Zootaxa 5353 (2): 117–130
https://www.mapress.com/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.5353.2.2
http://zoobank.org/urn:lsid:zoobank.org:pub:7A24DCBF-BC93-4B25-BB8A-DEAE75167DB4

A survey of the Sumatran Ctenidae (Araneae). 1. Two new *Acantheis* species

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Abstract

Two new species of *Acantheis* Thorell, 1891 are described from Sumatra Island: *A. andreimishenini* **sp. n.** (♂♀) and *A. sergeimishenini* **sp. n.** (♂). Detailed descriptions, digital photographs and a distributional map are provided. Male copulatory organs and habitus of *A. dimidiatus* (Thorell, 1890) from the same island are shown for the first time. The male and female copulatory organs of *Acantheis* are described in detail for the first time.

Key words: Aranei, Acantheinae, Aceh Province, biodiversity, Sunda Islands, taxonomy, tropical wolf spiders

Introduction

Ctenidae Keyserling, 1877, commonly known as “tropical wolf spiders” or “wandering spiders”, is a medium-sized family comprising 593 species in 48 genera (WSC 2023). The family is widespread in tropical regions of the world, being the most diverse in the Neotropical Realm. The known diversity of Ctenidae in South-East Asia is relatively low. To date, only nine ctenid species have been known from Sumatra Island (WSC 2023), belonging to three genera: *Acantheis* Thorell, 1891; *Anahita* Karsch, 1879 and *Bowie* Jäger, 2022. *Acantheis* is a small genus of Ctenidae restricted to the Indo-Malayan Realm. Its northernmost species, *A. nipponicus* Ono, 2008, is known to occur in South Iwo Jima Island (Japan) (Ono 2008), but represents a doubtfully placed species (see comment below). Only a single *Acantheis* species is known from both sexes—*A. celer* (Simon, 1897) from Java (WSC 2023), and yet it remains poorly known and never illustrated. Thus, *Acantheis* seems to be one of the least studied genera of Ctenidae and has never been the subject of a revision, and its copulatory organs have never been properly illustrated. All the known species have restricted distribution that is usually confined to a single island: viz., Sumatra (*A. dimidiatus* (Thorell, 1890)), Nias (*A. variatus* (Thorell, 1890)), Java (*A. celer* (Simon, 1897)), Kalimantan (=Borneo) (*A. laetus* Thorell, 1890), Celebes (=Sulawesi) (*A. boetonensis* (Strand, 1913)), and South Iwo Jima (*A. nipponicus*) (WSC 2023). The only Sumatran species was described without any illustrations (Thorell, 1890). Studying the unsorted material, which are stored in the Institute of Systematics and Ecology of Animals SB RAS (Novosibirsk, Russia), we found many vials with spiders collected in Sumatra Island in 1988 by an unknown collector. Among these spiders there were a number of Ctenidae specimens. Study of these specimens has revealed two new species of *Acantheis*, which are diagnosed and described in this paper, wherein we also provide the first detailed figures of the male palp and epigyne of the genus.

Accepted by A. Santos: 21 Sept. 2023; published: 9 Oct. 2023

Material and methods

The specimens examined were photographed with an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope at the Altai State University (Barnaul, Russia), a Nikon DSRi2 camera attached to a Nikon SMZ25 stereomicroscope at the Far Eastern Federal University (Vladivostok, Russia), and a Fujifilm X-T10 camera with Zeiss touit 50 mm f/2.8 macro camera lens. Digital images were montaged using Zerene Stacker software (https://www.zerenestacker.com). The distribution map was produced using the online mapping application SimpleMappr (Shorthouse 2010). All measurements are in millimeters. Lengths of leg segments were measured from the prolateral side, those of palps from the retrolateral side. Palp and leg spination are based on examination of one specimen of each species (one side of the body). The spination pattern is given in the following format: the sum of all spines is listed for the prolateral, dorsal and retrolateral sides; ventral spines are listed in pairs, from proximal to distal. The terminology and description format follow Jäger (2012), with modifications. All the examined material is deposited in the Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk, Russia (ISEA; curator G.N. Azarkina).

Abbreviations: ALE—anterior lateral eyes, AME—anterior median eyes, *BP*—basal process of embolus, *Cn*—conductor, *CS*—cluster of stiff setae, *Em*—embolus, *ES*—embolic spike, d—dorsal, *DB*—dorsal branch of embolus, *EB*—embolic base, *ES*—septum, *ET*—epigynal tooth, Fe—femur, *Fo*—fovea, ISEA—Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk, Russia, *ME*—membranous extension of embolus, MSNG—Museo Civico di Storia Naturale Giacomo Doria, Mt—metatarsus, p—prolateral, Pa—patella, PLE—posterior lateral eyes, PME—posterior median eyes, r—retrolateral, *RI*—receptacle's chamber I, *RII*—receptacle's chamber II, *Re*—receptacle, *RTA*—retrolateral tibial apophysis, *SB*—septal base, *SD*—sperm duct, *SH*—septal hump, *SN*—subtegular notch, *SS*—septal stem, *St*—subtegulum, *TA*—tegular apophysis, Ti—tibia, *TP*—tegular process, Tr—tarsus, v—ventral, *VB*—ventral branch of embolus, viz.—namely, I–IV—legs I to IV.

Taxonomy

Family Ctenidae Keyserling, 1877

Genus *Acantheis* Thorell, 1891

Acantheis Thorell, 1891: 61. Simon 1897: 118.
Type species *Acanthoctenus variatus* Thorell, 1890, from Nias Island.

Note. The genus *Acantheis* was described in a brief footnote, with the three species being assigned to it (Thorell, 1891): viz., *A. variatus*, *A. dimidiatus* and *A. laetus*. The type species was not indicated in that paper. Simon (1897) was the first who considered the genus and selected the generotype (*A. variatus*), although it was described from a juvenile specimen (probably lost according to Lehtinen [1967]), while two others were known from the males. It is worth noticing that Simon (1897) considered the genus in Acantheæ, which later were called the subfamily Acantheinae by Simon (1897).

Initially, we identified our specimens as *Acantheis* based on similarity of their male palps with that of *A. laetus*, which was depicted by Lehtinen (1967). The following features, highlighted by Simon (1897), support their belonging to this genus: high clypeus, long palpal tibia in the males (length/width ratio 4+) and 8–9 pairs of ventral spines on tibiae I (cf. Simon 1897: figs 109–111). Our specimens from Sumatra possess all these characters.

Acantheis nipponicus from the heavily isolated South Iwo Jima Island has the cymbium with a shortened tip and a slightly modified proximal part and the embolus originating from the proximal part of bulb, which casts doubt on the accuracy of the generic assignment of this geographically isolated species. It could belong to another, yet undescribed genus.

