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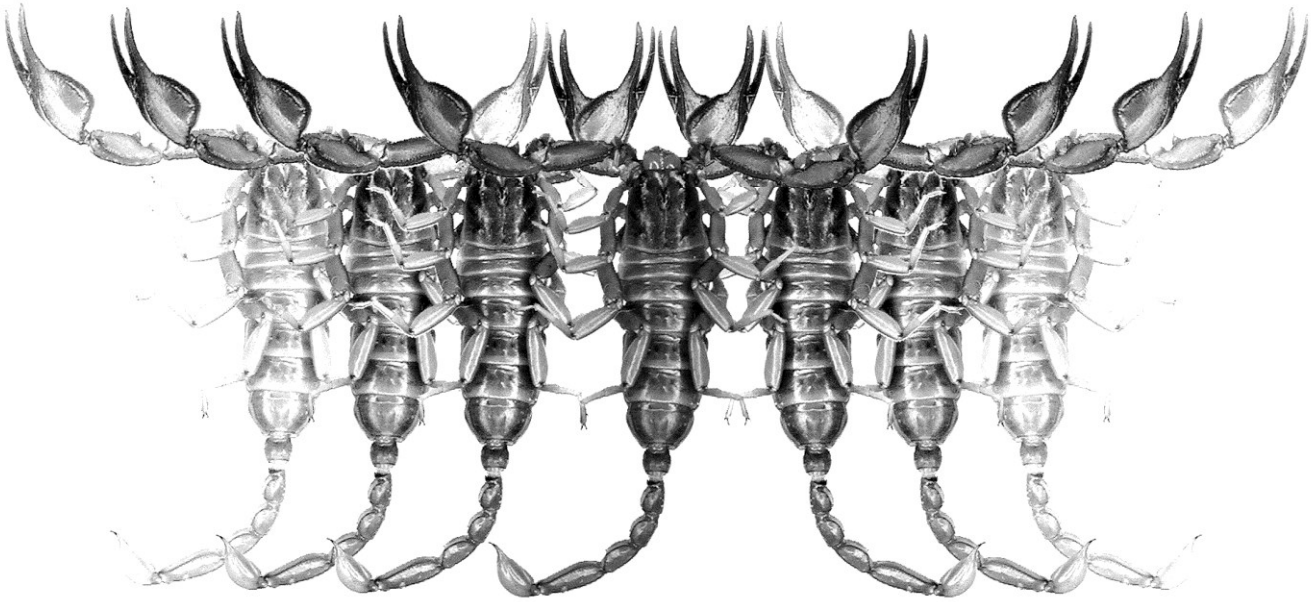

A Review of *Thaicharmus* Kovařík, 1995, with Description of *Thaicharmus indicus* sp. n. from India (Scorpiones, Buthidae)

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A review of *Thaicharmus* Kovařík, 1995, with description of *Thaicharmus indicus* sp. n. from India (Scorpiones: Buthidae)

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Summary

Thaicharmus indicus **sp. n.** from India (Goa State) is described and compared with *T. mahunkai* Kovařík, 1995 from Thailand and *T. lowei* Kovařík, Soleglad et Fet, 2007 from India. The genus *Thaicharmus* Kovařík, 1995 is discussed and a key is provided. Photos of male *T. mahunkai* are published for the first time.

Introduction

The genus *Thaicharmus* Kovařík, 1995 with the type species *T. mahunkai* Kovařík, 1995 was based on two females collected by Sándor Mahunka & L. Mahunka-Papp in Thailand, Phetchaburi Province, Kaeng Krachan, Kaeng Krachan National Park, Reservoir, 7 February 1994. The male (Figs. 21–22) was collected by Peter Schwendinger in western Thailand, Kanchanaburi Province, Sai Yok, 100 m a.s.l., 21 July 1987. The second species, *Thaicharmus lowei* Kovařík, Soleglad et Fet, 2007, was described from India (Goa State).

