

**A NEW SPECIES OF THE GENUS *Trigonura* Sichel, 1865
(Hymenoptera: Chalcididae) FROM VIETNAM**

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ABSTRACT

Based on the specimens of chalcid parasitoid wasps collected by malaise traps set in fruit orchards in the adjacent area of Ha Noi city from 2018–2019, one new species of the genus *Trigonura*, *T. vietnamica* Long, sp. n., was described and illustrated. Two species of this genus from Vietnam are keyed, the comparative characters of the new species were also given to compare with two similar species from the Oriental Region, *T. indica* Narendran and *T. luzonensis* Narendran.

Keywords: Chalcididae, *Trigonura*, new species, parasitoid wasps, Oriental, Vietnam.

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INTRODUCTION

The family Chalcididae Latreille, 1817 (Hymenoptera: Chalcidoidea), a moderate-sized family within the Chalcidoidea, is apparently polyphyletic, though the different subfamilies. The family composed mostly of parasitoids and few hyperparasitoids. As presently defined, there are about 90 valid genera and approximately 1500 valid species so far described from the world (Noyes, 2011; Narendran & van Achterberg, 2016). The genus *Trigonura* Sichel, 1865 is one of the moderately diverse genus among the family Chalcididae, and up to date, the genus comprises twenty nine valid species, of those eleven species were reported from the Oriental region. The Chalcididae of Vietnam was revised by Narendran & van Achterberg (2016) with 16 genera and 68 species reported, and in this work there was one species, *Trigonura luzonensis* Narendran, 1987, was recorded from Vietnam. In this paper we aim to report the discovery of another one new species of the genus *Trigonura* Sichel, 1865 from Vietnam.

MATERIALS AND METHODS

This study is based on the chalcid wasp specimens captured by malaise traps set in fruit orchards in the surrounding areas of Ha Noi city from 2018 through 2019. All the specimens, including types are deposited in the Parasitic Hymenoptera Collection at the Institute of Ecology and Biological Resources (IEBR), Vietnam Academy of Science and Technology (VAST), Ha Noi, Vietnam.

Terminology used in this paper follows Narendran & van Achterberg (2016). For identification of the genera of the subfamily Chalcididae, see Narendran & van Achterberg (2016). For virtually all species we used an Olympus® SZ61 binocular microscope; key to species and description of species are based on female; measurements were carried out using an Olympus® SZ40 binocular microscope; The colour photographs were made with Sony® 5000 digital camera attached to a Nikon® SMZ 800N binocular microscope connected to a PC at IEBR. The

scale-lines of the plates indicate in mm. Abbreviations used in this paper are as follows: POL = postocellar line; OOL = ocular-ocellar line; OD = diameter of posterior ocellus; MT: Malaise trap; “Chalcid.+number’: code number indexing for specimens of the Chalcididae in the collection at IEBR; N = North, STCT = Department of Insect Ecology. All types of the new species are deposited in IEBR (Ha Noi, Vietnam).

RESULTS

SYSTEMATICS

Trigonura Sichel, 1865

Trigonura Sichel, 1865: 358, 376–377 (as subgenus of *Phasganophora* Sichel, 1865).

Type species: *Phasganophora crassicauda* Sichel, by monotypy.

Bactrochalcis Kieffer, 1912: 463. Type species: *Bactrochalcis reticulata* Kieffer, by monotypy. Synonymised with *Trigonura* Sichel by Steffan (1951b).

Centrochalcis Cameron, 1913: 92. Type species: *Centrochalcis ruficaudis* Cameron, by monotypy. Synonymised with *Trigonura* Sichel by Waterston (1922).

Centrochalcidea Gahan & Fagan, 1923: 28. Replacement name for *Centrochalcis* Cameron, 1913, not 1905.

Chalcidellia Girault, 1924a: 1–3. Type species: *Chalcis euthyrrhini* Dodd, by original designation. Synonymised with *Trigonura* Sichel by Bouček (1988b).

Urochalcis Nikol’skaya, 1952: 91. Type species: *Urochalcis ninae* Nikol’skaya, by original designation. Synonymised with *Trigonura* Sichel by Nikol’skaya (1960).

Checklist and distribution of *Trigonura* species of the Oriental region

Trigonura bakeri Masi, 1926/Philippines.

Trigonura gladiator (Walker, 1862)/Malaysia.

Trigonura indica Narendran, 1987/India.

Trigonura javensis Narendran, 1987/Indonesia.

Trigonura luzonensis Narendran, 1987/
India, Philippines, Vietnam.

Trigonura nishidai Narendran, 1989/
China, Laos.

Trigonura samarensis Narendran, 1987/
India, Philippines.

Trigonura shonima Narendran, 1989/
Malaysia.

Trigonura steffani Narendran, 1987/India.

Trigonura tenuicaudis Waterston, 1922/
India.

Trigonura townesi Narendran, 1989/
Malaysia.

Trigonura vietnamica Long, **sp. n.**/
Vietnam.

