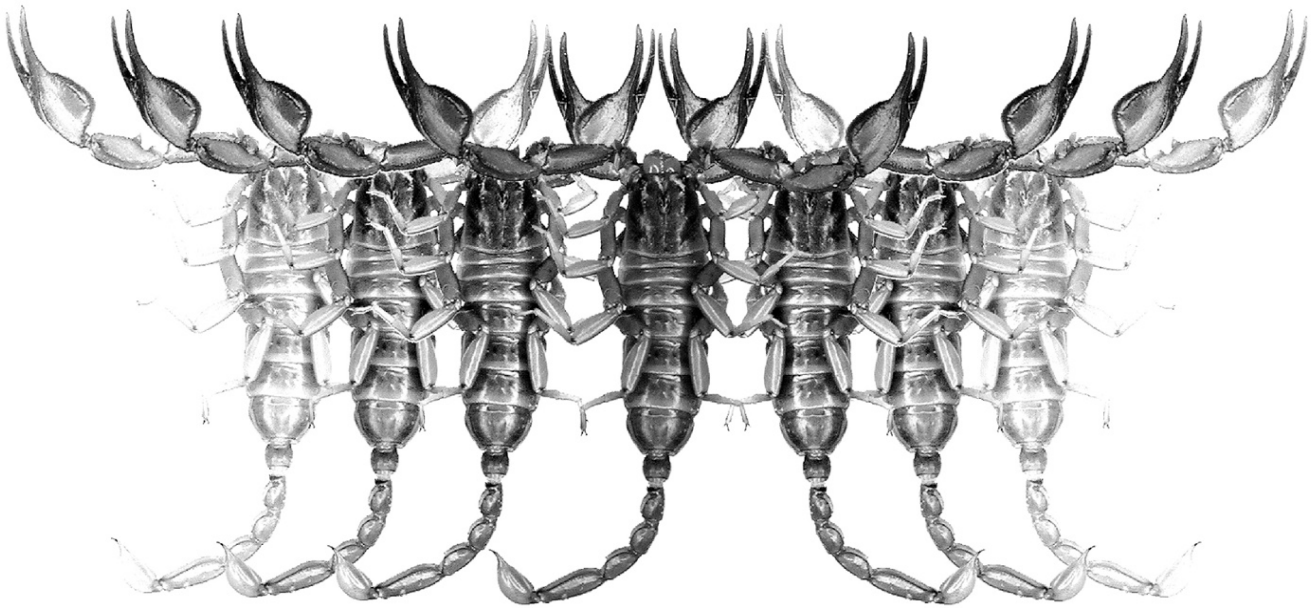


Euscorpius

Occasional Publications in Scorpiology



**New records of *Mesobuthus rakhshanii*
Barahoei, 2022 in Iran
(Scorpiones: Buthidae)**

**Ersen Aydın Yağmur, Zhale Baghernavesi, Zahra
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<http://zoobank.org/urn:lsid:zoobank.org:pub:04BD23B3-F8A2-4949-85C0-72C101DE4C25>

New records of *Mesobuthus rakhshanii* Barahoei, 2022 in Iran (Scorpiones: Buthidae)

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Summary

Mesobuthus rakhshanii Barahoei, 2022 (Scorpiones: Buthidae) was so far known only from the type locality in Sistan and Baluchestan Province, Iran. We give a list of numerous new records of this species from the same province. A map and detailed illustrations are provided.

Introduction

The genus *Mesobuthus* Vachon, 1950 has a broad range in the Palearctic (Fet & Lowe, 2000). It was recently reviewed by Kovařík et al. (2022) and 15 taxa were accepted as valid and in species level, and 14 new species were described in this revision. The same year, Barahoei (2022) described another new species from Iran. Iran has a very rich *Mesobuthus* fauna with high level endemism. 16 species of *Mesobuthus* are known in Iran (*M. afghanus*, *M. birulai*, *M. crucittii*, *M. eupeus*, *M. farleyi*, *M. iranensis*, *M. kaftani*, *M. kirmanensis*, *M. mirshamsii*, *M. navidpourii*, *M. persicus*, *M. philippovitschi*, *M. phillipsii*, *M. rakhshanii*, *M. vesiculatus*, *M. vignolii*). Of these species, 12 are endemic for Iran. *M. afghanus* is also found in Afghanistan and Turkmenistan; *M. eupeus*, in Armenia, Azerbaijan, Georgia, Russia, and Turkey, and *M. persicus*, in Azerbaijan.

The species *M. rakhshanii* was described by Barahoei (2022) from the Hamon County of Sistan and Baluchestan Province (Lotak District, Rahmatabad Village, 30°45'N, 61°21'E, 481 m), and so far, was only known from the type locality. This species is characterized with the number of pectinal teeth 25-29 in males and 18-21 in females; ratio of length/height of the third metasoma segment between 1.50-1.90; the central lateral and dorsal central carinae of the carapace are not connected and do not form a lyre-shaped structure (Barahoei, 2022).

We examined the *Mesobuthus* populations of the northern part of Sistan and Baluchestan Province; numerous new distributional records of *M. rakhshanii* are listed here.

Material and Methods

Specimens of *M. rakhshanii* were collected from the northern regions of Sistan and Baluchestan Province (Iran). Identifications of specimens were done according to Kovařík et al. (2022) and Barahoei (2022). Photographs of *M. rakhshanii* were taken by Canon EOS 7D. Stacking of pictures was made using Helicon Focus software. The focus stacking method is modified from Canon-Cognisys system recommended by Brecko et al. (2014). The specimens were deposited in AZMM (Alaşehir Zoological Museum, Manisa Celal Bayar University, Alaşehir, Manisa, Turkey). The map showing the localities of the specimens was generated with the SimpleMappr <https://www.simplemappr.net/api> (Shorthouse, 2010).

