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Taxonomic paper

Review of the genus *Metopheltes* Uchida, 1932 (Hymenoptera, Ichneumonidae) with description of a new species from Vietnam

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Abstract

A new species of the genus *Metopheltes* Uchida (Hymenoptera: Ichneumonidae, Ctenopelmatinae), *M. clypeoarmatus* **sp. n.** is described from Vietnam. *M. petiolaris* Uchida, 1932 is recorded for the first time from the Russian Far East. The other previously described species are also illustrated and discussed.

Keywords

Ctenopelmatinae, Perilissini, *Metopheltes*, *Metopheltes clypeoarmatus* **sp. n.**, *Metopheltes chinensis* (Morley, 1913), *Metopheltes petiolaris* Uchida, 1932, Vietnam, Russian Far East

Introduction

The genus *Metopheltes* was described as a monotypic genus by Toichi Uchida in 1932, with *M. petiolaris* Uchida, 1932 from Japan as the type species (Uchida 1932). It was

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placed in the tribe Perilissini of the subfamily Ctenopelmatinae (Hymenoptera, Ichneumonidae) and is considered to be closely related to the genus *Opheltes* Holmgren, 1859. But twenty years before another species of this genus, *M. chinensis* (Morley, 1913) was discovered from China and placed within the genus *Opheltes* (Morley 1913). It was transferred to the genus *Metopheltes* by Henry Townes (Townes et al. 1965).

The members of the genus are rather rare as well as Ctenopelmatinae in general in the Oriental region. This species-rich subfamily includes mostly koinobiont endoparasitoids of sawfly larvae (Hymenoptera: Symphyta) and is more diverse in temperate than tropical zones as the primary host groups are relatively scarce in tropical habitats (Gauld 1997, Veijalainen et al. 2012). We know 60 species of Ctenopelmatinae recorded from the Oriental region, mostly China, while in contrast 757 species are known from the Western Palaearctic (Yu et al. 2012). On the other hand sawfly diversity in South East Asia is expected to be rather high (Wei and Niu 2009) and the history of Ctenopelmatinae research in this region is rather recent when compared with Europe.

Nothing is known about the biology of *Metopheltes*. However species of the closely related (see Diagnosis) genus *Opheltes* were reared from large-bodied sawflies of the genera *Cimbex* Olivier, 1790 and *Agenocimbex* Rohwer, 1910 (Hymenoptera, Cimbicidae) (Aubert 2000, Giraud and Laboulbène 1877, Sheng et al. 2004, Townes 1945, Townes et al. 1965, Uchida 1928, Uchida 1930, Ulbricht 1909, Zirngiebl 1961). Hosts of *Metopheltes* members could be expected within cimbicid sawflies associated with deciduous trees. Here we provide a detailed up-to-date diagnosis of the genus and a description of a new species (*M. clypeoarmatus* **sp. n.** from Vietnam) is added. *Metopheltes petiolaris* Uchida, 1932 is recorded for the first time from Russian Far East.

Materials and methods

The specimen of *M. clypeoarmatus* **sp. n**. was collected with a Malaise trap in the Cuc Phuong National Park (Vietnam) in 2000 (Fig. 1). The biotope was a small piece of disturbed lowland rainforest on limestone just inside the park and about 1 km from the headquarter buildings. The holotype of the new species is deposited in the Naturalis Biodiversity Center, Leiden (RMNH). We also studied specimens of *M. petiolaris* Uchida, 1932 from the Zoological Museum of Moscow State University (ZMUM) and the Smithsonian Institution (USNM) and *Opheltes glaucopterus* (Linnaeus 1758) from the Swedish Museum of Natural History (NHRS). The only known specimen of *M. chinensis* which is actually the type was not available for examination due to a loan policy of the British Museum of Natural History (BMNH) and we had to use photos. The morphological terminology follows Gauld (Gauld 1997). Photographs of the specimens, excluding *M. chinensis*, were taken with a Canon EOS 7D digital camera and combined using Zerene®.

Figure 1.

Distribution of *M. clypeoarmatus* **sp. n.**

Taxon treatments

Metopheltes Uchida, 1932

Type species

Metopheltes petiolaris Uchida, 1932 - Uchida 1932.

