

## **Taxonomic consideration of the genus *Odontobuthus* Vachon (Scorpiones, Buthidae), with description of a new species <sup>1</sup>**

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**Taxonomic consideration of the genus *Odontobuthus* Vachon (Scorpiones, Buthidae), with description of a new species.** - The two species of the genus *Odontobuthus* Vachon known at present are reassessed and considered to be valid. A new species, *Odontobuthus bidentatus* sp. n. is described from Iraq and from the region of Borazdjan, southern Iran. Some comments on the geographical distribution of the genus are added and a key to its species is provided.

**Key-words:** Scorpions - *Odontobuthus* - Iraq - new species - geographical distribution.

### **INTRODUCTION**

The genus *Odontobuthus* was introduced by Vachon in 1950. Its type species, *Buthus doriae* Thorell, 1876, was originally described from Teheran. Since its establishment, *Odontobuthus* has been thought to consist of only two species, *O. doriae*, distributed in Iran and Iraq, and *Odontobuthus odonturus* (Pocock, 1897) from Kelat Frontier, Sind (before in India, now in Pakistan). The genus is presumably distributed throughout India, Pakistan, Iran and Oman (Fet & Lowe, 2000).

For some time, the validity of these two species has been questioned. After describing *O. odonturus* (under *Buthus odonturus*) in 1897, Pocock changed his mind and, in his Fauna of India (Pocock, 1900), considered it to be only a sub-species of *B. doriae*, *B. doriae odonturus* (= *Odontobuthus doriae odonturus*). This opinion was retained by others authors, including Takashima (1945). More recently, in their new version of the Fauna of India, Tikader and Bastawade (1983) redescribed Pocock's holotype under *O. doriae odonturus* and suggested that the genus might be monotypic. Finally Kovarik (1997) listed both species and justified their validity on the basis of the different number of lateral lobes on the metasomal segment V.

Because of various imprecisions in the diagnosis both of the genus and of the species, and also doubts about their precise geographical distribution (see Fet & Lowe, 2000), we decided to investigate the large collection of *Odontobuthus* available in the Paris Museum, together with several specimens now deposited in the Geneva

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Museum. We concluded that the two species in this genus are valid and can be justified by more than the single character given by Kovarik (1997). Furthermore, some specimens from Iraq and from the south of Iran were found to represent a new congeneric species, which is described below. The geographical distribution of *O. doriae* is probably limited to Iran, whereas the presence of *O. odonturus* in Iran still requires confirmation. The records by Vachon (1966), Habibi (1971), and Farzanpay (1988) are most certainly based on misidentifications. Revised diagnoses are given for the genus and for the two known species, followed by a description of the new species. A key is also provided for the three species.

Abbreviations: MHNG. Muséum d'histoire naturelle, Genève. MNHN. Muséum National d'Histoire Naturelle, Paris. NHMW. Naturhistorisches Museum, Wien.

## TAXONOMIC TREATMENT

### *Odontobuthus* Vachon, 1950

Type species by original designation: *Buthus doriae* Thorell.

*Diagnosis:* Scorpions of small to medium size, ranging from 40 to 70 mm in total length. General coloration yellow to pale yellow. Dentate margins of fixed and movable fingers with 10 to 14 oblique rows of granules separated by stronger accessory granules. Carapace carinae strong, showing a lyre-shaped configuration. Tergites tricarinated. Ventral carinae of metasomal segments II-III and ventral transverse carina of segment IV armed with very strong teeth. Ventrolateral carinae of metasomal segment V with several strong lobated granules. Anal arch composed of strong lateral lobes and more reduced ventral lobes. Trichobothriotaxy type A-β.

