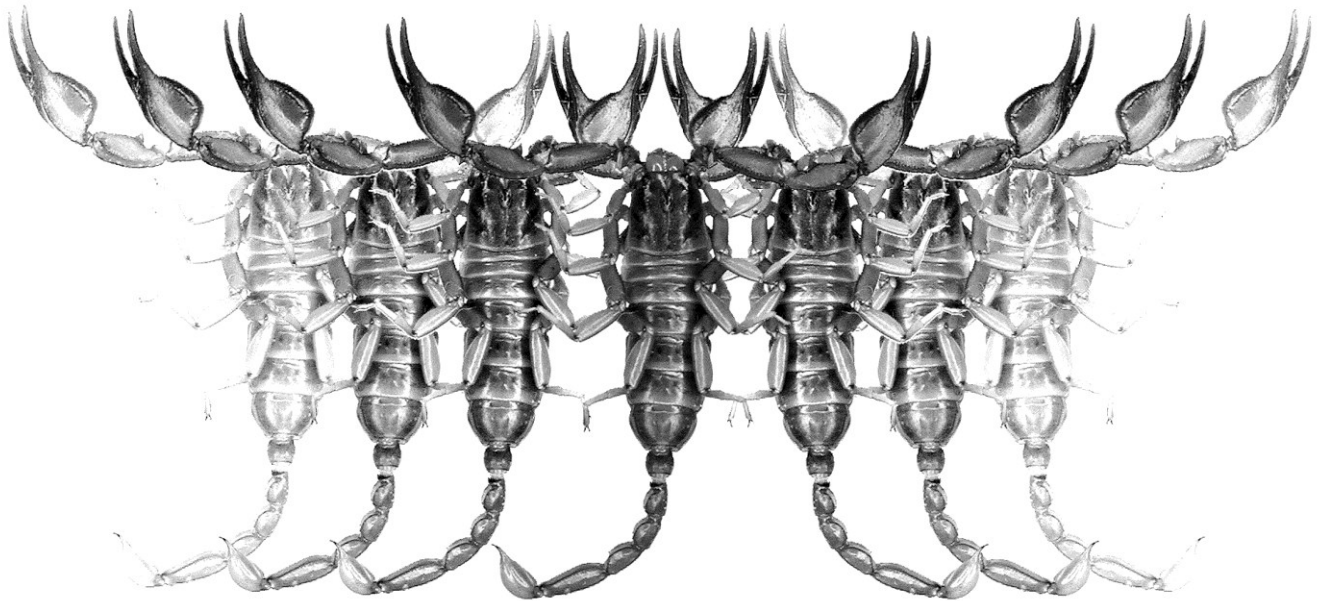


Euscorpius

Occasional Publications in Scorpiology



**A New Species of the Genus *Thaicharmus* Kovařík, 1995
(Scorpiones: Buthidae) from Northeast India**

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January 2016 — No. 215

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Publication date: 13 January 2016
<http://zoobank.org/urn:lsid:zoobank.org:pub:85BF1181-214F-4471-B504-9A37A075145C>

A new species of the genus *Thaicharmus* Kovařík, 1995 (Scorpiones: Buthidae) from northeast India

Zeeshan A. Mirza^{1,2}, Rajesh V. Sanap^{1,3} & Krushnamegh Kunte^{1,4}

¹ National Centre for Biological Sciences, Tata Institute for Fundamental Research,
Bangalore, Karnataka 560065, India.

² snakeszeeshan@gmail.com

³ rajeshvsanap@gmail.com

⁴ krushnamegh@ncbs.res.in

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Summary

A new species *Thaicharmus guptai* sp. nov. is described from the northeast Indian state of Tripura. The new species differs from the known members of the genus in the following set of morphological characters: large size (total length 45.6 mm); trichobothrium d_2 is distal to i_1 on femur; trichobothria *est*, *em* and *et* on the external surface of the patella do not form a straight line. Subaculear tubercle is absent. The movable finger of pedipalp chela has 12 cutting rows of denticles. The movable finger is much longer than the pedipalp patella. Number of pectinal teeth 20/19; pectines with distinct lamellae and fulcra. Two horn-like projections are present on the ventrolateral aspect of the metasomal segment V.

