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NEW DISTRIBUTIONAL RECORDS OF TWO SCORPION SPECIES (SCORPIONES: BUTHIDAE) WITH THE DESCRIPTION OF THE MALE *BUTHOSCORPIO INDICUS* LOURENÇO, 2012 FROM ODISHA, INDIA

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Abstract: Among the genera of the family Buthidae, the genus *Buthoscorpio* remains rare. Only five species have so far been reported from the world. Two species, *Buthoscorpio indicus* Lourenço, 2012 and *Lychas biharensis* Tikader & Bastawade, 1983 were collected from a tiger reserve forest in Odisha State, India. Since both species were only previously known from their type locality, the present study reveals new distributional records for both species outside their type locality. The male of the first species is described.
Key words: Scorpiones, Buthidae, *Buthoscorpio indicus*, *Lychas biharensis*, new records, Odisha, India.

Nuevas citas de dos especies de escorpiones (Scorpiones: Buthidae) y descripción del macho de *Buthoscorpio indicus* Lourenço, 2012 de Odisha, India
Resumen: Entre los géneros de la familia Buthidae, *Buthoscorpio* sigue siendo raro. Sólo cinco especies han sido reportadas de todo el mundo. Dos especies, *Buthoscorpio indicus* Lourenço, 2012 y *Lychas biharensis* Tikader & Bastawade, 1983 se han colectado en un bosque de la reserva de tigres del estado de Odisha, en la India. Dado que ambas especies sólo se conocían previamente de su localidad tipo, el presente estudio revela nuevos registros distributivos para ambas especies fuera de su localidad tipo. Se describe el macho de la primera especie.
Palabras clave: Scorpiones, Buthidae, *Buthoscorpio indicus*, *Lychas biharensis*, nuevas citas, Odisha, India.

Introduction

The family Buthidae is the largest scorpion family represented by 1094 species under 91 genera Worldwide out of which 56 species under 15 genera are reported from different states of India, (Jan Ove Rein, 2016; Bastawade, 2012). The genus *Buthoscorpio* Werner, 1936 is one of the Buthidae genera having limited range of distribution. As already stated by Lourenço (2012), Maqsood Javed *et al*. (2010) and Aswathi *et al*. (2015), the genus *Buthoscorpio* is represented only by five species in the World. In India, four species are reported and the remaining one is reported from Sri Lanka. The known species from India includes, *B. politus* (Pocock, 1899); *B. rayalensis* Maqsood Javed, Thulsi Rao, Mirza, Sanap & Tampal, 2010; *B. indicus* Lourenço, 2012 and *B. chinnarensis* Aswathi, Sureshan & Lourenço, 2015 and the species *B. sarasinorum* (Karsch, 1891) is known from Sri Lanka. The species *Buthoscorpio indicus* was described by Lourenço, 2012 from the north-central region of Madhya Pradesh state of India, based on one female specimen deposited in the Museum national d' Histoire naturelle, Paris. During the faunal exploration surveys conducted by ZSI Kolkata in the Satkosia, Tiger Reserve of Odisha, India (Figure 1), one male specimen *Buthoscorpio* was collected. On detailed examination it was identified as the male of *B.indicus* which is described here for the first time.

During the above mentioned survey, another female specimen of the species *L. biharensis* Tikader & Bastawade, 1983 was also collected from the same locality .The species *L. biharensis* was described by Tikader & Bastawade in 1983 based on two female specimens collected from Bihar state of India. The present report forms the first subsequent report of the species from India and extension of the distribution in the Odisha state.

Materials and Methods

The specimens were hand collected and preserved in 70% ethanol.They were later identified based on the original descriptions of *Buthoscorpio indicus* Lourenço, 2012 and *Lychas biharensis* Tikader & Bastawade, 1983. Measurements, given in mm, are made with the help of Leica MC 170 HD microscope, and follows Stahnke (1970). The morphological terminology follows Vachon (1956, 1963, 1974, 1975) and Hjelle (1990).

Taxonomic treatment

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

Genus ***Buthoscorpio*** Werner, 1936

Buthoscorpio indicus Lourenço, 2012 (Figure 2)

MATERIAL EXAMINED: 1 Male. India, Odisha, Satkosia, Satapatra Range (Lat. 20°26.210 N, Long. 84°43.138 E & Alt. 606 ft), 17/xii/2015, Coll. H. E Hassan & Party, Reg. No.ZSI/WGRC/IR/7265

DIAGNOSIS: Scorpions of moderate size in relation to the other species of the genus with 23.3 mm in total length. Coloration dark ranging from reddish brown to dark brown or blackish brown, pale brown patches present throughout the body. Carapace, mesosomal tergites and metasoma lustrous. A moderate to strong median epistome present medially on the anterior margin of carapace. Vestigial subaculear tubercle present ventrally on the telson vesicle and marked with a black color. Pedipalp smooth and lustrous; patella smooth and round, chela fingers with 11-11 rows of granules. Sternum partially subpentagonal, groove present posteriorly and a

shallow furrow anteriorly with a blunt apical button. Pectinal tooth count 15-15.

