

ARTÍCULO:

New considerations on the North-western African species of *Buthacus Birula* (Scorpiones, Buthidae), and description of a new species

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ARTÍCULO:

NEW CONSIDERATIONS ON THE NORTHWESTERN AFRICAN SPECIES OF *BUTHACUS* BIRULA (SCORPIONES, BUTHIDAE), AND DESCRIPTION OF A NEW SPECIES

Wilson R. Lourenço

Abstract:

Considerations are proposed regarding the species of the genus *Buthacus* Birula occurring in North-western Africa. The existence of a "*leptochelys* complex" is once again discussed. Besides *B. leptochelys* itself, three other species from North-western Africa can be placed in this complex: *Buthacus occidentalis* Vachon, from Mauritania, *Buthacus zieglerei* Lourenço, from the central Atlas in Morocco, and *Buthacus huberi* Lourenço, from the extreme south of Mauritania. Another new species, also belonging to the "*leptochelys* complex" is described here from the SE region of Morocco.

Key words: Scorpiones, Buthidae, *Buthacus*, Africa.

Taxonomy: *Buthacus mahraouii* sp. n.

Nuevas consideraciones sobre las especies africanas noroccidentales de *Buthacus* Birula (Scorpiones, Buthidae) y descripción de una nueva especie

Resumen:

Se presentan diversas consideraciones sobre las especies del género *Buthacus* Birula, de distribución africana noroccidental. Se discute de nuevo la existencia de un "complejo *leptochelys*". Además de *B. leptochelys*, pueden incluirse otras tres especies del noroeste de África en este complejo: *Buthacus occidentalis* Vachon, de Mauritania, *Buthacus zieglerei* Lourenço, del Atlas central, en Marruecos, y *Buthacus huberi* Lourenço, del extremo sur de Mauritania. Se describe otra nueva especie, también perteneciente al "complejo *leptochelys*", de la región del SE de Marruecos.

Palabras clave: Scorpiones, Buthidae, *Buthacus*, África.

Taxonomía: *Buthacus mahraouii* sp. n.

Introduction

As already exposed in recent papers (Lourenço, 2000, 2001), the genus *Buthacus* was erected by Birula (1908) as a subgenus of *Buthus* Leach, having as type species *Buthus leptochelys* (Ehrenberg, 1829), described from Sinai (Palestine) as *Androctonus (Leiurus) leptochelys*. Since its creation, *Buthacus* has been considered to be a subgenus or a genus according to different authors. It was finally defined as a valid genus related to *Buthus* by Vachon (1949, 1952).

In his important study of the North African scorpions, Vachon (1949, 1952) discussed the very wide distribution of the genus *Buthacus*, which ranged from the Atlantic coastal region of Africa to Palestine. Today the known distribution of this genus is much wider, since a new species, *Buthacus striffleri* Lourenço (2004), has just been described from Afghanistan. Vachon also called the attention to the fact that it was impossible (back in 1952) to be sure about the precise composition of this genus. Vachon established, however, that four species could be diagnosed precisely within the genus *Buthacus*: *Buthacus foleyi* Vachon and *Buthacus villiersi* Vachon respectively from the south of Algeria and from Senegal, as well as *Buthacus leptochelys* and *Buthacus arenicola* Simon. He also drew attention to the fact that *leptochelys* and *arenicola* could represent two complexes of forms or subspecies. In his systematic remarks about *Buthacus arenicola*, and about *Buthacus leptochelys*, Vachon (1952) indicated his doubts about the real status of the different populations found in the North and Northwestern Africa, from Egypt to Mauritania and Morocco. He considered that several forms (or species) could well be present in the African range of distribution of the genus.

Levy and Amitai (1980), in their 'Fauna Palaestina' also attempted to divide the genus *Buthacus* in two groups mainly on basis of the structure of movable finger dentition. These authors also discussed about the difficulties for a precise definition of several forms, and stated as follow: "These groups could be further divided according to other characters, however, the definite position of several forms from North Africa is still uncertain".

