815, *Hottentotta*, and *Mesobuthus* Vachon, 1950 are of similar size, but *Iranobuthus* gen. n. differs from them in that the central medial and posterior medial carinae on the carapace join and form a continuous linear series of granules at the posterior margin, and the carapace lacks posterior lateral keels (Fig. 15 and Sissom 1990: 92, figs 3.17 a–c).

***Iranobuthus krali* sp. n.**
(Figs 4–10, 15, Table 1)

TYPE MATERIAL. Holotype, male preserved in 75% alcohol, labelled: Iran, Fars prov., alt. ca 1700 m, 10 km E of Sivand vill., 30° 05' N 52° 55' E, Loc. No. 10, 29.–30.IV.1996, leg. D. Král. It is currently in the author's collection, but will be deposited in the Department of Invertebrate Zoology, National Museum, Prague.

TYPE LOCALITY. The holotype was found under stone on a limestone hillside covered with xerophytic vegetation.

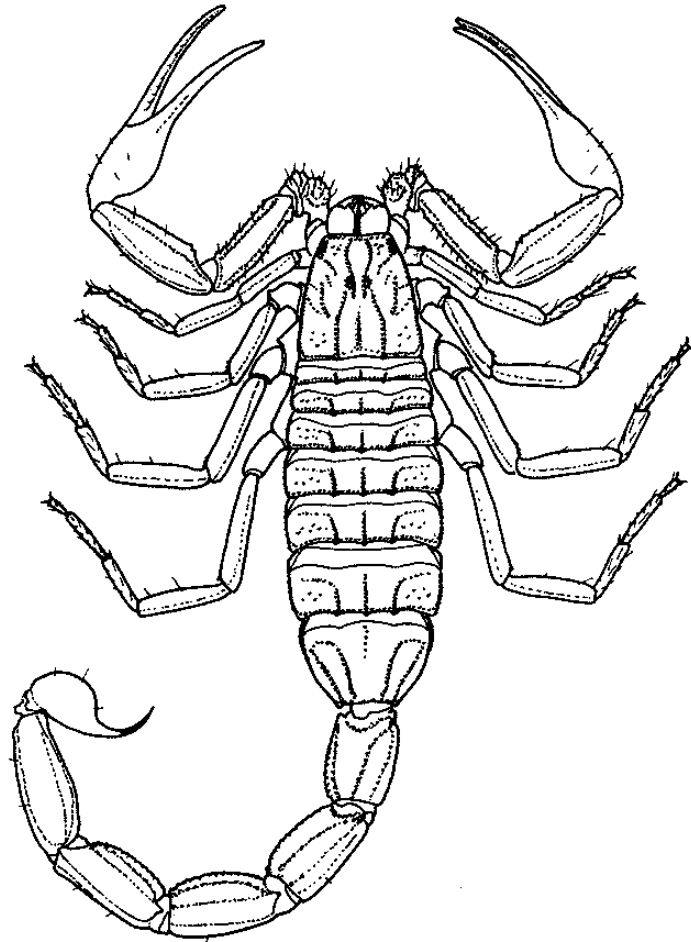


Fig. 15. *Iranobuthus krali* gen. et sp. n., (holotype). Dorsal aspect.

ETYMOLOGY. Named after the collector.

DESCRIPTION. The holotype is 82 mm long and has 31 pectinal teeth. The habitus is shown in Fig. 15. Measurements of the carapace, telson, segments of the metasoma and of pedipalps, and numbers of pectinal teeth are given in Table 1. For the position and distribution of trichobothria on the pedipalps see Figs 1–2.

The base color is yellow, with only the vicinity of the medial and posterior eyes and the aculeus being black.

The carapace has keels and several solitary granules. Three pairs of lateral eyes are situated in a row distant from the carapace margin.

The third and fourth legs possess tibial and pedal spurs. The entire first and second tarsomeres are covered with long, dense hair, whereas the tibia is hirsute only on the inner surface, and the trochanter and femur bear only several scattered hairs.

The mesosoma has three median keels. The keels of individual tergites each terminate in a larger granule that overlaps the hind margin of the tergite. In addition, the hind margin bears a transverse row of granules.

