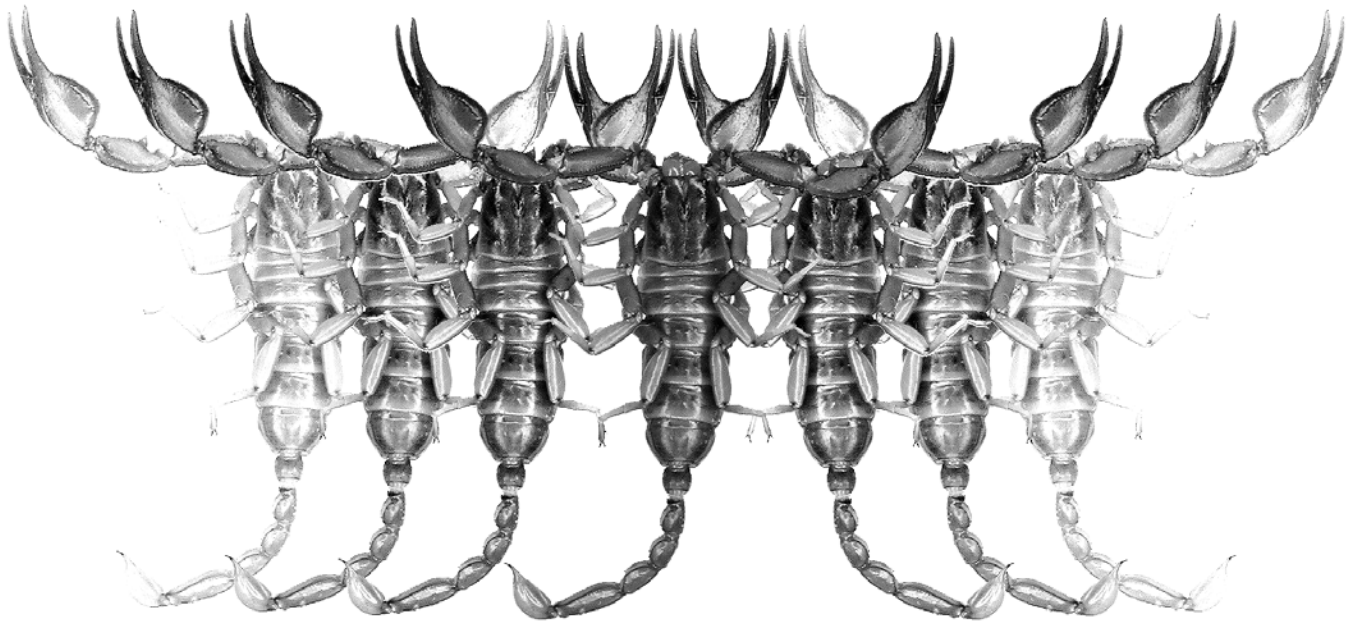


# *Euscorpius*

Occasional Publications in Scorpiology



**The Genus *Butheoloides* Hirst, 1925 (Scorpiones, Buthidae)  
in Morocco, with a Description of a New Species**

**Wilson R. Lourenço, Oulaid Touloun & Ali Boumezzough**

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# *Euscorpius*

## Occasional Publications in Scorpiology

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- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
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- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway
- **OUMNH**, Oxford University Museum of Natural History, Oxford, UK
- **NEV**, Library Netherlands Entomological Society, Amsterdam, Netherlands

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## The genus *Butheoloides* Hirst, 1925 (Scorpiones, Buthidae) in Morocco, with a description of a new species

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### Summary

A new species belonging to the genus *Butheoloides* Hirst, 1925 (subgenus *Butheoloides* Hirst, 1925) (Scorpiones, Buthidae) is described from two localities in Morocco: north of Sidi Ifni in the southern coast and Sidi Moussa west of Tiznit. With the description of *Butheoloides* (*Butheoloides*) *littoralis* sp. n., the total number of species of this genus known from Morocco is raised to five. This makes Morocco the region in Africa with the highest diversity for *Butheoloides* species.

