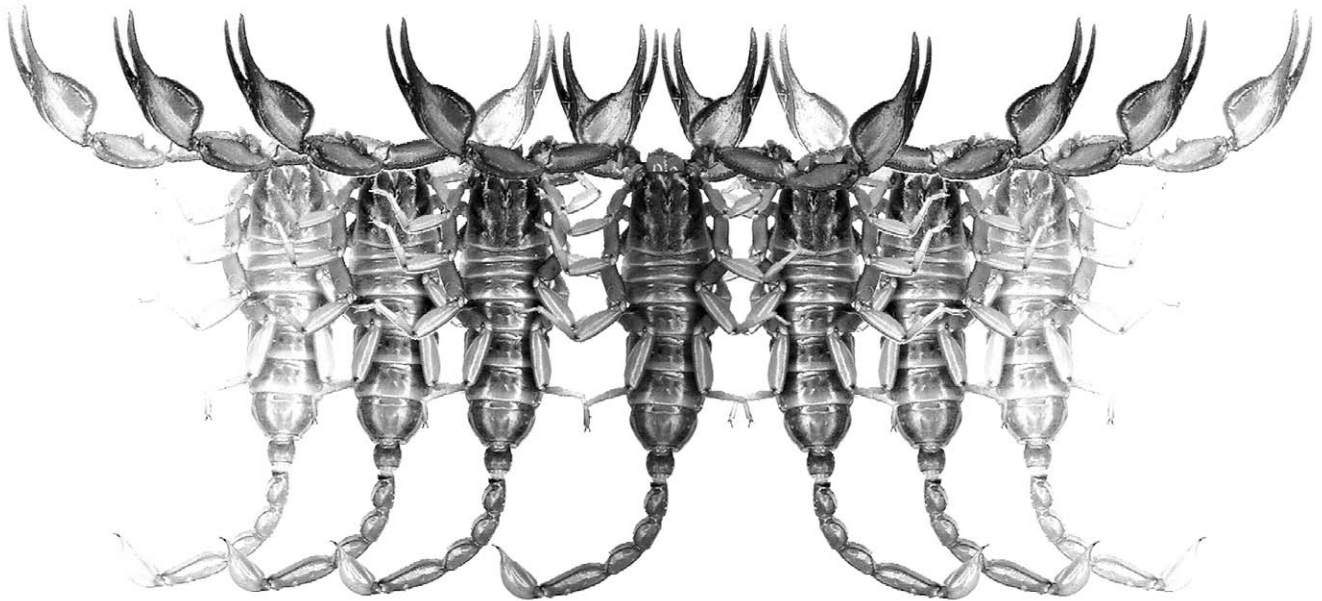


Euscorpium

Occasional Publications in Scorpiology



Neotype Designation for *Scorpiops pachmarhicus* Bastawade, 1992 (Scorpiones: Euscorpiidae), with Redescription and Notes on the Species

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Euscorpius

Occasional Publications in Scorpiology

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<http://www.zoobank.org/urn:lsid:zoobank.org:pub:1F8E6B4D-5C92-476D-B04B-D6A17C2C671F>

Neotype designation for *Scorpiops pachmarhicus* Bastawade, 1992 (Scorpiones: Euscorpiidae), with redescription and notes on the species

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Summary

Scorpiops pachmarhicus Bastawade, 1992 was described based on specimens collected from Pachmarhi, Madhya Pradesh. An expedition to the type locality led to discovery of a population at the type locality which permit us to designate a neotype for the species as types of the species are presently not traceable.

Introduction

The genus *Scorpiops* Peters, 1861 includes 29 species (Rein, 2016). In India, the genus is represented by ten species distributed across northern India, especially throughout the Western Himalayas, with the exception of a single species distributed in the Satpura Hills of central India (Bastawade, 1992; Zambre et al., 2014). The central Indian species, *Scorpiops pachmarhicus* Bastawade, 1992 was described from Pachmarhi in Madhya Pradesh (Bastawade, 1992). The types of the species were said to be deposited in the national collection of the Zoological Survey of India Kolkata “ZSIK” (*vide* Bastawade 1992). During a visit to the arachnid section of the ZSIK, attempts were made to locate type specimens of scorpions deposited in the collection including that of *S. pachmarhicus*, however the specimens were not traceable. This is not just the case with this species but several other scorpion specimens allegedly deposited in the collection are not traceable or were never deposited there.

