

New taxa and faunistic data on linyphiid spiders (Araneae: Linyphiidae) from Southeast Asia

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Abstract. One genus and two new species of linyphiid spiders are described from Thailand: *Protopalpus*, new genus, with *Protopalpus kurku*, new species, as the type species, and *Cyphonetria flagellata*, new species. The new genus is described based on the sole male, being characterised by a simple and primitive structure of the palp. The taxonomic position of the genus *Cyphonetria* Millidge, 1995 within the subfamilies of Linyphiidae is discussed. New data on the distribution of some linyphiid spiders in Southeast Asia are given. *Nasoonaria sinensis* Wunderlich & Song, 1995 is recorded from Vietnam and Myanmar for the first time, *Neriene strandia* (Blauvelt, 1936) is new to the fauna of Laos.

Key words. new genus, new species, Oriental Region, distribution

INTRODUCTION

Presently, a list of linyphiid spiders of Thailand is known to contain 47 species (Thorell, 1895; Locket, 1982; Millidge & Russell-Smith, 1992; Barrion & Litsinger, 1995; Millidge, 1995; Tu & Li, 2006; Ponksee & Tanikawa, 2010; Tanasevitch, 2014b, 2017, 2018, 2019). This is the longest species list among the countries of continental Southeast Asia. This paper puts on record two new species and one new genus collected in the Doi Inthanon National Park, northern Thailand. In addition, new data on the distribution of linyphiid spiders in Southeast Asia are presented.

MATERIAL AND METHODS

This paper is based on material deposited at the Muséum d'histoire naturelle de Genève, Switzerland (MHNG) and the Senckenberg Museum, Frankfurt am Main, Germany (SMF). The MHNG sample numbers are given in square brackets. Specimens preserved in 75% ethanol were studied using a MBS-9 stereo microscope. A Levenhuk C-800 digital camera was applied for taking pictures. Leg chaetotaxy is presented in a formula, e.g., 1.1.1.1, which refers to the number of dorsal spines on tibiae I–IV. The sequence of leg segment measurements is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are given in mm. Figure numbers are shown above the scale lines,

with the bar length shown below them. The terminology of copulatory organs mainly follows those of Merrett (1963) and of the authors mentioned in the abbreviations below.

Abbreviations used in the text and figures:

a.s.l.—above sea-level

DSA—distal suprategular apophysis sensu Hormiga (2000)

Du—duct

Em—embolus

Fe—femur

MM—median membrane sensu van Helsdingen (1965)

N.P.—National Park

P—paracymbium

R—radix

RA—radical apophysis

TAXONOMY

Order Araneae Clerck, 1757

Family Linyphiidae Blackwall, 1859

Subfamily Erigoninae Emerton, 1882

Protopalpus, new genus

Type species. *Protopalpus kurku*, new species.

Etymology. The generic name emphasises a simple and primitive structure of the embolic division in the male palp. The gender is masculine.

Diagnosis. *Protopalpus*, new genus, is diagnosed by the following combination of somatic and genitalic characters:

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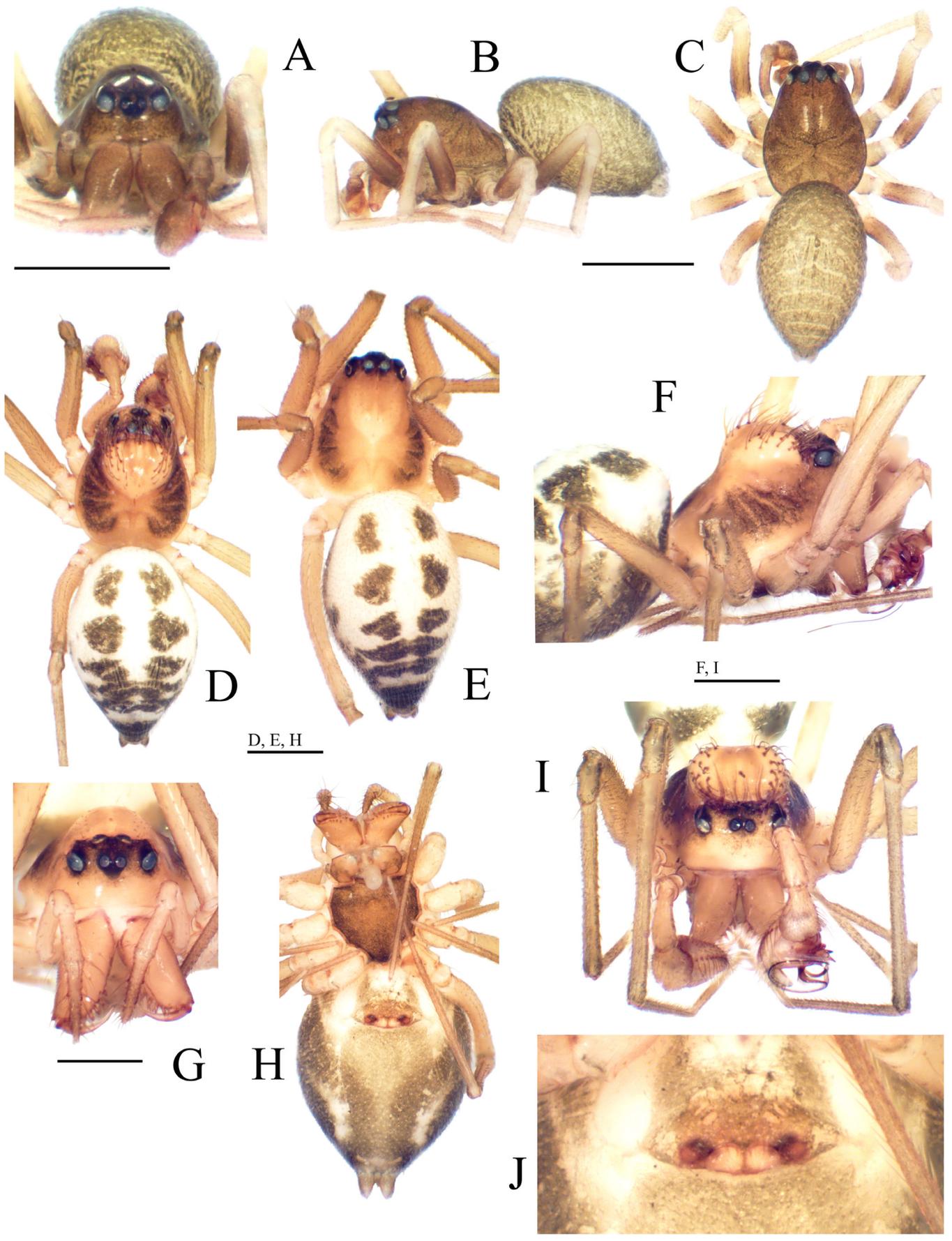


Fig. 1. Photographs of *Protopalpus kurku*, new species, male holotype (A–C); *Cyphonetria flagellata*, new species, male holotype (D, F, I) and female paratype (E, G, H, J). B–E, H, body; C–E, dorsal view; B, lateral view; H, ventral view; A, F, I, prosoma; A, G, I, frontal view; F, posterolateral view; J, epigyne, ventral view. Scale = 0.5 mm.

- 1) small-sized Erigoninae, with a total length of ca 1.4;
- 2) carapace unmodified, sulci absent (Fig. 1A–C);
- 3) eyes enlarged (Fig. 1A);
- 4) no distinct dorsal abdominal pattern (Fig. 1B, C);
- 5) leg chaetotaxy formula: 1.1.1.1, metatarsi IV without trichobothrium, TmI ca 0.4;
- 6) palpal tibia modified (Fig. 2A, D);
- 7) paracymbium flat and wide, of a peculiar shape (Fig. 2A);
- 8) embolic division large, extremely simple: radix continuous with embolus (Fig. 2B, C).

Species included. *Protopalpus kurku*, new species.

Taxonomic remarks. By its small size, the chaetotaxy formula, and the extremely simple palp structure, the new genus resembles the Holarctic genus *Tapinocyba* Simon, 1884. However, *Protopalpus*, new genus, clearly differs by the absence of sulci on the carapace, the enlarged eyes, this being characteristic of numerous Oriental erigonines, as well as by the peculiar shape of the paracymbium. By the simple structure of the embolic division, *Protopalpus*, new genus, is also reminiscent of the Afrotropical-Oriental genus *Pseudomicrocentria* Miller, 1970, but is clearly distinguished by the formula of leg chaetotaxy (2.2.2.1 vs. 1.1.1.1.), by the absence of sulci on the male carapace, the enlarged eyes, as well as by the structure of the paracymbium.

Distribution. Known only from Thailand.