**Key to Vietnamese species of *Trigonura*
Sichel**

1. In lateral view, scutellum highly convex anteriorly higher upper level of mesoscutum (Fig. 200 in Narendran & van Achterberg, 2016); PMV longer than STV; hind femur and tibia completely black.....*T. luzonensis* Narendran, 1987
- In lateral view, scutellum convex medially, almost at the upper level of mesoscutum (Figs 1, 4); PMV $0.7 \times$ STV (Fig.); hind femur brown, except baso-dorsally and apico-ventrally reddish-yellow; tibia mostly brownish-yellow, infuscate basally.... *T. vietnamica* Long, **sp. n.**

Description of species

***Trigonura vietnamica* Long, sp. n.** (Figs 1–9)

Material. Holotype, ♀, “Chalcid.0068” (IEBR), N Vietnam: Ha Noi, Tu Liem, Minh Khai, fruit orchard, MT, 20°23’N 105°34’E, 8 m, 20–30.iv.2019, STCT. Paratypes, 2 ♀, “Chalcid.0069”, “Chalcid.0070” (IEBR), *ibid*; paratype, 1 ♀, “Chalcid.0071” (IEBR), N Vietnam: Ha Noi, Chuong My, Thuy Xuan Tien, fruit orchard, MT, 20°52’59.7”N 105°34’35.5”E, 11 m, 20–30.iv.2019, STCT.

Diagnosis. Differences between *Trigonura vietnamica* Long, sp. n. and *T. luzonensis* Narendran, 1987, from Philippines and Vietnam (Narendran & van Achterberg, 2016) are given in the key, the new species can be distinguished from *T. luzonensis* by the following characters: a) POL $2.2 \times$ OOL ($2.5–3.1 \times$ in *T. luzonensis*); b) PMV distinctly shorter than STV (slightly longer than STV in *T. luzonensis*); c) in lateral view, scutellum slightly convex, and almost at the same level of mesoscutum (highly convex above level of mesoscutum in *T. luzonensis*); d) T1 $1.1 \times$ its width (T1 shorter than its width in *T. luzonensis*); and e) Hind femur dark brown laterally, yellowish-red baso-laterally and apico-ventrally (blackish without any yellow spot in *T. luzonensis*).

Based on the diagnosis given by Narendran & van Achterberg (2016), the new species is close to *Trigonura indica* Narendran, 1987, from India, but differs from the latter by the following characters: a) Hind femur densely and minutely punctate (in *T. indica* the punctures are less close on the hind femur); and b) Hind femur dark brown laterally, reddish-yellow baso-laterally and apico-ventrally (in *T. indica* hind femur yellowish-red with a distinct characteristic yellow spot at the apex).

Description. ♀, length of body 5.7 mm, fore wing 3.2 mm, antenna 2.5 mm (Fig. 1).

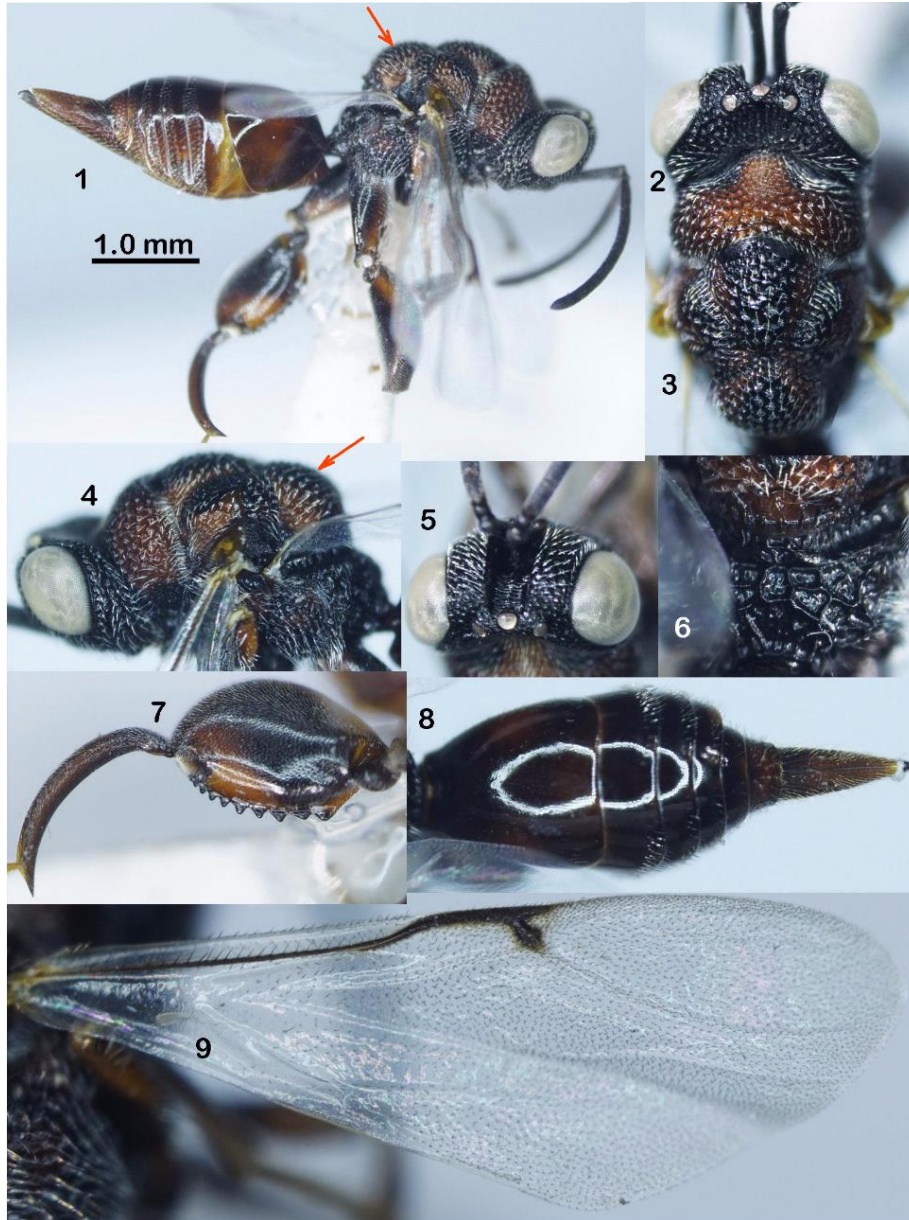
Head. Middle antennal segment $2.0 \times$ as long as wide (10:5); apical antennal segment $1.7 \times$ as long as subapical segment (12:7); in dorsal view, POL $2.2 \times$ OOL; POL : OD : OOL = 13 : 4 : 6 (Fig. 2); face, frons, vertex and temple foveolate-rugose; area between scrobes finely transversely strigate-rugose.