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### Introduction

As detailed in previous publications (Lourenço, 2010), the genus *Butheoloides* was proposed by Hirst (1925) for the species *Butheoloides maroccanus* distributed in the Atlas Mountains of the region of Amizmiz in the south of Marrakech in Morocco, but also in the plane of Haouz north of Marrakech. Subsequently, several other species were described for different countries in Africa (Lourenço, 2000), and the genus was divided in two subgenera, *Butheoloides* Hirst and *Gigantoloides* Lourenço, 2002 (Lourenço, 2002; Lourenço et al., 2003). The discovery and description of different species of *Butheoloides* confirmed a peri-Saharan pattern of distribution for this genus, almost forming a ring around the most arid core region of the Sahara. This region follows a circle from the north of Algeria and through the Atlas Mountains of Morocco, south via Senegal, and then east through Mali, Côte d'Ivoire, Nigeria, Sudan and Ethiopia (Lourenço, 2002; Lourenço et al., 2003).

In the specific case of the Moroccan fauna, following *B. maroccanus*, a second species, *Butheoloides* (*Gigantoloides*) *aymerichi* Lourenço, 2002 was described from the region of Tinerhir and included in a new subgenus *Gigantoloides* (Lourenço, 2002). Shortly after, another new species, *Butheoloides* (*Butheoloides*) *occidentalis* Lourenço, Slimani et Berahou, 2003, was described from the region of Tan-Tan, near the southern coastal region of the country (Lourenço, Slimani & Berahou, 2003). Very recently, a fourth species, *Butheoloides slimanii* Lourenço, 2010 was described

from Tanannt/Azilal in the northern range of Atlas Mountains (Lourenço, 2010).

At present, one more new species is described from two sites in Morocco: north of Sidi Ifni in the southern coast and Sidi Moussa west of Tiznit. This raises to five the total number of species known for the country. Morocco is the region in Africa with the highest diversity for *Butheoloides* species. The total number of known species in the genus *Butheoloides* remains nevertheless moderate (i.e., fourteen).

### Methods

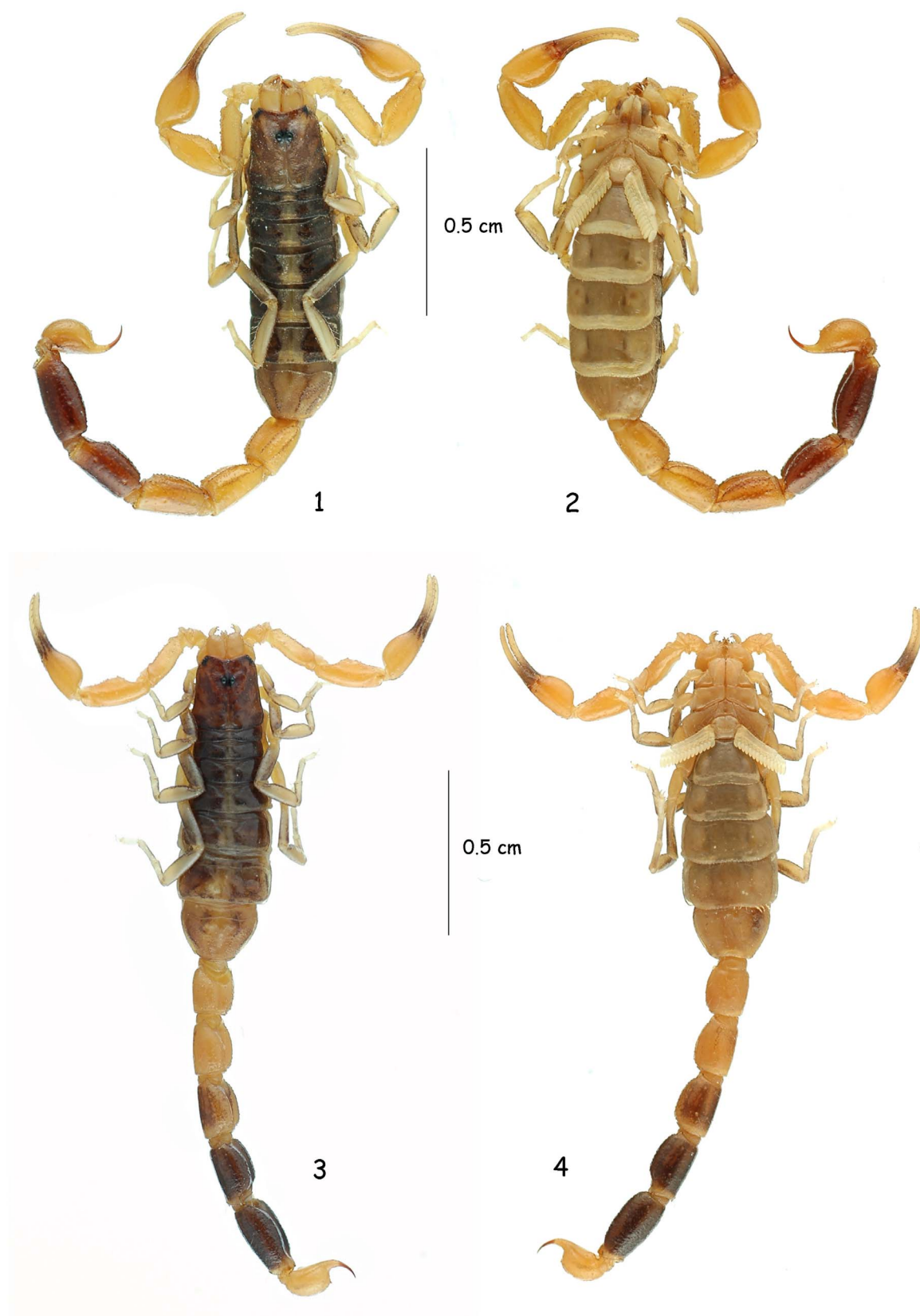
Illustrations and measurements were produced with the aid of a Wild M5 stereo-microscope with a drawing tube (camera lucida) and an ocular micrometer. Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology generally follows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