Systematics

Buthidae C. L. Koch, 1837

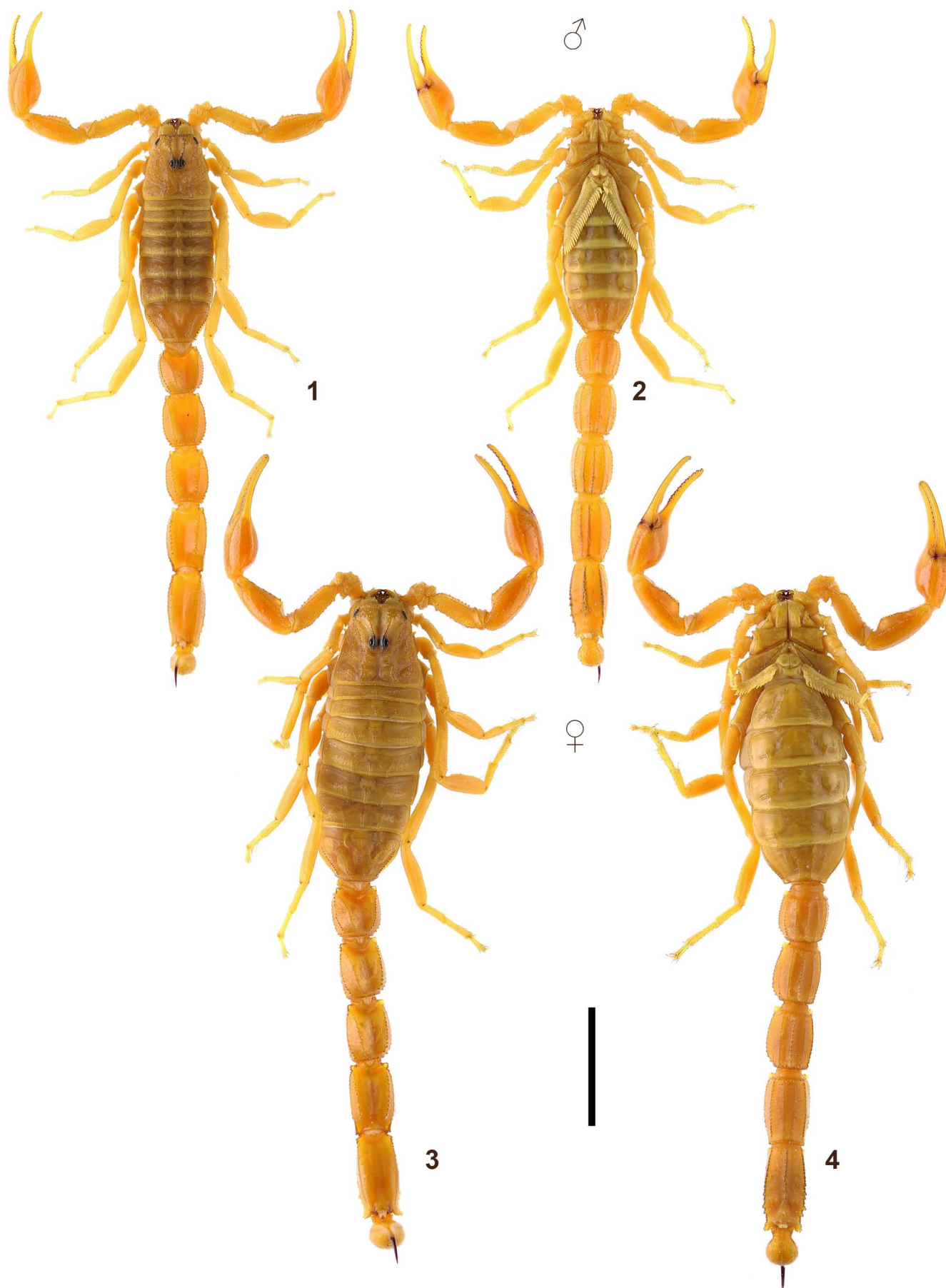
Mesobuthus Vachon, 1950

Mesobuthus rakhshanii Barahoei, 2022

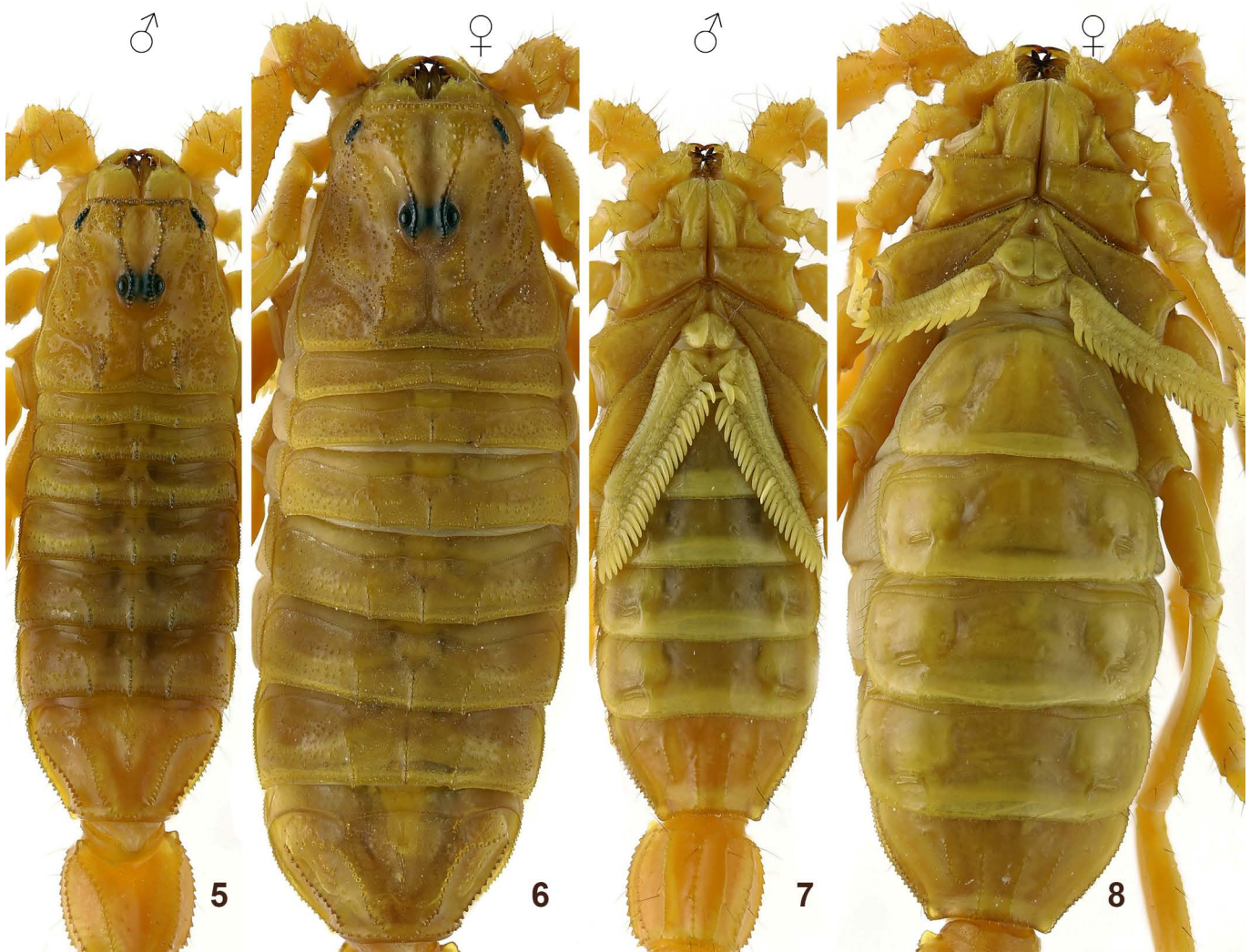
(Figures 1–37)

<http://zoobank.org/urn:lsid:zoobank.org:act:9FE70460-98C5-4B05-9A23-60F9A2EA16D5>

Material examined. IRAN: Sistan and Baluchestan Province, Hamun, Lutak, 30°45'54"N 61°24'05"E, 481 m a. s. l., 4.V.2018, 7♂ (AZMM/Sco-2018:4-10); Hamun, Shar-e Goli, 