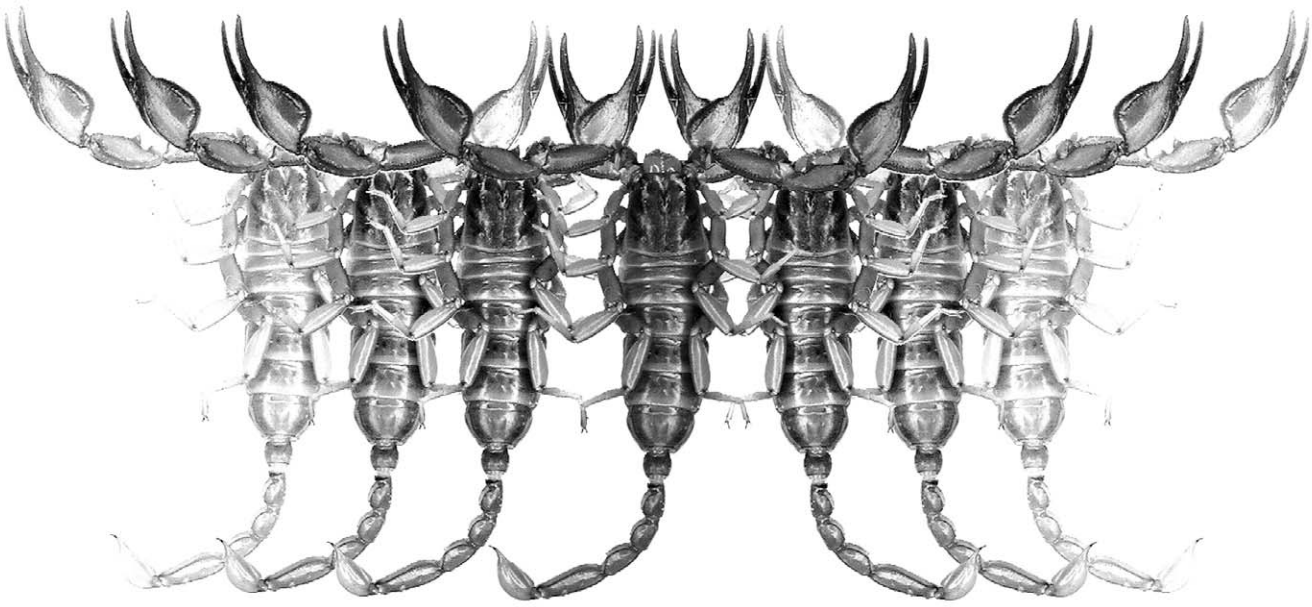
# *Euscorpius*

## Occasional Publications in Scorpiology

# *Hemiscorpius shahii* sp. n. from Iran (Scorpiones: Hemiscorpiidae)


**František Kovařík, Shahrokh Navidpour & Michael E. Soleglad**



**August 2017 – No. 249**

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## Occasional Publications in Scorpiology

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**Publication date: 7 August 2017**
**http://zoobank.org/urn:lsid:zoobank.org:pub:45F2A30A-7031-4264-8EE0-2E1881F1FE20**

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# *Hemiscorpius shahii* sp. n. from Iran (Scorpiones: Hemiscorpiidae)

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**http://zoobank.org/urn:lsid:zoobank.org:pub:45F2A30A-7031-4264-8EE0-2E1881F1FE20**

## Summary

*Hemiscorpius shahii* **sp. n.** from Iran, Hormozgan Province, is described and compared with other species of *Hemiscorpius* genus. The new species is characterized mainly by total length of 84 (female) to 110.7 (male) mm and unique trichobothrial pattern of pedipalp patella. The number of external trichobothria on patella is 17–18 (5 *eb*, 4 *esb*, 2–3 *em*, 3 *est*, 3 *et*); the number of ventral trichobothria on patella is 14–16. This distinguishes *H. shahii* **sp. n.** from all other species of genus *Hemiscorpius*, which have 3 or 10–12 ventral trichobothria on patella, one or two trichobothria in patella *est* series, and two or three trichobothria in *esb* series.

