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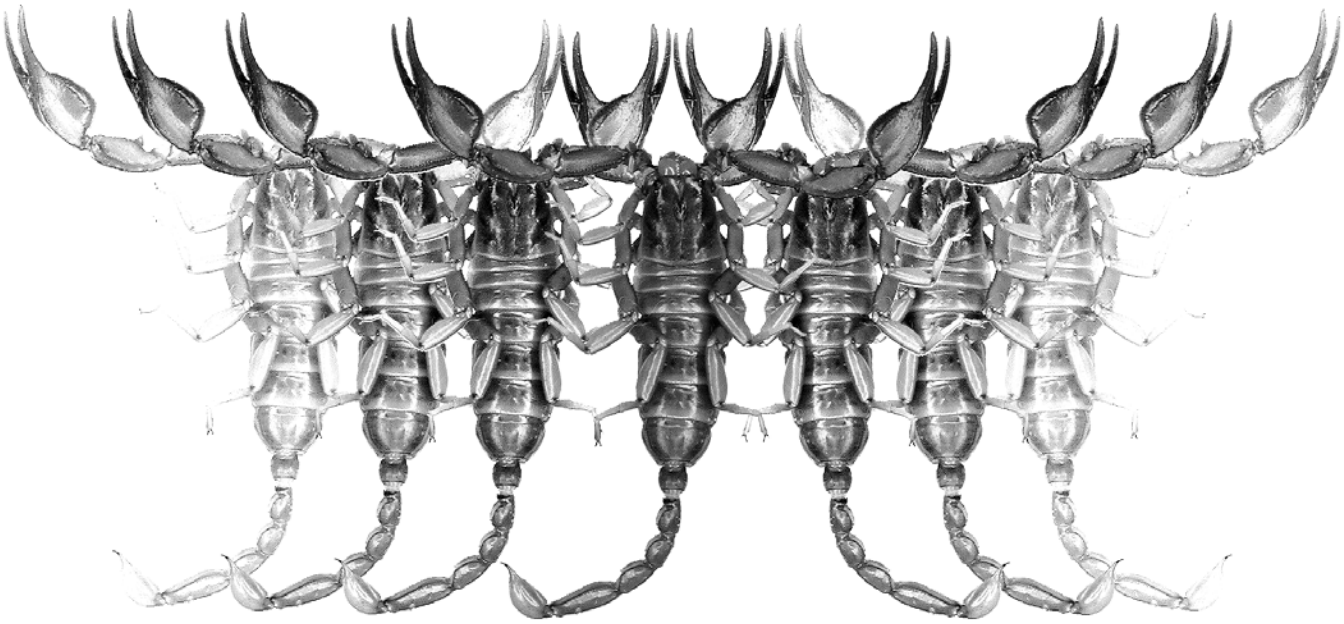

Taxonomic Position of the Genus *Simonoides* Vachon et Farzanpay, 1987, and Description of a New Species of *Orthochirus* Karsch from Iran (Scorpiones, Buthidae)

František Kovařík & Victor Fet

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EDITOR: **Victor Fet**, Marshall University, **'fet@marshall.edu'**

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- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
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Taxonomic position of the genus *Simonoides* Vachon et Farzanpay, 1987, and description of a new species of *Orthochirus* Karsch from Iran (Scorpiones, Buthidae)

František Kovařík [1] & Victor Fet [2]

[1] P. O. Box 27, CZ - 145 01 Praha 45, Czech Republic.
[2] Department of Biological Sciences, Marshall University, Huntington, West Virginia 25755-2510, USA.

Summary

Simonoides Vachon et Farzanpay, 1987 is synonymized with *Orthochirus* Karsch, 1891. Lectotype is designated for *Simonoides farzanpayi* Vachon et Farzanpay, 1987. *Orthochirus sobotniki* Kovařík, 2004 is synonymized with *Orthochirus farzanpayi* (Vachon et Farzanpay, 1987), **comb. n**. *Orthochirus gruberi*, **sp. n.** (Iran) is described and distinguished from all other Iranian species of the genus on a combination of two characters, the presence of rows of granules with internal and external granules on the movable fingers of pedipalps and hirsuteness of the entire metasoma and telson.

Abbreviations

FKCP, František Kovařík Collection, Praha, Czech Republic; MNHN, Muséum national d´Histoire naturelle, Paris, France; NMW, Naturhistorisches Museum Wien, Vienna, Austria.

