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***Pilaria sarawakiensis* n. sp. (Diptera, Limoniidae) from Borneo (Malaysia, Sarawak)**

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Abstract. A new recent species *Pilaria sarawakiensis* n. sp. (Diptera, Limoniidae, Limnophilinae) from the Oriental region (Borneo, Malaysia) is described and compared to the congeners.

Key words: Diptera, Limoniidae, *Pilaria*, taxonomy, new species.

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I. INTRODUCTION

The genus *Pilaria* SINTENIS, 1889 (Limoniidae, Limnophilinae) is distributed world-wide with the exception of Antarctica and comprises 47 extant species and two subspecies mainly from the Palearctic (17 species) and Nearctic (15 species) regions. From Australia and Oceania only one species of the genus is known, and from the Neotropic only two species (OOSTERBROEK 2014). From the Oriental region seven species have been described (OOSTERBROEK 2014), and from Borneo (Malaysia) EDWARDS (1926) indicated only one species *Pilaria melanota* ALEXANDER (1922), originally described from Japan.

In terms of fossil species, five are known from the Eocene Baltic amber (ALEXANDER 1931), one species as an imprint from Isle of Wight, England (Late Eocene) (COCKEREL &

CLARK 1918) and one species from Italy (also an imprint; Miocene) (KRZEMIŃSKI & GENTILINI 1992).

In the collection of the Natural History Museum in London (BMNH) we found three specimens from Borneo belonging to the genus *Pilaria*, which distinctly differ from *Pilaria melanota* and represent a new species.

II. MATERIAL AND METHODS

The study was based on material from the collection of the Natural History Museum (BMNH) in London (three specimens). The specimens were studied using a Nikon SMZ 1500 stereomicroscope. The microphotographs were taken with a Nikon DS-Fi1 camera equipped with a stereomicroscope. The drawings were based on photographs, and supplemented during direct observation under a binocular microscope. The measurements were taken with NIS-Elements D 3.0 software. The male genitalia were prepared using KOH and preserved in glycerol housed with the rest of the specimen in the Natural History Museum (BMNH) in London. The comparison (Table 1) was based on ALEXANDER publications (1922, 1931, 1963) and the species described from the same and other regions.

The term “d-cell base” for the section of M3+4 within the d cell is used after KRZEMIŃSKI (1993). The nomenclature of wing venation is given after KRZEMIŃSKI (2002).

III. SYSTEMATIC PALAEONTOLOGY

Order: **Diptera** LINNAEUS 1758

Family: **Limoniidae** SPEISER 1909

Genus: ***Pilaria*** SENTENIS 1889

Type-species: *Limnobia pilicornis* ZETTERSTEDT 1851 (designation: SHARP 1890) [= *meridiana* (STAEGER 1840)].

***Pilaria sarawakiensis* n. sp.**

(Figs 1-4)

D i a g n o s i s. The new species differs from all known representatives of the genus *Pilaria* from the Oriental region especially by wing venation (the length of vein Sc and R₁). In *Pilaria sarawakiensis* n. sp. the vein Sc terminates just behind half the length of vein Rs; vein R₁ ending opposite the bifurcation of vein R₂₊₃₊₄.

E t y m o l o g y. Genitive of Sarawak, province of Malaysia; Borneo.