Africactenus unumus Sankaran & Sebastian, 2018, described based on males from the south of India (Sankaran & Sebastian 2018), is another species with doubtful placement. This species possesses several features which we have identified as distinctive for *Acantheis*, namely: 1) presence of clusters of stiff setae on the dorso-posterior part of opisthosoma; 2) elongated cymbial tip as long as the bulb; 3) the bifurcated embolic tip is divided into dorsal and ventral branches pointing in the same direction (cf. Sankaran & Sebastian 2018: figs 1A, 3). Due to this there is a possibility that *Africactenus unumus* actually belongs to *Acantheis*. However, *Africactenus unumus* has features not typical for *Acantheis* (except *A. nipponicus*): modified cymbium with lamella-like outgrowth retro-proximally (vs.

cymbium with no modifications) and straight and thick embolus (*vs*. thin and strongly curved). So, we refrain from transferring of this species as long as *Acantheis* remains unrevised.

A series of photographs of four *Acantheis* morphospecies, which are most probably new to science, were published in the photographic field guide (Koh & Bay 2019). This account, as well as our findings, suggests that the real species diversity of *Acantheis* in South-East Asia is much higher than the currently known. We are confident that a large number of *Acantheis* species will be discovered and described in the near future.

Diagnosis. *Acantheis* differs from all the ctenid genera known from South-East Asia (*Amauropelma* Raven, Stumkat et Gray, 2001; *Anahita* Karsch, 1879; *Bowie* Jäger, 2022 and *Sinoctenus* Marusik, Zhang et Omelko, 2012) by the presence of clusters of stiff setae (*CS*) on the dorso-posterior part of opisthosoma (Fig. 7). Males of *Acantheis* differ in having an elongated cymbial tip, which is as long as the bulb (*vs*. the cymbial tip significantly shorter than the bulb, or even absent, cf. Figs 14, 19 and Polotow & Brescovit 2014: fig. 6b; Jäger 2012: fig. 32; Jäger 2022: fig. 338; Marusik *et al.* 2012: figs 9–11), and the bifurcated embolic tip, which is divided into dorsal and ventral branches pointing in the same direction (Figs 30, 31; vs. undivided apical part of embolus or divided into prolateral and retrolateral branches). Additionally, *Acantheis* males can be distinguished from all south-east Asian ctenids but *Anahita* by the proximal part of the cymbium with no modifications (vs. the presence of prolateral cymbial bulge or retro-proximal cymbial outgrowth). Males of *Acantheis* can be separated from those of *Anahita* by the embolus starting from the prolateral side of the bulb (*vs*. the retrolateral or posterior side, cf. Figs 23, 27 and Jäger 2012: fig. 32). Females of *Acantheis* differ from those of other Oriental ctenid genera, except *Bowie*, in having the receptacles subdivided into two chambers (*vs*. undivided, cf. Fig. 34 and Polotow & Brescovit 2014: fig. 15b; Jäger 2012: fig. 26). The endogynes of *Bowie* are polymorphic, representing both subdivided and undivided receptacles (cf. Jäger 2022: figs 6, 529, 532). However, the *Bowie* species with subdivided receptacles always have the receptacle chambers of different sizes: one could be 2–4 times (or even more) larger than the second one. In *Acantheis*, such receptacle chambers are about equal in size.

Acantheis sergeimishenini sp. n.

Figs 1–2, 7–9, 12–16, 22–25, 30, 46–48

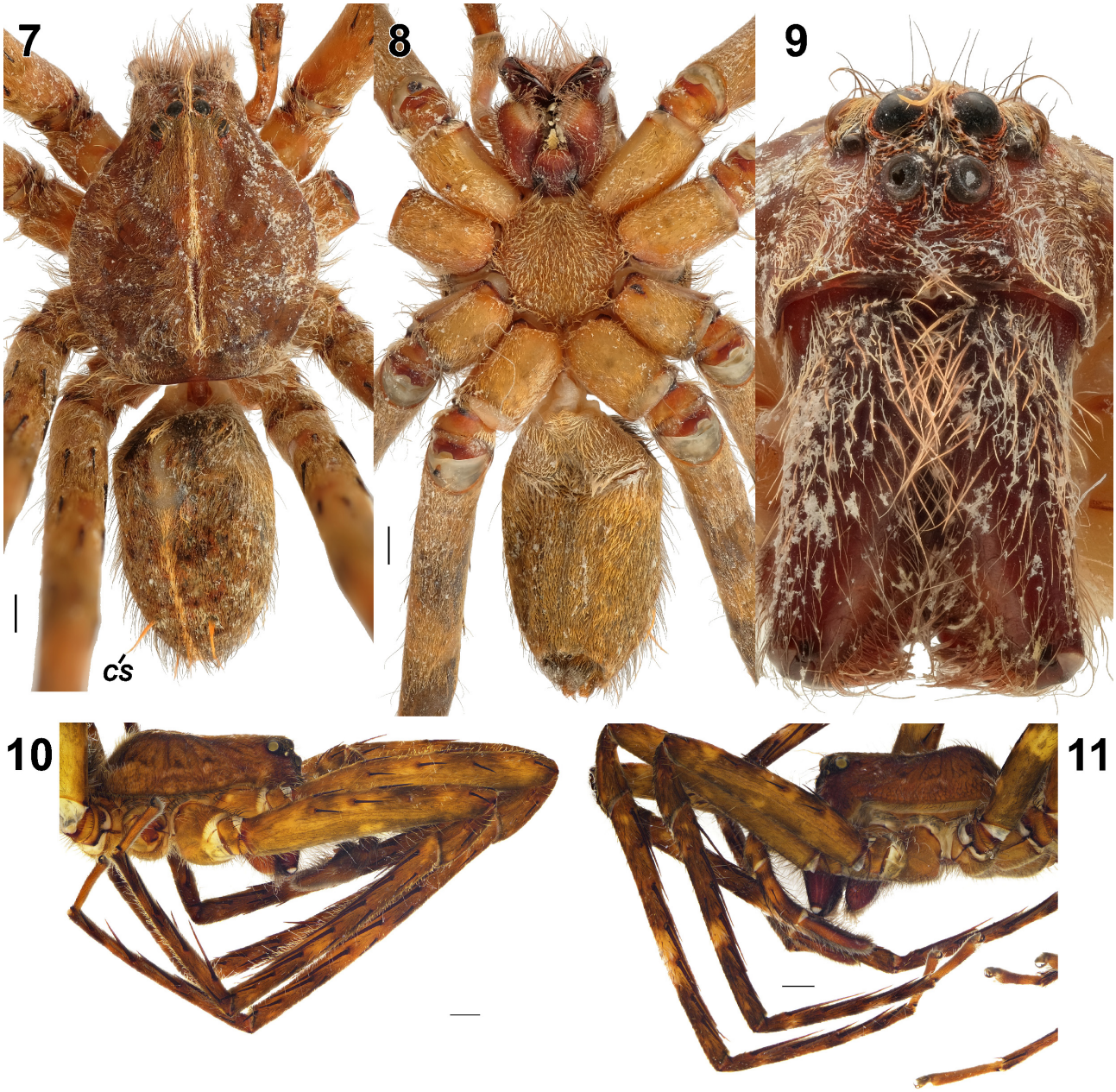
Type. INDONESIA: ***Sumatra*** Island: Aceh Prov.: holotype: ♂ (ISEA, 001.9531), Ketambe Vil. [03°41′N, 97°39′E], 400–500 m, 1988 (precise date unknown), unknown collector.