Systematics

Orthochirus Karsch, 1891

Orthochirus Karsch, 1891: 306; Fet & Lowe, 2000: 193; Fet et al., 2003: 69.

= *Orthodactylus* Karsch, 1881: 90, a junior homonym of *Orthodactylus* Hitchcock, 1858 (Reptilia), type species: *Orthodactylus olivaceus* Karsch, 1881 = *Orthochirus scrobiculosus* (Grube, 1873) (syn. by Kraepelin, 1895: 84).

= *Simonoides* Vachon et Farzanpay in Farzanpay, 1987: 162, type species: *Simonoides farzanpayi* Vachon et Farzanpay, 1987; Farzanpay, 1988: 40; Fet & Lowe, 2000: 223. **Syn. n.**

= *Afghanorthochirus* Lourenço & Vachon, 1997: 330, type species: *Afghanoorthochirus erardi* Lourenço & Vachon, 1997 = *Orthochirus erardi* (Lourenço & Vachon, 1997); Kovařík, 1998: 120 (syn. by Kovařík, 2004: 5).

Type species: *Orthodactylus olivaceus* Karsch, 1881 = *Orthochirus scrobiculosus* (Grube, 1873).

Diagnosis: Dorsal trichobothria of femur arranged in β-configuration. Trichobothrium d_2 of pedipalp femur absent on dorsal surface. Trichobothrium d_3 of pedipalp patella located internally of DM_c carina. Tibial spurs present on legs III and IV. Pectines with fulcra and densely hirsute. Movable fingers of pedipalps with 7–10 rows of granules and 2–5 distal granules. Carapace in lateral view distinctly inclined downward from median eyes to anterior margin. First and second metasomal segments with carinae. Metasomal segments IV and V ventrally punctated. Telson elongate, aculeus as long or longer than vesicle. Total length under 60 mm.

Orthochirus farzanpayi (Vachon et Farzanpay, 1987), **comb. n.**
(Figs. 1–2)

Orthochirus scrobiculosus: Farzanpay & Pretzmann, 1974: 216 (in part).

Simonoides farzanpayi Vachon et Farzanpay in Farzanpay, 1987: 162; Farzanpay, 1988: 41; Fet & Lowe, 2000: 223.

= *Orthochirus sobotniki* Kovařík, 2004: 20. **Syn. n.**

Type locality and type repository. **Iran**, 215 km N of Bandar-e-Abbas (NMW).

Type material examined. **Iran**, 215 km N of Bandar-Abas [Bandar-e-Abbas], 22 March 1972, 1♀ (lectotype) 1♂1♀ (paralectotypes), NMW Nos. 68–70, studied by Max Vachon in 1977, No. VA 1910 [no collec-

Figure 1: *Orthochirus farzanpayi* (Vachon et Farzanpay, 1987) **comb. n.**, female lectotype, dorsal aspect.

Figure 2: *Orthochirus farzanpayi* (Vachon et Farzanpay, 1987) **comb. n.**, male paralectotype, dorsal aspect.

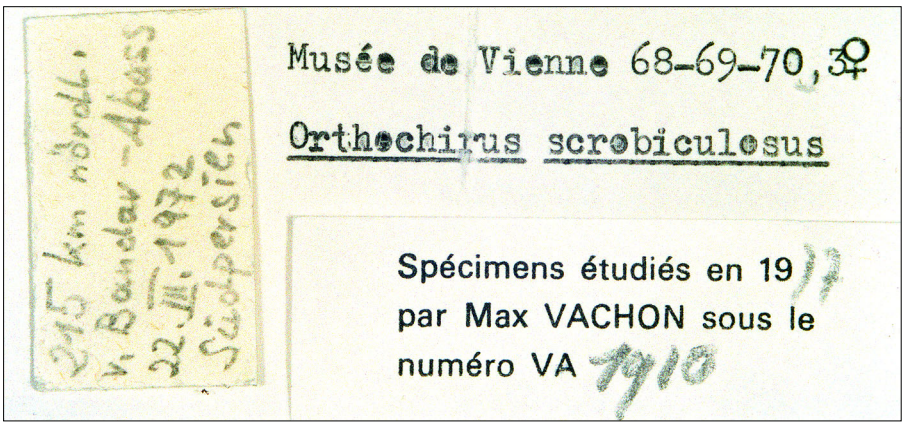

Figure 3: Label of *Orthochirus farzanpayi* type series, NMW 69–70.

tor's name]; 5 km SE of Posht Chenár, 19–20 April 2000, 29°12'941"N, 53°20'014"E, alt. 1692 m, 1♂1♀1im. ♂A (holotype, allotype, and paratype of *Orthochirus sobotniki*), leg. J. Šobotník (FKCP).