Diagnosis

Metopheltes shares several character states with *Opheltes*: the presence of a thyridium on the second tergite of the metasoma (Fig. 2c), the absence of a distinct tyloid on the basal flagellomere and a deep groove extending the full length of the mesopleuron (Fig. 3c) (Townes 1970). This mesopleural character is not unique within Perilissini and occurs also in *Priopoda impressa* Reshchikov, 2012 (Reshchikov 2012) and some Westwoodiini (Wharton et al. 2010). Unlike *Opheltes* (Fig. 4a) the second maxillary palpomere is not modified in *Metopheltes* (Fig. 2d) while the frontal carina (a character state previously found only in *Opheltes*) is present in *M. clypeoarmatus* **sp. n.** (Fig. 3b), though less developed. *Metopheltes* also differs from *Opheltes* by the shape of the propodeum in lateral view: the basal part rounded (elevated at an acute angle in *Opheltes*); its apical part comparatively elongate and the apical transverse carina not elevated (Figs 2a, 4b). The median apical ligulate process of the last visible sternite of male is notched apically and laterally (Fig. 5f). The tip of the aedeagus is bent over and ends in an adze-like blade.

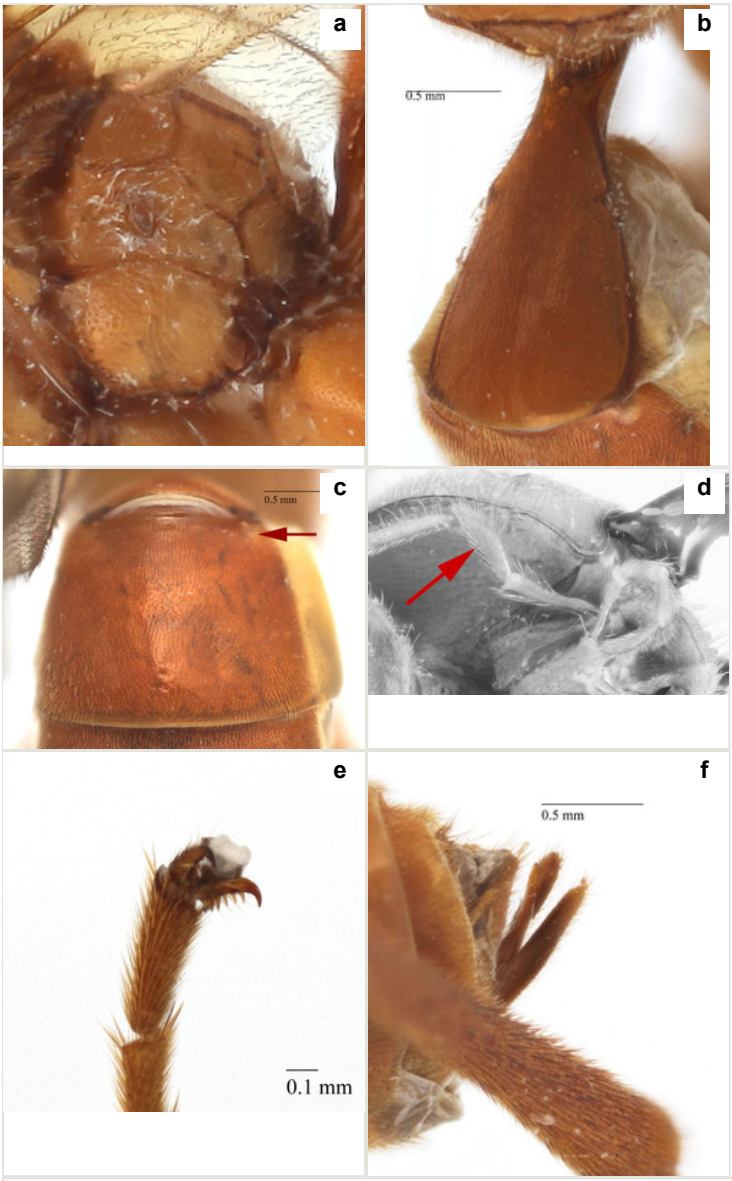

Figure 2.