Etymology. The species name is a patronym given in honor of the teacher and friend of Alexander A. Fomichev, Sergei I. Mishenin (Novosibirsk, Russia), on the occasion of his 60th anniversary. S.I. Mishenin is the first mentor of Alexander A. Fomichev, who inspired his interest in arachnology.

Diagnosis. This new species is similar to *A. laetus* from Kalimantan and to *A. dimidiatus* and *A. andreimishenini* **sp. n.** from Sumatra in having a slender embolus (*Em*), a medially located tegular apophysis (*TA*) and an elongated cymbial tip. The male can be easily distinguished from that of *A. laetus* by the strongly curved embolus (*vs*. smoothly rounded, cf. Fig. 23 and Lehtinen 1967: fig. 410). The male of *A. sergeimishenini* **sp. n.** differs from that of *A. andreimishenini* **sp. n.** in having a larger body size (carapace length 7.7 *vs*. 5.8), a longer bulb (1.32 mm *vs*. 1.03 mm), a bifurcated retrolateral tibial apophysis (*RTA*) (*vs*. non-bifurcated, cf. Figs 15 and 20), the comma-shaped tegular apophysis (in ventral view; *vs*. round, cf. Figs 23 and 27), and the ventral embolic branch (*VB*) twice as wide as the dorsal one (*DB*) (*vs*. the same width, cf. Figs 30 and 31). The male of *A. sergeimishenini* **sp. n.** differs from that of *A. dimidiatus* by the bifurcated retrolateral tibial apophysis (*vs*. non-bifurcated, cf. Figs 15 and 41), the comma-shaped tegular apophysis (*vs*. triangular, cf. Figs 23 and 43), and the ventral embolic branch twice as wide as the dorsal one (*vs*. ventral embolic branch twice as thin as the dorsal one, cf. Figs 30 and 41). For a list of the differences between the males of *A. sergeimishenini* **sp. n.**, *A. andreimishenini* **sp. n.** and *A. dimidiatus*, see Table 7.

Description. Male. Total length 15.1, carapace 7.7 long, 6.3 wide. Opisthosoma 7.0 long, 4.0 wide. Eye sizes and interdistances: AME 0.46, ALE 0.24, PME 0.5, PLE 0.49, AME–AME 0.2, AME–ALE 0.33, PME–PME 0.21, PME–PLE 0.31, AME–PME 0.21, ALE–PLE 0.2. Clypeus height at AME 0.7, at ALE 1.17. For palp and legs measurements see Table 1. For palp and legs spination see Table 2. Coloration (Figs 1–2, 7–9), carapace brown, with a thin longitudinal light stripe. Clypeus, chelicerae, endites and labium dark brown. Sternum and coxae yellow. Palps yellow with brown-grey annulations. Legs yellow-brown, with very vague brown-grey annulations. Opisthosoma yellow-grey with thin longitudinal light stripe dorsally. Posterior part of opisthosoma with two pairs of clusters of stiff yellow setae (*CS*). Venter of opisthosoma dirty yellow. Spinnerets dark grey.

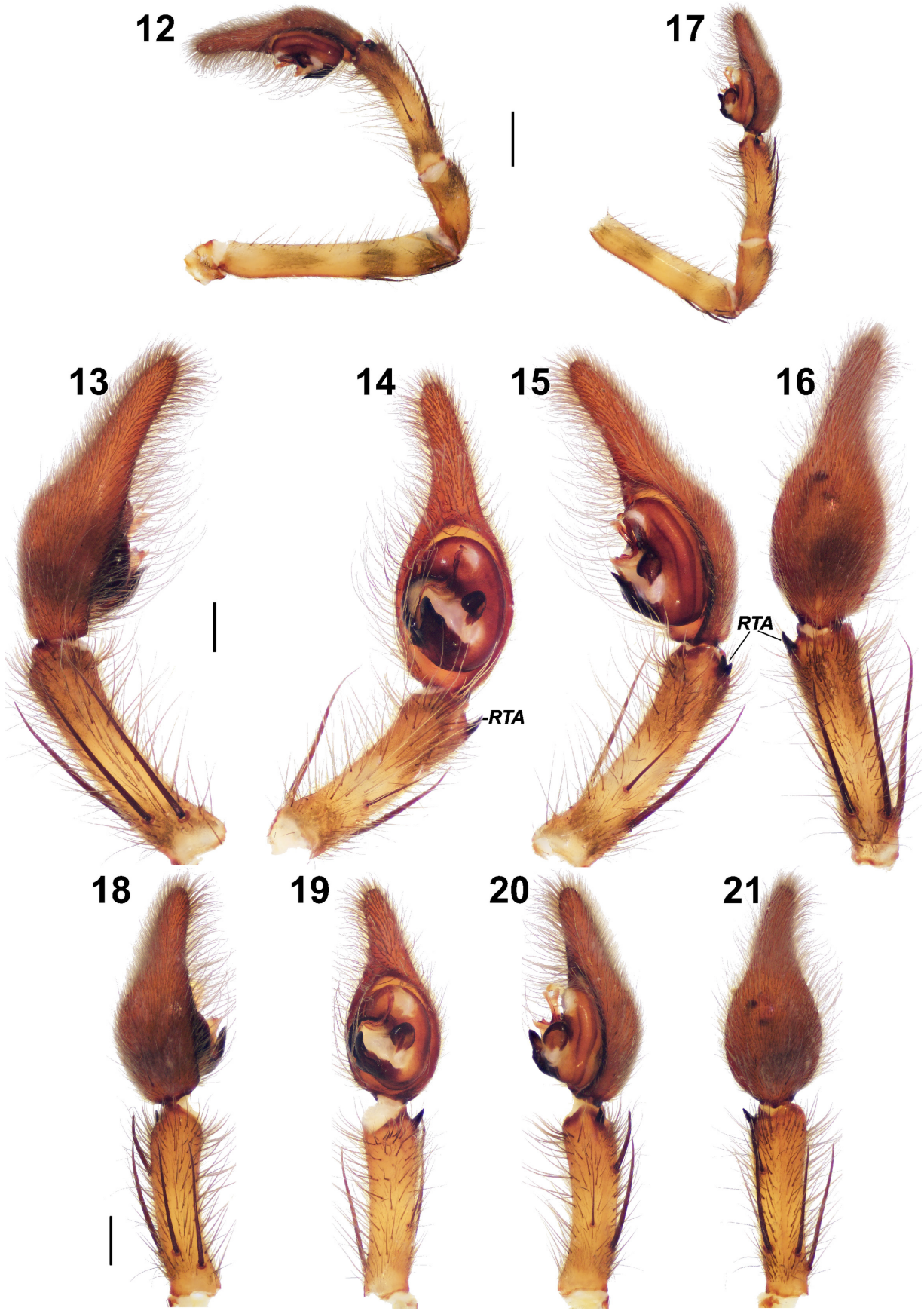
FIGURES 1–6. Habitus of *Acantheis sergeimishenini* **sp. n.** (1–2), and *A. andreimishenini* **sp. n.** (3–6). 1, 3—male, dorsal; 2, 4—male, ventral; 5—female, dorsal; 6—female, ventral. Scale: 2 mm.



