

## A new species of *Buthus* Leach, 1815 from Algeria (Scorpiones, Buthidae)

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(with 10 figures)

### Abstract

During the last 12 years, the genus *Buthus* Leach, 1815 (family Buthidae) was the subject of an impressive number of studies. These concerned particularly the species belonging to the '*Buthus occitanus*' complex. A number of populations previously considered as subspecies or varieties of *Buthus occitanus* Leach were raised to the rank of species, but also many new species were described. Most of the species considered in these studies come from North Africa, in particular from Morocco, Mauritania, Tunisia and Egypt, but only one new species was recorded from Algeria. At present, one more new species of *Buthus*, *B. pusillus* sp. n., is described from the Algerian Atlas Mountains, raising the number of confirmed *Buthus* in Algeria to four.

**K e y w o r d s:** Scorpiones, *Buthus*, new species, Atlas Mountains, Algeria.

### Introduction

During the last 10-12 years, following the preliminary revisions of the genus *Buthus* Leach, 1815 proposed by Lourenço (2002, 2003), several new species have been described, in particular associated to the '*Buthus occitanus*' complex.

Most new species have been discovered and described from North African deserts (Lourenço 2003) or from sub-Saharan regions (Lourenço & Leguin 2012), with a few exceptions for European and Middle East new taxa (Lourenço 2008, Lourenço & Vachon 2004, Lourenço *et al.* 2010).

A majority of the new species from North Africa were recorded and described from countries such as Morocco, Mauritania, Tunisia, Sudan and Egypt (Lourenço 2003, Lourenço & Cloudsley-Thompson 2012), but only one new species was recently recorded from Algeria (Lourenço 2002).

Some years ago, I received from Prof. P. M. Brignoli several scorpions collected in North Africa and in particular in Algeria. One of these samples was from the extreme north of the country, within the region of the Algerian Atlas Mountains. Two male specimens proved to be a very small species of the genus *Buthus*. Precise analysis of these specimens showed that these could not correspond to *Buthus tunetanus* (Herbst, 1800) or *Buthus paris* (C. L. Koch, 1839) which are also currently distributed in Algeria. Consequently, a new species of *Buthus* from Algeria is described here.

## Methods

Illustrations and measurements were made with the aid of a Wild M5 stereo-microscope with a drawing tube (camera lucida) and an ocular micrometer. Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology mostly follows Vachon (1952) and Hjelle (1990).

## Taxonomic treatment

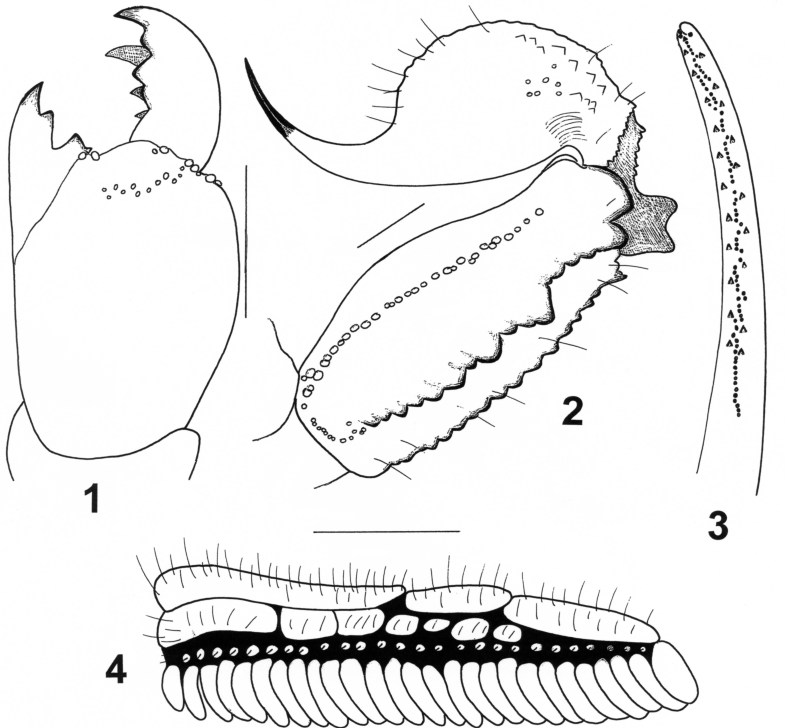
Family Buthidae C. L. Koch, 1837

Genus *Buthus* Leach, 1815

*Buthus pusillus* sp. n.

(Figs 1-9)

TYPE MATERIAL: Holotype, male, paratype, one subadult male. Algeria, Region of Tizi Oumalou (36.5102 N, 4.339 E), in the Djurdjuna Mountains, 2150 m a.s.l., August 1978, coll. P. M. Brignoli. Holotype and paratype deposited in the Zoologisches Museum Hamburg, Germany (ZMH Acc. No. A11/13 and A12/13, respectively).

