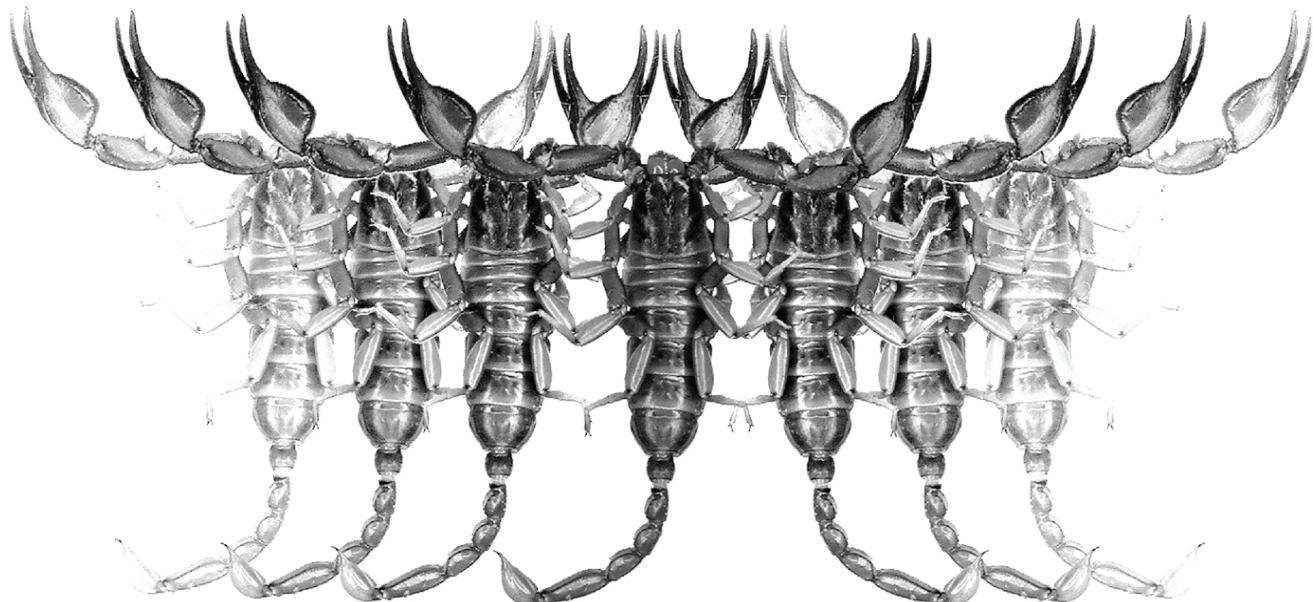


Euscorpius

Occasional Publications in Scorpiology



**Revision of the genus *Reddyanus* from
Southeast Asia, with description of five new
species from Cambodia, Malaysia, Thailand
and Vietnam (Scorpiones: Buthidae)**

František Kovařík & František Štáhlavský

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Euscorpius

Occasional Publications in Scorpiology

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Revision of the genus *Reddyanus* from Southeast Asia, with description of five new species from Cambodia, Malaysia, Thailand and Vietnam (Scorpiones: Buthidae)

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<http://zoobank.org/urn:lsid:zoobank.org:pub:C1B6834A-19A0-40EA-AEA6-AC1FE9E7E4ED>

Summary

Five new species are described: *Reddyanus furai* sp. n. from Vietnam, *R. hofereki* sp. n. and *R. majkusi* sp. n. from Malaysia, *R. rolciki* sp. n. from Vietnam and Cambodia, and *R. schwotti* sp. n. from Thailand and Cambodia, fully complemented with color photographs of live and preserved specimens, as well as their habitats. New species are compared with all other species from this region. In addition to the analysis of external morphology, we also describe the karyotypes of *R. furai* sp. n. ($2n=14$), *R. majkusi* sp. n. ($2n=16$), *R. rolciki* sp. n. ($2n=14$), and *R. schwotti* ($2n=11$). A key and distribution map to *Reddyanus* Vachon, 1972 in Southeast Asia (14 species) are included.

Introduction

The genus *Reddyanus* Vachon, 1972 includes relatively rare scorpions distributed from India and China (Tibet) in the west to Melanesia in the east. Most of these species hide under scales of bark of standing tree trunks (see fig. 583 in Kovařík et al., 2016: 121), and during night collecting, only the tips of their pedipalp fingers can be seen. Other *Reddyanus* species are found under the bark of dead trees or on the ground in leaf litter. The subgenus *Isometrus* (*Reddyanus*) was revised by Kovařík (2003) and Kovařík & Ojanguren (2013), and then elevated to the genus status by Kovařík et al. (2016), together with a detailed study of Sri Lankan species. Here, we revise 14 species from the Southeast Asia, including five new species described below (Fig. 225).

Methods, Material & Abbreviations

Nomenclature and measurements follow Stahnke (1971), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Lowe & Kovařík, 2019; Vachon, 1974) and sternum (Soleglad & Fet, 2003).

Karyotype analyses were based on chromosome preparations obtained by the spreading technique already used in scorpions (e.g. Kovařík et al., 2009; Sadílek et al., 2015). The chromosomes were stained by 5% Giemsa solution in Sörensen phosphate buffer for 20 min. Five postpachytene or mitotic metaphases were measured using the software Image J 1.45r (<http://rsbweb.nih.gov/ij>) with the plugin Levan (Sakamoto & Zacaro, 2009). The relative length of the

chromosomes was calculated for the diploid set.

Specimen Depositories: BMNH (The Natural History Museum, London, United Kingdom); FKCP (František Kovařík, private collection, Prague, Czech Republic); MNHN (Muséum National d'Histoire Naturelle, Paris, France); NHMB (Naturhistorisches Museum Basel, Switzerland); NHRS (Naturhistoriska Riksmuseet, Stockholm, Sweden); NMPC (National Museum of Natural History, Prague, Czech Republic); and ZMHG (Museum für Naturkunde der Humboldt-Universität, Berlin, Germany).

Morphometrics: D, depth; L, length; W, width.

Systematics

Family Buthidae C. L. Koch, 1837

Reddyanus Vachon, 1972

(Figures 1–226, Tables 1–4)

Isometrus (*Reddyanus*) Vachon, 1972: 176–177, figs. 14, 16, 18, 20; Vachon, 1982: 90–101, 108–110, figs. 47–67, 88–91; Fet & Lowe, 2000: 150–154; Kovařík, 2003: 5–14, figs. 1–8; Kovařík & Ojanguren, 2013: 184–193, 347–354, 357–360, figs. 1265–1367, 1384–1409.

Isometrus (*Reddyanus* [sic]): Tikader & Bastawade, 1983: 254–311 (in part), figs. 727–770, 841–895.

Reddyanus Kovařík et al., 2016: 53–88, figs. 14, 199, 201–220, 225–236, 245–250, 254–402, 409–420, 551–554, 561–570, tables 3–5.

TYPE SPECIES. *Isometrus acanthurus* Pocock, 1899



Figures 1–2. *Reddyanus furai* sp. n., male holotype (1) and female paratype (2) in vivo habitus.

DIAGNOSIS. Medium sized buthids, adults 19–75 mm. Sternum type 1, triangular in shape. Pedipalps orthobothriotaxic, type Aβ. Chelal trichobothrium *db* located between *et* and *est*. Three to five pairs of lateral eyes. Tibial spurs absent on all legs. Pedipalp movable finger with six rows of granules, several accessory granules and external and internal accessory granules. Pedipalp fixed finger with seven rows of granules and six external and seven internal accessory granules. Cheliceral fixed finger with a single ventral denticle. Third and fourth legs without tibial spurs. Tibia and tarsomeres of legs I–III with setae not arranged into bristle combs on dorsal surfaces. Tarsomere II of leg IV with two sparse rows of <20 spiniform setae on ventral surface. Mesosoma dorsally with one median carina. Telson with subaculear tooth pointed or rounded. Males of most species have longer metasomal segments and often also a wider pedipalp chela manus than females.

REMARKS ON KARYOTYPES. We analyzed male karyotypes of four new *Reddyanus* species. The chromosomes of these species (Figs. 215–220) show the typical features of the buthid scorpions such as holocentric organization, achiasmatic meiosis in males, and lower number of chromosomes (e.g. Mattos et al., 2013). The diploid sets of *R. furai* sp. n. holotype (2n=14) (Figs. 215, 221), *R. majkusi* sp. n. holotype (2n=16) (Figs. 216, 222), *R. rolciki* sp. n. holotype (2n=14) (Figs. 217, 223), and three *R. schwotti* paratypes (2n=11) (Figs. 218–220, 224) correspond to the known range for three *Reddyanus* species already analyzed from Sri Lanka (2n=15–17) (Kovařík et al., 2016). The chromosomes of *R. furai* sp. n., *R. majkusi* sp. n., and *R. rolciki* sp. n. gradually decrease in length (Figs. 221–223), whereas the karyotype of *R. schwotti* possesses one extra large and one extra short chromosomes (Fig. 224, Table 4). Moreover, this species has odd number of chromosomes and very complex multivalent association (a chain of nine chromosomes) during meiosis (Fig. 219) in contrast to only observed bivalents in *R. furai* sp. n. (Fig. 215) and *R. rolciki* sp. n. (Fig. 217). The karyotype of *R. schwotti* probably has differentiated by the accumulation of chromosomal fusions and reciprocal translocations. The chromosomal rearrangements are frequently detected in many other buthid scorpions (e.g. Shanahan, 1989; Sadílek et al., 2015; Mattos et al., 2018). These types of chromosomal rearrangements may also explain different numbers and lengths of chromosomes in *Reddyanus* species from Sri Lanka (Kovařík et al., 2016).

SUBORDINATE TAXA. Genus *Reddyanus* was revised by Kovařík et Ojanguren (2013) as subgenus and elevated to the genus status by Kovařík et al. (2016). Currently, it includes 32 species that can be divided into four informal groups according to their geographic distribution:

- (a) species from India, Bangladesh and China (Tibet) (9 species): *R. acanthurus* (Pocock, 1899), *R. assamensis* (Oates, 1888), *R. brachycentrus* (Pocock, 1899), *R. corbetti* (Tikader & Bastawade, 1983), *R. khammamensis* (Kovařík, 2003), *R. problematicus* (Kovařík, 2003), *R. rigidulus* (Pocock, 1897), *R.*

vittatus (Pocock, 1900), and *R. tibetanus* (Lourenço & Zhu, 2008);

- (b) species from Sri Lanka (6 species): *R. basilicus* (Karsch, 1879), *R. besucheti* (Vachon, 1982), *R. ceylonensis* Kovařík et al., 2016, *R. jayaratnei* Kovařík, 2016, *R. loebli* (Vachon, 1982), and *R. ranawanai* Kovařík, 2016;
- (c) species from Australia, Melanesia, New Guinea, and Oceania (3 species): *R. bilyi* (Kovařík, 2003), *R. heimi* (Vachon, 1976), and *R. melanodactylus* (L. Koch, 1867);
- (d) species from Southeast Asia, which are revised here (14 species): *R. deharvengi* (Lourenço & Duhem, 2010), *R. feti* (Kovařík, 2013), *R. furai* sp. n., *R. hofereki* sp. n., *R. jendeki* (Kovařík, 2013), *R. krasenskyi* (Kovařík, 1998), *R. kurkai* (Kovařík, 1997), *R. majkusi* sp. n., *R. navaiae* (Kovařík, 1998), *R. neradi* (Kovařík, 2013), *R. petrzelkai* (Kovařík, 2003), *R. rolciki* sp. n., *R. schwotti* sp. n., and *R. zideki* (Kovařík, 1994).

COMMENTS. We did not include into this revision the species *Isometrus (Reddyanus) hainanensis* Lourenço et al., 2005 from China (Hainan Island) and *I. (R.) lao* Lourenço & Leguin, 2012 from Laos. *I. (R.) hainanensis* was based on two specimens collected in 1931. The authors stated (p. 58) that this species is closest to *R. petrzelkai*, from which it differs by pale coloration, and added that pigmentation can be very stable within populations of buthid species. *I. (R.) lao* was based on two specimens collected in 1938, and also in this case the authors argued that the difference is in “slightly darker coloration pattern” (than in *I. hainanensis*) and in other non-measurable characters (p. 74). The arguments about stability of pigmentation were refuted, and both species were synonymized with *R. petrzelkai* (see Kovařík & Ojanguren, 2013: 191–192). However, based on new detailed study of genus *Reddyanus* and distribution of its species, we now believe that this synonymization was not valid. At the same time, it is still not possible to define unambiguously the identity of these two taxa due to their loss of pigmentation and important information missing in original descriptions. For a final decision, it is necessarily to study recently collected specimens of both populations in comparison with the types.

DISTRIBUTION. From India and China (Tibet) in the west to Melanesia in the east.

Reddyanus deharvengi (Lourenço & Duhem, 2010) (Figure 225)

Isometrus (Reddyanus) deharvengi Lourenço & Duhem, 2010: 632.

TYPE LOCALITY AND TYPE REPOSITORY. Vietnam, Kien Giang, Kien Luong, Hon Chong, Nui Hon Chong hill, Hang Ciêng Tiên, in cave; MNHN.

DIAGNOSIS. Total length of male holotype 67 mm. Male has longer metasomal segments and telson. Coloration generally yellowish to pale yellow. Tergites yellowish with three longitudinal blackish-brown stripes that continue as median and lateral stripes on carapace. Metasoma yellow with small brown spots. First and second metasomal segments bear 10 carinae, third and fourth segments bear eight carinae, fifth segment bears five carinae. One posterior spinoid granule on dorsal carinae of second to fourth metasomal segments. Telson very weakly granular, almost smooth with one vestigial ventral carina. Subaculear tooth large, rhomboid, dorsally with 6/7 granules. Pectinal teeth number 15–17.

COMMENTS. Unfortunately, we have not been able to examine this species. The diagnosis is compiled from the data published in the original description.

DISTRIBUTION. Vietnam (Fig. 225).

***Reddyanus feti* (Kovařík, 2013)**

(Figures 192, 203, 225)

Isometrus (Reddyanus) feti Kovařík in Kovařík et Ojanguren, 2013: 187, figs. 1343–1347.

TYPE LOCALITY AND TYPE REPOSITORY. Indonesia, Java, Poedjon; FKCP.

TYPE MATERIAL. **Indonesia**, Java, Poedjon, 1♂ (holotype), FKCP.

DIAGNOSIS. Total length of male holotype 42 mm. Male has enlarged metasomal segments and telson. Pedipalps and legs yellow, with brown spots. Base coloration yellow with dark spots, identical on femur and patella. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. Metasoma V bears five carinae, which can be reduced. Terminal tubercle of dorsal carina on metasoma II of male markedly enlarged. Subaculear tooth wide, its terminus not rounded, dorsally with 3 granules on dorsal surface in two rows. Pectinal teeth number 11–13.

DISTRIBUTION. Indonesia (Fig. 225).

***Reddyanus furai* sp. n.**

(Figures 1–36, 193, 204, 225, Tables 1, 4)

<http://zoobank.org/urn:lsid:zoobank.org:act:52EF458C-1BBD-4E4D-9076-4A778C052891>

TYPE LOCALITY AND TYPE REPOSITORY. Vietnam, Pho Yen Province; FKCP.

TYPE MATERIAL. **Vietnam**, Pho Yen Province, 2018, 1♂1♀ (holotype No. 1453 and paratype), leg. V. Fura, FKCP.

ETYMOLOGY. The species epithet is a patronym honoring Vladimír Fura, the collector of types of the new species.

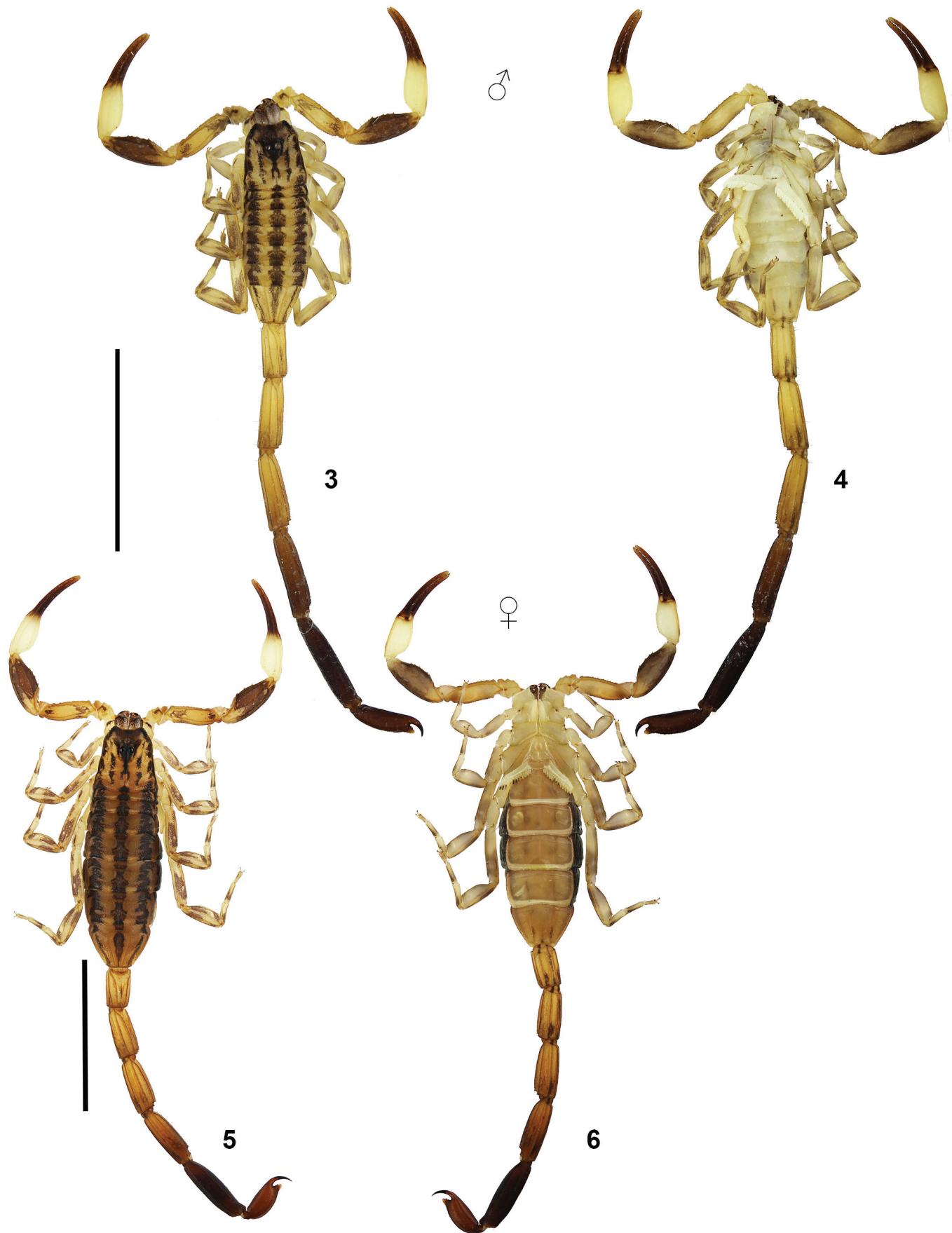
DIAGNOSIS. Adult from 33 mm (male) to 37 mm (female) long. Male has longer metasomal segments and telson. Pedipalps, legs and metasoma I–IV yellow, with brown spots. Femur of pedipalps mostly yellow, patella mostly black. Manus of pedipalps yellow with two or three black spots, fingers black. Metasoma V black and telson reddish black. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, lateral carinae on metasoma II represented only by several granules mainly in posterior part. Metasoma V bears five carinae which can be reduced. Terminal tubercle on second and third metasomal segments of male only very slightly enlarged. Telson elongate in male, shorter in female. Subaculear tooth large but not rounded, dorsally with 4–5 granules in three rows. Pectinal teeth number 14 in male, 13 in female.