### Taxonomy

Family Buthidae C. L. Koch, 1837  
Genus *Butheoloides* Hirst, 1925  
Subgenus *Butheoloides* Hirst, 1925

*Butheoloides* (*Butheoloides*) *littoralis* sp. n.  
(Figs. 3–4, 6–12)

*Type material*: Holotype (female). Morocco, Lagzira Beach, 10 km N Sidi Ifni, road between Mirleft



**Figures 1–4:** 1–2. *Butheoloides* (*B.*) *maroccanus*, female from Amizmiz. Dorsal and ventral aspects. 3–4. *Butheoloides* (*B.*) *littoralis* sp. n., female holotype. Dorsal and ventral aspects.

	<i>B. (B.). littoralis</i> sp. n	<i>B. (B.) maroccanus</i>
Total length	17.0	22.3
Carapace:		
- length	2.2	2.6
- anterior width	1.7	2.0
- posterior width	2.2	2.7
Metasomal segment I:		
- length	1.3	2.0
- width	1.3	1.6
Metasomal segment V:		
- length	2.2	3.0
- width	1.2	1.5
- depth	1.1	1.3
Vesicle		
- width	1.0	1.2
- depth	0.9	1.1
Pedipalp:		
- femur length	1.8	2.4
- femur width	0.7	0.9
- patella length	2.2	2.8
- patella width	0.9	1.2
- chela length	3.5	4.7
- chela width	0.9	1.3
- chela depth	0.7	1.1
Movable finger:		
- length	2.0	3.0

**Table 1:** Morphometric values (in mm) of the female holotype of *Butheoloides (B.) littoralis* sp. n. and of a female of *B. (B.) maroccanus* from Amizmiz.

and Sidi Ifni, 5–10 m alt., 17 December 2010 (O. Touloun & A. Boumezzough). Paratype (female). Morocco, Sidi Moussa, 10 km west of Tiznit, 550 m alt., 06 April 2002 (O. Touloun). Holotype deposited in the collections of the Muséum national d'Histoire naturelle, Paris (MNHN-RS-8862). Paratype in the collections of the Laboratoire 'Ecologie & Environnement' Faculté des Sciences Semlalia, Université Cadi Ayyad, Marrakech, Morocco.

*Etymology:* The specific name refers to the coastal zone where the holotype of the new species was found.

*Diagnosis:* Scorpions of small size; female holotype 17.0 mm in total length. Coloration globally reddish-yellow with brownish pigmentation on body and appendages; chelicerae without any variegated pigmentation; chelae with the base of the fingers infuscated. Carapace strongly emarginated. Carapace and tergites smooth. Dorsal carinae of metasomal segments weakly marked; telson with some minute spinoid granulations on the ventral aspect; aculeus moderately curved and shorter than vesicle; subaculear tooth weakly marked, slightly

spinoid. Pectinal tooth count 14–14 (paratype 12–12); fulcra present. Pedipalps short; fixed and movable fingers with 9–10 rows of granules; internal accessory granules present, conspicuous; distal extremity of movable finger with three teeth. Trichobothrial pattern A- $\alpha$  (alpha), orthobothriotaxy.