The hereby described *T. indicus* sp. n., also from Goa State in India, strongly suggests a close relationship of all three species and supports their placement in the same genus. While the size and coloration link the new species to *T. mahunkai*, the shape of the chela suggests an even closer relationship with *T. lowei*. The species name "*indicus*" refers to the occurrence of the species and is in discord with the generic name "*Thaicharmus*". The combination "*Thaicharmus indicus*" thus reflects our previously inadequate understanding of the distribution (see also discussion in Kovařík et al., 2007: 205–208 including distribution map, fig. 14 on page 206).

Systematics

Thaicharmus Kovařík, 1995
(Figs. 1–30)

Thaicharmus Kovařík, 1995: 195–199, figs. 7–17; Kovařík, 1998: 120; Fet & Lowe, 2000: 224; Kovařík et al., 2007: 201–209, figs. 1–14; Kovařík, 2009: 18 (fig. 5) and 31.

TYPE SPECIES. *Thaicharmus mahunkai* Kovařík, 1995

ETYMOLOGY. Denotes affinity to the genus *Charmus* and the geographic distribution of the type species.

DISTRIBUTION. Thailand and India (Goa State).

DIAGNOSIS. Total length 16–34 mm. Dorsal trichobothria of femur arranged in *alfa*-configuration (Fig. 12). Pedipalp patella with trichobothria *est*, *em*, and *et* aligned in a straight line angled distally towards the ventral edge. Pedipalp chela with three *Eb* trichobothria on manus (Fig. 9). 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, equipped with a small but distinct 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.

SUBORDINATE TAXA. *Thaicharmus mahunkai* Kovařík, 1995 (Figs. 18–24); *Thaicharmus lowei* Kovařík, Soleglad et Fet, 2007 (Figs. 15–17); *Thaicharmus indicus* **sp. n.** (Figs. 1–14, 25–29).

Thaicharmus indicus Kovařík, sp. n.
(Figs. 1–14, 25–30)

