

# Description of A New Species of *Trissolcus* Ashmead (Hymenoptera: Scelionidae) Parasitic on Eggs of *Megymenum gracilicorne* Dallas (Hemiptera: Dinidoridae)

Kazunori MATSUO<sup>1)\*</sup>, Yoshimi HIROSE<sup>2)</sup> and Norman F. JOHNSON<sup>3)</sup>

<sup>1)</sup> Biosystematics Laboratory, Faculty of Social and Cultural Studies, Kyushu University, Fukuoka, Japan, Fukuoka 819–0395, Japan. E-mail: matsuosudachi@scs.kyushu-u.ac.jp

<sup>2)</sup> Kyushu University, Fukuoka 819–0395, Japan.

<sup>3)</sup> Department of Evolution, Ecology and Organismal Biology, The Ohio State University, Columbus, OH 43212, USA.

\* Corresponding author.

**Abstract** *Trissolcus brevinotaulus* Matsuo, Hirose, and Johnson sp. nov. (Hymenoptera: Scelionidae) is described as an egg parasitoid of *Megymenum gracilicorne* Dallas, 1851 (Hemiptera: Dinidoridae) in Japan. This is the first record for a *Trissolcus* species that parasitizes eggs of Dinidoridae.

## Introduction

*Trissolcus* Ashmead (Hymenoptera: Scelionidae) contains at least 190 species worldwide (Johnson, 1992; Matsuo *et al.*, 2014; Kononova, 2014; Talamas *et al.*, 2015; Talamas *et al.*, 2017). *Trissolcus* species have been reared from eggs of the following insect families: Pentatomidae, Scutelleridae, Acanthosomatidae, Coreidae, Tesseratomidae and Alydidae (Hemiptera) (Johnson, 1991); Diaspididae (Coccoidea) (Soyka, 1942); Erebididae, Gelechiidae, Noctuidae, Sphingidae and Tineidae (Lepidoptera) (Ratzeburg, 1848; Nixon, 1938; Mani & Sharma, 1982; Rajmohana, 2006; Talamas *et al.*, 2015).

In July 2013, an undescribed species of *Trissolcus* was reared from eggs of *Megymenum gracilicorne* Dallas, 1851 (Hemiptera: Dinidoridae) in Ibaraki, Japan. In the present study, we described it with morphological illustrations.

## Materials and methods

Egg masses of *M. gracilicorne* were collected from Ibaraki and Fukuoka, Japan in 2013 and 2017, respectively. The reared wasps were observed under a binocular microscope (LEICA S8APO). Several specimens were gold-coated for microphotography with a JEOL JSM-5600LV scanning electronic microscope. Adult morphological terminology

follows usage in Talamas *et al.* (2017) and that for additional characters of antenna follows usage in Lahey *et al.* (2019). The holotype and paratypes of the new species are deposited in the collection of the Biosystematics Laboratory, Faculty of Social and Cultural Studies, Kyushu University. We also examined the holotype of *T. vindicius* (Nixon) that has been deposited in the Natural History Museum, London, UK.