## Introduction

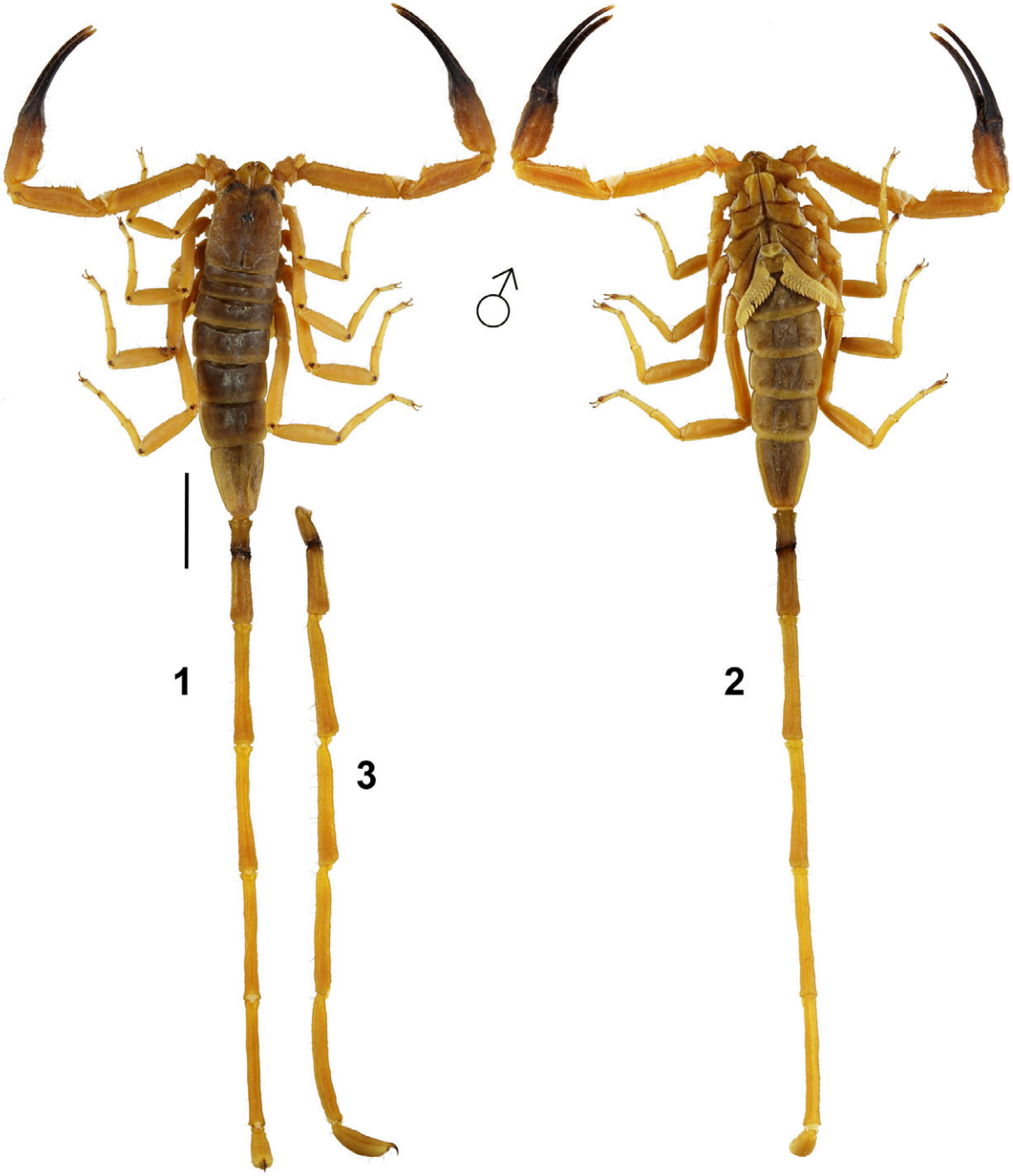
Most of *Hemiscorpius* species have constant orthobothriotaxic trichobothrial patterns of the patella with 3 ventral and 13 external (5 *eb*, **2** ***esb***, 2 *em*, **1** ***est***, 3 *et*) trichobothria (fig. 3 in Kovařík & Mazuch, 2011: 2; Lowe, 2010). Vachon (1974: 952) described genus *Habibiella* with the type species *Habibiella gaillardi* Vachon, 1974, which has a neobothriotaxic trichobothrial pattern representated by 10–12 ventral and 15 external (5 *eb*, **3** ***esb***, 2 *em*, **2** ***est***, 3 *et*) trichobothria on patella.