FIGURES 7–11. General appearance (7–8), cephalic part (9) and prosoma with legs (10–11) of *Acantheis sergeimishenini* **sp. n.** (7–9), and *A. andreimishenini* **sp. n.** (10–11). 7—male, dorsal; 8—ditto, ventral; 9—ditto, anterior; 10—ditto, lateral; 11—female, lateral. Scale: 7, 8, 10, 11=1 mm. Abbreviation: *CS*—cluster of stiff setae.

TABLE 1. Palp and legs measurements of male of *Acantheis sergeimishenini* **sp. n.**

	Fe	Pa	Ti	Mt	Tr	Total
Palp	4.5	1.8	2.7	-	3.1	12.1
Leg I	12.6	4.2	14.2	10.4	2.4	43.8
Leg II	11.4	3.9	11.6	9.4	2.3	38.6
Leg III	9.8	3.1	9.0	9.2	2.3	33.4
Leg IV	13.5	3.4	12.0	16.5	2.9	48.3



FIGURES 12–21. Male palp of *Acantheis sergeimishenini* **sp. n.** (12–16), and *A. andreimishenini* **sp. n.** (17–21). 12, 17—whole palp, retrolateral; 13, 18—terminal part of the palp, prolateral; 14, 19—ditto, ventral; 15, 20—ditto, retrolateral; 16, 21—ditto, dorsal. Scale: 12, 17=1 mm; 13–16, 18–21=0.5 mm. Abbreviations: *RTA*—retrolateral tibial apophysis.

TABLE 2. Palp and legs spination of male of *Acantheis sergeimishenini* **sp. n.**

	Fe	Pa	Ti	Mt
Palp	d4 p1 r1	p1	d1 p2 r1	-
Leg I	d3 p4 r4	p1 r1	p5 r5 v2-2-2-2-2-2-2-2	p1 r3 v2-2-2-2
Leg II	d3 p4 r4	p1 r1	d4 p4 r5 v2-2-2-2-2-2-2-1-2	d1 p1 r3 v2-2-2-2
Leg III	d3 p4 r4	p1 r1	d4 p3 r4 v2-1-2-2	d5 p3 r4 v1-2-1-2-1-2
Leg IV	d3 p4 r4	p1 r1	d4 p3 r3 v2-2-2	d6 p5 r5 v2-1-2-2-1-2

Male palp as shown in Figs 12–16, 22–25, 30. Tibia *ca.* 4.5 longer than wide, with 4 very long spines, longest *ca.* 0.9 of tibia length. Retrolateral tibial apophysis (*RTA*) small, bifurcated. Ventral RTA branch longer than dorsal one. Cymbium length/width ratio *ca.* 2.7. Cymbial tip about 0.43 of its length, as long as bulb. Subtegulum (*St*) large, oval. Tegular length/width ratio *ca.* 1.5. Sperm duct (*SD*) clearly visible only in retrolateral view. Retrolateral margin of tegular process (*TP*) convex. Tegular apophysis (*TA*) comma-shaped. Conductor (*Cn*) five times longer than wide, not covering embolic tip. Embolic base with basal process (*BP*) located near subtegular notch (*SN*). Membranous extension of embolus (*ME*) wider than its adjoining part. Embolus (*Em*) strongly curved, with a small spike (*ES*) ventrally. Ventral branch of embolus (*VB*) twice as wide as dorsal one (*DB*).

Female. Unknown.

Distribution. Only known from the type locality (Figs 46–48).

Acantheis andreimishenini **sp. n.**

Figs 3–6, 10–11, 17–21, 26–29, 31–35, 46–48

Types. INDONESIA: ***Sumatra*** Island: Aceh Prov.: holotype ♂ (ISEA, 001.9532), Kedah Vil. [03°59′N, 97°15′E], 1300–1500 m, 1988 (precise date unknown), unknown collector. Paratypes: 3♂ (ISEA, 001.9533), 1♀ (ISEA, 001.9534), together with the holotype.

Etymology. The species name is a patronym given in honor of the teacher and friend of Alexander A. Fomichev, Andrei I. Mishenin (Novosibirsk, Russia), brother of Sergei I. Mishenin, on the occasion of his 60th anniversary.

Diagnosis. This new species is similar to *A. laetus* from Kalimantan and to *A. sergeimishenini* **sp. n.** and *A. dimidiatus* from Sumatra in having a slender embolus (*Em*), a medially located tegular apophysis (*TA*) and an elongated cymbial tip. The male can be easily distinguished from that of *A. laetus* by the strongly curved embolus (*vs*. smoothly rounded, cf. Fig. 27 and Lehtinen 1967: fig. 410), and from that of *A. sergeimishenini* **sp. n.** by the smaller body size (carapace length 5.8 *vs*. 7.7), the shorter bulb (1.03 mm *vs*. 1.32 mm), the non-bifurcated retrolateral tibial apophysis (*RTA*) (*vs*. bifurcated, cf. Figs 20 and 15), the round tegular apophysis (seen in ventral view; *vs*. comma-shaped, cf. Figs 27 and 23) and the ventral (*VB*) and dorsal (*DB*) branches of the embolus with the same width (*vs*. the ventral branch twice as wide as the dorsal one, cf. Figs 31 and 30). The male of *A. andreimishenini* **sp. n.** differs from that of *A. dimidiatus* by the wide cardiac mark reaching middle part of opisthosoma (*vs*. thin stripe reaching spinnerets, cf. Figs 3 and 36), the median band on the carapace as wide as the distance between PLE (*vs*. as wide as distance between PME), the circular tegular apophysis (*vs*. triangular, cf. Figs 27 and 43), and the dorsal and ventral embolic branches equal in size (*vs*. ventral embolic branch twice thinner than dorsal one, cf. Figs 31 and 41). For a complete list of the differences between the males of *A. andreimishenini* **sp. n.**, *A. sergeimishenini* **sp. n.** and *A. dimidiatus*, see Table 7. The female of *A. andreimishenini* **sp. n.** is similar to that of *A. indicus* Gravely, 1931 from India, in having the rectangular septal base (*SB*), but differs in having parallel epigynal teeth (*ET*) (*vs*. converging), the posterior part of septal base with rounded angles (*vs*. sharp), and a wide gap between epigynal teeth and septal base (*vs*. narrow, cf. Figs 32–33 and Gravely 1931: fig. 3D).