Specimens collected during an expedition in May 2014 to the type locality of *S. pachmarhicus* resulted in discovery of a population. Specimens collected from this expedition permit us to designate a neotype for this species as well as redescribe it and add notes on the natural history of the species.

Material and Methods

Specimens in the field were located with the help of ultraviolet light detection by means of Arachnid™ A28,

transferred to plastic jars and preserved in 70% ethyl alcohol. Photographs of specimens were taken with a Canon 70D and a macro lens illuminated with two Canon 430EX-II flash. Specimens were examined using an Olympus SZ42 stereo binocular microscope and measured with the help of digital caliper to the nearest 0.01. The collection, after identification, has been deposited with the research collection facility at the National Centre for Biological Sciences, Bangalore. Descriptive terms and abbreviations follow Stahnke (1970) and Sissom et al. (1990).

Results

Family **Euscorpiidae** Laurie, 1896
Genus ***Scorpiops*** Peters, 1861

Scorpiops pachmarhicus Bastawade, 1992
(Figs. 1–3, Table 1)

Scorpiops (Scorpiops) pachmarhicus Bastawade, 1992: 100.

Neotype (here designated): NCBS AT103, ♀ from near Dhoopgarh, near Pachmarhi, Hoshangabad district, Madhya Pradesh, India. 22.467818°N, 78.388150°E, 1125 m asl. Collected by Rajesh Sanap, David Raju & Zeeshan Mirza on 6th May 2014.

Other material: two ♀ (NCBS AT104-AT105) and one ♂ (NCBS AT106), same data as for neotype.



Figures 1–2: *Scorpiops pachmarhicus* female neotype NCBS AT103. **1 (top).** in life. **2 (bottom).** (A) dorsal aspect, (B) ventral aspect. Scale 10 mm.