### *Odontobuthus doriae* (Thorell)

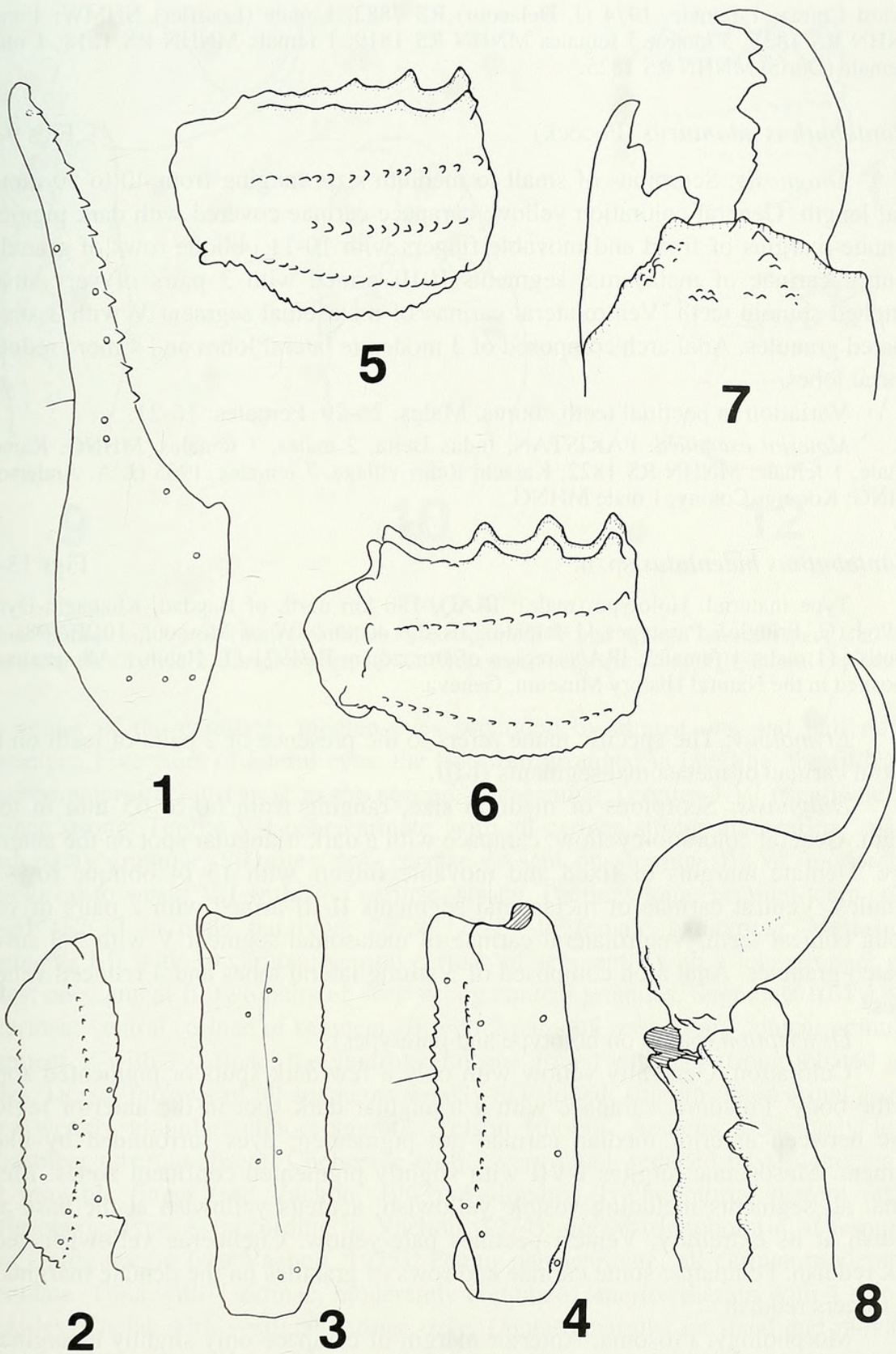
Figs 1-8

*Diagnosis:* Scorpions of medium size, ranging from 65 to 70 mm in total length. General coloration yellow to pale yellow. Dentate margins of fixed and movable fingers with 13-14 oblique rows of granules. Ventral carinae of metasomal segments II-III armed with 3 pairs of very strong conical teeth. Ventrolateral carinae of metasomal segment V with 4-5 strong lobated granules. Anal arch composed of 2 strong lateral lobes and 6 more reduced ventral lobes.

Variation in pectinal teeth counts. Males: 27-35. Females: 18-24.

*Material examined:* IRAN, Borudjerd, 1 male (T. Habibi) MNHN RS 4667; Cazvin, 1 male, 1 female, 1971 (T. Habibi) MHNG; Karady, 1 male, 1 female, 1971 (T. Habibi) MHNG; Kashan, 1 female (T. Habibi) MNHN RS 4669, 2 males, 4 females, MNHN RS 1824, 1 female, MNHN RS 1823, 4 males, 13 females (A. Chabaud) MNHN RS 1828, 2 males, 22 females (A. Chabaud) MNHN RS 1827, 3 males, 2 females (A. Chabaud) MNHN RS 1826, 5 males, 12 females (A. Chabaud) MNHN RS 4645, 6 males, 16 females (A. Chabaud) MNHN RS 4646; Region of Teheran, 4 males, 5 females, 1974 (Farzanpay) MHNG; Rezayeh, 1 female (T. Fatemi) MNHN RS 4341; Teheran, 2 males, 2 females (T. Habibi) MHNG; 1 female (T. Fatemi) MNHN RS 4403; 20 km NW of Kashan toward Quom, 1 female, 1974 (J. Delacour) MNHN RS 7884; 132 km NW of Rafsanjam, 114 km SE of Yazd, 1 female (J. Garzoni, A. de Chambrier); 100 km SE of Esfahan, after Shiraz, 1 male, 1974 (J. Delacour) MNHN RS 7883; 70 km W of Sirjan toward Chiraz, 1 female, 1974 (J. Delacour) MNHN RS 7881; 100 km NW of Sirjan toward Kerman, 1 male, 3 females, 1974 (J. Delacour) RS 7880; 130 km W of Sirjan





FIGS 1-8

*Odontobuthus doriae* (female). 1-4. Trichobothrial pattern. 1. Chela, external aspect. 2. Femur, dorsal aspect. 3-4. Tibia, external and dorsal aspects. 5-6. Metasomal segments II and III, lateral aspect. 7. Chelicera, dorsal aspect. 8. Metasomal segment V and telson, lateral aspect, showing anal arch.



toward Chiraz, 1 female, 1974 (J. Delacour) RS 7882; 1 male (Loeffler) NHMW; 1 male MNHN RS 1821; 3 males, 3 females MNHN RS 1819; 1 female MNHN RS 1818; 1 male, 1 female (Doria) MNHN RS 1825.