In a paper on the scorpions of Mauritania, Vachon (1953), described a new sub-species, *Buthacus leptochelys occidentalis*, but he did not precisely indicated type specimens for it. He merely listed the studied material, from several localities in Mauritania: Fort Gouraud, Chinguetti, Akjoujt and Aïoun Lebgar. In his systematic remarks he also associated some specimens from the south of Morocco (Tiznit and Draa), which he referred to *B.l. occidentalis*, but with some hesitations as he cited: "Mais une fois encore, il nous faut insister sur les difficultés de classement des "formes" à l'intérieur d'une même espèce." At least part of the material was lost, since I was not able to examine the specimens from the south of Morocco.

The recent comparative study of an adult male collected in the central Atlas mountains in Morocco and of some specimens of *B. leptochelys occidentalis* deposited in the collections of the Natural History Museum in Paris, led to the description of a new species, *Buthacus zieglerti*, and to the promotion of *B. occidentalis* to the rank of species (Lourenço, 2000). Subsequently, another species, *Buthacus huberi* Lourenço, also associated with the *B. leptochelys*, was described from the south of Mauritania (Lourenço, 2001). The description of these two species, strongly suggests that Vachon's opinion was correct in the sense that *Buthacus leptochelys* represented in fact not one species but a complex of species.

At present another new species, also associated with the *Buthacus leptochelys* "complex", is described from the Sahara region in Morocco, near to the border with Algeria. The type locality of the new species is not too far from Beni Abbes in Algeria location where *B. leptochelys* is also distributed. This would suggest a sympatric or at least parapatric distribution of the two species.

***Buthacus mahraoui* sp. n.**

Figs. 1-10, 16, 18.

TYPE: Morocco, near to the border with Algeria (31° 46' N, 03° 09' W), northwest of Béni-Abbès and Igli, 20/V/1977 (P.M. Brignoli leg.). 1 male holotype. Deposited in the Museum national d'Histoire naturelle, Paris.

ETYMOLOGY: Patronym in honour of Dr. Lahcen Mahraoui, Paris, for his continuous interest in the Morocco biodiversity.

DIAGNOSIS: Scorpion of moderate size with a total length of 50 mm. General coloration yellowish without

