



**HAL**  
open science

## **A new species of Buthacus Birula, 1908 from the Algerian Saharan Desert (Scorpiones: Buthidae)**

Salah Eddine Sadine, Zineb Souilem, Abdelwahab Chedad, Bahri Chebihi, Rabah Zebsa, Moussa Houhamdi, Wilson R. Lourenço, Eric Ythier

► **To cite this version:**

Salah Eddine Sadine, Zineb Souilem, Abdelwahab Chedad, Bahri Chebihi, Rabah Zebsa, et al.. A new species of Buthacus Birula, 1908 from the Algerian Saharan Desert (Scorpiones: Buthidae). Faunitaxys, 2024, 12 (9), pp.1-9. hal-04475443

**HAL Id: hal-04475443**

**<https://hal.science/hal-04475443v1>**

Submitted on 23 Feb 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

# Faunitaxys

*Revue de Faunistique, Taxonomie et Systématique  
morphologique et moléculaire*



Volume 12  
Numéro 09

Février 2024

ISSN (Print) : 2269 - 6016  
ISSN (Online) : 2970 - 4960  
Dépôt légal : Février 2024

# Faunitaxys

*Revue de Faunistique, Taxonomie et Systématique  
morphologique et moléculaire*

ZooBank : <https://zoobank.org/79A36B2E-F645-4F9A-AE2B-ED32CE6771CC>

Directeur de la publication, rédacteur, conception graphique et PAO:

*Lionel Delaunay*

Cette revue ne peut pas être vendue

Elle est distribuée par échange aux institutions (version papier)

et sur simple demande aux particuliers (format PDF)

à l'adresse suivante:

AFCFF (Association française de Cartographie de la Faune et de la Flore)

28, rue Voltaire, F- 42100 Saint Etienne

E-mail: [faunitaxys.journal@gmail.com](mailto:faunitaxys.journal@gmail.com)

Elle est disponible librement au téléchargement à partir du site:

<https://faunitaxys.fr/>

La parution de *Faunitaxys* est apériodique

*Faunitaxys* est indexé dans / *Faunitaxys* is indexed in:

- **Zoological Record**

Articles and nomenclatural novelties are referenced by:

- **ZooBank** (<https://zoobank.org>)

Online Archives:

- **HAL** (<https://hal.archives-ouvertes.fr>)

- **Internet Archive** (<https://archive.org>)

Imprimée sur les presses de SPEED COPIE, 6, rue Tréfilerie, F- 42100 Saint-Etienne

**Imprimé le 23 02 2024**

# A new species of *Buthacus* Birula, 1908 from the Algerian Saharan Desert (Scorpiones: Buthidae)

SALAH EDDINE SADINE (1), ZINEB SOUILEM (2), ABDELWAHAB CHEDAD (3, 4), BAHRI CHEBIHI (4, 5), RABAH ZEBSA (6, 7), MOUSSA HOUHAMDI (6, 8), WILSON R. LOURENÇO (7) & ERIC YTHIER (10, \*)

(1) Laboratoire Valorisation et Conservation des Ecosystèmes Arides (LVCEA), Faculté des Sciences de la Nature et de la Vie et Sciences de la Terre, Université de Ghardaïa, 47000 Ghardaïa, Algeria. - [sse.scorpion@yahoo.fr](mailto:sse.scorpion@yahoo.fr)

- ZooBank: <https://zoobank.org/45564AC0-B7ED-4C1E-95DD-9EAB3CED9336> - Orcid: <https://orcid.org/0000-0002-0026-8280>

(2) Laboratoire de Mathématiques et Sciences Appliquées (LMSA), Faculté des Sciences et de la Technologie, Université de Ghardaïa, 47000 Ghardaïa, Algeria. - [zinebsouilem294@gmail.com](mailto:zinebsouilem294@gmail.com)

- ZooBank: <https://zoobank.org/DF17E241-C2C7-4C3B-B617-7DDA6F95ADEC> - Orcid: <https://orcid.org/0000-0002-1243-2607>

(3) Laboratory of Saharan Bio-Ressources: Preservation and Valorisation (BRS), University Kasdi-Merbah, 511, 30000 Ouargla, Algeria. - [agrochedad@yahoo.fr](mailto:agrochedad@yahoo.fr)

- ZooBank: <https://zoobank.org/A32A90A0-2F24-4E6B-A2BD-6D91AC5A6B33> - Orcid: <https://orcid.org/0000-0001-8098-1803>

(4) Directorate of Forest Conservation of Ghardaïa, 47000 Ghardaïa, Algeria.

(5) - [chebihbahri@gmail.com](mailto:chebihbahri@gmail.com) - ZooBank: <https://zoobank.org/FB2BC204-359B-45E5-9688-F1E7EAB219BE>

(6) Laboratoire Biologie, Eau et Environnement (LBEE), Faculté SNV-STU, Université 8 Mai 1945 Guelma, 401, 24000 Guelma, Algeria.