30°46'48"N 61°22'52"E, 482 m a. s. l., 15.VI.2018, 1♂ (AZMM/Sco-2018:11); Hamun, Tasuki, 30°24'07"N 61°08'06"E, 478 m a. s. l., 17.VI.2018, 11♂ (AZMM/Sco-2018:12-22); Hirmend, Borj-e Mirgol castle, 31°13'20"N 61°43'20"E, 480



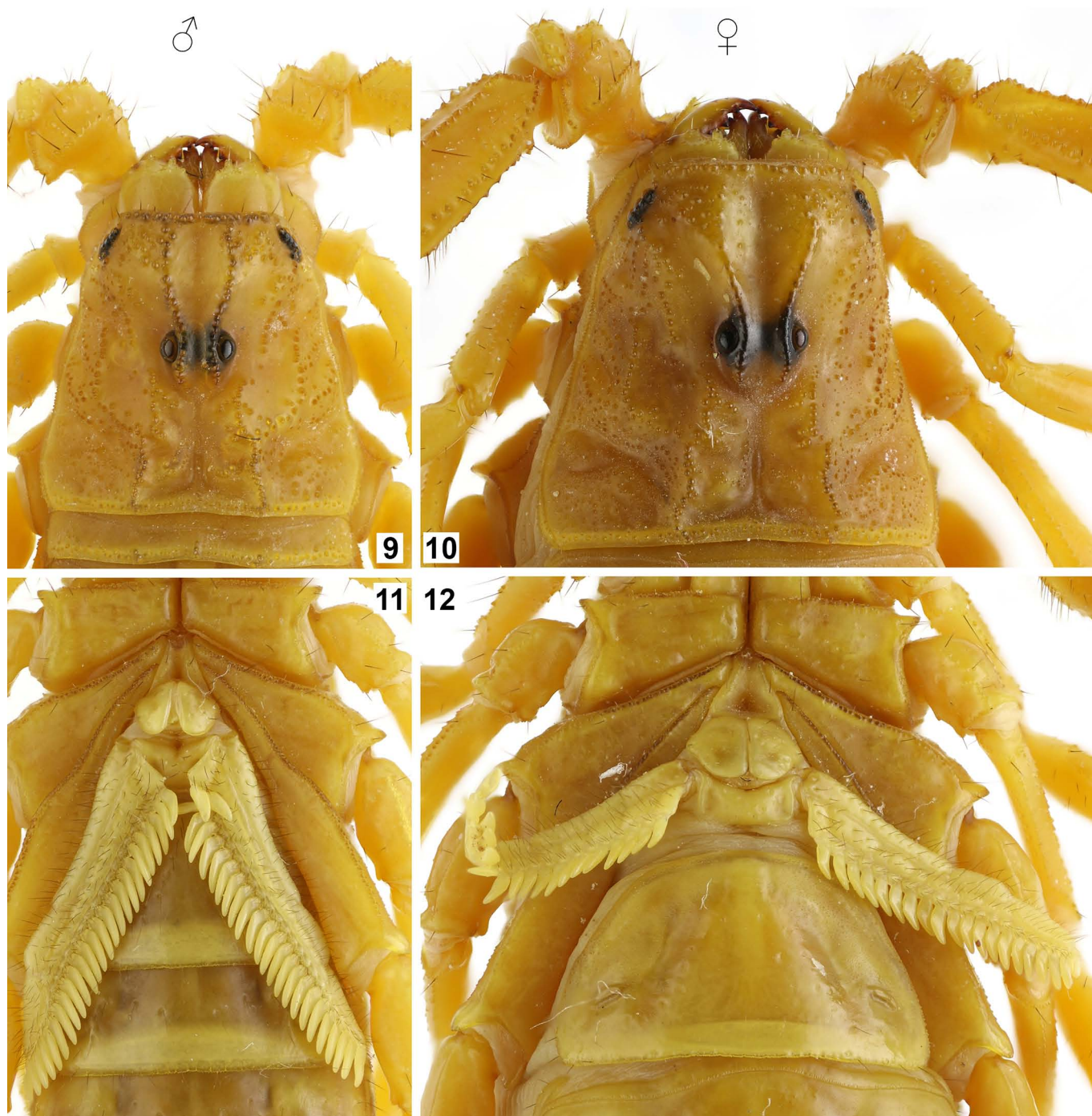
Figures 1–4: *Mesobuthus rakhshanii* from Zabol. **Figures 1–2.** Male, dorsal (1) and ventral (2) views. **Figures 3–4.** Female, dorsal (3) and ventral (4) views. Scale bar: 10 mm.