***Odontobuthus odonturus* (Pocock)**

Figs 9-12

*Diagnosis:* Scorpions of small to medium size, ranging from 40 to 50 mm in total length. General coloration yellow; carapace carinae covered with dark pigment. Dentate margins of fixed and movable fingers with 10-11 oblique rows of granules. Ventral carinae of metasomal segments II-III armed with 3 pairs of very strong flattened spinoid teeth. Ventrolateral carinae of metasomal segment V with 3 strong lobated granules. Anal arch composed of 3 moderate lateral lobes and 4 more reduced ventral lobes.

Variation in pectinal teeth counts. Males: 26-29. Females: 16-21.

*Material examined:* PAKISTAN, Indus Delta, 2 males, 7 females, MHNG; Karachi 1 male, 1 female, MNHN RS 1822; Karachi Rehri village, 7 females, 1965 (J. A. Anderson), MHNG; Korangi-Colony, 1 male MHNG.

***Odontobuthus bidentatus* sp. n.**

Figs 13-26

Type material. Holotype (male): IRAQ, 180 km north of Bagdad, Khanagin-Dyala, II/1964 (G. Pringle). Paratypes (1 female): IRAQ, 40 km SW of Mossoul, 10/XI/1981 (B. Moutis). (1 male, 1 female): IRAN, region of Borazdjan, III/1971 (T. Habibi). All specimens deposited in the Natural History Museum, Geneva.

*Etymology:* The specific name refers to the presence of 2 pairs of teeth on the ventral carinae of metasomal segments II-III.

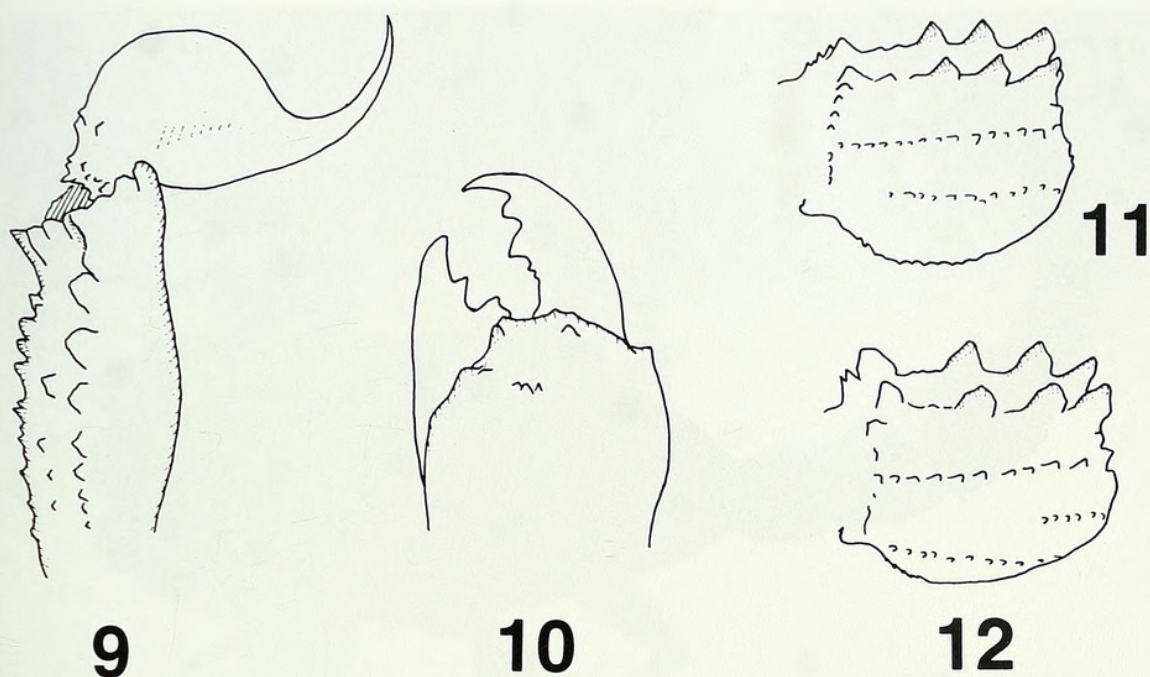
*Diagnosis:* Scorpions of medium size, ranging from 60 to 65 mm in total length. General coloration yellow; carapace with a dark triangular spot on the anterior edge. Dentate margins of fixed and movable fingers with 13-14 oblique rows of granules. Ventral carinae of metasomal segments II-III armed with 2 pairs of very strong conical teeth. Ventrolateral carinae of metasomal segment V with 2-3 strong lobated granules. Anal arch composed of 3 strong lateral lobes and 4 reduced ventral lobes.

