

Contribution to the knowledge of the Ichneumoninae from Vietnam

(Hymenoptera: Ichneumonidae)

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In this survey, distribution records and taxonomic remarks are presented for 24 Vietnamese species of the subfamily Ichneumoninae (Hymenoptera: Ichneumonidae) which are all new records for the fauna of Vietnam.

Two genera and eight species are new for science and described and illustrated here: *Cephalojoppa* Riedel gen. nov., *Orientocalus* Riedel gen. nov., *Benyllus flavofacies* Riedel sp. nov., *Callajoppa bachmaensis* Riedel sp. nov., *Cephalojoppa rufithorax* Riedel sp. nov., *Losgna nigrifemur* Riedel sp. nov., *Orientocalus clypeatus* Riedel sp. nov., *Stirexephanes ocellator* Riedel sp. nov., *Stirexephanes rufithorax* Riedel sp. nov. and *Stirexephanes vietnamensis* Riedel sp. nov.

The previously unknown male of *Lissophadnus testaceus* Cameron, 1907 and female of *Losgna cariniscutis* (Cameron, 1907) are described. In addition, a short determination key for the known species of the genus *Stirexephanes* Cameron, 1912 is provided.

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Introduction

The subfamily Ichneumoninae represents a large group of Darwin wasps (Hymenoptera: Ichneumonidae) with almost 700 described species known from the Oriental region (Yu et al. 2016). Although this group includes many large and colourful species, our knowledge of the taxonomy and biology is still incomplete especially in areas, such as the Oriental region, which have not been intensively studied.

The catalogue of Yu et al. (2016) listed only 21 Ichneumoninae from Vietnam, but with our ongoing studies of Oriental Ichneumoninae which are preserved in several European museums, the number has increased to 52 known Vietnamese species to date (Riedel 2013, 2017a, 2017b, 2023, 2025).

Here, we present new findings of Vietnamese Ichneumoninae collected by O. Schmidt and S. Schmidt during biodiversity surveys in two National Parks in Vietnam under the framework of the VIETBIO project. VIETBIO is a bilateral German–Vietnamese research and capacity building project focused on the development and transfer of new methods and technology towards an integrated biodiversity discovery and monitoring system for Vietnam.

Material and methods

This publication is based on the material of Ichneumoninae which has been accumulated during two collection trips of O. Schmidt and S. Schmidt in 2018 and 2019. Specimens were collected with Malaise traps at

several places in Bach Ma and Cuc Phuong National parks in Central and Northern Vietnam. The material is deposited in the Zoologische Staatssammlung Munich (ZSM) and some voucher specimens in the private collection of the first author.

Bach Ma National Park is located in the Annamite Mountains in Thua Thien Hue Province with the extension zone partially belonging to Quang Nam Province, in total covering more than 37 000 hectares. Considered a biodiversity hotspot, the national park lies on a mountain ridge up to 1430 m high that runs west–east from the Laotian border to the East Sea (Craik 2001). This ridge forms a biogeographical boundary between northern and southern Vietnam and also affects the local climate in the national park, with average annual rainfall at the summit of Mount Bach Ma reaching 7977 mm (WWF/EC 1997). The main vegetation type is moist evergreen and montane forest, as well as areas of scrub and grassland (Bach Ma National Park 2016).

Cuc Phuong is the oldest national park in Vietnam. It is located 120 km southwest of Hanoi in northern Vietnam and nestled between the provinces of Ninh Binh, Hoa Binh and Thanh Hoa, covering an area of 22 200 hectares, with the highest point of the park, May Bac peak at 648 m a.s.l. The topography is characterized by limestone karst and the underlying geological formations for the region are mostly sedimentary rocks (Cuc Phuong National Park 2011). Average rainfall for Cuc Phuong National Park is about 1680 mm/year. The main vegetation cover is broad-leaved tropical evergreen lowland forest, with considerable areas of primary forest found mainly along the limestone mountain ridges.

The material was stored in 70% ethanol, and then dried, pinned and labelled by M. Riedel who is also responsible for all determinations. For the descriptions below, morphological terms follow Broad et al. (2018). For the species list, we use the new tribal concept of the subfamily Ichneumoninae which was recently proposed by Santos et al. (2021). The distribution records were taken from the catalogue of Yu et al. (2016) and our own findings.

For the measurements the following relations were used: length of 1st flagellar segment was measured in lateral view (length without annellus) and length and width of hind femur in lateral view. For the punctuation of body parts, the following definitions were used: very sparse – distance between punctures >2x the diameter of punctures; sparse – distance 1.1–2x puncture diameter; rather dense – distance about as large as puncture diameter; dense – diameter larger than distance between punctures.

For the measurements an Olympus SZX7 stereo microscope with a dividing eyepiece was used. The figures were mainly taken with an Olympus SC 50 CCD-camera using the cellSens Imaging software and processed with the Helicon Pro software and Microsoft Office Picture Manager.

Abbreviations: OED – distance between lateral ocellus and compound eye; OOD – distance between lateral ocelli; MI – malar index: ratio of length of malar space to width of mandible base; HT – holotype; PT – paratype.

Results

Tribe Platylabini

Platybirmania acutinota Heinrich, 1974

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, summit, 16.19944°N 107.85828°E, 1401 m, 1 ♂, 5–13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e (ZSM).

Remarks. This Vietnamese ♂ differs from the original description by mainly black hind coxa with fronto-dorsal ivory spot and entirely black hind femur and hind tibia. It is otherwise typical.

Distribution. Known from Myanmar, new record for Vietnam.

Tribe Ichneumonini

Aglaojoppa violaceipennis Cameron, 1903

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, near station, 16.19288°N 107.85334°E, 1255 m, 1 ♂, 9.vi.2018, leg. S. & O. Schmidt, ZSM-HYM S2750, VIETBIO 29775-C02 (ZSM).

Distribution. Known from India and Laos, new record for Vietnam.

Allonotus politus ssp. *sauteri* (Uchida, 1932)

Material. Vietnam, Ninh Binh, Cuc Phuong NP nr park center, 20.35507°N 105.60213°E, 525 m a.s.l., 1 ♀, 8.v.2019, Yellow pan trap, S. Schmidt leg., ZSM-HYM-S27c7; Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19488°N 107.85362°E, 1294 m a.s.l., 2 ♂♂, 12.vi.2018, S. Schmidt leg., ZSM-HYM-S2737; trail to summit, 16.19488°N 107.85362°E, 1294 m a.s.l., 2 ♂♂, 13.vi.2018, S. Schmidt leg., ZSM-HYM-S2723; 16.19302°N 107.85306°E, 1256 m a.s.l., 1 ♂, 8.vi.2018, S. Schmidt leg., ZSM-HYMS272d; 16.19368°N 107.85596°E, 1236 m, 1 ♀, 9.vi.2018, S. Schmidt leg., ZSM-HYMS271e (ZSM and coll. Riedel).

Remarks. Female. Body length 10.5–12.0 mm. Flagellum with 37–41 segments, moderately lanceolate; 1st flagellar segment 4.3–4.5× as long as wide, 14th segment square, widest segments 1.4× as wide as long. Hind femur 3.8–4.0× as long as wide. Hind tibia with c. 10 short spines externally. 2nd tergite 1.5× as long as wide. Colour reddish; flagellar segments 1–4 reddish, following segments black, segments 8–15 ivory dorsally. Hind leg red; hind tarsus reddish-brown distally.

Male. Body length 11.0–13.5 mm. Flagellum with 39–41 segments, bristle-shaped, distal segments

moderately nodose; 1st flagellar segment 3.7–3.8× as long as wide. Tyloids on flagellar segments 10/11–15/17, linear, maximally 0.8× as long as their segments. Hind femur 4.0–4.1× as long as wide. Hind tibia with multiple short coarse spines externally. 2nd tergite 1.5× as long as wide. Colour reddish; basal flagellomeres ± reddish, flagellomeres 12–18 ivory dorsally. Clypeus and face usually ± yellowish. Hind tarsus ± infuscate. Wings with yellowish shine; prestostigma ochreous.

Distribution. Widespread in the Oriental region, new record for Vietnam.

Amblyjoppa sinensis ssp. *birmanica*
Heinrich, 1968

Material. Vietnam, Ninh Binh, Cuc Phuong NP, nr headquarter, 20.25063° N 105.71489° E, 166 m, 1 ♀, 3.v.2019, Yellow pan trap, S. Schmidt leg., ZSM-HYM-S2724; 1 ♀, 2–9.v.2019, Malaise trap 4, S. Schmidt, M. Ohl leg., ZSM-HYMS27bc; 1.3 km NW Mac lake, 20.26507° N 105.69795° E, 170 m, 1 ♂, 1–9.v.2019, Malaise trap 2, S. Schmidt leg., ZSM-HYM-S278f (ZSM).

Distribution. Known from Myanmar, new record for Vietnam.