Figures 5–8: *M. rakhshanii* from Zabol. **Figure 5–6.** Carapace and tergites, male (5) and female (6). **Figure 7–8.** sternopectinal area and sternites, male (7) and female (8).

m a. s. l., 3.IV.2018, 1♀ (AZMM/Sco-2018: 23); Hirmend, Golshah, Negarbandi, 31°11'09"N 61°47'22"E, 479 m a. s. l., 21.IV.2018, 2♂1♀ (AZMM/Sco-2018:24-26); Hirmend, Gang Barani, 31°06'13"N 61°40'36"E, 484 m a. s. l., 30.IV.2018, 7♂ (AZMM/Sco-2018: 27-33); Hirmend, Golshah, 31°11'07"N 61°47'17"E, 14.V.2018, 5♂1♀ (AZMM/Sco-2018:34-40); Hirmend, Khammar, 31°10'24"N 61°46'16"E, 483 m a. s. l., 15.V.2018, 2♂2♀ (AZMM/Sco-2018:41-44); Hirmend, Sanjarani, 30°59'00"N 61°48'52"E, 491 m a. s. l., 2.V.2018, 4♂4♀ (AZMM/Sco-2018:45-52); Hirmend, Shandel, 31°08'39"N 61°40'28"E, 480 m a. s. l., 1.V.2018, 4♂ (AZMM/Sco-2018:53-56); Khash, Esmailabad, 28°18'25"N 61°08'15"E, 1485 m a. s. l., 27.V.2018, 5♂ (AZMM/Sco-2018:57-61); Mirjaveh, Mohammad Shah, 29°01'27"N 61°28'27"E, 853 m a. s. l., 20.V.2018, 2♂2♀ (AZMM/Sco-2018:62-65); Nimruz, Adimi, 31°06'30"N 61°24'53"E, 478 m a. s. l., 26.VI.2018, 4♂ (AZMM/Sco-2018:66-69); Nimruz, Haji Golalali, 31°07'43"N 60°46'04"E, 827 m a. s. l., 28.IV.2018, 1♂4♀ (AZMM/Sco-2018:70-74), same data, 5.VII.2019, 11♂11♀ (AZMM/Sco-2018:75-96), same data, 5.III.2019, 1♂2♀ (AZMM/Sco-2018:97-99); Nimruz, Sharifabad, 31°07'44"N 60°46'04"E,

11.III.2019, 2♂1♀ (AZMM/Sco-2018:100-102), same data, 21.VI.2018, 13♂ (AZMM/Sco-2018: 103-115); Zahedan, Dorahi, 29°27'07"N 60°53'03"E, 1394 m a. s. l., 15.VI.2018, 1♂ (AZMM/Sco-2018:116); Zahedan, Lavar Ab, 30°04'59"N 60°47'59"E, 14.VI.2018, 3♀ (AZMM/Sco-2018:117-119); Zahedan, Nosratabad, 29°51'20"N 59°59'02"E, 1129 m a. s. l., 13.VI.2018, 2♂ (AZMM/Sco-2018:120-121); Zahak, 30°52'39"N 61°39'51"E, 490 m a. s. l., 24.VI.2018, 2♀ (AZMM/Sco-2018:122-123), same data, 25.VI.2018, 8♀ (AZMM/Sco-2018:124-131); Zahak, Dashtak, 30°53'34"N 61°41'04"E, 495 m a. s. l., 18.VI.2018, 2♂ (AZMM/Sco-2018:132-133); Zabol, Ali Bin Abitaleb Hospital, 30°59'02"N 61°29'14"E, 477 m a. s. l., 8.III.2018, 2♂3♀ (AZMM/Sco-2018:134-138); Zabol, As Ghazi, 30°56'52"N 61°32'10"E, 484 m a. s. l., 6.V.2018, 4♂3♀ (AZMM/Sco-2018:139-145); Zabol, Heydarabad, 31°05'24"N 61°33'26"E, 482 m a. s. l., 3.V.2018, 5♂6♀ (AZMM/Sco-2018:146-156), same data, 2.V.2018, 9♀ (AZMM/Sco-2018:157-165); Zabol, Qaghazi, 31°04'02"N 61°28'55"E, 479 m a. s. l., 20.VI.2018, 6♂1♀ (AZMM/Sco-2018:166-172); same data, 13.V.2018, 3♀ (AZMM/Sco-2018:173-175).



