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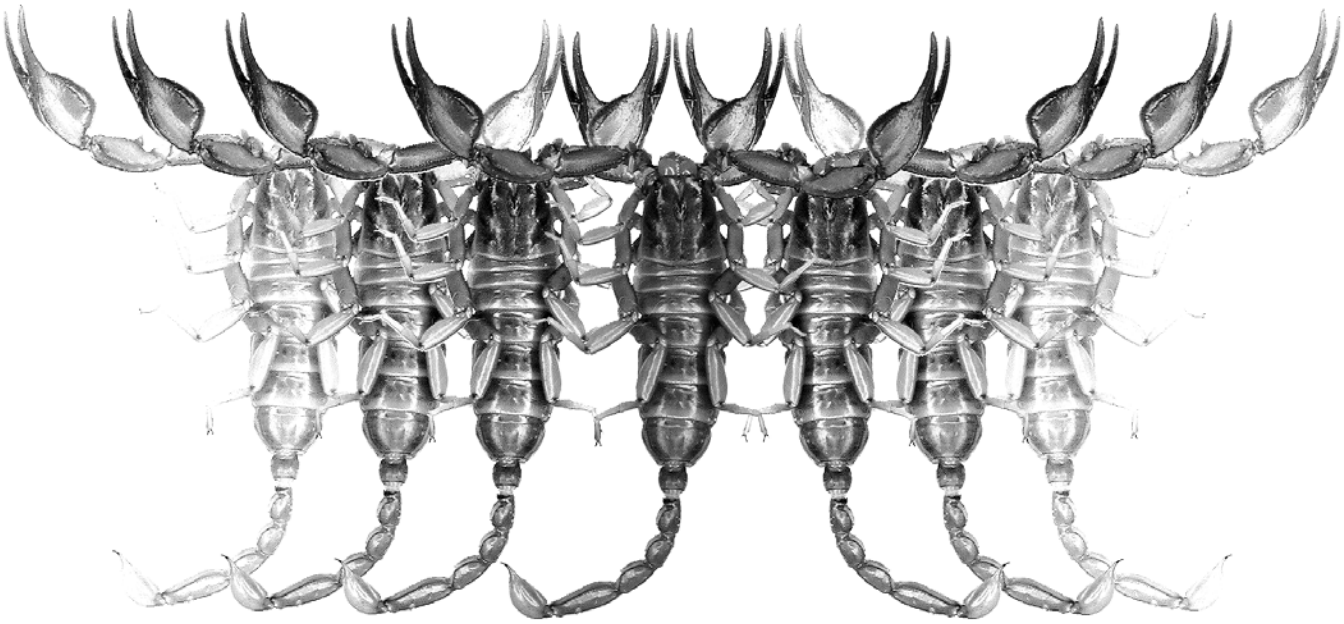

Review of Tunisian Species of the Genus *Buthus* with Descriptions of Two New Species and a Discussion of Ehrenberg's Types (Scorpiones: Buthidae)

František Kovařík

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Review of Tunisian species of the genus *Buthus* with descriptions of two new species and a discussion of Ehrenberg's types (Scorpiones: Buthidae)

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Summary

Buthus chambiensis, **sp. n.** and *Buthus dunlopi*, **sp. n.** from Tunisia are described. Presented is also a key to four Tunisian species of the genus *Buthus*. The males of *B. chambiensis*, **sp. n.** and *B. paris* (C. L. Koch, 1839) have narrower chela than the females, which distinguishes them from *B. tunetanus* (Herbst, 1800) and *B. dunlopi*, **sp. n.** Uniformly yellowish mesosoma and very narrow chela of pedipalps distinguish *B. chambiensis*, sp. **n.** from *Buthus paris* (C. L. Koch, 1839). Morphologically closest to *B. chambiensis* **sp. n.** is *Buthus barcaeus* Birula, 1909, **comb. n.** from Libya, which has a different color pattern on mesosomal segments, more bulbous telson, and more densely pubescent legs. *B. dunlopi*, **sp. n.** has sexual dimorphism similar to *B. tunetanus* (Herbst, 1800), but is smaller and has narrower chela of pedipalps. Examination of the holotype results in revalidation of *Buthus intumescens* (Ehrenberg in Hemprich & Ehrenberg, 1829), **comb. n.** with the synonyms *Androctonus* (*Leiurus*) *tunetanus intermedius* Ehrenberg in Hemprich & Ehrenberg, 1829, **syn. n.** and *Buthus occitanus mardochei* var. *israelis* Shulov & Amitai, 1959, **syn. n**..