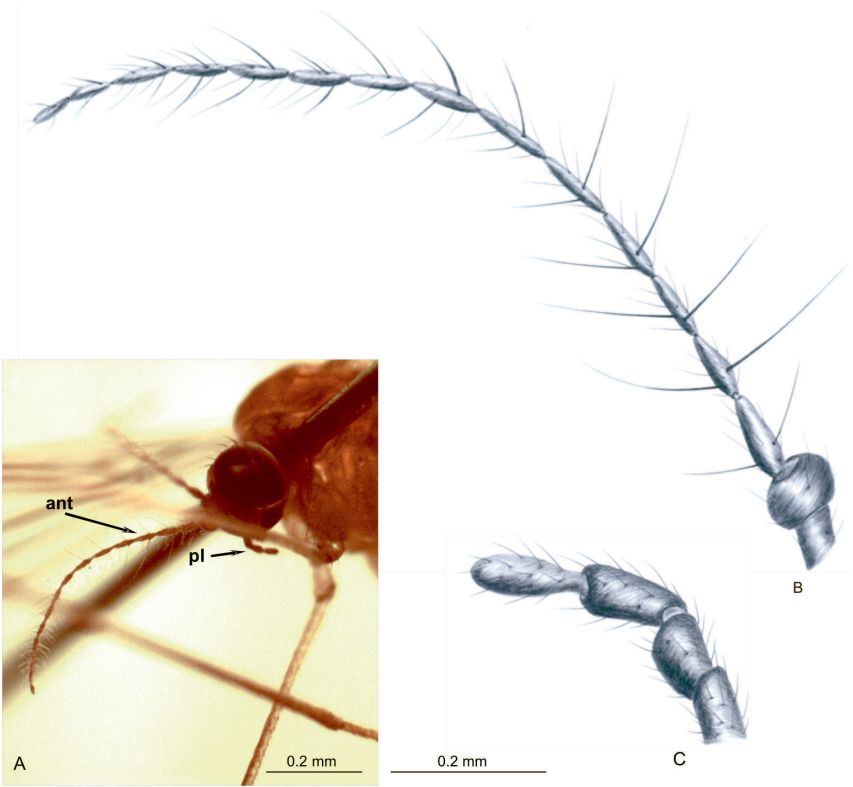


Fig. 1. *Pilaria sarawakiensis* n. sp., holotype (male): A – head; B – antenna; C – palpus (ant – antenna, pl – palpus).

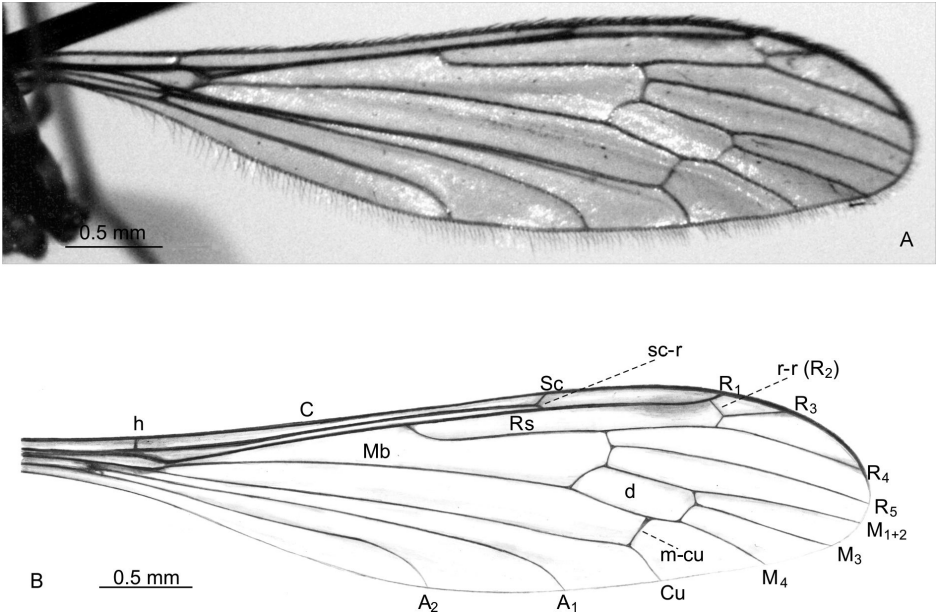


Fig. 2. *Pilaria sarawakiensis* n. sp., holotype (male): A – wing (photo); B – wing (drawing).