The metasoma bears several scattered hairs. The first and second metasomal segments possess 10 keels each, of which four keels on the first segment and six keels on the second segment are smooth and blunt. Only four dorsal keels on the second segment and four dorsal and two lateral keels on the first segment are covered with blunt granules which do not merge. The last granule is slightly larger and pointed. The third and fourth metasomal segments bear eight keels, of which the two dorsal ones are covered with minute, non-merging granules. The ventral surface of the fifth metasomal segment has one keel composed of minute granules and several scattered granules. The telson is smooth, without a subaculear tubercle and with several scattered hairs.

AFFINITIES. Differential diagnosis of the new species is included in the generic diagnosis.

Mesobuthus eupeus (C. L. Koch, 1839)

MATERIAL. Iran, Esfahan prov., alt. ca 2000–2200 m, Zagros Mts., Qamishlu vill. env., 32° 02' N 51° 29' E, Loc. No. 5, 27.–28.IV.1996, 4F 2juvsA, leg. M. Kaftan, IMA, leg. D. Král, 1FA, leg. J. Pitulová; Fars prov., alt. ca 1700 m, 10 km E of Sivand vill., 30° 05' N 52° 55' E, Loc. No. 10, 29.–30.IV.1996, 1FA, leg. M. Kaftan, alt. ca 2200 m, Zagros Mts., road Dasht-e-Arzhan - Tang-Abolhayat, 30.IV.–1.V.1996, 1juv. A, leg. V. Šejna, alt. ca 1000 m, Zagros Mts., Abshar vill. env., 30° 23' N 51° 30' E, Loc. No. 14, 2.–3.V.1996, 1FA, leg. J. Pitulová; Boyerahmad-va-Kuhgiluyeh prov., alt. ca 1800–2300 m, Zagros Mts., Kuh-e-Dinar Ridge, 10 km NE of Yasuj, by road, 30° 39' N 51° 36' E, Loc. No. 13, 1.–2.V.1996, 1juv. A, leg. V. Šejna, 1FA, leg. J. Pitulová; prov. Bushehr, alt. ca 50 m; 15 km NW of Bandar-e-Gonavch, Chahak vill. env., 29° 40' N 50° 25' E, Loc. No. 19, 3.–5.V.1996, 3MA, leg. M. Kaftan, 1M 1juv.A, leg. V. Šejna; Khuzestan prov., alt. ca 100 m, Choqa-Zanbil (zikkurat) env., 32° 00' N 48° 31' E, Loc. No. 20, 5.–6.V.1996, 1MA, leg. M. Kaftan, 3M 1F 1juv.A, leg. D. Král; Hamadan prov., ca 2000 m, 35 km SE of Hamadan, Gonbad vill. env., 34° 40' N 48° 45' E, Loc. No. 23, 7.–8.V.1996, 1juv.A, leg. D. Král; Mazandaran prov., alt. ca 1800–2500 m, Alborz Mts. N slopes, Vali Abad vill. env., 36° 14' N 51° 18' E, Loc. No. 25, 8.–10.V.1996, 3M 6F 5juvsA, leg. D. Král, 4F 1juv.A, leg. V. Šejna; Azarbajecjan-e-Gharbi prov., alt. ca 1000 m, 8 km N of Ev Oghli, Markan vill. env., 13.V.1996, 1juv.A, leg. V. Šejna.

COMMENTS. *Mesobuthus eupeus* is widely distributed from Turkey (e. g. Kovařík 1996: 54) to Mongolia (e. g. Stahnke 1967: 61) and forms many subspecies, nine in Iran alone (Farzanpay 1988: 38, 1986: 333–335). Some of the subspecies are controversial and a revision of the entire species is needed (Farzanpay 1988: 38). The hitherto published criteria are at the most part inadequate for precise determination below the species level. For this reason I have not attempted such determination, although the material includes at last two subspecies (*M. e.* cf. *eupeus* from most of the localities and *M. eupeus* subsp. ? from Chahak and Choqa-Zanbil).

***Odontobuthus doriae* (Thorell, 1876)**

(Fig. 11)

MATERIAL. Iran, Esfahan prov., alt. ca 800 m, SEE of Kashan, Jafar Abad vill. env., 33° 55' N 51° 53' E, Loc. No. 2, 26.–27.IV.1996, IMA, leg. M. Kaftan.

COMMENTS. *Odontobuthus doriae* was described as *Buthus doriae* (Thorell 1876: 107) and later became the type species of the genus *Odontobuthus* Vachon, 1950. This genus has only two species *O. doriae* and *O. odonturus*.