Introduction

Northeast India is among the globally recognized biodiversity hotspots (Myers et al., 2000). Its vertebrate fauna is somewhat well-documented, and some invertebrate groups are being studied intensively. Arachnids have remained largely undocumented from this area with the only available surveys conducted during the British era in India (Pocock, 1900) and a single study of arachnids of Arunachal Pradesh (Bastawade, 2006). Based on available literature, members of the family Buthidae are poorly represented in northeast India with two genera *Lychas* and *Isometrus* being the only ones recorded so far (Tikader & Bastawade, 1983).

During a biodiversity survey of Tripura State, a single male specimen of a buthid scorpion was collected which was later identified as belonging to the “*Charmus*” group. The “*Charmus*” group presently consists of three genera: *Charmus* Karsch, 1879 (southern India and Sri Lanka), *Thaicharmus* Kovařík, 1995 (Thailand and Goa State, India), and *Somalicharmus* Kovařík, 1998 (Ethiopia) (Kovařík, 1995, 2013; Kovařík et al., 2007) (Fig. 1). After a detailed comparison of recent literature (Kovařík, 1995, 2013; Kovařík et al., 2007) and museum collections, we concluded that the Tripura scorpion belongs to an undescribed species of the genus *Thaicharmus*.

Methods

The specimen was located with the help of an ultra-violet torch and preserved in 70% ethanol. The specimen has been deposited in the collection of the National Centre for Biological Sciences, Bangalore. Photographs were taken with a Canon™ 70D and a Canon 100 mm macro lens illuminated with two Canon 430EX-II flashes. This specimen and related comparative material were examined using an Olympus SZ42 stereo binocular microscope and measured with the help of a digital caliper to the nearest 0.1 mm. Descriptive terms and abbreviations follow Stahnke (1971) and Sissom (1990). Terminology for trichobothria follows Vachon (1974).

Systematics

Family Buthidae C. L. Koch, 1837

Genus *Thaicharmus* Kovařík, 1995

Thaicharmus Kovařík, 1995: 195–199; Kovařík et al., 2007: 201–209; Kovařík, 2013: 1.

Diagnosis (modified after Kovařík, 2013): Total length 16–45 mm. Dorsal trichobothria of femur arranged in *alfa*-configuration. Pedipalp chela with three