***Protopalpus kurku*, new species**
(Figs. 1A–C, 2A–D)

Holotype. Male (MHNG), THAILAND, Chiang Mai Province, Chomthong District, Doi Inthanon N.P., 2,530 m a.s.l., coll. P. Schwendinger, 23 February 1987.

Etymology. The species epithet is a noun in apposition, taken from the shape of the embolic division, which looks like the Nepalese knife “kurku”, see Fig. 2C.

Diagnosis. The new species is characterised by a large, flat, and wide embolic division, a peculiar shape of the embolus, and enlarged eyes.

Description. Male holotype. Total length 1.35. Carapace unmodified, 0.63 long, 0.47 wide, greyish brown, eyes enlarged as shown in Fig. 1A–C. Chelicerae unmodified, 0.26 long. Legs pale brown, each femur darkened from its base to middle. Leg I 1.56 long (0.45 + 0.15 + 0.36 + 0.30 + 0.30), IV 1.68 long (0.47 + 0.17 + 0.39 + 0.36 + 0.29). Chaetotaxy 1.1.1.1, spines 1–1.5 times as long as diameter of corresponding leg segment. TmI 0.35. Metatarsus IV without trichobothrium. Palp (Fig. 2A–D): Tibia with a thin, relatively long, dorso-retrolateral process slightly broadening distally. Paracymbium large, flat, poorly sclerotised, almost transparent. Its proximal and distal parts not separated by a notch. Embolic division large, radix flat, slightly bent at middle, continuous with embolus. Abdomen 0.78 long, 0.48 wide, grey (as shown in Fig. 1B, C).

Taxonomic remarks. See above, under the generic diagnosis.

Distribution. Known only from Chiang Mai Province, Thailand, at 2,530 m a.s.l.

***Cyphonetria* Millidge, 1995**

Type species. *Cyphonetria thaia* Millidge, 1995.

Taxonomical remarks. The genus *Cyphonetria* Millidge, 1995 was established for a single species and based on a single female from Doi Inthanon Forest (= Doi Inthanon National Park), Thailand, above 1,500 m a.s.l. (Millidge, 1995). Millidge did not specify which subfamily this genus belonged to, but correctly brought it closer to two other Oriental genera, *Labullinyphia* van Helsdingen, 1985 and *Emenista* Simon, 1894. These two latter genera together with *Cyphonetria* are characterised by an epigynal structure similar to the Mynogleninae-type, namely, helicoid copulatory ducts, but lacking clypeal sulci. In the absence of a described male, van Helsdingen (1985) assigned *Labullinyphia* to the Linyphiinae, noting that no erigonines were known with such a structure of the copulatory ducts. Benjamin & Hormiga (2009), after a detailed analysis of the genitals of both sexes of *Labullinyphia tersa* (Simon, 1894), the type species, hypothesised that this genus belonged to the subfamily Erigoninae. I agree with that opinion for the time being. It seems highly likely that *Cyphonetria* and *Emenista*, the genera with the rather similar genitalia, could also be assigned to the subfamily Erigoninae.

Distribution. Known only from Thailand.

***Cyphonetria flagellata*, new species**
(Figs. 1D–J, 3A–H)

Holotype. Male (MHNG), THAILAND, Chiang Mai Province, Chomthong District, Doi Inthanon N.P., 2,520 m a.s.l., lower mountain forest, coll. P. Schwendinger, 13 January 1993.

Paratypes. 1 female (MHNG), collected together with the holotype; 2 females (MHNG), same locality, 2,530 m a.s.l., coll. P. Schwendinger, 22 February 1992.

Etymology. The species epithet is an adjective meaning a whip in Latin, referring to a very long and filiform embolus of the male palp.

Diagnosis. The male of the new species is characterised by a strongly modified carapace, a peculiar shape of the cymbium, a very complicated structure of the embolic division, and a very long, whip-shaped, filiform embolus. The female is diagnosed by a modified carapace (this being rather unusual in Linyphiidae), the epigynal plate divided by a septum, as well as by thick, helical, copulatory ducts.

