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Description of a new genus and new species of Buthidae scorpion from the Himalayas of India and Nepal, with some new biogeographic implications¹

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(With 6 figures)

Abstract

A new genus and species of scorpion belonging to the family Buthidae, *Himalayotityobuthus martensi* gen. n., sp. n., is described from Pir Panjal-Mts, Tangmarg, Kashmir (India) and Tribani Ghat (Nepal). The discovery of this new genus provides further evidence about the possible affinity of the Madagascan scorpion fauna with that of the Oriental region.

Introduction

The scorpion fauna of the Himalayas of both India and Nepal still remains poorly studied and characterized, and in recent years only a few isolated contributions have been added to it (Kovarík 1994). The study of several specimens send by Prof. Jochen Martens of the Johannes Gutenberg-Universität Mainz, collected during his expeditions of the "Fauna des Nepal-Himalaya", revealed, among other things, the presence of one very interesting new genus and species of the family Buthidae, represented by a single male from Kashmir, India. Further studies on the Nepal scorpions deposited in the Natural History Museum in Paris, disclosed another specimen (female) belonging to this same species. The discovery of this new scorpion genus and species is of a great biogeographic significance since it provides further evidence regarding the possible affinity between the Madagascan scorpion fauna with that of the Oriental region (Lourenço 1996a,b,c).

Himalayotityobuthus gen. n.

D i a g n o s i s: The new genus is related to the genus *Tityobuthus* Pocock, 1893 which is endemic to Madagascar (Lourenço 1996c). It also has traits common to the

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genera *Odonturus* Karsch, 1879 and *Lychas* Koch, 1845. It can, however, be distinguished from these three genera by the following characters:

- The trichobothrial pattern is $A-\beta$, orthobothriotaxic, whereas in *Tityobuthus* the pattern is $A-\alpha$.

- Absence of fulcra in the pectines. This character is present in the genera *Odon-turus* and *Lychas*. It also demonstrates the association of the new genus with the Gondwanian genus *Ananteris* Thorell, 1891 (Lourengo 1993).

E t y m o l o g y: The generic name reflects the association between the type locality and the related Madagascan genus *Tityobuthus*.

Himalayotityobuthus martensi sp. n.
(Figs. 1 - 6)

HOLOTYPE male: India, Kashmir, Pir Panjal-Mountains, Tangmarg, in spruce forest (*Picea*), under stone and wood, 2400-2600 m, 21-23 May 1976, coll. J. Martens. Together with 9 specimens of *Scorpiops zohtangensis* Mani, 1959 (Scorpiopsidae). Deposited in the Zoologisches Museum of the University of Hamburg (Reg. No. A 40/97).

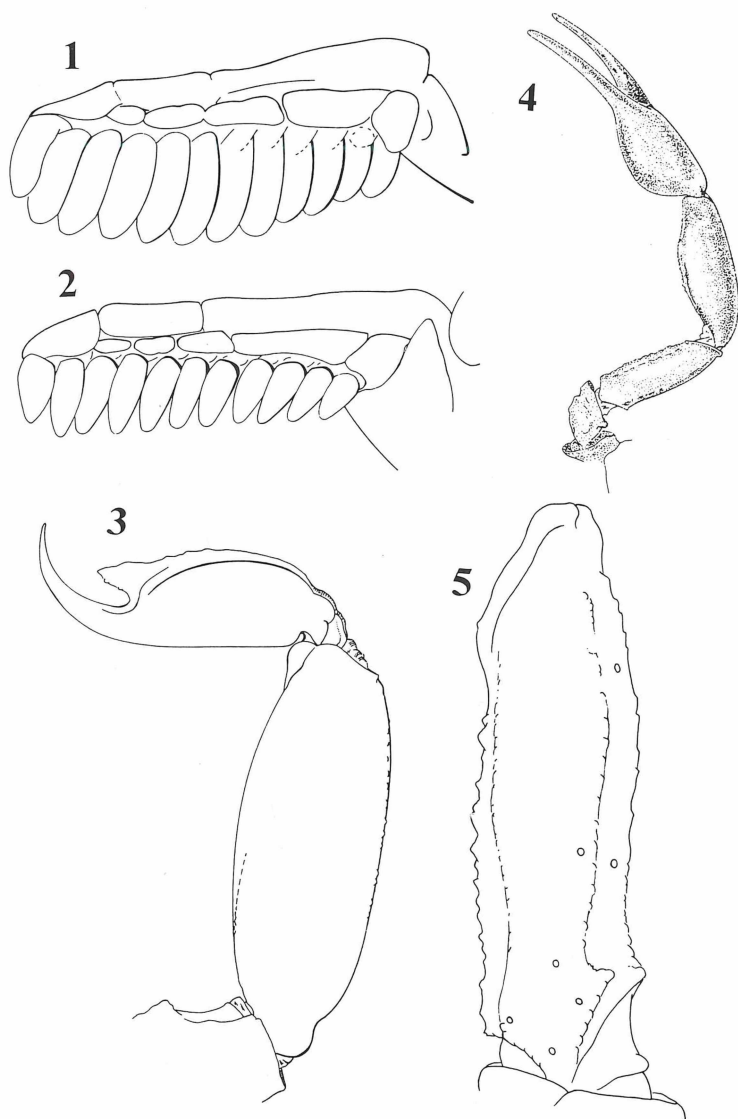
ALLOTYPE female: Nepal, Tribani Ghat, (840 m) Station n° 3, 27 December 1966 (16h30) (M. Hubert); housed at the Natural History Museum in Paris (MNHN-RS-8236).