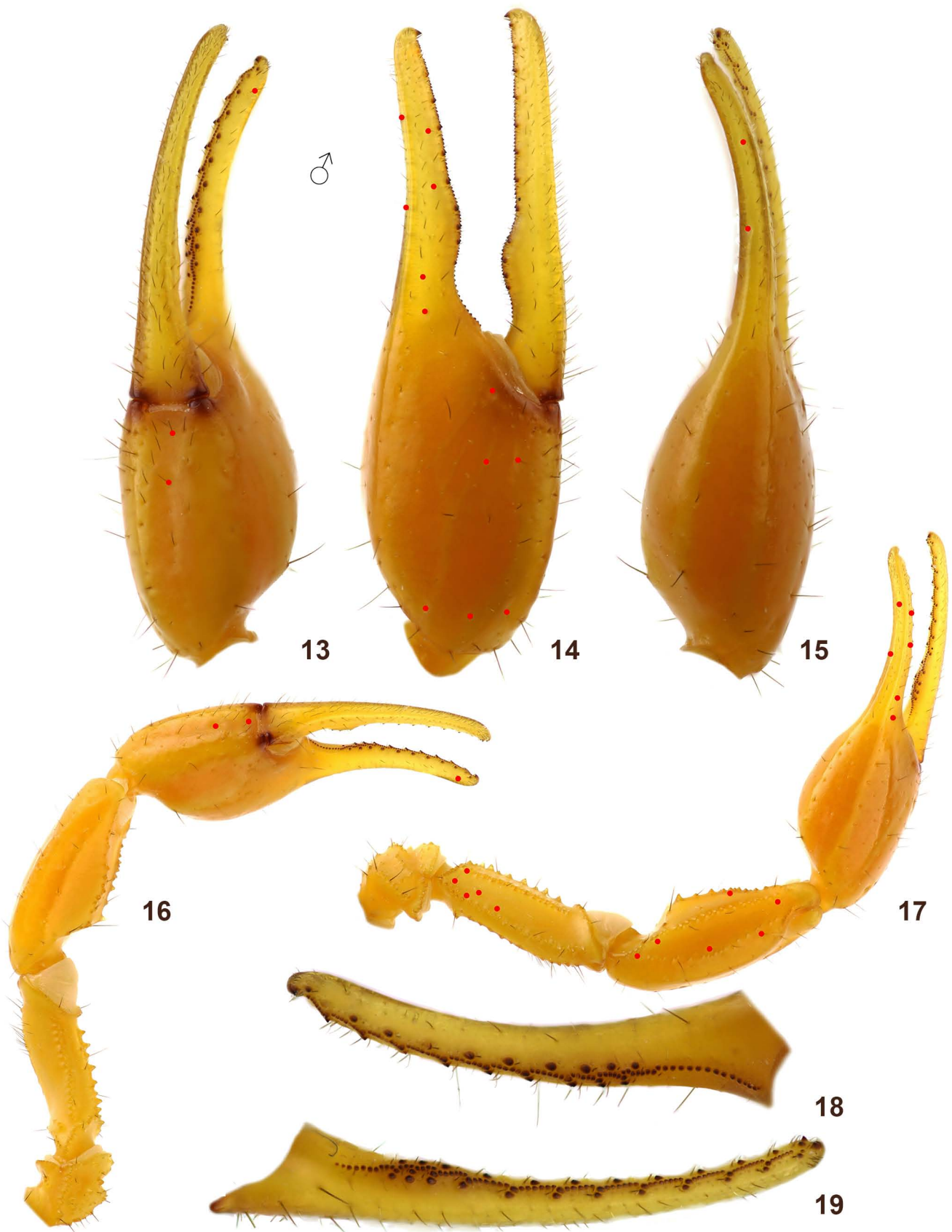
Figures 9–12: *M. rakhshanii* from Zabol. **Figure 9–10.** Carapace, male (9) and female (10). **Figure 11–12.** Sternopectinal area, male (11) and female (12).