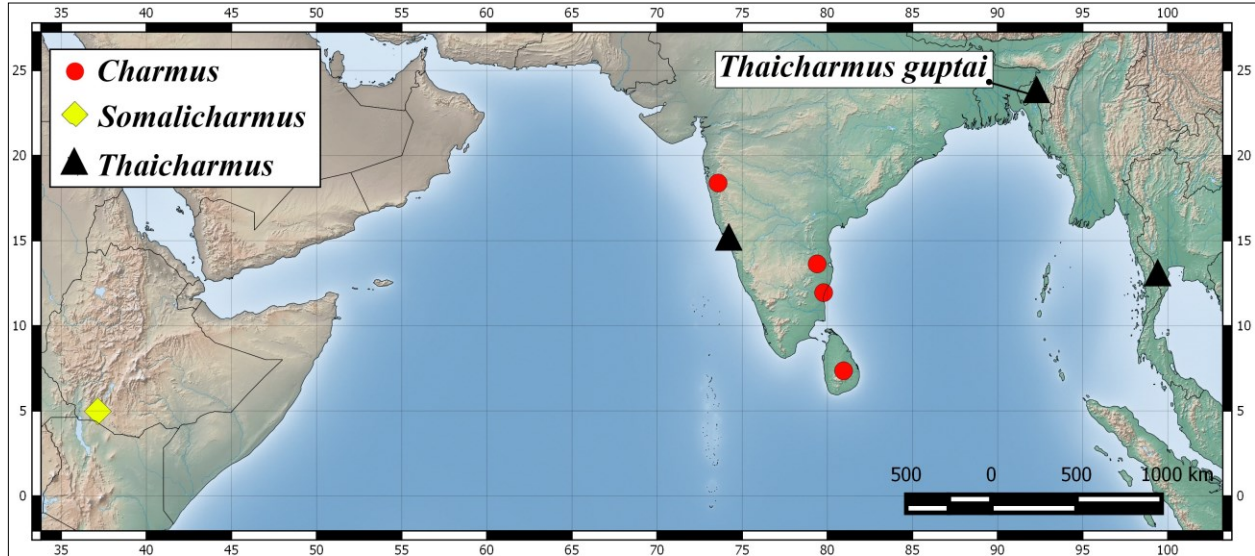


Figure 1: Distribution of the “*Charmus* group”. Modified after Kovařík et al. (2007).



Figure 2: *Thaicharmus guptai* sp. nov. holotype male NCBS-AG800, live coloration.

Eb trichobothria on manus. Carapace anterior edge with epistome present medially. Third and fourth legs with long tibial spurs. Coxae of legs short, not elongated.

Sternum subpentagonal, roughly as wide as long, exhibiting minor horizontal compression. Movable finger of pedipalp longer than manus. Telson vesicle globular,

	Holotype male NCBS-AG800
Total length	45.66
Carapace Length	4.90
Anterior width	2.81
Posterior width	4.66
Metasoma Length	14.38
Metasoma I	
Length	4.44
Width	2.77
Metasoma II	
Length	4.15
Width	2.99
Metasoma III	
Length	3.95
Width	3.14
Metasoma IV	
Length	4.46
Width	3.20
Metasoma V	
Length	5.18
Width	3.38
Depth	2.67
Vesicle Length	4.20
Depth	1.94
Femur Length	4.45
Width	1.06
Patella Length	5.38
Width	1.56
Chela Length	8.47
Width	1.36
Depth	1.45
Movable Finger Length	5.54
Pectinal teeth L/R	20/19

Table 1: Morphometric values (in mm) of *Thaicharmus guptai* sp. nov.

may be equipped with a small subaculear tubercle. Movable fingers of pedipalps with 10–12 cutting rows of granules. Pedipalps, metasoma and telson densely hirsute. Pectines with enlarged basal middle lamellae and with fulcra.

***Thaicharmus guptai* sp. nov.**
(Figs. 2–6, Table 1)

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Holotype ♂ NCBS-AG800, near Phuldungsei, Jampui Hills, North Tripura District, Tripura State, India

(23°48.704'N, 092°15.667'E, elevation 920 m), coll. R. Sanap & Z. Mirza, 1st November 2014.

Etymology: The specific epithet is a patronym honoring Atul Gupta, IFS, Principal Chief Conservator of Forest and the Director of Tripura Biodiversity Board, for initiating and supporting the Tripura biodiversity documentation project during which the new species was discovered.

Diagnosis: *Thaicharmus guptai* sp. nov. differs from all known members of the genus *Thaicharmus* in bearing the following set of morphological characters: trichobothrium d_2 distal to i_1 on femur; trichobothria *est*, *em* and *et* on external surface of patella do not form a straight line; subaculear tubercle absent; movable finger of pedipalp chela with 12 cutting rows of denticles; movable finger much longer than pedipalp patella; pectinal teeth number 20/19; pectines with distinct lamellae and fulcra; two horn-like projections on ventrolateral aspect of metasomal segment V. The female is unknown. *Thaicharmus guptai* sp. nov. is most similar to *T. mahunkai* in bearing 12 cutting rows of denticles on movable finger of pedipalp chela; however, it differs from the latter species in lacking the subaculear tubercle.

Description of holotype ♂ NCBS-AG800

Coloration (live) (Figs. 2, 3a & 3b): Carapace, mesosoma and metasoma in shade of black; pedipalp in shade of brown, chelicerae light brown with dark reticulation, cheliceral teeth on movable and immovable finger dark brown to black, femur and patella of legs almost black fading to dark brown distally, the brown color from patella further fades to pale yellow towards the tarsus. Pectines, genital operculum and all sternites (except the last one, which is of a darker shade) pale yellowish. Sternum distally dark brown, fading to yellow towards the center and base. Coloration in preserved condition much faded and paler. Metasomal segment fades from black to a dark brown color. Telson dark brown.