E t y m o l o g y: Patronym in honor of Prof. J. Martens of the Institut für Zoologie, Johannes Gutenberg-Universität Mainz, Germany.

Description based on m a l e h o l o t y p e. Measurement in Table I.

C o l o r a t i o n. Basically yellowish, symmetrically marbled with dark reddish brown, producing an overall spotted appearance. Prosoma: carapace yellowish, heavily spotted; eyes surrounded with black pigment. Mesosoma: yellowish with three longitudinal brown stripes which become confluent on the distal region of the tergites. Metasoma: segments I to III yellowish; IV and V reddish. Vesicle reddish as the segment V. Venter yellow with some light spots on sternites IV and V. Chelicerae yellowish with dark spots over all the dorsal surface; fingers darker to reddish. Pedipalps: yellowish with several spots on femur and tibia; chelae much less spotted; fingers darker, reddish. Legs yellowish with several fuscous spots.

M o r p h o l o g y. Carapace moderately to feebly granular; anterior margin with a moderate to strong median concavity. Anterior median superciliary and posterior median keels moderate to feeble. All furrows moderate to feeble. Median ocular tubercle distinctly anterior to the center; median eyes separated by more than one ocular diameter. Three pairs of lateral eyes. Sternum subtriangular to pentagonal. Mesosoma: tergites moderate to strongly granular. Median keel strong in all tergites. Tergite VII pentacarinat. Venter: genital operculum divided longitudinally. Pectines: pectinal tooth count 12-12; basal middle lamellae of the pectines not dilated; fulcra absent. Sternites smooth with small elongate stigmata; VII with four keels. Metasoma: segments I to III with 10 keels, crenulate. Segment IV with 8 keels crenulate. Segment V with 5 keels, smooth and rounded. Telson with 7 keels moderately crenulate, and with a rather short and moderately curved aculeous; subaculeous tooth very strong and spinoid. Cheliceral dentition characteristic of the family Buthidae (Vachon 1963);



Figs 1-5. *Himalayotityobuthus martensi* gen. n., sp. n.: 1, 2 - pectines showing absence of fulcra, holotype (σ , 1), allotype (φ , 2); 3 - fifth metasomal segment and telson, holotype; 4 - right pedipalp, holotype; 5 - femur, dorsal view, showing type A trichobothrial pattern with β configuration, holotype.

ventral aspect of both finger and manus with long, moderately dense setae. Pedipalps: femur pentacarinat; tibia with 7 keels; chelae without keels, smooth; internal face of tibia with 12/13 small spinoid granules; all faces moderate to feebly granular. Movable fingers with 7/8 oblique rows of granules; internal and external accessory granules present but very discrete. Trichobothriotaxy; orthobothriotaxy $A-\beta$ (Vachon, 1973, 1975). Legs: tarsus with fine very numerous median setae ventrally. Tarsal and pedal spurs present and strong.