Comments

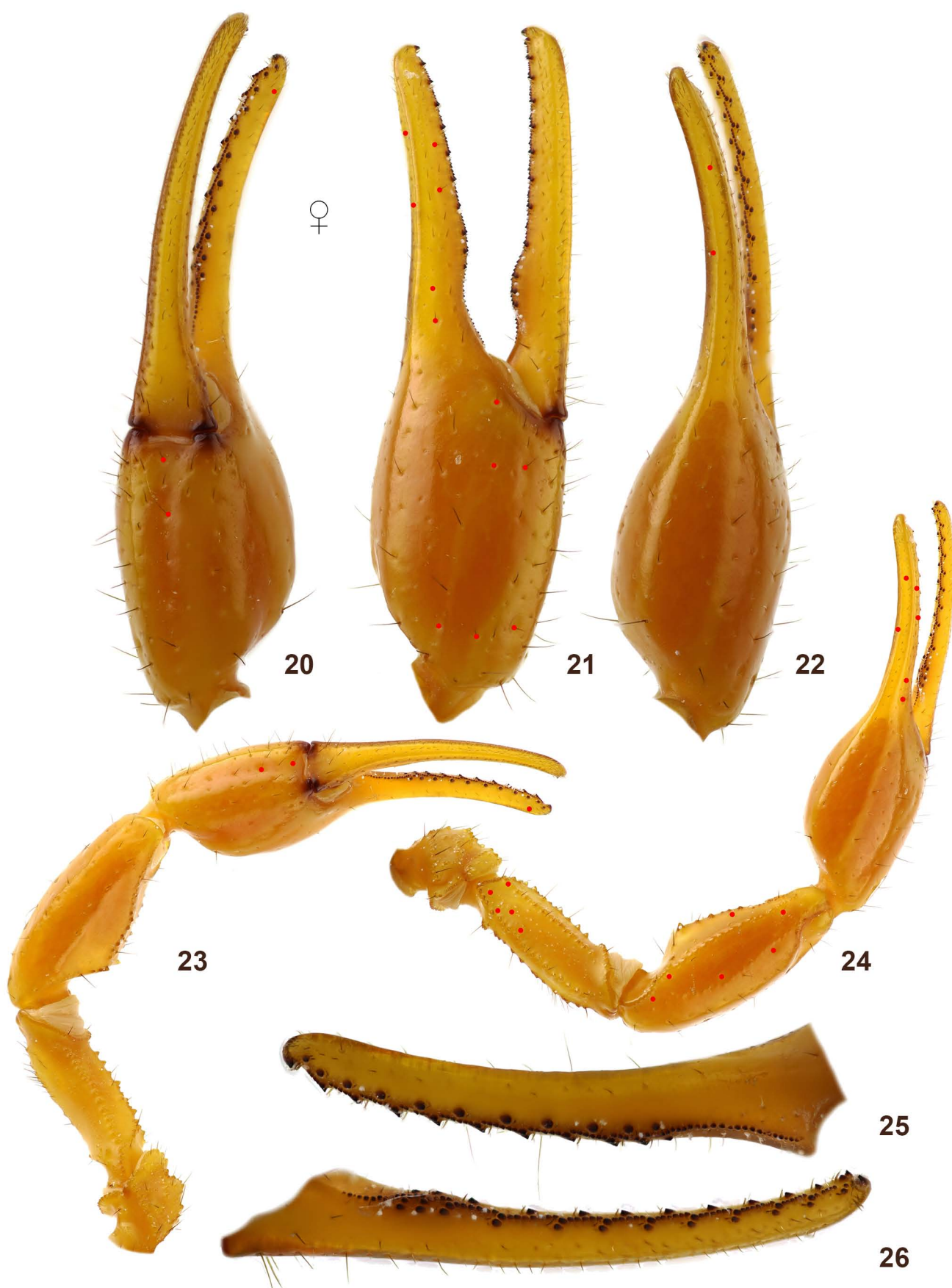
In addition to *M. rakhshanii*, two more congeneric species are found in Sistan and Baluchestan Province: *M. kirmanensis* (Birula, 1990) (= *Buthus pachysoma* Birula, 1900) and *M. navidpouri* Kovařík et al. (2022). There are significant morphological differences between these species as outlined below.

(a) In *M. kirmanensis*, carapace and tergites are black pigmented, yellowish to reddish brown, metasoma, telson,

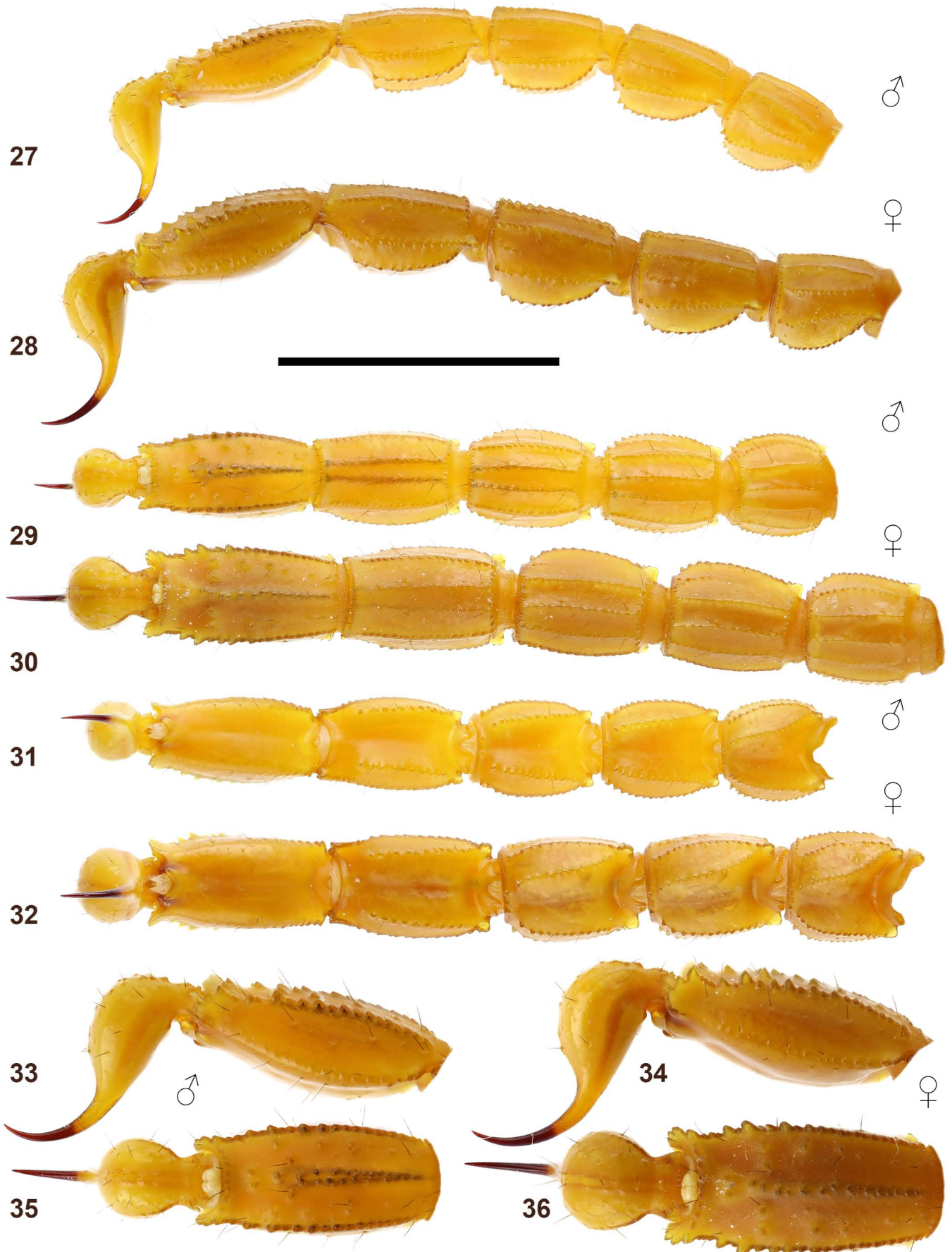
pedipalps and legs yellowish brown, and metasomal segment V fuscous whereas *M. rakhshanii* is uniformly yellowish without any black coloration except ventral median and ventral submedian carinae of metasoma. Intercarinal surfaces on all metasomal segments are finely granulated in *M. kirmanensis*, whereas they are smooth in *M. rakhshanii*. Anal lobe is usually divided into four parts in *M. kirmanensis*, whereas it is divided into three parts in *M. rakhshanii*.