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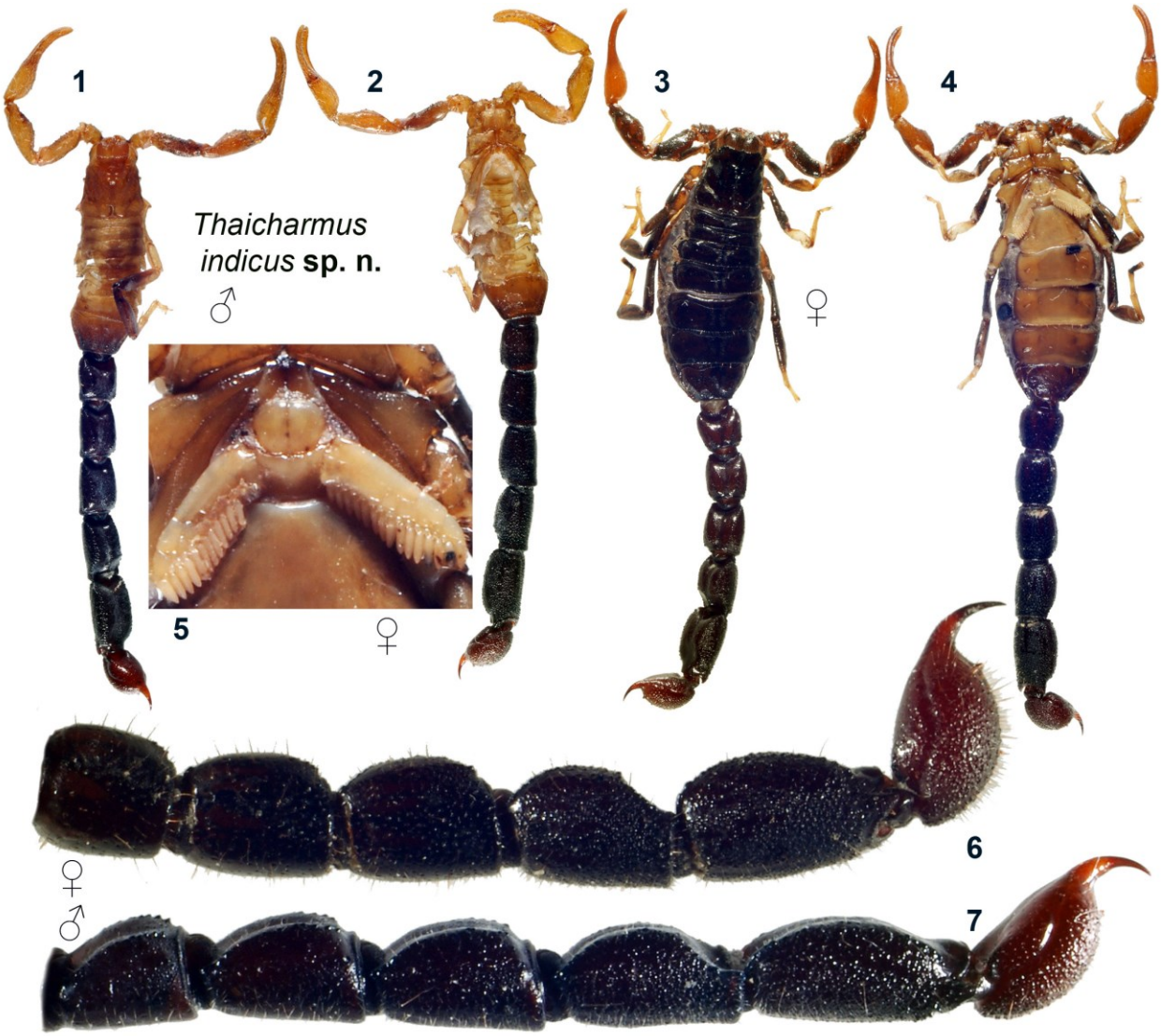


Figures 1–7: ***Thaicharmus indicus*** **sp. n.**, **Figures 1–2, 7:** ♂ (28.5 mm) paratype, dorsal (1) and ventral (2) views, metasoma and telson lateral view (7). **Figures** 3–**6.** ♀ (34 mm) holotype, dorsal (3) and ventral (4) views, pectinal area (5) and metasoma and telson lateral view (6).