Morphology: Carapace trapezoidal with sinuous anterior, bearing a beady gloss and sparse granulation, more concentrated on lateral aspect (Fig. 4a). The eye-tubercle slightly elevated, a deep longitudinal furrow from anterior border to the posterior border is present. Median eyes are situated anteriorly in a ratio of 1:3.51. Five lateral eyes are present comprising three large and two small ones. A moderately developed median epistome on its anterior border arises in a shallow concavity (Fig. 4a). Carapace with only median ocular carina slightly elevated whereas others are absent. Chelicerae typical of family Buthidae (Sissom, 1990) (Figs. 4b-4c). Mesosoma: Tergites I–VI smooth, lustrous throughout,

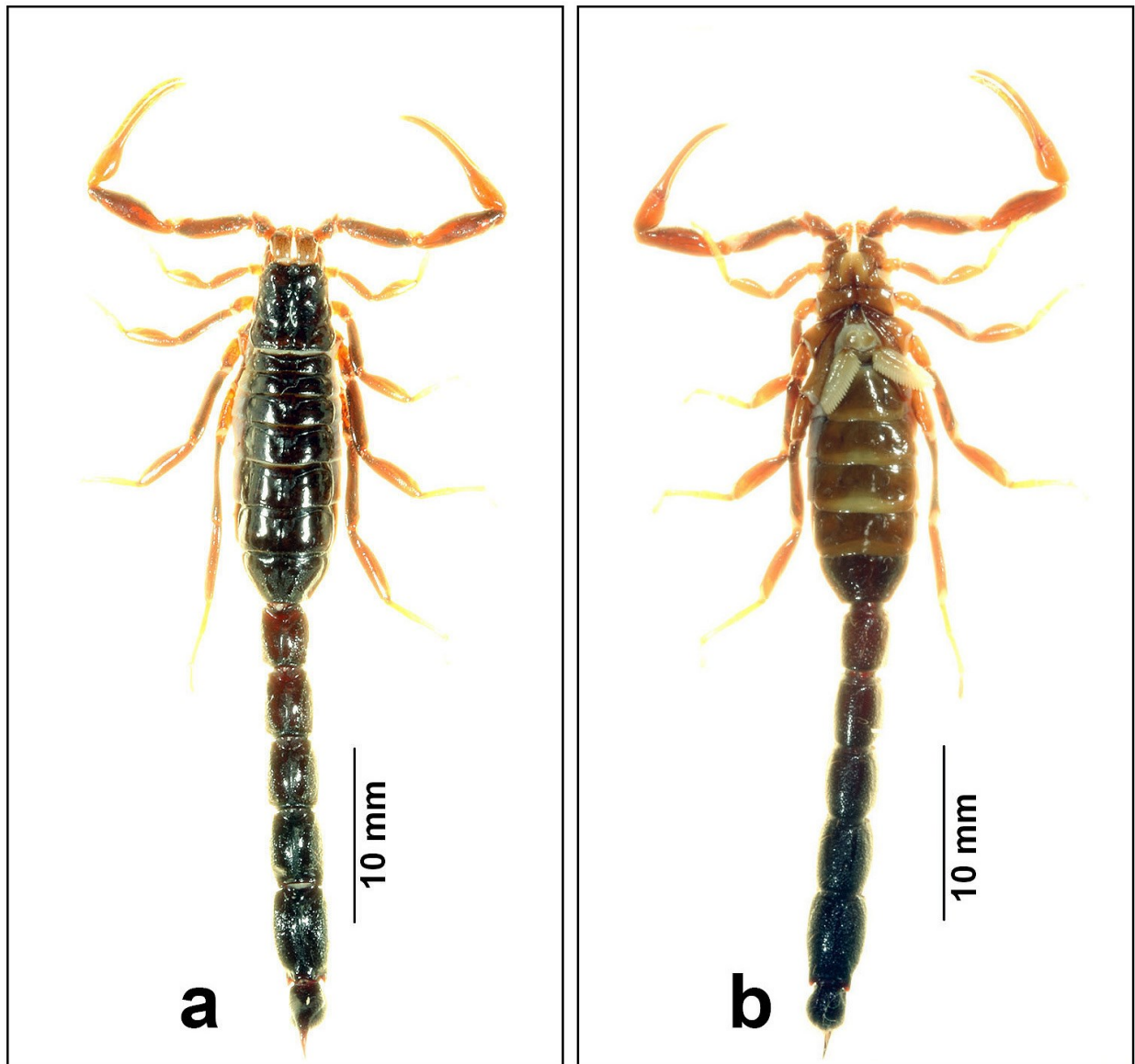


Figure 3: *Thaicharmus guptai* sp. nov. holotype male NCBS-AG800., habitus (a) dorsal, (b) ventral.

lacking granulation with a single slightly elevated median smooth carinae (Fig. 3a). Tergite VII has two pairs of granular carinae (Fig. 3b). Granular throughout. Sternites smooth throughout with a few sparse punctuations, densely concentrated in the last segment. Stigmata are slit-like. The sternum is pentagonal with a distinct longitudinal median furrow. Pectinal teeth 20/19 in number. Pectines are well-developed, with nine lamellae and with fulcra at base of each tooth excluding the first and last pectinal teeth (Figs. 4d-4e). Metasoma (Fig. 6): All segments robust, densely punctuated on their ventral aspect and also hirsute. Segment V has two distinct horn-like projections on its ventro-lateral aspect.

Vesicle bulbous, lacking a distinct aculear tubercle. Pedipalp: Smooth and lustrous throughout, but densely granular between crenulated dorsal and internal carinae of femur. Patella lacks distinct carinae, with only a few granules on its internal aspect. Movable finger of pedipalp chela with 12 cutting rows of denticles (Fig. 5d). The movable finger is much longer than pedipalp patella. Chela lacking carinae. All segments lacking setae. Dorsal trichobothria on femur in *alfa*-configuration (Fig. 5a). Trichobothrium *est* basal to *em* and *et* on the external surface of patella. *Est*, *em* and *et* aligned angularly, not forming a straight line (Fig. 5c). Trichobothrium d_2 distal to i_1 on femur (Fig. 5a).