(7) - [zebsarabah@gmail.com](mailto:zebsarabah@gmail.com) - ZooBank: <https://zoobank.org/2552213D-5749-4D96-85F8-CF261DD26B98> - Orcid: <https://orcid.org/0000-0001-8214-9500>

(8) - [houhamdimoussa@yahoo.fr](mailto:houhamdimoussa@yahoo.fr) - ZooBank: <https://zoobank.org/174EA605-1D8B-48B4-AB98-59598F869260> - Orcid: <https://orcid.org/0000-0002-4644-8906>

(9) Muséum national d'Histoire naturelle, Sorbonne Universités, Institut de Systématique, Evolution, Biodiversité (ISYEB), UMR7205-CNRS, MNHN, UPMC, EPHE, CP 53, 57 rue Cuvier, 75005 Paris, France. - [wilson.lourenco@mnhn.fr](mailto:wilson.lourenco@mnhn.fr)

- ZooBank : <http://zoobank.org/58448BD6-79D7-46CE-AFDD-91EFF2B7D4EF> - Orcid: <https://orcid.org/0000-0002-2386-363X>

(10) BYG Taxa, 382 rue des Guillates, F-71570 Romanèche-Thorins, France. - [contact@bygntaxa.com](mailto:contact@bygntaxa.com)

- ZooBank: <http://zoobank.org/06FD0852-A88E-49E5-B8E6-E1494B86C4E1> - Orcid: <https://orcid.org/0000-0002-3194-5184>

\* Correspondence.

## Keywords:

Scorpion;  
*Buthacus*;  
*deserticus*;  
taxonomy;  
new species;  
description;  
morphology;  
Sahara;  
Algeria.

**Abstract.** – A new species of *Buthacus* Birula, 1908 is described on the basis of specimens collected in the region of Ghardaïa, Central Algeria. *Buthacus deserticus* sp. n. belongs to the *Buthacus leptochelys* (Ehrenberg 1829) complex of species. It is compared with the two other species of the “*leptochelys*” complex occurring in the region, namely *B. spinatus* Lourenço, Bissati & Sadine, 2016 and *B. elmenia* Lourenço & Sadine, 2017. This new taxon represents the 12<sup>th</sup> known *Buthacus* species reported from Algeria. A map of the geographical distribution of the Algerian *Buthacus* species is presented. Emended diagnosis is also provided for *Buthacus spinatus* Lourenço, Bissati & Sadine, 2016 based on additional material.

Sadine S. E., Souilem Z., Chedad A., Chebihi B., Zebsa R., Houhamdi M., Lourenço W. R. & Ythier E., 2024. – A new species of *Buthacus* Birula, 1908 from the Algerian Saharan Desert (Scorpiones: Buthidae). *Faunitaxys*, 12(9): 1 – 9.

DOI: [https://doi.org/10.57800/faunitaxys-12\(9\)](https://doi.org/10.57800/faunitaxys-12(9))

ZooBank: <https://zoobank.org/EDF7FC4C-8866-46D3-A64C-F0FCE84DCBB6>

Received: 18/02/2024 – Revised: 21/02/2024 – Accepted: 22/02/2024

## Introduction

The genus *Buthacus* was created by Birula (1908) as a subgenus of *Buthus* Leach, 1815, having as its type species *Buthus leptochelys* (Ehrenberg 1829), described from Sinai (Palestine) as *Androctonus (Leirus) leptochelys*. Since its creation, *Buthacus* has been considered either as a subgenus or as a genus by different authors and was finally defined as a valid genus (related to *Buthus*) by Vachon (1949, 1952), who also drew the attention to the extreme complexity of this genus, and notably to the fact that *Buthacus leptochelys* and *Buthacus arenicola* (Simon, 1885) could represent two complexes of forms or

species, rather than individual species. This fact was later confirmed by Levy & Amitai (1980) who attempted to divide the genus *Buthacus* in two species groups mainly based on the structure of the dentition of the movable finger, *i.e.* species bearing a complete, or almost complete, series of external accessory granules (*B. leptochelys* group) and species with all or most of the external accessory granules absent (*B. arenicola* group).

An analysis of four *Buthacus* male and female specimens recently collected in the region of Ghardaïa, in the central Algerian Saharan, has led to the description of another new species for the genus. This new taxon is associated with the *Buthacus leptochelys* complex of species and represents the 12<sup>th</sup> known *Buthacus* species reported from Algeria, attesting again to a considerable degree of scorpion diversity found in the Algerian Saharan desert (*e.g.* Lourenço & Sadine, 2014;

Reviewer: Gérard Dupré (France).



This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

Copyright 2024 The Authors. *Faunitaxys* published by Lionel Delaunay on behalf of the AFCFF (Association française de Cartographie de la Faune et de la Flore).

Lourenço *et al.*, 2017; Sadine *et al.* 2020; Ythier *et al.*, 2021; Ythier, 2022; Bengaid *et al.*, 2022; Sadine *et al.*, 2023), and that our knowledge of this fauna is still far from complete, with many additional species and probably even genera awaiting discovery.

The new complex of species and it is compared with the two other species of the “*leptochelys*” complex occurring in the region, namely *B. spinatus* Lourenço, Bissati & Sadine, 2016 and *B. elmenia* Lourenço & Sadine, 2017 (Fig. 18). This new taxon represents the 12<sup>th</sup> known *Buthacus* species reported from Algeria.

In addition, an analysis of additional material of *B. spinatus* including adult specimens of both sexes recently collected at the type localities of the species, and a comparison with the type material of *B. spinatus*, allowed an emended diagnosis of the species.