Description. Male (holotype). Total length 11.5, carapace 5.8 long, 5.2 wide. Opisthosoma 6.1 long, 3.5 wide. Eye sizes and interdistances: AME 0.39, ALE 0.2, PME 0.46, PLE 0.43, AME–AME 0.17, AME–ALE 0.26, PME–PME 0.21, PME–PLE 0.29, AME–PME 0.14, ALE–PLE 0.23. Clypeus height at AME 0.49, at ALE 0.93. Labium as long as wide. For palp and legs measurements see Table 3. For palp and leg spination see Table 4. Coloration (Figs 3–4, 10), carapace brown, with yellow median band. Clypeus and chelicerae dark brown. Labium and endites brown. Sternum and coxae yellow. Palps and legs yellow-brown, with grey annulations. Opisthosoma dorsally

yellow-gray, with yellow cardiac mark. Posterior part of opisthosoma bears several clusters of stiff yellow setae. The venter dirty yellow. Spinnerets yellow-grey.

TABLE 3. Palp and legs measurements of male of *Acantheis andreimishenini* **sp. n.**

	Fe	Pa	Ti	Mt	Tr	Total
Palp	3.1	1.4	2.0	-	2.3	8.8
Leg I	7.9	2.9	8.6	6.4	1.7	27.5
Leg II	7.3	2.7	7.1	6.0	1.8	24.9
Leg III	6.5	2.3	5.6	5.8	1.8	22.0
Leg IV	8.6	2.3	7.6	9.8	2.2	30.5

TABLE 4. Palp and legs spination of male of *Acantheis andreimishenini* **sp. n.**

	Fe	Pa	Ti	Mt
Palp	d3 p1 r1	p1	d2 p2 r1	-
Leg I	d3 p5 r5	p2 r1	d3 p5 r2 v2-2-2-2-2-2-1-2-2	p1 r2 v2-2-2-2
Leg II	d3 p4 r4	p1 r1	d4 p4 r6 v2-2-2-2-2-2-2-2	p2 r3 v2-2-2-2
Leg III	d3 p4 r4	p1 r1	d2 p3 r2 v2-2-2	d2 p3 r4 v2-1-2-2
Leg IV	d3 p4 r4	p1 r1	d3 p2 r2 v2-2-2	d2 p4 v2-2-2-2

TABLE 5. Palp and legs measurements of female of *Acantheis andreimishenini* **sp. n.**

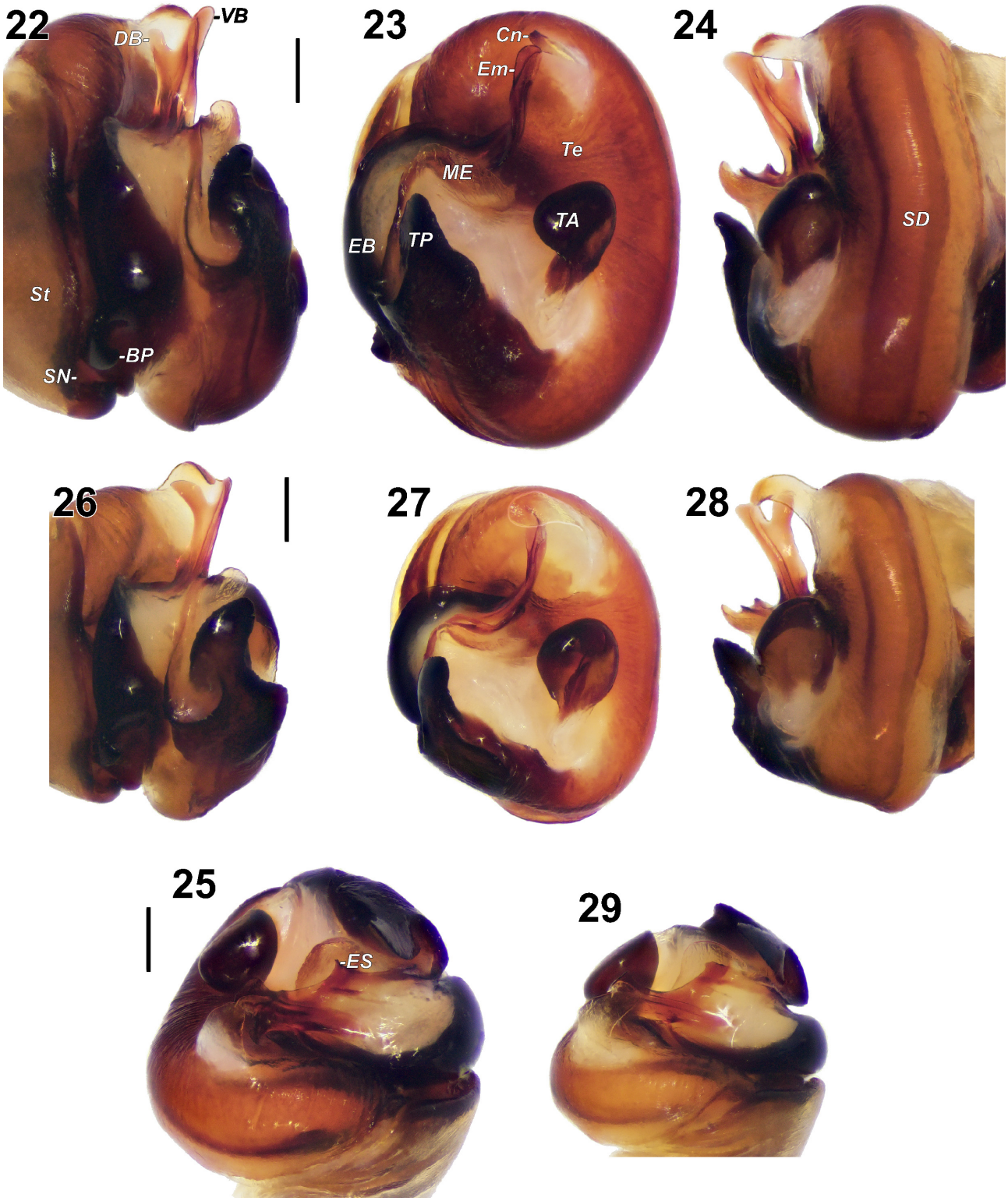
	Fe	Pa	Ti	Mt	Tr	Total
Palp	3.2	1.4	2.3	-	2.4	9.3
Leg I	8.2	3.0	9.1	6.6	1.7	28.6
Leg II	7.2	2.8	7.5	5.8	1.8	25.1
Leg III	6.4	2.2	5.9	5.9	1.8	22.2
Leg IV	8.6	2.1	7.8	9.9	2.3	30.7

Male palp as shown in Figs 17–21, 26–29, 31. Tibia ca. 4.5 longer than wide, with five very long spines, the longest is about 0.7 times of tibia length. Retrolateral tibial apophysis (*RTA*) small, non-bifurcated. Cymbium length/width ratio *ca.* 2.4. Tip of cymbium about 0.39 of cymbial length, sligthly shorter than bulb. Bulb 1.25 times longer than cymbial apex. Subtegulum (*St*) oval. Tegular length/width ratio *ca.* 1.4. Sperm duct (*SD*) clearly visible only in retrolateral view. Retrolateral margin of tegular process (*TP*) concave. Tegular apophysis almost round. Conductor (*Cn*) 2.4 times longer than wide, covering embolic tip. Embolic base with basal process (*BP*) located near subtegular notch (*SN*). Membranous extension of embolus (*ME*) thinner than its adjoining part. Embolus (*Em*) strongly curved, with a small spike (*ES*) ventrally. Dorsal branch (*DB*) of embolus as wide as ventral one (*VB*).

