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Rediscovery of the enigmatic holotype of *Buthus barbouri* Werner, 1932 (Scorpiones: Buthidae), with a new synonymy

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The enigmatic *Buthus barbouri* Werner, 1932 was described based on a single specimen (identified as a male) from Agadir, Morocco, as a species related to *Buthus marocannus* Birula, 1903, and was regarded as the second worldwide known dark species of the Old World genus *Buthus* Leach, 1815. Werner (1932) did not specify the depository of this specimen, which led Sousa *et al*. (2017) to consider it probably lost. In his monograph, Vachon (1952) suggested a relationship between this species and the genus *Androctonus* Ehrenberg, 1828, particularly *Androctonus mauritanicus* (Pocock, 1902), based on the morphology of the chelae, the pilosity of the pedipalps, and the pectinal tooth count. However, a more plausible taxonomic relationship would have been with *Androctonus bourdoni* Vachon, 1948, which was described as a subspecies of *A. mauritanicus* based on specimens mainly from the Souss-Massa region, including Agadir, with an adult male from this locality now recognized as the lectotype (Ythier & Lourenço 2022). Sousa *et al*. (2017), in their updated catalogue of *Buthus*, transferred *B. barbouri* to the genus *Androctonus*, following Vachon's (1952) conclusions and supporting the potential taxonomic relationship between *B. barbouri* and *A. bourdoni*.

What appears to have been overlooked by Sousa *et al*. (2017), and even by Vachon (1952), at least within the context of their respective studies, is Werner's explicit mention of two diagnostic morphological traits, namely the dense hirsuteness of the metasomal segments and the pedipalps, as stated by Werner: «*...die starke Behaarung namentlich an Maxillarpalpen und Cauda...*». From this, it can be noted that Vachon considered only the pilosity of the pedipalps and neglected that of the metasoma. This constitutes the first point. The second concerns the complete absence of lobes on metasomal segment V, noted by Werner as «*...am 5. Segment fehlen Lappen vollständig...*». These characters correspond more closely to *Hottentotta gentili* (Pallary, 1924), a second well-known dark buthid species from Agadir, the type locality of *B. barbouri*, and lead us to question the validity of Vachon's assumption, since none of the known *Androctonus* species in Morocco possesses both of the characters cited here, especially the first one.

In the present study, we finally resolved the taxonomic issue of *B. barbouri* by rediscovering the holotype in the collection of the Museum of Comparative Zoology, Harvard University, Cambridge (MCZ) after 94 years. It should be noted that the same institution houses type material of several reptile species described from north-west Africa by Werner (e.g., the holotype of *Hemorrhois algirus intermedius* (Werner, 1929), MCZ:Herp:R-27496; the holotype of *Atlantoacerta andreanskyi* (Werner, 1929), MCZ:Herp:R-27391; the holotype of *Saurodactylus fasciatus* Werner, 1931, MCZ:Herp:R-29935; the holotype of *Chalcides ebneri* Werner, 1931, MCZ:Herp:R-31461, etc.; M.C.Z. 2025), which provides coherent and complementary support that the specimen examined here is indeed the true holotype. The specimen was examined and photographed using a Canon EOS R camera, with a 65 mm macro lens for close-up morphological images mounted on a WeMacro rail, and an 85 mm macro lens for wider shots. Image acquisition was controlled using Helicon Remote, and focus stacking was performed in Helicon Focus. Measurement methods generally follow Stahnke (1970). Morphological nomenclature follows Vachon (1952) and Stahnke (1970).

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Systematic treatment

Buthidae C. L. Koch, 1837

On the validity of *Buthus barbouri* Werner, 1932

The female holotype of *Buthus barbouri* (MCZ IZ:89296) examined here has a total body length of 61.29 mm (60 mm in Werner, 1932) and a pectinal tooth count of 25 (24–25 in Werner, 1932). Our re-examination, however, reveals that it does not belong to *Buthus*, as concluded by Werner (1938), nor to *Androctonus*, as suggested by Vachon (1952) and Sousa *et al*. (2017). This conclusion is supported by the diagnosis presented here: (1) carapace carinae are distinct and strongly developed, particularly the posteromedian and centromedian carinae (Fig. 1A); (2) centrolateral and posteromedian

FIGURE 1. *Hottentotta gentili* (♀ holotype of *Buthus barbouri* **syn. n.**), MCZ IZ:89296. **A.** Carapace and tergites; **B.** Original label by Werner (above) and label given to the specimen (below); **C.** Sternum, genital operculum, pectines and sternite III. Scale bars = 2 mm.

carinae are not connected and therefore do not form a lyre-shaped configuration as observed in *Buthus* species (Fig. 1A); (3) centromedian and centrolateral carinae approach each other very closely but remain unconnected as in *Hottentotta* species (Fig. 1A); (4) pedipalp femur and patella are sparsely to moderately hirsute; (5) pedipalp chelae (Figs. 2A–B) are weakly hirsute, with long fingers and manus longer than wide (L/W ratio: 1.77; L: 4.41 mm, W: 3.03 mm); (6) metasomal segments are longer than wide; however, segment I (Fig. 2C) is almost as long as wide (L/W ratio: 1.01; L: 4.25 mm, W: 4.18 mm), in contrast to that reported by Werner (L: 5 mm, W: 4 mm; see Werner 1932); (7) metasomal segments are moderately hirsute, with ventrolateral carinae of metasomal segment V not lobate, as in *Buthus* and some *Androctonus* species (Fig. 2D). Accordingly, it can be concluded that this specimen is simply a misidentified *Hottentotta gentili* specimen *sensu stricto* by Werner, and therefore *B. barbouri* herein is considered a **junior synonym** of *H. gentili*.