Benyllus flavifacies Riedel sp. nov.
Figs 1–5

Holotype: (♀) Vietnam, Ninh Binh, Cuc Phuong NP nr park center, 20.35348° N 105.59222° E, 443 m a.s.l., 6.v. 2019, Yellow pan trap, S. Schmidt, O. Schmidt leg., ZSM-HYM-S2790 (ZSM).

Paratypes: (3 ♀♀) same data (ZSM and coll. Riedel); (1 ♂) Vietnam, Hoa Binh, Lanh Anh, Pomelo river (Song Buoi), 20.35246° N 105.51855° E, 137 m a.s.l., 30.vi.2019, Yellow pan trap, coll. S. Schmidt, Van Quang To, Sample-ID ZSM-HYM-S2793 (ZSM); (1 ♀ 1 ♂) Vietnam, Ninh Binh, Cuc Phuong NP, Bong Center along trail to ancient tree, 20.34875° N 105.59863° E, 400 m a.s.l., 7.v.2019, Yellow pan trap, coll. Van Quang To, ZSM-HYM-S2751 (ZSM); (1 ♂) Vietnam, Ninh Binh, Cuc Phuong NP nr park center, 20.34845° N 105.59764° E, 385 m a.s.l., 2–9.v.2019, Malaise trap, coll. S. Schmidt, ZSM-HYM-S279a (ZSM); (2 ♀♀) Vietnam, Ninh Binh, Cuc Phuong NP nr park center, 20.34903° N 105.59606° E, 395 m a.s.l., 7.v.2019, Yellow pan trap, S. Schmidt, O. Schmidt leg., ZSM-HYM-S27e8 (ZSM); (2 ♂♂) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19488° N 107.85362° E, 1294 m a.s.l., 12.vi.2018, S. Schmidt leg., ZSM-HYM-S2737 (ZSM and coll. Riedel); (1 ♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19944° N 107.85828° E, 1401 m a.s.l., 6–14.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2773 (all ZSM).

Etymology. The species name refers to the yellow (Latin, “flavus”) face.

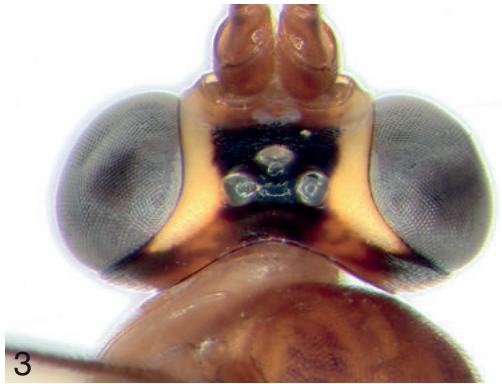
Description

Female. Body length 6.5–9.5 mm. Flagellum with 34–39 segments, slightly lanceolate; 1st flagellar segment 3.8–4.4× as long as wide, about 13th segment square, widest segments 1.2–1.3× as wide as long. Temple very short, strongly and roundly narrowed behind eye. OED 1.1× and OOD 1.0–1.1× ocellar diameter. Frons finely punctate laterally, with fine transverse rugae medially. Face densely punctate, shining, weakly impressed above anterior tentorial pits, latero-ventrally slightly swollen. Clypeus 2.1× as wide as long, almost flat, with sparse punctures; apical margin sharp and slightly concave. Mandible long and distinctly narrowed behind base, with two teeth; ventral tooth smaller than dorsal tooth and slightly bent inwards. MI 1.1. Genal carina reaching hypostomal carina close to mandible base.

Mesosoma rather short and stout. Notaulus indistinct. Mesoscutum finely and densely rugose-punctate, dull. Mesopleuron with fine dense punctures dorsally and fine longitudinally striate punctation ventrally; speculum large, smooth. Metapleuron densely punctate; juxtacoxal carina present. Scutellum moderately and roundly elevated, slightly wider than long, with dense punctures and complete slightly lamelliform lateral carina. Propodeum completely carinated, with distinct apophysis (about as long as basally wide); spiracle slit-shaped. Area basalis trapezoid, slightly wider than long, with median tubercle. Area superomedial heart-shaped, 1.2–1.5× as wide as long; costula at posterior 0.7 of its length. Area petiolaris slightly impressed, with complete lateral carina. Hind coxa with fine dense punctures, without scopa. Hind femur finely and densely punctate, 3.9–4.0× as long as wide. External side of hind tibia with 3–5 fine denticular spines in apical third. Claws simple. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 2–3× their diameter; vein 2m-cu distad its middle. Vein 1cu-a interstitial or slightly postfurcal.

Metasoma oxyptygous. Postpetiole moderately widened, without latero-median carina, densely punctate; median field not separated. Gastrocoelus small, indicated as longitudinal rim. Thyridium very small, pit-shaped. 2nd tergite 1.2–1.3× as wide as long, finely and densely punctate, with fine longitudinal rugae in anterior half. Following tergites finely punctate, ± shining. Ovipositor sheath narrow, reaching widely beyond metasomal apex by 0.8–1.0× length of 2nd hind tarsomere.

Colour: Red. Scape, pedicel and two basal flagellomeres ventrally reddish; following flagellomeres



black, flagellomeres 6/7–14 ivory dorsally. Head reddish; palps, clypeus, face and frontal orbits up to vertex cream-yellow. Frons medially, occiput medially, dorsal spot of outer orbit and ocular area blackish. Mesosoma and metasoma red; 2nd tergite sometimes and 3rd tergite usually with brownish basal or subbasal bands. Legs red; fore and mid tarsi apically and hind tarsus ± brownish; hind tibia slightly infuscate apically. Wings hyaline; pterostigma ochreous.

Male. Body length 6.5–7.5 mm. Flagellum with 31–33 segments, bristle-shaped, distal segments moderately nodose; 1st flagellar segment 3.8× as long as wide. OED 0.9× and OOD 0.8–0.9× ocellar diameter. Sides of face ± divergent ventrally. Scutellum distinctly elevated, in profile almost pyramidal. Hind femur 4.0–4.4× as long as wide. 2nd tergite 1.1–1.2× as wide as long. Hypopygium unmodified; apical margin slightly bulging medially. Flagellum black, basal 3–5 flagellar segments reddish. Frontal margin of pronotum sometimes ± yellowish. Hind tibia blackish in apical 0.1–0.3. Pterostigma brown. Structure and coloration otherwise as described for the female.

Remarks. This new species mostly resembles *Benyllus rufus* Cameron, 1903 from India but differs by the entirely red mesoscutum, propodeum and petiole and the darkened hind tarsus.

Distribution. Only known from Vietnam.

Callajoppa bachmaensis Riedel sp. nov.

Figs 6–10

Holotype: (♂) Vietnam, Thua Thiên-Huế, Bach Ma National Park, summit, 16.19944°N 107.85828°E, 1401 m a. s. l., 5–13. vi. 2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e (ZSM).

Etymology. The species name refers to the collection site, Bach Ma National Park.

Description

Male. Body length 18 mm. Flagellum with 40 segments, bristle-shaped, distal segments slightly nodose; 1st flagellar segment 2.6× as long as wide. Tyloids on flagellar segments 10–17, long-oval, small, maximally 0.4× as long as their segments. Temple strongly and roundly narrowed behind eye. OED 1.3× ocellar diameter. Frons smooth. Face densely punctate, moderately bulging medially. Clypeus

slightly convex, with sparse punctures; apical margin blunt, almost straight. MI 0.4. Mandible with two teeth, ventral tooth smaller than dorsal tooth, not bent inwards. Genal carina reaching hypostomal carina far from mandible base, both carinae low.

Mesosoma covered with rather long dense brownish setae. Notaulus impressed in anterior 1/3 of mesoscutum. Mesoscutum with rather dense but superficial punctures, but with a row of coarse punctures at lateral margins, shiny. Mesopleuron and metapleuron finely and densely punctate. Speculum large, smooth. Juxta-coxal carina present. Scutellum moderately elevated, wider than long, with dense punctures, without lateral carina. Propodeum strongly sloping basally and apically, rather short, smooth in frontal third, rugose-punctate in caudal 2/3. Spiracle slit-shaped. Area basalis and area superomedia confluent, slightly elevated, smooth. Area superomedia about hexagonal, wider than long; costula at its middle. Lateral carina of area petiolaris meeting posterior transverse carina caudal to area superomedia, both carinae developed as blunt ridges. Area petiolaris with fine transverse striae. Hind femur stout, 3.0× as long as wide. Claws large, simple, strongly bent apically (by 90°). Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 1× their width; vein 2m-cu reaching its middle. Vein 1cu-a slightly postfurcal by 1× its width.

Metasoma covered with dense erect setae. Postpetiole strongly widened, without latero-median carina and with fine punctation; median field slightly elevated, with some fine striae between punctures. Gastrocoelus strongly and almost triangularly impressed, smooth. Thyridium large, oblique, 1.3× as wide as interval. 2nd tergite 1.2× as wide as long. 2nd to 4th tergites densely punctate, with strong median longitudinal striation. 5th tergite with fine dense punctures. 2nd and 3rd sternites with median fold. Apical margin of hypopygium slightly rounded.