## Taxonomy

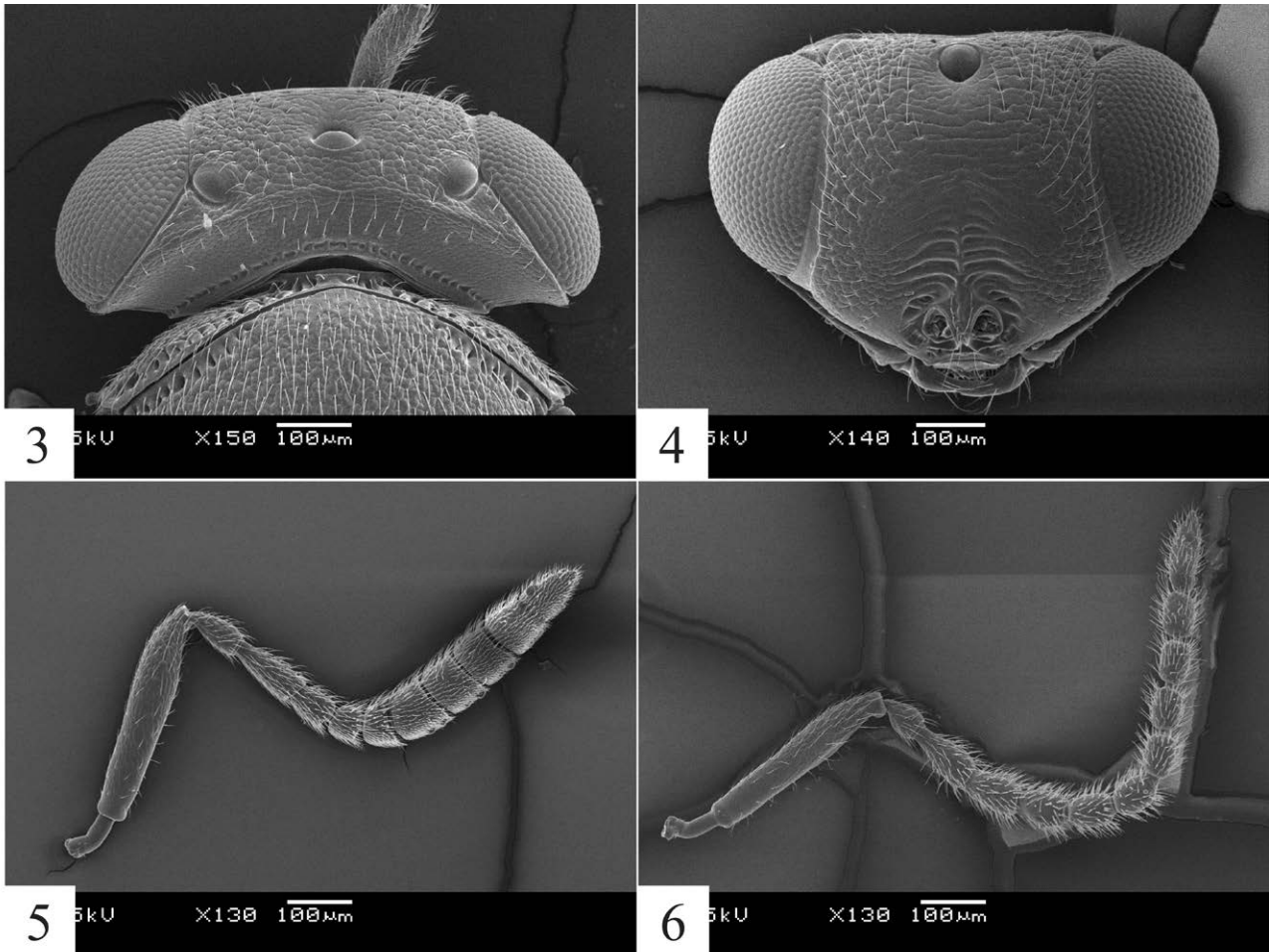
*Trissolcus brevinotaulus* Matsuo, Hirose and Johnson, sp. nov.

*Specimens examined.* Holotype: female, emerged on 8 July 2013 from an egg of *M. gracilicorne* collected by T. Hosokawa from Shimoda, Shimotsuma, Ibaraki, Japan. Paratypes: three females and two males, same data as holotype; one male, emerged on 14 July 2013 from an egg of *M. gracilicorne* collected by T. Hosokawa from Shimoda, Shimotsuma, Ibaraki, Japan; three females and one male, emerged in June 2017 from eggs of *M. gracilicorne* collected by T. Hosokawa from Fukuoka, Japan.

*Description.* Female (Fig. 1). Body length 1.6–1.7 mm. Head, mesosoma, and metasoma black. Radicle and A1–A4



Figs. 1–2. *Trissolcus brevinotaulus* Matsuo, Hirose and Johnson, sp. nov. 1, Female; 2, male.



Figs. 3–6. *Trissolcus brevinotaulus* Matsuo, Hirose and Johnson, sp. nov. 3, Head in dorsal view; 4, head in frontal view; 5, female antenna; 6, male antenna.

brown; A5–A6 dark brown; A7–A11 black. Coxae of all legs black; all femora and tibiae brownish yellow.