Description. Male holotype. Total length 2.68. Carapace modified, 1.20 long, 0.98 wide, pale brown, with black-brown, radial, pyramidal stripes not reaching its edge. Carapace

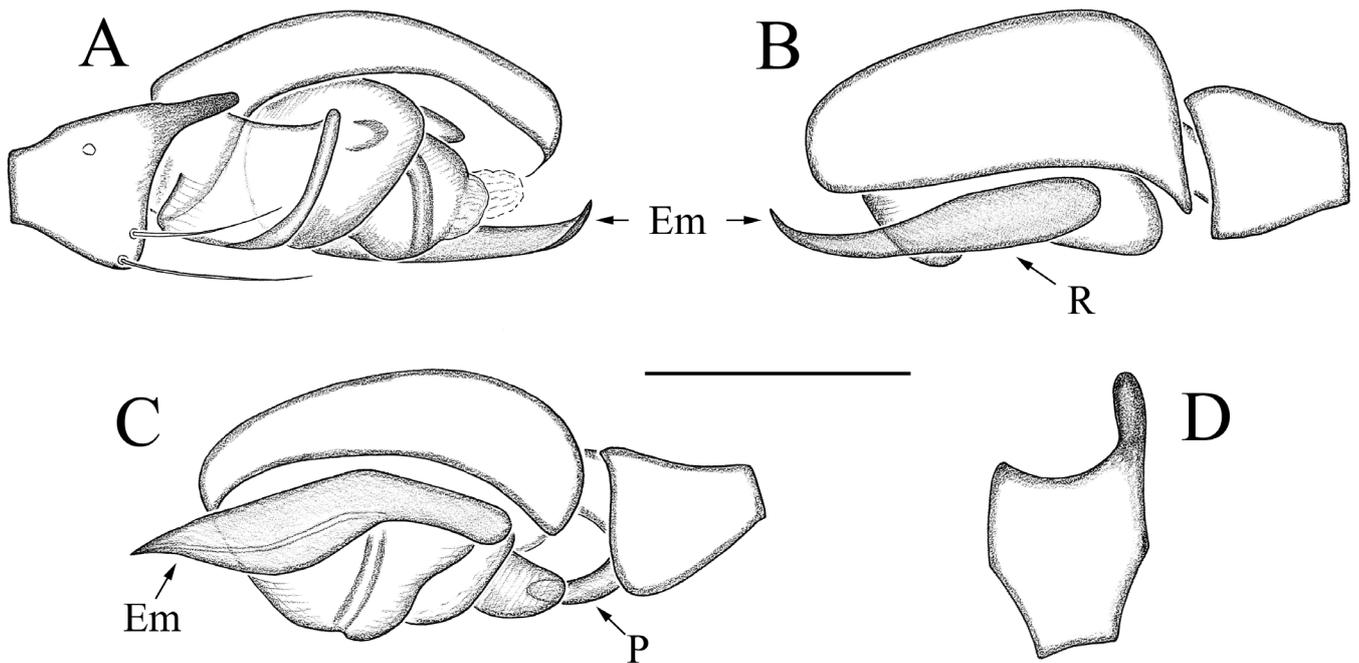


Fig. 2. Details of male palp structure of *Protopalpus kurku*, new species, male holotype. A–C, right palp, retrolateral, prolateral, and ventro-prolateral view, respectively; D, palpal tibia, dorsal view. Em = embolus; P = paracymbium; R = radix. Scale = 0.1 mm.

behind ocular area with a pale, large, rounded, double-lobe elevation bearing sparse, strong, slightly curved setae, as shown in Fig. 1D, F, I. Eyes normal, not enlarged. Chelicerae unmodified, 0.63 long, a mastidion absent. Legs yellow to pale brown, without annulations. Leg I 5.71 long ($1.55 + 0.35 + 1.48 + 1.38 + 0.95$), IV 5.39 long ($1.45 + 0.33 + 1.38 + 1.43 + 0.80$). Chaetotaxy 2.2.1.1, spines on tibiae I & II very short (probably broken off), a spine on tibiae III and IV 1–1.5 times as long as diameter of corresponding leg segment. Metatarsi spineless. Tibia I and metatarsus I with a lateral row of long bristles on both sides. Each metatarsus with a trichobothrium. TmI 0.52. Palp (Fig. 3A–E): Palpal tibia unmodified, only with a small invagination apically. Cymbium with a low dorsal ridge bearing a row of curved spines. Retrolaterally, cymbium with a long, slightly bent outgrowth carrying a row of short and curved spines. Distal suprategular apophysis strong, bifurcated distally. Median membrane a narrow, long, semi-transparent stripe, its distal part rounded and broadened. Radix complicated, its proximal part (tailpiece) bent, distal part with several outgrowths, one of which is long, slender, and vermiform. Embolus very long, whip-shaped, twisted into a double ring distally. Abdomen 1.65 in length, 1.05 wide, dorsal pattern as shown in Fig. 1D.