Mesosoma. In lateral view, scutellum slightly convex, almost at the same level of mesoscutum (Figs 1, 4); pronotum transversely rugose dorsally, foveolate-rugose laterally (Fig. 4); mesoscutum foveolate-punctulate (Fig. 3), except anterior narrow transverse area of mesoscutum finely costate; scutellum foveolate-punctulate; metanotum and scutellum apically crenulate (Fig. 6);

propodeum areolate (Fig. 6); metapleuron setose, foveolate-rugose (Fig. 4).

Wings. Length of fore wing $2.1 \times$ as long as its maximum width (82 : 39); fore wing veins MV : STV : PMV = 16 : 6 : 4 (Fig. 9); length of hind wing $4.3 \times$ as long as its maximum width (56 : 13); hind wing with three hamuli.

Legs. Hind coxa densely setose baso-ventrally, almost smooth apically; hind femur with close minute setigerous pits, outer ventral margin with a row of 10 teeth, basal tooth distinctly larger than others, and size of teeth decreasing from base to apex (Fig. 7).



Figures 1–9. *Trigonura vietnamica* Long, sp. n. Holotype, female (lateral view) 1. Habitus, 2. Head dorsal view 3. Mesoscutum 4. Mesopleuron 5. Frons and scrobes 6. Metanotum and propodeum 7. Hind femur and tibia (lateral view) 8. Metasoma (dorsal view) 9. Fore wing

Metasoma. First metasomal tergite (T1) $1.1 \times$ as long as wide (47:44) (Fig. 8); dorsally, epipygium long, with dorsal median carina (Fig. 8), $0.7 \times$ as long as T1 (18 : 26), and $0.3 \times$ as long as length of T1–T6 (18 : 57).

Colour. Head black; scapus black, except yellow at extreme base; antennae black; eye and ocellus eye and ocellus reflecting whitish-grey; mandible yellow, except its black tips; pronotum reddish-yellow, black ventrally; tegula yellow; lobes of mesoscutum blackish brown dorsally, reddish-yellow laterally; scutellum blackish brown dorsally, reddish-yellow laterally and apically; metanotum and propodeum black; fore and middle coxa dark brown to black; fore and middle femur and tibia yellow, but yellowish-brown dorsally; fore and middle tarsus yellow; hind coxa brown, but reddish-yellow apico-ventrally; hind femur dark brown laterally, reddish-yellow baso-laterally and apico-ventrally; fore wing veins pale brown; wing membrane hyaline.

Male. Unknown.

Etymology. The new species is named after the country, where the holotype was discovered (Vietnam).

Host. Unknown.

Distribution. N Vietnam: Ha Noi.

DISCUSSION

Recently, in the paper published by Narendran & van Achterberg (2016), of the total 68 species belonging to 16 genera reported, 37 species and 11 genera were new for Vietnam. Probably this is the first taxonomical work dealing with chalcid wasps from Vietnam. Additionally, in the published paper by Narendran & van Achterberg (2016), the chalcid specimens were mostly collected using malaise traps from Southern and North Central Vietnam. The previously recorded species of Chalcididae from Vietnam can also be found in the chalcidoid database: www.nhm.ac.uk/research-curation/research/projects/chalcidoids/database/. Our small project aims to reveal chalcid wasps as

parasitoids of coleopteran, dipteran and lepidopteran insect pests damaging agricultural and fruit crops in Northern and Southern Vietnam, many specimens of Chalcididae were collected from different habitats and are awaiting to be treated. In this paper, the discovery is only partly described, and unfortunately the host of this new chalcid wasp is unknown yet.

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