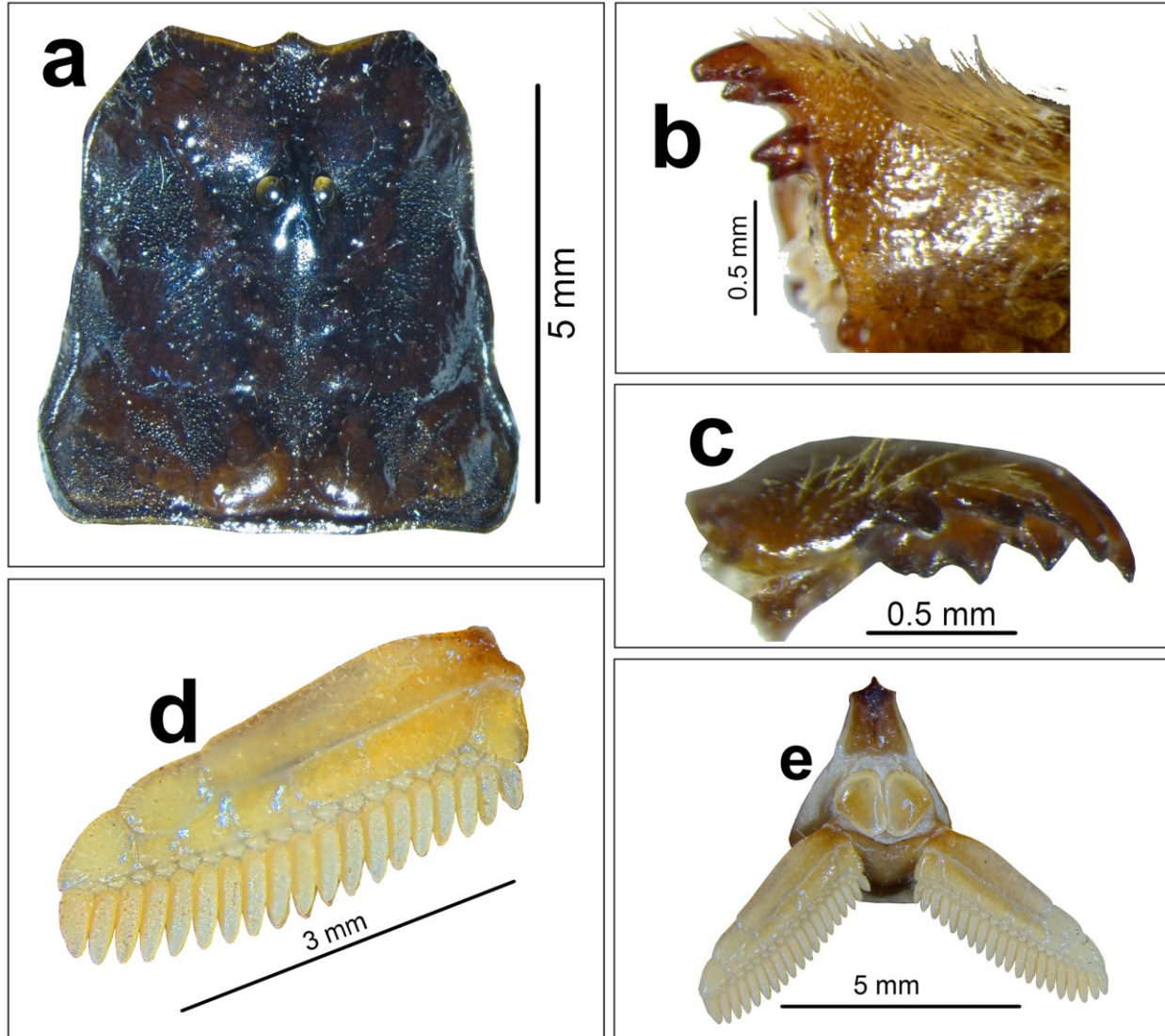


Figure 4: *Thaicharmus guptai* sp. nov. holotype male NCBS-AG800, (a) carapace, (b) fixed finger of chelicerae, ventral view, (c) movable finger of chelicerae, ventral view, (d) right pectine, (e) sternum, genital operculum and pectines.

Natural history and distribution: The holotype male was found actively moving on a rocky escarpment in degraded evergreen forest along a stream. The type locality is Jampui Hills, on the border of Tripura and Mizoram States (Fig. 7). Hence, the species is likely to be present in Mizoram and also perhaps in Bangladesh and Myanmar as the hill range extends into the neighboring states and countries sharing a similar habitat. Other scorpions observed at the type locality were *Chaerilus pictus*, *Euscorpions longimanus* and *Liocheles* sp. The new species was found during a biodiversity survey of Tripura. The fieldwork was conducted across the entire southern part of the state for approximately eight weeks, and only on one occasion the new species

was observed. The holotype was found in a ravine that can only be accessed in the dry season.

Discussion

Members of the *Charmus* group appear to be widespread but not common anywhere. Despite searching for more than a month across Tripura State, only a single specimen of the new species was found. Even the type series of most of the described species of this group generally includes only a single specimen. The rarity of specimens in the wild as well as in the museums makes it impossible to undertake a comprehensive review of the genera and species within this group. The discovery