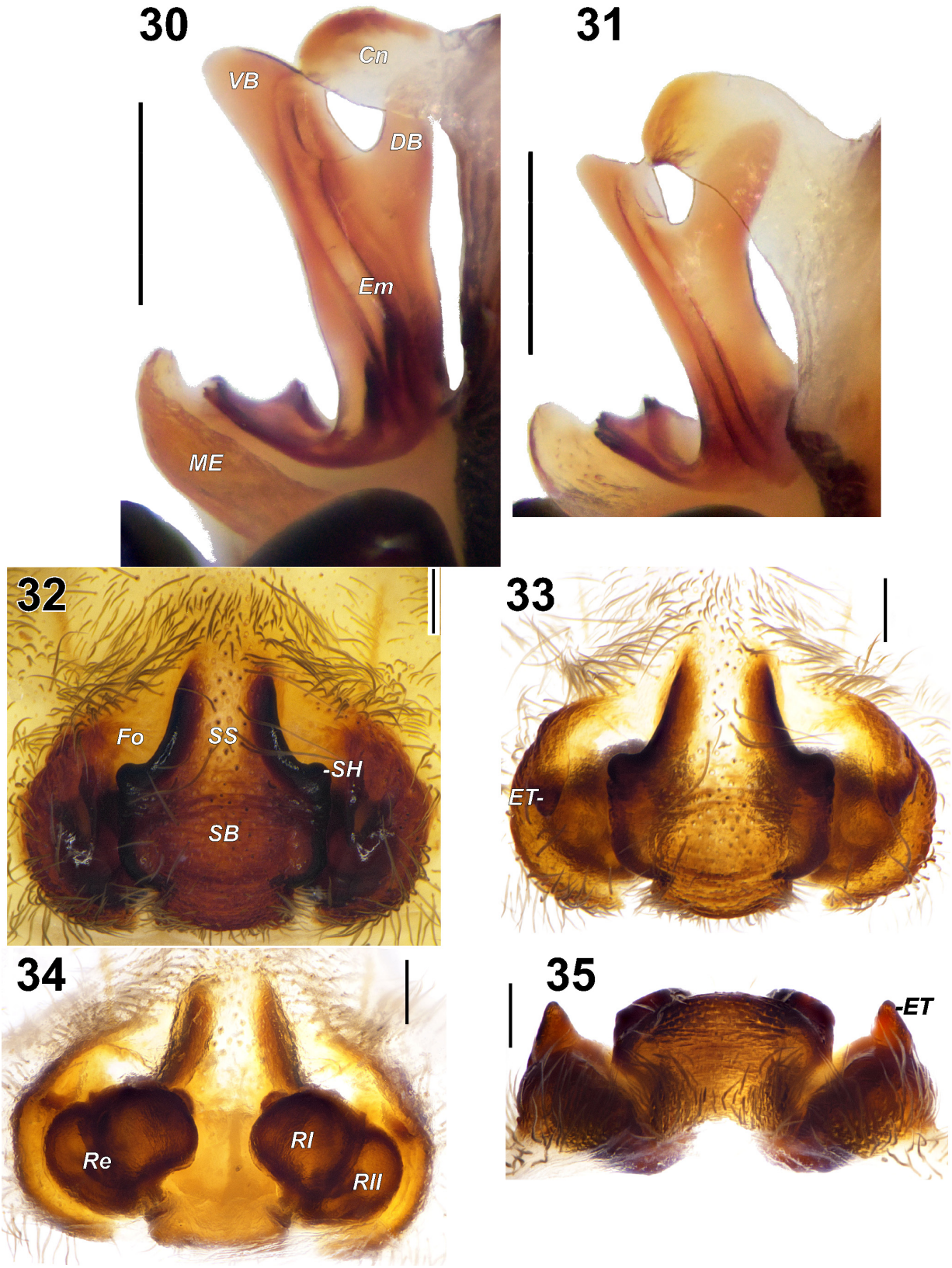
Female. Total length 14.86, carapace 6.38 long, 5.42 wide. Opisthosoma 8.32 long, 5.66 wide. Eye sizes and interdistances: AME 0.37, ALE 0.23, PME 0.46, PLE 0.48, AME–AME 0.22, AME–ALE 0.34, PME–PME 0.23, PME–PLE 0.35, AME–PME 0.20, ALE–PLE 0.25. Clypeus height at AME 0.53, at ALE 1.05. For palp and legs measurements see Table 5. For palp and legs spination see Table 6. Coloration (Figs 5–6, 11), carapace, clypeus, chelicerae, labium and endites as in the male. Sternum and coxae brown. Palps and legs as in the male, but with more contrasting annulations. Opisthosoma as in the male, but somewhat lighter, its posterior part bears several clusters of stiff yellow setae.

Female genitalia as shown in Figs 32–35. Epigyne slightly wider than long. Septal base (*SB*) almost square, with heavily sclerotized septal humps (*SH*). Septal stem (*SS*) 1.5 times shorter than septal base. Epigynal teeth (*ET*) parallel, as long as septal stem. Receptacles (*Re*) subdivided into two chambers: chamber I (*RI*) and chamber II (*RII*), both are about of the same size.