DESCRIPTION. The adults are 33.68 mm (male holotype) – 37.31 mm (female paratype) long. The habitus is shown in Figs. 1–6. For position and distribution of trichobothria of pedipalps see Figs. 21–24 and 26–27. Sexual dimorphism: adult male with longer and narrow metasomal segments and telson.

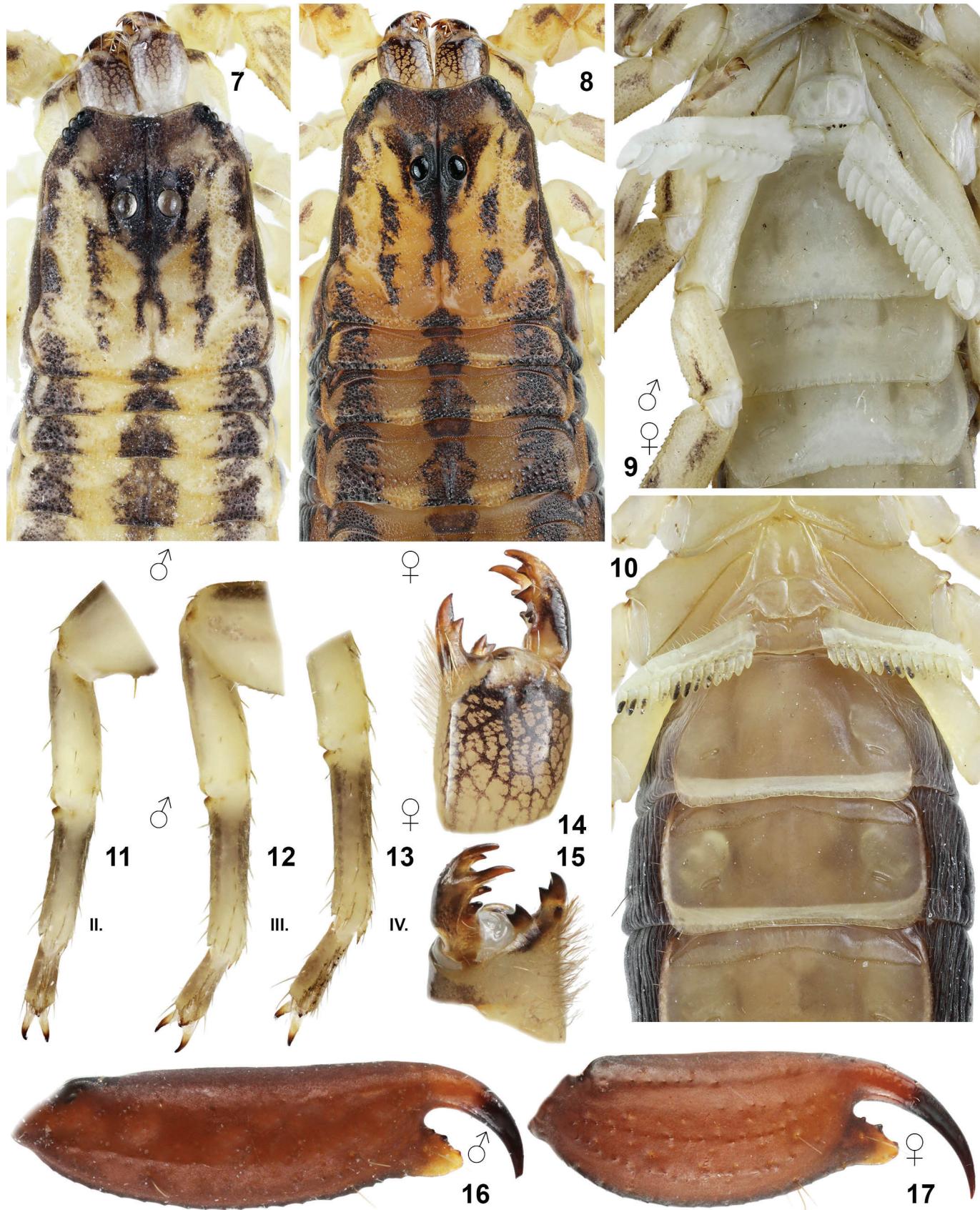
Coloration (Figs. 1–6). The base color is yellow with dark spots. The chelicera is yellow, strongly reticulated. The fingers of chelicerae are spotted. The carapace and mesosoma are with a pattern that forms three dark longitudinal strips. The ventral side of the mesosoma is yellowish white. The femur and patella of pedipalps are dorsally and laterally yellow with dark spots, femur is mostly yellow and patella mostly black. The legs are also yellow with black spots. The metasoma I–IV is yellowish or reddish brown with black spots, metasoma V is black and telson is reddish brown.

Carapace and mesosoma (Figs. 3–10). The entire carapace is covered with large granules; carinae are absent. The anterior margin of the carapace is medially convex. The mesosoma bears one median carina and is strongly granulated. Tergite VII is pentacarinate. The pectinal tooth count is 14 in male holotype and 13 in female paratype. The pectine marginal tips extend to the quarter of the fourth sternite in the male and to the third quarter of the third sternite in the female. The pectines have three marginal lamellae and 10–11 middle lamellae. The lamellae and fulcra bear numerous light setae. Sternites are smooth with two parallel furrows except sternite VII which bears four incomplete carinae and is smooth. The glabrous zone in the middle of the posterior margin of sternite V present in male in shape of triangle.

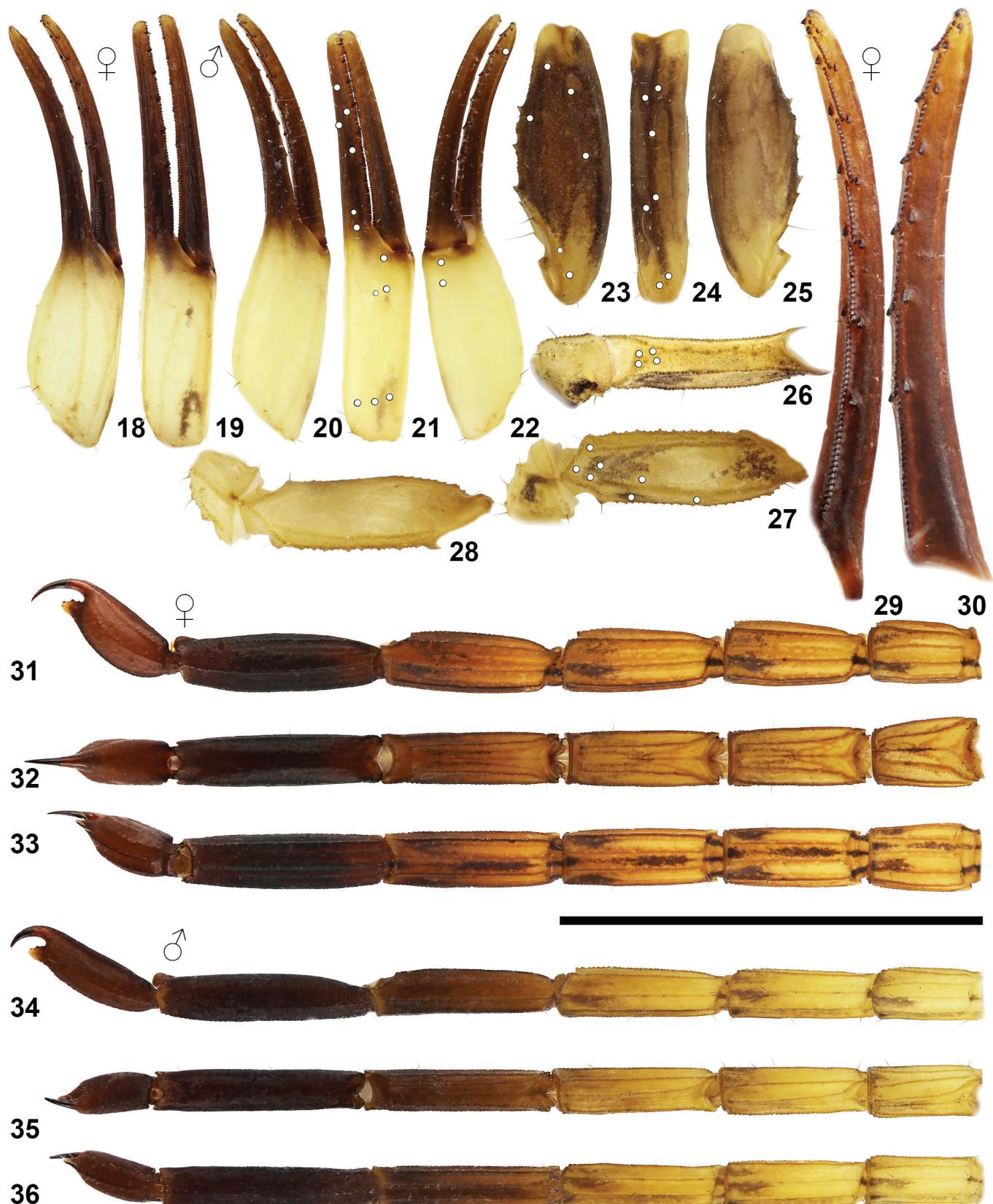
Metasoma and telson (Figs. 16–17, 31–36). The first segment bears 10 carinae. The lateral carinae on the second segment are present but incomplete. The third and fourth segments bear eight carinae, and the fifth segment bears five carinae. Ventral carina is present on the telson in male, and ventral and lateral carinae are present on the telson in female. Surfaces between carinae are obviously smooth, with small, sparse granules



Figures 3–6: *Reddyanus furai* sp. n. **Figures 3–4.** Male holotype in dorsal (3) and ventral (4) views. **Figures 5–6.** Female paratype in dorsal (5) and ventral (6) views. Scale bars: 10 mm.



Figures 7–17: *Reddyanus furai* sp. n. **Figures 7, 9, 11–13, 16.** Male holotype, carapace and tergites I–III (7), coxosternal area and sternites III–V (9), left legs II–IV, retrolateral aspect (11–13), and telson lateral (16). **Figures 8, 10, 14–15, 17.** Female paratype, carapace and tergites I–III (8), coxosternal area and sternites III–V (10), right chelicera dorsal (14) and ventral (15) views, and telson lateral (17).



Figures 18–36: *Reddyanus furai* sp. n. **Figures 18–19, 29–33.** Female paratype, pedipalp chela dorsal (18) and external (19) views, movable finger (29) and fixed finger (30) dentition, metasoma and telson in lateral (31), dorsal (32) and ventral (33) views. **Figures 20–28, 34–36.** Male holotype, pedipalp chela dorsal (20), external (21) and ventral (22) views, patella dorsal (23), external (24) and ventral (25) views, femur and trochanter internal (26), dorsal (27), and ventral (28) views, metasoma and telson in lateral (34), dorsal (35) and ventral (36) views. Trichobothrial pattern is indicated in Figures 21–24 and 26–27. Scale bar: 10 mm (31–36).

Dimensions (MM)		<i>R. furai</i> sp. n. ♂ holotype	<i>R. furai</i> sp. n. ♀ paratype	<i>R. hofereki</i> sp. n. ♂ holotype	<i>R. hofereki</i> sp. n. ♀ paratype
Carapace	L / W	3.49 / 3.25	4.17 / 4.05	3.57 / 3.34	3.40 / 3.53
Mesosoma	L	6.85	11.22	7.76	9.68
Tergite VII	L / W	1.90 / 2.70	2.54 / 4.12	2.03 / 2.70	1.80 / 3.25
Metasoma + telson	L	23.34	21.92	23.99	17.87
Segment I	L / W / D	2.76 / 1.29 / 1.25	2.52 / 1.61 / 1.40	2.78 / 1.34 / 1.39	2.22 / 1.48 / 1.33
Segment II	L / W / D	3.58 / 1.17 / 1.14	3.27 / 1.47 / 1.48	3.57 / 1.18 / 1.39	2.66 / 1.39 / 1.40
Segment III	L / W / D	3.98 / 1.11 / 1.13	3.62 / 1.34 / 1.44	3.99 / 1.16 / 1.36	2.95 / 1.34 / 1.31
Segment IV	L / W / D	4.46 / 0.98 / 1.11	4.17 / 1.24 / 1.41	4.72 / 1.18 / 1.37	3.07 / 1.31 / 1.29
Segment V	L / W / D	5.09 / 0.92 / 1.09	4.76 / 1.19 / 1.32	5.33 / 1.30 / 1.46	3.96 / 1.30 / 1.36
Telson	L / W / D	3.47 / 0.86 / 1.01	3.58 / 1.02 / 1.28	3.60 / 1.20 / 1.24	3.01 / 1.09 / 1.20
Pedipalp	L	13.10	14.58	13.57	11.89
Femur	L / W	3.43 / 1.02	3.65 / 1.13	3.54 / 1.09	3.03 / 0.98
Patella	L / W	3.87 / 1.28	4.28 / 1.59	3.95 / 1.42	3.49 / 1.42
Chela	L	5.80	6.65	6.08	5.37
Manus	W / D	1.20 / 0.98	1.44 / 1.15	1.48 / 1.10	1.21 / 0.95
Movable finger	L	3.41	3.84	3.40	3.33
Total	L	33.68	37.31	35.32	30.95

Table 1. Comparative measurements of adults of *Reddyanus furai* sp. n. and *R. hofereki* sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

that become more numerous only on metasoma I. Terminal tubercle on the second and the third metasomal segments of male only very slightly enlarged. The telson elongate in male, shorter in female. Subaculear tooth large but not rounded, dorsally with 4–5 granules in three rows.

Pedipalps (Figs. 18–30). The pedipalps are very sparsely hirsute. The femur bears five granulated carinae and patella bears 7 smooth reduced carinae. The chela is smooth without carinae in the male and visible carinae in the female. The chela and patella are smooth and femur is densely granulated. Movable finger with six and fixed finger with seven rows of granules, both with several accessory granules and 6 external and 5 internal accessory granules.

Legs (Figs. 11–13). The legs without tibial spurs. The tibia and tarsomeres of legs with setae not arranged into bristle combs on dorsal surfaces. Tarsomere II of leg IV with two sparse rows of < 20 spiniform setae on ventral surface. The femur bears 3–4 and patella 5 carinae; both feur and patella are granulated.

Measurements. See Table 1.

AFFINITIES. The described features distinguish *R. furai* sp. n. from all other species of the genus. They are recounted in the key. Morphologically closest is *R. loebli* from Sri Lanka, which differs mainly by the extremely enlarged terminal tubercle on each dorsal carina of the third metasomal segment (Fig. 34 and fig. 366 in Kovářík et al., 2016: 75). In the region only two species with elongate metasomal segments in males has dark pedipalp patella (Figs. 193 and 196). These two species we can easily distinguish by shape of telson in male which is

not so enlarged in *R. krasenskyi* from Java as in *R. furai* sp. n. from Vietnam. Telson length/depth ratio in male is 3.43 in *R. furai* sp. n. and 2.96 in *R. krasenskyi*.

DISTRIBUTION. Vietnam (Fig. 225).

Reddyanus hofereki sp. n.

(Figures 37–71, 194, 205, 225, Tables 1, 4)

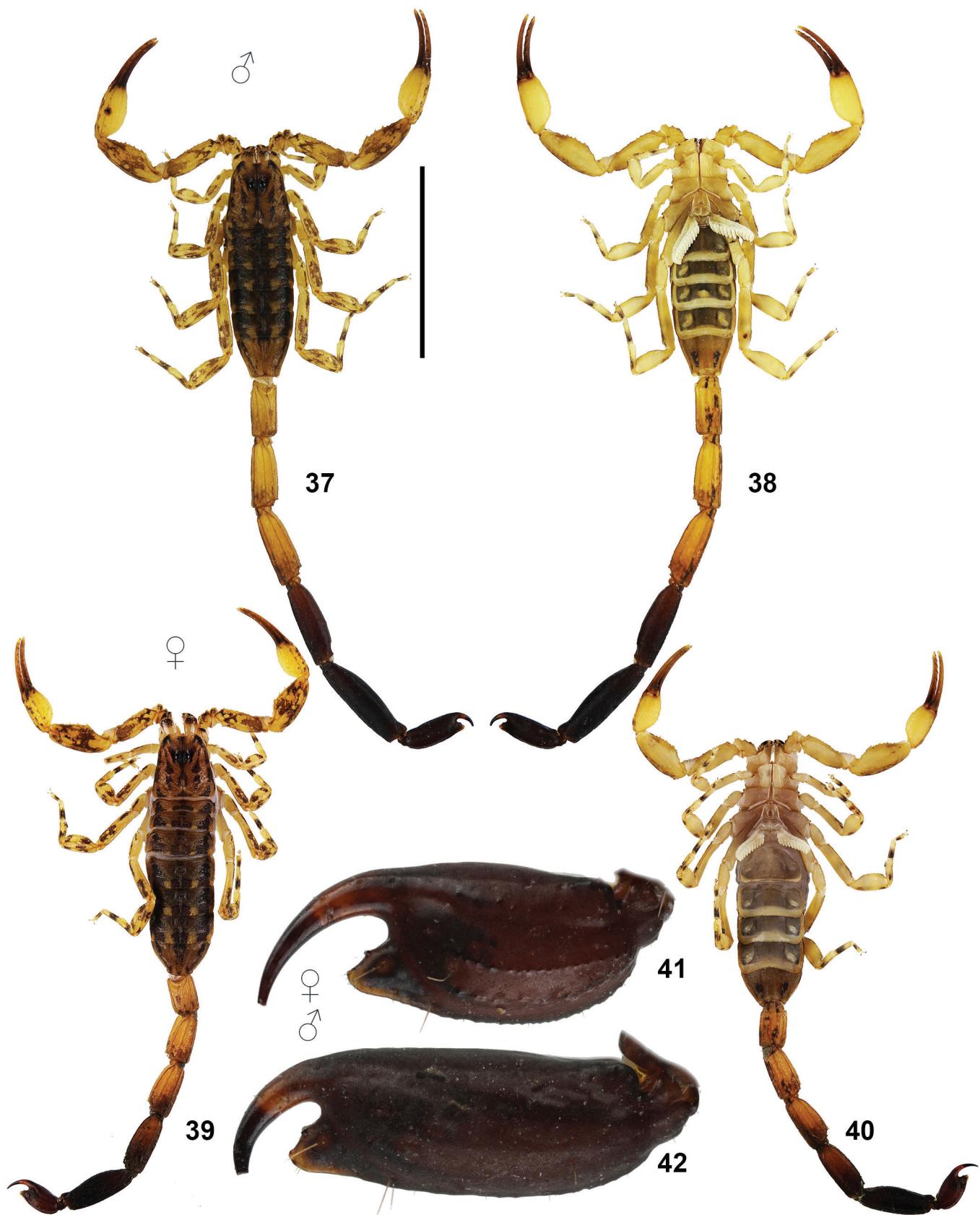
<http://zoobank.org/urn:lsid:zoobank.org:act:891C12CA-BF4D-4CAC-AAF4-DD4BFC0A20BE>

TYPE LOCALITY AND TYPE REPOSITORY. Malaysia, Kelantan Dabong, Gunung Stong, 05°20'34.5"N 101°58'41.4"E, 125 m a. s. l.; FKCP.