## 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, Habitus photographs were made with a Canon EOS 7D and Adobe Photoshop software. Map was made using Adobe Photoshop software. Measurements follow Stahnke (1971) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology mostly follows Vachon (1952) and Hjelle (1990). Material studied herein is deposited in the MNHN (Muséum national d’Histoire naturelle, Paris, France) and EYCP (Eric Ythier Private Collection, Romanèche-Thorins, France).



**Fig. 1-4.** *Buthacus spinatus*, habitus.

1-2. ♀, dorsal (1) and ventral (2) aspects. 3-4. ♂, dorsal (3) and ventral (4) aspects.



**Fig. 5-8.** *Buthacus deserticus* sp. n., habitus.

5-6. ♀ holotype, dorsal (5) and ventral (6) aspects. 7-8. ♂ paratype, dorsal (7) and ventral (8) aspects.

## Taxonomic treatment

Family **Buthidae** C. L. Koch, 1837

Genus ***Buthacus*** Birula, 1908

### Composition of the genus *Buthacus* in Algeria (in order of description)

- *Buthacus arenicola* (Simon, 1885)
- *Buthacus fuscata* Pallary, 1929
- *Buthacus foleyi* Vachon, 1948
- *Buthacus algerianus* Lourenço, 2006
- *Buthacus birulai* Lourenço, 2006
- *Buthacus armasi* Lourenço, 2013
- *Buthacus samiae* Lourenço & Sadine, 2015
- *Buthacus spinatus* Lourenço, Bissati & Sadine, 2016
- *Buthacus elmenia* Lourenço & Sadine, 2017
- *Buthacus ahaggar* Lourenço, Kourim & Sadine, 2017
- *Buthacus sadinei* Ythier, 2022
- *Buthacus deserticus* sp. n.

*Buthacus spinatus* Lourenço, Bissati & Sadine, 2016

(Fig. 1-4, Tab. I)

### Material examined (3 ex.)

- Algeria, Ghardaïa, Metlili, 12/II/2023 (A. Chedad), 1 ♀, deposited in the MNHL.
- Algeria, Ghardaïa, Sebseb, 29/I/2023 (Z. Souilem), 2 ♂, deposited in the MNHL and EYCP.

**Diagnosis** (emended). – Scorpions of small to moderate size for the genus with a total length of 42 mm in female and 36-37 mm in male. General coloration yellow to pale yellow; only metasomal segment V with dark brown to blackish pigmentation. Pectinal tooth count 17-18 in female, 21-23 in male. Ventral carinae on metasomal segments II-III with well-marked spiniform granules; ventral and latero-ventral carinae on segment V with strong spinoid granules and several conspicuous spinoid lobes. Pedipalp chela manus moderately inflated in male; fingers straight in female, twisted in male,

with 8 rows of granules on fixed finger, 9 on movable finger; external and internal accessory granules moderately to strongly marked. Tibial spurs moderate to weak on legs III and IV. Trichobothriotaxy A- $\beta$  (beta) orthobothriotaxic; fixed fingers with trichobothrium **eb** slightly displaced on chela manus, situated closer to **Et** than **esb**; trichobothria **db** and **esb** situated at the same level and trichobothrium **Eb<sub>3</sub>** displaced to the ventral aspect of chela hand.

*Buthacus deserticus* sp. n. Sadine, Souilem, Lourenço & Ythier

(Fig. 5-15, Tab. I)

ZooBank: <https://zoobank.org/095D35DB-B116-45AD-9ED0-0E27C8747B14>

**Holotype**, ♀, Algeria, Ghardaïa, Dhayet Bendhahoua, 17/III/2019 (S. E. Sadine), deposited in the MNHL.

**Paratypes** (3 ex.)

- Algeria, Ghardaïa, Mansoura, 03/III/2023 (Z. Souilem), 1 ♂, deposited in the MNHL.

- Algeria, Ghardaïa, Mansoura, 03/III/2023 (Z. Souilem), 1 ♀, deposited in the EYCP.

- Algeria, Ghardaïa, Beni Isguen, 11/X/2022 (Z. Souilem), 1 ♂, deposited in the EYCP.

**Etymology.** – The specific name refers to the Sahara Desert, where the new species was collected.

**Diagnosis.** – Scorpions of moderate size for the genus with a total length of 44-50 mm in female and 47-52 mm in male. General coloration yellowish to brownish yellow, with dark brown to blackish pigmentation on the carapace and metasomal segment V. Pectinal tooth count 15-17 in female, 22-24 in male. Ventral carinae on metasomal segments II-III with well-marked spiniform granules; ventral and latero-ventral carinae on segment V with moderate to strong spinoid granules and several conspicuous spinoid lobes. Pedipalp chela manus strongly inflated in male; fingers straight in female, twisted in male, with 8 rows of granules on fixed finger, 9 on movable finger; external and internal accessory granules moderately to strongly marked. Tibial spurs moderate on legs III and IV. Tibial spurs moderate to weak on legs III and IV. Trichobothriotaxy A- $\beta$  (beta) orthobothriotaxic; fixed fingers with trichobothrium **eb** slightly displaced on chela manus, situated closer to **Et** than **esb**; trichobothrium **db** distal to **esb**.