Monod & Lourenço (2005: 869–941) revised the species of *Hemiscorpius* Peters, 1861 from Iran, synonymized *Habibiella* with *Hemiscorpius*, and noticed that *Habibiella gaillardi* is morphologically more closely related to *Hemiscorpius lepturus*, the type species of *Hemiscorpius*, than *H. lepturus* is to other *Hemiscorpius*, mainly species from Africa and Arabia. These authors were convinced that the presence of 9–11 *additional* accesory trichobothria could not alone be a generic character. We accept this opinion and describe here a new species of the genus *Hemiscorpius* which has 15–18 accesory trichobothria. However, one coauthor of the *Habibiella* synonymization recently changed his opinion and described a new subgenus and genus based solely on the presence of accesory trichobothria, see Lourenço (2013: 52) and Lourenço (2017: 352). Lourenço (2017: 356) wrote: "the trichobothrial nomenclature proposed by Vachon ..... must not be accepted as a *dogma*", and decided for several species/genera to rename chelal trichobothrium $V_4$ to $eb_1$ (see, for example, *Euscorpius italicus* (Herbst, 1800) versus *Alloscorpops calmonti* Lourenço, 2013) thus creating a bogus character. It is increasingly clear that Lourenço does not understand the difference between *homology* and *nomenclature*. Homology is destroyed when one whimsically changes established trichobothrial designations based on simple and arbitrary differences in "location", and/or confusion caused by neobothriotaxy. This serious mistake by Lourenço was discussed in detail by Kovařík et al. (2013: 1–2).

Monod & Lourenço (2005: 887–896) also described *Hemiscorpius enischnochela* Monod et Lourenço, 2005, which is closely related to *H. gaillardi*, both of them have elongated neobothriotaxic pedipalps. They differ in the number of patellar trichobothria in *est* series which are represented by two trichobothria in *H. gaillardi* and one trichobothrium in *H. enischnochela*. Both these species have 10–12 ventral patellar trichobothria.

*Hemiscorpius shahii* **sp. n.** is morphologically closely related to *H. enischnochela* and *H. gaillardi* but differs by the unique neobothriotaxic trichobothrial pattern represented by high number of pedipalp patellar trichobothria. The number of external trichobothria on patella is 17–18 (5 *eb*, **4** ***esb***, 2–3 *em*, **3** ***est***, 3 *et*) and the number of ventral trichobothria on patella is 14–16.

As we declared above, we accept all cited species as members of *Hemiscorpius* Peters, 1861 even though some morphological differences including spiniform formula of leg tarsomeres suggest presence of three lineages inside the genus. For the final resolution of the taxonomy of these lineages it is important to compare hemispermatophores of all species as proposed by Monod & Lourenço (2005).




**Figures 1–3:** *Hemiscorpius shahii* **sp**. **n**., male holotype in dorsal (1) and ventral (2) views, metasoma and telson lateral (3) view. Scale bar: 10 mm.