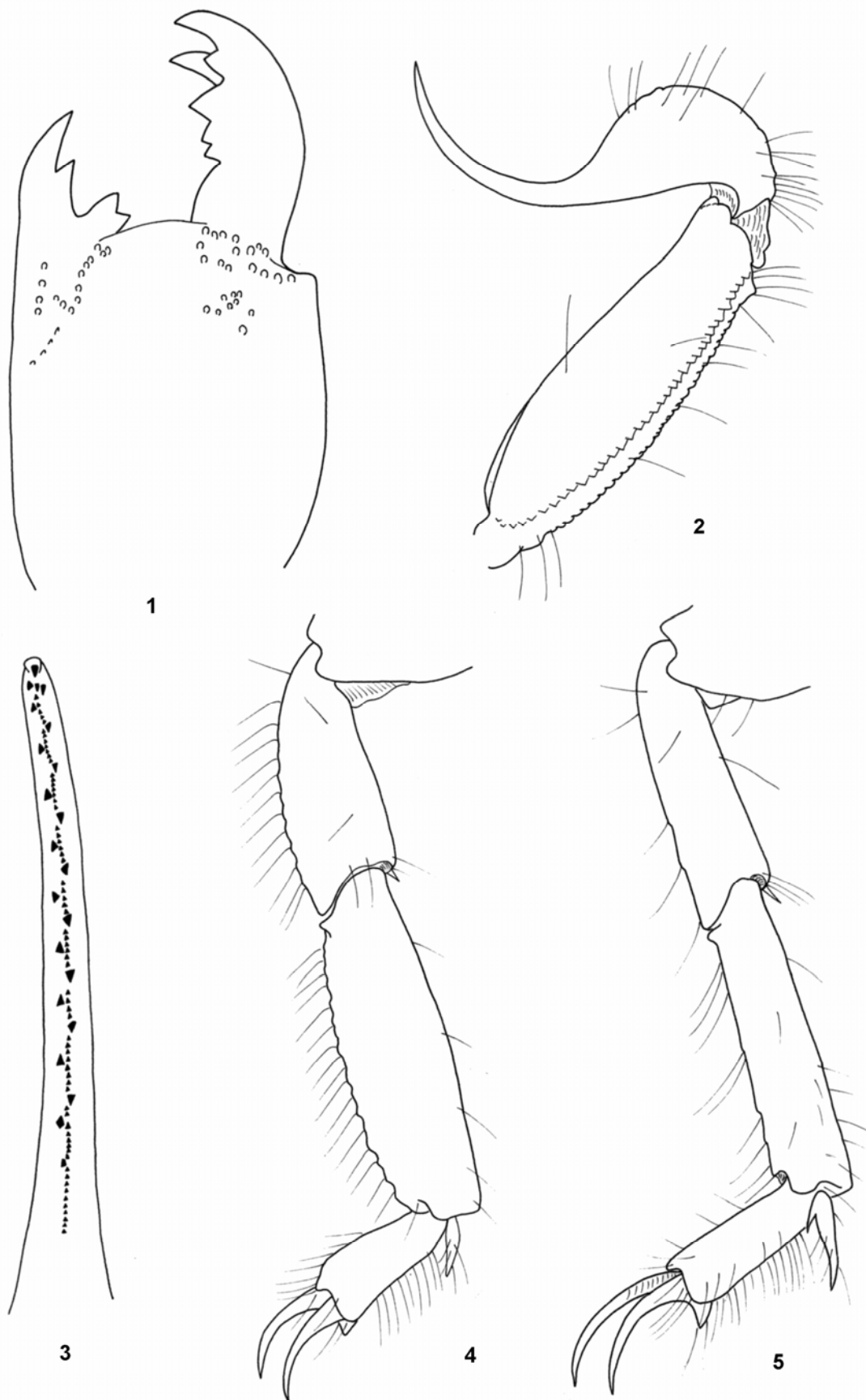
any spots. Pedipalps with 9-10 rows of granules on the fixed and movable fingers. Trichobothriotaxy A-β (beta) orthobothriotaxic. Lateral carinae on tergite VII with spiniform granules; dorsal and lateral carinae on metasomal segments I and II also with spiniform granules. Tibial spurs reduced on leg IV, vestigial on leg III. Pectinial tooth count 37-36.

DESCRIPTION BASED ON MALE HOLOTYPE.