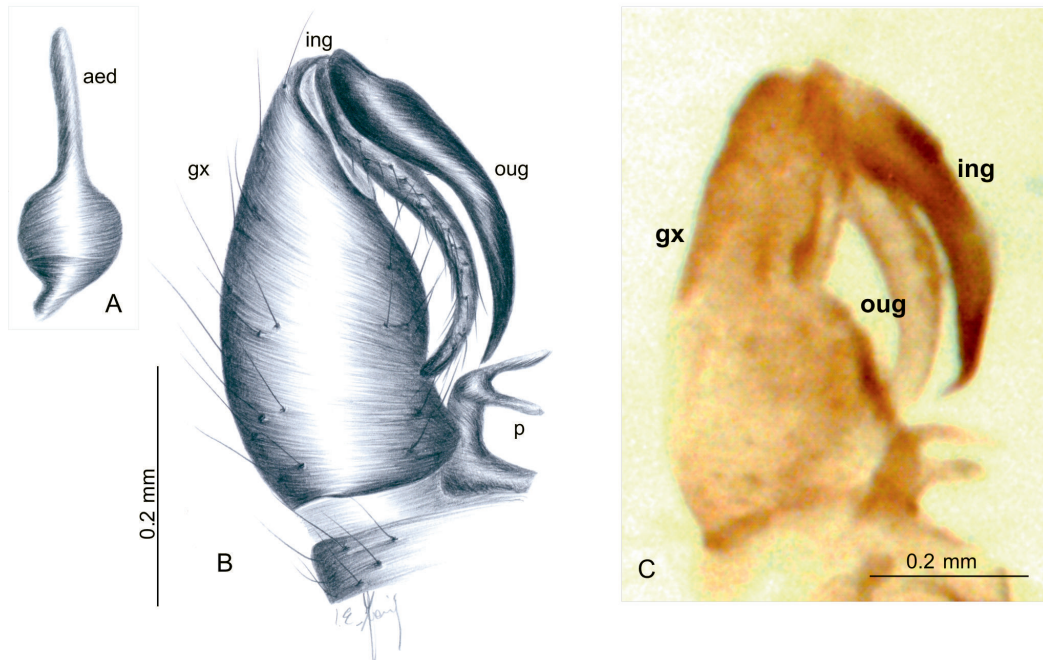


Fig. 3. *Palaria sarawakiensis* n. sp., holotype (male): A – aedeagus, dorsal view (drawing); B-C – hypopygium (part, dorsal view), drawing and photograph (gx – gonocoxite, ing – inner gonostylus, oug – outer gonostylus, p – parameres).

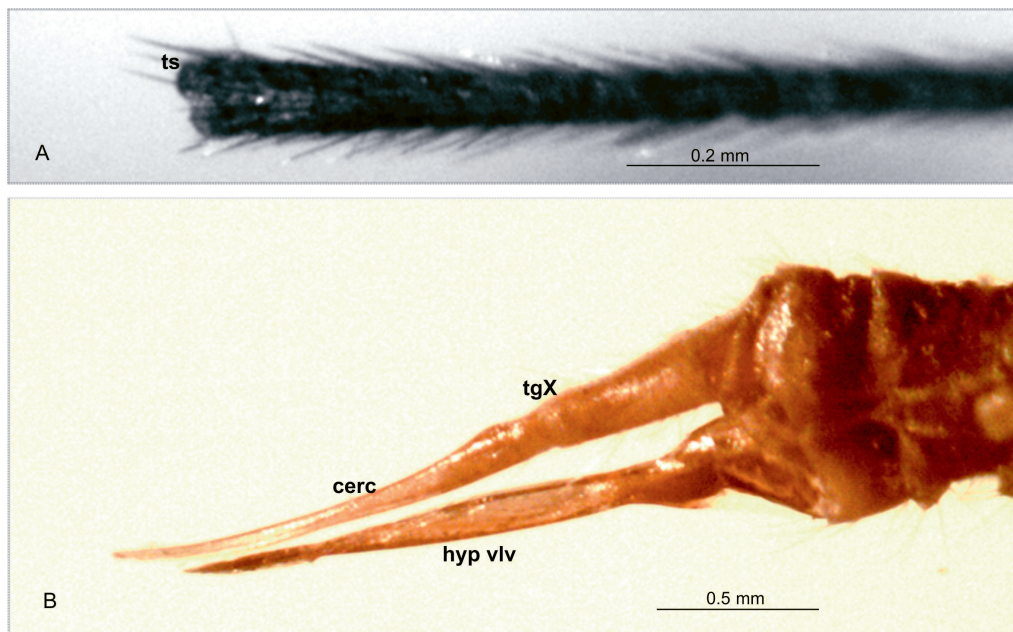


Fig. 4. *Palaria sarawakiensis* n. sp., holotype (male): A – tibial spurs (female); B – ovipositor (ts – tibial spurs, cerc – cercus, hyp vlv – hypogynial valve, tg X – tergite X).