**Description** (based on male holotype and male and females paratypes; measurements in Table I).

**Coloration.** – Prosoma: carapace yellowish (male) to brownish yellow (female) with diffuse variegated dark brown to blackish spots between lateral eyes and median ocular tubercle; eyes surrounded by black pigment. Mesosoma: tergites yellowish (male) to brownish yellow (female); sternites, coxapophysis, sternum and genital operculum yellowish, pectines pale yellow. Metasoma: yellowish with dark brown to blackish pigmentation on segment V. Vesicle pale yellow; aculeus reddish yellow at the base and reddish at its extremity. Chelicerae yellowish without any reticulation; teeth reddish. Pedipalps: yellowish, the rows of granules on the dentate margins of the fingers reddish. Legs pale yellow.

**Morphology.** – Prosoma: anterior margin of carapace not emarginate, straight, bearing ten macrosetae. Carapace carinae weak; anterior median carinae obsolete; central median, posterior median and central lateral carinae weak. All furrows weak to obsolete. Intercarinal spaces moderately granular. Median ocular tubercle slightly anterior to the centre of the carapace; median eyes separated by about two ocular diameters. Five pairs of lateral eyes; the first four disposed in one line, the fifth situated behind fourth eye. Mesosoma: tergites I-VI tricarinate; all carinae weak; lateral carinae vestigial on segment I; tergite VII pentacarinata, with lateral pairs of carinae strong. Intercarinal spaces with fine granulation in

central area of tergites, with coarse and fine granulation on lateral sides. Sternites smooth; all carinae absent from sternites III-VI; sternite VII with two pairs of smooth carinae. Pectines with the marginal tips extending to the end of sternite III in female, end of sternite IV in male; pectinal tooth count 15-17 in females, 22-24 in males; pectines with 3 marginal lamellae and 8-9 middle lamellae; lamellae and fulcra with numerous setae. Metasoma: segment I with 10 complete carinae, II-IV with 8 complete carinae (incomplete lateromedial carinae on posterior half of segment II, indicated by a few granules on posterior part of segment III), V with five carinae. Ventral carinae weak on segment I, with well-marked spiniform granules on II-III (especially in female), weak on IV; dorsal carinae without any well marked spinoid granules on segments I to IV. Segment V with ventral and ventrolateral armed with moderate to strong spinoid granules and several conspicuous spinoid lobes. Dorsal furrows of all segments weakly developed; dorsal and lateral intercarinal spaces smooth on all segments; ventral intercarinal spaces smooth on segments I-III, weakly granulated on IV-V. Segment V with 36 long setae. Anal arc composed of 6 ventral teeth and two lateral lobes. Telson smooth. Aculeus very long and curved; subaculear tubercle absent. Chelicerae with two reduced but not fused denticles at the base of the movable finger (Vachon, 1963). Pedipalps: Trichobothrial pattern orthobothriotaxic, type A (Vachon, 1974); chela fixed fingers with trichobothrium **eb** slightly displaced on chela manus, situated closer to **Et** than **esb**; trichobothrium **db** distal to **esb**; dorsal trichobothria of femur in  $\beta$  (beta) configuration (Vachon, 1975). Femur pentacarinata; all carinae moderately crenulate. Patella and chela with vestigial carinae only, almost smooth. Pedipalp chela manus strongly inflated in male; fingers straight in female, twisted in male, with 8 rows of granules on fixed finger, 9 on movable finger; each row with one external and one internal accessory granule, both moderate to strong; 3 terminal granules next to the terminal denticle. Legs: Ventral aspect of tarsi with numerous thin long setae. Tibial spurs moderate on legs III-IV.