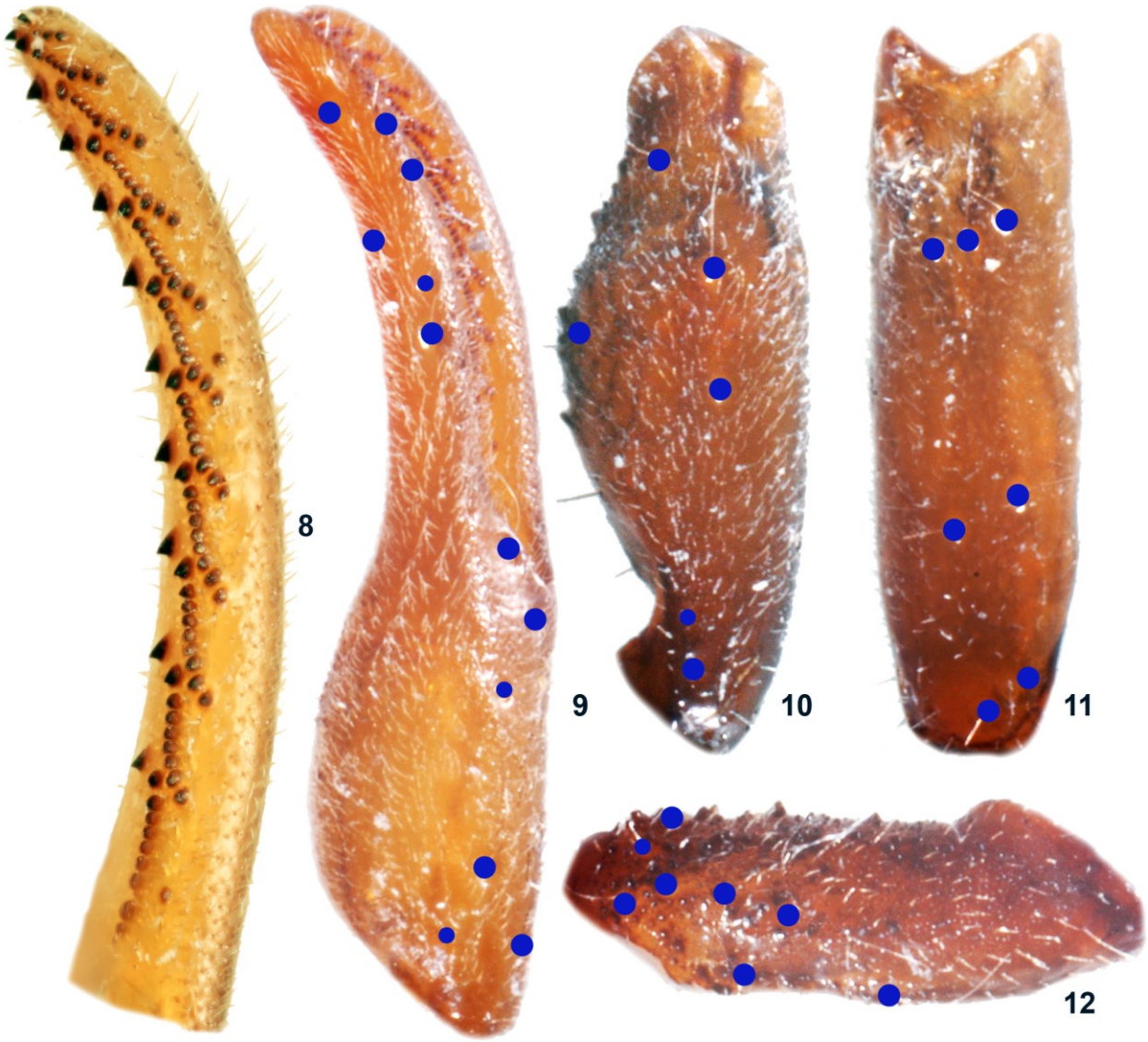
TYPE LOCALITY AND TYPE DEPOSITORY. India, Goa State, near Chaudi; the author´s collection (FKCP).

TYPE MATERIAL. India, Goa State, near Chaudi, XI. 2012, 1♂ (paratype) 1♀ (holotype), leg. V. Fura, (FKCP).

ETYMOLOGY. Named after the country of occurrence.

DIAGNOSIS. Total length 28.5–34 mm. Sexual dimorphism manifested in narrower male segments of metasoma and pedipalps. Mesosoma black with brown ornament, metasoma and femur of pedipalp black, chela of pedipalp and telson reddish brown, tibia of legs yellowish brown. Chelicerae yellow, with black reticulation. Carapace without carinae. Metasoma, telson and pedipalps densely hirsute, hairs shorter on pedipalp than on metasoma. First and second metasomal segments almost smooth and punctate, fourth and fifth metasomal segments and telson densely granulated. Movable and fixed fingers of pedipalps bear 10 rows of granules, with internal accessory granules and six distal granules of which three are smaller and form an apical row. Manus to movable finger length ratio 0.7–0.75. Pectinal teeth number 15 in female. Sternites without carinae.