Head in dorsal view 2.6–2.8 times as wide as long; hyperoccipital carina complete and sharp (Fig. 3); orbital furrow smooth, expanded ventrally; preocellar pit absent; frons between antennal scrobe and anterior ocellus coriaceous with shallow transverse striae; antennal scrobe transversely striated (Fig. 4); facial striae absent; gena reticulated; genal carina absent; anterior margin of clypeus with two setae. Antenna 11 segmented (Fig. 5); radicle 2.5–3.0 times as long as wide; A1 4.7–5.6 times as long as wide; A3 1.1–1.3 times as long as A2; A7–A10 with two papillary sensilla; A11 with one papillary sensillum.

Mesosoma 0.9–1.0 times as long as wide; epomial carina absent; netrion sulcus complete; mesoscutal humeral sulcus indicated by cells; mesoscutum wholly reticulated; notauli present, extending 0.3–0.4 length of mesoscutum (Fig. 7); mesoscutellum wholly reticulated; postacetabular sulcus comprised of cells; shape of episternal foveae irregular; episternal foveae appear as a continuation of the postacetabular sulcus and extend dorsally to the mesopleural pit (Fig. 8); sculpture of anterior mesepisternum finely reticulate; mesopleural carina well defined in dorsal half, absent in ventral half; paracoxal sulcus in ventral half of metapleuron indicated by a line of distinct foveae;

anteroventral extension of metapleuron long, extending to mesocoxa.

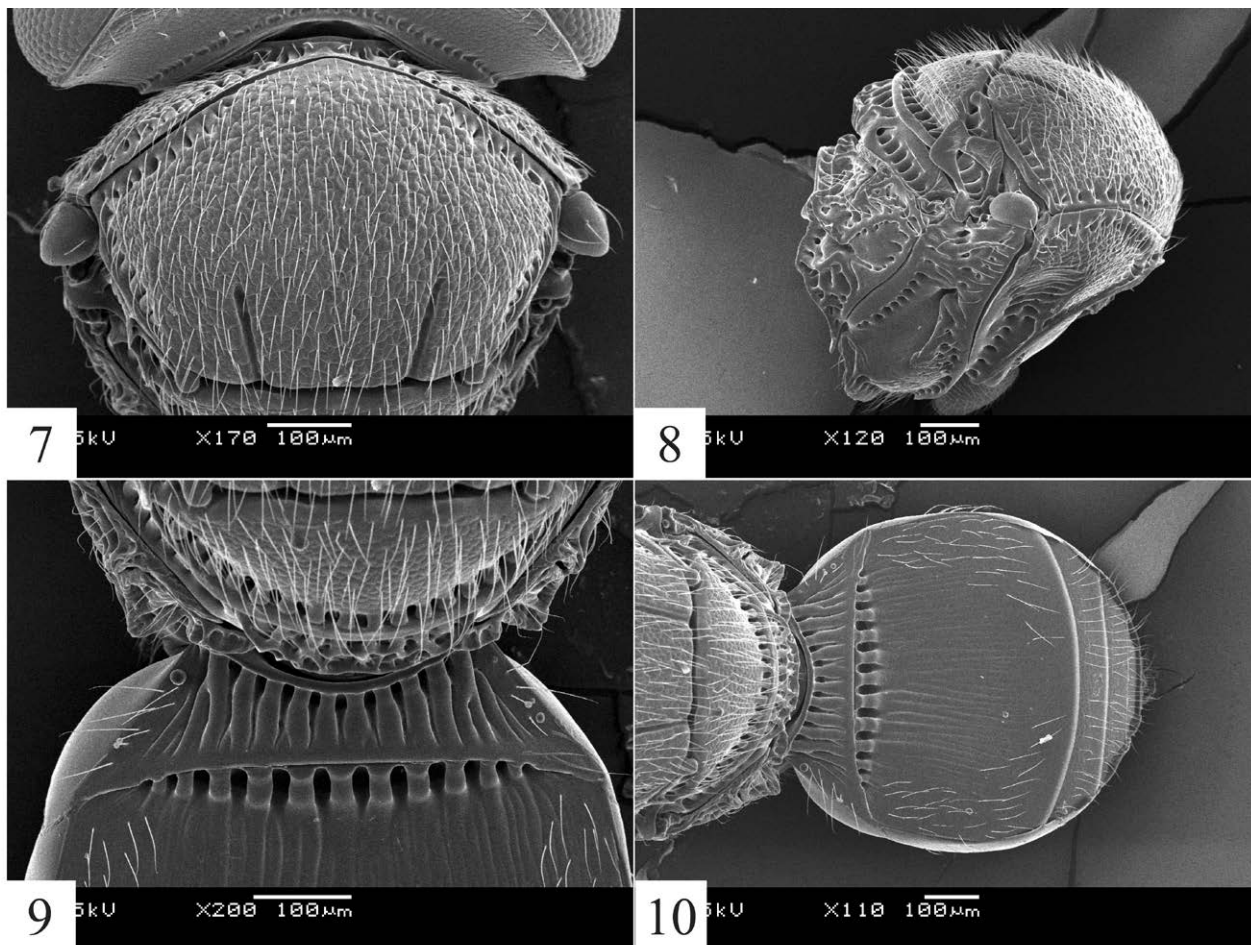
Metasoma 1.1–1.2 times as long as wide; T1 without sublateral setae (Fig. 9); T2 with many setae laterally; longitudinal striae on T2 extend 0.7–0.8 of its length; T3–T5 with small punctures and bearing many setae (Fig. 10); laterotergite 1 without setae.