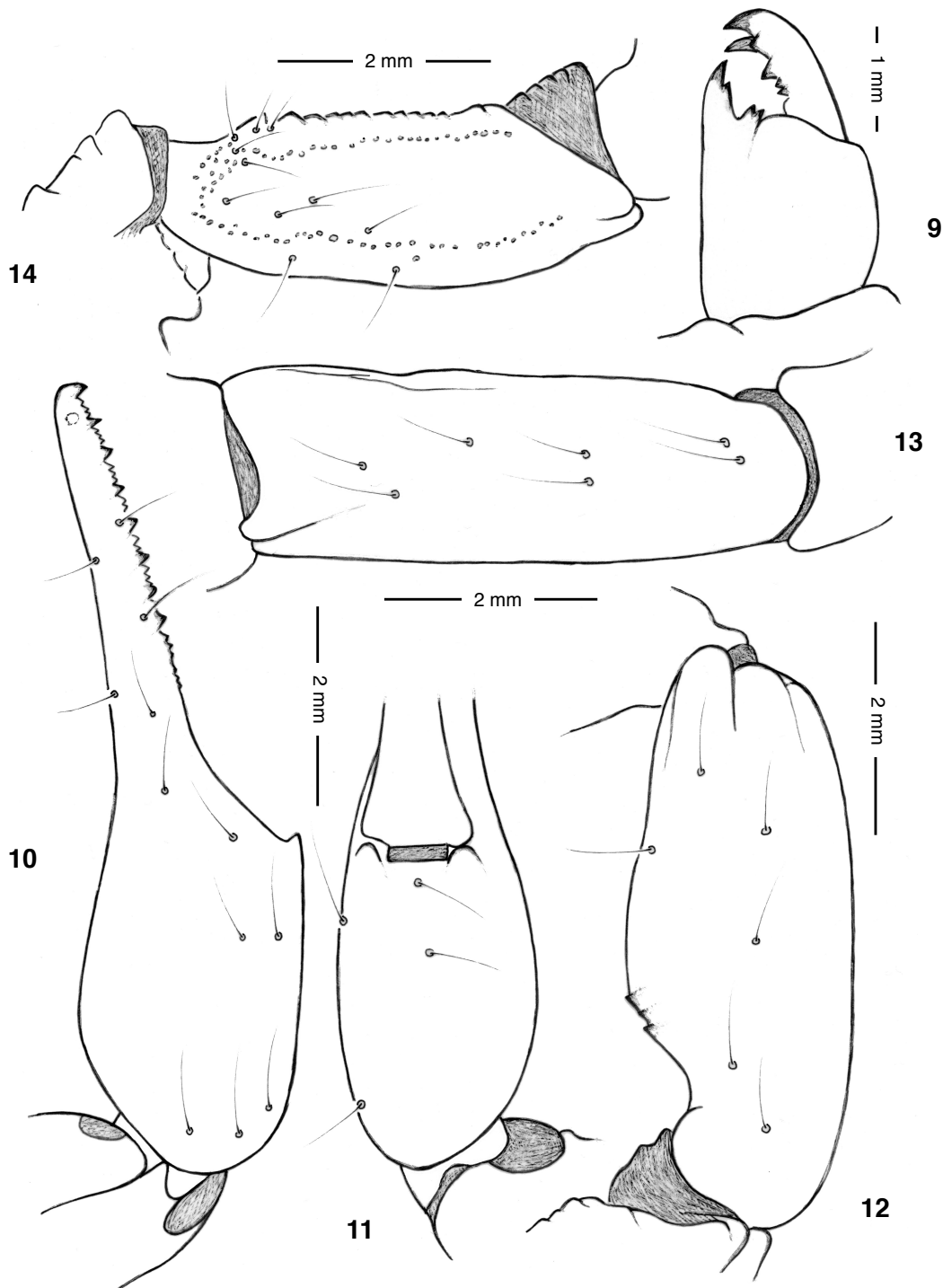
**Relationships.** – *Buthacus deserticus* sp. n. shows similarities with regard to several morphological characters as well as a similar biotope, with *B. spinatus* and *B. elmenia*, both species belonging to the “*leptochebys*” complex and occurring in the region of Ghardaïa, Central Algeria.

The new species can however be easily distinguished from these species notably by the following main features:

- (i) larger size with 44-52 mm (36-42 mm in *B. spinatus*, 41 mm in *B. elmenia*);
- (ii) general coloration yellowish to brownish yellow with darker pigmentation on carapace (yellow to pale yellow without spots on carapace in *B. spinatus* and *B. elmenia*);
- (iii) pectinal tooth count 22-24 in male (19-20 in male *B. elmenia*);
- (iv) ventral and latero-ventral carinae on segment V with moderate to strong spinoid granules and several conspicuous spinoid lobes (stronger granulation in *B. spinatus*, spinoid lobes inconspicuous in *B. elmenia*);
- (v) male pedipalp chela manus strongly inflated (moderately inflated in *B. spinatus*);
- (vi) chela fixed fingers with trichobothrium **db** distal to **esb** (at the same level in *B. spinatus*);
- (vii) vesicle more bulky in female and several other distinct morphometric values (Tab. I).

## Ecological characteristics of the region of Ghardaïa

Ghardaïa (29°19'N-32°57'N, 02°03'E-04°54'E), located in the central Algerian Saharan, is an important arid and desert region, characterized with scorpion fauna adapted to arid conditions, such as typically psammophilic species (Bengaid *et al.*, 2022). The climate which characterizes this region is semi-arid to arid climate (Mihoub *et al.*, 2016), with extreme thermal amplitudes between the day and the night that reach 15-16 degrees (Sam, 2012). The coldest month is January, with a minimum temperature of 6.2 °C, whereas the hottest month is July, with a maximum temperature of



**Fig. 9-14.** *Buthacus deserticus* sp. n., ♀ holotype.

9. Chelicera, dorsal aspect. 10-14. Trichobotrial pattern. 10-11. Chela, dorso-external (10) and ventral (11) aspects. 12-13. Patella, dorsal (12) and external (13) aspects. 14. Femur, dorsal aspect.

41.8 °C (Sadine *et al.*, 2016). Rainfall is extremely low in the region of Ghardaïa, with an average of 80.2 mm per year. Air humidity is rather low, with a maximum humidity of 55.5% in December and a minimum of 21.6% in July (Chehma, 2011).

### Funding

This work is part of a *Programme National de Recherche* (PNR) project entitled « *La diversité scorpionique dans le centre algérien* » (the scorpion diversity of central Algeria), sponsored by the *Agence Thématique de Recherche en Sciences de la Santé et de la Vie* (ATRSSV), Algeria.