DESCRIPTION. The adult male is 28.5 mm long, the adult female is 34 mm long. For habitus see Figs. 1–4. For position and distribution of trichobothria of pedipalps see Figs. 9–12. Sexual dimorphism is manifested mainly



Figures 8–12: ***Thaicharmus indicus* sp. n.**, ♂ (28.5 mm) paratype. **Figure 8**. Movable finger of pedipalp. **Figures 9–12.** Trichobothrial pattern. **9**. Chela dorsal. **10**. Patella dorsal. **11**. Patella external. **12**. Femur dorsal.

in narrower male segments of metasoma and pedipalps. Other sexual differences are noted below.

COLORATION. The base color is black. The mesosoma is black with brown ornament. The femur of pedipalp is black, the patella of pedipalp is variably brownish black, and the chela is reddish brown. The telson is reddish black. The chelicerae are yellow, with black reticulation which is more defined in the anterior part. The legs are black, only the tibiae are yellowish brown.

CARAPACE. The carapace of female lacks carinae and is smooth, but in the anterior/lateral part it has two larger, symmetrically situated elevated areas by a median groove densely granulated (Fig. 13). Sparsely granulated is also an area around the median eyes. The male has almost entire carapace densely granulated and its posterior part is bumpy. Present are three well developed and two reduced lateral eyes. The anterior edge exhibits a broad, subtle indentation with a conspicuous epistome medially.

MESOSOMA. The mesosoma bears one carina and is almost smooth in the female, and is densely granulated in the male. The pectinal tooth count is 15 in the female, in the male the pectines are damaged. The marginal tips of pectines extend to three quarters of sternite III in the female. The pectines bear three marginal lamellae and seven middle lamellae. Each lamella bears several white setae, three to five on each fulcrum. Sternites III–VII are smooth, without carinae. Stigmata are short and oval.

METASOMA AND TELSON. The segments of metasoma have only two dorsal carinae, which are well developed

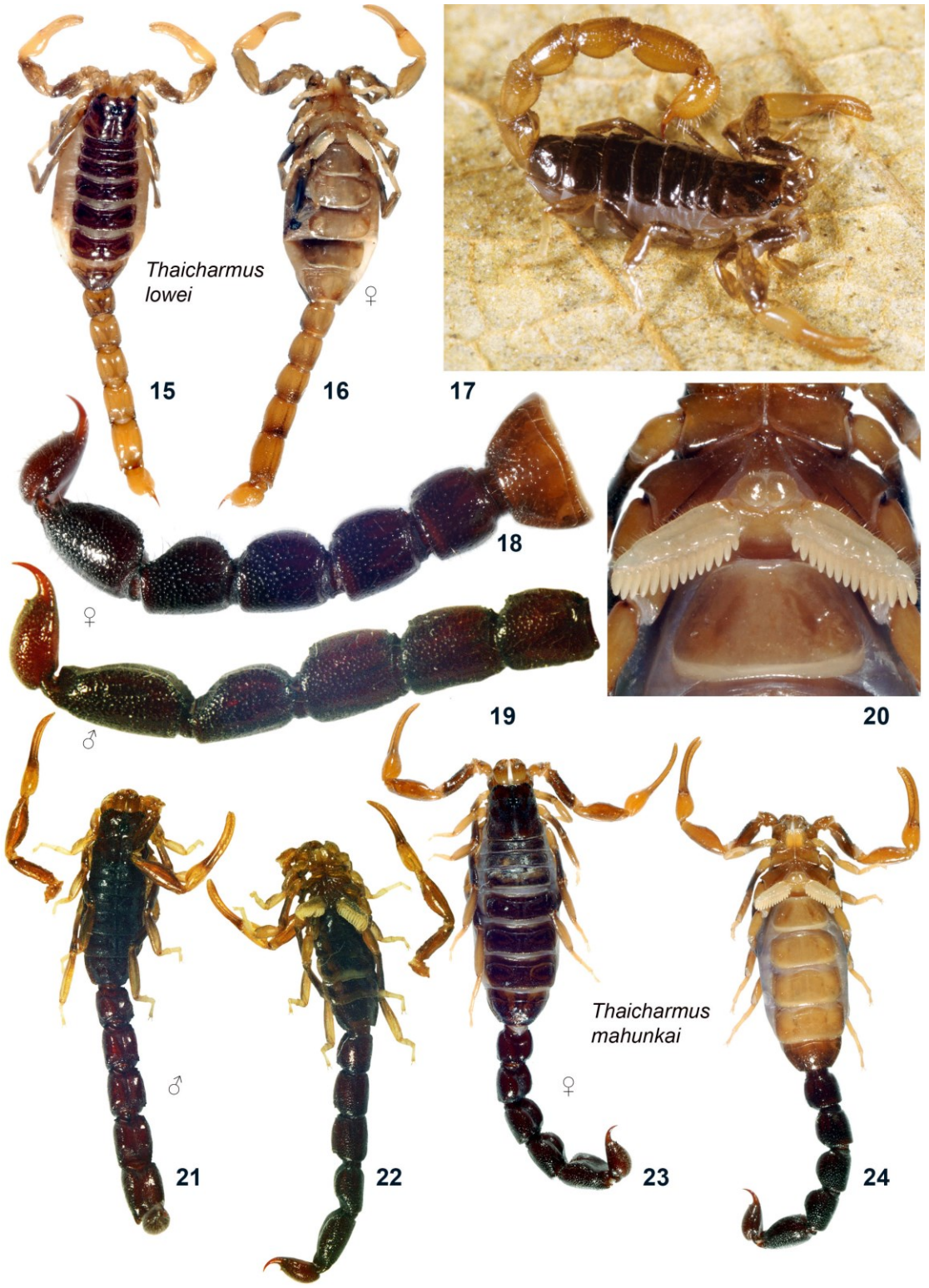
Figures 13–14: ***Thaicharmus indicus*** **sp. n.**, **Figure 13:** ♀ (34 mm) holotype, carapace with mesosomal segments I–II, chelicerae, trochanter and part of femur of pedipalp. **Figure 14:** ♂ (28.5 mm) paratype, telson with fifth and part of fourth metasomal segments.