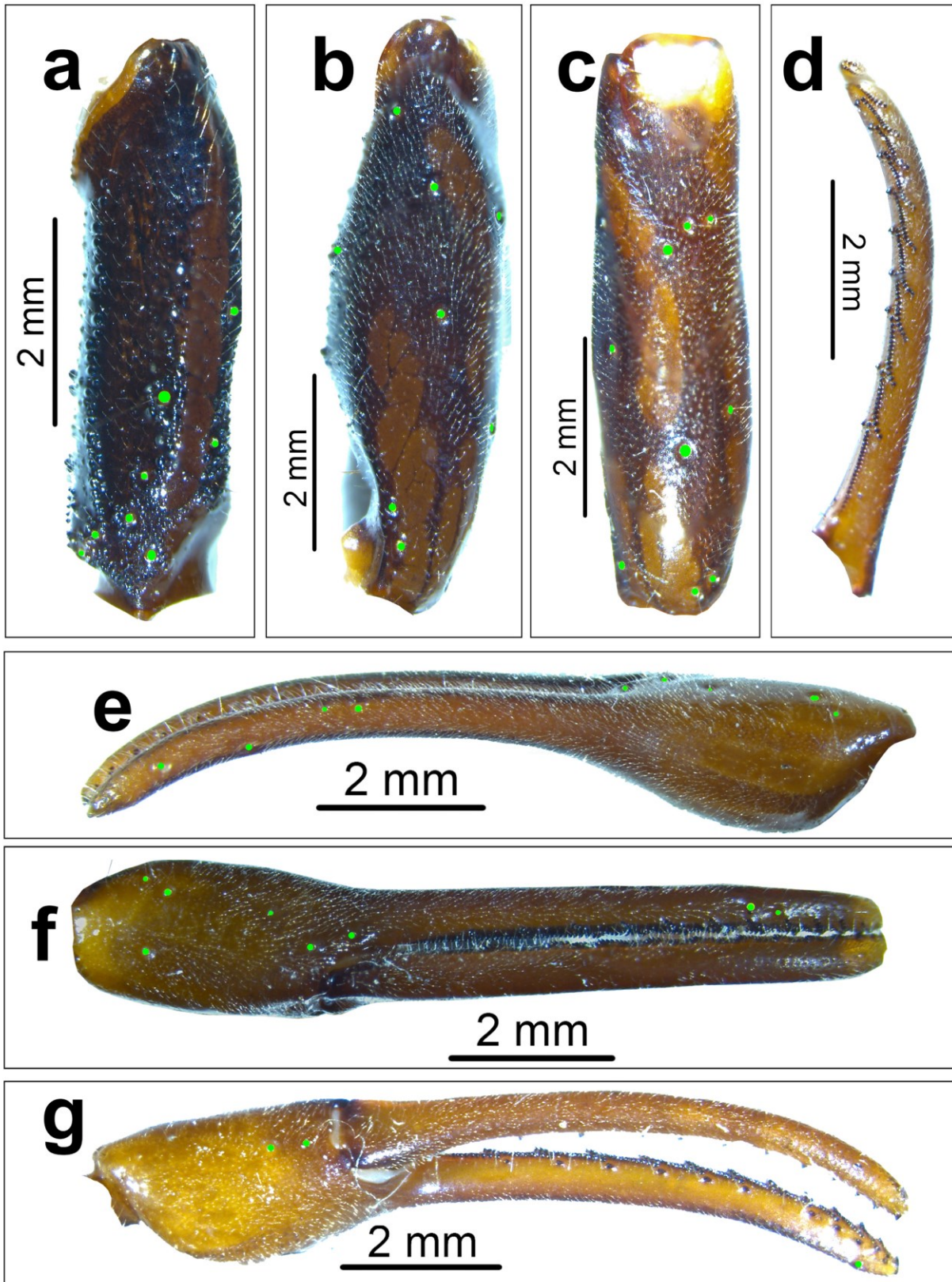


Figure 5: *Taicharmus guptai* sp. nov. holotype male NCBS-AG800, right pedipalp. (a) femur, dorsal view, (b) patella dorsal view, (c) patella external view, (d) movable finger, (e) manus dorsal view, (f) manus external view, (g) manus ventral view. Visible trichobothria indicated with green circles.