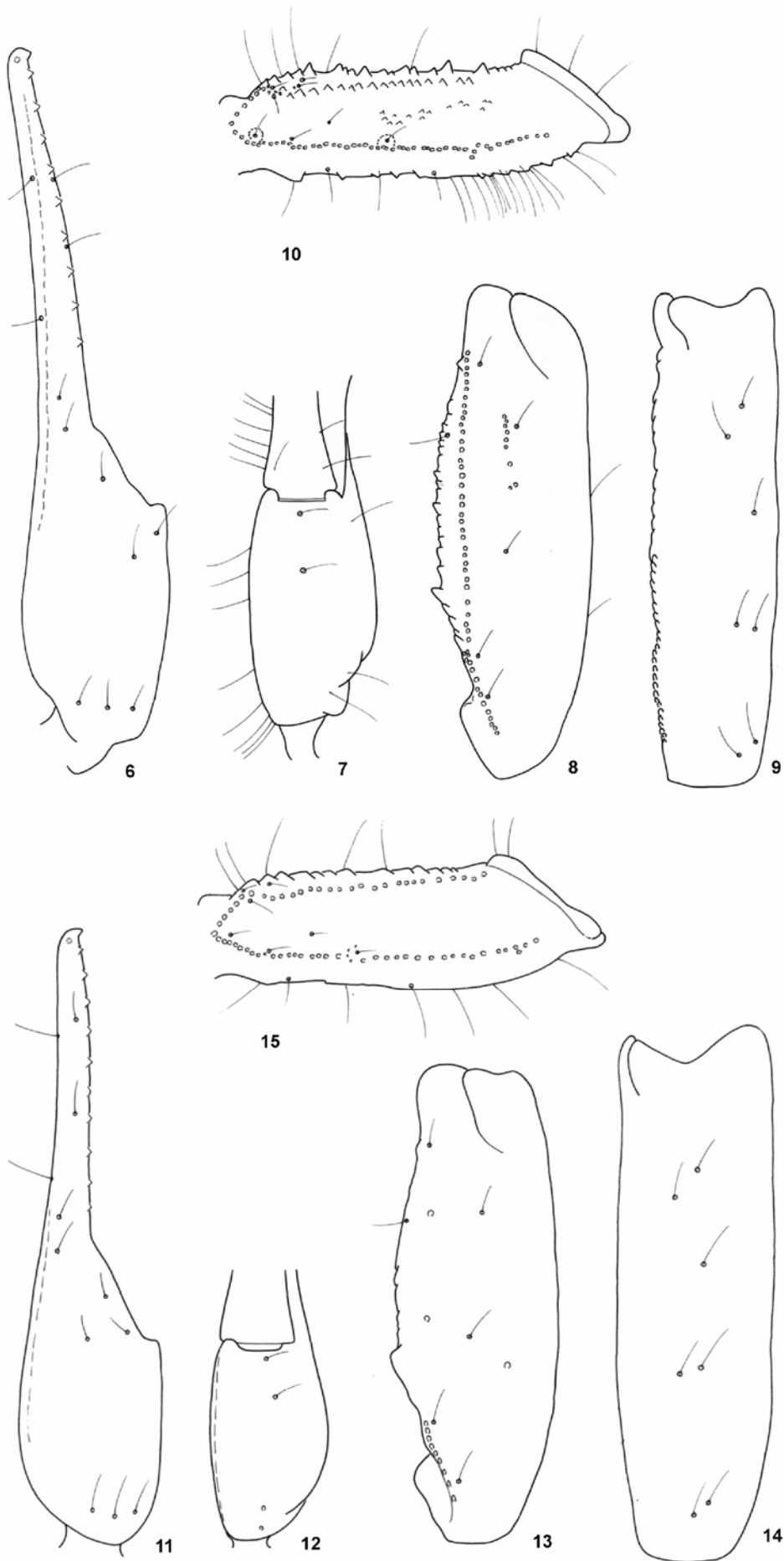
Morphometric measurements in Table I.

Coloration. Generally yellowish to pale yellow without any spots or pigmented zones on the body and its appendages. Prosoma: carapace yellowish; only the eyes surrounded by black pigment. Mesosoma: yellowish; tergites I-VI with a thin depigmented zone on the posterior edge. Metasoma: all segments yellowish. Vesicle yellowish; aculeus yellowish at the base and reddish at its extremity. Venter pale yellow. Chelicerae yellowish; teeth reddish. Pedipalps: yellowish overall; rows of granules on the dentate margins of the fingers reddish. Legs yellowish, paler than body.