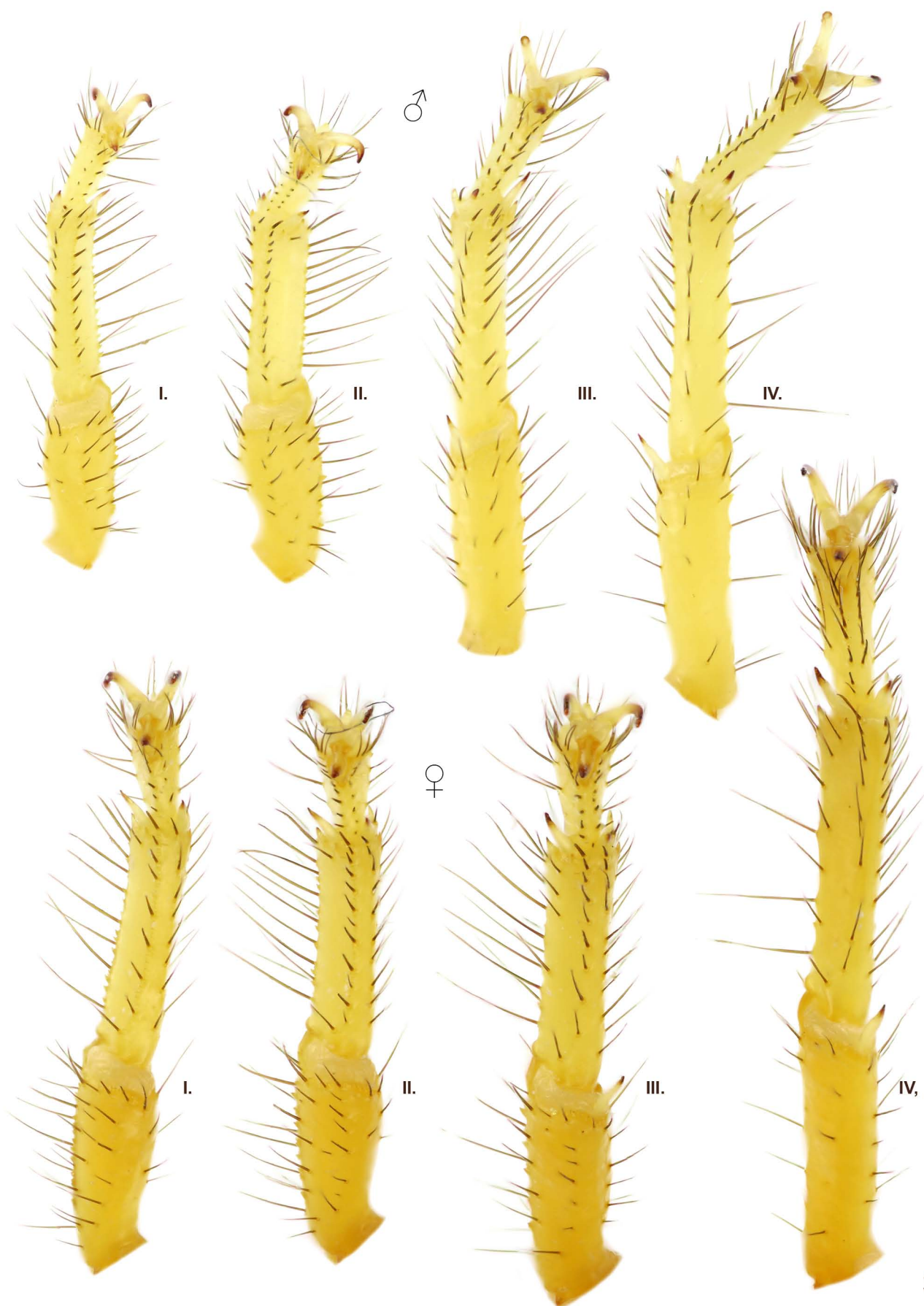
Figures 13–19: *M. rakhshanii* from Zabol, pedipalp segments of male. Chela ventral (13), external (14) and dorsal (15) views. Pedipalp ventral (16), dorsal (17). Fixed (18) and movable (19) fingers dentition. Trichobothrial pattern is indicated by red circles (13–17).