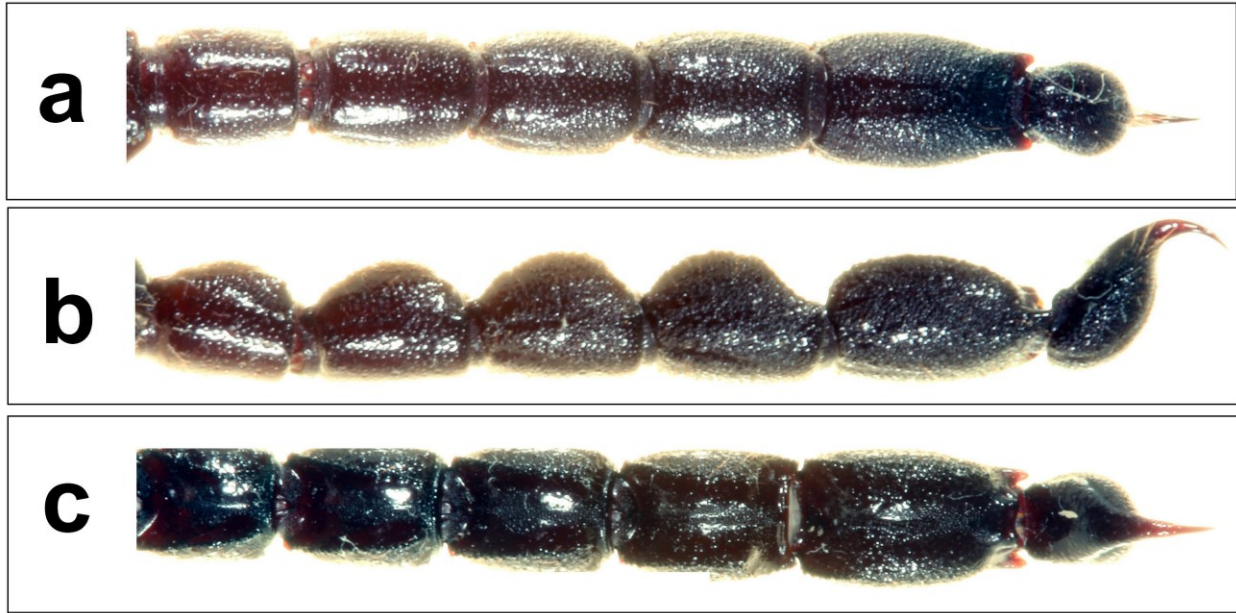


Figure 6: *Thaicharmus guptai* sp. nov. holotype male NCBS-AG800, metasoma (a) ventral view, (b) lateral view, (c), dorsal view. Not to scale.



Figure 7: Landscape view of the type locality showing forest of Tripura in the foreground and forests of Mizoram in the background.

of the new species highlights the paucity of diagnostic characters for the genera. A detailed review of this group will certainly be needed, which is beyond the scope of the present study largely due to the lack of representatives of this group in Indian museums or also because many types are in personal collections abroad.

Studies of Indian scorpions have largely been carried out on the Deccan Plateau or in the Western Ghats, which is clearly reflected by the much greater number of species that have been described from these areas (Pocock, 1900; Tikader & Bastawade, 1983; Mirza et al., 2014, 2015). Northeastern India is part of two globally recognized biodiversity hotspots: the Indo-Burma and the Himalaya (Myers et al., 2000), yet this area is relatively less explored. Recent surveys and re-examination of museum material collected from the Himalayan region have resulted in discovery of several new scorpion species (Lourenço & Duhem, 2010; Zambre et al., 2014). The discovery of a new species of scorpion further attests to how much work remains to be done in this biodiverse region (Mirza & Sanap, 2010; Mirza et al., 2012; Zambre et al., 2011, 2014).

Acknowledgments

Thanks are due to Atul Gupta (Tripura Biodiversity Board) and Ajith Kumar (NCBS) for initiating the Tripura biodiversity surveys. This work was a collaboration with the Tripura Biodiversity Board, which facilitated and funded this project. Survey and collection permits (No.F.8. (163) /For-WL-2012 /Part/ 38802-08) were granted by the Principal Chief Conservator of Forests, Department of Forest, Government of Tripura. The Forest Department staff at Kanchanpur and Manu Forest Divisions provided logistical support. The voucher specimen is deposited in the research collections of the National Centre for Biological Sciences, Bangalore, Karnataka, India. Special thanks to Tiasa Adhya, Ajith Kumar and Atul Gupta for comments on the manuscript. We also thank two anonymous reviewers for their comments.

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