*Description* (based on holotype and paratypes):

Coloration. Generally yellow with only a few dark spots or pigmented zones on the body. Prosoma: carapace with a triangular dark spot in the anterior region; zone between anterior median carinae not pigmented; eyes surrounded by black pigment. Mesosoma: tergites I-VII with slightly pigmented confluent zones. Metasoma: all segments including vesicle yellowish; aculeus yellowish at the base and reddish at its extremity. Venter: pectines pale-yellow. Chelicerae yellowish; teeth dark reddish. Pedipalps: some carinae and rows of granules on the dentate margins of the fingers reddish.

Morphology. Prosoma: Anterior margin of carapace only slightly emarginate. Carapace carinae moderately to strongly developed; anterior median carinae strong; central lateral and posterior median carinae showing lyre configuration; central median carinae moderately developed. All furrows moderately developed to strong. Intercarinal spaces moderately to weakly granular. Median ocular tubercle anterior to





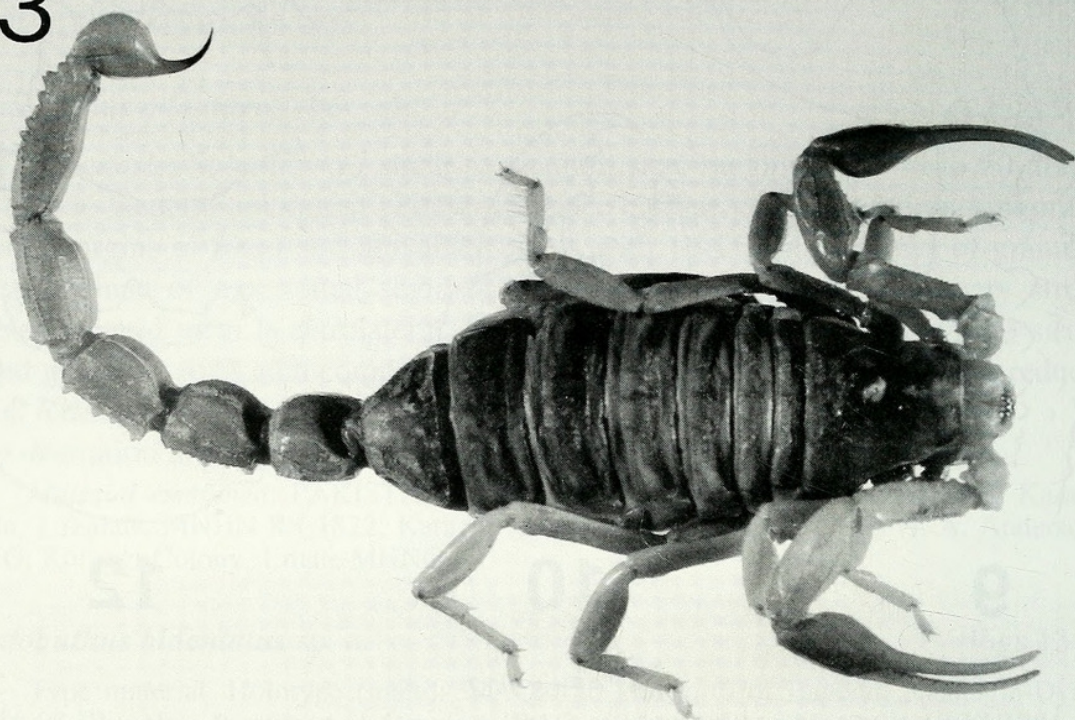
FIGS 9-12

*Odontobuthus odonturus* (male). 9. Metasomal segment V and telson, lateral aspect, showing anal arch. 10. Chelicera, dorsal aspect. 11-12. Metasomal segments II and III, lateral aspect.