Holotype female *Metopheltes clypeoarmatus* **sp. n.**

a: Propodeum in profile.
b: First metasomal tergite.
c: Second metasomal tergite.
d: Second maxillary palpomere.
e: Tarsal claw.
f: Ovipositor.

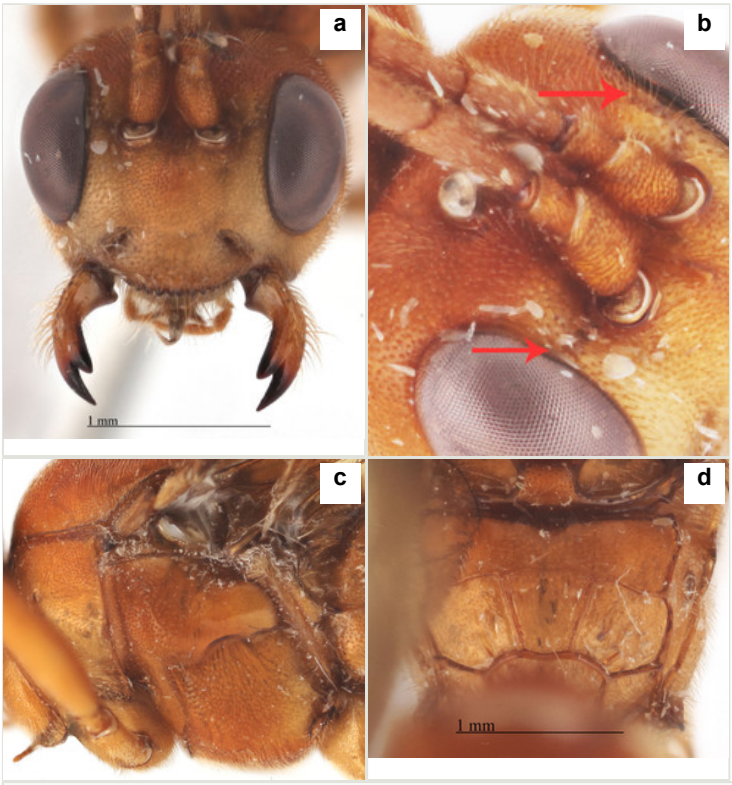

Figure 3.

Holotype female *Metopheltes clypeoarmatus* **sp. n.**

a: Face.
b: Frontal carina.
c: Mesopleuron.
d: Propodeum in dorsal view.

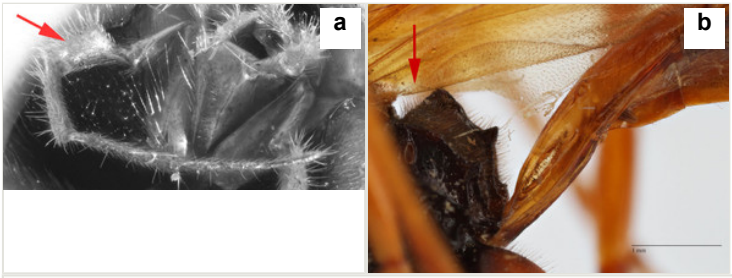

Figure 4.

Opheltes glaucopterus (Linnaeus, 1758).

a: Second maxillary palpomere.
b: Propodeum in profile.