Introduction

In 2004 and 2005, I conducted two collecting trips to Tunisia (Kovařík et al., 2005), where in the company of my friends Petr Kabátek and Stanislav Kadlec I visited several localities in the northern and central parts of the country and was able to observe scorpions of the genus *Buthus* Leach, 1815 in their natural environment. Hitherto, there have been only two species, namely *Buthus paris* (C. L. Koch, 1839) and *Buthus tunetanus* (Herbst, 1800), of the *Buthus occitanus* complex recorded from Tunisia. However, already during the field work it became apparent that there are three species involved; in addition to that I found yet another species among previously acquired specimens collected in southern Tunisia. In order to verify that two of the species are really new, I examined Ehrenberg´s types pertaining to the *Buthus occitanus* complex with special attention to those whose taxonomic status appeared questionable to me. It turned out that none of Ehrenberg´s types can be matched to the species described here as new, although one of his taxa proved to be valid; it is *Buthus intumescens* (Ehrenberg in Hemprich & Ehrenberg, 1829), **comb. n**. All listed specimens are in the author's collection (FKCP) unless noted otherwise.

Abbreviations

List of depositories: FKCP, Personal collection of František Kovařík, Prague, Czech Republic; ZMBH, Museum für Naturkunde der Humboldt-Universität Berlin, Berlin, Germany.

Systematics

***Buthus chambiensis*, sp. n.**

(Figs. 1–5, Table 1)

Type locality and type repository. **Tunisia**, Kasserine Province, Jebel Chambi Mts., 24 km W Kasserine (Fig. 1); author's collection (FKCP).

Type material. **Tunisia**, Kasserine Province, Jebel Chambi Mts., 24 km W Kasserine, 23–24 May 1999, 1♂ imm. (paratype), leg. M. Kafka, 29–30 May 2005, 1♂ (holotype), 2♀ 1 imm. (allotype and paratypes), leg. F. Kovařík.

Etymology: Named after the type locality.

Diagnosis: Total adult length 60–70 mm. Legs, metasoma, and pedipalps uniformly yellowish brown, mesosoma and carapace darker but without noticeable bands, mesosomal sagittal carina black. Movable fingers

		B. chambiensis sp. n.		*B. dunlopi* sp. n.		*B. paris*		*B. tunetanus*	
		♂	♀	♂	♀	♂	♀	♂	♀
		HT	AT	HT	AT	(Le Kef)		(Balta)	
Total	**length**	62.3	67.3	58.3	54.2	58.9	71.4	66.2	72.1
Carapace	**length**	6.1	7.0	6.8	6.0	6.1	7.2	7.3	7.5
	width	6.6	7.6	7.1	6.5	6.4	8.2	7.5	8.2
Metasoma and telson									
	length	36.5	35.8	38.3	31.4	35.8	37.9	40.0	38.1
segment I	**length**	4.9	4.6	5.0	3.9	4.6	4.8	4.8	4.8
	width	4.8	4.6	4.9	3.9	4.5	5.1	5.0	5.2
segment II	**length**	5.4	5.4	5.6	4.5	5.5	5.6	5.9	5.5
	width	4.3	4.3	4.7	3.8	4.3	4.7	4.9	4.9
segment III	**length**	5.5	5.6	5.9	4.8	5.6	5.6	6.1	5.8
	width	4.2	4.3	4.2	3.7	4.1	4.6	4.9	4.8
segment IV	**length**	6.6	6.3	7.1	5.5	6.5	6.5	7.3	6.8
	width	4.0	4.1	4.2	3.5	3.9	4.5	4.7	4.7
segment V	**length**	7.2	7.3	7.8	6.7	7.1	7.8	8.5	7.5
	width	3.4	3.9	3.9	3.6	3.6	4.1	4.2	4.5
telson	**length**	6.7	6.6	6.9	6.0	6.5	7.6	7.3	7.7
Pedipalp									
femur	**length**	5.4	5.3	5.6	5.0	5.1	5.7	6.0	6.4
	width	1.6	1.7	1.8	1.6	1.5	2.2	2.0	2.2
patella	**length**	6.1	6.4	6.5	5.8	6.1	6.9	7.9	7.4
	width	2.3	2.7	2.6	2.2	2.4	2.9	3.1	3.2
chela	**length**	10.5	10.8	10.6	9.8	10.6	11.7	12.6	12.9
	width	2.0	3.2	2.4	2.1	2.4	3.2	4.1	3.9
finger mov.	**length**	7.2	7.5	7.5	6.7	8.2	7.7	7.9	8.4
Pectinal teeth		29:31	27:28	31:31	27:28	33:34	26:27	29:30	25:26

Table 1: Morphometrics (mm) of *Buthus* species. HT = holotype, AT = allotype.

of pedipalps bear 11 or 12 rows of granules with one internal and one external granule and three distal granules. In female, the segments of pedipalps, namely chela, are wider than in male; chela length to width ratio 5.2 in males, 3.4 in females. Pectines with 26–28 teeth in females, 29–33 in males.