Female paratype (collected together with the holotype). Total length 2.95. Carapace modified, 1.25 long, 1.00 wide, pale brown, with black-brown, radial, pyramidal stripes not reaching its edge. Carapace behind ocular area with a large, pale, rounded elevation, as shown in Fig. 1E, G. Eyes normal, not enlarged. Chelicerae unmodified, 0.60 long, a mastidion absent. Legs yellow to pale brown, without annulations. Leg I 5.46 long ($1.50 + 0.38 + 1.40 + 1.30 + 0.88$), IV 5.06 long ($1.43 + 0.35 + 1.25 + 1.25 + 0.78$). Chaetotaxy 2.2.1.1, spines 1.5–2 times as long as diameter

of corresponding leg segment. No lateral row of long bristles on both sides of tibia I and metatarsus I. Each metatarsus with a trichobothrium. TmI 0.51. Abdomen 1.90 long, 1.15 wide, dorsal pattern as shown in Fig. 1E. Epigyne (Figs. 1H, J, 3F–H): Epigynal plate wider than long, divided by a median septum. Copulatory openings situated on both sides at base of septum. Copulatory ducts thick, long, helical.

Taxonomic remarks. As mentioned above, because the male of *C. thaia* is yet unknown, the placement of the new species described above in the genus *Cyphonetria* is only based on the similar habitus and the structure of the epigyne. The type localities of *C. thaia* and *C. flagellata*, new species, are situated very close to each other, but at different altitudes. However, this seems to matter little. The probability that the male of *C. flagellata*, new species, might represent a previously unknown male of *C. thaia* seems to be much lower than that both sexes of *C. flagellata*, new species, are conspecific. The male holotype and female paratypes of *C. flagellata*, new species, were collected together and, above all, both show the same chaetotaxy different from that of *C. thaia*. The females of both species are indeed similar to each other, but still clearly different. The carapace in the female of *C. thaia* is with an abrupt elevation located at a considerable distance from the ocular area, termed a “cephalic ridge” in Millidge (1995), versus a rounded elevation that starts immediately behind the posterior medial eyes in *C. flagellata*, new species. In addition, the copulatory openings in the new species begin at the base of the septum, and the helical-shaped copulatory ducts are much thicker than in *C. thaia*.

Distribution. Known only from Chiang Mai Province, Thailand, at 2,520–2,530 m a.s.l.