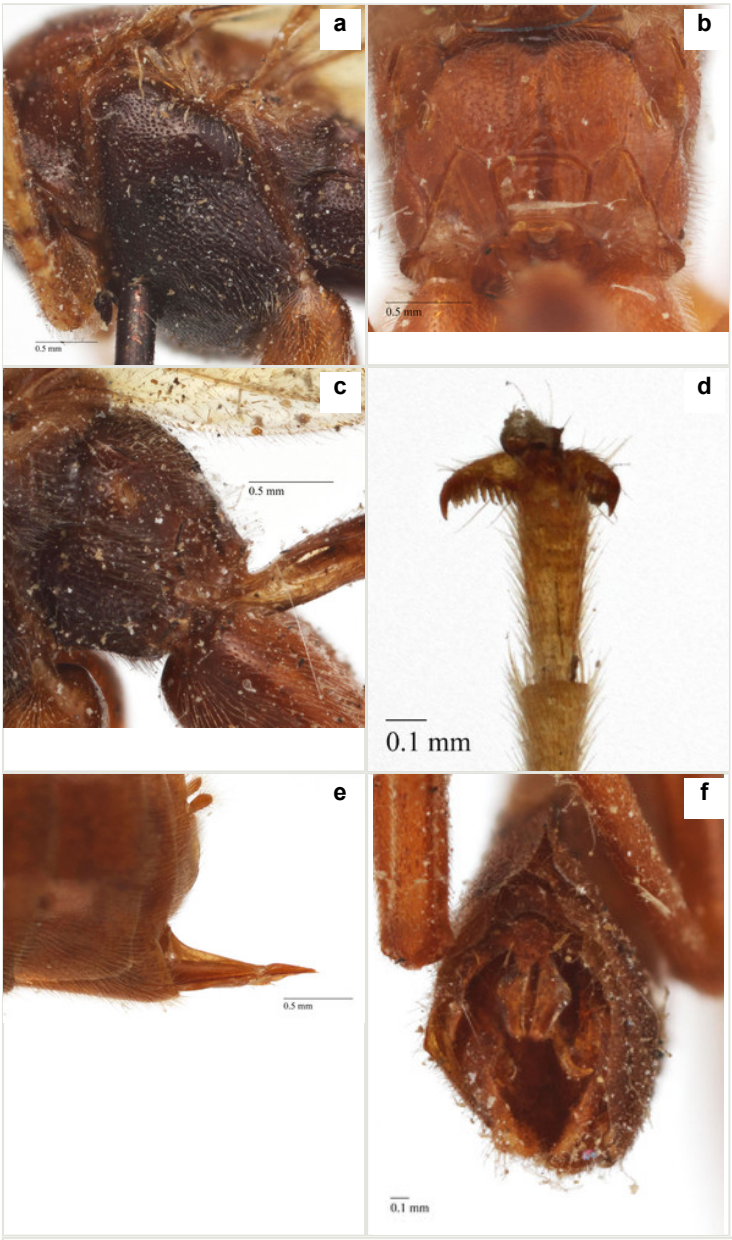

Figure 5.

Metopheltes petiolaris Uchida, 1932.

a: Mesopleuron, female.
b: Propodeum in dorsal view, female.
c: Propodeum in profile, female.
d: Tarsal claw, female.
e: Ovipositor, female.
f: Last visible sternite, male.

Metopheltes chinensis (Morley, 1913)

Nomenclature

Opheltes chinensis Morley, 1913 - Morley 1913: 135.

Material

Holotype:

a. country: **China**; eventDate: 1854; individualCount: 1; sex: male; recordedBy: Fortune; institutionCode: BMNH

Distribution

China.

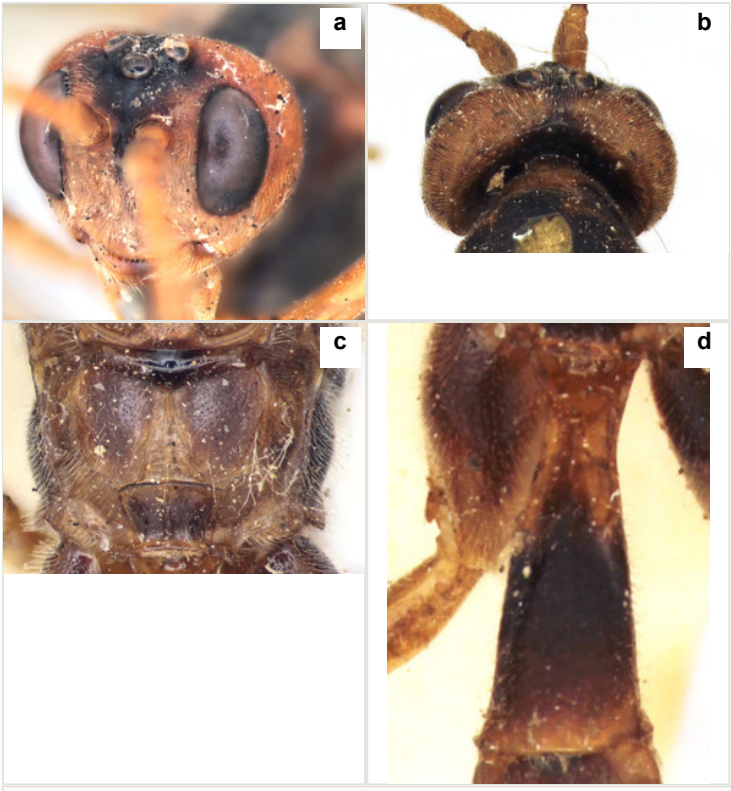

Figure 6.