*Description:* Based on female holotype. Measurements in Table 1.

*Coloration.* Basically reddish-yellow with brownish pigmentation on body and appendages. Prosoma: carapace uniformly brownish; median and lateral eyes surrounded with black pigment. Mesosoma: tergites I to VI brownish; VII yellowish with some brownish spots. Metasomal segments I and II yellowish; segments III to V yellowish, strongly marked with brownish spots; IV–V almost totally dark; telson yellow with the aculeus reddish at the tip. Venter yellow; pectines light yellow. Chelicerae yellow without any variegated spots; fingers yellow with reddish teeth. Pedipalps reddish-yellow with the base of the chela fingers infuscated; legs pale yellow slightly infuscated.



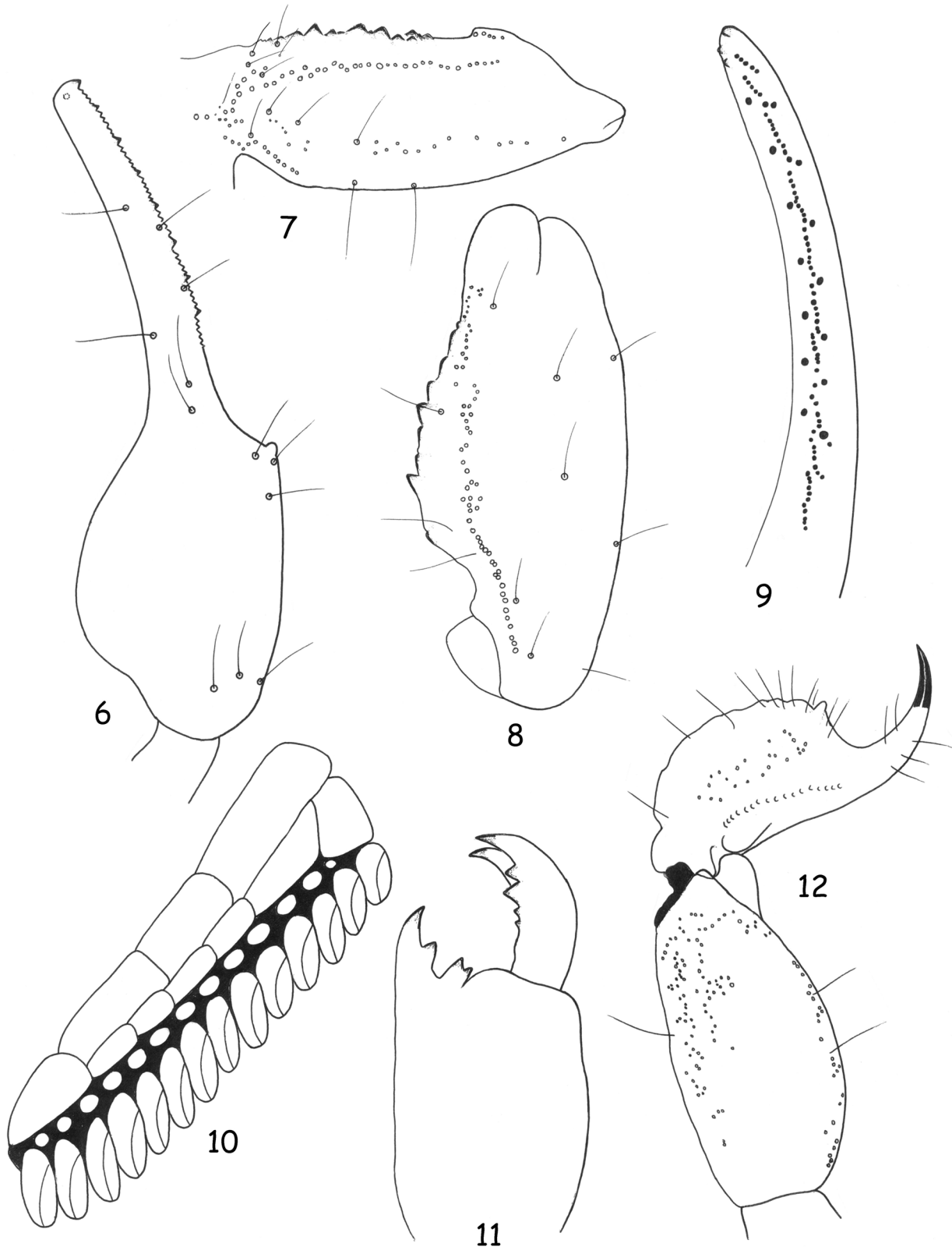


**Figure 5:** Lagzira Beach, the natural habitat of *Butheoloides (B.) littoralis* sp. n.

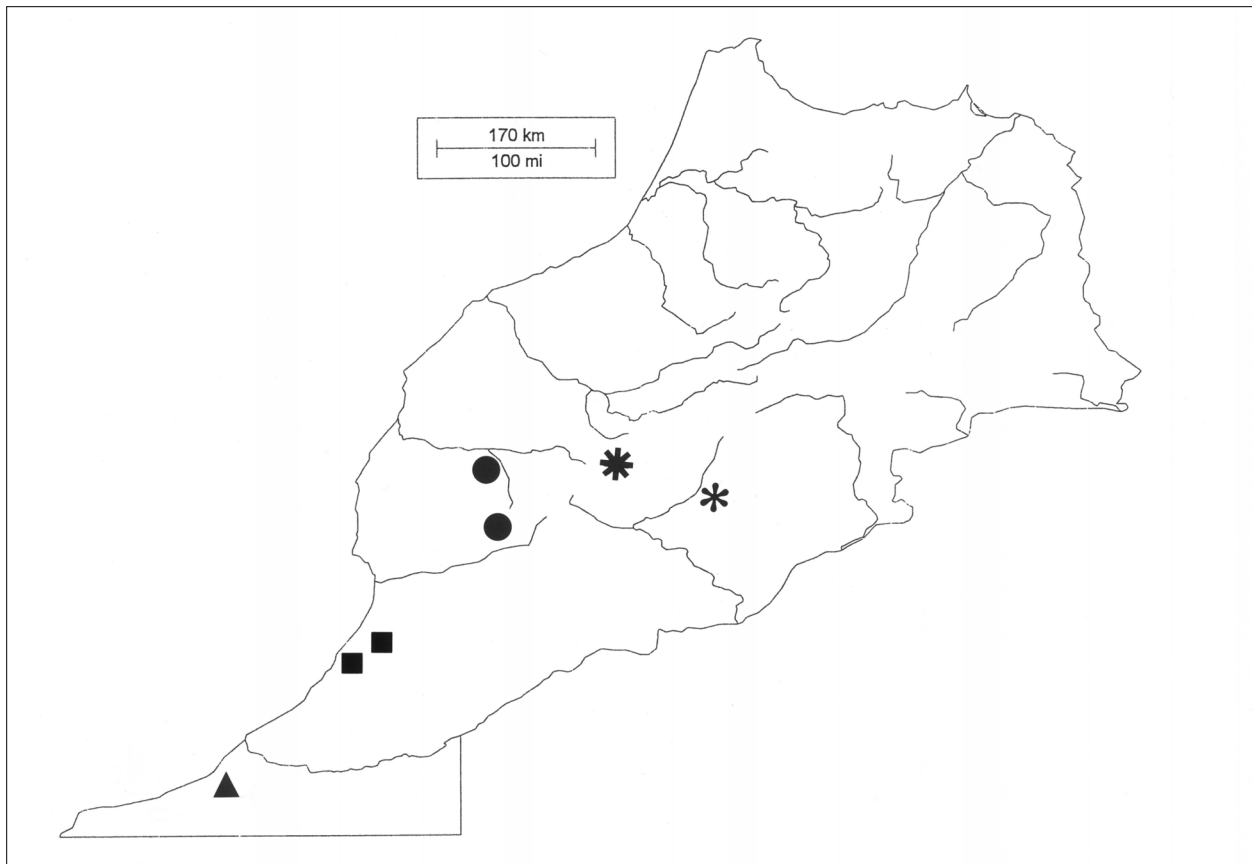
**Morphology.** Carapace smooth and punctuated; anterior margin strongly emarginated. Carinae and furrows vestigial or absent. Median ocular tubercle markedly anterior to the centre of the carapace; median eyes separated by one ocular diameter. Three pairs of lateral eyes. Sternum pentagonal, wider than long. Mesosoma: Tergites smooth and punctuated; median carina very weakly marked in all tergites; tergite VII pentacarinata, with carinae weakly marked. Venter: genital operculum divided longitudinally, and formed by two almost semi-triangular plates. Pectinal tooth count 14–14; fulcra conspicuous. Sternites smooth with small slit-like spiracles; VII smooth without carinae. Metasomal segments I to V rounded; dorsal and dorso-lateral carinae present only on segments I–III; segments IV–V lustrous with some minute granulations; intercarinal spaces weakly granulated to smooth. Telson weakly granular on ventral aspect; aculeus shorter than the vesicle, moderately curved; subaculear tooth conical to spinoid, moderately marked. Cheliceral dentition characteristic of the family Buthidae (Vachon, 1963); movable fingers with two basal teeth, small and fused;