### References

- Bengaid Y., Sadine S. E., Zouatine O., Abidi H., Bissati S. & Houhamdi H., 2022. – Notes and remarks on *Buthacus* species of Central Algeria (Scorpiones: Buthidae). *Serket*, 18(3): 274-281.
- Birula A. A., 1908. – Ergebnisse der mit Subvention aus der Erbschaft Treitel unternommenen zoologischen Forschungsreise Dr. F. Werner's nach dem AngloAegyptischen Sudan und NordUganda. XIV. Skorpiones und Solifugae. *Sitzungsberichte der kaiserlich-königlichen Akademie der Wissenschaften, Wien*, 117(1): 121-152.
- Chehma A., 2011. – Séminaire L'effet du Changement Climatique sur l'élevage et la gestion durable des parcours dans les zones arides et



	<i>B. deserticus</i> sp. n.		<i>B. spinatus</i>		<i>B. elmenia</i>
	♀	♂	♀	♂	♀
<b>Total length</b>	50.3	52.4	42.4	36.0	40.7
<b>Carapace</b>					
- length	5.6	5.5	4.5	4.0	4.4
- anterior width	3.3	2.9	2.6	2.4	2.9
- posterior width	6.4	6.4	5.1	4.6	5.4
<b>Mesosoma length</b>	11.9	12.0	11.4	8.4	10.6
<b>Metasomal segment I</b>					
- length	4.3	4.4	3.9	3.0	3.2
- width	3.8	3.9	2.8	2.6	2.6
<b>Metasomal segment II</b>					
- length	5.0	5.3	3.8	3.4	3.8
- width	3.6	3.8	2.5	2.5	2.4
<b>Metasomal segment III</b>					
- length	5.3	5.5	3.9	3.6	4.0
- width	3.4	3.5	2.4	2.3	2.3
<b>Metasomal segment IV</b>					
- length	6.0	6.4	4.5	4.1	4.4
- width	3.1	3.1	2.3	2.1	2.1
<b>Metasomal segment V</b>					
- length	6.8	7.0	5.3	4.9	5.2
- width	2.8	2.8	2.1	2.0	2.0
- depth	2.6	2.4	1.9	1.8	1.8
<b>Telson length</b>	5.4	6.3	5.1	4.6	5.1
<b>Vesicle</b>					
- width	2.4	2.3	1.8	1.6	1.7
- depth	2.3	2.1	1.6	1.5	1.7
<b>Pedipalp</b>					
- femur length	4.1	4.6	3.4	3.6	3.5
- femur width	1.6	1.6	1.4	1.1	1.2
- patella length	5.5	5.5	4.3	4.4	4.3
- patella width	2.3	2.4	1.6	1.6	1.6
- chela length	7.9	9.1	6.1	6.9	6.3
- chela width	1.8	3.1	1.4	1.9	1.3
- chela depth	2.1	3.4	1.5	2.0	1.2
- movable finger length	4.9	4.9	3.9	3.9	3.9
<b>Morphometric ratios</b>					
- metasomal segment I L/W	1.31	1.13	1.39	1.15	1.23
- metasomal segment V L/W	2.43	2.50	2.52	2.45	2.60
- metasomal segment V L/D	2.62	2.92	2.79	2.72	2.89
- telson L/W	2.25	2.74	2.83	2.88	3.00
- telson L/D	2.35	3.00	3.19	3.07	3.00
- pedipalp chela L/W	4.39	2.94	4.36	3.63	4.85
- pedipalp chela L/D	3.76	2.68	4.07	3.45	5.25
- pedipalp chela L / movable finger L	1.61	1.86	1.56	1.77	1.62

**Table I.** Morphometric values (mm) and selected morphometric ratios of the female holotype and one male paratype of *B. deserticus* sp. n., female and male of *B. spinatus* and female holotype of *B. elmenia* (L: length, W: width, D: depth).