Colour: Black. Ivory are palps, mandible except teeth, clypeus, face, gena, frontal orbit, narrow stripe on vertex, outer orbit, scape ventrally, propleuron, collar, frontal and upper margins of pronotum, subtegular ridge, longitudinal band on lower mesopleuron, prescutellar carina, narrow sides of scutellum, postscutellum, upper division of metapleuron, area spiracularis, posterior transverse carina, posterolateral spot on postpetiole and apical bands on 2nd to 4th tergites, apical margins of 2nd to 5th sternites, fore and mid coxae and all trochanters. Setae of tergites brownish. 1st to 4th tergites red. Fore and mid femora, tibiae and tarsi cream-yellow, with black dorsal stripes; hind coxa black; hind femur

◁ **Figs 1–5.** *Benyllus flavifacies* sp. nov. ♀ (PT): 1. habitus, lateral view; 2. head, frontal view; 3. head, dorsal view; 4. propodeum, dorsal view; 5. basal tergites, dorsal view.



red; hind tibia ivory, black in apical 0.3; hind tarsus black. Wings slightly infuscate in proximal third, strongly infuscate in distal $\frac{2}{3}$. Pterostigma black.

Female unknown.

Remarks. This new species differs from the other known *Callajoppa* species from the East Palaearctic and Oriental regions by its colour pattern: black head and mesosoma with extensive ivory marks and the mainly red basal tergites with diffuse apical yellowish bands.

Distribution. Only known from Vietnam.

Cephalojoppa Riedel gen. nov.

Type species: *Cephalojoppa rufithorax* Riedel sp. nov.

Diagnosis

Rather large. Flagellum moderately lanceolate; 2nd flagellar segment slightly longer than 1st flagellar segment; widest segments distinctly wider than long. Head large. Temple rather long, slightly widened behind eye and slightly narrowed apically. Ocelli smaller than the distance between lateral ocellus and compound eye. Occiput distinctly concave. Occipital and genal carinae partly absent. Clypeus slightly convex; apical margin blunt and moderately rounded. Malar space much shorter than width of mandible base. Mandible large, with two teeth, ventral tooth slightly shorter than dorsal tooth and slightly bent inwards. Genal carina only present ventrally, reaching mandible base.

Mesosoma rather stout. Pronotum medially without longitudinal ridge. Epomia distinct. Mesoscutum dull. Notaulus impressed in anterior part of mesoscutum. Mesopleuron and metapleuron punctate; speculum smooth. Epicnemial carina low, dorsally ending short distance from anterior margin of mesopleuron. Juxtacoxal carina present. Scutellum slightly elevated above mesoscutum, with complete lateral carina. Propodeum with basal horizontal and apically sloping areas, without apophysis, completely carinated; spiracle slit-shaped. Area basalis without median tubercle. Area superomedia longer than wide; costula present. Posterior transverse carina reaching area petiolaris far behind area superomedia. Hind coxa without scopa. Hind femur slender; hind tibia without coarser spines externally. Claws with short fine basal teeth. Areolet pointed frontally. Vein 1cu-a postfurcal.

Metasoma rather narrow, oxygygous. Petiole as high as wide. Postpetiole without lateromedian carina and with very sparse fine punctures. Gastrocoelus triangularly impressed. Thyridium smaller than interval between thyridia. Basal tergites finely and densely rugose-punctate. 2nd to 5th sternites with median folds. Ovipositor sheath short, not reaching beyond metasomal apex.

Colour pattern: Antenna with ivory ring. Head and metasoma mainly black, with extensive ivory stripes and spots. Mesosoma mainly reddish.

Male and hosts unknown.

Remarks. This new genus belongs to the group of Ichneumoninae with distinct dorsal and postero-dorsal fields of propodeum which meet at a distinct angle (tribe Joppini sensu Townes et al. 1961 or Ichneumonini sensu Heinrich 1967a). Within this group, it is characterized by its large head with rather long and wide temple, lanceolate flagellum, large and almost equally sized mandible teeth, partly absent occipital and genal carinae, complete carinated scutellum with flattened surface, complete carinated propodeum without apophysis, absence of median tubercle of area basalis, oxygygous metasoma, almost smooth surface of postpetiole and rather large thyridium which is narrower than the interval between thyridia.

In the key of Oriental Ichneumoninae (Townes et al. 1961) it runs to couplet 28: *Bambuscopus* Heinrich, but differs by the partly absent genal and occipital carinae, completely carinated scutellum, strong carination of propodeum, almost smooth postpetiole and much stouter habitus.

Cephalojoppa rufithorax Riedel sp. nov.

Figs 11–15

Holotype: (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19488°N 107.85362°E, 1294 m a.s.l., 12. vi. 2018, S. Schmidt leg., ZSM-HYM-S2737 (ZSM).

Etymology. The species name refers to the reddish mesosoma.

Description

Female. Body length 13.0 mm. Flagellum with 36 segments; 1st flagellar segment 2.6× as long as wide; 2nd segment 2.9× as long as wide and 1.1× as long as 1st segment; 15th segment square; widest segments 1.7× as wide as long. Temple rather long, slightly widened behind eye and slightly narrowed apically,

◁ **Figs 6–10.** *Callajoppa bachmaensis* sp. nov. ♂ (HT): 6. habitus, dorsal view; 7. head, frontal view; 8. head, dorsal view; 9. propodeum, dorsal view; 10. basal tergites, dorsal view.



dorsally 0.7× as long as eye. OED 1.6× and OOD 0.7× ocellar diameter. Occiput distinctly concave; occipital carina medially present but absent laterally. Temple and frons largely smooth, with very sparse fine punctures, shining. Face with dense punctures, shiny. Clypeus slightly convex, 2.4× as wide as long, with dense punctures; apical margin blunt and moderately rounded. MI 0.5. Mandible with ventral tooth slightly shorter than dorsal tooth and slightly bent inwards. Gena large, with rather dense punctures ventrally. Genal carina low, reaching mandible base, only shortly present ventrally and largely absent laterally.

Side of pronotum superficially punctate dorsally, almost smooth ventrally. Mesoscutum densely and superficially punctate, with microsculpture, dull. Notaulus impressed in anterior fourth of mesoscutum. Mesopleuron and metapleuron densely and superficially punctate, shiny; speculum smooth. Submetapleural carina frontally and posterior transverse carina laterally lamelliform widened. Scutellum slightly elevated above mesoscutum, but with flattened surface, about as long as wide, with rather dense punctures and complete lateral carina. Propodeum without apophysis. Area basalis trapezoid, slightly wider than long, without median tubercle. Area superomedia heart-shaped, slightly longer than wide; costula at $\frac{6}{10}$ of its length. Area externa punctate; area dentipara with transverse striae. Area petiolaris narrow, smooth. Hind coxa densely punctate, without scopa. Hind femur with fine dense punctures, 4.3× as long as wide; external side of hind tibia without coarser spines. Claws with short fine basal teeth. Areolet pointed frontally; vein 2m-cu slightly proximal to its middle. Vein 1cu-a postfurcal by 2× its width.

Metasoma rather narrow, oxyptygous. Postpetiole moderately widened, without lateromedian carina, smooth and with very sparse fine punctures; median field not separated. 2nd tergite 1.1× as wide as long. Gastrocoelus triangularly impressed, with fine longitudinal ridges. Thyridium oblique, 0.7× as wide as interval between thyridia. 2nd to 4th tergites finely and densely rugose-punctate, 5th tergite only in basal half, dull. 2nd to 5th sternites with median folds.

Colour: Antenna black; scape, pedicel and basal flagellomere reddish-yellow ventrally; flagellar segments 7–13 ivory dorsally. Palps, mandible except teeth, clypeus, face except reddish baso-medial spot, narrow frontal and vertical orbits, gena and wide outer orbit ivory. Frons medially, temples and dorsal occiput blackish. Mesosoma reddish;

subtegular ridge and postscutellum reddish-yellow; median stripe of area petiolaris brown. Tergites black; petiole and apical band of postpetiole, sides and apical bands of all following tergites, and all sternites except brown lateral spots ivory. Fore and mid coxae and trochanters ivory; fore and mid legs otherwise reddish-yellow; fore and mid tarsi ± infusate apically. Hind leg including coxa black; hind coxa with yellowish stripe ventrally, hind trochanter ivory; hind tibia reddish-brown sub-basally. Wings slightly infusate; pterostigma yellowish.

Male and hosts unknown.

Distribution. Only known from Vietnam.

Chiaglas longicornis Cameron, 1903

Material. Vietnam, Ninh Binh, Cuc Phuong NP, nr headquarter, 20.25063° N 105.71489° E, 166 m, 1 ♀, 3.v.2019, Yellow pan trap, S. Schmidt leg., ZSM-HYM-S2724.

Distribution. Widespread in the Oriental region, new record for Vietnam.