ventral aspect of both finger and manus with setae. Pedipalps: Femur pentacarinata; patella with dorsal and dorso-internal carinae moderately marked; chela without carinae, smooth; all faces weakly granular to smooth. Fixed and movable fingers of pedipalps with 9–10 oblique rows of granules, and accessory granules; three granules on the extremity of the movable finger. Trichobothriotaxy; A- $\alpha$  (alpha) orthobothriotaxy (Vachon, 1974, 1975). Legs: tarsus with setae ventrally. Tibial and pedal spurs present on legs III–IV; tibial spurs moderately marked on leg IV, extremely reduced on III.

**Relationships:** The geographically closest species is *Butheoloides (B.) occidentalis*, described from Tan-Tan in the south of Morocco. Nevertheless, no common features are observed between the two species. Instead, the new species shows some affinities with *Butheoloides (B.) maroccanus*, but can be distinguished by a combination of distinct characters: (i) carapace and tergites more uniformly dark brown and metasomal segments III to V brownish; (ii) carapace strongly emarginated; (iii) carapace and tergites smooth, without granulations; (iv)



**Figures 6–12:** *Butheoloides* (*B.*) *littoralis* sp. n., female holotype. 6–8. Trichobothrial pattern. 6. Chela, dorsoexternal aspect. 7. Femur, dorsal aspect. 8. Patella, dorsal aspect. 9. Disposition of the granules on the dentate margin of the pedipalp chela movable finger. 10. Pecten, external aspect. 11. Chelicera, dorsal aspect. 12. Metasomal segment V and telson, lateral aspect.



**Figure 13:** Map of Morocco showing the type localities and known distribution of *Butheoloides* (*B.*) *maroccanus* (black circle). *B. (B.) occidentalis* (black triangle). *B. (B.) slimanii* (black asterisk), *B. (B.) littoralis* sp. n. (black square) and *B. (G.) aymerichi* (black flower).

pectines with 14–14 (12–12) teeth, while female of *B. (B.) maroccanus* has 15–17; (v) pedipalps very short (see Table I); (vi) cheliceral movable fingers with two small and fused basal teeth; (vii) tibial spur extremely reduced on leg III.

### Ecological Remarks

The new species of *Butheoloides* is found in distinctly different habitats than *B. (B.) maroccanus*. The latter inhabits mountain environments, in altitudes ranging from 600 m (plane of Haouz north of Marrakech) to 2600 m in the ‘Haut Atlas Central’ (Lourenço et al., 2003). Its microhabitat is the litter of the ‘chênes verts’, but also that of the ‘Pin d’Alep’ (*Pinus halepensis*). In contrast, the holotype of the new species was found on the coastal region of southern Morocco, near the Atlantic Ocean, at altitudes of 5 to 10 m. The main vegetation in this area is composed of *Euphorbia echinus*, *Euphorbia regis jubae* (Euphorbiaceae) and *Salsola vermiculata* (Amaranthaceae). It is distributed over rocky soil substrates (Fig. 5). Sidi

Moussa in west of Tiznit, where the paratype was found, is located at a higher altitude (550 meters), but distant only of about 20 km from the coastline.

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