Description: The adult male holotype is 62.3 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. Legs, metasoma, and pedipalps are uniformly yellowish brown, mesosoma and carapace are darker but without noticeable bands, and the sagittal carina on the mesosoma is black. For habitus see Figs. 2–5.

Mesosoma and carapace: The mesosoma is granulated, with three median carinae, and the seventh segment ventrally bears four inconspicuous carinae. The carapace is sparsely granulated, with carinae typical for the genus *Buthus* (Fig. 2). Pectinal teeth number 26–28 in females and 29–33 in males.

Metasoma and telson: The first segment bears 10 carinae, the second through fourth segments bear eight carinae (the lateral surface of the second and third segments bears a row of granules that exceeds one-half of the segment length but does not form a complete carina). The fifth metasomal segment has five carinae. The ventrolateral carinae of the fifth segment terminate in two lobes. The ventral carinae on the second and third segments of females posteriorly bear two or three large granules. The surface between carinae is finely granulated, especially in males, may be smooth in females. The telson is bulbous, with the aculeus as long as or shorter than the vesicle.

Legs: Tarsomeres of the legs I to III have very dense bristlecombs. The legs IV are only hirsute. All legs have tarsomeres, tibia, and patella hirsute also on the ventral surfaces. Tibial spurs of legs III and IV are moderately developed.

Pedipalps: The movable fingers bear 11 or 12 rows of granules that have one internal and one external granule and three distal granules. The chela is smooth, males (including immature) may have smooth carinae and on the femur and patella, granulate carinae. Females have wider segments of pedipalps, especially the chela, than males. The chela length to width ratio is 5.2 in males and 3.4 in females.

Affinities. The described features distinguish *Buthus chambiensis*, sp. n. from all other species of the genus. A key to the Tunisian species of the genus is presented below.

B. chambiensis, sp. n. is easily distinguished from *B. tunetanus* and *B. dunlopi*, sp. n. by coloration and

Figure 1: Type locality of *Buthus chambiensis* sp. n. (Tunisia, Kasserine Province, Jebel Chambi Mts., 24 km W Kasserine).

sexual dimorphism. Whereas the males of *B. tunetanus* and *B. dunlopi*, sp. n. have the chela as wide as or wider than females (Figs 16 and 18), in *B. chambiensis*, sp. n. the chela is markedly narrower in the male than in the female (Figs. 2 and 4, Table 1). Recognition of species within the *Buthus occitanus* complex (Lourenço, 2002, 2003, 2005) should employ sexual dimorphism as a criterion that allows to divide the complex into groups.

Another Tunisian species is *B. paris*, whose presence in the steppes around Le Kef I was able to verify during the 2004 and 2005 trips. This species has sexual dimorphism similar to *B. chambiensis*, sp. n., in which, however, the chela of both sexes is markedly narrower than in *B. paris* (Figs. 2–5). Other differences are given in the key below.

In the neighboring Algeria there occurs *B. tassili* Lourenço, 2002, which differs from all Tunisian species in having the telson and the fifth metasomal segment dark.

The species in all respects closest to *B. chambiensis*, sp. n. is *Buthus barcaeus* Birula, 1909, **comb. n**. from Libya (Fig. 6), which, however, is larger and has differently colored mesosoma, more bulbous telson, and more densely hirsute legs. This latter species is here elevated to the species status according to the current recognition of former *Buthus occitanus* as a species complex.

***Buthus dunlopi*, sp. n.**

(Figs. 7–8, Table 1)

Type locality and type repository. **Tunisia**, near Remada; author's collection (FKCP).

Type material. **Tunisia**, near Remada, 2♂ (holotype and paratype), 3♀ (allotype and paratypes), 20 September 1989, anonymous collector.

Etymology: Named after Jason Dunlop of the Museum für Naturkunde, Zentralinstitut der Humboldt-Universität zu Berlin, in appreciation of his kind help.

Diagnosis: Total adult length 50–60 mm. Legs, metasoma and pedipalps uniformly yellowish brown; mesosomal sagittal carina black, with adjacent dark band on each side. Movable fingers of pedipalps bear 12 rows of granules with one internal and one external granule and 3 distal granules. Chela of pedipalp narrow in both sexes, its length to width ratio 4.4–4.7. Pectinal teeth number 26–28 in females and 31–33 in males.

Description: The adult male holotype is 58.3 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. Legs, metasoma and pedipalps are uniformly yellowish brown, ventral carinae on the metasoma may be black. The metasomal sagittal carina is black, with adjacent median dark band