Chiaglas nigripes Cameron, 1902

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, summit, 16.19944° N 107.85828° E, 1401 m, 1 ♂, 5–13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e; restaurant near station, 16.19446° N 107.85344° E, 1278 m, 1 ♂, 9–14.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2755; near station, 16.19944° N 107.85828° E, 1401 m, 4 ♂♂, 6–14.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2769 (ZSM).

Distribution. Widespread in the Oriental region, new record for Vietnam.

Coelichneumon kosempensis ssp. *kosempensis* Uchida, 1932

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, near station, 16.19944° N 107.85828° E, 1401 m, 1 ♀, 6–14.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2773; summit, 16.19944° N 107.85828° E, 1401 m, 1 ♂, 5–13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e (ZSM).

Distribution. Known from China and Myanmar, new record for Vietnam.

◁ **Figs 11–15.** *Cephalojoppa rufithorax* sp. nov. ♀ (HT): **11.** habitus, lateral view; **12.** head, frontal view; **13.** head, dorsal view; **14.** propodeum, dorsal view; **15.** basal tergites, dorsal view.

Dimaetha ferruginea (Cameron, 1902)

Material. Vietnam, Ninh Binh, Cuc Phuong NP, nr headquarter, 20.25063°N 105.71489°E, 166 m, 1 ♂, 3.v.2019, yellow pan trap, S. Schmidt leg., ZSM-HYM-S2724; Vietnam, Thua Thiên-Huế, Bach Ma National Park, summit, 16.19944°N 107.85828°E, 1401 m, 1 ♀, 5-13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e (ZSM).

Distribution. Known from India, new record for Vietnam.

Facydes nigroguttatus (Uchida, 1935)

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, summit, 16.19944°N 107.85828°E, 1401 m, 1 ♀, 5-13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e (ZSM).

Distribution. Known from China, Japan and Korea, new record for Vietnam.

Hiorada bilineata Cameron, 1902

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, near station, 16.19944°N 107.85828°E, 1401 m, 1 ♂, 6-14.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2769 (ZSM).

Distribution. Known from India and Myanmar, new record for Vietnam.

Ileantella birmanica Heinrich, 1968

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19368°N 107.85596°E, 1236 m, 1 ♀, 1 ♂, 9.vi.2018, S. Schmidt leg., ZSM-HYMS271e; summit, 16.19944°N 107.85828°E, 1401 m, 1 ♀, 5-13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e (ZSM).

Remarks. The Vietnamese material differs slightly from the original description (Heinrich 1968: 227-228): Female. Body length 14 mm. Flagellum with 44 segments. Fore and mid femora, tibiae and tarsi reddish. Male. Body length 16.5 mm. Flagellum with 44 segments, black, without ivory ring. Fore and mid femora, tibiae and tarsi red; hind femur red, infuscate apically; hind tibia reddish-yellow, basally and apically infuscate.

Distribution. Known from Myanmar, new record for Vietnam.

Lissohadnus testaceus Cameron, 1907, new male
Figs 16-17

Material. Vietnam, Ninh Binh, Cuc Phuong NP, nr headquarter, 20.25063°N 105.71489°E, 166 m a. s. l., 3.v.2019, Yellow pan trap, S. Schmidt leg., ZSM-HYM-S2724 (ZSM).

Description

Female. Body length 15 mm. Flagellum with 46 segments, bristle-shaped, distal flagellomeres slightly nodose; 1st flagellar segment 2.7× as long as wide. Tyloids on flagellar segments 10-20, linear, maximally 0.8× as long as their segments. Temple moderately and roundly narrowed behind eye. OED 1.2× and OOD 0.8× ocellar diameter. Frons with microsculpture, shiny. Face with microsculpture and densely punctate, slightly bulging medially. Clypeus flat, 2.1× as wide as long, with dense punctures medially and sparse punctures laterally; apical margin blunt, almost straight. Labrum visible, with long apical setae. Mandible with two teeth, ventral tooth much smaller than dorsal tooth and distinctly bent inwards (by 50°). MI 0.5. Gena densely punctate ventrally. Genal carina reaching hypostomal carina close to mandible base, both carinae low.

Notaulus impressed on anterior 1/6 of mesoscutum. Mesoscutum densely punctate and granulate, ± dull. Mesopleuron and metapleuron densely punctate. Speculum large, smooth. Juxtacoxal carina present. Scutellum slightly elevated, slightly longer than wide, with dense punctures, lateral carina on its basal 0.7. Propodeum strongly sloping anteriorly and apically, densely rugose-punctate, smooth in frontal 1/5. Spiracle slit-shaped. Area basalis not separated. Area superomedial small, sickle-shaped, without distinct carinae and with smooth surface, wider than long; costula caudal to its middle. Area petiolaris narrow and long, with distinct lateral carina. Hind femur densely punctate, 3.8× as long as wide. Claws simple. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 3× their width; vein 2m-cu reaching its middle. Vein 1cu-a strongly postfurcal by 5× its width.

Postpetiole slightly widened, without lateromedian carina, smooth with very sparse fine punctures; median field not separated. Gastrocoelus strongly and almost triangularly impressed, with ridges. Thyridium small, slightly oblique, 0.4× as wide as interval between punctures. 2nd tergite 1.1× as long as wide. 2nd and 3rd tergites densely and finely rugose-punctate; 2nd tergite striate in basal half. 4th tergite with fine dense punctures, following tergites with superficial fine punctures. 2nd to 4th sternites with median folds. Hypopygium unmodified, apical margin slightly rounded.



Figs 16–17. *Lissophadnus testaceus* Cameron, new ♂: 16. propodeum, dorsal view; 17. basal tergites, dorsal view.

Colour: reddish. Mesosoma with pale setae, setae of tergites dark. Flagellum reddish, from 10th flagellomere on black. Palps ivory. Mandible except teeth, clypeus, face, gena, frontal and outer orbits yellow. Frons medially, ocellar area and temple partly blackish. Mesoscutum with three brownish stripes, apically narrowly blackish. Tergites reddish, apical tergites more reddish-brown. Legs reddish; hind femur in apical 0.2, hind tibia in apical 0.3 and hind tarsus blackish. Wings with slightly yellowish tint; pterostigma reddish-brown.

Distribution. Known from India, new record for Vietnam.

Losgna bambusicola Heinrich, 1965

Material. (♀) Vietnam, Ninh Binh, Cuc Phuong NP, nr headquarter, 20.25063°N 105.71489°E, 166 m a.s.l., 3.v.2019, Yellow pan trap, S. Schmidt leg., ZSM-HYM-S2724 (ZSM).

Remarks. The female from Vietnam differs from the original description of *L. bambusicola* Heinrich, 1965 from India and Myanmar by: petiole red, not yellow; flagellum less strongly lanceolate (widest flagellar segment 2.2× as wide as long), ventral spot of scape ivory (not reddish). It might represent a new subspecies of *L. bambusicola*, but more material would be necessary for this suggestion.

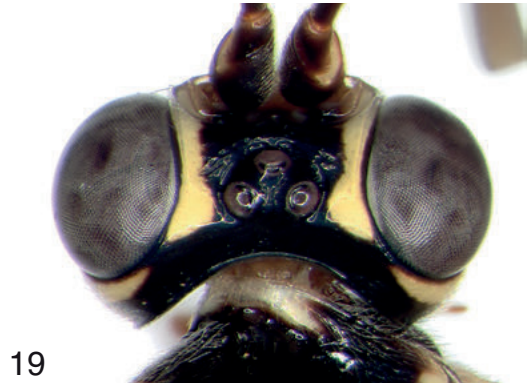
Distribution. The nominate subspecies was reported from India and Myanmar, the new subspecies is only known from Vietnam.

Losgna cariniscutis (Cameron, 1905), new female Figs 18–21

Material. Vietnam, Ninh Binh, Cuc Phuong NP nr park center, 20.35507°N 105.60213°E, 525 m a.s.l., 1 ♀, 8.v.2019, Yellow pan trap, S. Schmidt leg., ZSM-HYM-S27c7; Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19368°N 107.85596°E, 1236 m a.s.l., 1 ♀, 9.vi.2018, S. Schmidt leg., ZSM-HYM-S271e (ZSM).

Description

Female. Body length 10.5 mm. Flagellum with 45 segments, moderately lanceolate; 1st flagellar segment 2.3× as long as wide, 11th segment square, widest segments 1.8× as wide as long. Temple distinctly and roundly narrowed behind eye. OED 1.2× ocellar diameter. MI 0.9. Genal carina reaching mandible base. Scutellum slightly elevated, about as long as wide, with complete lateral carina and sparse punctures. Hind coxa without scopa. Hind femur 4.3× as long as wide. 2nd tergite 1.1× as long as wide, with weak lateral impressions. 2nd tergite entirely and anterior half of 3rd tergite coarsely and longitudinally rugose-punctate; caudal half of 3rd



Figs 18–21. *Losgna cariniscutis* (Cameron), new ♀: 18. head, frontal view; 19. head, dorsal view; 20. propodeum, dorsal view; 21. metasoma, dorsal view.

tergite with superficial fine punctures, smooth and shiny.