Holotype male *M. chinensis* (Morley, 1913).

a: Face.
b: Head in dorsoposterior view.
c: Propodeum.
d: First metasomal tergite.

Notes

This species is represented by a single male specimen. In the original description (Morley 1913) the type locality is not clearly mentioned, and the label data is poor, "a single male in British Museum is labelled "Northern China", but was more probably taken about Shanghai, by Mr. Fortune." (Morley 1913). However photos of the type specimen (Fig. 6) allow one to distinguish this species from closely related *M. petiolaris*. In future if more representative material of *Metopheltes* can be collected it will be possible to clarify the status of this species and provide an identification key for the group.

Metopheltes clypeoarmatus Reshchikov & Achterberg, sp. n.

- ZooBank urn:lsid:zoobank.org:act:BB674DDC-E6FB-4E0D-9A6A-60CF17DB5C4A

Material

Holotype:

a. country: **Vietnam**; stateProvince: Ninh Binh; verbatimLocality: Cuc Phuong N.P., near entrance, c. 225 m; samplingProtocol: Malaise trap; eventDate: 14.iv.-1.v.2000; individualCount: 1; sex: female; recordedBy: Mai Phu Quy; institutionCode: RMNH

Description

Body length 11 mm. Antennal flagellum with 34 segments. Width to length ratio of scapus 0.5 (Fig. 3a). First flagellomere 3 times as long as wide, without distinct tyloid. Head not narrowed behind the eyes, temple rounded. Maximal length of temple 1.3 times transverse eye diameter; minimal length of temple equal to transverse eye diameter. Face as wide as longitudinal eye diameter; moderately convex, bulging; matt; densely and shallowly punctate, densely pubescent. Frontal carina between eye and antennal socket present (Fig. 3b). Clypeus flat, very slightly separated from face by a shallow impression; apical margin of clypeus moderately obtuse and serrate. Posterior ocellus separated from eye by 2.5 times maximum diameter of ocellus. Tentorial pits large (Fig. 3a). Width of malar space 0.3 times of basal width of mandible. Lower mandible tooth longer than upper one. Second maxillary palpomere not modified (Fig. 2d). Hypostomal carina joining occipital carina well above base of mandible (Fig. 2d). Occipital carina complete.

Mesosoma matt, punctate, with sparse yellowish setae. Notauli not impressed. Epicnemial carina raised at lower part of mesopleuron, not reaching anterior margin of mesopleuron, terminating dorsally in rounded transverse ridge that sharply delimits a median longitudinal furrow extending across middle of mesopleuron. Mesopleuron matt, densely and shallowly punctate, with deep groove extending full length of mesopleuron (Fig. 3c). First tibia with an apical tooth. Apical margin of mid tibia without distinct tooth similar to that on fore tibia. Posterior hind tibial spur at least 11 times longer than its maximum basal width. Tarsal claws pectinate with comparatively short teeth (Fig. 2e). Areolet of fore wing petiolate. Radius leaving pterostigma little before its

middle. Second recurrent vein with two bullae. Nervulus postfurcal. Nervellus intercepted above its middle. Propodeal carinae complete, strongly raised, except basal part of dorso-median longitudinal carina; apical transverse carina curved towards metasoma; area superomedia trapezoidal and as long as wide (Fig. 3d).

Metasoma slightly shiny, smooth, sparsely pubescent. First metasomal tergite 0.4 times wider than its length (Fig. 2b); slightly prominent dorsally in profile; without shallow median longitudinal impression; only basally bordered by lateral longitudinal carinae. Second metasomal tergite with thyridium (Fig. 2c). Apical metasomal segments compressed laterally. Ovipositor straight, as long as height of last tergite, without notch and nodus apically, swollen basally (Fig. 2f).