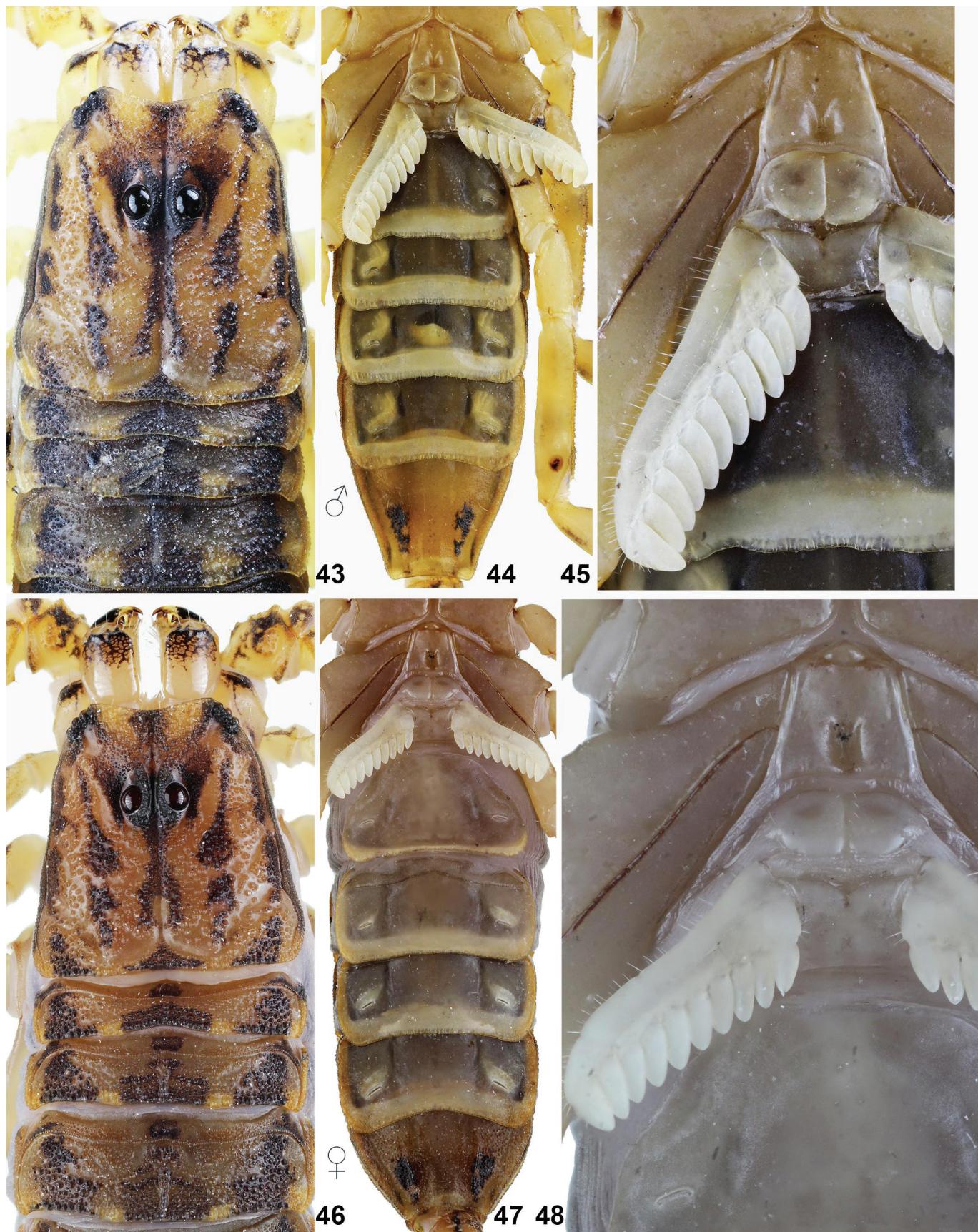
TYPE MATERIAL. **Malaysia**, Kelantan Dabong, Gunung Stong, 05°20'34.5"N 101°58'41.4"E, 125 m a. s. l., 30.VIII.2016, 1♂ (holotype) 1♀ 2juvs. (paratypes), leg. D. Hoferek, FKCP.

ETYMOLOGY. The species epithet is a patronym honoring David Hoferek, the collector of types of the new species. He is also the author of the photograph of type locality (Fig. 71).

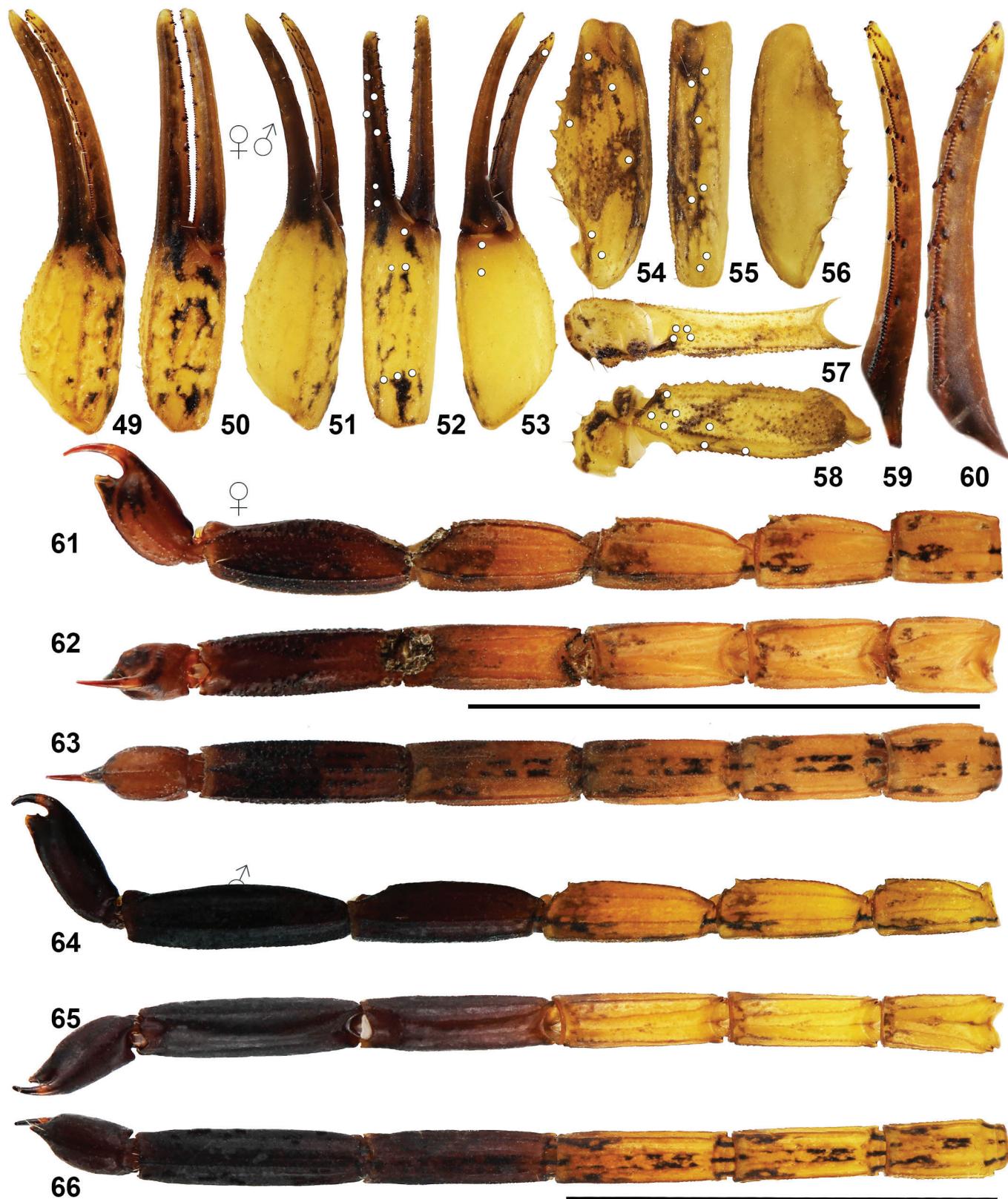
DIAGNOSIS. Adult from 31 mm (female) to 35 mm (male) long. Male has longer metasomal segments and telson. Legs and metasoma yellow, with brown spots. Base coloration of pedipalp yellow with dark spots, identical on femur and patella. Manus of pedipalps yellow with black spots, fingers black. Metasoma V and partly IV and telson black in male. First metasomal segment bears 10 carinae, second through fourth



Figures 37–42: *Reddyanus hofereki* sp. n. Figures 37–38, 42. Male holotype in dorsal (37) and ventral (38) views, and telson lateral (42). Figures 39–41. Female paratype in dorsal (39) and ventral (40) views, and telson lateral (41). Scale bar: 10 mm (37–40).



Figures 43–48: *Reddyanus hofereki* sp. n. **Figures 43–45.** Male holotype, carapace and tergites I–III (43), coxosternal area and sternites (44–45). **Figures 46–48.** Female paratype, carapace and tergites I–III (46), coxosternal area and sternites (47–48).



Figures 49–66: *Reddyanus hofereki* sp. n. **Figures 49–50, 61–63.** Female paratype, pedipalp chela dorsal (49) and external (50) views, metasoma and telson in lateral (61), dorsal (62) and ventral (63) views. **Figures 51–60, 64–66.** Male holotype, pedipalp chela dorsal (51), external (52) and ventral (53) views, patella dorsal (54), external (55) and ventral (56) views, femur and trochanter internal (57), and dorsal (58) views, movable finger (59) and fixed finger (60) dentition, metasoma and telson in lateral (64), dorsal (65) and ventral (66) views. Trichobothrial pattern is indicated in Figures 52–55 and 57–58. Scale bar: 10 mm (61–66).



Figures 67–70. *Reddyanus hofereki* sp. n., male holotype, left legs IV–I, retrolateral aspect.



Figure 71. *Reddyanus hofereki* sp. n., type locality.

bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. Metasoma V bears five carinae which can be reduced. Terminal tubercle on second and third metasomal segments of male slightly enlarged. Telson elongate in male, shorter in female. Subaculear tooth large but not rounded, dorsally with 3–4 granules in two rows. Pectinal teeth number 11 in male, 10 in female.

DESCRIPTION. The adults are 31 mm (female paratype) – 35.32 mm (male holotype) long. The habitus is shown in Figs. 37–40. For position and distribution of trichobothria of pedipalps see Figs. 52–55, and 57–58. Sexual dimorphism: adult male with longer and narrow metasomal segments and telson.

Coloration (Figs. 37–40). The base color is yellow with dark spots. The chelicera is yellow, strongly reticulated. The fingers of chelicerae are spotted. The carapace and mesosoma are with a pattern that forms three dark longitudinal strips. The tergits with two symmetrical yellow spots on posterior part. The ventral side of the mesosoma is reddish brown. Base coloration of pedipalp yellow with dark spots, identical on femur and patella. The legs are also yellow with large black spots. The metasoma I–III is yellowish or reddish brown with black spots, metasoma IV–V is black in male and reddish black and spotted in female.

Carapace and mesosoma (Figs. 37–48). The entire carapace is covered with large granules; carinae are absent. The anterior margin of the carapace is medially convex. The mesosoma bears one median carina and is strongly granulated. Tergite VII is pentacarinate. The pectinal tooth count is 11 in male holotype and 10 in female paratype. The two subadult paratypes have 10–11 pectinal tooth. The pectine marginal tips extend to the end of the third sternite in the male and to the third quarter of the third sternite in the female. The pectines have three marginal lamellae and 8–9 middle lamellae. The lamellae and fulcra bear numerous light setae. Sternites are smooth with two parallel furrows except sternite VII which bears four incomplete carinae and is smooth. The glabrous zone in the middle of the posterior margin of sternite V present in both sexes.

Metasoma and telson (Figs. 41–42, 61–66). The first segment bears 10 carinae. The metasoma II–IV bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. The fifth segment bears five carinae from which the dorsal in male are reduced. Ventral carina is present on the telson in male and ventral and lateral in female. Surfaces between carinae are obviously smooth, with small, sparse granules that become more numerous on metasoma I–II in female. Terminal tubercle on the second and the third

metasomal segments of both sexes only very slightly enlarged. The telson elongate in male, shorter in female. Subaculear tooth not rounded, dorsally with 3–4 granules in two rows.

Pedipalps (Figs. 49–60). The pedipalps are very sparsely hirsute. The femur bears five and patella seven granulated carina. The chela is with four granulated carinae in both sexes. The chela and patella are slightly and femur is densely granulated. Movable finger with six and fixed finger with seven rows of granules, both with several accessory granules and 6 external and 5 internal accessory granules.

Legs (Figs. 67–70). The legs without tibial spurs. The tibia and tarsomeres of legs with setae not arranged into bristle combs on dorsal surfaces. Tarsomere II of leg IV with two sparse rows of < 20 spiniform setae on ventral surface. The femur bears 3–4 and patella, 5 carinae; both femur and patella are granulated.

Measurements. See Table 1.

AFFINITIES. The described features distinguish *R. hofereki* sp. n. from all other species of the genus. They are recounted in the key. Morphologically closest species is *R. krasenskyi* from Java, which differs mainly by the darker pedipalp patella and more elongate metasomal segments in male (Figs. 194 versus 196).

DISTRIBUTION. Malaysia (Fig. 225).

Reddyanus jendeki (Kovařík, 2013)

(Figures 195, 206, 225)

Isometrus (Reddyanus) jendeki Kovařík in Kovařík et Ojanguren, 2013: 188–189, figs. 1358–1367.

TYPE LOCALITY AND TYPE REPOSITORY. Malaysia, Pahang, Kuala Rompin State Park, 35 km SW Kuala Rompin, 2.617°N 103.337°E, 50 m a. s. l.; FKCP.

TYPE MATERIAL. **Malaysia**, Pahang, Kuala Rompin State Park, 35 km SW Kuala Rompin, 2.617°N 103.337°E, 50 m a. s. l., 28.II.–13.III.2011, 1♂ (holotype) 1♀ (allotype), leg. E. Jendek, FKCP.

ADDITIONAL MATERIAL EXAMINED. **Malaysia**, Negeri Sembilan, Pasoh forest, 2.97°N 102.30°E, 80 m a. s. l., 10.–11.VI.2013, 1juv., leg. E. Jendek et O. Šauša, FKCP.

DIAGNOSIS. Total length 27–33.5 mm. Male has longer metasomal segments and telson than female. Pedipalps and legs yellowish to reddish, with brown to black spots. Base coloration yellow with dark spots, identical on femur and patella. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, metasoma V bears five carinae which can be reduced. Terminal tubercle on second and third metasomal segments slightly enlarged in both sexes. Subaculear tooth wide, its terminus pointed, dorsally with 3 granules on dorsal surface in two rows. Pectinal teeth number 11–12.

DISTRIBUTION. Malaysia (Fig. 225).

Reddyanus kurkai (Kovařík, 1997)

(Figure 225)

Isometrus (Reddyanus) kurkai Kovařík, 1997: 5; Kovařík, 1998a: 36; Kovařík, 1998b: 111; Fet & Lowe, 2000: 152; Kovařík, 2003: 9; Kovařík in Kovařík et Ojanguren, 2013: 189, figs. 1341–1342.

TYPE LOCALITY AND TYPE REPOSITORY. Indonesia, Java, “Tigenter, Mündung” [Cigenter River mouth, Udjung Kulon National Park]; NHMB.

TYPE MATERIAL. Indonesia, Java, “Tigenter, Mündung” [Cigenter River mouth, Udjung Kulon National Park]; 6.VIII.1969, 1♀ (holotype), leg. R. Schenkel, NHMB.

ADDITIONAL MATERIAL EXAMINED. **Indonesia**, Java, Bogor, 1♀, FKCP. **Malaysia**, Borneo, Sarawak, Matang, ca 20 km W of Kuching, 1♀, FKCP; Sarawak, District Kapit, Rumah Ugap, 1juv., 3.–9.III.1994, leg. P. Bílek, FKCP.

DIAGNOSIS. Total length of females about 23 mm, male unknown. Pedipalps and legs yellow, with several small brown spots. Femur of pedipalps mostly yellow, patella mostly black. Manus of pedipalps yellow, fingers black. Metasoma and telson yellow with brown spots First metasomal segment bears 10 carinae, second through fourth bear eight carinae, metasoma V bears five carinae which can be reduced. All carinae well developed and composed of fine granules of equal size, except dorsolateral carinae that terminate in a slightly larger granule. Subaculear tooth bears two granules in a row. Pectinal teeth number 12–14 in females.

DISTRIBUTION. Indonesia (Java, Kalimantan), Malaysia (Sarawak) (Fig. 225).

Reddyanus krasenskyi (Kovařík, 1998)

(Figures 196, 207, 225)

Isometrus (Reddyanus) krasenskyi Kovařík, 1998a: 35; Kovařík, 1998b: 111; Fet & Lowe, 2000: 152; Kovařík, 2003: 9; Kovařík in Kovařík et Ojanguren, 2013: 189, figs. ZO.4, 1325–1332.

TYPE LOCALITY AND TYPE REPOSITORY. Indonesia, Java; FKCP.

TYPE MATERIAL. Indonesia, Java, 1980, 1♀ (holotype), FKCP.

ADDITIONAL MATERIAL EXAMINED. **Indonesia**, Java, 1♀, NHRS No. 219; Java, Udjung Kulon National Park, 06°50'28"S 105°24'45"E, 13.I.2003, 1♂ (Figs. 196, 207), FKCP.

DIAGNOSIS. Total length of male 36 mm, of female 32–35 mm. Male has longer metasomal segments and telson. Segments of pedipalps approximately same length and width in both sexes. Pedipalps and legs yellow, with several small brown

Dimensions (MM)		<i>R. majkusi</i> sp. n. ♂ holotype	<i>R. majkusi</i> sp. n. ♀ paratype	<i>R. rolciki</i> sp. n. ♂ holotype	<i>R. rolciki</i> sp. n. ♂ paratype
Carapace	L / W	3.38 / 3.24	3.99 / 3.68	4.64 / 4.35	4.93 / 4.49
Mesosoma	L	8.38	12.48	9.59	10.53
Tergite VII	L / W	1.97 / 2.63	2.36 / 3.68	2.92 / 3.54	3.10 / 3.77
Metasoma + telson	L	20.84	19.59	33.40	34.94
Segment I	L / W / D	2.53 / 1.44 / 1.32	2.21 / 1.67 / 1.50	4.00 / 1.72 / 1.76	4.16 / 1.79 / 1.80
Segment II	L / W / D	3.07 / 1.30 / 1.34	2.94 / 1.42 / 1.61	5.21 / 1.55 / 1.77	5.71 / 1.66 / 1.76
Segment III	L / W / D	3.41 / 1.23 / 1.38	3.13 / 1.43 / 1.50	5.77 / 1.54 / 1.61	6.12 / 1.70 / 1.65
Segment IV	L / W / D	3.87 / 1.17 / 1.37	3.58 / 1.43 / 1.42	6.59 / 1.35 / 1.46	6.67 / 1.52 / 1.49
Segment V	L / W / D	4.60 / 1.29 / 1.39	4.31 / 1.30 / 1.51	7.46 / 1.55 / 1.68	7.64 / 1.55 / 1.71
Telson	L / W / D	3.36 / 1.12 / 1.14	3.42 / 1.10 / 1.29	4.37 / 1.48 / 1.44	4.64 / 1.50 / 1.50
Pedipalp	L	12.54	13.19	16.97	18.18
Femur	L / W	3.20 / 1.02	3.26 / 1.20	4.38 / 1.35	4.70 / 1.40
Patella	L / W	3.71 / 1.40	3.93 / 1.63	4.99 / 1.75	5.16 / 1.83
Chela	L	5.63	6.00	7.60	8.32
Manus	W / D	1.41 / 1.12	1.37 / 1.04	1.89 / 1.64	2.01 / 1.67
Movable finger	L	3.18	3.80	4.09	4.35
Total	L	32.60	36.06	47.63	50.40

Table 2. Comparative measurements of adults of *Reddyanus majkusi* sp. n. and *R. rolciki* sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

spots. Femur of pedipalps mostly yellow, patella mostly black. Manus of pedipalps yellow, fingers black. Metasoma yellow with brown spots, fourth and fifth segments black. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. Metasoma V bears five carinae which can be reduced. Terminal tubercle on second and third metasomal segments of male slightly enlarged. Telson elongate in male, shorter in female. Subaculear tooth large but not rounded, dorsally with 5 granules on dorsal surface in three rows. Pectinal teeth number 13–14 in male, 10–12 in female.