Thorell (1876) stated that *O. doriae* has a total length of 74 mm and 20–22 pectinal teeth. The male from Iran is immature, with a total length of 53 mm and 31–32 pectinal teeth.

O. doriae is known from Iran, Iraq (Birula 1917: 239), and Pakistan (Minnocci 1974: 28).

***Odontobuthus odonturus* Pocock, 1897**

(Figs 12–13)

MATERIAL. Iran, Bushehr prov., alt. ca 50m, 15 km NW of Bandar-e-Gonaveh, Chahak vill. env., 29° 40' N 50° 25' E, Loc. No. 19, 3.–5.V.1996, IME IFA, leg. M. Kaftan, IFA, leg. D. Král.

COMMENTS. *Odontobuthus odonturus* was described as *Buthus odonturus* (Pocock 1897: 104) based on a male from India with a total length of 58 mm and 28–29 pectinal teeth. Pocock (1897) distinguished it from *O. doriae* on three lobes laterally terminating the fifth metasomal segment. *O. doriae* has only two such lobes.

The genus *Odontobuthus* is well characterized by protuberances on the ventral side of the metasomal segments (Pocock 1900: 17, fig. 8b), but it is often characterized also by a short row of five to seven smaller granules on the tips of movable fingers of the pedipalps (Fig. 11) – e. g. in Sissom's (1990: 98) key of the family Buthidae. However, the number of granules is intraspecifically variable. An examined male of *O. odonturus* from Iran has three such granules, whereas a female (leg. D. Král) has three granules on the left movable finger (Fig. 13) but only two external basal granules on the right movable finger (Fig. 12), like species of the genus *Mesobuthus* Vachon, 1950. Another female has four terminal granules on the right movable finger, but on the left finger no such granules precede the first granular row.

The females are 82 and 86 mm long and have 25–28 pectinal teeth; the male is 73 mm long and has 32 pectinal teeth. Apart from India and Iran, the species is known also from Pakistan (Birula, 1917: 239).

***Orthochirus* sp. n. ?**

MATERIAL. Iran, Esfahan prov., alt. ca 2000–2200 m, Zagros Mts., Qamishlu vill. env., 32° 02' N 51° 29' E, Loc. No. 5, 27.–28.IV.1996, IMA, leg. M. Kaftan; Boycrahmad-va-Kuhgiluyeh prov., alt. ca 1800–2300 m, Zagros Mts., Kuh-e-Dinar Ridge, 10 km NE of Yasuj, by road, 30° 39' N 51° 36' E, Loc. No. 13, 1.–2.V.1996, IMA, leg. J. Pitulová; Bushehr prov., alt. ca 50 m, 15 km NW of Bandar-e-Gonaveh, Chahak vill. env., 29° 40' N 50° 25' E, Loc. No. 19, 3.–5.V.1996, IM IFA, leg. M. Kaftan, IFA, leg. D. Král; Khuzestan prov., alt. ca 100 m., Choqa-Zanbil (zikkurat) env., 32° 00' N 48° 31' E, Loc. No. 20, 5.–6.V.1996, IMA, leg. M. Kaftan.

COMMENTS. *O. scrobiculosus* differs from these Iranian specimens in the absence of external granules on the movable fingers of the pedipalps. *Orthochirus* sp. n. ? has eight cutting edges with seven external granules on the movable fingers and differs in coloration as well. It is almost entirely black, with only the tibia of pedipalps and metatarsi of legs yellow and fingers of the pedipalps yellow to yellowish brown. The specimens are up to 40 mm long and have 18–20 pectinal teeth.

I surmise that this is a new species but defer formally describing and naming it until criteria for differentiating among the species and subspecies of *Orthochirus* become less equivocal. A revision of the genus *Orthochirus* has been repeatedly advocated (Levy & Amitai 1980: 94, Fet 1988: 116, Kovařík 1993: 203, Kovařík 1996: 181). Although Tikader & Bastawade presented a key to the species of *Orthochirus* from India (Tikader & Bastawade 1983: 113), they used variable characters and included *Orthochirus melanurus* (Kessler, 1874) whose status is dubious.