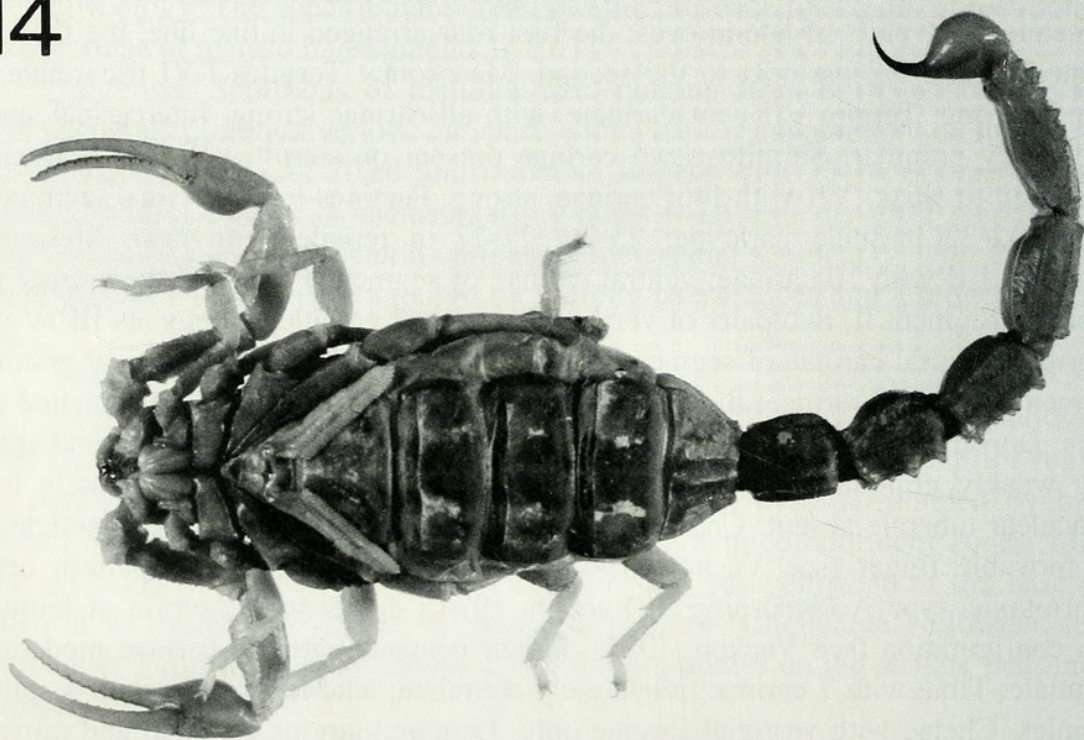
the center of the carapace; median eyes separated by almost one and half ocular diameters. Five pairs of lateral eyes; the first four arranged in one line, the fifth pair situated anteriorly, just next to the second. Mesosoma: Tergites I-VI tricarinate; all carinae strong. Tergite VII pentacarinata, with all carinae strong. Intercarinal spaces moderately granular. Sternites: two carinae present on sternites III-VI, moderately developed to weak; VII with four carinae, strong. Pectines long; pectinal teeth count 32-31 (32-32 in male paratype; 25-26, 27-27 in female paratypes). Metasoma: Segments I-II with 10 carinae; ventral carinae of segment I with a few stronger granules; on segment II, two pairs of very strong conical granules. Segments III-IV with 8 carinae; ventral carinae of segment III with 2 pairs of very strong conical granules. Segment V with 7 carinae; the ventrolateral one armed with 2-3 strong lobated granules. Dorsal furrows of all segments weakly developed, smooth; intercarinal spaces very weakly granular, almost smooth. Telson smooth. Aculeus moderately long; subaculear tubercle absent. Chelicerae with 2 very much reduced basal denticles on the movable finger (see Vachon, 1963). Pedipalps: Trichobothrial pattern orthobothriotaxic, type A (according to Vachon, 1974); dorsal trichobothria of femur in beta configuration (see Vachon, 1975). Femur pentacarinata; all carinae moderately crenulate. Tibia with 7 carinae, moderately crenulate; anterior margin with 4 spinoid granules. Chelae with vestigial carinae only. Dentate margins on fixed and movable fingers composed of 13-14 oblique rows of granules, separated by stronger accessory granules. Legs: Ventral aspect of tarsi with numerous thin long setae. Strong tibial spurs present on legs III-IV. Pedal spurs present, moderately developed to strong on all legs.