Colour. Body yellowish-red (Figs 2, 3, 7). Mandible black apically (Fig. 3a). Apical part of antennal flagellum, hind tibia and tarsus reddish. Pterostigma brown. Fore wing very slightly infuscate apically.

Figure 7.

Holotype female *Metopheltes clypeoarmatus* **sp. n.**, habitus in lateral view.

Diagnosis

This species differs from other two members of *Metopheltes* by the following combination of character states: first flagellomere shorter (3.0 times as long as wide) than in *M. petiolaris* (6.0 times as long as wide) and *M. chinensis* (4.0 times as long as wide Fig. 6b clypeus); clypeus apically serrate (Fig. 3a); tentorial pits large (Fig. 3a); clypeus flat, very slightly separated from face by a shallow impression; posterior ocellus separated from eye by 2.5 times its maximum diameter (1.7 times in two other species Fig. 6a); frontal carina between eye and antennal socket present (Fig. 3b); upper hind part of mesopleuron polished and smooth (Figs 3c, 5a; punctate in *M. petiolaris*); apical margin of middle tibia without distinct tooth similar to that on fore tibia; posterior hind tibial spur at least 11.0 times longer than maximum basal width (6.0–7.0

times in *M. petiolaris*); hind femur and tibia 4.8 and 7.0 times as long as wide, respectively, (10.0 and 11.0 times in *M. petiolaris*); tarsal claws shorter and pectinate with comparatively short teeth (Figs 2e, 5d); areolet petiolate; radius leaving pterostigma only little before its middle; propodeum more precipitous (Fig. 2a) than in *M. petiolaris* (Fig. 5c), its carinae complete (Fig. 3d) and strongly raised (except basal part of dorso-median longitudinal carina; only area apicalis defined in *M. petiolaris* (Fig. 5b) and *M. chinensis* (Fig. 6c); first metasomal tergite (Fig. 2b) 0.4 times wider than long (0.6 times in *M. petiolaris* or *M. chinensis* Fig. 6d *chinensis*); ovipositor without notch and nodus apically, (ovipositor with shallow notch and weak nodus in *M. petiolaris* Figs 2f, 5e).

Etymology

The species epithet *clypeoarmatus* refers to the serrate apical margin of the clypeus.

Distribution

N. Vietnam.

Metopheltes petiolaris Uchida, 1932

Materials

a. country: **Japan**; stateProvince: Wakasa; individualCount: 1; sex: female; recordedBy: T. Fukai; institutionCode: USNM
b. country: **Russia**; stateProvince: Primorsky Krai; verbatimLocality: Spassk-Dalny; eventDate: 17.vi.1961; individualCount: 1; sex: female; recordedBy: A. Zhelokhovtsev; institutionCode: ZMUM
c. country: **Russia**; stateProvince: Primorsky Krai; verbatimLocality: around Vladivostok; eventDate: 28.vi.1940; individualCount: 1; sex: male; recordedBy: A. Romanov; institutionCode: ZMUM
d. country: **Russia**; stateProvince: Primorsky Krai; verbatimLocality: Khasansky District, Kedrovaya Pad Nature Reserve; eventDate: 6.vi.1962; individualCount: 2; sex: male; recordedBy: A. Rasnitsyn; institutionCode: ZMUM

Diagnosis

This species differs from the other two members of *Metopheltes* by the following combination of character states: first flagellomere longer (6.0 times as long as wide) than in other species; ventrally clypeus not serrate; posterior ocellus separated from eye by 1.7 times its maximum diameter; frontal carina between eye and antennal socket absent; upper hind part of mesopleuron punctate; apical margin of middle tibia with distinct tooth similar to that on fore tibia; posterior hind tibial spur at least 6.0 times longer than maximum basal width; hind femur and tibia 10.0 and 11.0 times as long as wide, respectively; tarsal claws long and pectinate with long teeth (Fig. 5c); propodeum acclivous (Fig. 5c), not precipitous like in *M. clypeoarmatus* **sp. n.** (Fig. 2a), its carinae

incomplete, only area apicalis defined (Fig. 5b); first metasomal tergite 0.6 times wider than long; ovipositor with shallow notch and weak nodus.

Distribution

Japan, Russian Far East (first record).

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