and granulated. The first and second segments are almost smooth and punctate; the third segment is also granulated, more so in the male; and the fourth and fifth segments and the telson are densely granulated. Also the dorsal surfaces of all metasomal segments are granulated in both sexes – less so on the first segment. The entire metasoma and the telson are densely hirsute, less so on the first metasomal segment. The vesicle of telson is somewhat bulbous, with a short and highly curved aculeus. A short, non-granulated but distinct subaculear tooth is present on the posterior aspect of the vesicle.

LEGS. Both pedal spurs are present, and a long tibial spur is present on the third and fourth legs. The tarsus has scattered setae on the ventral surface. The coxae are not elongated.

PEDIPALPS. The dorsointernal carina of femur is granulated, the ventrointernal carinae are serrate, and the surface is densely granulated. The femur has internal carinae only indicated, and the entire surface is granulated and punctate. The chela lacks carinae, is punctate, and its internal surface is sparsely granulated. All pedipalps are densely hirsute, but the hairs are shorter than on the metasoma. The movable and fixed fingers of pedipalps bear 10 rows of granules, with internal accessory granules and six distal granules of which three are smaller and form an apical row.

MEASUREMENTS IN MM. *Male paratype*. Total length 28.5; carapace length 3.5, width 3.4; metasoma and telson length 17.7; first metasomal segment length 2.2, width 1.9; second metasomal segment length 2.6, width 1.8; third metasomal segment length 2.7, width 1.8; fourth metasomal segment length 2.9, width 1.8; fifth metasomal segment length 3.7, width 1.9; telson length



Figures 15–24: **Figures 15–17:** ***Thaicharmus lowei*** Kovařík et al., 2007, dorsal (15) and ventral (16) views and live (17), ♀(16 mm) holotype, India, Goa State, Sanguem, FKCP. **Figures 18–24:** ***Thaicharmus mahunkai*** Kovařík, 1995. **Figures 18, 20, 23–24**. ♀(29 mm) paratype, Thailand, Phetchaburi Province, Kaeng Krachan, Kaeng Krachan National Park, Reservoir, FKCP, metasoma and telson lateral (18), pectinal area (20), dorsal (23) and ventral (24) views. **Figures 19, 21–22**. ♂(24 mm), Thailand, Kanchanaburi Province, Sai Yok, ZSRO No. 1173 (Universität Rostock, Germany), metasoma and telson lateral (19), dorsal (21) and ventral (22) views.

Figures 25–26: ***Thaicharmus indicus*** **sp. n.**, ♀ (34 mm) holotype.

Figures 27–29: ***Thaicharmus indicus* sp. n.**, ♂ (28.5 mm) paratype.

Figure 30: India, Goa State, near Chaudi, type locality of ***Thaicharmus indicus* sp.**

3.6; telson width 1.7; pedipalp femur length 2.6, width 0.9; pedipalp patella length 3.1, width 1.1; chela length 4.6; manus length 2.1; manus width 1; movable finger length 2.8.

Female holotype. Total length 34; carapace length 3.4, width 3.5; metasoma and telson length 18.85; first metasomal segment length 2.3, width 2.4; second metasomal segment length 2.6, width 2.3; third metasomal segment length 2.7, width 2.3; fourth metasomal segment length 3.1, width 1.8; fifth metasomal segment length 3.95, width 2.4; telson length 4.2; telson width 2.2; pedipalp femur length 2.8, width 1.1; pedipalp patella length 3.5, width 1.4; chela length 5.2; manus length 2.25; manus width 1.3; movable finger length 3.2.

COMMENTS. Regrettably, the male paratype died during transport and was partially destroyed (Figs. 1–2), so that only the metasoma and pedipalps could be preserved (Figs. 7–12). However, the collector Vladimír Fura photographed the male while still alive at the type locality (Figs. 27–29).

Key to Species of *Thaicharmus*

1. Chelal movable finger with 10 median denticle (*MD*) rows; chelal fingers not overly elongate, ratio of the manus compared to the movable finger is 0.66–0.75; found in Goa, India ……...……. **2**

– Chelal movable finger with 11–12 median denticle (*MD*) rows; chelal fingers elongate, ratio of the manus compared to the movable finger is 0.55–0.58; found in southern Thailand. …..……..……. ***T. mahunkai***

2. Small sized species, female 16 mm; metasoma yellow to yellowish brown . …….…….... ***T. lowei***

– Medium sized species, female 34 mm; metasoma reddish black to black . ……..…. ***T. indicus***

AFFINITIES. *T. indicus* **sp. n.** is similar to *T. mahunkai* from Thailand. Apart from distributions, these two species can be separated on the color of the patella of pedipalps and legs, which are dorsally lighter in *T. mahunkai* (Figs. 21–24) than in *T. indicus* **sp. n.** (Figs. 3–4). Other differences are in the number of rows of granules on the movable fingers of pedipalps (10 in *T. indicus* **sp. n.** versus 11–12 in *T. mahunkai*). *T. mahunkai* has a more elongate pedipalp chela (see Figs. 21–24 versus Figs. 1–4). The manus to movable finger length ratio is 0.55–0.58. Both Indian species have the chela shorter. The ratio is 0.66 in *T. lowei* and 0.7–0.75 in *T. indicus* **sp. n**. Both *T. indicus* **sp. n.** and *T. lowei* live in India, Goa State, but they differ markedly in color (see key and Figs. 3–4 versus Figs. 15–16) and total length (16 mm in the female holotype of *T. lowei* versus 28.5–34 mm in *T. indicus* **sp. n.**).

Acknowledgments

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