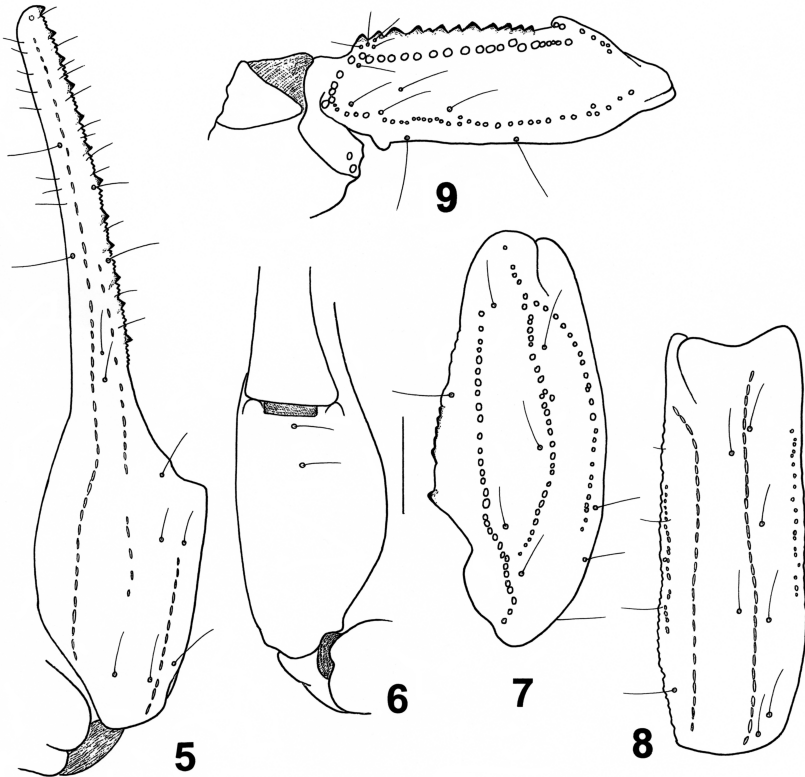


**Figs 1-4.** *Buthus pusillus* sp. n., male holotype. 1. Chelicera, dorsal aspect; 2. metasomal segment V and telson, lateral aspect; 3. movable finger of pedipalp chela with rows of granules; 4. pecten. (Scale bars = 1 mm).

ETYMOLOGY: The specific name refers to the small size of the new species.

DIAGNOSIS: Scorpion of small size, reaching a total length of 41 mm in males. General coloration orange-yellowish; carapace and tergites intensely spotted; three longitudinal stripes over tergites; legs and pedipalps without spots. Carinae moderately marked; granulations moderately to weakly marked. Fixed and movable fingers with 11-12 rows of granules. Pectines with 27 to 28 teeth in males. Tibial spurs strongly developed

RELATIONSHIPS: *Buthus pusillus* sp. n. belongs to the '*Buthus occitanus*' complex of species. By its small size and pattern of pigmentation, the new species shows similarities with *Buthus amri* Lourenço, Yagmur & Duhem, 2010 described from Jordan (Lourenço *et al.* 2010). It can, however, be distinguished from the other species of *Buthus* and in particular from *Buthus tunetanus* and *B. paris* (the two other species also distributed in the North range of Algeria) by the following characters: (i) both *B. tunetanus* and

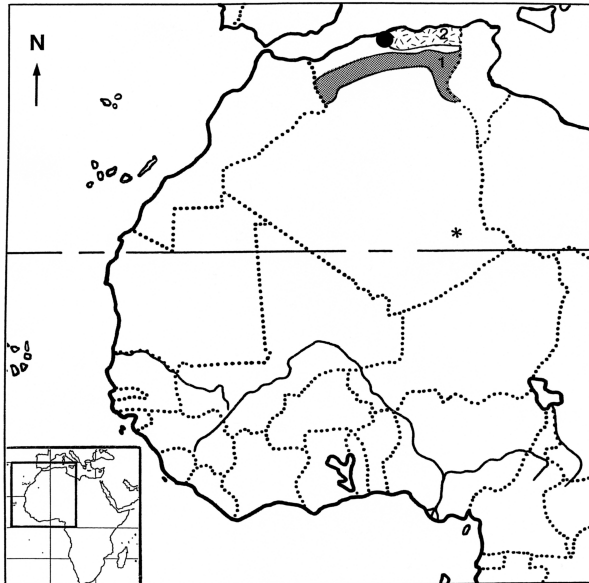


**Figs 5-9.** *Buthus pusillus* sp. n., male holotype. Trichobothrial pattern: 5-6. Chela, dorso-external and ventral aspects; 7-8. patella, dorsal and external aspects; 9. femur, dorsal aspect. (Scale bars = 1 mm).