Paraorthochirus glabrifrons (Kraepelin, 1903)

MATERIAL. Iran, Hamadan prov., ca 2000 m, 35 km SE of Hamadan, Gonbad vill. env., 34° 40' N 48° 45' E, Loc. No. 23, 7.–8.V.1996, 1M 1F 1juv.A, leg. V. Šejna.

COMMENTS. *Paraorthochirus glabrifrons* was described as *Butheolus glabrifrons* (Kraepelin 1903: 564), later placed in the genus *Orthochirus* Karsch, 1891, and in turn transferred to the genus *Paraorthochirus* Lourenço & Vachon, 1995 (= *Pseudoorthochirus* [sic] Lourenço & Vachon 1995: 304) based on the presence of trichobothrium d2 on the dorsal surface of the femur.

Kraepelin gave the type locality at „Mascat“ (Kraepelin 1903: 565), but Lourenço & Vachon (1995: 298) list it as „sud de la Perse“. In my opinion, this species occurs only in Iran.

According to Kraepelin (1903: 564), *Paraorthochirus glabrifrons* has 19–21 pectinal teeth whereas Lourenço & Vachon (1995) found 18–20 pectinal teeth in the female and 21–24 in the male. The adult male examined in this study has a total length of 38 mm and 24 pectinal teeth, the female has a total length of 41 mm and 20 pectinal teeth, and an immature male has a total length of 17 mm and 21 pectinal teeth.

Paraorthochirus goyffoni Lourenço & Vachon, 1995

MATERIAL. Iran, Fars prov., alt. ca 1000 m, Zagros Mts., Abshar vill. env., 30° 23' N 51° 30' E, Loc. No. 14, 2.–3.V.1996, 2juvsA, leg. V. Šejna.

COMMENTS. *Paraorthochirus goyffoni* was described from Bandar-Langeh, Iran (Lourenço & Vachon 1995: 301). The occurrence of two specimens at Abshar vill. env. shows that the species occupies a larger area.

The two examined juveniles are 23.5 mm (male) and 17 mm (female) long and have 22 and 20 pectinal teeth, respectively.

Hemiscorpius lepturus Peters, 1862

MATERIAL. Iran, Fars prov., alt. ca 1700 m, 10 km E of Sivand vill., 30° 05' N 52° 55' E, Loc. No. 10, 29.–30.IV.1996, 3M 1F 1juv.A, leg. M. Kaftan, 1M 3F 4juvsA, leg. D. Král, 2F 2juvsA, leg. J. Pitulová, 1M 1F 1juv.A, leg. V. Šejna, alt. ca 1000 m, Zagros Mts., Abshar vill. env., 30° 23' N 51° 30' E, Loc. No. 14, 2.–3.V.1996, 2FA, leg. M. Kaftan, 1F 1juv.A, leg. D. Král, 1M 1FA 2juvsA, leg. J. Pitulová, 1juv.A, leg. V. Šejna; Boycerahmad-va-Kuhgiluyeh prov., alt. ca 1800–2300 m, Zagros Mts., Kuh-e-Dinar Ridge, 10 km NE of Yasuj, by road, 30° 39' N 51° 36' E, Loc. No. 13, 1.–2.V.1996, 1F 1juv.A, leg. J. Pitulová; Lorestan prov., alt. ca 1000 m, Zagros Mts., 30 km W of Khorram Abad, Gholaman vill. env., 33° 25' N 48° 12' E, Loc. No. 22, 6.–7.V.1996, 1F 1MA, leg. D. Král; Hamadan prov., ca 2000 m, 35 km SE of Hamadan, Gonbad vill. env., 34° 40' N 48° 45' E, Loc. No. 23, 7.–8.V.1996, 2FA, leg. M. Kaftan.

COMMENTS. *Hemiscorpius lepturus* was described from Baghdad, Iraq (Peters 1862: 426). From *H. maindroni* Kraepelin, 1901, which appears to have been incorrectly listed from Iran, *H. lepturus* differs in overall length and the number of pectinal teeth. According to Kraepelin (1901: 16), the male of *H. maindroni* reaches 38 mm and has 12–13 pectinal teeth, and the

female reaches 33 mm and has 9–10 pectinal teeth. Kraepelin (1899: 142) gave a total length of up to 66 mm and 15–16 pectinal teeth for the male and up to 45 mm and nine pectinal teeth for the female of *H. lepturus*. The newly collected males of *H. lepturus* from Iran reach 64 mm and have 14–16 pectinal teeth, whereas the females reach 57 mm and have 7–16 pectinal teeth (most frequently 9–11, twice 8, and once 7, 13 and 16, respectively).