DESCRIPTION OF MALE

Coloration: Basically brownish to blackish except the appendages and metasoma. Prosoma: Carapace blackish with some pale brown patches medially, posteriorly and laterally. Shallow to deep furrows present medially, anterior-laterally and posterior-laterally. Granulation present in the furrows of median and anterior-laterally. Anterior margin of the carapace slightly elevated just below the epistome. Mesosoma blackish with '><' pale brown marks on both the sides of the median region of the tergites. Two pale brown spots present medially, extending from the pre-tergite to the anterior portion of the tergite. Metasomal segments brownish to reddish brown. Venter yellow except for the sternite VII and regions around sternum. Pectines and genital operculum yellow, sternum pale yellow to blackish.Chelicera yellow with black reticulate finger yellow with black reticulation; fingers yellow with black shade, teeth reddish. Pedipalps blackish with pale patches on coxa, patella and chela, fingers yellow with blackish coloration at the basal proximal portion. Legs complete pale yellow on tibia, tarsomere I and II, femur and patella with a mixture of black and yellow.

Morphology: carapace smooth and lustrous except the anterior-lateral and median furrows accommodates some granulations; carinae absent; anterior margin with a strong median epistome, furrows moderate to strong. Median ocular tubercle distinctly anterior to the center of carapace in the ratio 1: 1.9. Median eyes separated by one ocular diameter. Five pairs of lateral eyes. Mesosomal tergites smooth and lustrous; some granulation present on tergite VII. Median longitudinal projection present on all tergites. No carinae on tergites. Venter: genital operculum divided longitudinally, wider than long and as long as sternum. Pectines: Pectinal tooth count 15-15; marginal lamellae with three pieces; middle lamellae with six pieces. Sternite smooth and lustrous; two weak lateral furrows present on sternites III-VI. Short slit like spiracles. Metasomal segments rounded and dorsal carinae weakly marked, absent on segments I and II; dorsal surface weakly punctuated, segments I-IV with dense granulation medially and less granular on segment V. Telson without carinae and granulation, but punctuated ventrally and laterally; aculeus short and strongly curved; a vestigial subaculear tooth present. All metasomal segments without any setation. The dentition of chelicerae shows all the characteristics of the family Buthidae; movable finger with basal teeth slightly fused (Vachon, 1963). Pedipalps: carinae on femur vestigial and pentacarinated; carinae absent on patella and chela. Chela fingers with 11-11 rows of granules and extremity of the fingers with 3 accessory granules. Trichobothriotaxy; orthobothriotaxy A-α (for trichobothrial pattern see Lourenco, 2012) Legs III and IV with one strong tibial spur; tarsomere I and II with thick fine median setae.

Morphometric values: see Table I.

NOTE: There are not many noticeable differences between the male and female of the species *B.indicus*. However the genital operculum of female is longer than wide but in male specimen examined here it is slightly wider than long. The present specimen appears as sub-adult and there will be more morphological variations between the sexes if an adult male specimen is examined.

Table I. Morphometric values (in mm) of a female (from Lourenço, 2012) and the male (sub-adult; ZSI/WGRC/IR/INV/7265) of *Buthoscorpio indicus* Lourenço, 2012.

Measurement (in mm)	♀	♂(sub-adult)
Total length	38.1	23.3
Carapace:		
Length	4.3	2.5
Anterior width	3.1	1.9
Posterior width	4.7	2.8
Mesosoma length	12.6	7.9
Metasoma segment I:		
Length	2.5	1.6
Width	3.7	2.0
Metasomal segment II:		
Length	2.9	1.8
Width	3.8	2.1
Metasomal segment III:		
Length	3.1	1.9
Width	3.9	2.1
Metasomal segment IV:		
Length	3.7	2.2
Width	3.9	2.2
MetasomalSegmentV:		
Length	4.6	2.7
Width	3.8	2.1
Depth	2.8	1.4
Telson length	4.4	2.7
Vesicle:		
Width	2.2	1.6
Depth	1.6	1.1
Pedipalp:		
Femur length	3.7	2.3
Femur width	1.0	0.7
Patella length	4.5	2.9
Patella width	1.4	0.9
Chela length	6.4	4.1
Chela width	1.1	0.8
Chela depth	1.1	1.1
Movable finger		
Length	4.5	2.9

Genus ***Lychas*** C. L. Koch, 1845

Lychas biharensis Tikader & Bastawade, 1983 (Figure 3)

MATERIAL EXAMINED: One Female. India, Odisha, Satkosia, Satapatra Range (Lat. 20°26.210 N, Long. 84°43.138 E & Alt. 606 ft), 17/xii/2015, Coll. H. E Hassan & Party, Reg. No. ZSI/WGRC/IR/7266.

DIAGNOSIS: Scorpions of moderate size. Body coarsely granular all over, except the interocular area and the scattered yellow patches, which are smooth. Carinae are not much distinct on the carapace; anterior margin of the carapace not straight, but slightly concave. Mesosomal tergites with one median carina and yellow in colour. Metasomal segments I to III with 10 carinae, the lateral carinae of segment III incomplete; 8 carinae present on segment IV. Telson vesicle with a spinoid subaculear tubercle and slightly granular ventrally. Pedipalp stout, femur tetracarinated. Two carinae present on patella, one is partially developed; chela acarinated; movable fingers with two accessory denticles. Legs thin, carinated on femur, patella and tibia, but granulation present on femur and patella; tibial spur present on legs III and IV. Sternum triangular with an apical button. Pectinal tooth number 23-24 (For trichobothrial pattern see Tikader & Bastawade, 1983).

NOTE: The present specimen exactly matches with the original description of the species by Tikader & Bastawade 1983. It is the extension of the distribution of species from the Odisha state of India, which lies adjacent to the state of Bihar.





Fig. 1. Distribution of *Buthoscopio indicus* and *Lychas biharensis* in Odisha, India. **Fig. 2.** *Buthoscopio indicus.* **Fig. 3.** *Lychas biharensis.*

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