DISTRIBUTION. Indonesia (Java) (Fig. 225).

Reddyanus majkusi sp. n.

(Figures 72–112, 197, 208, 225, Tables 2, 4)

<http://zoobank.org/urn:lsid:zoobank.org:act:EFAD254C-ACB2-49AA-B1E7-583C26EAB57C>

TYPE LOCALITY AND TYPE REPOSITORY. Malaysia, Pahang, Tioman Island, Juara, 2°80'N 104°19'E, 45 m a. s. l.; FKCP.

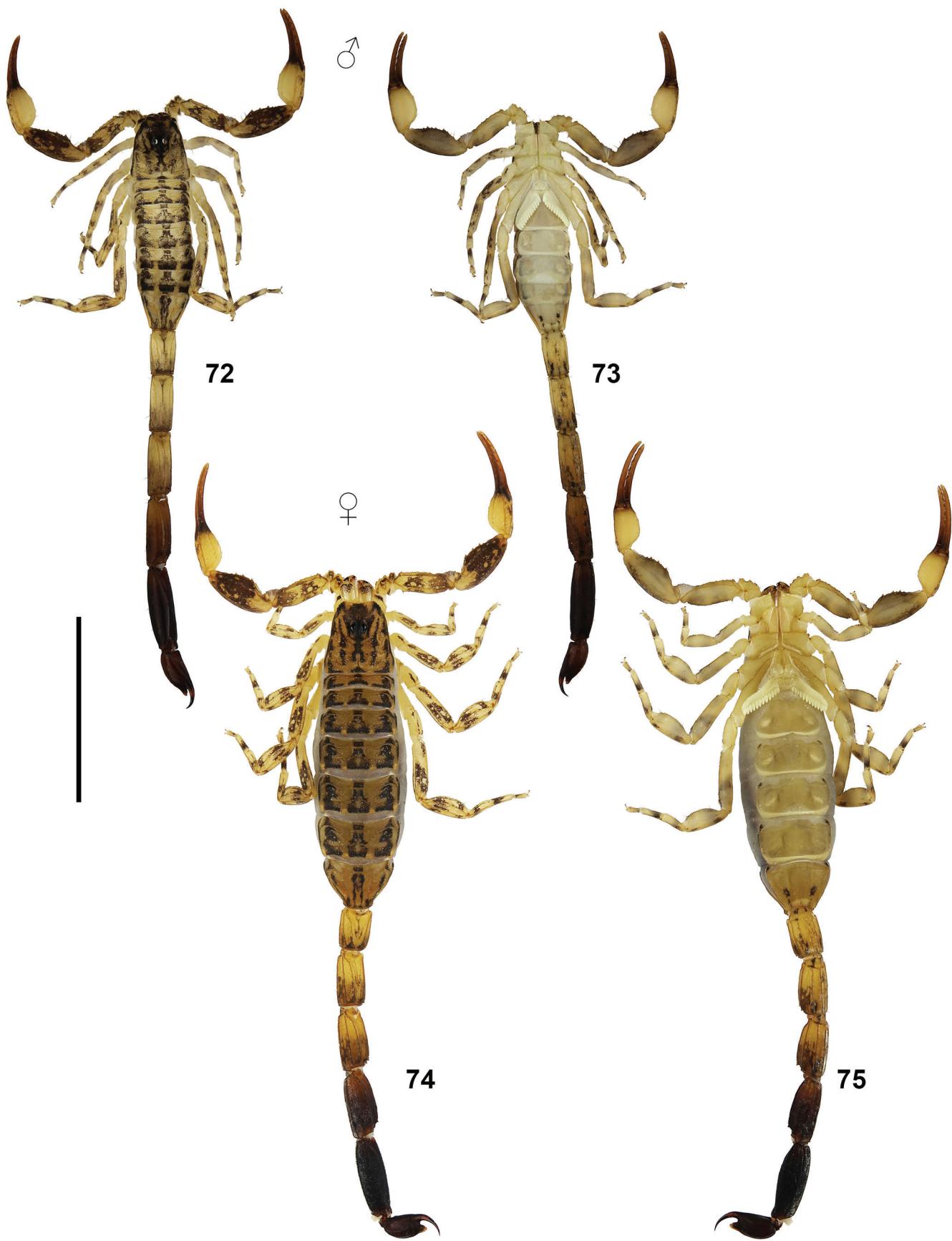
TYPE MATERIAL (FKCP). **Malaysia**, Pahang, Tioman Island, Juara, 2°80'N 104°19'E, 45 m a. s. l., 1♂ (holotype, No. 1559) 1♀ (paratype), 28.VIII.2018, leg. R. Majkus; Tioman Island, Tekek env. 2°49'14.7"N 104°10'16.1"E, 1♂ (paratype, Figs. 76–78), 21.X.2018, leg. A. Albert.

ETYMOLOGY. The species epithet is a patronym honoring Roman Majkus, the collector of types of the new species. He is also the author of the photographs of type locality (Figs. 111–112).

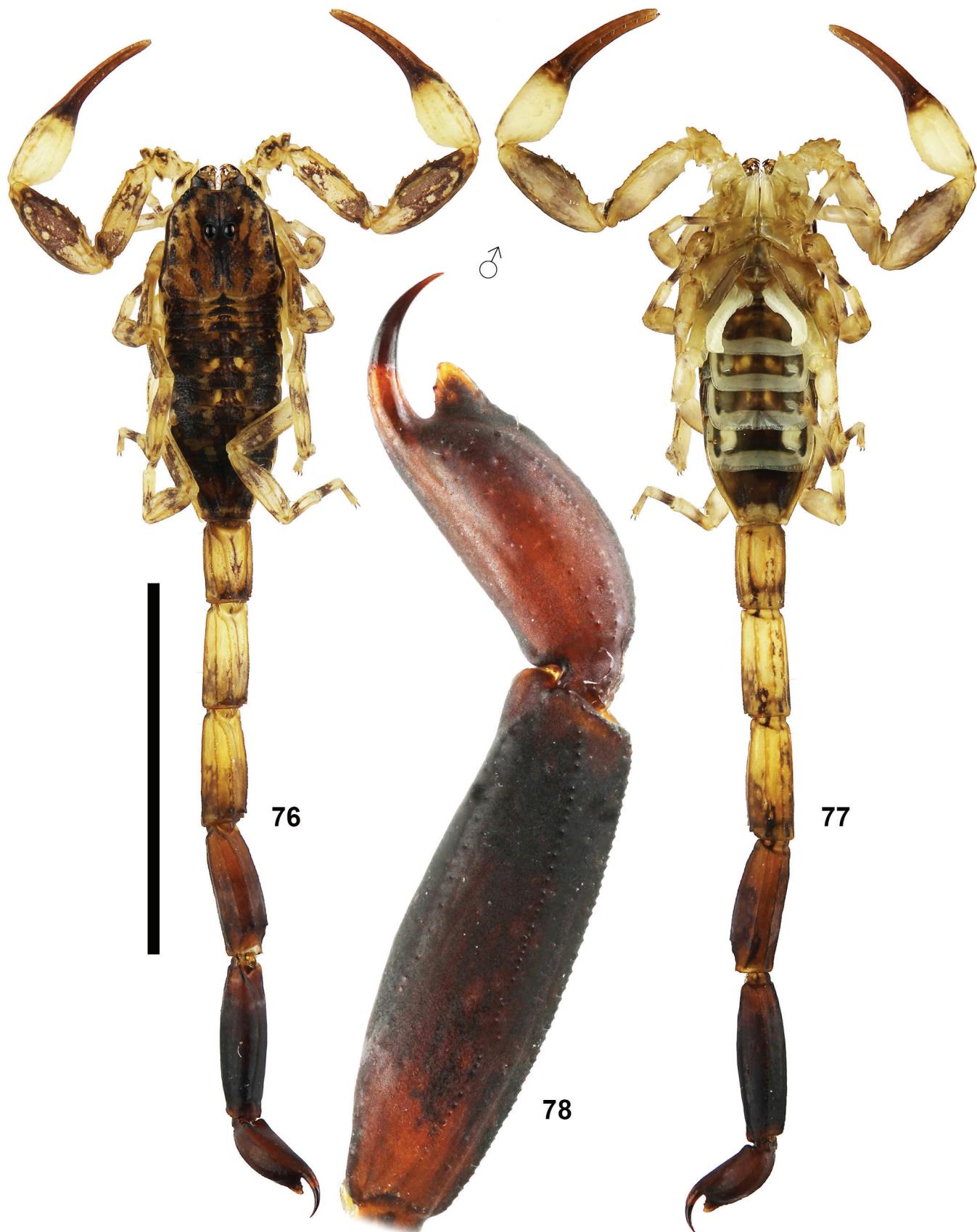
DIAGNOSIS. Adult from 29 mm (male) to 36 mm (female) long. Male has slightly longer metasomal segments and telson. Pedipalps, legs and metasoma I–III yellow, with brown spots. Femur of pedipalps mostly yellow, patella mostly black. Manus of pedipalps yellow with black spots, fingers reddish black. Metasoma V black and telson reddish black. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, lateral carinae on metasoma II represented only by several granules mainly in posterior part. Metasoma V bears five. Terminal tubercle on second and third metasomal segments of both sexes slightly enlarged. Telson narrower in male. Subaculear tooth large but not rounded, dorsally with 5 granules in three rows. Pectinal teeth number 12–13 in male, 12 in female.

DESCRIPTION. The adults are 29–32.60 mm (males) – 36 mm (female) long. The habitus is shown in Figs. 72–77. For position and distribution of trichobothria of pedipalps see Figs. 93–96, and 98–99. Sexual dimorphism: adult male with slightly longer metasomal segments and narrower telson.

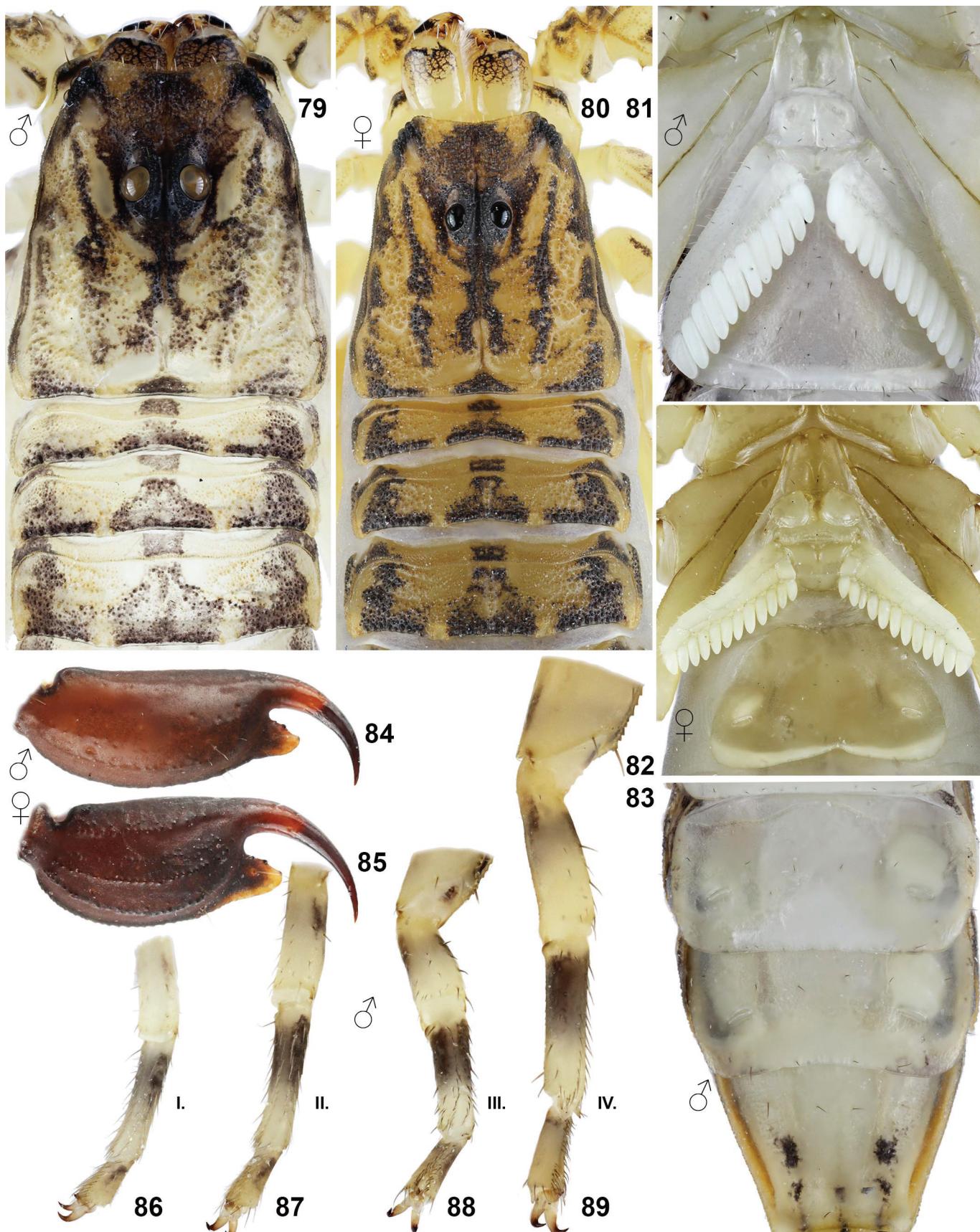
Coloration (Figs. 72–77, 109–110). The base color is yellow with dark spots. The chelicera is yellow, strongly reticulated. The fingers of chelicerae are spotted. The carapace and mesosoma are with a pattern that forms three dark longitudinal strips. The ventral side of the mesosoma is yellowish white with several spots on sternite VII. The femur and patella of pedipalps are yellow with dark spots, femur is mostly yellow and patella mostly black. The legs are also yellow with black spots. The metasoma I–III and partly metasoma IV are yellowish or reddish brown with black spots, metasoma V is black and telson is reddish brown.



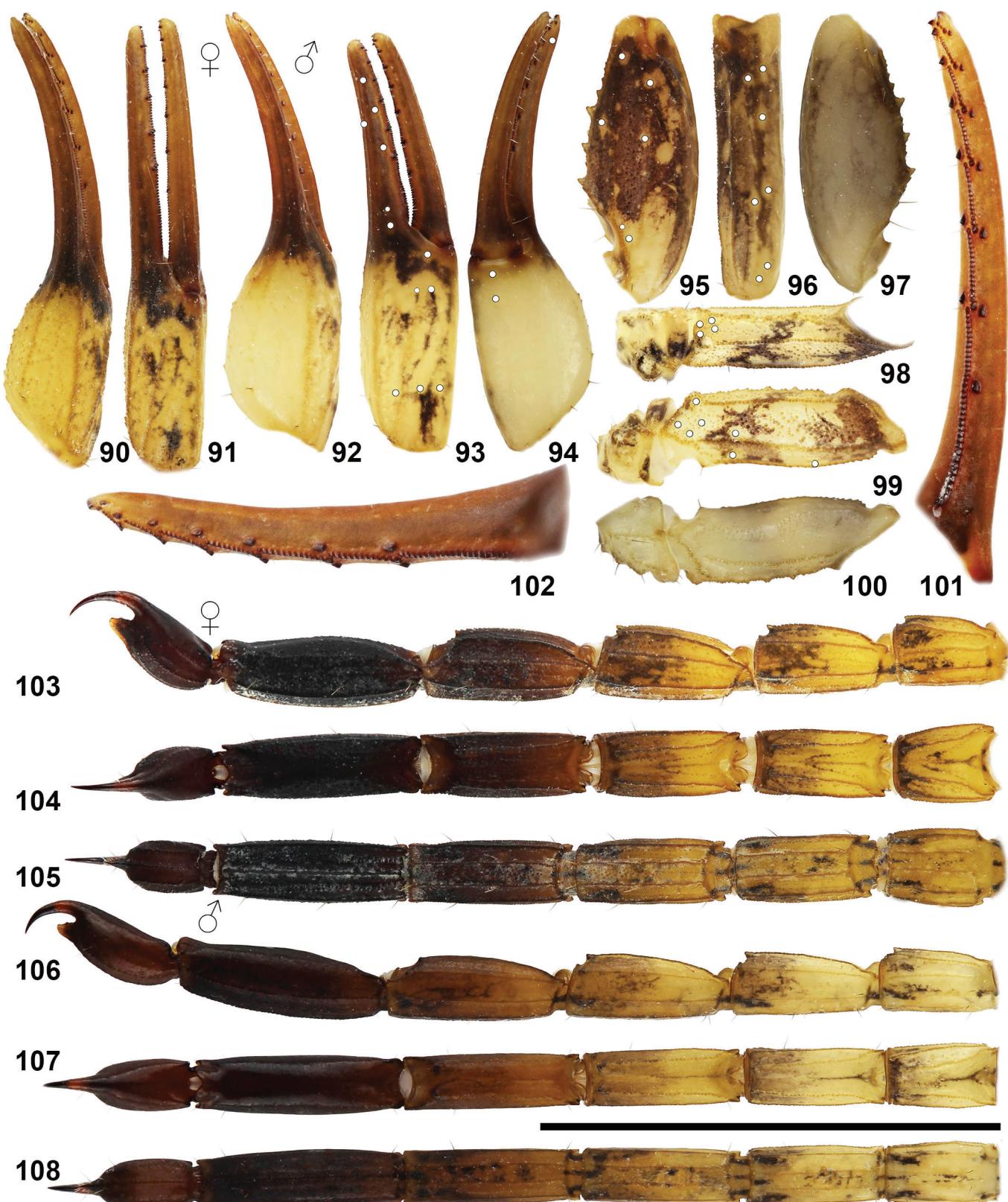
Figures 72–75: *Reddyanus majkusi* sp. n. **Figures 72–73.** Male holotype in dorsal (72) and ventral (73) views. **Figures 74–75.** Female paratype in dorsal (74) and ventral (75) views. Scale bar: 10 mm.



Figures 76–78. *Reddyanus majkusi* sp. n., male paratype in dorsal (76) and ventral (77) views. Metasoma V and telson lateral view. Scale bar: 10 mm (76–77).



Figures 79–89: *Reddyanus majkusi* sp. n. **Figures 79, 81, 83–84, 86–89.** Male holotype, carapace and tergites I–III (79), coxosternal area and sternite III (81), sternites V–VII (83), telson lateral (84), and left legs I–IV, retrolateral aspect (86–89). **Figures 80, 82, 85.** Female paratype, carapace and tergites I–III (80), coxosternal area and sternite III (82), and telson lateral (85) view.



Figures 90–108: *Reddyanus majuski* sp. n. **Figures 90–91, 103–105.** Female paratype, pedipalp chela dorsal (90) and external (91) views, metasoma and telson in lateral (103), dorsal (104) and ventral (105) views. **Figures 92–102, 106–108.** Male holotype, pedipalp chela dorsal (92), external (93) and ventral (94) views, patella dorsal (95), external (96) and ventral (97) views, femur and trochanter internal (98), dorsal (99), and ventral (100) views, movable finger (101) and fixed finger (102) dentition, metasoma and telson in lateral (106), dorsal (107) and ventral (108) views. Trichobothrial pattern is indicated in Figures 93–96 and 98–99. Scale bar: 10 mm (103–108).