Morphology. Prosoma: Anterior margin of carapace not emarginate, straight. Carapace carinae weakly developed; anterior median carinae obsolete; central median, posterior median and central lateral carinae weak. All furrows weak to obsolete. Intercarinal spaces moderately to weakly granular. Median ocular tubercle slightly anterior to the centre of the carapace; median eyes separated by one and half ocular diameters. Five pairs of lateral eyes; the first four disposed in one line, the fifth situated behind eye three. Mesosoma: Tergites I-VI tricarinate; all carinae very weak; lateral carinae vestigial on segments I-III; tergite VII pentacarinate, with lateral pairs of carinae strong and with spinoid granules; median carinae present on proximal one-half, moderate. Intercarinal spaces moderately to weakly granular. Sternites: all carinae absent from sternites III-VI; moderate to weak on VII. Pectines very long; pectinal tooth count 37-36. Metasoma: Segments I-II with 10 carinae; III-IV with 8 carinae. Ventral carinae vestigial on segment I; weak on segments II-IV; dorsal and dorsolateral carinae with spinoid granules on segments I to III. Segment V with 5 carinae; ventrolateral armed with spinoid granules. Dorsal furrows of all segments weakly developed, smooth; intercarinal spaces very weakly granular. Telson smooth. Aculeus very long; subaculear tubercle absent. Chelicerae with two reduced but not fused denticles at the base of the ventral aspect of the movable finger (Vachon, 1963). Pedipalps: Trichobothrial pattern orthobothriotaxic, type A (Vachon, 1974); dorsal trichobothria of femur in beta configuration (Vachon, 1975). Femur pentacarinate; all carinae moderately crenulate. Patella with seven carinae; ventral and external vestigial; chela with vestigial carinae only, smooth. Dentate margins on fixed and movable fingers composed of 9 and 10 almost linear rows of granules, separated by stronger accessory granules. Legs: Ventral aspect of tarsi with numerous thin long setae. Tibial spurs present on legs III-IV; reduced on IV, vestigial on III. Pedal spurs present, moderate to strong on all legs.



Figs. 1-5. *Buthacus mahraouii* sp. n. (male holotype). 1. Chelicera. 2. Metasomal segment V and telson, lateral aspect. 3. Disposition of granulations on the dentate margins of the pedipalp chela movable finger. 4-5. Legs III and IV, showing pedal and tibial spurs.





Figs. 6-10. *Buthacus mahraouii* sp. n. (male holotype). Trichobothrial pattern. **6-7.** Chela, dorso-external and ventral aspects. **8-9.** Patella, dorsal and external aspects. **10.** Femur, dorsal aspect.

Figs. 11-15. *Buthacus leptochelys* (male from Béni-Abbès). Trichobothrial pattern. **11-12.** Chela, dorsoexternal and ventral aspects. **13-14.** Patella, dorsal and external aspects. **15.** Femur, dorsal aspect.

Table I. Morphometric values (in mm) of the studied species of *Buthacus*

	<i>B. mahraouii</i> sp.n. Holotype (Male)	<i>B. leptochelys</i> Male*	<i>B. zieglerei</i> Holotype (Male)
Total length	50.1	47.3	55.0
Carapace:			
- length	6.0	5.4	5.4
- anterior width	3.8	3.4	3.5
- posterior width	6.4	5.9	6.1
Metasomal segment I:			
- length	4.8	4.6	5.2
- width	3.6	3.3	3.5
Metasomal segment V:			
- length	7.1	6.7	6.6
- width	2.4	2.4	2.5
- depth	2.3	2.2	2.3
Vesicle:			
- width	1.8	2.0	1.9
- depth	1.8	1.7	1.8
Pedipalp:			
- Femur length	5.4	5.1	5.2
- Femur width	1.5	1.5	1.5
- Patella length	6.6	6.0	6.3
- Patella width	2.0	1.9	2.1
- Chela length	9.3	9.1	9.6
- Chela width	1.6	2.3	2.1
- Chela depth	1.6	2.3	2.0
Movable finger			
- length	6.3	5.4	5.4

* Male from Béni-Abbès (RS-4496)

DISTRIBUTION: see Figs. 16-18.

RELATIONSHIPS: Within the genus *Buthacus*, the new species is allied to *Buthacus leptochelys* (Figs. 11-15) and *Buthacus zieglerei*, respectively distributed in western Algeria and northeast Morocco. It can, however, be distinguished from these two species by the following characters:

- Lateral carinae on tergite seven and dorsal and dorso-lateral carinae on metasomal segments I to II very strong, with spinoid granules.
- Pectinal tooth counts in the new species shows higher number of teeth than found in *B. leptochelys* or *B. zieglerei*: 36-37 against 28 to 30 in males. It can be expected that females of the new species should have 31 to 33 teeth, since those of *B. leptochelys* show 22-24 teeth.
- Morphometric values are different between the new species and the other two (see Table I).