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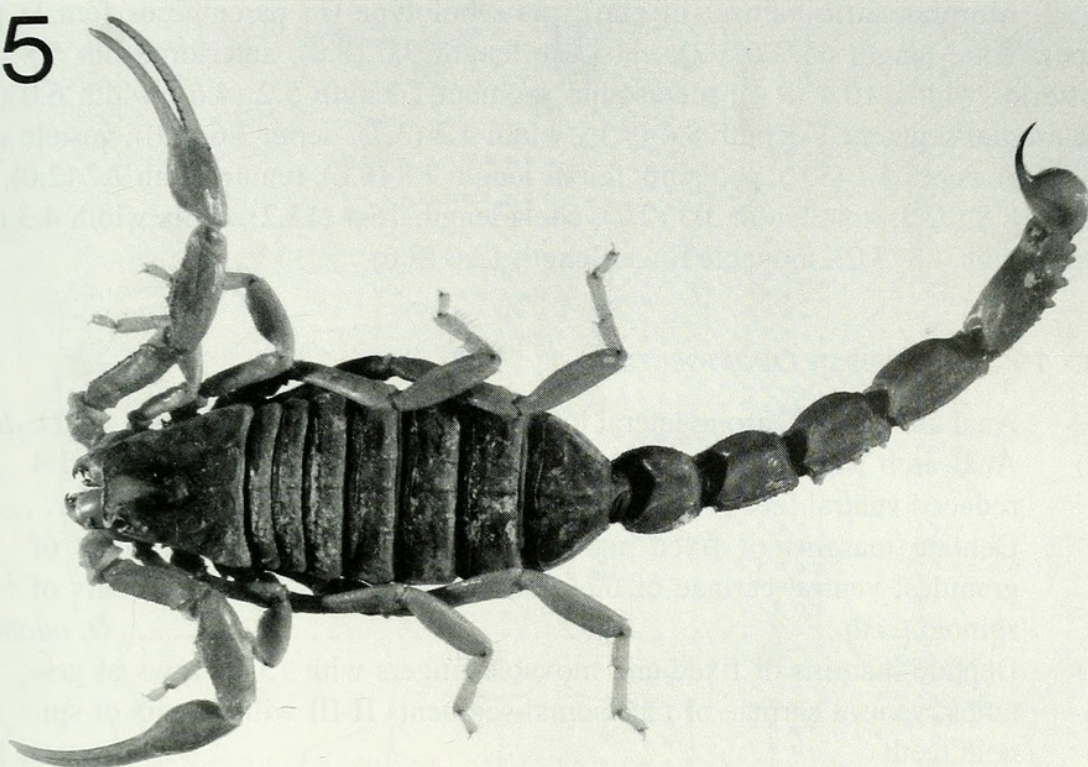


FIGS 13-14

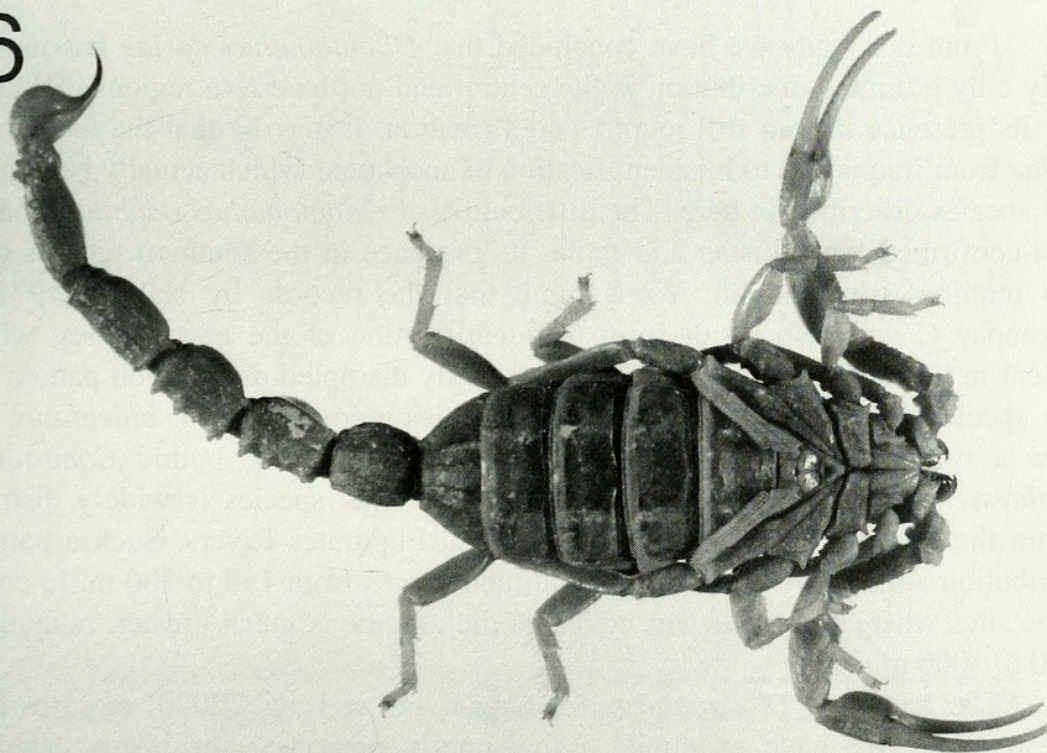
*Odontobuthus bidentatus* sp. n., male paratype, dorsal and ventral aspects (photos by Cl. Ratton, MHNG).



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FIGS 15-16

*Odontobuthus bidentatus* sp. n., female paratype, dorsal and ventral aspects (photos by Cl. Ratton, MHNG).



Morphometric values (in mm): male holotype (in parentheses female paratype). Total length 65.7 (61.2); carapace length 9.0 (8.0), anterior width 5.8 (5.2), posterior width, 10.4 (9.4); metasomal segment I length 5.2 (4.6), width 6.0 (5.2); metasomal segment V length 8.6 (7.1), width 4.2 (3.7), depth 3.6 (3.0); vesicle width 4.0 (3.6), depth 4.1 (3.6); pedipalp: femur length 7.8 (6.2), femur width 2.2 (2.0), tibia length 8.8 (7.2), tibia width 3.2 (2.7), chela length 16.4 (13.2), chela width 4.3 (2.5), chela depth 4.8 (3.2), movable finger length 12.0 (9.6).