Figures 109–110. *Reddyanus majkusi* sp. n., male holotype (109) and female paratype (110) in vivo habitus.



Figures 111–112. *Reddyanus majkusi* sp. n., type locality.

Carapace and mesosoma (Figs. 79–83). The entire carapace is covered with large granules; carinae are absent. The anterior margin of the carapace is medially convex. The mesosoma bears one median carina and is strongly granulated. Tergite VII is pentacarinate. The pectinal tooth count is 12–13 in males and 12 in female. The pectine marginal tips extend to the end of the third sternite in the males and to the half of the third sternite in the female. The pectines have three marginal lamellae and 5–7 middle lamellae. The lamellae and fulcra bear numerous light setae. Sternites are smooth with two parallel furrows except sternite VII which bears four incomplete carinae and is smooth. The glabrous zone in the middle of the posterior margin of sternite V present in male in shape of triangle and reduced in female.

Metasoma and telson (Figs. 84–85, 103–108). The first segment bears 10 carinae. The metasoma II–IV bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. The fifth segment bears five carinae from which the dorsal in male could be reduced. Ventral and ventrolateral carinae are present on the telson in male, and ventral and lateral, in female. Surfaces between carinae are obviously smooth, with small, sparse granules that become more numerous on metasoma I–IV mainly in female. Terminal tubercle on second and third metasomal segments of both sexes slightly enlarged. The telson narrower in male. Subaculear tooth large but not rounded, dorsally with 4–5 granules in three rows.

Pedipalps (Figs. 90–102). The pedipalps are very sparsely hirsute. The femur bears five granulated carinae and patella bears 7 smooth reduced carinae. The chela is with four carinae granulated in both sexes more in female. The chela is sparsely granulated in both sexes. The patella dorsally and femur are densely granulated in both sexes. Movable finger with six and fixed finger with seven rows of granules, both with several accessory granules and 6 external and 5–6 internal accessory granules.

Legs (Figs. 86–89). The legs without tibial spurs. The tibia and tarsomeres of legs with setae not arranged into bristle combs on dorsal surfaces. Tarsomere II of leg IV with two sparse rows of < 20 spiniform setae on ventral surface. The femur bears 3–4, and patella, 5 carinae; both femur and patella are granulated.

Measurements. See Table 2.

AFFINITIES. The described features distinguish *R. majkusi* sp. n. from all other species of the genus. They are recounted in the key. Morphologically closest is *R. zideki*. Males of these two species has not extremely elongate metasomal segments (Figs. 192–202) but differs in color pattern of pedipalp patella (Fig. 197 verus 202). Subaculear tooth large but not rounded, dorsally with 3 granules in two rows in *R. zideki* (Fig. 214) versus 5 granules in three rows in *R. majkusi* sp. n. (Fig. 208).

DISTRIBUTION. Malaysia (Tioman Island) (Fig. 225).

***Reddyanus navaiae* (Kovařík, 1998)**
(Figure 225)

Isometrus (Reddyanus) navaiae Kovařík, 1998a: 37; Kovařík, 1998b: 112; Fet & Lowe, 2000: 153; Kovařík, 2003: 10; Kovařík in Kovařík et Ojanguren, 2013: 190, figs. 1339–1340.

TYPE LOCALITY AND TYPE REPOSITORY. Philippines, S. Mindanao, Port Banga; ZMHB.

TYPE MATERIAL. Philippines, S. Mindanao, Port Banga, V.1915, 4♀ (holotype and paratypes), leg. S. Böttcher & V. Heyne, ZMHB, NMPC, FKCP; N. Mindanao, Kolambungan, I. 1905, 1♀1juv. (paratypes), leg. S. Böttcher & V. Heyne, ZMHB; Luzon, Banahao, 2000 m a. s. l., 25.IV.1914, 1♀ (paratype), leg. S. Böttcher & V. Heyne, ZMHB.

DIAGNOSIS. Total length of females 19–34.4 mm, male unknown. Mesosoma bears two dark bands on dorsal margins. Median band indicated by dark spots at posterior margins of segments. Posterior margins of mesosomal segments and of carapace bear eight yellow spots or a yellow longitudinal band interrupted by dark transverse bands and spots. Pedipalps and legs reddish brown, with black spots. Base coloration identical on femur and patella. Metasoma dominantly reddish brown, dark spots present chiefly on ventral surfaces of segments and on telson. First metasomal segment bears 10 carinae, second through fourth bear eight carinae. Terminal tubercle on second and third metasomal segments slightly enlarged. Subaculear tooth dorsally with 3 granules on dorsal surface in two rows. Pectinal teeth number 12–14 in females.

DISTRIBUTION. Philippines (Fig. 225).

***Reddyanus neradi* (Kovařík, 2013)**
(Figures 198, 209, 225)

Isometrus (Reddyanus) neradi Kovařík in Kovařík et Ojanguren, 2013: 190–191, figs. 1348–1353.

TYPE LOCALITY AND TYPE REPOSITORY. Thailand, Namtok Phlio National Park, 12°31'50"S 102°11'03"E; FKCP.

TYPE MATERIAL. Thailand, Namtok Phlio National Park, 12°31'50"S 102°11'03"E, 2010, 1♂ (holotype), leg. L. Nerad, FKCP.

DIAGNOSIS. Total length of male holotype 32 mm. Pedipalps, legs and telson yellow, with brown spots. Base coloration yellow with dark spots, identical on femur and patella. First metasomal segment with 10 carinae, second through fourth with eight carinae, fifth with five carinae. Terminal tubercle on second and third metasomal segments slightly enlarged. Subaculear tooth wide, its terminus rounded, dorsally with 5

granules on dorsal surface in three rows. Telson length/ depth ratio in male is 2.82. Pectinal teeth number 12–13.

DISTRIBUTION. Thailand (Fig. 225).

***Reddyanus petrzelkai* (Kovařík, 2003)**
(Figures 199, 210, 225)

Isometrus vittatus: Fage, 1933: 28; Fage, 1936: 181; Fage, 1944: 71.

Isometrus (Reddyanus) vittatus: Vachon, 1976: 39 (in part), 42; Fet & Lowe, 2000: 153.

Isometrus (Reddyanus) vittatus: Kovařík, 1994: 202 (in part); Kovařík, 1995: 188 (in part); Kovařík, 1997: 9 (in part); Kovařík, 1998a: 37; Kovařík, 1998b: 112 (in part).

Isometrus (Reddyanus) petrzelkai Kovařík, 2003: 10; Lourenço et al., 2005: 58; Kovařík in Kovařík et Ojanguren, 2013: 191–192 (in part), figs. 1312–1316.

TYPE LOCALITY AND TYPE REPOSITORY. Vietnam, Dong Nai Province, 80 km NNE Ho Shi Minh City (formerly Saigon), valley Ma Da, Tri An dam; FKCP.

TYPE MATERIAL. **Vietnam**, Dong Nai Province, 80 km NNE Ho Shi Minh City (formerly Saigon), valley Ma Da, Tri An dam, 1♀ (allotype), 27.IV.1996, 2♂ (holotype and paratype), III.1998, leg. K. Petrželka, FKCP.

DIAGNOSIS. Total length 45–58 mm (males) and 37 mm (female). Male has longer metasomal segments and telson. Segments of pedipalps approximately same length in both sexes. Pedipalps and legs yellow with black spots. Manus of pedipalps yellow, fingers black. Metasoma yellow with spots namely in female, fifth segment darker than preceding. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, metasoma V bears five carinae, which can be reduced. Terminal tubercle on second and third metasomal segments of male very slightly enlarged. Telson reddish, elongate in males, shorter in females. Subaculear tooth large, rounded, dorsally with 5–6 granules on dorsal surface in three rows. Pectinal teeth number 13–16.

DISTRIBUTION. Vietnam (Fig. 225).

***Reddyanus rolciki* sp. n.**

(Figures 113–140, 200, 211, 225, Tables 2, 4)

<http://zoobank.org/urn:lsid:zoobank.org:act:1A9BC754-86E1-4D02-8365-3FD1E42273B0>

Isometrus (Reddyanus) petrzelkai Kovařík in Kovařík et Ojanguren, 2013: 191–192 (in part).

TYPE LOCALITY AND TYPE REPOSITORY. Vietnam, Bình Thuận Province, Phan Thiết, approximately 10°56'N 108°06'E; FKCP.

TYPE MATERIAL (FKCP). **Vietnam**, Bình Thuận Province, Phan Thiết, approximately 10°56'N 108°06'E, III.2014, 1♂ (holotype No. 560, maturity ecdysis 1.VIII.2014), leg. V. Fura, bred by F. Kovařík; **Cambodia**, Mondol Kiri Province, Sen Monorom, 12°30'N 107°12'E, 600 m a. s. l., 22.–26.I.2006, 1♂ (paratype, Figs. 115–117), leg. S. Bečvář, R. et H. Fouqué.

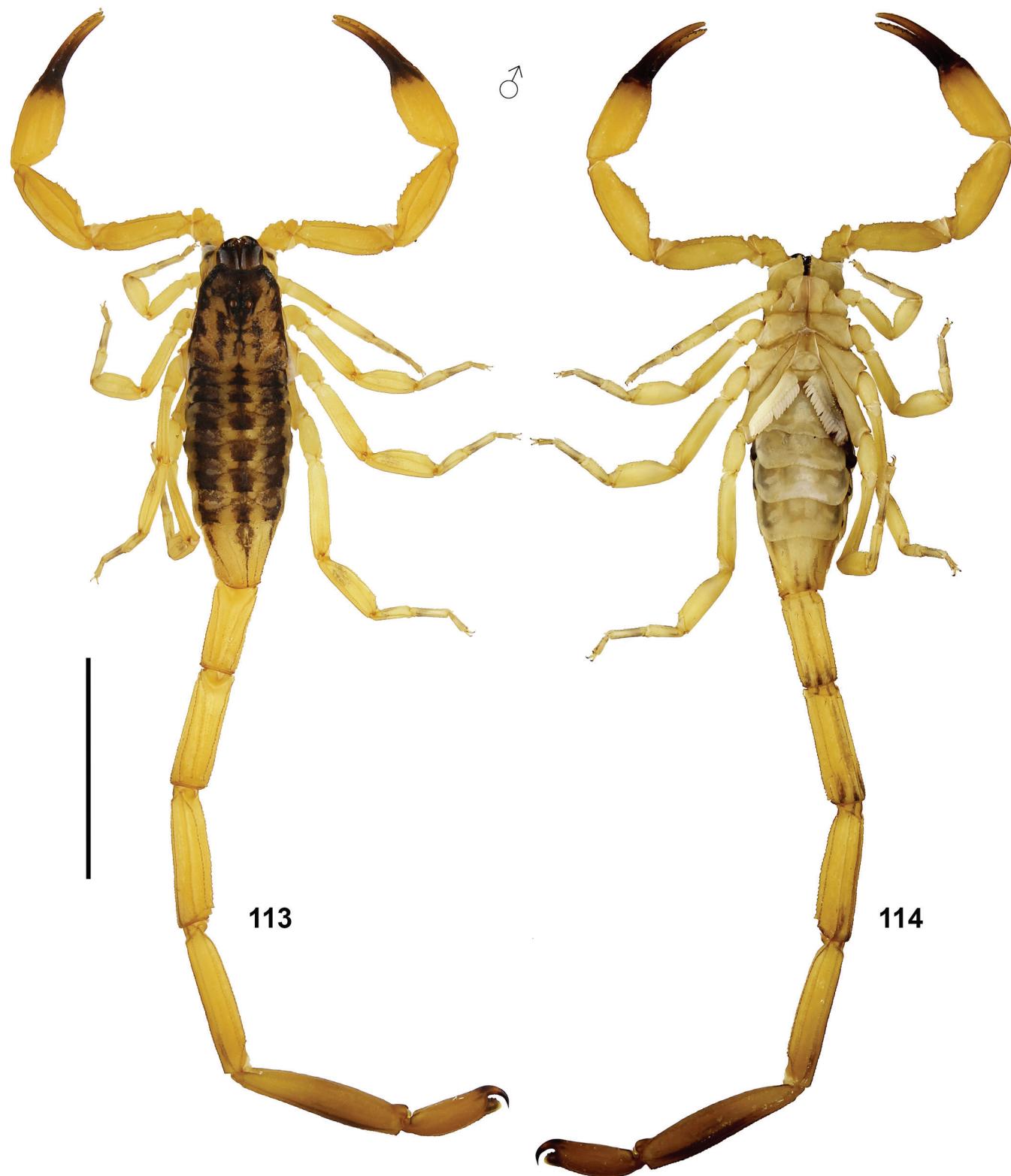
ETYMOLOGY. The species epithet is a patronym honoring the entomologist Jakub Rolčík.

DIAGNOSIS. Adult males 47–50.5 mm long, female unknown. Males have elongate metasomal segments and telson. Femur and patella of pedipalps yellow without spots. Manus of pedipalps yellow with two or three black spots on external surface, fingers black. Metasoma yellow, with brown spots on ventral surfaces of metasoma I–IV and on posterior part of metasoma V. Telson reddish black. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, lateral carinae on metasoma II represented only by several granules mainly in posterior part. Metasoma V bears five carinae. Terminal tubercle on second and third metasomal segments of males only very slightly enlarged. Telson elongate in males. Subaculear tooth large and rounded, dorsally with 5–6 granules in three rows. Pectinal teeth number 14–16 in males.

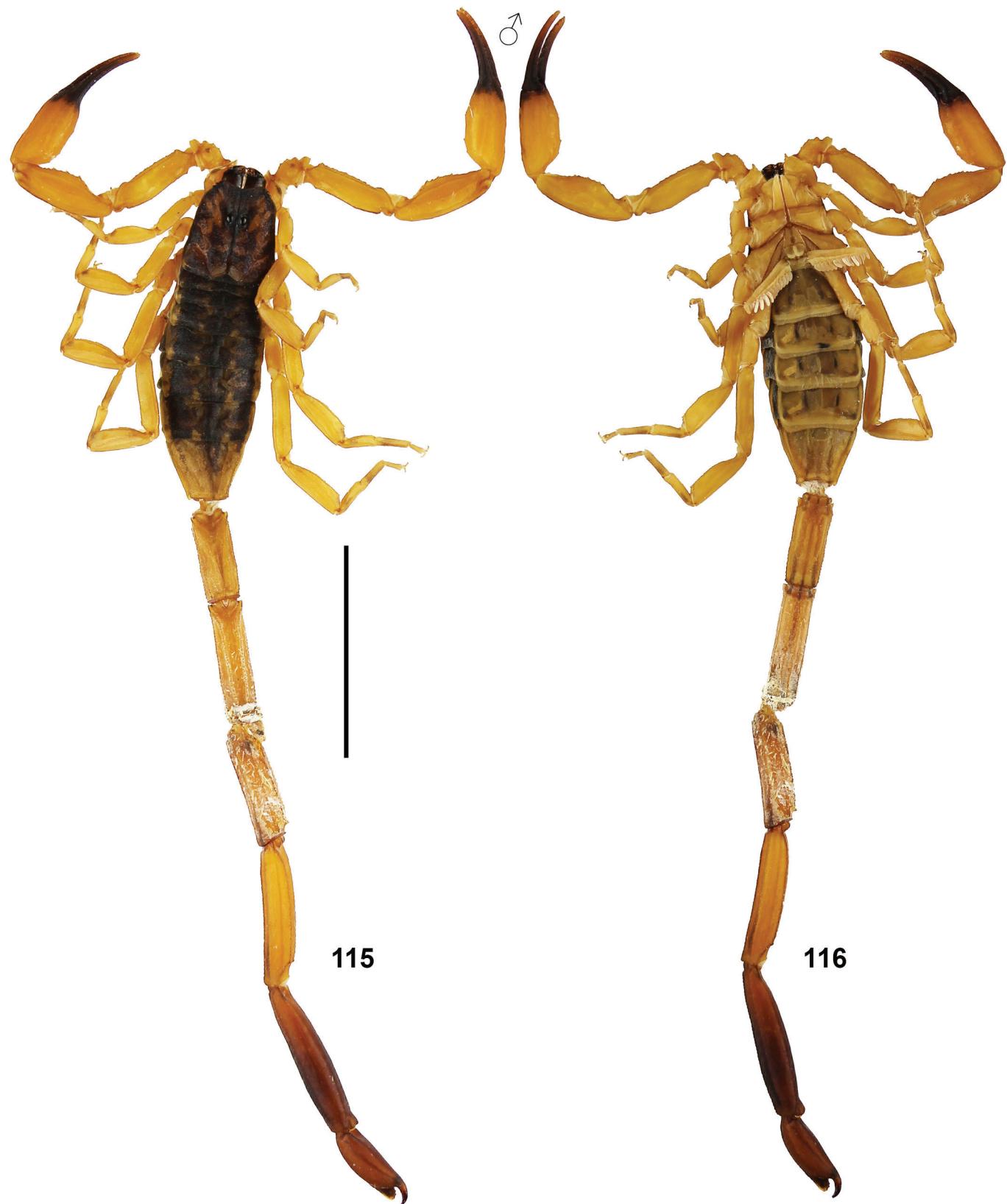
DESCRIPTION. The adult males are 47–50.5 mm long, female unknown. The habitus is shown in Figs. 113–116 and 140. For position and distribution of trichobothria of pedipalps see Figs. 125–128, and 130–131. Adult male with elongate and narrow metasomal segments and telson.

Coloration (Figs. 113–116, 140). The base color is yellow with reduced spots. The chelicera is yellow to black, strongly reticulated. The fingers of chelicerae are spotted, mostly black. The carapace and mesosoma are with a pattern that forms three dark longitudinal strips. The ventral side of the mesosoma is yellow. The femur and patella of pedipalps are yellow without dark spots. The legs are also yellow with reduced black spots, totally absent on femur. The metasoma I–IV is yellow with black spots only on ventral surfaces, metasoma V and telson are reddish brown.