Other material examined. **Iran**, Pass 135 km S of Sirjan, 21 March 1972, 1♀, leg. Pretzmann, NMW No. 3400, det. R. Farzanpay as *O. scrobiculosus* (see Farzanpay & Pretzmann, 1974: 216).

Diagnosis: Metasomal segments IV and V ventrally punctated and without carinae. Spaces among punctae smooth, without granules. Entire metasoma glabrous (short, thin setae may originate from punctae). Dorsal surface of all metasomal segments mesially smooth, without granules (several scattered granules may be present on fifth segment). Mesosoma and metasoma black, telson reddish brown, femur of pedipalp gray. In adults, legs and pedipalps yellow; in juveniles, femur of legs and pedipalps black. Movable fingers of pedipalps bear 8 rows of granules with internal and external granules and two or three distal granules. Tarsi of all legs without bristlecombs. Pectinal teeth number 18 to 23.

Comments. The description of the monotypic genus *Simonoides* (and type species *Simonoides farzanpayi*) was published in a book by Farzanpay (1987: 162) in Farsi, and the Latin names were transliterated in the Farsi text as well. The Index in this book, however, included Latin names, separate for species and genus names (pp. 217, *farzanpayi*; p. 221, *Simonoides*), which technically makes these names available under Farzanpay's authorship.

It is clear, however, that Farzanpay had no intention to be an author of these taxa. In a publication that appeared next year (Farzanpay, 1988: 41), he listed these taxa again, and clearly stated that a full description was being prepared by M. Vachon: "*Simonoides* (n. gen. to be described by Vachon); *Simonoides farzanpayi* (n. sp. to be described by Vachon)". Indeed, a forthcoming publication in the *Bulletin du Muséum national d'Histoire naturelle* (Paris) by Vachon was announced (CIDA, 1986: 45, item 739) under the title "*Simonoides farzenpayi*, gen. nov, nov. sp. de scorpion Buthidae (Arachnida) habitant le sud-ouest de l'Iran". As far as we could establish, this paper was never published.

Farzanpay (1988: 39, 40) also listed three other new scorpion genera, where he indeed planned to be one of the authors: "*Olivierus* (n. gen. to be described by Farzanpay & Vachon)," "*Razianus* (n. gen. to be described by Vachon & Farzanpay)," and "*Sassanidothus* (n. gen. to be described by Farzanpay & Vachon)". In the introduction, he wrote (Farzanpay, 1988: 34): "The new creations are based on the co-operation and suggestion of Professor Max Vachon of the Muséum national d'Histoire naturelle in Paris as agreed by personal communication....(letter August 30, 1984)". However, again inadvertently, Farzanpay (1987) published descriptions of *Olivierus*, *Razianus*, and *Sassanidothus* in his book, in Farsi with the Latin names listed in the Index. The genus *Olivierus* was recently synonymized with *Mesobuthus* Vachon, 1950 by Gantenbein et al. (2003). The name *Razianus*, on the contrary, happens to be valid under Farzanpay's authorship, and is the senior synonym of *Neohemibuthus* Lourenço, 1996 (Fet & Lowe, 2000: 216; see also Fet, 1997). The validity of *Sassanidothus* is being currently studied (Kovařík & Fet, in progress).

There is no evidence that Vachon was aware that descriptions of four new genera and one new species were published by Farzanpay (1987). No further descriptions of any of these genera by Vachon appeared until Vachon's death in 1992. The genus *Simonoides* and species *Simonoides farzanpayi* were never revised. These taxa were considered valid by Fet & Lowe (2000), as well as *Olivierus*, *Razianus*, and *Sassanidothus*. The authorship of the three latter genera, however, was assigned only to Farzanpay (1987) by Fet & Lowe (2000: 189, 216, 222) since they did not think that Vachon was responsible for the descriptions (quite incomplete and inadequate) as published by Farzanpay (1987). At the same time, Fet & Lowe (2000: 223) decided to assign

the joint authorship of *Simonoides* and *Simonoides farzanpayi* to Vachon and Farzanpay, to avoid creation of a taxon both named after Farzanpay and described by him. In general, we do not think that posthumous authorship assignment is a good practice unless it can be proved that the deceased author indeed prepared a description ready for publication.