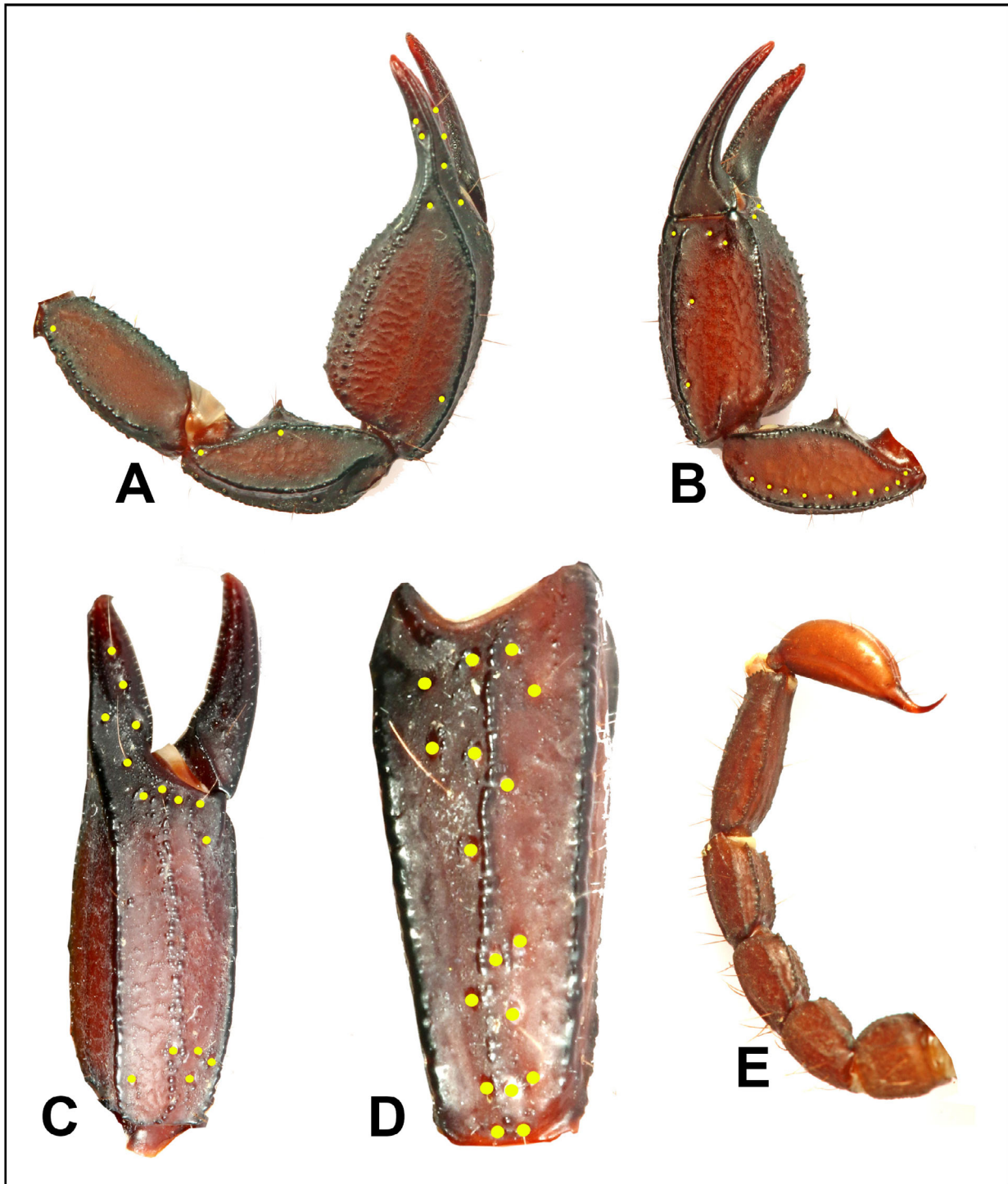


Figure 3: *Scorpiops pachmarhicus* female neotype NCBS AT103, (A) pedipalp dorsal aspect, (B) manus and patella ventral aspect, (C) manus external view, (D) patella external view, (E) metasoma. Not in scale.

Description of Neotype Female NCBS AT103:

Coloration (in preserved condition): Mostly yellow to yellow-brown. Carapace yellow-brown, median and lateral tubercles black. Tergites and metasoma brown. Vesicle light brown with reddish brown aculeus, basal por-

tion of the aculeus blackish. Chelicerae yellow with reticulation, fingers yellow-brown, gradually become yellow towards the tips. Manus of pedipalps dark reddish-brown to black with black carinae, fingers black with reddish tips. Sternites and sternum yellow. Genital operculum, basal piece and pectines yellow. In living condition (Fig. 1), overall coloration a shade of brown,

	Neotype			
Characters	AT103	AT104	AT105	AT106
Sex	♀	♀	♀	♂
total length	47.04	39.91	38.31	42.49
carapace length	6.6	6.27	5.93	6.25
carapace anterior width	3.6	3.22	2.74	2.78
carapace posterior width	5.54	5.3	4.84	5.4
mesosomal length	21.27	14.24	13.95	16.53
Metasoma total length	19.17	19.4	18.43	19.71
metasomal seg I length	2.07	1.9	1.91	2.23
metasomal seg I width	1.8	2.09	1.99	1.83
metasomal seg II length	2.61	2.66	2.06	2.25
metasomal seg II width	1.5	1.58	1.76	1.62
metasomal seg III length	2.7	2.33	2.38	2.5
metasomal seg III width	1.63	1.71	1.73	1.77
metasomal seg IV length	2.7	2.99	2.88	3.12
metasomal seg IV width	1.59	1.57	1.48	1.66
metasomal seg V length	4.33	4.51	3.9	4.58
metasomal seg V width	1.51	1.52	1.33	1.44
telson length	4.76	5.01	5.3	5.03
femur length	5.58	5.17	4.81	5.03
femur width	2.58	2.44	2.06	2.31
patella length	5.68	5.58	5.57	5.47
patella width	2.7	2.98	2.93	2.95
chela length	11.57	10.42	9.75	11.43
chela width	3.77	4.3	4.11	4.42
movable finger length	5.55	4.9	5.1	5.7
pectine L/R	7/6	7/7	7/8	7/7

Table 1: Morphometry of *Scorpiops pachmarhicus*.

mesosoma, legs and metasoma brown, telson yellowish brown. Anterior half of carapace darker. Pedipalp dark reddish brown to black.