## Systematics

### *Hemiscorpius shahii* **sp**. **n**.

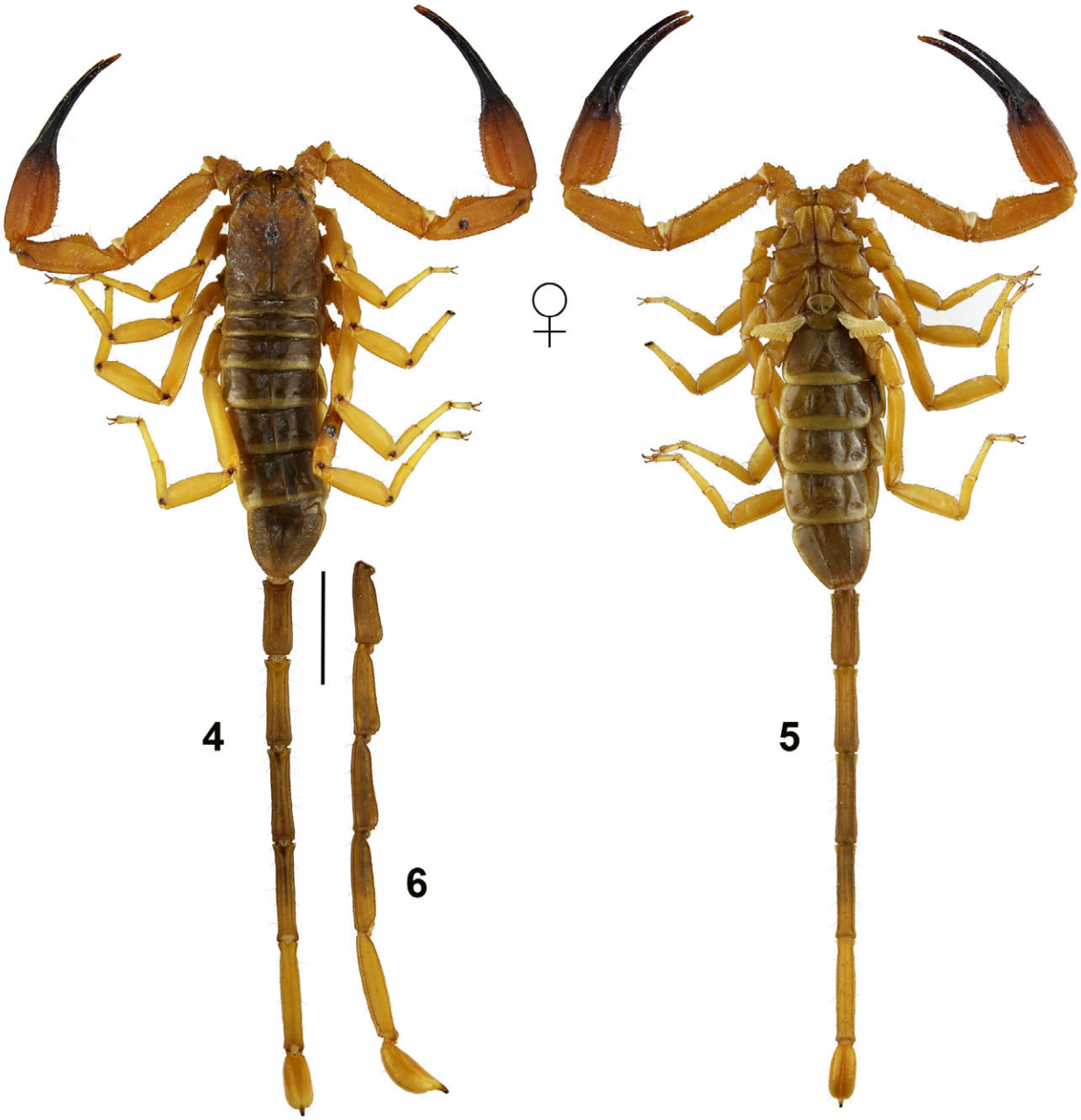
(Figs. 1–37, Table 1)

**http://zoobank.org/urn:lsid:zoobank.org:act:094CE71A-D90B-4BFE-BFA6-5DB03068D579**

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Hormozgan Province, Beshagard, 26°36'9.88" N 58°12'8.62"E, 903 m. a.s.l., FKCP.

TYPE MATERIAL. Iran, Hormozgan Province, Beshagard, 26°36'9.88" N 58°12'8.62"E, 903 m. a.s.l. (Figs. 36–37), 2016, 2♂ (holotype and paratype) 1♀ (paratype), leg. M. Shahi; Beshagard Mts., Davari vil., 26º27'N 57º38'E, 6-11.IV.2000, 1juv.♀ (paratype), leg. V. Siniaev & A. Plutenko. The types are deposited in the first author's collection (FKCP).