Comment. It should be noted that the holotype of *B. barbouri* is clearly a female and not a male as originally stated by Werner (1932), as this is clearly indicated by the shape of the genital operculum and by the reduced size and number of the pectinal teeth (Fig. 1C). This sex misidentification was likely the main character that specifically influenced Vachon (1952) in proposing the possible relationship cited above, rather than considering *H. gentili* as the more logically related species, even based on Werner's (1932) diagnosis. This is directly due to the high number of pectinal teeth in both sexes of *H. gentili* (28–31 in females and 32–34 in males; see Vachon 1952), which is lower in *A. mauritanicus* (20–24 in females, 25–30 in males; see Vachon, 1952) and *A. bourdoni* (23–25 in females, 27–29 in males; see Vachon 1952). In our view, this difference represents simply an intraspecific variation, and the number of pectinal teeth in females of this species may, however, be lower than usually reported, varying from 25 to 31.

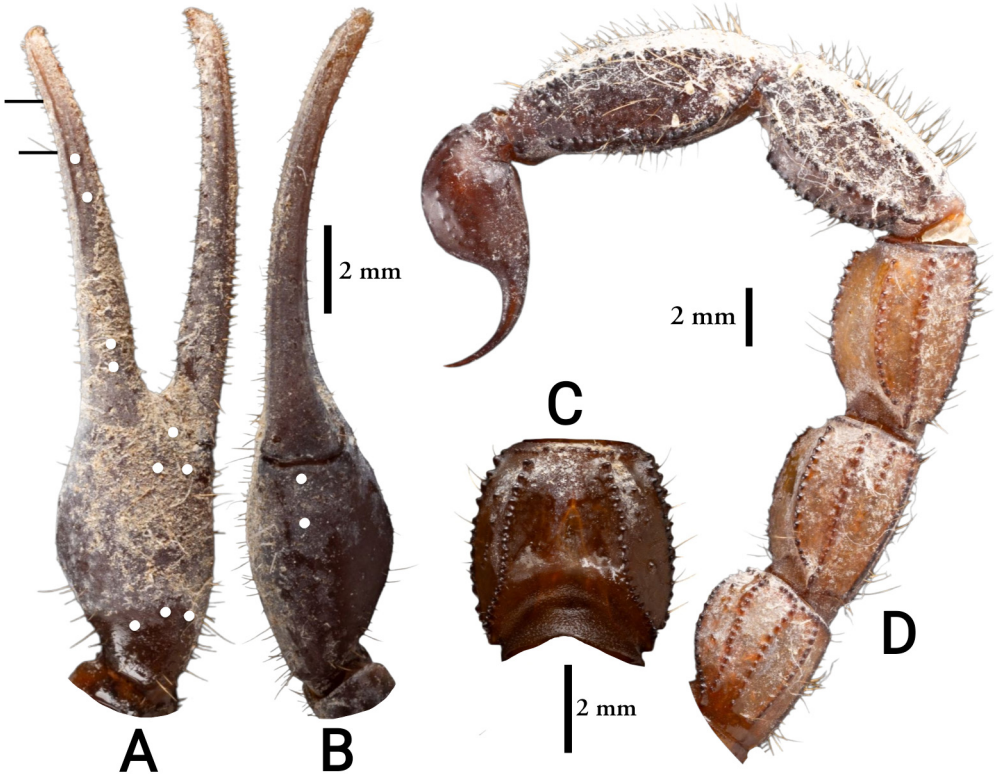

FIGURE 2. *Hottentotta gentili* (♀ holotype of *Buthus barbouri* **syn. n.**), MCZ IZ:89296. **A–B.** Pedipalp chela, lateral and venteral aspects, respectively, showing the trichobothrial pattern; **C.** Metasomal segment I, dorsal aspect; **D.** Metasoma, lateral aspect. Scale bars= 2 mm.

References

Museum of Comparative Zoology, Harvard University (2025) *MCZbase: Collection database*. Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts. Available from: https://mczbase.mcz.harvard.edu (accessed 16 December 2025)

Sousa, P., Arnedo, M.A. & Harris, J.D. (2017) Updated catalogue and taxonomic notes on the Old-World scorpion genus *Buthus* Leach, 1815 (Scorpiones, Buthidae). *ZooKeys*, 686, 15–84. https://doi.org/10.3897/zookeys.686.12206

Stahnke, H.L. (1970) Scorpion nomenclature and mensuration. *Entomological News*, 81 (12), 297–316.

Vachon, M. (1948) Études sur les Scorpions. III (suite). Description des Scorpions du Nord de l'Afrique. *Archives de l'Institut Pasteur d'Algérie*, 26 (3), 288–316.
Vachon, M. (1952) *Études sur les Scorpions*. Publications de l'Institut Pasteur d'Algérie, Alger, 482 pp.
Werner, F. (1932) Ergebnisse einer zoologischen Forschungsreise nach Marokko VI. Skorpione. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse*, Wien, 141, 285–306.
Ythier, E. & Lourenço, W.R. (2022) A new species of *Androctonus* Ehrenberg, 1828 from Western Sahara (Scorpiones: Buthidae). *Serket*, 18 (3), 239–251.