Figures 20–26: *M. rakshanii* from Zabol, pedipalp segments of female. Chela ventral (20), external (21) and dorsal (22) views. Pedipalp ventral (23), dorsal (24). Fixed (25) and movable (26) fingers dentition. Trichobothrial pattern is indicated by red circles (20–24).



Figures 27–36: *M. rakshanii* from Zabol, metasoma and telson. **Figures 27–28:** Lateral view, male (27) and female (28). **Figures 29–30:** Ventral view, male (29) and female (30). **Figures 31–32:** Dorsal view, male (31) and female (32). **Figures 33–34:** Lateral view of metasoma V and telson, male (33) and female (34). **Figures 35–36:** Dorsal view of metasoma V and telson, male (35) and female (36). Scale bar: 10 mm (27–32).



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Figure 37: *M. rakshanii* from Zabol, tibia, basitarsus and tarsus of right legs I–IV (top row, male; bottom row, female).

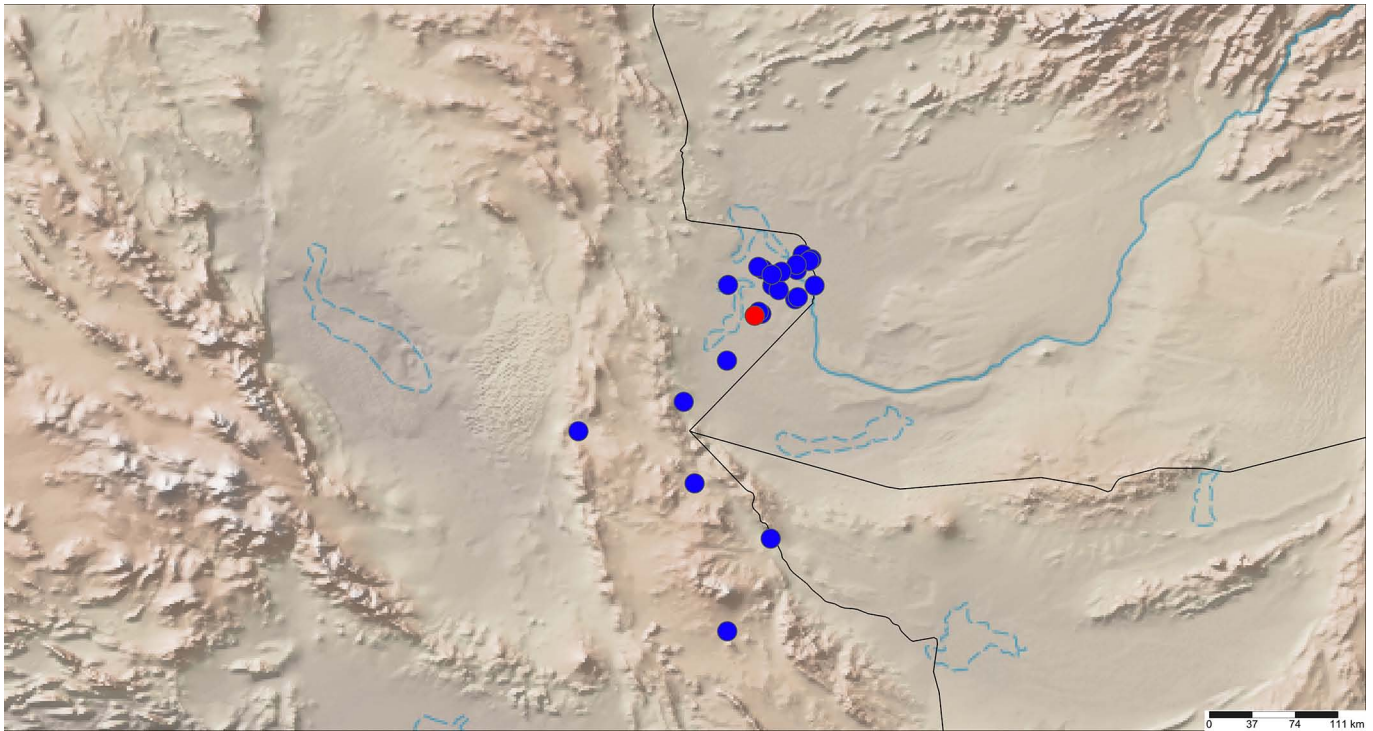


Figure 38: Distribution map of *M. rakhshanii*. Red circle, type locality; blue circles, new records.

(b) Central median and posterior median carinae of carapace are fused and continuous in *M. navidpouri* whereas they are not fused in *M. rakhshanii*. Chela of *M. navidpouri* is thin and elongated, but rather stocky in *M. rakhshanii*. Mesosoma of *M. navidpouri* has five stripes whereas in *M. rakhshanii* only carinae of mesosoma are slightly fuscous. Ventrolateral carinae of the fifth segment of metasoma bear small conical granules in *M. navidpouri* whereas they bear large and spinoid granules in *M. rakhshanii*.

Since the original illustrations by Barahoei (2022) are insufficient, the detailed illustrations of *M. rakhshanii* are given in this study for the first time (Figs. 1–37).

Barahoei (2022) reported *M. rakhshanii* only from the type locality in Hamun County in Sistan and Baluchestan Province (Lutak District). We confirmed this species from Hamun and recorded it from 7 more counties (Hirmend, Khash, Mirjaveh, Nimruz, Zahedan, Zahak, and Zabol). *M. rakhshanii* is known so far only from the northern part of Sistan and Baluchestan Province, south to Zahedan County (Fig. 38). At the same time, congeneric *M. kirmanensis* and *M. navidpouri* are found in the western and central parts of the province (Kovařík et al., 2022: Fig. 1157), i.e. the three species appear to be allopatric.

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