ETYMOLOGY. Named after Dr. Mehran Shahi (Department of Medical Entomology & Vector Control, School

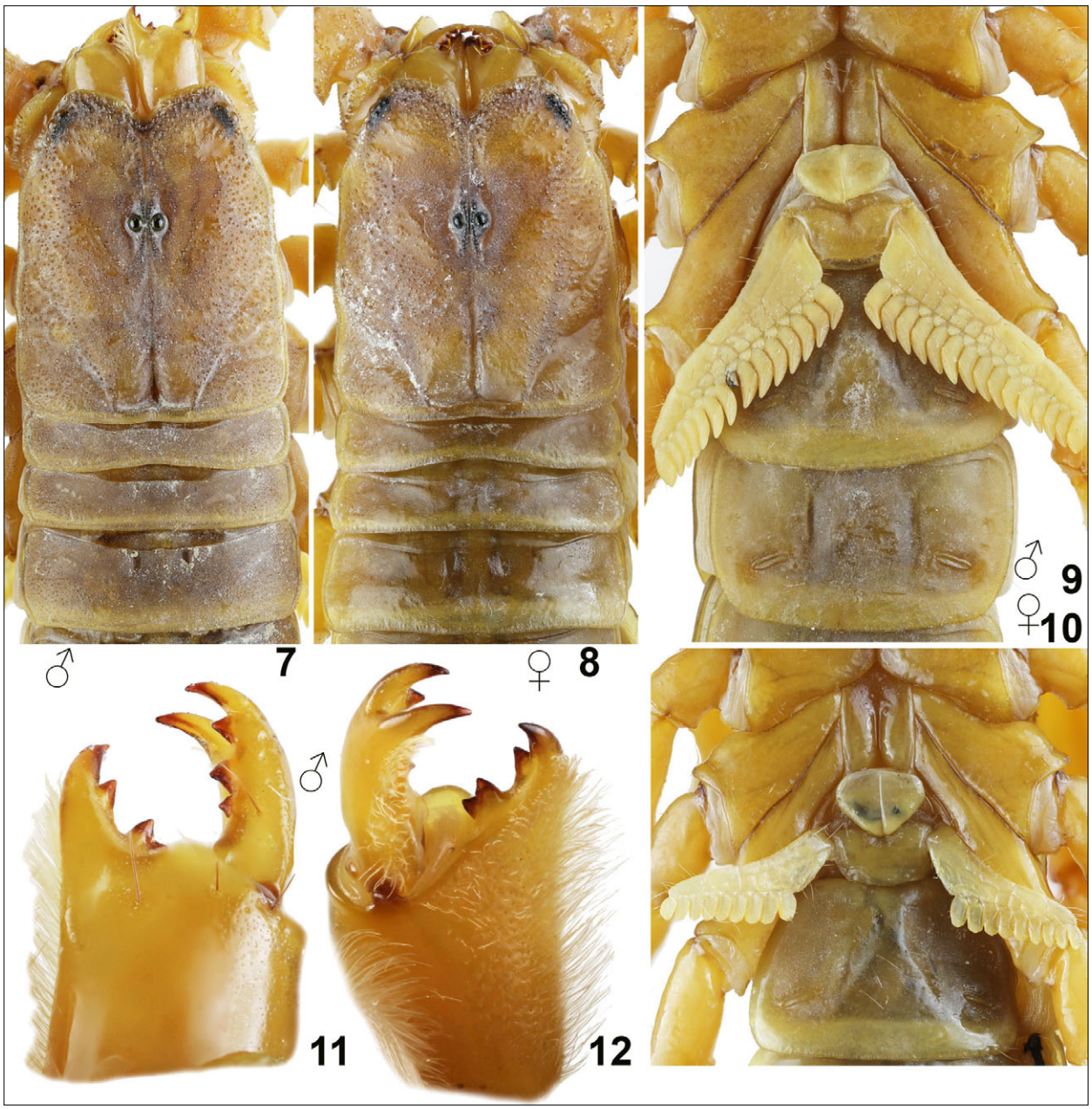



**Figures 4–6:** *Hemiscorpius shahii* **sp. n.**, female paratype in dorsal (4) and ventral (5) views, metasoma and telson lateral (6) view. Scale bar: 10 mm.

of Public Health, Infectious and Tropical, Hormozgan University, Iran), collector of the types.