Colour: black. Flagellar segments 1–4 reddish ventrally. Ivory are stripes on flagellar segments 9–19, clypeus, face, gena, orbit except small interruption on vertex, scape ventrally, collar, ventral edge and upper margin of pronotum, subtegular ridge, longitudinal band on mesopleuron, prescutellar carina, side and apex of scutellum, postscutellum, spot on metapleuron, area basalis, spot around propodeal spiracle, area posteroexterna, base of

petiole, posterolateral spots on postpetiole and 3rd tergite, apical bands on 2nd and 6th tergites, entire 7th tergite, coxae and trochanters (except brown spots on hind coxa and hind trochantellus). Fore and mid femora, tibiae and tarsi reddish; hind femur reddish or brownish; hind tibia and tarsus blackish. Wings hyaline, pterostigma brown.

Distribution. Known from Malaysia, new record for Vietnam.

Losgna nigrifemur Riedel sp. nov.

Figs 22–26

Holotype: (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19368°N 107.85596°E, 1236 m a.s.l., 9. vi. 2018, S. Schmidt leg., ZSM-HYMS271e (ZSM).

Paratypes: (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19302°N 107.85306°E, 1256 m a.s.l., 8. vi. 2018, S. Schmidt leg., ZSM-HYMS272d (ZSM); (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, near station, 16.19944°N 107.85828°E, 1401 m a.s.l., 6–14. vi. 2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2769 (coll. Riedel).

Etymology. The species name refers to the black hind femur.

Description

Female. Body length 13.5–14.0 mm. Flagellum with 49–50 segments, strongly lanceolate; 1st flagellar segment 2.3× as long as wide, 9th or 10th segments square, widest segments 2.3–2.5× as wide as long. Temple short, distinctly and roundly narrowed behind eye. OED 1.2× ocellar diameter. Frons finely granulated and with coarse superficial punctures dorsally, smooth above antennal sockets. Face moderately protruding medially, with rather dense punctures. Clypeus with sparse punctures. MI 0.9. Genal carina reaching mandible base.

Mesosoma covered with greyish setae. Mesoscutum coarsely rugose-punctate. Mesopleuron with dense, fine punctures. Metapleuron coarsely rugose-punctate, juxtacoxal carina present. Scutellum slightly elevated, about as long as wide, sparsely punctate, with complete lateral carina. Area superomedial 1.2× as long as wide, coarsely rugose; costula at 4/10 of its length. Hind coxa without scopa. Hind femur 4.2–4.3× as long as wide. Claws simple. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 2× their width. Vein 2m-cu reaching its middle. Vein 1cu-a antefurcal by 2× its width.

Metasoma oxygygous. Postpetiole moderately widened, without lateromedian carina, with few fine punctures laterally, smooth and shining medially. Gastrocoelus not impressed, indicated by some fine longitudinal ridges. Thyridium small, oblique, 0.4× as wide as interval between thyridia. 2nd tergite 1.2× as long as wide, with weak lateral impressions. 2nd and 3rd tergites densely and finely rugose-punctate, ± dull; apical 1/5 of 3rd tergite with fine and superficial punctures. Following tergites finely punctate, shiny. 2nd to 4th sternites with median fold. Ovipositor sheath slightly extending behind metasomal apex (by 0.5–1.0× length of 7th tergite).

Colour: black with rich ivory coloration. Ivory are stripes on flagellar segments 9/10–18/19, palps,

mandible except teeth, clypeus, face, ventral half of gena, narrow frontal orbit, scape ventrally, collar, ventral edge and upper margin of pronotum, spot on tegula, subtegular ridge, one or two small spots on ventral mesopleuron, mesepisternum, prescutellar carina, narrow side and apex of scutellum, postscutellum, spot around propodeal spiracle, area posteroexterna, petiole, posterolateral spots on postpetiole and 3rd tergite, w-shaped apical band on 2nd tergite, lateral margins of all tergites and 3rd tergite, apical half of 6th tergites, entire 7th tergite, all sternites (except small median brownish spot on 5th sternite), entire fore and mid coxae and trochanters, dorsal spot on hind coxa and trochanter. Fore and mid femora, tibiae and tarsi reddish; hind femur, tibia and tarsus black, hind tibial spurs yellowish. Wings almost hyaline; pterostigma brown.

Male unknown.

Remarks. This new taxon runs to *L. simulator* Townes, 1961 in the key to Oriental *Losgna* species (Heinrich 1965: 138–139), but *L. simulator* differs from the new species by its sub-basally reddish hind tibia, ivory area basalis, ivory apical bands on 4th and 5th tergites and entirely ivory orbits.

Distribution. Only known from Vietnam.

Losgna ursula Heinrich, 1965

Material. Vietnam, Ninh Binh, Cuc Phuong NP, 0.5 km S Mac lake, 20.253°N 105.70904°E, 170 m, 1 ♂, 1–9.v.2019, Malaise trap 1, sample 1 of 2, S. Schmidt leg., ZSMHYM-S27e1 (ZSM).

Distribution. Known from Myanmar, new record for Vietnam.

Orientocalus Riedel gen. nov.

Type species: *Orientocalus clypeatus* Riedel sp. nov.

Diagnosis. Rather large, body length 15–18 mm. Flagellum strongly lanceolate in female and bristle-shaped in male. Flagellar tyloids in female present. Head large. Temple slightly widened behind eye and narrowed apically, dorsally 0.8× as long as eye. Ocelli smaller than the distance of lateral ocellus to compound eye. Clypeus wider than long, concavely impressed medially; apical margin strongly concave and sharp medially. Labrum exposed, triangular. Malar space shorter than width of mandible base. Mandible large, with two teeth, twisted and with smaller ventral tooth distinctly turned inwards (in frontal view almost sickle-shaped). Genal carina reaching mandible base.



22

5 mm



23



24



25



26

Pronotum without longitudinal median ridge, upper margin not distinctly swollen. Notaulus weakly impressed. Mesoscutum, mesopleuron and metapleuron densely rugose-punctate. Speculum smooth. Juxtacoxal carina absent. Scutellum moderately elevated above mesoscutum, but flattened, slightly longer than wide and moderately narrowed apically, with lateral carina on basal 0.7. Propodeum short, strongly sloping apically, without apophysis; spiracle slit-shaped. Area superomedia wider than long, confluent with area petiolaris; costula present. Hind coxa without scopa. Hind femur rather stout. All claws with very short basal teeth. Areolet almost quadrangular. Vein 1cu-a slightly postfurcal.

Metasoma oxygygous. Petiole not wider than high. Postpetiole strongly widened, without latero-median carina. Median field with fine longitudinal rugae and hump-like elevation between spiracles (as in *Cobunus* Uchida). 2nd tergite wider than long. Gastrocoelus strongly impressed. Thyridium very large and much wider than the interval between thyridia. 2nd and 3rd tergites coarsely rugose-striate. 2nd to 4th sternites with median folds. Ovipositor sheath of female very slender, clearly extending beyond metasomal apex, slightly thickened basally and with fine transverse rugae on basal 0.2. Hypopygium in both sexes unmodified, its apical margin slightly rounded in male. Sexual differences very small.

Hosts unknown.

Remarks. This new genus belongs to a small assemblage of genera which were combined as *Ctenocalini* sensu Heinrich, 1938 (e.g., with very large head, strongly twisted mandible apex making mandible appear sickle-shaped, short and strongly sloping propodeum, and stout metasoma with large and deep thyridia).

This group has been known from the Afrotropical and Palaearctic regions and has not been found in the Oriental region before. In the key to the genera of the *Ctenocalini* sensu Heinrich (1967b: 377–378) the new genus runs to *Ctenocalus* Szépligeti but differs by its different colour pattern, concave clypeus, only shortly pectinate claws, hump-like median field of postpetiole and very long and slender ovipositor sheath of female.

Orientocalus clypeatus Riedel sp. nov.

Figs 27–33

Holotype: (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, near station, 16.19944°N 107.85828°E, 1401 m a.s.l., 6–14. vi. 2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2769 (ZSM).

Paratype: (♂) Vietnam, Thua Thiên-Huế, Bach Ma National Park, near station, 16.19288°N 107.85334°E, 1255 m, 5. vi. 2018, leg. S. & O. Schmidt, Sample-ID ZSM-HYM S274b, VIETBIO 29775-G06 (ZSM).

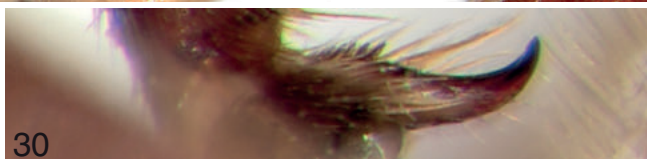
Etymology. The species name refers to the unusual structure of the clypeus.