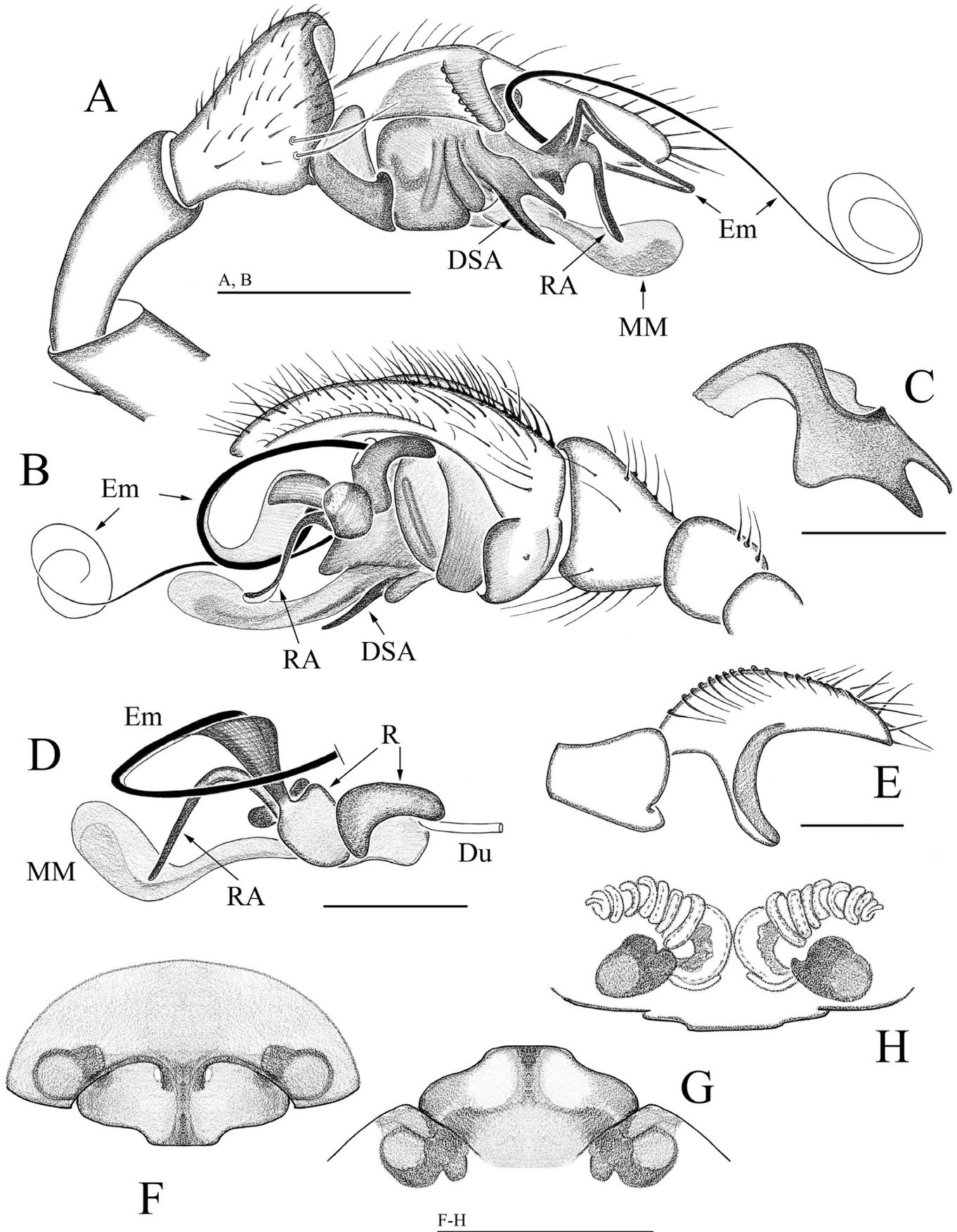


Fig. 3. Details of male palp and epigyne structure of *Cyphonetria flagellata*, new species, male holotype (A–E) and female paratype (F–H). A, B, right palp, retrolateral and prolateral view, respectively; C, distal suprategular apophysis, lateral view; D, embolic division; E, palpal tibia and cymbium, dorsal view; F, G, epigyne, ventral and dorsal view, respectively; H, cleared epigyne, dorsal view. DSA = distal suprategular apophysis; Du = duct; Em = embolus; MM = median membrane; R = radix; RA = radical apophysis. Scale = 0.2 mm.

FAUNISTIC RECORDS

Indophantes lehtineni Saaristo & Tanasevitch, 2003

Material examined. 1 female (MHNG), EAST MALAYSIA, Borneo, Sabah, West Coast Residency, Mt Kinabalu N.P., “Summit Trail” (trail connecting “Power Station” to the summit), near “Carson’s Camp”, *Leptospermum* forest, 2,680 m a.s.l., coll. B. Hauser [sab-82/19], 29 April 1982; 1 male, 1 female (MHNG), Mt Kinabalu N.P., above Gunting Lagadan, 3,400 m a.s.l., coll. A. Smetana, 19 May 1987; 1 female, Mt Kinabalu N.P., base of St. Johus Peak, 3,950–4,000 m a.s.l., coll. A. Smetana [B62], 20 May 1987; 1 female (MHNG), Sarawak, Santubong, 32 km N of Kuching, 0–50 m a.s.l., under bark of fallen trees along edge of secondary mixed *Dipterocarpus* forest, coll. I. Löbl & D. Burckhardt [13a], 28.–29 May 1994.

Remarks. This species was originally described based on both sexes from Mt Kinabalu N.P., Sabah, Borneo, East Malaysia, at an altitude of 2,000–2,800 m a.s.l. (Saaristo & Tanasevitch, 2003).

Distribution. East Malaysia, Borneo: Sabah (2,000–4,000 m a.s.l.) (Saaristo & Tanasevitch, 2003) and Sarawak (first record).

Kalimagone cuspidata Tanasevitch, 2017

Material examined. 1 female (MHNG), EAST MALAYSIA, Borneo, Sarawak, Gunung Matang, 20 km W of Kuching, 600 m a.s.l., mixed *Dipterocarpus* forest, sifting of vegetational debris, coll. I. Löbl & D. Burckhardt [11a], 25 May 1994.