DIAGNOSIS. Total length 84–110.7 mm. External trichobothria on patella number 17–18 (5 *eb*, 4 *esb*, 2–3 *em*, 3 *est*, 3 *et*); ventral trichobothria on patella number 14–16. Color yellow to yellowish brown, pedipalp fingers black, darker than chela. Male has markedly longer metasoma than female. All metasomal segments longer than wide in both sexes. Telson elongate, with aculeus markedly shorter than vesicle. Pectinal teeth number 9 in female and 13–15 in males. Setation formula of tarsomere II of legs: 6-7/5: 7-8/6: 7-8/6: 8/6.

DESCRIPTION. The adults are 84 (female) and 88–110.7 (male) long. The habitus is shown in Figs. 1–6. For position and distribution of trichobothria of pedipalps see Figs. 15–26. External trichobothria on the patella number 17–18 (5 *eb*, 4 *esb*, 2–3 *em*, 3 *est*, 3 *et*); ventral trichobothria on patella number 14–16. Chelal tricho-




**Figures 7–12:** *Hemiscorpius shahii* **sp**. **n**. **Figures 7**, **9**, **11–12**. Male holotype, carapace and tergites I–III (7), coxosternal area and sternites III–IV (9), right chelicera in dorsal (11) and ventral (12) views. **Figures 8**, **10**. Female paratype, carapace and tergites I–III (8), coxosternal area and sternite III (10).

bothrium *Dt* is located on the fixed finger, considerably distal of the fixed finger juncture. Trichobothria *ib–it* are positioned on the distal one-third of the fixed finger. Spacing of chelal trichobothria $V_2$ and $V_3$ is more than three times the distance than that found between $V_1$ and $V_2$. The mesosoma is matte in the male and glossy in the female; the male has more elongate telson and markedly longer metasomal segments (Tab. 1). The fingers of pedipalps are almost straight, without exhibiting any sexual dimorphism (Figs. 14 and 17).

**Coloration** (Figs. 1–6). The base color is uniformly yellow to yellowish brown. The pedipalp fingers and anterior margin of carapace are black. The chelicerae are pale yellow with reddish denticles.

**Pedipalps** (Figs. 13–29). The elongated pedipalps are sparsely hirsute and finely granulated. The femur bears four granulate carinae; the ventroexternal carina is incomplete. The patella bears five coarsely granular carinae. The chela bears four to six carinae, of which median internal and dorsal carina may be weak and in-


**Figures 13–27:** *Hemiscorpius shahii* **sp**. **n**., pedipalp segments. **Figures 13–15**. Female paratype, right chela dorsal (13) and external (14), and right patella external (15). **Figures 16–22**, **24–27**. Male holotype, right chela dorsal (16), external (17) and ventrointernal (18); right patella dorsal (19), external (20) and ventral (22); left patella external (21); right femur internal (24), dorsal (25), external (26) and ventral (27). **Figure 23**. Male paratype, right patella external. Trichobothrial pattern is indicated.

| **Dimensions (MM)** | | **♂ holotype** | **♀ paratype** |
|---|---|---|---|
| Carapace | L / W | 9.65 / 8.03 | 9.95 / 8.65 |
| Mesosoma | L | 26.80 | 25.4 |
| Tergite VII | L / W | 7.70 / 5.78 | 7.25 / 7.00 |
| Metasoma and telson | L | 74.25 | 49.0 |
| Segment I | L / W / D | 11.6 / 2.90 / 2.75 | 6.85 / 2.55 / 2.63 |
| Segment II | L / W / D | 13.2 / 2.35 / 2.40 | 7.30 / 2.38 / 2.42 |
| Segment III | L / W / D | 13.9 / 2.25 / 2.30 | 8.30 / 2.15 / 2.30 |
| Segment IV | L / W / D | 14.1 / 2.00 / 1.95 | 8.80 / 2.05 / 2.15 |
| Segment V | L / W / D | 13.6 / 1.85 / 1.80 | 9.80 / 1.90 / 2.15 |
| Telson | L / W / D | 7.85 / 2.45 / 2.35 | - / 2.60 / 2.80 |
| Pedipalp | L | 41.2 | 40.9 |
| Femur | L / W | 11.6 / 2.65 | 10.8 / 1.40 |
| Patella | L / W | 10.7 / 3.05 | 10.6 / 3.45 |
| Chela | L | 18.9 | 19.5 |
| Manus | W / D | 8.50 / 4.00 | 8.40 / 4.70 |
| Movable finger | L | 12.4 | 12.1 |
| **Total** | **L** | **110.7** | **84.35** |