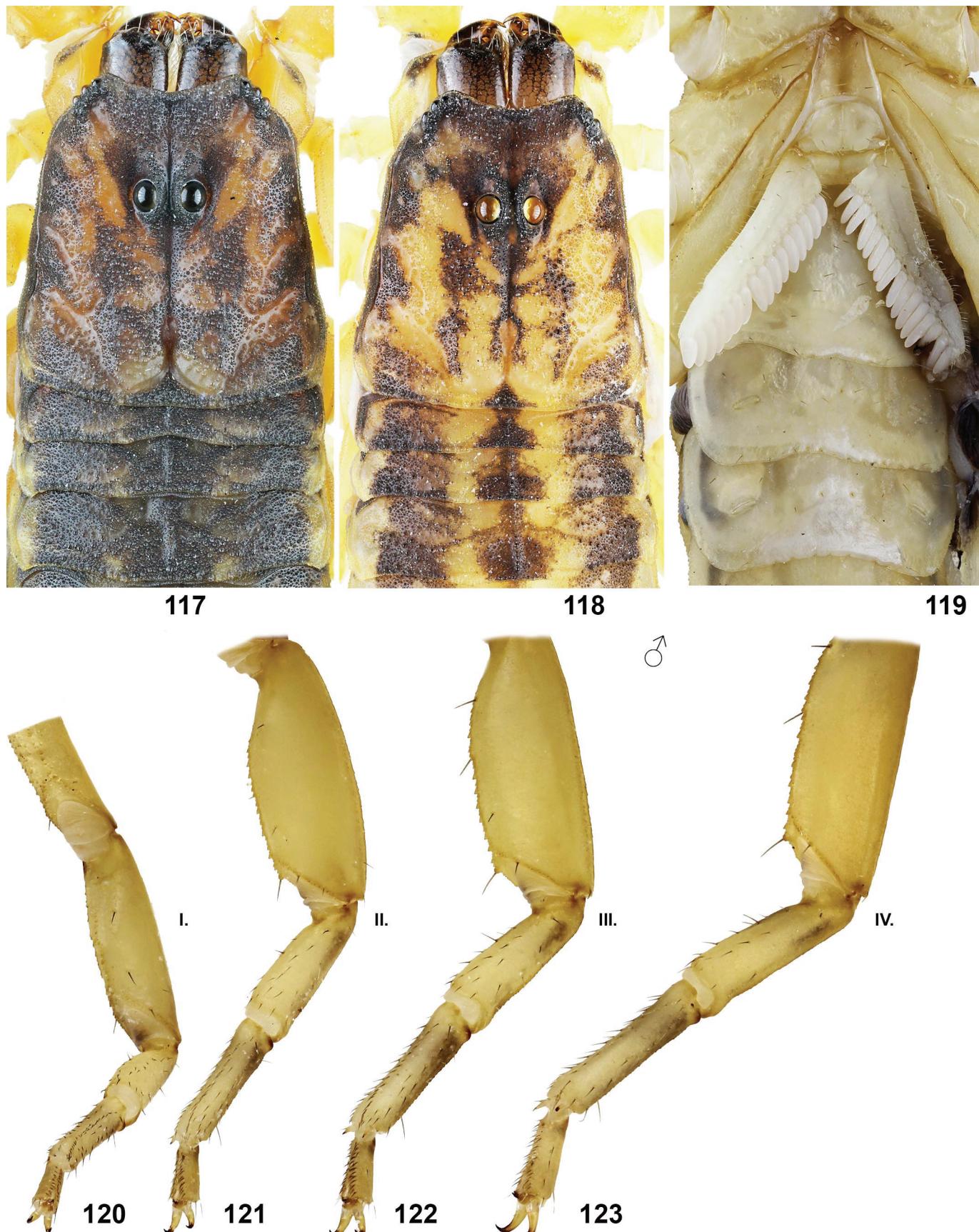
Carapace and mesosoma (Figs. 113–119). The entire carapace is covered with large granules; carinae are absent. The anterior margin of the carapace is medially convex. The mesosoma bears one median carina and is strongly granulated. Tergite VII is pentacarinate. The pectinal tooth count is 14–16 in males. The pectine marginal tips extend to the quarter of the fourth sternite in the males. The pectines have three marginal lamellae and 8–10 middle lamellae. The lamellae and fulcra bear numerous light setae. Sternites are smooth with two parallel furrows except sternite VII which bears four incomplete carinae and is smooth. The glabrous zone in the middle of the posterior margin of sternite V present in shape of triangle.



Figures 113–114. *Reddyanus rolciki* sp. n., male holotype in dorsal (113) and ventral (114) views. Scale bar: 10 mm.



Figures 115–116. *Reddyanus rolciki* sp. n., male paratype in dorsal (115) and ventral (116) views. Scale bar: 10 mm.



Figures 117–123: *Reddyanus rolciki* sp. n. **Figure 117.** Male paratype, carapace and tergites I–III. **Figures 118–123.** Male holotype, carapace and tergites I–III (118), coxosternal area and sternites III–V (119), and right legs I–IV, retrolateral aspect (120–123).



Figures 124–139: *Reddyanus rolciki* sp. n., male holotype, pedipalp chela dorsal (124), external (125) and ventral (126) views, patella dorsal (127), external (128) and ventral (129) views, femur and trochanter internal (130), dorsal (131), and ventral (132) views, movable finger (133) and fixed finger (134) dentition, metasoma and telson in lateral (135), dorsal (136) and ventral (137) views, and right legs III–IV, dorsal aspect (138–139). Trichobothrial pattern is indicated in Figures 125–128 and 130–131. Scale bar: 10 mm (135–137).



Figure 140. *Reddyanus rolciki* sp. n., male holotype in vivo habitus and its maturity exuvia.

Metasoma and telson (Figs. 135–137, 211). The first segment bears 10 carinae. The metasoma II–IV bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. The fifth segment bears five carinae. Ventral carina is present on the telson in males. Surfaces between metasomal carinae are obviously smooth, with small, sparse granules. Terminal tubercle on the second and the third metasomal segments of male only very slightly enlarged. The telson elongate in males. Subaculear tooth large and rounded, dorsally with 5–6 granules in three rows.

Pedipalps (Figs. 124–134). The pedipalps are very sparsely hirsute. The femur bears five and patella bears 7 granulated carinae. The chela is with four carinae. The chela is finely and patella and femur are rather densely granulated. Movable finger with six and fixed finger with seven rows of granules, both with several accessory granules and 6 external and 5 internal accessory granules.

Legs (Figs. 120–123, 138–139). The legs without tibial spurs. The tibia and tarsomeres of legs with setae not arranged into bristle combs on dorsal surfaces. Tarsomere II of leg IV with two sparse rows of < 20 spiniform setae on ventral surface. The femur bears 3–4, and patella, 5 carinae; both femur and patella are granulated.

Measurements. See Table 2.

AFFINITIES. The described features distinguish *R. rolciki* sp. n. from all other species of the genus. They are recounted in the key. Morphologically closest species is *R. petrzelkai*, which differs mainly by the color pattern of pedipalp femur and patella (see Figs. 199 versus 200).

DISTRIBUTION. Vietnam and Cambodia (Fig. 225).

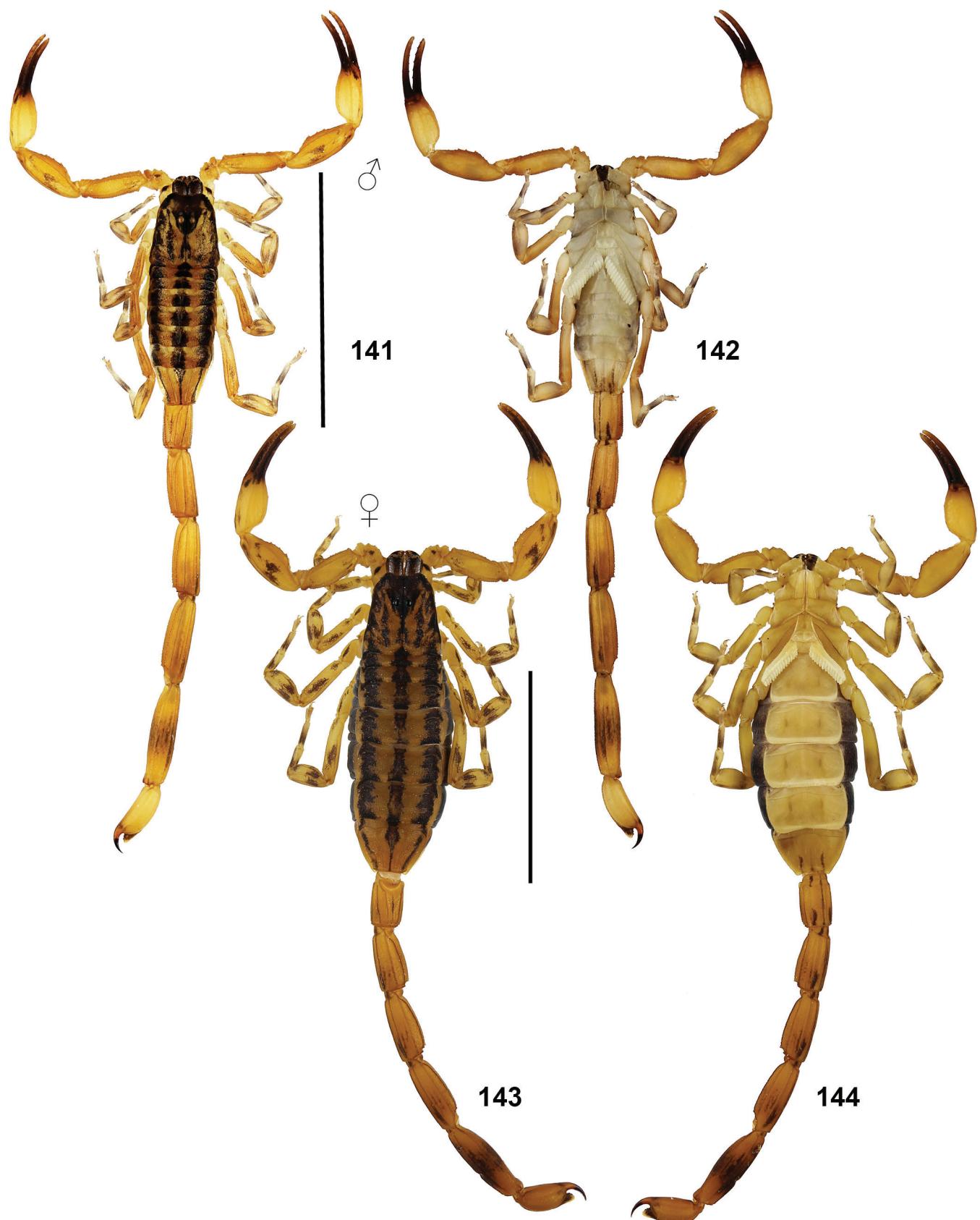
Reddyanus schwotti sp. n.

(Figures 141–191, 201, 213, 225, Tables 3–4)
<http://zoobank.org/urn:lsid:zoobank.org:act:5B50CE19-D041-4AA5-908C-CF1D9C6395C9>

Isometrus (Reddyanus) petrzelkai Kovařík et Ojanguren, 2013: 191–192 (in part).

TYPE LOCALITY AND TYPE REPOSITORY. Thailand, Sa Kaeo Province, Pang Sida, 13.593909°N 102.122117°E; FKCP.

TYPE MATERIAL (FKCP). **Thailand**, Sa Kaeo Province, Pang Sida, 13.593909°N 102.122117°E, X.2014, 1♀ (paratype, Figs. 143–144, 188, Tab. 3) 5♂ (holotype Figs. 141–142, 184–186, 187, 212, Tab. 3, and paratypes, Nos. 728, 729, 736; all males born in D. Hoferek's care and raised to



Figures 141–144: *Reddyanus schwotti* sp. n. **Figures 141–142.** Male holotype in dorsal (141) and ventral (142) views. **Figures 143–144.** Female paratype from type locality in dorsal (143) and ventral (144) views. Scale bars: 10 mm.

Dimensions (MM)		<i>R. schwotti</i> sp. n.	<i>R. schwotti</i> sp. n.	<i>R. schwotti</i> sp. n.
		♂ holotype	♀ paratype	♂ paratype
Carapace	L / W	3.80 / 3.20	3.96 / 3.77	3.66 / 3.31
Mesosoma	L	9.55	9.98	7.45
Tergite VII	L / W	2.44 / 2.77	2.26 / 3.60	2.16 / 2.67
Metasoma + telson	L	24.83	20.09	26.59
Segment I	L / W / D	2.86 / 1.38 / 1.33	2.37 / 1.56 / 1.42	3.09 / 1.34 / 1.38
Segment II	L / W / D	3.74 / 1.25 / 1.34	2.94 / 1.36 / 1.39	3.98 / 1.17 / 1.33
Segment III	L / W / D	4.18 / 1.24 / 1.33	3.29 / 1.35 / 1.37	4.43 / 1.11 / 1.25
Segment IV	L / W / D	4.78 / 1.21 / 1.22	3.78 / 1.28 / 1.37	5.22 / 1.04 / 1.15
Segment V	L / W / D	5.47 / 1.19 / 1.28	4.39 / 1.21 / 1.38	5.86 / 1.09 / 1.21
Telson	L / W / D	3.80 / 1.20 / 1.26	3.32 / 1.17 / 1.27	4.01 / 1.02 / 1.15
Pedipalp	L	13.29	13.02	13.33
Femur	L / W	3.46 / 1.11	3.28 / 1.21	3.38 / 1.01
Patella	L / W	3.80 / 1.41	3.75 / 1.57	3.96 / 1.34
Chela	L	6.03	5.99	5.99
Manus	W / D	1.42 / 1.16	1.52 / 1.12	1.42 / 1.12
Movable finger	L	3.33	3.46	3.36
Total	L	38.18	34.03	37.70

Table 3. Comparative measurements of adults of *Reddyanus schwotti* sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

adulthood in captivity by D. Hoferek; the pregnant female leg. L. Nerad; Tao Island, Hin Wong Bay, 10°06'23"N 99°50'46"E, II.2012, 1♂ (paratype, Figs. 145–147, 170–171, 181–183, Tab. 3), leg. P. Schwott; Khao Sok, 13.1048534°N 102.1936548°E, X.2014, 1♂1♀ (paratypes, Figs. 148–149, 151–156, 166–169, 172–177, 189–190, 201, 213), leg. L. Nerad. **Cambodia**, Kampot Province, Bokor, 10°38'20.65"N 104°00'30.62"E, 990 m a. s. l., 14.XI.2013, 1♂ (paratype, Figs. 150, 157–165, 178–180, 191, maturity ecdysis 20.I.2014) 3♀4juvs. (paratypes), leg. O. Košulič, breed F. Kovařík.

ETYMOLOGY. The species epithet is a patronym honoring Petr Schwott, the collector of a paratype of the new species.

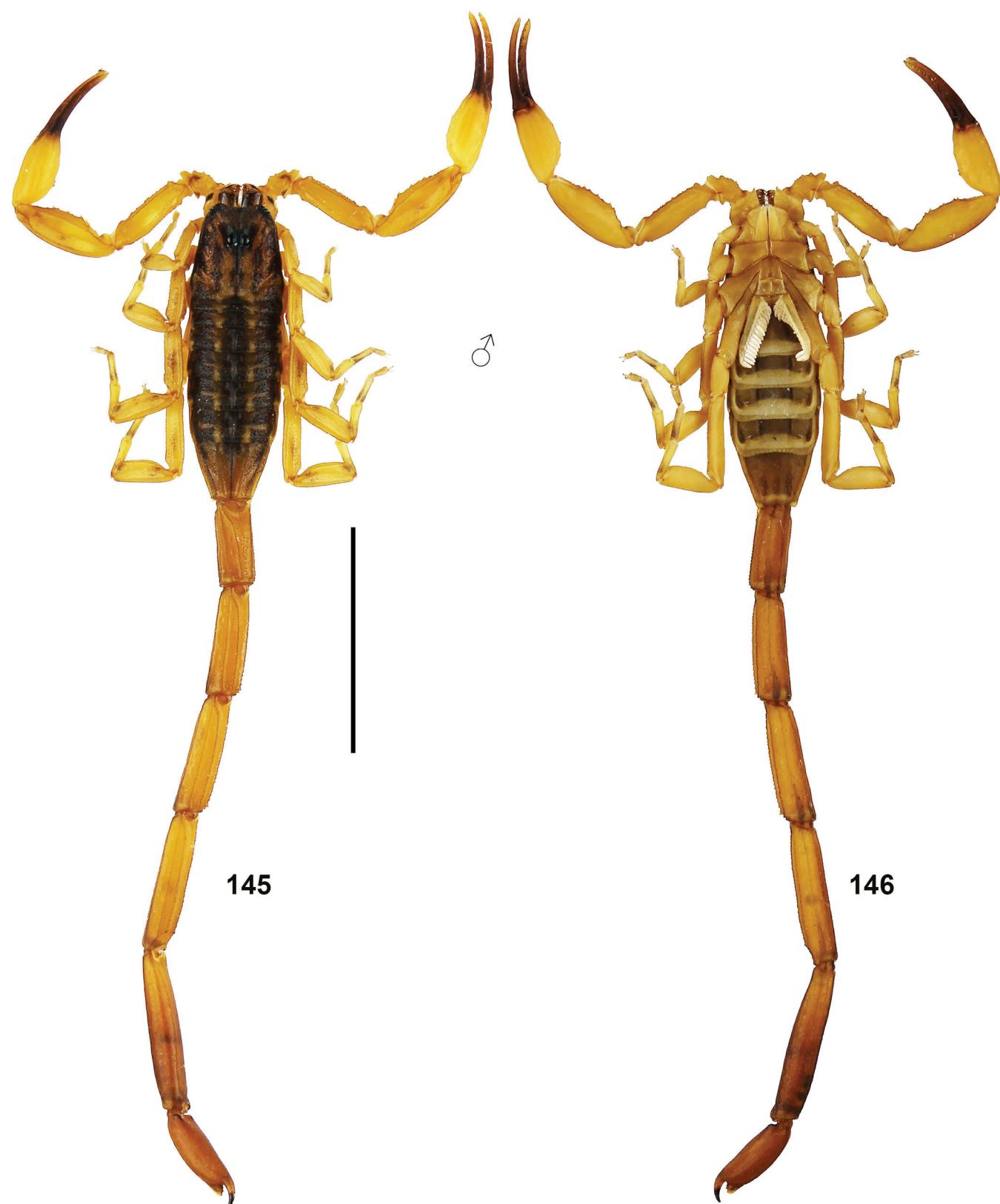
DIAGNOSIS. Adult from 29 mm (male) to 38 mm (female) long. Male has elongate metasomal segments and telson. Pedipalps, legs and metasoma yellow to red, with reduced brown spots. Manus of pedipalps yellow with black spots, fingers reddish black. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, lateral carinae on metasoma II represented only by several granules mainly in posterior part. Metasoma V bears five. Terminal tubercle on second and third metasomal segments of both sexes slightly enlarged. Subaculear tooth wide but its terminus not rounded, dorsally with 5–6 granules in three rows. Pectinal teeth number 14–15 in males, 12–14 in females.