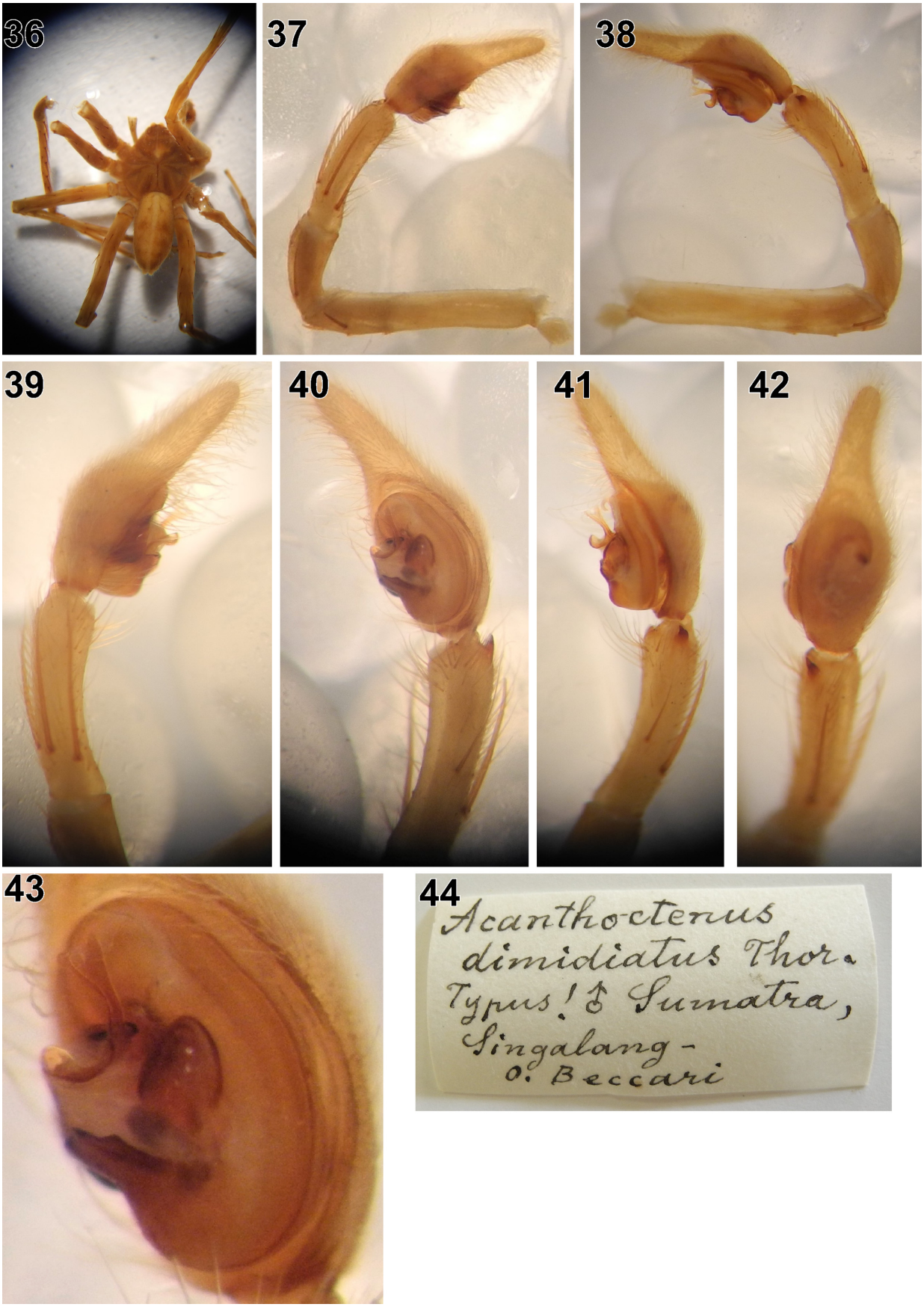
Distribution. Only known from the type locality (Figs 46–48).



FIGURES 22–29. Bulb of *Acantheis sergeimishenini* **sp. n.** (22–25), and *A. andreimishenini* **sp. n.** (26–29). 22, 26—prolateral; 23, 27—ventral; 24, 28—retrolateral; 25, 29—apical. Scale: 0.2 mm. Abbreviations: *BP*—basal process of embolus, *Cn*—conductor, *DB*—dorsal branch of embolus, *EB*—embolic base, *Em*—embolus, *ES*—embolic spike, *ME*—membranous extension of embolus, *SD*—sperm duct, *SN*—subtegular notch, *St*—subtegulum, *TA*—tegular apophysis, *Te*—tegulum, *TP*—tegular process, *VB*—ventral branch of embolus.



FIGURES 30–35. Terminal part of the embolus (30–31) and female genitalia (32–35) of *Acantheis sergeimeshenini* **sp. n.** (30), and *A. andreimishenini* **sp. n.** (31–35). 30, 31—retrolateral; 32—intact epigyne, ventral; 33—macerated epigyne, ventral; 34—endogyne, dorsal; 35—epigyne, posterior. Scale: 0.2 mm. Abbreviations: *Cn*—conductor, *DB*—dorsal branch of embolus, *Em*—embolus, *ET*—epigynal tooth, *Fo*—fovea, *ME*—membranous extension of embolus, *RI*—receptacle's chamber I, *RII*—receptacle's chamber II, *Re*—receptacle, *SB*—septal base, *SH*—septal hump, *SS*—septal stem, *VB*—ventral branch of embolus.



FIGURES 36–44. Habitus (36), whole palp (37–38), terminal part of the palp (39–42), bulb (43) and labels (44–45) of the holotype of *Acantheis dimidiatus* Thorell, 1890. 36, 42—dorsal; 37, 39—prolateral; 38, 41—retrolateral; 40, 43—ventral.

TABLE 6. Palp and legs spination of female of *Acantheis andreimishenini* **sp. n.**

	Fe	Pa	Ti	Mt
Palp	d3 p1 r1	p1	d2 p1 r1	-
Leg I	d3 p4 r4	-	p1 v2-2-2-2-2-2-2-2	v2-2-2-2
Leg II	d3 p4 r4	-	p4 r3 v2-2-2-2-2-2-2-2	v2-2-2-2
Leg III	d3 p4 r4	p1 r1	d2 p2 r2 v2-2-2	d2 p3 r3 v2-2-2-2
Leg IV	d3 p4 r3	p1 r1	d4 p2 r2 v2-2-2	p5 7r v2-2-1-2-1-2-2

Acantheis dimidiatus (Thorell, 1890)

Figs 36–48

Acanthoctenus dimidiatus Thorell, 1890: 134 (♂).
Acantheis dimidiatus—Simon 1897: 117.

Material examined. 1♂ (holotype) (MSNG), INDONESIA: ***Sumatra*** Island: Singalong, O. Beccari. Examined by photo.

Diagnosis. The species is similar to *A. laetus* from Kalimantan and to *A. sergeimishenini* **sp. n.** and *A. andreimishenini* **sp. n.** from Sumatra in having the slender embolus (*Em*), the medially located tegular apophysis (*TA*) and the elongated cymbial tip. The male of *A. dimidiatus* differs from that of *A. laetus* by by the strongly curved embolus (*vs*. smoothly rounded, cf. Fig 43 and Lehtinen 1967: fig. 410). The male of *A. dimidiatus* can be distinguished from that of *A. sergeimishenini* **sp. n.** by the non-bifurcated retrolateral tibial apophsis (*RTA*) (*vs*. bifurcated, cf. Figs 41 and 15), the triangular tegular apophysis (*vs*. comma-shaped, cf. Figs 43 and 23), and the ventral embolic branch twice thinner than dorsal one (*vs*. ventral embolic branch twice wider than dorsal one, cf. Figs 41 and 30). From the males of *A. andreimishenini* **sp. n.** those of *A. dimidiatus* differs by the dorsal surface of opisthosoma with a thin stripe reaching spinnerets (*vs*. wide cardiac mark reaching middle part of opisthosoma, cf. Figs 36 and 3), the median band on the carapace as wide as distance between PME (*vs*. as wide as the distance between PLE), the triangular tegular apophysis (*TA*) (*vs*. circular, cf. Figs 43 and 27), and the ventral embolic branch twice thinner than dorsal one (*vs*. dorsal and ventral embolic branches equal in size, cf. Figs 41 and 31). For a complete list of the differences between the males of *A. dimidiatus*, *A. sergeimishenini* **sp. n.** and *A. andreimeshenini* **sp. n.** see Table 7.