*B. paris* are larger species, measuring up to 70 mm in total length; (ii) the new species has a reduced number of pectinal teeth; (iii) *B. paris* has 12-14 rows of granules on the chela fingers whereas the new species has 11-12 (iv) *B. pusillus* sp. n. shows a very weak setation on pedipalps, metasomal segments and telson ('oligotriche', *sensu* Vachon, 1952); this setation is better marked in the other two species; (v) metasomal segments I to III have 10 carinae in the new species, whereas in *B. tunetanus* and *B. paris* on these segments occur 10-8-8 carinae, respectively.

**DESCRIPTION:** Based on male holotype and male paratype. Measurements after the description.

**C o l o r a t i o n.** Basically orange-yellowish. **P r o s o m a:** Carapace yellowish; carinae and eyes intensely marked by dark pigment. **M e s o s o m a** yellowish with three longitudinal stripes; the median one narrower than the lateral. **M e t a s o m a** segments orange-yellowish with some reddish spots over carinae; vesicle yellowish with reddish lateral stripes; aculeus yellowish at its base and reddish at its extremity. **Venter** yellowish; pectines pale yellow. **C h e l i c e r a e** yellowish without variegated spots; fingers yellow with reddish teeth. **P e d i p a l p s** orange-yellowish; fingers with the oblique rows of granules slightly red. **L e g s** yellow without spots.



**Fig. 10.** The type locality of *Buthus pusillus* sp. n. (black circle), that of *B. tassili* Lourenço (asterisk) and the known distribution areas of *B. tunetanus* (Herbst) (1) and *B. paris* (C. L. Koch) (2) in Algeria (after Vachon 1952).



**MORPHOLOGY.** P r o s o m a: Carapace moderately to weakly granular; anterior margin with a weak concavity. Carinae moderately to strongly marked; anterior median, central median and posterior median carinae strongly granular, with 'lyre' configuration. All furrows moderate. Median ocular tubercle slightly anterior to the centre of carapace. Eyes separated by three ocular diameters. Three pairs of lateral eyes of moderate size in relation to median eyes. Sternum triangular, not narrowed; slightly wider than long. M e s o - s o m a: tergites moderately granular. Three longitudinal carinae moderately to strongly crenulate in all tergites; lateral carinae reduced in tergites I and II. Tergite VII pentacarinatate. Venter: genital operculum divided longitudinally, which plate with a semi-oval to semi-triangular shape. Pectines: pectinal tooth count 27-27 in male holotype (paratype with 27-28); middle basal lamella of the pectines not dilated. Sternites without granules, smooth with moderately elongated spiracles; four carinae on sternite VII; two vestigial carinae on VI; other sternites acarinated and with two vestigial furrows. M e t a s o m a I segments with a weak setation; segments I to III with ten crenulated carinae, ventral better marked on II-III but without lobate granules; segment IV with eight carinae, crenulated; the first four segments with a smooth dorsal depression; segment V with five carinae; the latero-ventral carinae crenulate with 2-3 lobate denticles posteriorly; ventral median carina divided posteriorly over  $\frac{1}{4}$  of the segment length; anal arc composed of 8-10 ventral teeth, and two lateral lobes. Intercarinal spaces weakly granular. Telson with a few minute granulations, almost smooth; aculeus curved and shorter than the vesicle, without a subaculear tubercle. C h e l i c e r a I dentition as defined by Vachon (1963) for the family Buthidae; external distal and internal distal teeth approximately the same length; basal teeth on movable finger small and totally fused; ventral aspect of both fingers and manus covered with long dense setae. P e d i p a l p s with a weak setation; femur pentacarinatate; patella with eight carinae, weakly marked; all faces weakly granular to smooth; chela smooth, with vestigial carinae. Fixed and movable fingers with 11-12 oblique rows of granules. Internal and external accessory granules present, moderately strong; four accessory granules on the distal end of the movable finger next to the terminal denticle. L e g s: tarsus with two longitudinal rows moderately long setae ventrally; tibial spurs very strong on legs III and IV; pedal spurs strong on legs I to IV. Trichobothriotaxy: trichobothrial pattern of Type A, orthobothriotaxic as defined by Vachon (1974). Dorsal trichobothria of femur arranged in  $\beta$  (beta) configuration (Vachon, 1975).

Morphometric values of the male holotype of *Buthus pusillus* sp. n. Total length including the telson, 41.0. Carapace: length, 4.8; anterior width, 3.2; posterior width, 5.2. Metasomal segments. I: length, 2.9; width, 3.2; V: length, 5.3; width, 2.5; depth, 2.3. Telson length, 4.5; vesicle: width, 2.1; depth, 2.0. Pedipalp: femur length, 3.7, width, 1.3; patella length, 4.5, width, 1.9; chela length, 7.6, width, 1.5, depth, 1.6; movable finger length, 5.4.

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