Material examined. Holotype: 1♂ – Sarawak (Borneo, Malaysia): 4th Div. Niah, 9-17.X.1976; 3.49° N 113.46° E (malaise trap in primary forest). Paratypes: 2♂♂, same locality (BMNH).

Description. Body: pale brown, wing 4.3 mm long, 1.0 mm wide.

Head (Fig 1A): pale brown with large dark eyes; antenna (Figs 1A, B) 16-segmented, dark, brown or yellow-brown in female; scape tubular, short; pedicel oval, second segment of flagellum with elongated setae reaching approximately half the length of segment bearing them, flagellomeres 3-6 in male and 2-8 in female with two additional elongated setae (verticils), which are 2-3x as long as segments bearing them. Palpus (Fig. 1A, C) dark brown, almost black, the last segment a little shorter than the penultimate one.

Thorax: pale brown; legs yellow at base, femur dark at distal part, tibia dark brown, tarsus pale brown; tibial spurs (Fig. 4A) very short and thin; wing (Figs 2A, B) transparent with dark brown veins, vein Sc short, ending just behind half the length of Rs; sc-r at one its length before the tip of Sc; R₁ long, ending opposite the fork of R₂₊₃₊₄ into R₂₊₃ and R₄; Rs long, 3.5x as long as R₃; R₂(r-r) between distal part of R₁ and vein R₃; R₂₊₃₊₄ 2x as long as R₃; R₄ 2.5x as long as R₃; only three medial veins present; d-cell rectangular, almost equal in length to vein M₃; cross-vein mc-u behind half the base of d-cell; A₂ elongated and straight, strongly arcuated at the end to the edge of wing.

Abdomen dark brown, darker in the female.

Genitalia, male (Figs 3B, C): hypopygium dark brown, outer gonostylus arched and strongly sclerotized, sharply ended; inner gonostylus pale brown, curved, pointy and a little longer than outer gonostylus; aedeagus short (Fig. 3A), straight and narrow, parameres small, narrow, curved.

Genitalia, female (Fig. 4B): ovipositor pale brown, very narrow and elongated; hypogynial valvae only slightly shorter than cerci.

IV. COMPARISON TO OTHER CONGENERS

Pilaria sarawakiensis n. sp. distinctly differs from most species known from Oriental region by the presence of only three medial veins. Only two species from this region have three medial veins, *Pilaria alboposticata* (ALEXANDER 1931) and *Pilaria coorgensis* (ALEXANDER 1963). The newly described species distinctly differs from *P. alboposticata* and *P. coorgensis* by the proportion of subcostal vein (Sc) and radial veins (R). The list of differences of this species from Oriental region is given in Table. 1.

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Table 1

List of differences between *Pilaria alboposticata*, *P. coorgensis* and *P. sarawakiensis* n. sp.

<i>P. sarawakiensis</i> n. sp.	<i>P. alboposticata</i>	<i>P. coorgensis</i>
Sc ending just behind half of Rs	Sc ending just before fork of Rs	Sc ending far behind half length of Rs
R ₁ ending opposite the fork of R ₂₊₃₊₄ into R ₂₊₃ and R ₄	R ₁ ending far behind the fork of R ₂₊₃₊₄ into R ₂₊₃ and R ₄	R ₁ ending far behind the fork R ₂₊₃₊₄ into R ₂₊₃ and R ₄
R ₂ (r-r) between distal part of R ₁ and vein R ₃	R ₂ (r-r) between distal part of R ₁ and vein R ₃	R ₂ (r-r) between vein R ₁ and the fork of R ₂₊₃₊₄
R ₂₊₃₊₄ 2x R ₃ R ₄ 2.5x R ₃ Rs 3.5x R ₃	R ₂₊₃₊₄ 0.5x R ₃ R ₄ 3x R ₃ ; Rs appr. 1.5x R ₃	R ₂₊₃₊₄ equal R ₃ R ₄ 1.5x R ₃ Rs over 1.5x R ₃
mc-u far behind half of d-cell base	mc-u almost in 1/3 of d-cell base	mc-u far behind half of d-cell base

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