The series of NMW specimens considered here to be the types of *Simonoides farzanpayi* does *not* bear any label with the Latin names of this genus or species. They, however, match the information contained in the Farsi description of Farzanpay (1987) in both locality (north of Bandar-e-Abbas) and type series size (three specimens). The description also mentions one specimen that is deposited in NMW (other two specimens presumably were loaned to Vachon), and the photograph given in Farzanpay (1987) matches the habitus and coloration of NMW specimens. As the label shows (Fig. 3), this series of three specimens was indeed analyzed by Vachon in 1977. These specimens were evidently collected during the NMW exedition to Iran in March 1972, since the date of their collection (March 22) closely matches the date of collection of another specimen of the same species (NMW No. 3400) by G. Pretzmann on March 21. Moreover, the handrwiting on the March 22 label (Fig. 3), likely belongs to K. Bilek, the collector for the same expedition (J. Gruber, pers. comm. to V.F., February 2006). No other similar specimens from Bandar-e-Abbas could be found in NMW or in Vachon's collection in MNHN (C. Rollard, pers. comm. to V.F., November 2005). We are confident therefore that the NMW series represents syntypes of *Simonoides farzanpayi*. Our attempts to locate and contact Dr. Farzanpay to confirm this information proved unsuccessful. Using all the evidence listed above, we therefore treated NMW specimens as syntypes of *Simonoides farzanpayi*, and designated one of them as the lectotype.

Another confusion in this issue was a description of a new genus *Paraorthochirus* Lourenço & Vachon, 1997 (Vachon was included by Lourenço posthumously as a co-author), species of which are also found in the south of Iran, near Bandar-e-Abbas (Lourenço & Vachon, 1997; see also Fig. 9). According to a personal communication from W. R. Lourenço to V.F. (February 1996), *Paraorthochirus* could be the genus Vachon intended to call *Simonoides*. If these genera were indeed synonyms, then *Simonoides* would be the senior synonym (as mentioned in Fet & Lowe, 2000: 212, 223). However, according to the current diagnosis of *Paraorthochirus* Lourenço & Vachon, 1997, it differs from *Orthochirus* only by presence of trichobothrium d_2 on pedipalp femur (which is absent in *Orthochirus*; Kovařík, 2004: 25). Thus, NMW specimens belong to *Orthochirus*, and *Simonoides* is the junior synonym of the latter.

At the time of the description of *Orthochirus sobotniki* Kovařík, 2004, the taxonomic position of the genus *Simonoides* was not clear, and for that reason *Orthochirus sobotniki* Kovařík, 2004 was compared only with other species of *Orthochirus*. Its synonymy with *Simonoides farzanpayi* could be recognized only during our recent examination of the Iranian material from NMW (see Figs. 1–2).

***Orthochirus gruberi* sp. n.**

(Figs. 4–6, Table 1)

Type locality and type repository. **Iran**, near Ğoupār, 30°08' N, 57°09' E (FKCP).
Type material. **Iran**, near Ğoupār, 30°08' N, 57°09' E, April 2004, 1♀ (holotype), coll. R. Demis (FKCP).
Other material. None.

Etymology. Named after Dr. Jürgen Gruber of the Naturhistorisches Museum Wien, who helped us resolve the taxonomic status of the genus *Simonoides*.

Diagnosis: Metasomal segments IV and V ventrally punctate and without carinae. Spaces among punctae smooth, without granules. Entire pedipalp, metasoma, and telson hirsute. Dorsal surface of all metasomal segments mesially smooth, without granules. Mesosoma, metasoma, femur and patella of pedipalps black, telson reddish brown to black, femur and patella of legs and chela of pedipalps yellowish green, tibiae of legs yellow to yellowish green. Movable fingers of pedipalps bear 7 rows of granules with internal and external granules and 2 distal granules. Tarsomere I of legs I to III with bristlecombs, legs IV without bristlecombs. Pectinal teeth number 20.

Description: The adult female holotype is 37.5 mm long. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For habitus see Figs. 4 and 5. The distance between trichobothria d_1 and d_3 on the femur of pedipalp approximately equals that between d_3 and d_4; trichobothrium e_1 is situated between d_3 and d_4.