Description

Female. Body length 15.5 mm. Flagellum with 40 segments, distinctly lanceolate; 1st flagellar segment 3.2x as long as wide; 13th segment square; widest segments 2.0x as wide as long. Temple slightly widened behind eye, slightly narrowed apically, dorsally 0.8x as long as eye. OED 1.4x ocellar diameter. Occiput with sparse punctures, but densely punctate behind ocellar area. Frons largely smooth, with few fine punctures dorsally, shining. Face with dense punctures, smooth between punctures, shiny. Clypeus with sparse punctures, 2.1x as wide as long; apical margin strongly concave and sharp medially. MI 0.7. Mandible large, with two teeth, twisted and appearing almost sickle-shaped; dorsal tooth about 2x as long as ventral tooth. Genal carina low, reaching mandible base.

Mesosoma covered with long erect setae (setae about as long as ocellar diameter). Side of pronotum punctate, with oblique striae at posterior margin. Mesoscutum densely and coarsely rugose-punctate, dull. Notaulus weakly impressed, indicated in anterior half of mesoscutum by irregular wrinkles. Mesopleuron coarsely rugose-punctate, dull; speculum large, smooth. Epicnemial carina low, dorsally reaching frontal margin of mesopleuron. Subtegular ridge sharp and lamelliform. Metapleuron with coarse rugose punctation, dull; juxtacoxal carina absent. Scutellum elevated above mesoscutum, but flattened, slightly longer than wide and moderately narrowed apically, densely rugose-punctate and with lateral carina on basal 0.7. Propodeum strongly sloping apically, without apophysis; spiracle slit-shaped. Area superomedia 1.5x as wide as long, confluent with area petiolaris; costula reaching at 3/10 of its length. Area externa smooth, propodeum otherwise coarsely punctate. Side of area petiolaris indicated by rugae basally and distinct carina in apical third. Hind coxa densely punctate, without scopa. Hind

◁ Figs 22–26. *Losgna nigrifemur* sp. nov. ♀ (HT): 22. habitus, lateral view; 23. head, frontal view; 24. head, dorsal view; 25. propodeum, dorsal view; 26. basal tergites, dorsal view.



Figs 27–30. *Orientocalus clypeatus* sp. nov.: 27. habitus of ♂, dorsal view; 28. head of ♀, frontal view; 29. head of ♂, dorsal view; 30. hind claw of ♀.



31



32



33

Figs 31–33. *Orientalocalus clypeatus* sp. nov.: 31. propodeum of ♂, dorsal view; 32. basal tergites of ♂, dorsal view; 33. metasomal apex and ovipositor of ♀, lateral view.

femur densely punctate, 3.7x as long as wide; hind tibia slightly curved. Inner spur of hind tibia 1.3x as long as outer spur and 0.6x as long as hind metatarsus. Claws with short basal teeth. Areolet almost quadrate, frontal distance between veins 2rs-m and 3rs-m 1x their diameter; vein 2m-cu slightly basad its middle. Vein 1cu-a postfurcal by 0.5x its width.

Metasoma oxypygous, covered with dense setae. Petiole as high as wide. Postpetiole strongly widened, without lateromedian carina, lateral field punctate; its median field with fine longitudinal

rugae and hump-like elevation between spiracles. 2nd tergite 1.2x as wide as long. Gastrocoelus strongly impressed. Thyridium very large, almost transverse, 3x as wide as interval between thyridia. 2nd and 3rd tergites coarsely and longitudinally rugose-striate; 4th tergite finely striate in basal half, punctate apically. Following tergites shining, with very superficial punctation. 2nd to 4th sternites with median folds. Ovipositor sheath very slender, stick-shaped, extending far beyond metasomal apex by combined length of 2nd and 3rd hind tarsomeres, slightly thickened

with fine transverse rugae on basal 0.2. Ovipositor tip with c. 5 fine ridges on upper and lower valves.

Colour: Head and antenna black. Ivory are palps, base of mandible, labrum, clypeus except small brownish median spot, face, narrow frontal orbit, wide gena and outer orbit up to vertex, scape ventrally. Mesosoma mainly red; collar and mesosternum with ivory spots; propleuron and mesosternum ventrally black. 1st tergite red, petiole ivory basally; 2nd and 3rd tergites black centrally, with wide ivory anterior, lateral and apical margins which are more yellowish-red at inner borders; following tergites black. 2nd and 3rd sternites and apical margins of following sternites yellowish. Fore and mid legs including coxae and trochanters ivory; fore and mid femora, tibiae and tarsi with external black stripes. Hind coxa black; hind trochanter and trochantellus ivory; hind femur black, ivory in apical 0.1; hind tibia ivory, black in apical 1/7, tibial spurs black; hind tarsus black. Wings slightly infuscate in basal 1/3, strongly infuscate in apical 2/3. Pterostigma black.

Male. Body length 17.5 mm. Flagellum with 38 segments, bristle-shaped, distal segments slightly nodose; 1st flagellar segment 3.8x as long as wide. Indistinct tyloids on flagellar segments 6-19, oval, maximally 0.7x as long as their segments. Temple dorsally 0.7x as wide as eye. OED 1.3x ocellar diameter. MI 0.5. Notaulus indistinct. Propodeal spiracle slit-shaped. Hind femur densely punctate, 3.9x as long as wide. Inner apical spur of hind tibia 1.2x as long as outer spur and 0.7x as long as hind metatarsus.

Postpetiole strongly widened, with sparse punctures. 2nd tergite 1.x as wide as long. 2nd and 3rd tergites coarsely longitudinally rugose-striate, 4th tergite finely striate in basal half, punctate apically. Following tergites shiny, with very superficial punctation. 2nd to 4th sternites with median folds. Hypopygium unmodified; apical margin moderately convex. Structure otherwise as described for ♀.

Colour: as described for the ♀ except: clypeus entirely ivory; mesosternum entirely black; all femora and tibiae and fore tarsus with external black stripes; mid tarsus blackish; hind coxa with narrow ivory apical margin; hind trochanter and trochantellus only partly ivory.

Distribution. Only known from Vietnam.

Setanta birmanica Heinrich, 1974

Material. Vietnam, Thua Thiên-Huế, Bach Ma National Park, summit, 16.19944°N 107.85828°E, 1401 m, 2 ♂♂ 5-13.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S276e; near station, 16.19944°N 107.85828°E, 1401 m, 3 ♀♀, 1 ♂ 6-14.vi.2018, S. Schmidt & Vu Van Lien leg.,

ZSM-HYM-S2769 and ZSM-HYM-S2773; restaurant near station, 16.19446°N 107.85344°E, 1278 m, 1 ♀, 9-14.vi.2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2755; 16.19302°N 107.85306°E, 1256 m, 3 ♀♀, 8.vi.2018, S. Schmidt leg., ZSM-HYMS272d (ZSM).

Distribution. Known from Myanmar, new record for Vietnam.

Stirexephanes ocellator Riedel sp. nov.

Figs 34-38

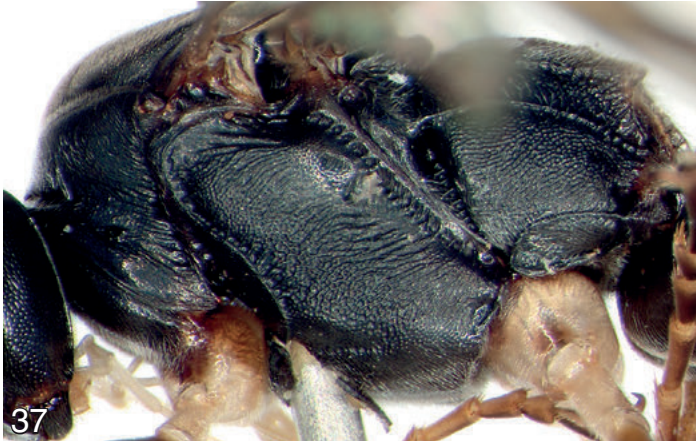
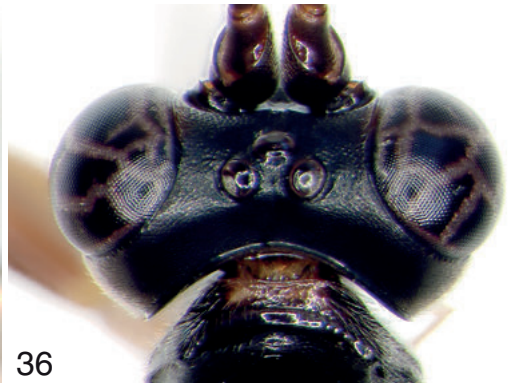
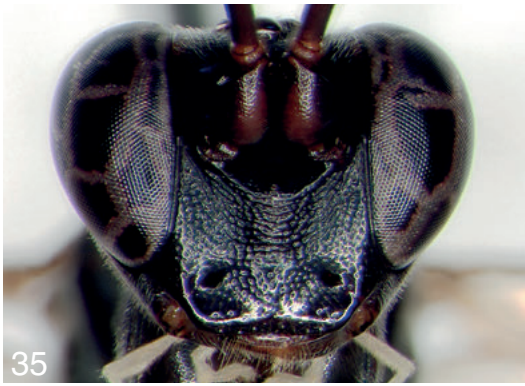
Holotype: (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19368°N 107.85596°E, 1236 m a.s.l., 9.vi.2018, S. Schmidt leg., ZSM-HYM-S271e (ZSM).