#### KEY TO THE SPECIES OF *ODONTOBUTHUS*

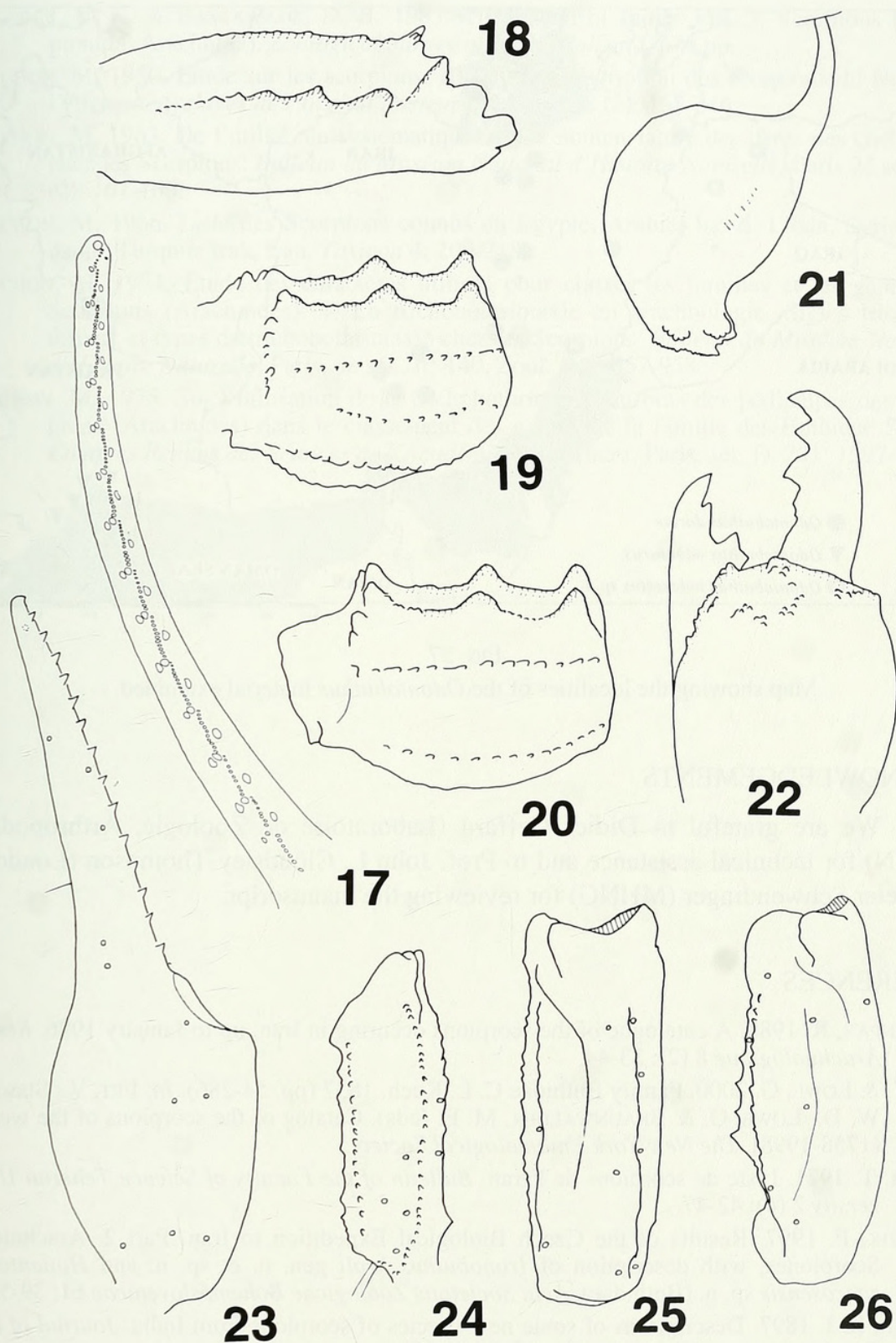
- 1      Anal arch with 2 strong lateral lobes and 6 reduced ventral lobes . . . *O. doriae*
- (1)    Anal arch with 3 strong or moderately developed lateral lobes and 4 reduced ventral lobes . . . . . 2
- 2      Dentate margins of fixed and movable fingers with 10-11 rows of granules; ventral carinae of metasomal segments II-III with 3 pairs of spinoid teeth . . . . . *O. odonturus*
- (2)    Dentate margins of fixed and movable fingers with 13-14 rows of granules; ventral carinae of metasomal segments II-III with 2 pairs of spinoid teeth . . . . . *O. bidentatus* sp. n.