Morphology: Prosoma (Fig. 2): Carapace with a slight gloss throughout, with minute sparsely distributed granules; anterior median furrow distinct and flat, posterior median and posterior lateral furrows distinct and deep; carinae absent; anterior and posterior margins smooth, anterior margin deeply notched; ocular tubercle well-developed, smooth, a pair of median eyes located much anteriorly in the ratio 1:2.51, three lateral eyes, anterior two larger than the third. A circular patch on each side between the median and lateral eyes. Chelicera small,

basal segment smooth, brownish reticulation on the dorsal surface, basal segment yellow-brown, fingers dark brown, gradually turn light brown towards the tip, toothed normally, inferior fang of the movable finger provided with 8-9 teeth. Mesosoma (Figs. 1–2): Tergites I–V with sparse granulation throughout, especially concentrated on the posterior margin, pretergal region smooth; tergite I–VI with distinct median carinae, traces of lateral carinae but poorly developed, tergite VII with two pairs of carinae in the posterior portion; sternites III–VI smooth, presternites and presternal margins smooth, sternites III–VI provided with bracket-shaped stigmata for book lungs. Pedipalp stout and strong, carinated,



Figure 4: Typical habitat of Satpura Hills in central India. Photo by David Raju.

manus medially depressed; femur flat, shorter than the carapace, carinated; all carinae show sparse granulation, inner carinae much more sparsely granulated, anterior surface with two small tubercles; patella marginally longer and wider than the femur, shorter than the carapace, carinated; carinae show sparse granulation, a small tubercle present on the anterior surface; chela long, much longer than wide, carinated, inner carinae more granular than the outer which are nearly smooth, can't find any basal tubercles; manus shows shallow depression dorsally, not much flat, wider than femur and patella, carinated; all carinae sparsely granular, exterior carinae nearly smooth, intercarinal region coarsely granulated on inner portion, sparse granulations on the dorsal surface; fingers smooth, carinated, granules on the fingers. Trichobothrial pattern on femur, patella, manus and the fixed finger (Fig. 3) is consistent with Bastawade (1992); patella with 10 ventral, differ in relative positions of Eb_2 to Eb_1 on patella and Dt to Eb_3 on manus, the rest typical for the family and genus (Tikader & Bastawade, 1983). Legs I–IV almost entirely smooth. Genital operculum wider than long, small genital papillae visible, pectines longer than wide, weakly developed, middle lamellae and fulcra indistinguishable, pectines 7/6 in female. Metasoma: Cauda almost thrice as long as the carapace; metasoma I longer than wide,

only dorsal and ventral carinae fairly developed, others almost vestigial; telson longer than metasoma V, shorter than carapace, smooth; aculeus less than half the length of the vesicle, not much curved, sharp (Fig. 3).

Natural history notes: All the specimens were found along rocky outcrops at Dhoopgarh. The locality is the highest point in the Satpura Hills range at 1350 m (Fig. 4) and is amidst a dense Sal forest. Specimens were found actively foraging on the rock with the aid of ultra violet flashlights. A few individuals were seen under boulder along a forest trail. A total of five individuals were collected however additional specimens of the species were encountered but were not collected.

Comments

Members of the three Indian genera of the family Euscorpiidae are distributed as follows: *Scorpiops* in western Himalayas and Satpuras, *Neoscorpiops* in Western Maharashtra, and *Euscorpiops* in northeastern India (Figure 5; Mirza et al., 2014; Zambre et al., 2014). The disjunct distribution is likely an artifact of incomplete sampling. Dedicated surveys in the intermediate zones will fill the large gap in the distribution as well as our understanding of this family. Designation of