Key to the Northwestern African species of *Buthacus*

1. Pectines in males and females with 25 or more teeth (26-37 in males; 25-33 in females).....**2**
 - Pectines in males and females with less than 25 teeth**5**
2. Pectines in males and females with 31 to 37 teeth;

- lateral carinae on tergite VII very strong and spinoid.....*B. mahraouii* sp. n.
- Pectines in males and females with 25 to 30 teeth; lateral carinae on tergite VII weak to moderate, never spinoid.....**3**
- 3. Dentate margins on movable fingers with 10 rows of granules; tibial spurs strong.....**4**
 - Dentate margins on movable fingers with 8-9 rows of granules; tibial spurs reduced.....*B. huberi*
- 4. Tergites and sternites with confluent slightly dark zones.....*B. zieglerei*
 - Tergites and sternites generally yellow without any darker zone.....*B. leptochelys*
- 5. Segment V with ventrolateral carinae armed with strong spinoid lobes; dentate margins on movable fingers composed of 6/7 rows of granules; tibial spurs moderate on leg IV, extremely reduced on III.....*B. clevei*
 - Segment V with ventrolateral carinae armed with reduced lobes; dentate margins on movable fingers composed of 8/9 rows of granules; tibial spurs moderate to strong on legs III-IV.....**6**
- 6. Total length of adults averaging 25 to 28 mm.....*B. villiersi*
 - Total length of adults averaging 44 to 50 mm.....*B. occidentalis*

Taxonomic comments

Vachon (1953), cited 26-29 teeth in males, and 20-25 in females for *B. occidentalis*. The study of the Mauritanian material only shows, however, that the most common counts for *B. occidentalis* are 23 or 24 to males and 21 for females. Therefore it is possible that the more important values indicated by Vachon (1953) made reference to the specimens from Morocco (now lost). In this case it can be suggested that the specimens from the south of Morocco studied by Vachon (1953) could rather be associated to another species of *Buthacus*.

The true status of the southern Morocco population of *Buthacus* will only be elucidated when fresh material will be available for study.

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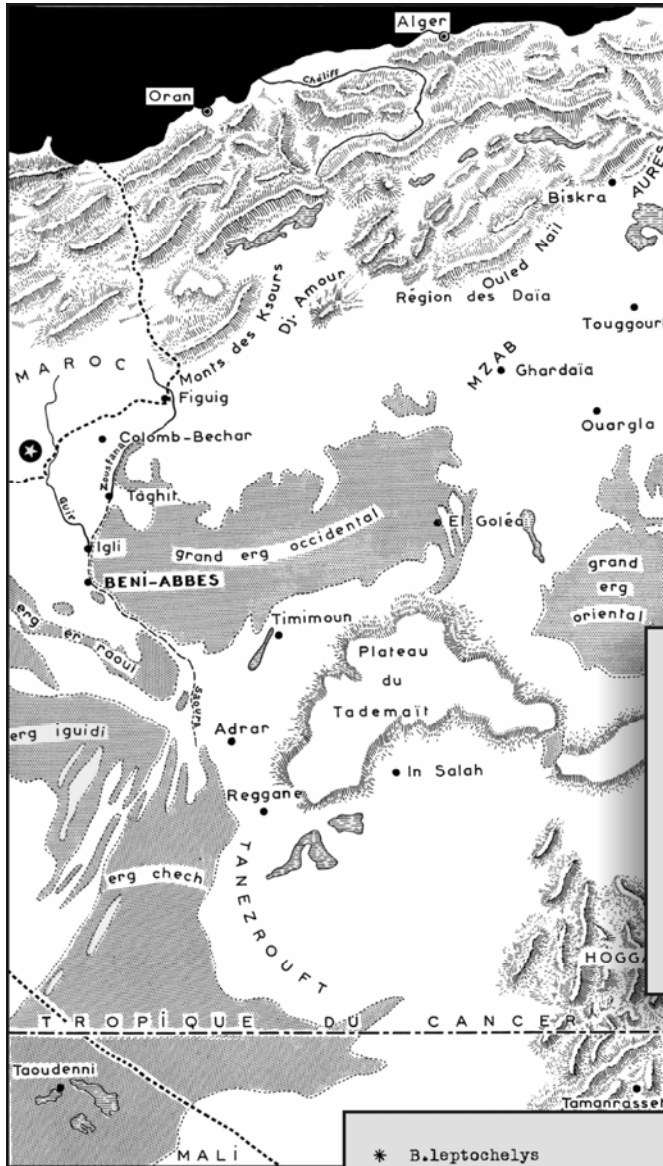
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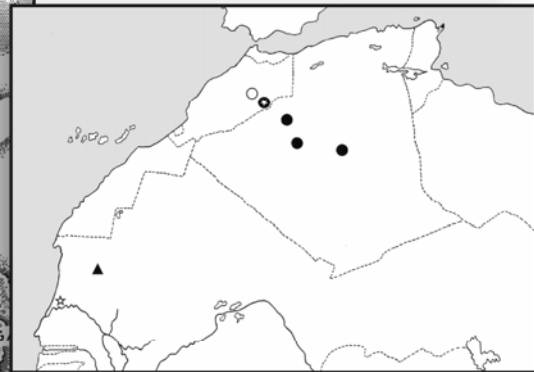
Fig. 16. Map of West Sahara showing the location of the Béni-Abbès oasis, and the nearby frontier between Morocco and Algeria. Black circle with white star indicates the type locality of *Buthacus mahraouii* sp. n.