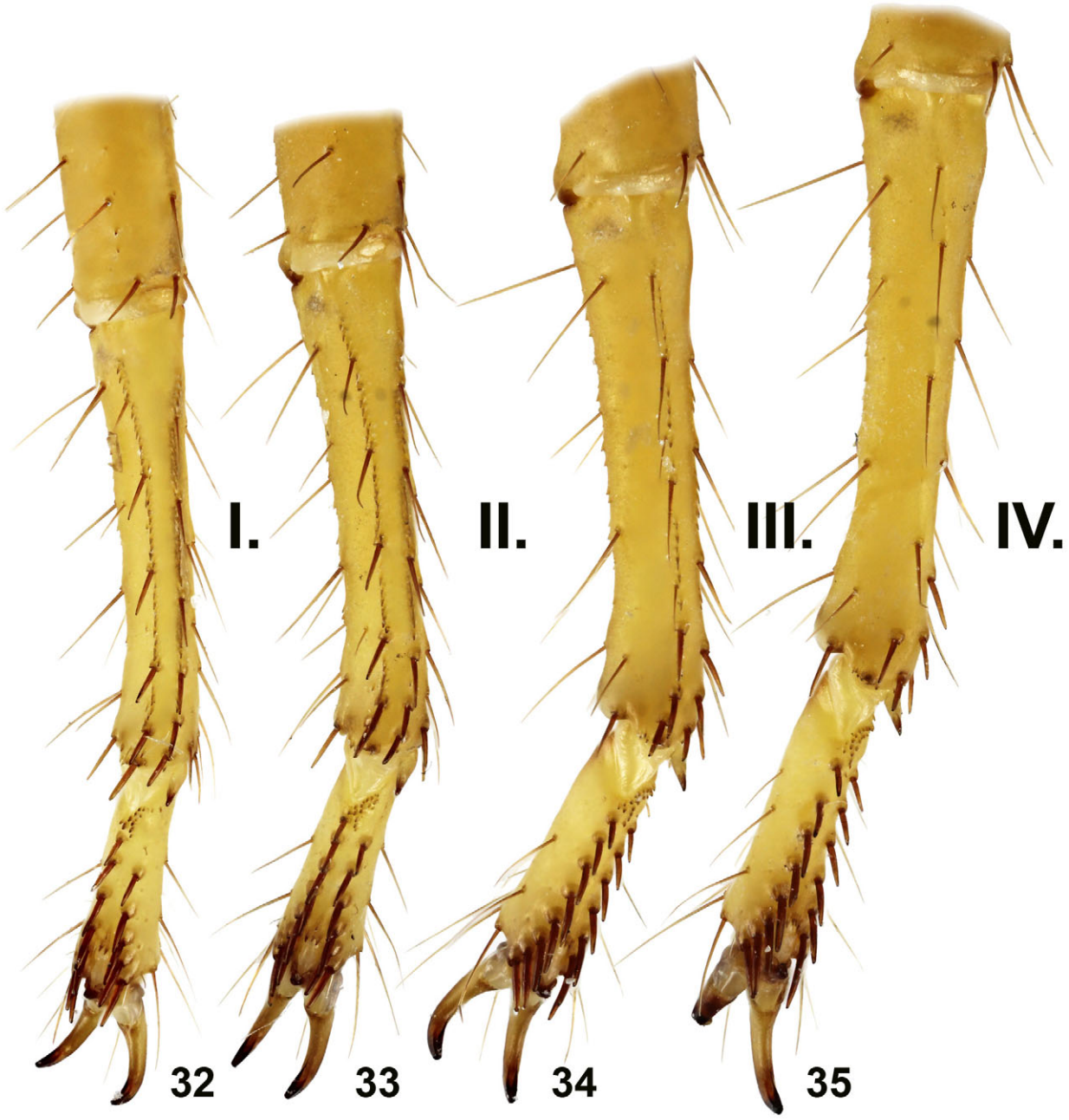
**Table 1:** Comparative measurements of adults of *Hemiscorpius shahii* **sp**. **n**. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).