Etymology. The species name refers to the large ocelli.

Description

Female. Body length 11 mm. Flagellum with 35 segments, moderately lanceolate, with blunt tip; 1st flagellar segment 4.1x as long as wide, 13th segment square, widest segments 1.6x as wide as long. Temple rather short, strongly and roundly narrowed behind eye. OED 0.9x and OOD 0.7x ocellar diameter. Occiput concave. Frons granulated, dull, with fine superficial punctures. Face densely punctate, with transverse rugae medially. Anterior tentorial pit large. Clypeus slightly convex, apical margin blunt and almost straight; basal half with dense punctures, apical half sparsely punctate. MI 0.4. Mandible unmodified; ventral tooth smaller than dorsal tooth, slightly turned inwards. Genal carina reaching hypostomal carina shortly before mandible base.

Mesoscutum very finely rugose-punctate and dull; notaulus impressed in anterior 1/6 of mesoscutum. Sternaulus impressed in anterior 0.4 of mesopleuron. Mesopleuron with rather coarse longitudinal rugose-striation, speculum with dense punctures. Metapleuron rugose-punctate and partly striate; juxtacoxal carina present. Scutellum slightly elevated, about as long as wide, with dense punctures and complete lateral carinae. Propodeum rugose-punctate; spiracle slit-shaped. Area basalis trapezoid, about as long as wide, without median tubercle. Area superomedia hexagonal, 1.5x as long as wide; costula at its middle. Apophysis present as short, blunt, rounded lamella. Hind coxa finely punctate, without scopa. Hind femur finely and densely punctate, 4.7x as long as wide; external surface of hind tibia with few fine denticular spines. Claws simple, with strongly curved (by 90°) tips. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 2x their diameter; vein 2m-cu reaching its middle. Vein 1cu-a interstitial.



Figs 34–38. *Stirexephanes ocellator* sp. nov. ♀ (HT): 34. habitus, lateral view; 35. head, frontal view; 36. head, dorsal view; 37. mesosoma, lateral view; 38. propodeum, dorsal view.

Metasoma strongly oxygygous. Postpetiole slightly widened, granulate, without lateromedian carina; its median field slightly elevated. 2nd tergite

1.1x as long as wide. Gastrocoelus finely impressed, much longer than wide. Thyridium slightly oblique, 0.5x as wide as interval between thyridia. 2nd and

3rd tergites very finely rugose-punctate, 2nd tergite with coarse punctures in basal 1/4. Ovipositor sheath distinctly reaching beyond metasomal apex by length of 7th tergite.

Colour: black. Scape with reddish stripe ventrally; flagellum black, flagellomeres 8–14 ivory dorsally. Palps ivory; frontal orbit narrowly reddish. Mesosoma black; apical spot of postscutellum and narrow posterolateral stripe of propodeum yellowish. Frontal and apical half of upper margin of pronotum and stripe on subtegular ridge yellowish. Scutellum reddish, yellow apically. Metasoma black; small posterolateral spots on postpetiole and apical band on 2nd tergite yellow; 2nd and 3rd tergites with narrow reddish apical margins; 7th tergite completely ivory. Wings slightly infusate; pterostigma ochreous. Fore and mid coxae and trochanters, dorsal spots on hind coxa and hind trochanter ivory; fore and mid femora brownish; fore and mid tibiae and tarsi ochreous; hind femur black, narrowly yellow basally; hind tibia black, with diffuse subbasal brownish stripe; hind tarsus black, but 2nd tarsomere apically, 3rd and 4th tarsomeres entirely and 5th hind tarsomere basally ivory. Wings hyaline; pterostigma pale brownish.

Male unknown.

Distribution. Only known from Vietnam.

Stirexephanes rufithorax Riedel sp. nov.

Figs 39–43

Holotype: (♀) Vietnam, Ninh Binh, Cuc Phuong NP nr park center, 20.35507°N 105.60213°E, 525 m a.s.l., 8.v.2019, Yellow pan trap, S. Schmidt leg., Sample-ID ZSM-HYM-S27c7 (ZSM).

Paratype: (♂) same data (ZSM).

Etymology. The species name refers to the mainly reddish mesosoma.

Description

Female. Body length 10.5 mm. Flagellum with 33 segments, slender, almost filiform with slightly attenuated distal segments; 1st flagellar segment 4.6x as long as wide, widest segments about square. Temple rather short, distinctly and roundly narrowed behind eye. OED 1.2x and OOD 0.9x ocellar diameter. Occiput concave. Frons smooth ventrally, with fine rather dense punctures dorsally. Face with superficial fine punctures, medially with fine transverse striae. Anterior tentorial pit large. Clypeus slightly

convex, with sparse punctures; apical margin blunt and almost straight, with small median notch. MI 0.6. Mandible unmodified; ventral tooth smaller than dorsal tooth, slightly turned inwards. Genal carina reaching hypostomal carina shortly before mandible base.

Mesoscutum very finely rugose-punctate and dull; notaulus impressed in anterior 1/6 of mesoscutum. Mesopleuron finely and densely punctate, with fine longitudinal striae ventrally, speculum with dense punctures. Metapleuron finely punctate and partly striate; juxtacoxal carina present. Scutellum moderately elevated, slightly longer than wide, densely punctate and with lateral carina in basal 0.6. Propodeum completely carinated; spiracle slit-shaped. Area basalis trapezoid, about as long as wide, without median tubercle. Area superomedia hexagonal, 1.6x as long as wide; costula at 4/10 of its length. Apophysis present as short blunt tooth (about as long as basally wide). Hind coxa finely punctate and finely pilose, with short denser setae dorso-ventrally indicating a weak scopa. Hind femur finely and densely punctate, 4.6x as long as wide. Claws simple, tips strongly curved (c. 90°). Areolet pointed frontally; vein 2m-cu reaching proximad its middle. Vein 1cu-a slightly antefurcal by 1x its width.

Metasoma strongly oxyppygous. Postpetiole moderately widened, without lateromedian carina; its median field slightly elevated and with fine longitudinal rugae; lateral field finely rugose-punctate. 2nd tergite about as long as wide. Gastrocoelus moderately impressed, almost triangular. Thyridium small, oblique, 0.3x as wide as interval between thyridia. 2nd and 3rd tergites very finely rugose-punctate, dull. Following tergites granulate and ± shining. Ovipositor sheath distinctly reaching beyond metasomal apex by length of 7th tergite.

Colour: red and black. Head black; palps and flagellomeres 7–12 dorsally ivory. Small lateral and apical stripes of clypeus and narrow stripe of frontal orbit reddish. Mesosoma reddish; tegula and mesoscutum reddish-brown. Scutellum with yellow spot centrally. Metasoma black; postpetiole apically and 2nd tergite basally and apically with narrow reddish-yellow bands; 7th tergite mainly ivory. Fore and mid coxae and trochanters mainly, apical spurs of hind tibia and 3rd and 4th hind tarsomeres ivory. Legs otherwise blackish; fore femur with dorsal reddish stripe; fore tibia mainly reddish-yellow. Wings slightly infusate; pterostigma brownish.

Male. Body length 10.0 mm. Flagellum with >29 segments (tips broken off), bristle-shaped, distal

Figs 39–43. *Stirexephanes rufithorax* sp. nov. ♀ (HT): 39. habitus, lateral view; 40. head, frontal view; 41. mesosoma, lateral view; 42. propodeum, dorsal view; 43. basal tergites, dorsal view. ▷



39

5 mm



40



41



42



43

segments slightly nodose; 1st flagellar segment 3.9x as long as wide. OED 1.3x and OOD 0.8x ocellar diameter. MI 0.4. Area basalis slightly wider than long. Area superomedia 1.2x as long as wide. Hind femur 5.2x as long as wide. Vein 1cu-a of fore wing slightly postfurcal by 1x its width. 2nd tergite 1.2x as long as wide. Thyridium 0.6x as wide as interval between thyridia. Apical margin of hypopygium roundly elongate medially. Structure otherwise as described for ♀.

Colour: as described for ♀, except: flagellomeres 13–19 ivory ventrally; face with two ivory paramedian spots below antennal bases; 7th tergite, hypopygium and paramere entirely ivory; fore and mid femora with reddish-brown stripes dorsally; fore and mid tibiae ochreous frontally; fore tarsus partly and mid tarsus entirely blackish; hind tarsus except basal 3/4 of metatarsus ivory.