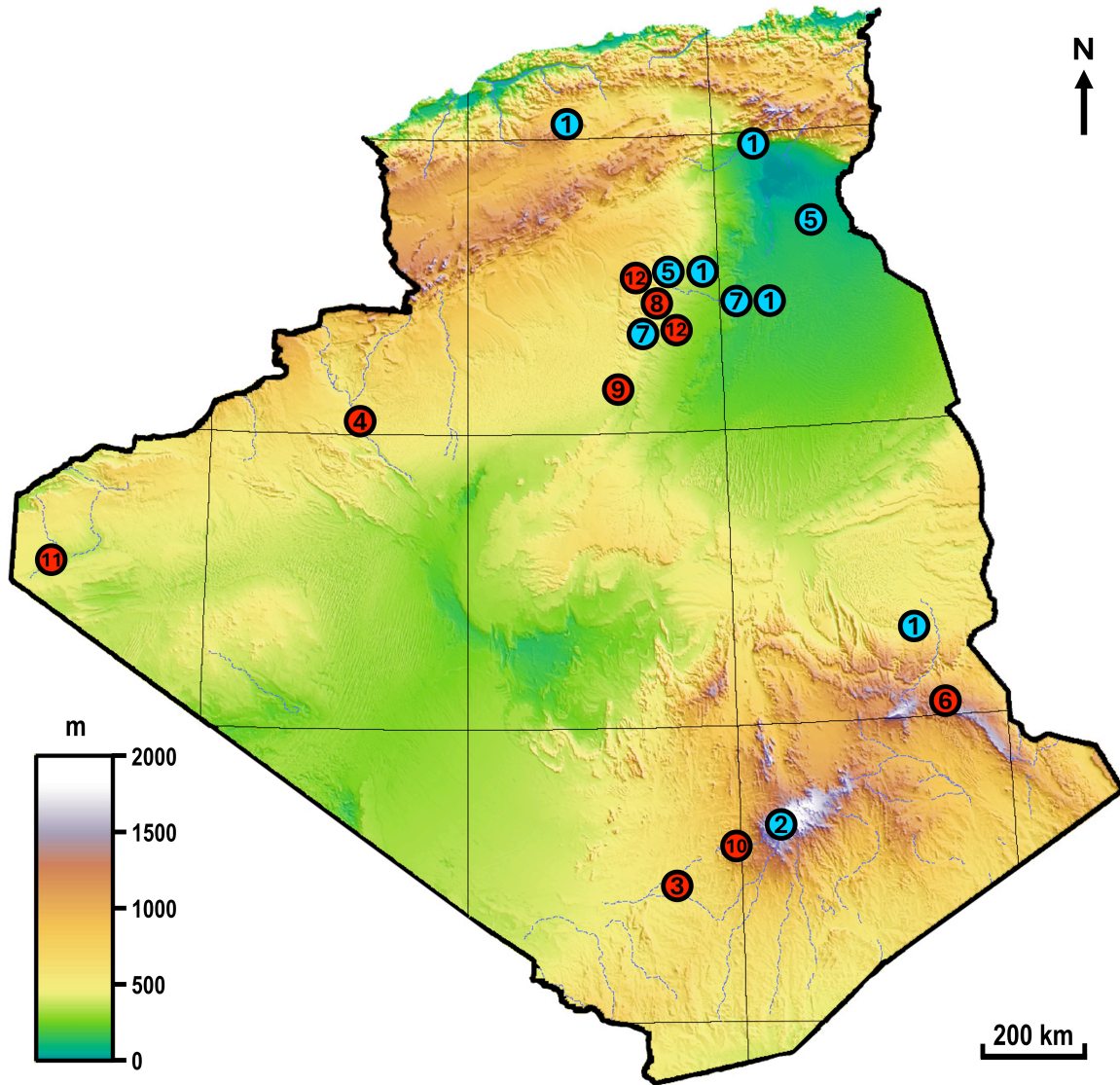


**Fig. 15.** *Buthacus deserticus* sp. n., ♂ paratype alive in its natural habitat (Dhayet Bendhahoua, Ghardaïa, Central Algeria).

- semi-arides du Maghreb. Du 21 au 24 Novembre 2011. In *Le Sahara en Algérie, Situation et Défis*; Université Kasdi Merbah: Ouargla, Algeria, 2011; pp. 1-8.
- Hjelle J. T., 1990. – Anatomy and morphology. Pp. 9-63. In: G. A. Polis (ed.), *The Biology of Scorpions*. Stanford Univ. Press, 587 pp.
- Levy G. & Amitai P., 1980. – Fauna Palaestina. Arachnida I. Scorpiones. The Israel Academy of Sciences and Humanities, Jerusalem, 130 pp.
- Lourenço W. R. & Sadine S. E., 2014. – A new species of the rare buthid scorpion genus *Lissothus* Vachon, 1948 from Central Algeria (Scorpiones, Buthidae). *Comptes Rendus Biologies*, 337: 416-422. <http://dx.doi.org/10.1016/j.crv.2014.04.006>
- Lourenço W. R., Sadine S. E., Bissati S. & Houtia A., 2017. – The genus *Buthacus* Birula, 1908 in Northern and Central Algeria; description of a new species and comments on possible microendemic populations (Scorpiones: Buthidae). *Arachnida Rivista Aracnologica Italiana*, 11: 18-30.
- Mihoub R., Chabour N. & Guermoui M., 2016. – Modeling soil temperature based on Gaussian process regression in a semi-arid-climate, case study Ghardaïa, Algeria. *Geomechanics and Geophysics for Geo-Energy and Geo-Resources*, 2(4): 397-403. <https://doi.org/10.1007/s40948-016-0033-3>
- Sadine S. E., Bissati S. & Lourenço W. R., 2016. – The first true deserticolous species of *Buthus* Leach, 1815 from Algeria (Scorpiones: Buthidae); Ecological and biogeographic considerations. *Comptes Rendus Biologies*, 339: 44-49. <http://dx.doi.org/10.1016/j.crv.2015.10.002>
- Sadine S. E., Djilani S. & Kerboua K. E., 2020. – Aperçu sur les scorpions d'Algérie. *Algerian Journal of Health Sciences*, 2(1): 8-14.
- Sadine S. E., Souilem Z., Belgaid Y., Chedad A., Djelloud-Souilem Z., Chebihi B., Zouaimia A., Bensakhri Z., Houhamdi M. & Zebza R., 2023. – Effects of Climate on Scorpion Diversity in Arid Ecosystems of the Sahara Desert of Algeria. *Diversity* 15, 541: 1-17. <https://doi.org/10.3390/d15040541>
- Sam F., 2012. – Réhabilitation Thermique d'un Local dans une Zone Aride cas de Ghardaïa. Ph.D. Thesis, Université Mouloud Mammeri, Tizi Ouzou, Algeria, 2012.
- Stahnke H. L., 1971. – Scorpion nomenclature and mensuration. *Entomological News*, 81: 297-316.
- Vachon M., 1949. – Etudes sur les Scorpions. III (suite). Description des Scorpions du Nord de l'Afrique. *Archives de l'Institut Pasteur d'Algérie*, 27(1): 66-100.
- Vachon M., 1952. – Etudes sur les scorpions. Publications de l'Institut Pasteur d'Algérie, Alger: 482 pp.
- Vachon M., 1963. – De l'utilité, en systématique, d'une nomenclature des dents des chélicères chez les Scorpions. *Bulletin du Muséum national d'Histoire naturelle*, Paris, 2e sér., 35 (2): 161-166.
- Vachon M., 1974. – Etude des caractères utilisés pour classer les familles et les genres de Scorpions (Arachnides). 1. La trichobothriotaxie en aracnologie. Sigles trichobothriaux et types de trichobothriotaxie chez les Scorpions. *Bulletin du Muséum national d'Histoire naturelle*, Paris, 3e sér., n° 140, Zool. 104: 857-958.