**Figures 28–31:** *Hemiscorpius shahii* **sp**. **n**. **Figures 28–29**. Male holotype, granulation of pedipalp movable (28) and fixed fingers (29). **Figures 30–31**. Telson lateral, male holotype (30) and female paratype (31).

complete. The dentate margin of the movable finger is armed with two parallel rows of denticles extending the entire length of the finger, including external and internal granules that appear to indicate six or seven subrows. The dentate margin of the fixed finger is armed with one or two parallel rows of denticles with external and internal granules that appear to indicate five or six subrows.

**Metasoma and telson** (Figs. 1–6, 30–31). The metasoma and telson are sparsely hirsute and smooth to very finely granulated. The metasomal segments I–IV bear a total of 7 finely granulate carinae composed of spiniform granules, only a single ventromedian carina is present. The fifth segment bears five carinae, lateral carinae are replaced by an irregular row of minute granules. The telson is strongly elongate, with the aculeus shorter than the vesicle.

**Carapace and mesosoma** (Figs. 7–10). The carapace longer than wide lacks carinae but has a deep sagittal furrow with a forked, V-shaped furrow on each side in the posterior part. The anteromedial margin of the carapace is strongly concave. Present are a pair of median eyes and three lateral eyes. The carapace and mesosoma are densely covered by different types of granules,




**Figures 32–35:** *Hemiscorpius shahii* **sp**. **n**., male holotype, spiniform setation of tarsomeres of right legs I–IV, retrolateral aspect.

minute to strong. The sternum is quite elongate, more than 1.5 times longer than wide. The anterior portion of the sternum is as wide or wider than its posterior aspect. Tergites I–II lack carinae, whereas tergites III–VI bear a sagittal carina. Tergite VII bear five incomplete carinae. Sternites III–VI lack carinae and are finely punctate, whereas sternite VII bears two smooth carinae. The pectinal tooth count is 9 in the female and 13–15 in the males. The pectinal marginal tips extend the proximal four-fifths of the third sternite in females and one-third the length of the fourth sternite in the male. The pectines have three marginal lamellae and six (female) to ten (male) middle lamellae. The marginal lamellae bear several white (female) or reddish setae (male), the middle lamellae and each fulcrum bear one to three these setae. The genital operculum is oval in male and pentagonal in female.

**Chelicerae** (Figs. 11–12). The chelicerae dentition is as follows: the movable finger's dorsal edge has one large subdistal (*sd*) denticle, its ventral edge is smooth lacking


**Figures 36–37:** *Hemiscorpius shahii* **sp**. **n**., the type locality.

ventral accessory (*va*) denticles. The dorsal distal denticle (*dd*) is approximately the same size as its ventral counterpart (*vd*). The fixed finger's median (*m*) and basal (*b*) denticles form a bicuspid. Ventral accessory (*va*) denticles are lacking on the fixed finger's ventral surface.

**Legs** (Figs. 32–35). All legs are finely granulated on dorsal surfaces. The tarsomeres are hirsute with setae

and macrosetae including ventral microsetae. All legs are without laterodistal lobes and a prolateral pedal spur is present, the retrolateral spur being absent. Tarsomere I on legs I–III has 5-7/5-7 spiniform setae. Spiniform formula of tarsomere II = 6-7/5: 7-8/6: 7-8/6: 8/6.

## Acknowledgments

Thanks to Mehran Shahi (Iran), Viktor Siniaev, and Andrey Plutenko (Russia) who passed on listed types to the authors; Victor Fet for reviewing this manuscript and providing support in the manuscript preparation. Further, we thank two anonymous reviewers for their comments on the manuscript.

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