#### SOME COMMENTS ON THE GEOGRAPHICAL DISTRIBUTION OF THE SPECIES

From our study we have concluded that *Odontobuthus doriae* has most probably only a limited distribution in the central and northwestern regions of Iran (Fig. 27). Its presence in Iraq still requires confirmation. It may be that the records of *O. doriae* from Iraq is due to misidentification of specimens which actually belong to the new species described in here. The distribution of *Odontobuthus odonturus* has only been confirmed for Pakistan and India. Its presence in the southern regions of Iran also requires confirmation. We assume that the records by Habibi (1971) and Farzanpay (1988) also result from misidentification of the new species, which is present in the southwest of Iran. This apparently disrupted distribution pattern of the new species does not stand alone. The localities recorded for *O. bidentatus* sp. n., show a similar pattern of distribution as observed for the buthid *Compsobuthus matthiesseni* Birula by Sissom and Fet (1998). This species is widely distributed within the drainage systems of the Tigris and Euphrates Rivers. Such a pattern of distribution applies to sites where the altitude ranges from 150 to 200 m. In contrast, at the sites where *O. doriae* was collected the altitude is much greater, ranging from 1000 to 3000 m.

The record of *O. odonturus* for Oman (Fet & Lowe, 2000) requires further investigation. We have examined a few poorly preserved specimens, labeled *O. doriae*, from the MNHN collections, which are presumably collected in Oman by M. Maindron. These specimens originate from outside the known distribution of either *O. doriae* or *O. odonturus*. We therefore prefer to postpone a decision until more material from Oman becomes available.





FIGS 17-26

*Odontobuthus bidentatus* sp. n. (male holotype). 17. Movable finger, cutting edge. 18. Metasomal segment V, lateral aspect, showing anal arch. 19-20. Metasomal segments II and III, lateral aspect. 21. Telson, lateral aspect. 22. Chelicera, dorsal aspect. 23-26. Trichobothrial pattern. 23. Chela, external aspect. 24. Femur, dorsal aspect. 25-26. Tibia, external and dorsal aspects.



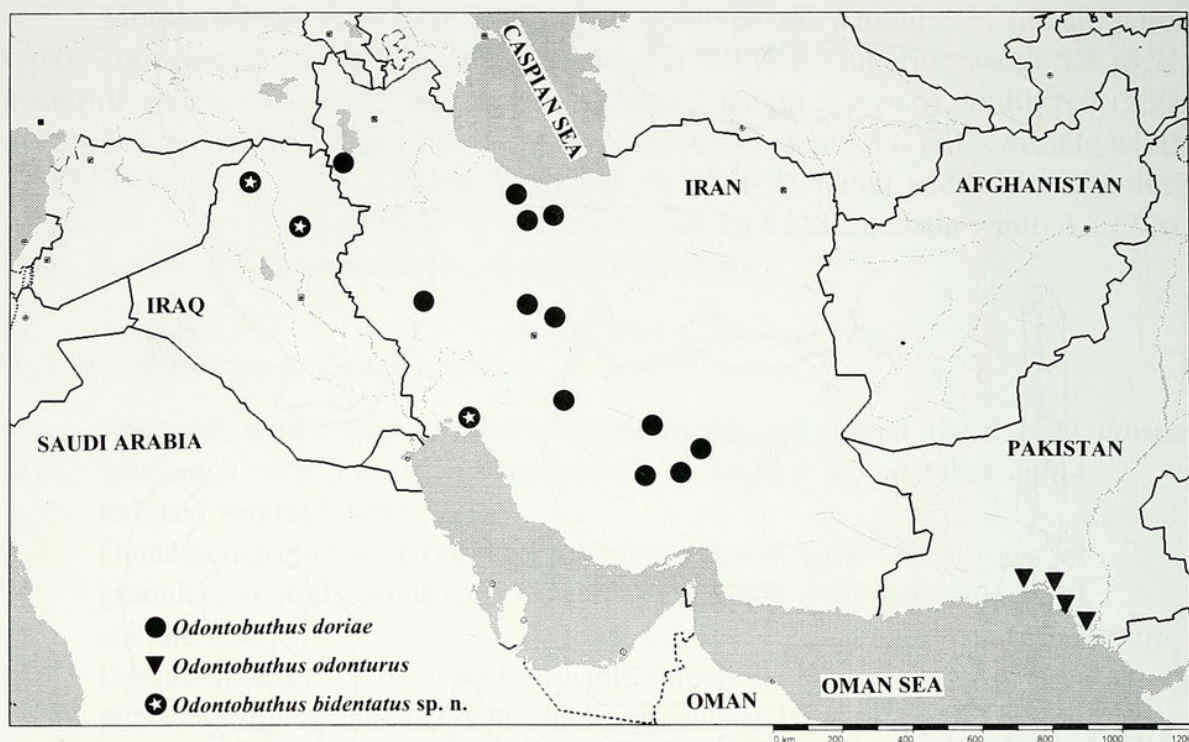


FIG. 27

Map showing the localities of the *Odontobuthus* material examined.

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