Coloration: Mesosoma, metasoma, femur and patella of pedipalps black, telson reddish brown to black, femur and patella of legs and chela of pedipalps yellowish green, tibiae of legs yellow to yellowish green. The seventh sternite is black, other sternites are yellowish green.

Mesosoma and carapace: The mesosoma bears a median carina and is densely granulated. The carapace is densely granulated, only the interocular triangle is smooth. The sternite VII bears four granulated carinae, the other sternites are smooth. Pectinal teeth number 20.

Figure 4: *Orthochirus gruberi* **sp. n**., female holotype, dorsal aspect.

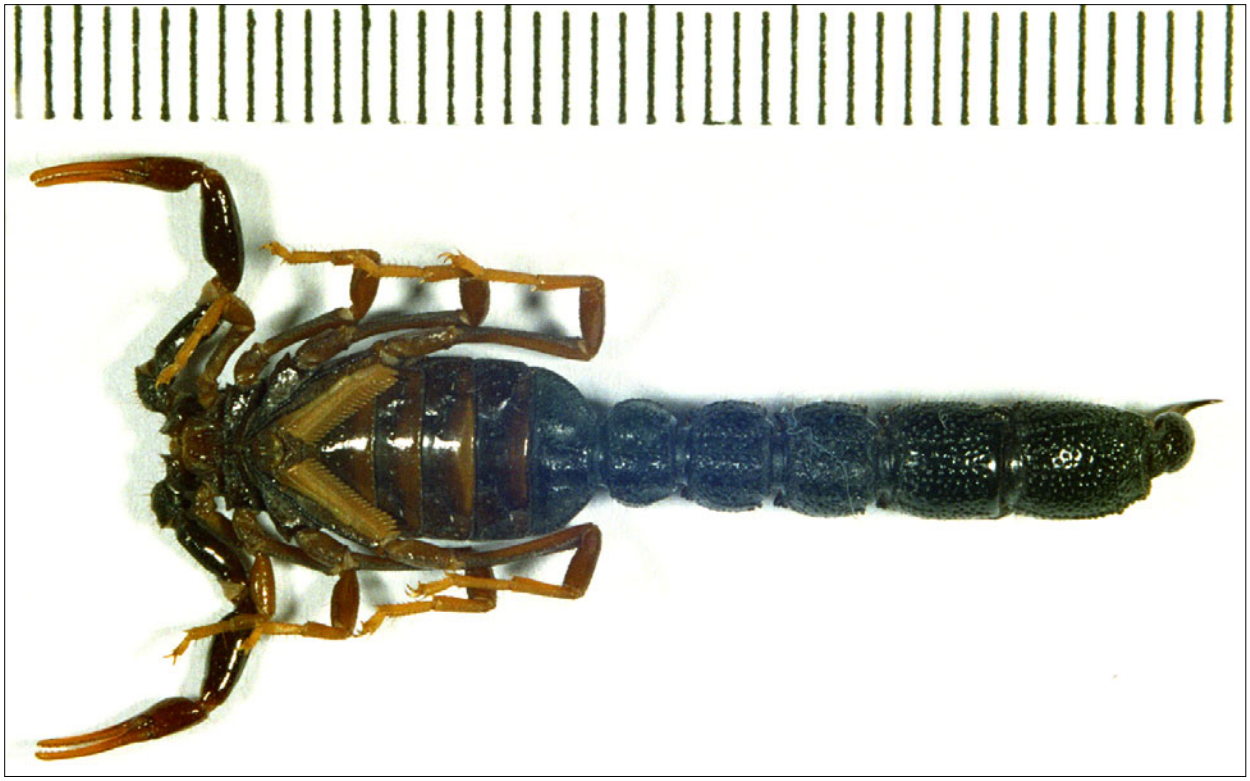

Figure 5: *Orthochirus gruberi* **sp. n**., female holotype, ventral aspect.