DESCRIPTION. The adults are 29–38 mm (males) and 35–38 mm (females) long. The habitus is shown in Figs. 141–146,

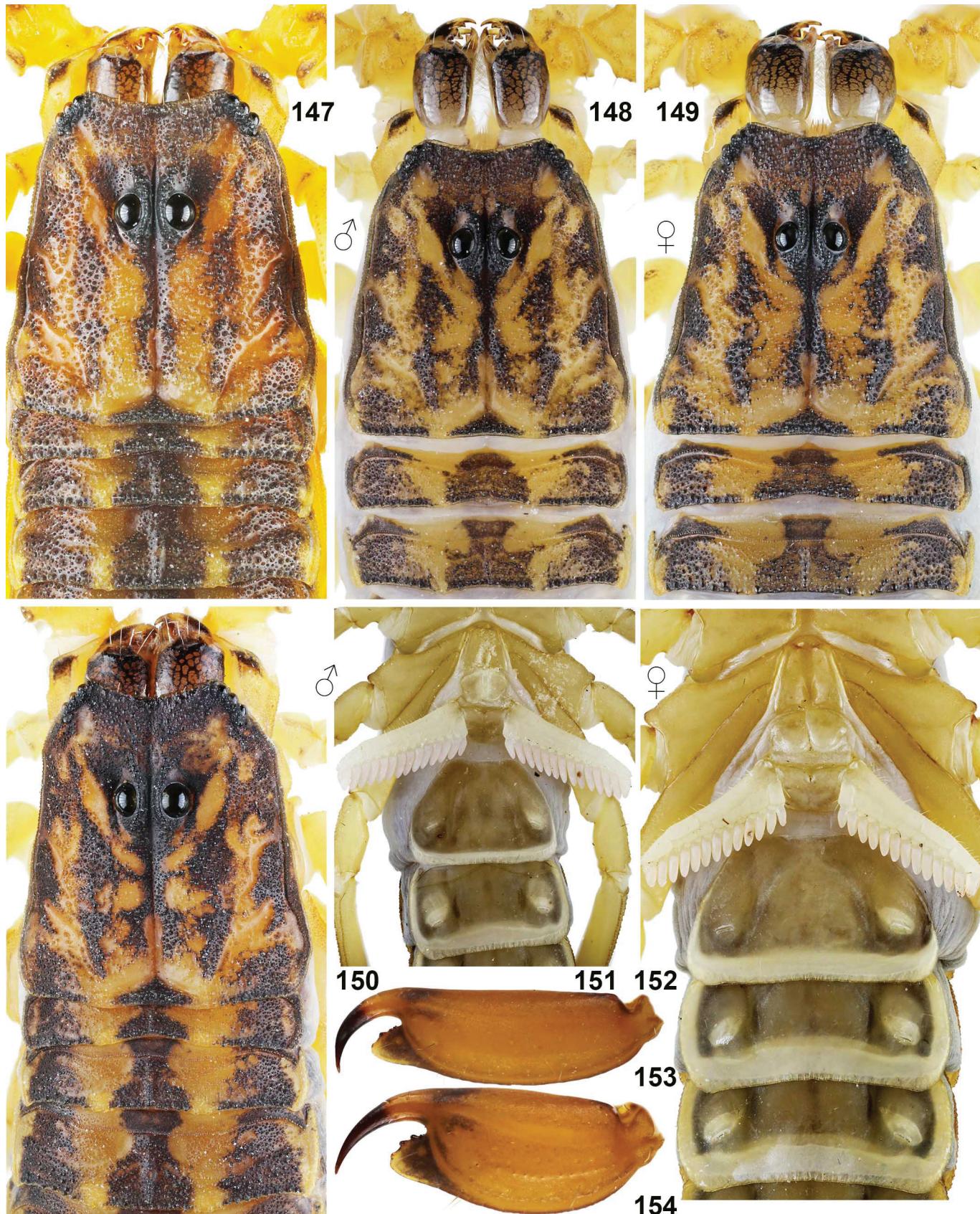
187–191. For position and distribution of trichobothria of pedipalps see Figs. 158–161, and 163–164. Sexual dimorphism: adult male with longer metasomal segments and longer and narrower telson.

Coloration (Figs. 141–146, 187–191). The base color is yellow to orange with dark spots. The chelicera is yellow, strongly reticulated. The fingers of chelicerae are spotted. The carapace and mesosoma are with a pattern that forms three dark longitudinal strips. The ventral side of the mesosoma is yellow to yellowish brown with several spots on sternite VII. The femur and patella of pedipalps are yellow or orange with small reduced dark spots, both femur and patella are mostly yellow. The legs are also yellow or orange with black spots. The metasoma is yellowish or reddish brown with black spots, metasoma V is darker than metasoma I–IV and telson is yellow, red to black.

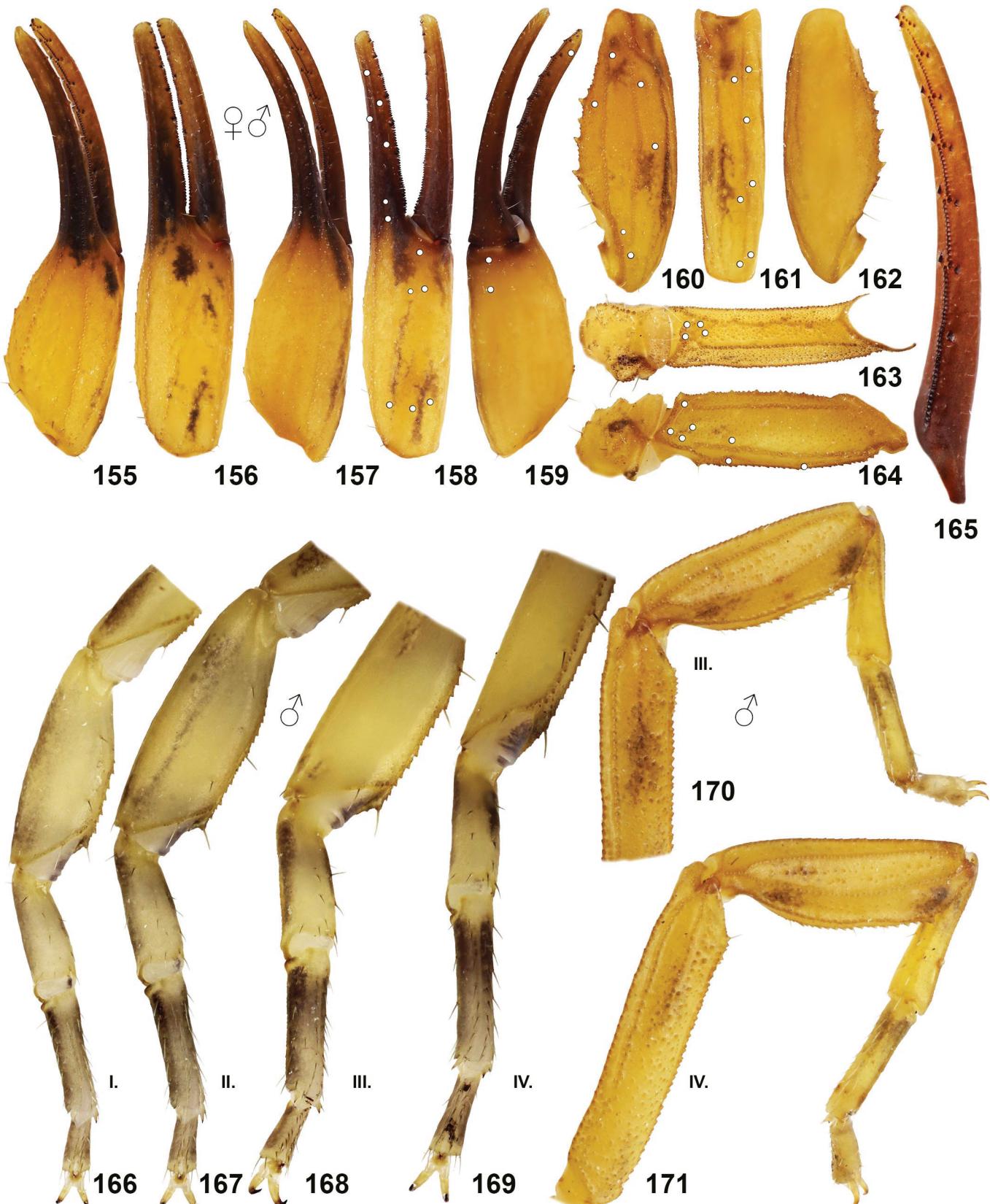
Carapace and mesosoma (Figs. 141–152). The entire carapace is covered with large granules; carinae are absent. The anterior margin of the carapace is medially convex. The mesosoma bears one median carina and is strongly granulated. Tergite VII is pentacarinate. The pectinal tooth count is 14–15 (9 x14, 7x15) in males, 12–14 (2x12, 7x13, 1x14) in females. The pectine marginal tips extend to the third quarter of the third sternite to quarter of the forth sternite in males and to the third quarter of the third sternite in females. The pectines have three marginal lamellae and 7–8 middle lamellae. The lamellae and fulcra bear numerous light setae. Sternites are smooth with two parallel furrows except sternite VII which bears four carinae partly reduced in females. The glabrous zone in the middle of the posterior margin of sternite V present but reduced in both sexes.



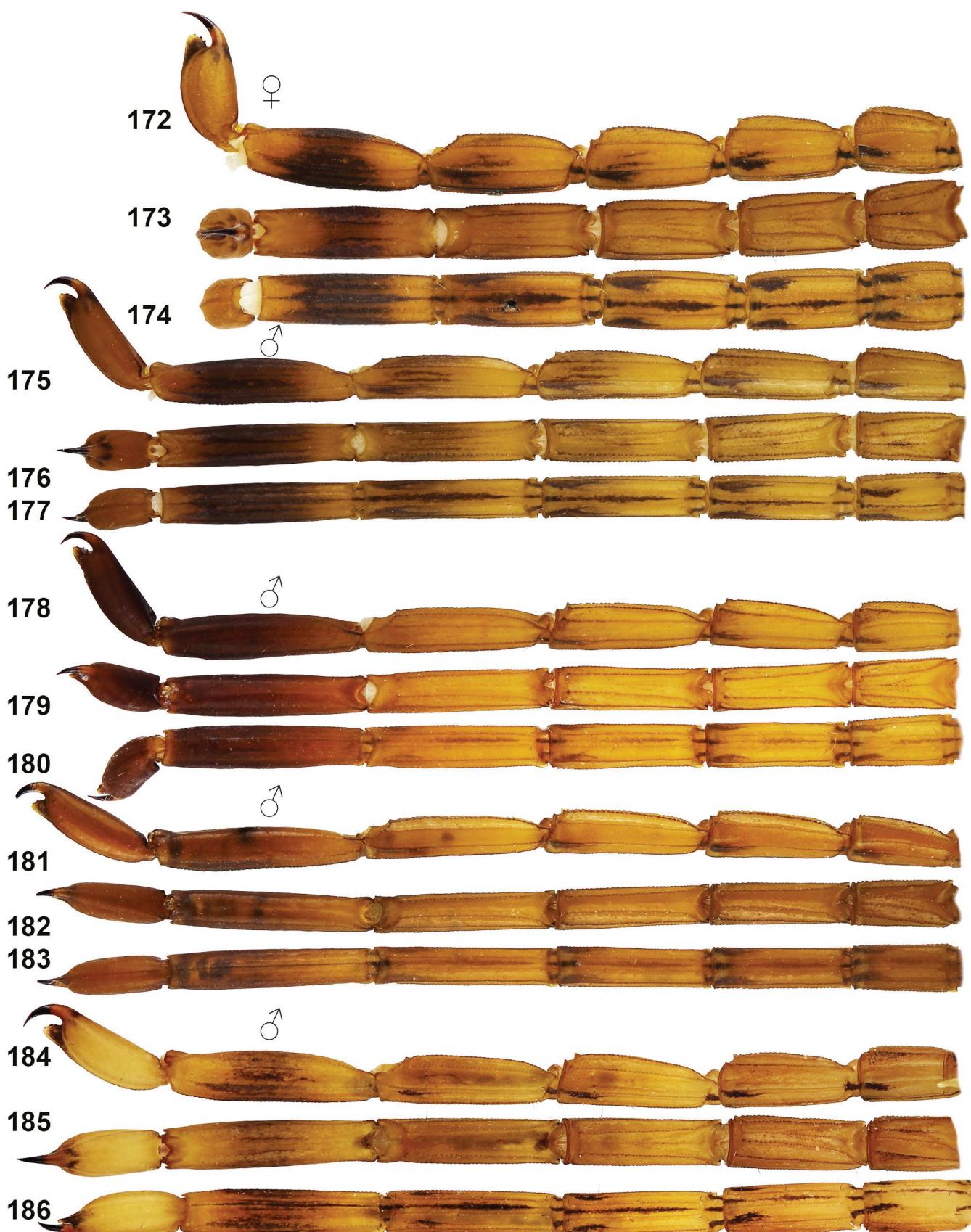
Figures 145–146. *Reddyanus schwotti* sp. n., male paratype from Thailand, Tao Island in dorsal (145) and ventral (146) views. Scale bar: 10 mm.



Figures 147–154: *Reddyanus schwotti* sp. n. **Figure 147.** Male paratype from Thailand, Tao Island, carapace and tergites I–III. **Figures 148, 151, 153.** Male paratype from Thailand Khao sok, carapace and tergites I–II (148), coxosternal area and sternites III–IV (151), and telson lateral (153). **Figures 149, 152, 154.** Female paratype from Thailand Khao sok, carapace and tergites I–II (149), coxosternal area and sternites III–V (152), and telson lateral (154). **Figure 150.** Male paratype from Cambodia, Kampot Province, Bokor, carapace and tergites I–III.



Figures 155–171: *Reddyanus schwotti* sp. n. **Figures 155–156.** Female paratype from Thailand Khao sok, pedipalp chela dorsal (155) and external (156) views. **Figures 157–165.** Male paratype from Cambodia, Kampot Province, Bokor, pedipalp chela dorsal (157), external (158) and ventral (159) views, patella dorsal (160), external (161) and ventral (162) views, femur and trochanter internal (163) and dorsal (164) views, movable finger dentition (165). Trichobothrial pattern is indicated in Figures 158–161 and 163–164. **Figures 166–169.** Male paratype from Thailand Khao sok, left legs I–IV, retrolateral aspect. **Figures 170–171.** Male paratype from Thailand, Tao Island, right legs III–IV, dorsal aspect.



Figures 172–186: *Reddyanus schwotti* sp. n., metasoma and telson in lateral (172, 175, 178, 181, 184), dorsal (173, 176, 179, 182, 185) and ventral (174, 177, 180, 183, 186) views. **Figures 172–177.** Female (172–174) and male (175–177) paratypes from Thailand Khao sok. **Figures 178–180.** Male paratype from Cambodia, Bokor. **Figures 181–183.** Male paratype from Thailand, Tao Island. **Figures 184–186.** Male holotype.



Figures 187–188. *Reddyanus schwotti* sp. n., male holotype (187) and female paratype from type locality (188) in vivo habitus.



Figures 189–190. *Reddyanus schwotti* sp. n., male (189) and female (190) paratypes from Thailand, Khao sok in vivo habitus.



Figure 191. *Reddyanus schwotti* sp. n., male paratype from Cambodia, Kampot Province, Bokor in vivo habitus and its maturity exuvia.

Species	2n	Postpachytene configuration	% TCL	Country	Reference
<i>Reddyanus furai</i> sp. n.	14	7II	8.92 – 5.28	Vietnam	present study
<i>Reddyanus basilicus</i>	16	mit	8.00 – 4.60	Sri Lanka	Kovařík et al., 2016
<i>Reddyanus basilicus</i>	15	mit	11.50 + 8.00 – 4.60	Sri Lanka	Kovařík et al., 2016
<i>Reddyanus ceylonensis</i>	16	mit	8.90 – 4.20	Sri Lanka	Kovařík et al., 2016
<i>Reddyanus loebli</i>	17	mit	7.70 – 5.00 + 3.50	Sri Lanka	Kovařík et al., 2016
<i>Reddyanus majkusi</i> sp. n.	16	mit	8.23 – 3.62	Malaysia	present study
<i>Reddyanus rolciki</i> sp. n.	14	7II	9.15 – 5.36	Vietnam	present study
<i>Reddyanus schwotti</i> sp. n.	11	III+CIX	19.23 + 10.11 – 6.58 + 4.18	Thailand	present study

Table 4. The diploid numbers, the postpachytene configuration (mit-information only about mitosis), the percentage of the total chromosome length of the diploid set (% TCL) and the origin of *Reddyanus* species cytogenetically investigated.

Metasoma and telson (Figs. 153–154, 172–186). The first segment bears 10 carinae. The metasoma II–IV bear eight carinae, lateral carinae on metasoma II represented only by several granules in posterior part. The fifth segment bears five carinae. Ventral carina is present on the telson in male and ventral and lateral crinae in female. Surfaces between metasomal carinae are obviously smooth, with small, sparse granules that become more numerous on metasoma I–III mainly in female. Terminal tubercle on second and third metasomal segments of both sexes very slightly enlarged. The telson longer and narrower in male. Subaculear tooth wide but its terminus not rounded, dorsally with 5–6 granules in three rows.

Pedipalps (Figs. 155–165). The pedipalps are very sparsely hirsute. The femur bears five granulated carinae and patella bears 7 granulated carinae. The chela is with four carinae granulated in both sexes more developed in female. The chela is finely and patella and femur are rather densely granulated. Movable finger with six and fixed finger with seven rows of granules, both with several accessory granules and 6 external and 5–6 internal accessory granules.

Legs (Figs. 166–171). The legs without tibial spurs. The tibia and tarsomeres of legs with setae not arranged into bristle combs on dorsal surfaces. Tarsomere II of leg IV with two sparse rows of < 20 spiniform setae on ventral surface. The femur bears 3–4, and patella, 5 carinae; both femur and patella are granulated.

Measurements. See Table 3.

Affinities. The described features distinguish *R. schwotti* sp. n. from all other species of the genus. They are recounted in the key. Morphologically closest is *R. petrzekai* which differs mainly by total length of male 45–58 mm (total length of *R. schwotti* sp. n. males is 29–38 mm), rounded terminus of subaculear tooth (Fig. 210) (subaculear tooth wide but terminus not rounded in *R. schwotti* sp. n., Figs. 212–213), and by the color pattern of pedipalp femur and patella (see Figs. 199 versus 201).

Distribution. Thailand and Cambodia (Fig. 225).

***Reddyanus zideki* (Kovařík, 1994)**
(Figures 202, 214, 225, 226)

Isometrus (Reddyanus) zideki Kovařík, 1994: 195; Kovařík, 1997: 9; Kovařík, 1998a: 36; Kovařík, 1998b: 112; Fet & Lowe, 2000: 153; Kovařík, 2003: 13; Kovařík in Kovařík et Ojanguren, 2013: 193, 194, figs. 1317–1320.

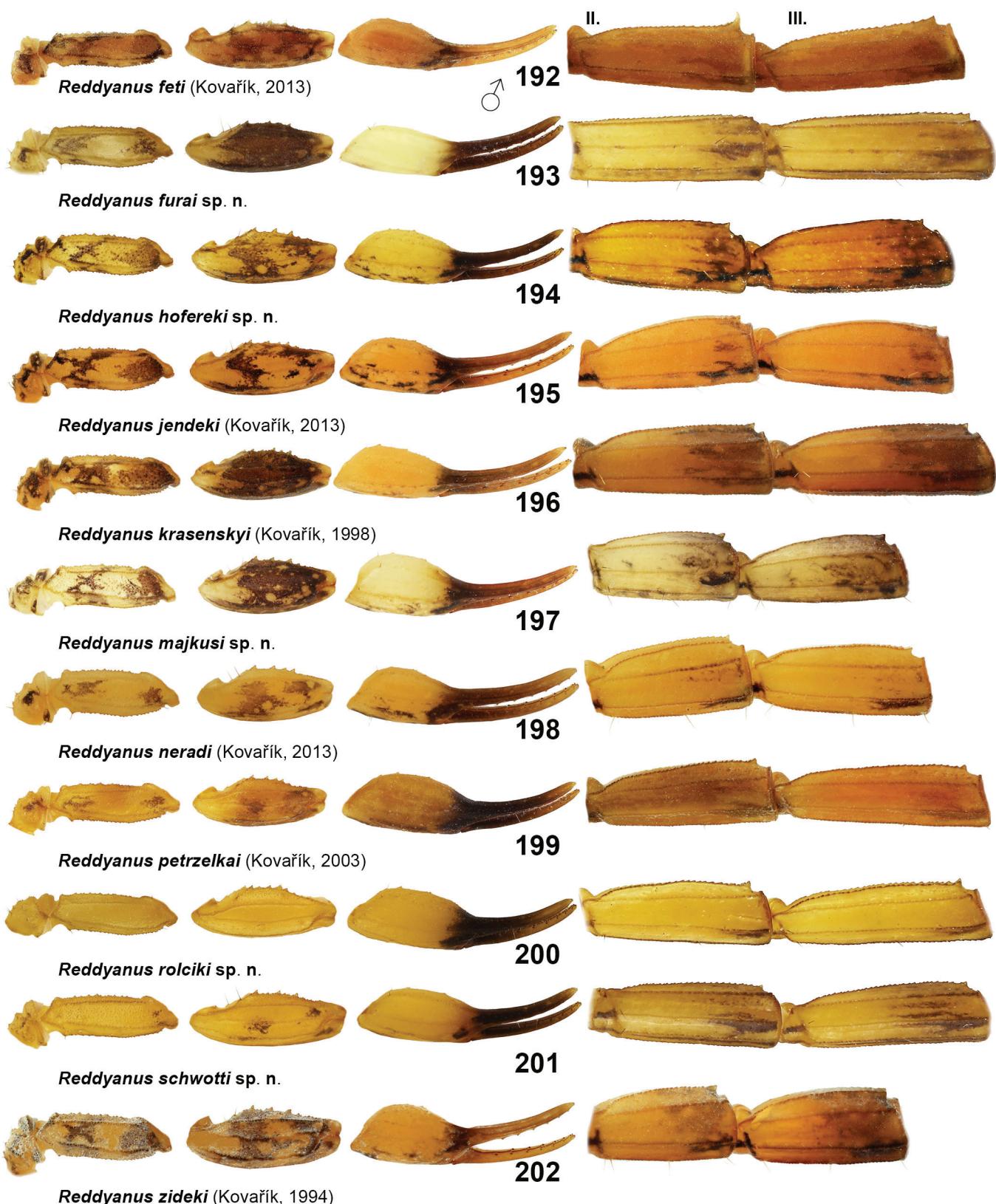
Type Locality and Type Repository. Malaysia, Cameron Highlands; FKCP.