Fig. 17. Map of north-western Africa showing the suggested distribution of *Buthacus leptochelys*. Figure 266 from Vachon (1952). The locality in Mauritania with a (?), corresponds to *B. occidentalis* described by Vachon (1953). The identity of the *Buthacus* from Tiznit in south of Morocco remains enigmatic.

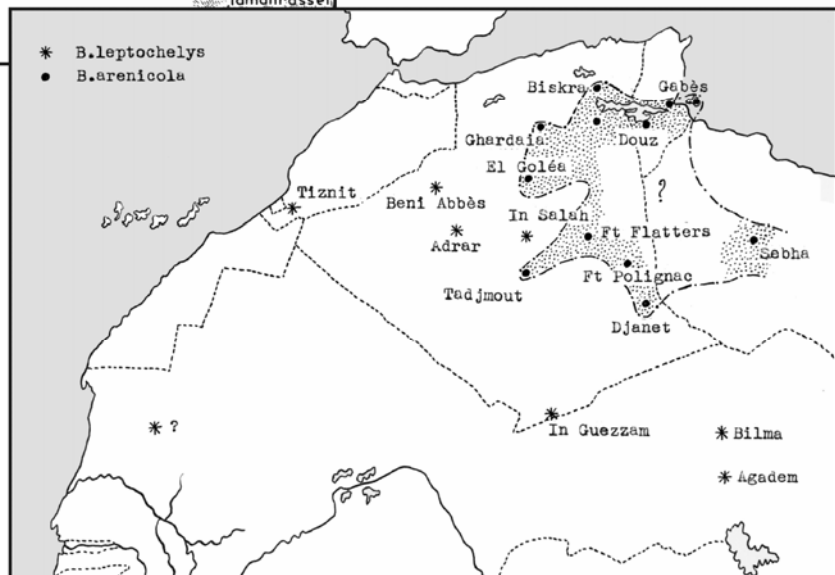
Fig. 18. Same base map of northwestern Africa showing the known distribution of the *Buthacus* species associated with the *B. leptochelys* group. *B. leptochelys* (black circle). *B. occidentalis* (black triangle). *B. zieglerei* (open circle). *B. huberi* (white star). *B. mahraouii* sp. n. (black circle with white star).



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