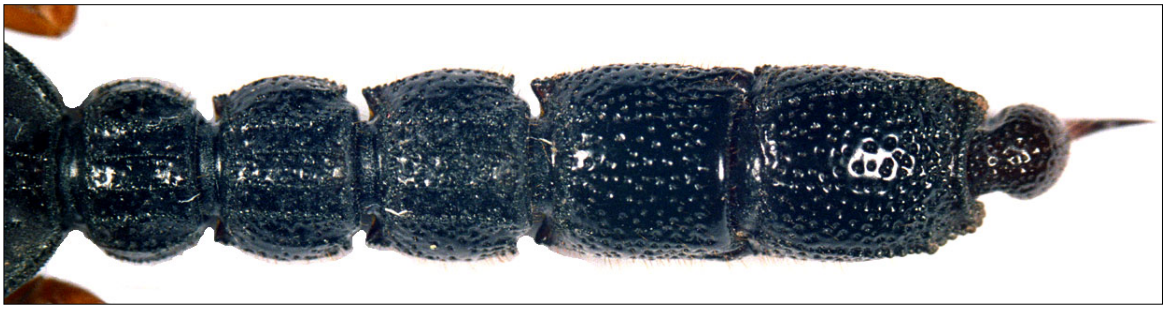

Figure 6: *Orthochirus gruberi* **sp. n**., female holotype, metasoma, ventral aspect.

		Orthochirus gruberi **sp. n.** ♀ **holotype**
Total	**length**	37.5
Carapace	**length**	4.1
	width	5.2
Metasoma		
and telson	**length**	22.5
segment I	**length**	2.4
	width	3.8
segment II	**length**	2.9
	width	3.9
segment III	**length**	3.5
	width	4.0
segment IV	**length**	4.4
	width	4.1
segment V	**length**	4.8
	width	4.1
telson	**length**	4.5
Pedipalp		
femur	**length**	3.3
	width	1.0
patella	**length**	4.2
	width	1.3
chela	**length**	5.2
	width	1.2
finger mov.	**length**	3.2
Pectinal teeth		20:20

Table 1: Measurements (in millimeters) of female holotype of *Orthochirus gruberi* sp. n.

Metasoma and telson: The segment I bears 10 granulated carinae. The segments II and III lack lateral carinae, the segment IV bears only dorsal carinae, and the segment V bears dorsal carinae and two incomplete ventrolateral carinae present only in the posterior half and composed of large teeth. All segments are smooth and punctated. Punctation is weak on segments I to III, and better developed on segments IV and V (Fig. 6). Spaces among punctae are smooth. The dorsal surface of all segments is mesially smooth except for several tubercles along dorsolateral carinae. The entire metasoma and telson are hirsute. The telson is punctate and lacks granules.

Pedipalps: The femur of pedipalp bears four smooth carinae. The patella has seven smooth carinae, and the chela has smooth carinae which may be discernible throughout the length of the fixed finger. The entire pedipalps are hirsute. The movable fingers bear 7 rows of granules with external and internal granules and two distal granules.

Legs: The femur bears four granulated carinae, the patella bears five carinae, and the tibia is smooth. The patella bears only a few solitary hairs and spines. The tibia bears several spines, namely on the outer side where they form two rows. Tarsomere I of legs I to III bears bristlecombs composed of 5–8 bristles each, legs IV lack bristlecombs.

Affinities: The described features distinguish *Orthochirus gruberi* sp. n. from all other species of the genus. *O. gruberi* sp. n. is close to *O. zagrosensis* Kovařík, 2004, from which it differs chiefly in the hirsuteness of the metasoma and telson and presence of 7 rows of granules on the movable fingers of pedipalps, *O. zagrosensis* having 8 or 9 rows.

Combination of the eight characters (and of characters 1 and 3 alone) presented in Table 2 allows to reliably distinguish all Asian species of *Orthochirus* from *O. gruberi* sp. n.

The following species, which we have not had an opportunity to examine, cannot be placed in the key (Tab. 2): *Orthochirus danielleae* (Lourenço et Vachon, 1997), *Orthochirus erardi* (Lourenço et Vachon, 1997), and *Orthochirus monodi* (Lourenço et Vachon, 1997). Of these, only *Orthochirus danielleae* shares hirsute telson with *O. gruberi* sp. n. According to the very brief description of *O. danielleae*, it has 18 pectinal teeth and is known from Afghanistan (see Lourenço & Vachon, 1997: 334); since types were not available for the study, we cannot unequivocally determine at this moment if the two are synonymous or not.

Figure 7: *Orthochirus zagrosensis* Kovařík, 2004, male holotype, dorsal aspect.

Figure 8: *Orthochirus zagrosensis* Kovařík, 2004, male from NMW, dorsal aspect.