Male (Fig. 2). Differs from female as follows: Body length 1.5–1.7 mm. Antenna with 12 segments (Fig. 6). T1 with one or two pairs of sublateral setae.

*Distribution.* Japan.

*Host association.* This species parasitizes eggs of *M. gracilicorne*. This is the first record for a *Trissolcus* species that parasitizes eggs of Dinidoridae. *Trissolcus brevinotaulus* may have one or more alternative host species because *M. gracilicorne* has univoltine life history and its eggs are available for *T. brevinotaulus* during the period from May to July (Kobayashi & Tachikawa, 2004; Ishikawa *et al.*, 2012).

*Taxonomic remarks.* Because *T. brevinotaulus* has hyperoccipital carina on the vertex, notauli on the mesoscutum, two apical setae on the clypeus, ventrally expanded orbital furrow, it belongs to *flavipes* group (sensu Talamas *et al.*, 2015). Among the members of *flavipes* group, *T. brevinotaulus* is similar to *T. vindicius* (Nixon, 1938) that has been known as an egg parasitoid of *Amblyopelta manihotis* (Blöte, 1935)



Figs. 7–10. *Trissolcus brevinotaulus* Matsuo, Hirose and Johnson, sp. nov. 7, Mesoscutum; 8, mesosoma in lateral view; 9, T1 of metasoma; 10, metasoma.

(referred as *Dasyneus manihotis* in the original record) (Hemiptera: Coreidae) in Java (Nixon, 1938). They share the following features: notauli short, extending 0.3–0.4 length of mesoscutum; anterior margin of clypeus with two setae; A7–A10 with two papillary sensilla; facial striae absent; genal carina absent; radicle and A1–A4 brownish yellow; coxae of all legs black; all femora and tibiae brownish yellow. However, *T. brevinotaulus* can be distinguished from *T. vindicius* based on the following characteristics: hyperoccipital carina complete and sharp (complete but not sharp in *vindicius*); frons between antennal scrobe and anterior ocellus with shallow transverse striae (without transverse striae in *vindicius*); T1 without sublateral setae (a pair of sublateral setae in *vindicius*). We paid careful attention to examine the sublateral setae on T1, because the setae were easy to fall out over time. Lectotype female of *T. vindicius* that was housed in BMNH has a sublateral seta on her right side, but lost in the left side. Talamas *et al.* (2017) mentioned character state of the sublateral setae of *T. vindicius* as “Number of sublateral setae (on one side): 0.” However, we concluded that *T. vindicius* has a pair of sublateral setae on T1, based on examination of the setal pores.

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*brevinotaulus*. We also thank Mr. D. Notton for allowing us to examine the type specimens of *T. vindicius*; Dr. T. Mita for providing information on host association of *Trissolcus* species.

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