Remarks. This species was originally described based on both sexes from Mt Kinabalu N.P., Sabah, Borneo, East Malaysia, at 1,540–2,590 m a.s.l. (Tanasevitch, 2017).

Distribution. East Malaysia, Borneo: Sabah (600–2,590 m a.s.l.) (Tanasevitch, 2017) and Sarawak (first record).

Nasoonaria magna Tanasevitch, 2014

Material examined. 1 female (SMF), LAOS, Luang Nam Tha Province, Muong Sing, 21°11.422'N 101°09.450'E, 639 m a.s.l., cultural fields, hedge, beside street, at night, by hand, coll. P. Jäger & V. Vedel, 3 November 2004; 1 female (SMF), Ban Tavan, 586 m a.s.l., 20°5'57.6"N 101°29'38.0"E, valley with stream, shrubs, trees, at night, by hand, coll. P. Jäger & S. Bayer, 18 November 2009; 1 female (SMF), Luang Prabang Province, NE of Luang Prabang, Nam Ou, Nong Khiao, Tham Pathok, 373 m a.s.l., 20°33'082"N 102°37'925"E, outside cave, leaf litter, sifting, coll. P. Jäger & F. Steinmetz, 17.–18 March 2007.

Remarks. This species was originally described based on a single male from the Nakhon Ratchasima Province, at altitudes 580–680 m a.s.l., Thailand (Tanasevitch, 2014b). The female of the species was described later, from China,

by Zhao & Li (2014, as *Nasoonaria circinata*, synonymised by Tanasevitch, 2016, see Mikhailov & Golovatch, 2020).

Distribution. Yunnan Province, China (Zhao & Li, 2014), Laos: Vientiane Province (Komisarenko et al., 2019), Luang Prabang and Luang Nam Tha provinces (first records).

Nasoonaria sinensis Wunderlich & Song, 1995

Material examined. 4 females (MHNG), VIETNAM, Vinh Phuc Province, Tam Dao National Park, 3 km N of Tam Dao city (21°28'51"N, 105°37'55"E), 1,050 m a.s.l., evergreen forest with bamboo, coll. P. Schwendinger [VN-12/02a], 12 May 2012; 1 female (MHNG), MYANMAR, Northern Shan State, ca 25 km W of Lashio, near Loi Taung Village, 860 m a.s.l., evergreen gallery forest along stream, coll. P. Schwendinger [MT-14/24], 10 June 2014.

Remarks. This species was originally described based on both sexes from the extreme south of the Yunnan Province, China (Wunderlich & Song, 1995).

Distribution. Yunnan Province, China (Wunderlich & Song, 1995), Laos and Thailand (Tanasevitch, 2014a, b, 2017), Sumatra, Indonesia (Tanasevitch, 2017), Vietnam, and Myanmar (first record).

Neriere strandia (Blauvelt, 1936)

Material examined. 1 male (SMF), LAOS, Vientiane Province, Vang Vieng, Ban Phoxay, valley east of road, 250 m a.s.l., 19°59.4'N 102°26.48'E, stream, vegetation, at day and night, by hand, sifting, sweep-net, coll. P. Jäger, M. Sandner & F. Steinmetz, 14 March 2007; 1 female (SMF), THAILAND, Trat Province, Gulf of Thailand, Ko Chang, Hat Sai Kao, 48 m a.s.l., 12°06'46.7"N 102°16'15.2"E, underpass, batter, forest with stream, at night, by hand, coll. P. Jäger & S. Bayer, 31 October 2009.

Remarks. This species was originally described based on both sexes from Sarawak, Borneo, East Malaysia (Blauvelt, 1936).

Distribution. Yunnan Province, China (Chen & Li, 2000; Li et al., 2018), Borneo, East Malaysia (Blauvelt, 1936) and Laos (first record).

Racata brevis Tanasevitch, 2019

Material examined. 1 male (MHNG), INDONESIA, Belitung Island, Gunung Tajam, between Gurok Beraye Waterfall, 2°47'01"S 107°51'47"E, and summit, 2°46'40"S 107°51'37"E, 150–450 m a.s.l., primary forest, coll. P. Schwendinger [IND-08/03], 21.–23. & 26 September 2008.

Remarks. This species was originally described based on both sexes from Sumatra, Indonesia, at 1,800–1,980 m a.s.l. (Tanasevitch, 2019).

Distribution. Sumatra, Indonesia (Tanasevitch, 2019) and Belitung Island (first record).

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