Characters and geographic distribution	12345678	Af	In	Ir	Iq	Ka	Ta	Tu	Uz	Pa
Orthochirus afghanus Kovařík, 2004	11110001	x	–	–	–	–	–	–	–	–
Orthochirus bicolor (Pocock, 1897)	11110111	?	x	–	–	–	–	–	–	?
Orthochirus farzanpayi (Vachon & Farzanpay, 1987)	10110001	–	–	x	–	–	–	–	–	–
Orthochirus feti Kovařík, 2004	01010001	–	–	–	–	–	–	–	x	–
Orthochirus flavescens (Pocock, 1897)	12110111	?	x	–	–	–	–	–	–	?
Orthochirus fuscipes (Pocock, 1900)	11110021	–	–	x	–	–	–	–	–	x
Orthochirus gromovi Kovařík, 2004	01010001	–	–	–	–	–	–	x	–	–
Orthochirus gruberi **sp. n.**	11010001	–	–	x	–	–	–	–	–	–
Orthochirus heratensis Kovařík, 2004	01010001	x	–	–	–	–	–	–	–	–
Orthochirus iranus Kovařík, 2004	12112011	–	–	x	–	–	–	–	–	–
Orthochirus iraqus Kovařík, 2004	11110001	–	–	–	x	–	–	–	–	–
Orthochirus jalalabadensis Kovařík, 2004	11111002	x	–	–	–	–	–	–	–	–
Orthochirus pallidus (Pocock, 1897)	1?101000	x	x	–	–	–	–	–	–	x
Orthochirus samrchelsis Kovařík, 2004	10110001	x	–	–	–	–	–	–	–	–
Orthochirus scrobiculosus (Grube, 1873)	01110001	x	?	x	?	x	x	x	x	?
Orthochirus varius Kovařík, 2004	12110000	–	–	x	–	–	–	–	–	–
Orthochirus zagrosensis Kovařík, 2004	11110001	–	–	x	–	–	–	–	–	–

Characters:

1 - Rows of granules on movable fingers of pedipalps with external granules.
2 - Tarsi of first to third legs with bristlecombs.
3 - Entire telson glabrous (short, thin setae may originate from some punctae).
4 - Metasomal segments IV and V in adults ventrally without median carinae.
5 - Spaces among punctae on ventral surface of metasomal segments IV and V granulated in adults.
6 - Dorsal surface of metasomal segment IV mesially densely granulated.
7 - Dorsal surface of metasomal segment V mesially densely granulated.
8 - Metasomal segments IV and V of adults strongly punctate, punctation to some extent discernible also on segment III.

Explanatory notes: **1** = yes, **0** = no, **2** = character may be variable or related to sexual dimorphism; **Af** = Afghanistan, **In** = India, **Ir** = Iran, **Iq** = Iraq, **Ka** = Kazakhstan, **Ta** = Tajikistan, **Tu** = Turkmenistan, **Uz** = Uzbekistan, **Pa** = Pakistan.

Table 2: Key to Asian species of *Orthochirus*.

Other revised specimens of Iranian *Orthochirus* deposited in the Naturhistorisches Museum Wien (NMW):

Orthochirus scrobiculosus (Grube, 1873)

Iran, Astrabad, 3♀2♂, No. 2438 (NMW).

Orthochirus zagrosensis Kovařík, 2004

Iran, Pass 115 km SW Kerman, 10.IV.1970, 1♀, No. 3399, leg. Pretzmann et Ressl (NMW); Farzanpay det. as *O. scrobiculosus* (see Farzanpay & Pretzmann, 1974: 216); Pass 160 km NO Shiraz, 20.IV.1970, 1♂, No. 3398, leg. Pretzmann et Bilek (NMW); Farzanpay det. as *O. scrobiculosus* (see Farzanpay & Pretzmann, 1974: 216).

Comments: The latter specimen (No. 3398) differs from the types of *O. zagrosensis* in coloration of the femur and patella of legs, which are yellow. However, the color of the pedipalps agrees with the types (Figs. 7 and 8) and also all other characters support the species identity. Taking into account the color variation known to occur in the genus (see Kovařík, 2004: 28), we are satisfied that the specimen is *O. zagrosensis*.

Acknowledgments

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Figure 9: *Paraorthochirus* cf. *stockwelli* Lourenço & Vachon, 1997 (Iran, Hormozgan Province, 12 km W Faryab, NE Bandar-e-Abbas, 27–28 April 2002, coll. M. Johanides, FKCP).

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