Description. Male palp as shown in Figs 37–43. Tibia ca. 4.6 longer than wide, 4 very long spines, longest ca. 0.7 of tibia length. Retrolateral tibial apophysis small, non-bifurcated. Cymbial tip about 0.42 of its length, slightly shorter than bulb. Sperm duct clearly visible only in retrolateral view. Tegular apophysis triangular. Embolus strongly curved. Ventral branch of embolus twice thinner than dorsal one.

Female. Unknown.

Distribution. Only known from the type locality (Figs 46–48).

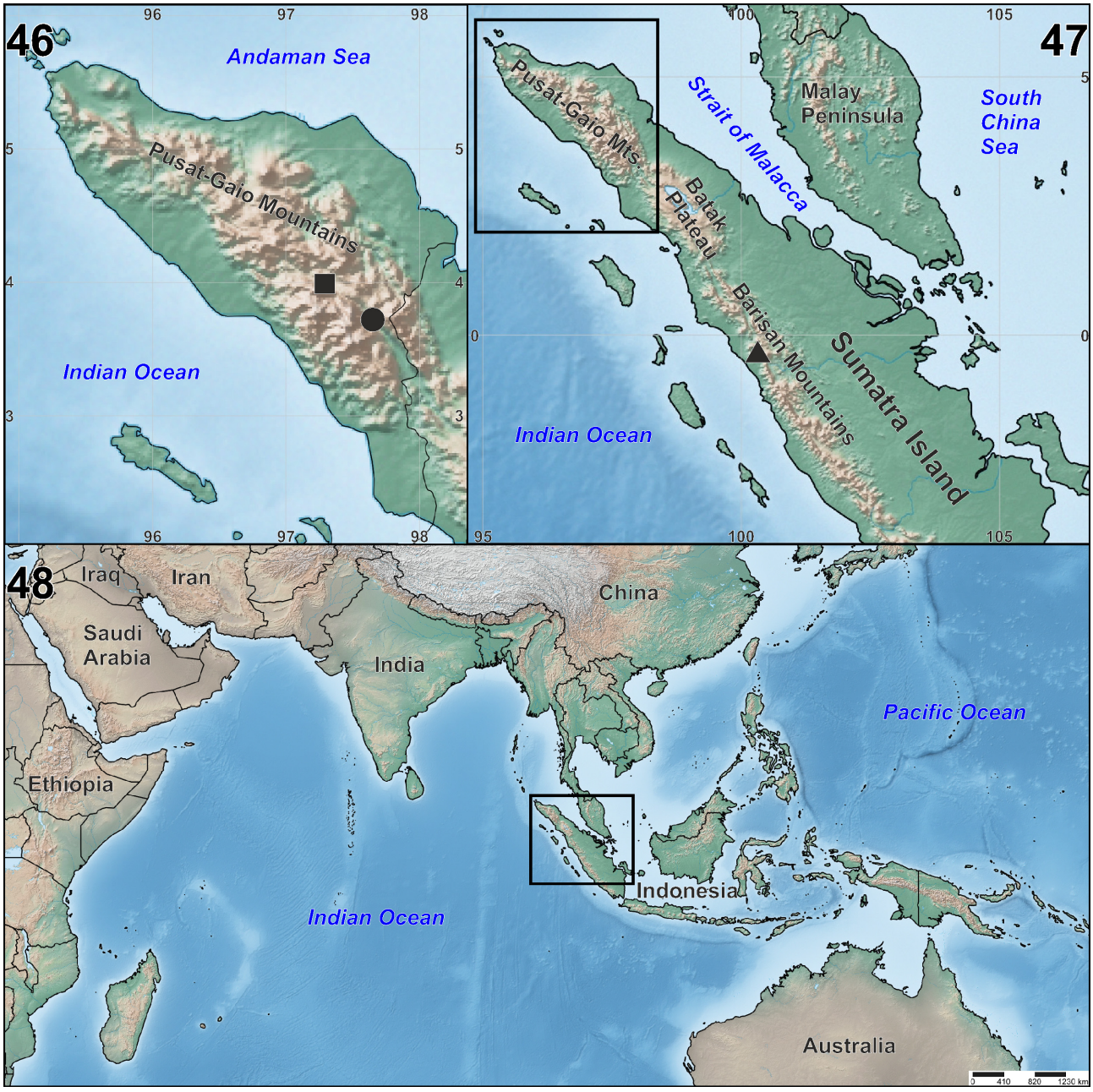
TABLE 7. Differences between males of Sumatran species of *Acantheis*. ?—the state of the character is unclear.

Character	*A. sergeimishenini* sp. n.	*A. andreimishenini* sp. n.	*A. dimidiatus* Thorell, 1890
Median band on the carapace	As wide as distance between PME	As wide as the distance between PLE	As wide as distance between PME
Coloration of the dorsal surface of opisthosoma	Thin stripe reaching spinnerets	Wide cardiac mark reaching middle part of abdomen	Thin stripe reaching spinnerets
Coloration of legs	Annulations not contrasting poorly visible	Annulations contrasting clearly visible	?
Presence of retrolateral spines on metatarsi IV	Yes	No	?
Palpal femur/patella ratio	2.5	2.0	2.4
Palpal tibia/patella ratio	1.5	1.2	1.4
Dorsal spines on palpal tibia	1	2	1

...Continued on the next page

TABLE 7. (Continued)

Character	*A. sergeimishenini* sp. n.	*A. andreimishenini* sp. n.	*A. dimidiatus* Thorell, 1890
Retrolateral tibial apophysis	Bifurcated	Non-bifurcated	Non-bifurcated
Bulb/cymbial apex ratio	1.1	1.25	1.1
Tegular apophysis	Comma-shaped	Circular	Triangular
Retrolateral margin of tegular process	Convex	Concave	?
Membranous extension of embolus	Wider than adjoining part of embolus	Thinner than adjoining part of embolus	?
Tip of embolus	Ventral branch twice wider than dorsal one	Dorsal and ventral branches equal in size	Ventral branch twice thinner than dorsal one



FIGURES 46–48. Collecting localities of *A. sergeimishenini* **sp. n.** (circle), *A. andreimishenini* **sp. n.** (square), and *A. dimidiatus* Thorell, 1890 (triangle). The frame on Fig. 48 refers to the content of Fig. 47 and the frame on Fig. 47 refers to the content of Fig. 46.

Acknowledgements

We thank Maria Tavano (Genova, Italy) and Marco Isaia (Turin, Italy) for providing photographs of the holotype of *Acantheis dimidiatus*. We are grateful to Sergei V. Reshetnikov (Novosibirsk, Russia) for his help with taking digital photos. The English of the final draft was kindly edited by Dmitri V. Logunov (Manchester Museum, UK). The work by Mikhail M. Omelko was carried out within the state assignment of the Ministry of Science and Higher Education of the Russian Federation (theme No. 121031000120-9) using equipment of the Laboratory of Ecology and Evolutionary Biology of Aquatic Organisms of the Far Eastern Federal University.

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