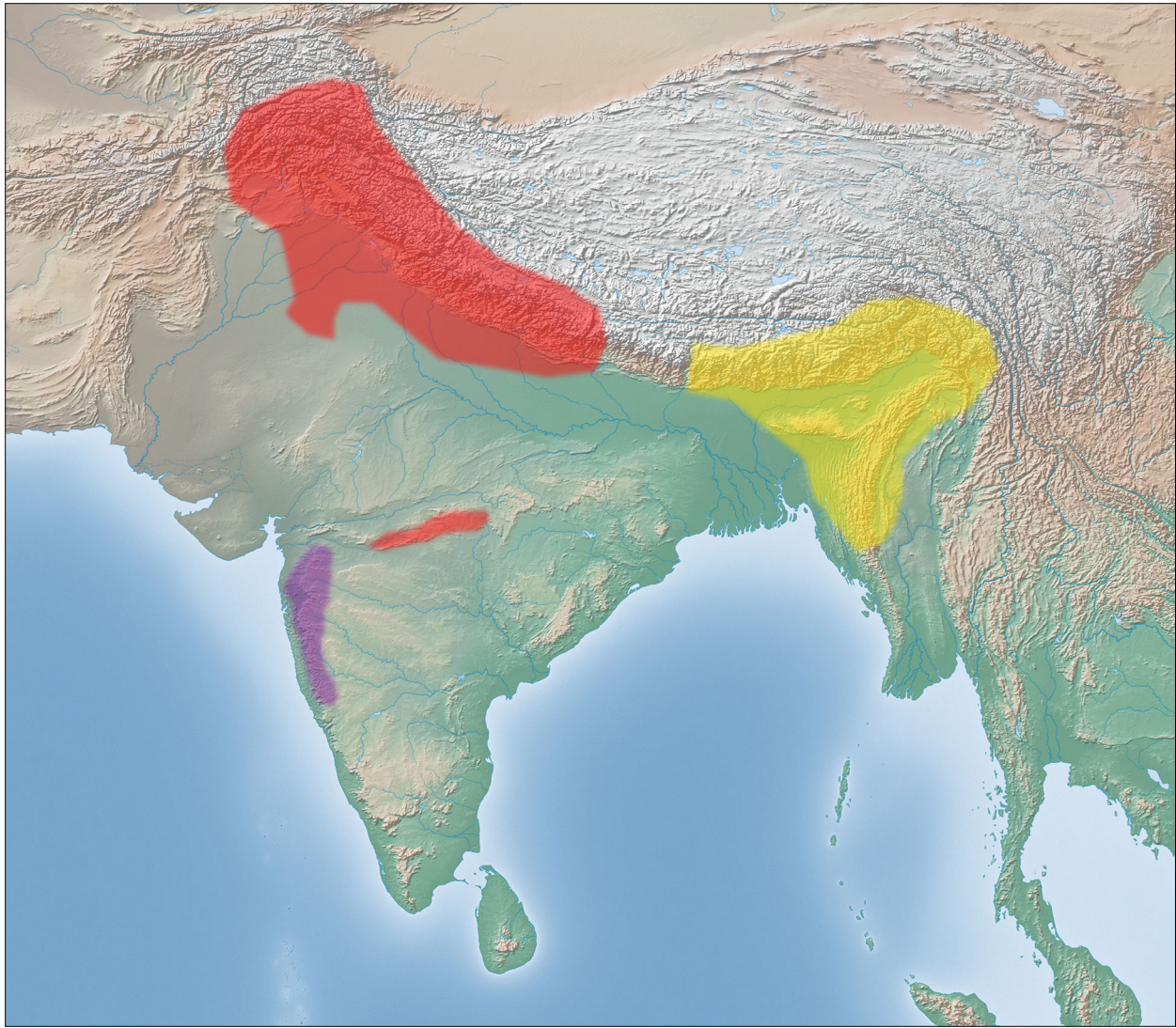


Figure 5: A schematic map of euscorpiid genera distribution in India. Modified after Bastawade (1992).

a neotype for *Scorpiops pachmarhicus* is in accordance with Article 75.3 of the International Code of Zoological Nomenclature, ICZN (1999) and is based on a specimen collected from the type locality. The designation is deemed necessary to further enhance our understanding of scorpions of India and for a revisionary work on Indian scorpions, material of each species must be examined, ideally the type specimens. Most type specimens deposited at the collection of the Zoological Survey of India are either not traceable or are difficult to access even for a native researcher, making it really important to have neotypes designated for species whose types are missing, and have them deposited in museums which are accessible to researchers.

Acknowledgments

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