Fig. 16-17. Natural habitats of *Buthacus deserticus* sp. n. in Dhayet Bendhahoua (16) and Beni Isguen (17), Ghardaïa, Central Algeria.



**Fig. 18.** Map of Algeria, showing the approximate known distribution of the *Buthacus* species, belonging to the *B. arenicola* (blue dots) or *B. leptochelys* (red dots) species complexes:

*B. arenicola* (1), *B. fuscata* (2), *B. foleyi* (3), *B. algerianus* (4), *B. birulai* (5), *B. armasi* (6), *B. samiae* (7), *B. spinatus* (8), *B. elmenia* (9), *B. ahaggar* (10), *B. sadinei* (11) and *B. deserticus* sp. n. (12).

Vachon M., 1975. – Sur l'utilisation de la trichobothriotaxie du bras des pédipalpes des Scorpions (Arachnides) dans le classement des genres de la famille des Buthidae Simon. *Comptes Rendus des Séances de l'Académie de Sciences*, 281 (D): 1597-1599.

Ythier E., 2022. – A new species of *Buthacus* Birula, 1908 from Western Algeria (Scorpiones: Buthidae). *Faunitaxys* 10(28): 1-6.

Ythier E., Sadine S. E., Haddadi M. L. & Lourenço W. R., 2021. – A new species of *Buthus* Leach, 1815 from Algeria (Scorpiones: Buthidae) and an interesting new case of vicariance. *Faunitaxys*, 9(21): 1-9.

#### Authors contribution <sup>1</sup>

*Publisher correspondence.* – EY

*Writing the article.* – EY

*Description.* – SE, ZS, WL, EY

*Article proofreading.* – SE, ZS, AC, BC, RZ, MH, WL, EY

*Bibliographic work.* – EY

*Material study.* – SE, ZS, AC, BC, RZ, MH

*Author of the figures.* – SE, ZS, WL, EY

<sup>1</sup> SE = Sadine S. E. – ZS = Souilem Z. – AC = Chedad A. – BC = Chebihi B. – RZ = Zebba R. – MH = Houhamdi M. – WL = Lourenço W. R. – EY = Ythier E

#### Résumé

Sadine S. E., Souilem Z., Chedad A., Chebihi B., Zebba R., Houhamdi M., Lourenço W. R. & Ythier E., 2024. – Une nouvelle espèce de *Buthacus* Birula, 1908 du Sahara algérien (Scorpiones: Buthidae). *Faunitaxys*, 12(9): 1 – 9.

Une nouvelle espèce appartenant au genre *Buthacus* Birula, 1908 est décrite sur la base de spécimens collectés dans la région de Ghardaïa, dans le centre de l'Algérie. *Buthacus deserticus* sp. n. appartient au complexe d'espèces *Buthacus leptochelys* (Ehrenberg 1829). La nouvelle espèce est comparée avec les deux autres espèces du complexe "leptochelys" présentes dans la région, *B. spinatus* Lourenço, Bissati & Sadine, 2016 et *B. elmenia* Lourenço & Sadine, 2017. Ce nouveau taxon représente la douzième espèce de *Buthacus* connue pour l'Algérie. Une carte de répartition des espèces de *Buthacus* en Algérie est présentée. Par ailleurs, une diagnose révisée de *Buthacus spinatus* Lourenço, Bissati & Sadine, 2016 est présentée sur la base de matériel supplémentaire.

Mots-clés. – Scorpion, *Buthacus*, *deserticus*, taxonomie, nouvelle espèce, description, morphologie, Sahara, Algérie.

# Faunitaxys

Volume 12, Numéro 9, Février 2024

## SOMMAIRE

Une nouvelle espèce de *Buthacus* Birula, 1908 du Sahara algérien (Scorpiones: Buthidae).

*Salah Eddine Sadine, Zineb Souilem, Abdelwahab Chedad, Bahri Chebihi, Rabah Zebsa, Moussa Houhamdi, Wilson R. Lourenço & Eric Ythier* ..... 1 – 9

## CONTENTS

A new species of *Buthacus* Birula, 1908 from the Algerian Saharan Desert (Scorpiones: Buthidae).

*Salah Eddine Sadine, Zineb Souilem, Abdelwahab Chedad, Bahri Chebihi, Rabah Zebsa, Moussa Houhamdi, Wilson R. Lourenço & Eric Ythier* ..... 1 – 9



### *Illustration de la couverture :*

Beni Isguen, Wilaya of Ghardaïa, Central Algeria, one of the type localities of *Buthacus deserticus* **sp. n.**

### Crédits:

**Eric Ythier** : Fig. 1-8 & 18.

**Wilson R. Lourenço** : Fig. 9-14.

**Salah Eddine Sadine** : Fig. 15, 16 & couverture.

**Zineb Souilem** : Fig. 17.