Remarks. This new species is characterized by the slightly notched apical margin of the clypeus and weak scopa of the hind coxa in female, and the mainly black head and metasoma and reddish mesosoma in both sexes.

Distribution. Only known from Vietnam.

Stirexephanes vietnamensis Riedel sp. nov.

Figs 44–48

Holotypus: (♀) Vietnam, Thua Thiên-Huế, Bach Ma National Park, 16.19302°N 107.85306°E, 1256 m, YPT, 8. vi. 2018, S. Schmidt, Sample-ID ZSM-HYM S272d, VIETBIO 29775-D04 (ZSM).

Description

Female. Body length 12 mm. Flagellum with 31 segments, slightly lanceolate, with blunt tip; 1st flagellar segment 3.8x as long as wide; widest segments 1.2x as wide as long. Temple short, strongly and roundly narrowed behind eye, dorsally 0.3x as long as eye. Ocelli large, OED 0.8x ocellar diameter. Occiput concave. Frons granulated, dull, with fine superficial punctures. Face dull, with fine transversely striate rugae. Clypeus slightly convex, apical margin sharp and almost straight; basal half with fine dense punctures and dull, apical half smooth and shiny, with sparse and coarser punctures. MI 0.6. Mandible rather slender; ventral tooth small, 0.3x as long as dorsal tooth, moderately turned inwards. Genal carina reaching hypostomal carina shortly before mandible base (distance 0.3x of malar space length).

Collar with narrow transverse groove containing some fine longitudinal ridges, but without strong median keel. Epomia strong. Side of pronotum finely rugose-punctate in dorsal 1/3, with coarse oblique rugae in ventral 2/3. Mesoscutum finely rugose-punctate and dull; notaulus impressed in anterior 1/5 of mesoscutum. Mesopleuron with fine longitudinal rugose-striation; speculum with fine dense punctures. Metapleuron finely rugose-punctate; juxtacoxal carina present. Scutellum slightly elevated, about as long as wide, with rather coarse punctures and complete lateral carinae. Propodeum rugose-punctate; spiracle slit-shaped. Area basalis halfmoon-shaped, without median tubercle. Area superomedia 1.5x as long as wide; costula at 4/10 of its length. Apophysis present as blunt, tooth-shaped lamella. Sides of area petiolaris indicated by some coarse longitudinal rugae. Hind coxa finely rugose-punctate, apical-ventrally with dense and slightly longer whitish setae indicating a weak scopa. Hind femur 4.3x as long as wide; external surface of hind tibia with some denticular spines. Claws simple, with strongly curved tips (by 90°). Areolet almost quadrangular, frontal distance between veins 2rs-m and 3rs-m 1x their width; vein 2m-cu reaching its middle. Vein 1cu-a slightly postfurcal by 1x its width. Nervellus strongly reclivous, intercepted at apical 0.8.

Metasoma strongly oxygygous. Postpetiole moderately widened, without latero-median carina; its median field finely rugulose. Lateral field 0.5x as wide as median field, with dense fine punctures. Tergites granulate, dull. 2nd tergite about as long as wide. Gastrocoelus not impressed. Thyridium comma-shaped, slightly oblique, 0.5x as wide as interval between thyridia. Ovipositor sheath distinctly reaching beyond metasomal apex by length of 7th tergite.

Colour: black. Scape and pedicel with reddish stripes; flagellum black, with ivory rings on flagellomeres 7–13. Head reddish-brown; palps ivory; orbits narrowly yellowish; occiput black. Mesosoma black, with some reddish-brown suffusion. Frontal and apical half of upper margin of pronotum and stripe on subtegular ridge yellowish. Scutellum reddish, yellow apically. Metasoma black; 2nd and 3rd tergites with narrow reddish apical margins; 7th tergite completely ivory. Fore and mid coxae mainly and all trochanters ivory; fore and mid legs otherwise reddish-brown; hind trochantellus and hind femur black, hind femur with reddish-brown suffusion centrally; hind tibia reddish-brown, blackish in apical 0.3; hind tarsus blackish, 2nd to 4th hind

Figs 44–48. *Stirexephanes vietnamensis* sp. nov. ♀ (HT): 44. habitus, lateral view; 45. head, frontal view; 46. head, dorsal view; 47. propodeum, dorsal view; 48. basal tergites, dorsal view.



44

5 mm



45



46



47



48

tarsomeres and basal half of 5th hind tarsomere ivory. Wings slightly infusate; pterostigma ochreous. Male unknown.

Remarks. The new species resembles *St. albitrochanterus* (Uchida, 1956) from Japan, but differs by its reddish-brown head, yellowish frontal margin and hind edge of pronotum and black 6th tergite.

Distribution. Only known from Vietnam.

Short key for the known species of *Stirexephanes* Cameron

- 1 2nd and 3rd tergites mainly black, at most with short yellow or ivory marks or bands 2
- 2nd and 3rd tergites completely or mainly reddish or reddish-yellow, rarely with basal blackish spots 12
- 2 All tergites with apical ivory bands. Oriental region *St. signatus* (Tosquinet, 1903)
- At least 4th and 5th tergites black, without ivory bands 3
- 3 Apical tergites black, without distinct ivory spots medially. All coxae blackish; fore and mid trochanters and trochantelli ivory. Borneo *St. melanarius* ♀ Cameron, 1912
- Apical tergites, at least 7th tergite with ivory median spot. Fore and mid coxae often ivory 4
- 4 Petiole ivory. Flagellum and hind tarsus with ivory rings. Legs reddish; hind femur and hind tibia apically black. Taiwan *St. parvidentatus* ♂ (Uchida, 1932)
- Petiole reddish or black. Hind legs often ± black 5
- 5 Mesosoma black frontally; scutellum, postscutellum, posterior half of mesopleuron, metapleuron and propodeum red. 1st tergite red. Borneo and Sumatra *St. rufopetiolaris* Riedel, 2023
- Colour pattern different. 1st tergite ± black ... 6
- 6 6th and 7th tergites with ivory median spots .. 7
- 6th tergite black, without ivory spots. 7th tergite usually ± ivory 10

- 7 Scutellum, tegula, apophysis of propodeum, apical band of postpetiole and posterolateral spots or stripes on 2nd and 3rd tergites ivory. Hind tarsus with ivory ring. New Guinea *St. triangulifer* (Cameron, 1911)
- Mesosoma entirely black, sometimes scutellum ± reddish. Hind tarsus black 8
- 8 All coxae and trochanters ivory. Scutellum with reddish spot. Borneo *St. albicoxis* Riedel, 2023
- Coxae and trochanters mainly blackish 9
- 9 Scutellum black. Legs including trochantelli black. Sulawesi *St. impictus* ♀ Heinrich, 1934
- Scutellum ivory. Legs partly brownish, trochantelli ivory. Japan *St. albitrochanterus* ♀ (Uchida, 1956)
- 10 Mesosoma mainly red, scutellum with central yellowish spot. Face black, with narrow reddish frontal orbit. Palps and flagellar rings ivory in both sexes. Face of male with paramedian ivory spots. Vietnam *St. rufithorax* sp. nov. ♀♂
- Mesosoma black, with or without ivory marks 11
- 11 Hind tarsus with ivory ring. Head black, frontal orbit narrowly reddish. Small posterolateral spots of postpetiole and apical band of 2nd tergite yellow. Vietnam *St. ocellator* sp. nov. ♀
- Hind tarsus black. Head reddish-brown, frontal orbit narrowly yellowish. Postpetiole black; 2nd and 3rd tergites with narrow reddish apical bands. Vietnam *St. vietnamensis* sp. nov. ♀
- 12 Basal tergite reddish or yellowish, apical tergite ± black. Mesosoma partly reddish-yellow, mesoscutum ± blackish 13
- All tergites ± reddish or yellowish, sometimes with blackish basal spots 14
- 13 Flagellum with ivory ring centrally. Femora apically, hind tibia and hind tarsus black. Sumatra *St. efferus* ♂ (Tosquinet, 1903)
- Flagellum without ivory ring. Hind tarsus with ivory ring. Hind femur red; hind tibia red, black in apical half. Sulawesi *St. pictus* ♀ (Heinrich, 1934)

- 14 Flagellum with central ivory ring or stripe (only ♂♂ known) 15
- Flagellum black or reddish, without ivory ring or stripe 16
- 15 Mesosoma laterally, petiole and fore and mid legs yellowish. Hind tarsus without ivory ring. Philippines *St. muticus* ♂ (Cushman, 1922)
- Mesoscutum black. Apical tergites ivory. Hind tarsus with ivory ring. China and Taiwan..... *St. tricolor* ♂ (Uchida, 1932)
- 16 Mesosoma including mesoscutum and propodeum entirely reddish-yellow. Tergites reddish-yellow, without black basal spots. Sulawesi.... *St. latimodjongis* ♀ (Heinrich, 1934)
- Mesoscutum and basal propodeum ± blackish. Tergites with basal black marks. China. *St. kulingensis* ♂ (Uchida, 1937)

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