Differences presented by allotype female: Coloration and pigmentation somewhat darker and more intense than of the holotype male. Morphology: similar to that of the male, but with the pedipalps much less bulky. Morphometric differences in Table I. Smaller pectines; tooth count 12-11; basal middle lamellae not dilated.

Table I. Morphometric values (in mm) of the male holotype and female allotype of *Himalayotityobuthus martensi* gen. n., sp. n.

	Holotype	Allotype
Carapace:		
- length	2,6	3,1
- anterior width	1,8	2,1
- posterior width	2,6	3,4
Metasomal segment I:		
- length	1,4	1,6
- width	1,4	1,8
Metasomal segment V:		
- length	3,5	3,5
- width	1,4	1,6
- depth	1,5	1,5
Vesicle:		
- width	0,9	0,9
- depth	0,9	1,0
Pedipalp:		
- Femur length	2,2	2,5
- Femur width	0,8	0,9
- Tibia length	2,7	3,2
- Tibia width	1,0	1,1
- Chelae length	4,5	4,6
- Chelae width	1,3	0,9
- Chelae depth	1,1	0,8
Movable finger:		
- length	2,8	3,0

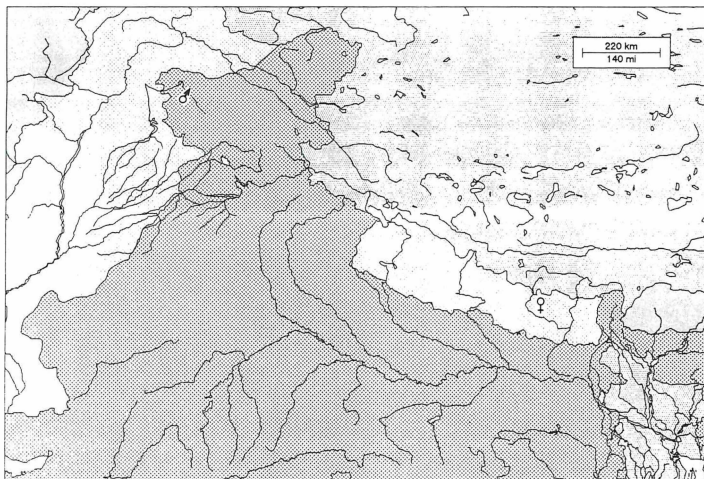


Fig. 6. The localities of *Himalayotityobuthus martensi* gen. n., sp. n. (♂, ♀).

Some considerations about the the new biogeographical implications of the discovery of *Himalayotityobuthus martensi* gen. n., sp. n.

The discovery of this new genus and species in the Himalayas of India and Nepal, showing affinities to the genus *Tityobuthus* which is endemic to Madagascar, provides new evidence regarding possible affinities between Madagascar and the Oriental region.

In fact, as indicated by Lourenço (1996a) in his biogeographical analysis of the origins and possible affinities of the Madagascan scorpion fauna, a new genus *Microcharmus* Lourenço has recently been discovered in the North-East region of Madagascar. This represented the first clear evidence of an affinity between a Madagascan genus and an Oriental genus, *Charmus* Karsch of India and Sri Lanka. Both *Microcharmus* and *Charmus* represent primitive lineages whose characteristics show that they are among the very first modern buthid scorpions. No other evidence was then available to suggest affinities between Madagascar and the Indo-Malayan region. The description of the genus *Himalayotityobuthus*, however, indicates an affinity between Madagascar and the Oriental region. Moreover, this discovery also supports the existence of affinities between the Oriental, Afrotropical and Neotropical regions via the genus *Ananteris* Thorell of Africa and South America, the genus *Tityobuthus* of Madagascar, and the genus *Himalayotityobuthus* from India and Nepal.

As with *Charmus* and *Microcharmus*, these three genera also represent primitive lineages whose characteristics indicate that they lie among the first modern buthid scorpions. However, they may alternatively represent a more advanced evolutionary

stage than that of other micro-buthid scorpions such as *Microcharmus*, *Charmus*, and *Akentrobutus* Lamoral, from Central Africa.

Knowledge of micro-buthid scorpions is still very incomplete. However, with the discovery of further examples we are beginning to have a much cleared vision regarding the primitive forms which are probably basic to the evolution of all terrestrial scorpions.

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