CHECKLIST OF SCORPIONS FROM IRAN

(compiled from Pocock (1889) – 1, Pocock (1900) – 2, Birula (1900) – 3, Birula (1903) – 4, Birula (1904) – 5, Birula (1905) – 6, Birula (1911) – 7, Birula (1917) – 8, Birula (1918) – 9, Vachon (1958) – 10, Vachon (1959) – 11, Bücherl (1959) – 12, Vachon (1966) – 13, Vachon & Stockmann (1968) – 14, Habibi (1971) – 15, Whittick (1971) – 16, Farzanpay & Pretzmann (1974) – 17, Minnocci (1974) – 18, Vachon (1974) – 19, Francke (1980) – 20, Farzanpay (1986) – 21, Fet (1988) – 22, Farzanpay (1988) – 23, Dehghani (1989) – 24, Fet (1994) – 25, Kovářík (1992) – 26, Lourenço & Vachon (1995) – 27, Lourenço (1996) – 28, and author's collection – 29)

Buthidae Simon, 1879

<i>Androctonus amoreuxi baluchicus</i> (Pocock, 1900)	(11, 13, 15, 29)
<i>Androctonus crassicauda crassicauda</i> (Olivier, 1807)	(12, 13, 15, 16, 17, 22, 23, 26)
<i>Apistobuthus pterygocercus</i> Finnegan, 1932	(23)
<i>Buthacus leptochelys leptochelys</i> (Hemprich & Ehrenberg, 1829)	(13, 15, 18, 23)
<i>Buthacus tadmorensis</i> (Simon, 1892)	(13, 15, 18)
<i>Compsobuthus acutecarinatus</i> (Simon, 1882)	(17, 18, 29)
<i>Compsobuthus matthiesseni</i> (Birula, 1905)	(13, 15, 18, 23, 29)
<i>Compsobuthus rugosulus</i> (Pocock, 1900)	(13, 15, 18, 23)
? <i>Hottentotta alticola</i> (Pocock, 1895)	(23)
? <i>Hottentotta jayakari</i> (Pocock, 1895)	(23)
<i>Hottentotta saulcyi</i> (Simon, 1880)	(13, 15, 23, 26, 29)
<i>Hottentotta schach</i> (Birula, 1905)	(11, 13, 14, 15, 17, 18, 23, 29)
<i>Hottentotta zagrosensis</i> sp. n.	(29)
<i>Iranobuthus krali</i> gen. n. et sp. n.	(29)
<i>Kraepelinia palpator</i> (Birula, 1903)	(4, 8, 13, 15, 18, 22, 23, 25)
<i>Liobuthus kessleri</i> Birula, 1898	(10, 13, 15, 22, 23)
<i>Mesobuthus caucasicus caucasicus</i> (Nordmann, 1840)	(13, 15, 22, 25)
<i>Mesobuthus caucasicus intermedius</i> (Birula, 1897)	(13, 15, 22, 25)
<i>Mesobuthus caucasicus parthorum</i> (Pocock, 1889)	(11, 13, 15, 22, 25)
<i>Mesobuthus eupeus afghanus</i> (Pocock, 1889)	(8, 11, 13, 15, 22, 23, 25)
<i>Mesobuthus eupeus eupeus</i> (C. L. Koch, 1839)	(5, 13, 15, 22, 23, 25, ? 29)
<i>Mesobuthus eupeus iranensis</i> (Birula, 1917)	(8, 18, 22, 25)
<i>Mesobuthus eupeus kirmanensis</i> (Birula, 1900)	(3, 6, 11, 13, 15, 18, 22, 23, 25)
? <i>Mesobuthus eupeus macmahoni</i> (Pocock, 1900)	(15)
<i>Mesobuthus eupeus pachysoma</i> (Birula, 1900)	(3, 13, 15, 18, 22, 25)
<i>Mesobuthus eupeus persicus</i> (Pocock, 1899)	(11, 13, 15, 18, 22, 25)
<i>Mesobuthus eupeus phillipovitschi</i> (Birula, 1905)	(6, 7, 8, 9, 11, 13, 15, 18, 22, 23, 25)
<i>Mesobuthus eupeus phillipsii</i> (Pocock, 1889)	(1, 11, 13, 15, 18, 22, 23, 25)
<i>Mesobuthus eupeus thersites</i> (C. L. Koch, 1839)	(13, 15, 18, 21, 22, 25)
<i>Mesobuthus zarudnyi zarudnyi</i> (Birula, 1900)	(8, 11, 13, 15)
<i>Mesobuthus zarudnyi gracilis</i> (Birula, 1900)	(13, 15, 18, 23)
<i>Mesobuthus zarudnyi sarghadensis</i> (Birula, 1903)	(13, 15, 23)
<i>Neohemibuthus kinzelbachi</i> Lourenço, 1996	(28)
<i>Odontobuthus doriae</i> (Thorell, 1876)	(13, 15, 18, 23, 24, 29)
<i>Odontobuthus odonturus</i> (Pocock, 1897)	(13, 15, 23, 24, 29)
? <i>Orthochirus scrobiculosus dentatus</i> (Birula, 1900)	(3, 18, 25)
? <i>Orthochirus scrobiculosus melanurus</i> (Kessler, 1874)	(13)
? <i>Orthochirus scrobiculosus persa</i> (Birula, 1900)	(3, 13, 15, 25)
? <i>Orthochirus scrobiculosus scrobiculosus</i> (Grube, 1873)	(? 15)
<i>Orthochirus</i> sp. n. ?	(29)