Type Material. **Indonesia**, Kalimantan, Nanga Pinoh, Tontag, 26.VII.1993, 1♀ (paratype), leg. J. Schneider. **Malaysia**, Cameron Highlands, 1992, 1♂1♀ (holotype and paratype), 1994, 1♂7♀ (paratypes), FKCP, NMPC.

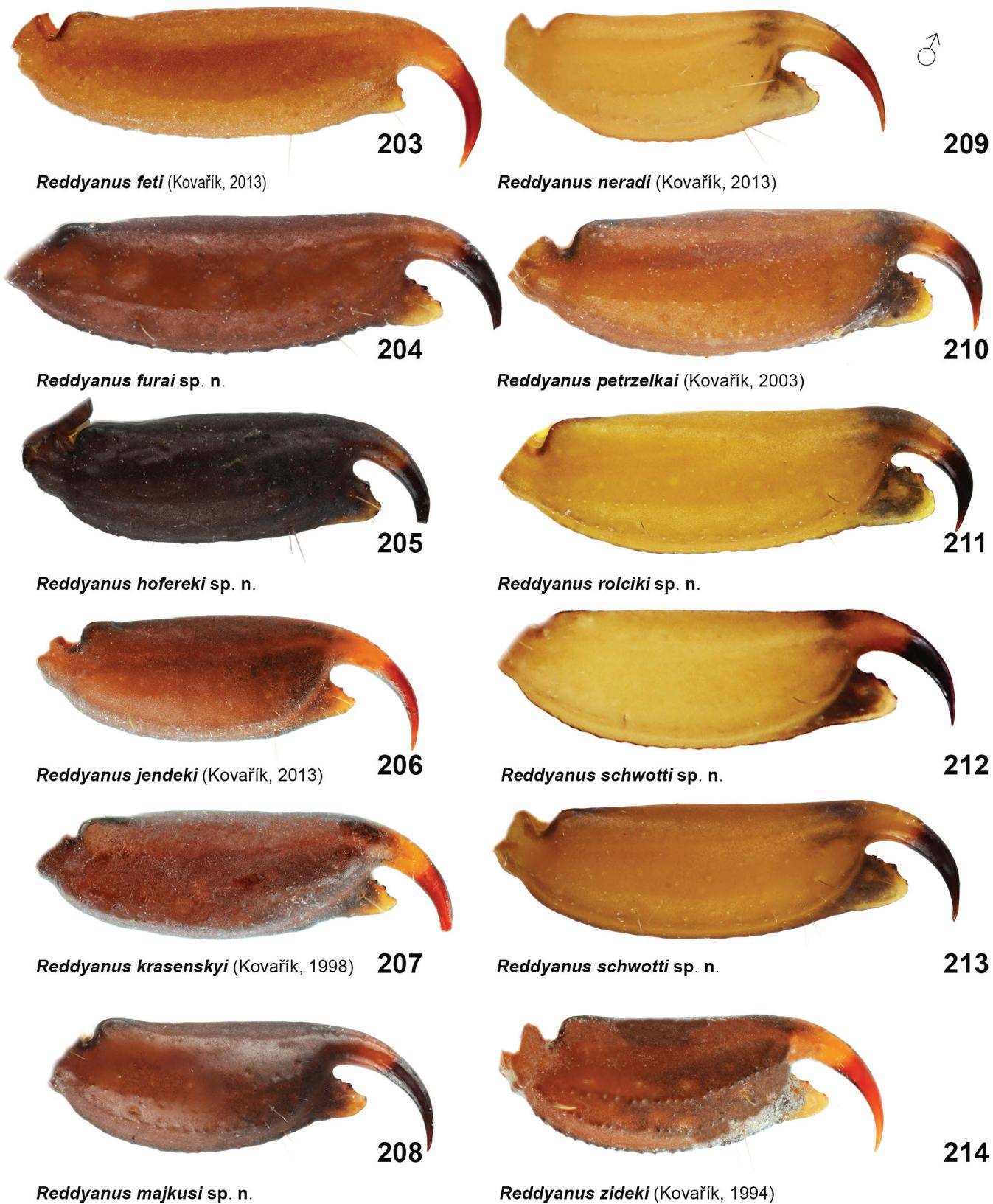
Additional Material Examined. **Malaysia**, Terengganu State, Kg. Bintang env., 21.–22.II.1988, 1♀, leg. S. Bečvář; Templer park, ca 50 km near Kuala Lumpur, IV.2002, 1♂(Fig. 226) 1♀, leg. V. Šejna, FKCP.

Diagnosis. Total length of males 29–33 mm, of females 25–31 mm. Male has slightly longer metasomal segments and wider manus of pedipalp chela. Pedipalps and legs yellow, with dark spots. Base coloration identical on femur and patella. Manus of pedipalps yellow, fingers black. Metasoma yellow to reddish with brown spots, fourth and fifth segments of metasoma and telson darker. First metasomal segment bears 10 carinae, second through fourth bear eight carinae, metasoma V bears five carinae, which can be reduced. Terminal tubercle on second and third metasomal segments slightly enlarged. Subaculear tooth large but not rounded, dorsally with 3 granules in two rows. Pectinal teeth number 10–13 in both sexes.

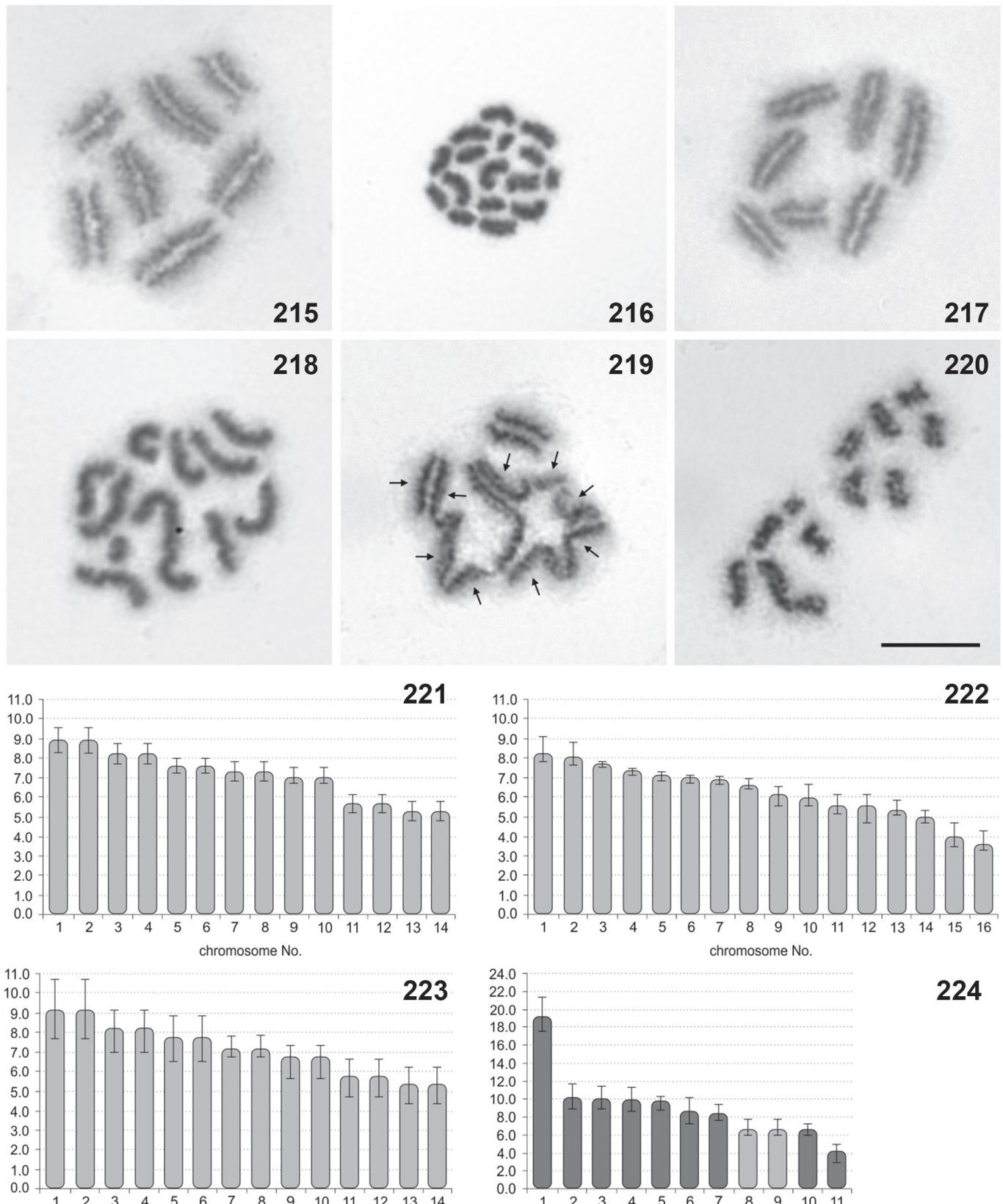
Distribution. Indonesia (Kalimantan), Malaysia (Malay Peninsula) (Fig. 225).



Figures 192–202: *Reddyanus*, males, pedipalp trochanter and femur, patella, and chela dorsal, metasoma II–III in lateral views. **Figure 192.** *R. feti*, holotype. **Figure 193.** *R. furai* sp. n., holotype. **Figure 194.** *R. hofereki* sp. n., holotype. **Figure 195.** *R. jendeki*, holotype. **Figure 196.** *R. krasenskyi*, Java, Ujung Kulon. **Figure 197.** *R. majkusi* sp. n., holotype. **Figure 198.** *R. neradi*, holotype. **Figure 199.** *R. petrzelkai*, holotype. **Figure 200.** *R. rolciki* sp. n., holotype. **Figure 201.** *R. schwotti* sp. n., Thailand, Khao sok. **Figure 202.** *R. zideki*, paratype.



Figures 203–214: *Reddyanus*, males, telson lateral. **Figure 203.** *R. feti*, holotype. **Figure 204.** *R. furai* sp. n., holotype. **Figure 205.** *R. hofereki* sp. n., holotype. **Figure 206.** *R. jendeki*, holotype. **Figure 207.** *R. krasenskyi*, Java, Ujung Kulon. **Figure 208.** *R. majkusi* sp. n., holotype. **Figure 209.** *R. neradi*, holotype. **Figure 210.** *R. petrzelkai*, holotype. **Figure 211.** *R. rolciki* sp. n., holotype. **Figure 212.** *R. schwotti* sp. n., holotype. **Figure 213.** *R. schwotti* sp. n., paratype from Thailand, Khao sok. **Figure 214.** *R. zideki*, paratype.



Figures 215–224: Male postpachytene (215, 217, 219), mitotic metaphases (216, 218), sister metaphases II (220), and ideograms (221–224) (y axis - % of the diploid chromosome length, dark grey marks chromosomes in multivalent association) of *Reddyanus* species from Southeast Asia. **Figures 215, 221.** *R. furai* sp. n. (2n=14, 7II). **Figures 216, 222.** *R. majkusi* sp. n. (2n=16). **Figures 217, 223.** *R. rolciki* sp. n. (2n=14, 7II). **Figures 218–220, 224.** *R. schwotti* sp. n. (2n=11, 1II+CIX). Arrows show chromosomes in multivalent association during postpachytene (219). Scale bar: 10 µm (215–220).

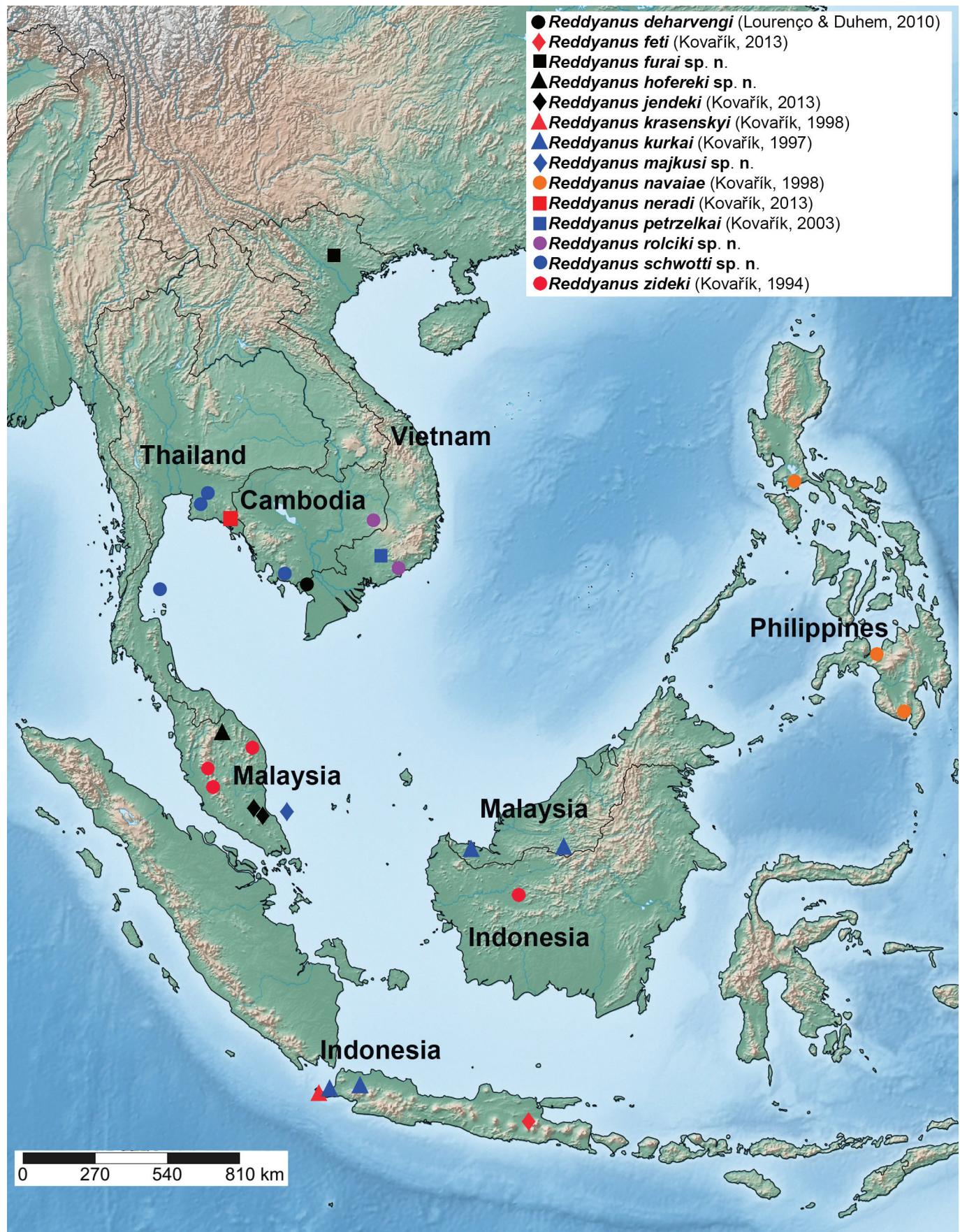


Figure 225. Map showing confirmed distribution of *Reddyanus* spp. in Southeast Asia.



Figure 226. *R. zideki*, male from Malaysia, Templer park in vivo habitus.

Key to species of *Reddyanus* of Southeast Asia

(Cambodia, Indonesia, Malaysia, Philippines,
Thailand, and Vietnam)

1. Subaculear tooth with two symmetrical granules on dorsal surface in a row. *R. kurkai* (Kovařík, 1997)
- Subaculear tooth with granules on dorsal surface in two or three rows. 2
2. Subaculear tooth with 3–4 granules on dorsal surface in two rows (Figs. 203, 206). 3
- Subaculear tooth with 5–6 granules on dorsal surface in three rows (Figs. 204, 209). 7
3. Terminal tubercle of dorsal carina on metasoma II of male markedly enlarged (Fig. 192). *R. feti* (Kovařík, 2013)
- Terminal tubercle of dorsal carina on metasoma II of male not markedly enlarged (Figs. 194, 195, 202). 4
4. Metasoma more elongate in females, metasoma IV length/width ratio is 3 in females. .. *R. navaiae* (Kovařík, 1998)
- Metasoma IV length/ width ratio is 2.3–2.72 in females.. 5
5. Metasoma more elongate in males, metasoma III length/width ratio is 3–3.44 in males (Figs. 194–195). 6
- Metasoma shorter in males, metasoma III length/width ratio is 2.43 (Fig. 202). *R. zideki* (Kovařík, 1994)
6. Telson in male more globular and shorter (Fig. 206). Pedipalp patella with dark spots reduced (Fig. 195). *R. jendeki* (Kovařík, 2013)
- Telson in male more narrow with aculeus more curved (Fig. 205). Pedipalp patella with dark spots more developed (Fig. 194). *R. hofereki* sp. n.
7. Patella of pedipalp with one large black spot covering 70% of surface (Figs. 193, 196, 197). 8
- Patella of pedipalp without a large black spot, patella and femur could be yellow or spotted (Figs. 198–201). 10
8. Metasoma more elongate in males, metasoma III length/ width ratio is 3.2–3.6 in males (Figs. 193, 196). 9
- Metasoma shorter in males, metasoma III length/ width ratio is 2.77 in male (Fig. 197). *R. majkusi* sp. n.
9. Telson in male more elongate (Fig. 204). Telson length/ depth ratio in male is 3.43. *R. furai* sp. n.
- Telson in male shorter (Fig. 207). Telson length/depth ratio in male is 2.96. *R. krasenskyi* (Kovařík, 1998)
10. Second metasomal segment with 10 carinae. *R. deharvengi* (Lourenço & Duhem, 2010)
- Second metasomal segment with 8 carinae. 11
11. Telson of males elongate, aculeus short. Telson length/ depth ratio is 3.01–3.48 (Figs. 210–213). 12
- Telson of male shorter, aculeus longer. Telson length/depth ratio is 2.82 (Fig. 209). *R. neradi* (Kovařík, 2013)
12. Pedipalp femur and patella yellow without dark spots (Fig. 200). *R. rolciki* sp. n.
- Pedipalp femur and patella yellow with black spots (Figs. 199 and 201). 13
13. Total length of males 45–58 mm. Subaculear tooth wide and rounded (Fig. 210). *R. petrzelkai* (Kovařík, 2003)
- Total length of males 29–38 mm. Subaculear tooth wide but its terminus not rounded (Figs. 212–213). *R. schwotti* sp. n.

Acknowledgments

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