<i>Paraorthochirus glabrifrons</i> (Kraepelin, 1903)	(18, 29)
<i>Paraorthochirus goyffoni</i> Lourenço & Vachon, 1995	(27, 29)
<i>Paraorthochirus stockwelli</i> Lourenço & Vachon, 1995	(27)

Scorpionidae Peters, 1862

<i>Habibiella gaillardi</i> Vachon, 1974	(19, 23)
<i>Habibiella persica</i> (Birula, 1903)	(13, 15, 17, 18, 23)
<i>Hemiscorpius lepturus</i> Peters, 1862	(13, 15, 17, 18, 23, 29)
<i>Scorpio maurus kruglovi</i> Birula, 1910	(15)
<i>Scorpio maurus townsendi</i> (Pocock, 1900)	(2, 13, 15, 18, 23)

Diplocentridae Pocock, 1893

<i>Nebo henjamicus</i> Francke, 1980	(20)
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DISCUSSION

Also described from Iran is *Androctonus crassicauda orientalis* (Vachon 1966: 210, Habibi 1971: 43), however I concur with Fet (1988: 79) in that this subspecies is a synonym of *A. c. crassicauda*.

Hottentotta alticola and *H. jayakari* are questionable, because they are listed for Iran only by Farzanpay (1988: 37) without localities to ascertain their occurrences.

Farzanpay (1988: 38) questioned the occurrences of subspecies *Mesobuthus eupeus macmahoni*, *M. e. pachysoma*, *M. e. persicus*, *M. e. iranus*, and *M. e. thersites* in Iran. However, with the exception of *M. e. macmahoni* these subspecies have been found in Iran by Fet (1988: 86).

The above list does include *Orthochirus scrobiculosus melanurus* (Kessler, 1874), although Fet (1994: 529–530) regards this subspecies as questionable. Also equivocal is the status of subspecies *O. s. dentatus* and *O. s. persa* (see *Orthochirus* sp. n. ? above and Fet 1988: 116).

Minnocci (1974: 36) listed from Iran also *Hemiscorpius maindroni* Kraepelin, 1901. This species is excluded from the above list because I am not aware of any specific occurrence in Iran and the type locality is Muscat in Oman.

In addition, Farzanpay (1988: 41) lists for Iran „*Simonoides farzanpayi*“, a „gen. and sp. n. to be described by Vachon“. However, Vachon never described this genus and species, which thus is a nomen nudum similarly to the genera *Olivierus*, *Razianus*, and *Sassanidotus* also listed by Farzanpay (1986: 334, 1988: 39, 40, 41).

Vachon (1966) lists for Iran 15 species, 9 genera, and two families. Habibi (1971) lists 37 subspecies, 24 species, 11 genera, and two families. Farzanpay (1988) lists 23 species, 17 genera (of which, however, four are nomina nuda), and two families. In this paper I list 49 subspecies, 32 species, 18 genera, and three families. However, the occurrence of two species and five subspecies is uncertain.

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