



Notes on the hosts of *Trissolcus* Ashmead (Hymenoptera: Scelionidae) from China

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Abstract

Background

Trissolcus Ashmead (Hymenoptera: Scelionidae) is a cosmopolitan genus of egg-parasitoid wasps associated with stink bugs (Pentatomidae, Scutelleridae, Urostylididae), many of which are important insect pests. Documentation of host associations for these wasps, which we here provide via museum specimens, can support their use as biological control agents of invasive stink bugs.

New information

The hosts of seven *Trissolcus* species are reported from China: *Trissolcus cultratus* (Mayr) (hosts: *Hippotiscus dorsalis* Stål, Pentatomidae; *Urochela luteovaria* Distant, Urostylididae), *Trissolcus elasmuchae* (Watanabe) (host: *Niphe elongata* (Dallas), Pentatomidae), *Trissolcus japonicus* (Ashmead) (hosts: *Erthesina fullo* (Thunberg), Pentatomidae; *Rhaphigaster nebulosa* (Poda), Pentatomidae), *Trissolcus latusulcus* (Crawford) (host: *Poecilocoris latus* Dallas, Scutelleridae), *Trissolcus mitsukurii* (Ashmead)

(host: Pentatomidae), *Trissolcus semistriatus* (Nees von Esenbeck) (host: *Eurydema* sp., Scutelleridae), *Trissolcus yamagishii* Ryu (host: *Niphe elongata* (Dallas), Pentatomidae).

Keywords

Biological control, egg parasitoid, Platygastroidea, stink bug

Introduction

Species of *Trissolcus* are egg parasitoids of stink bugs, many of which are important agricultural pests. During the past decade, the Asian fauna of *Trissolcus* has received increased attention, driven largely by the search for biological control agents to manage two invasive stink bugs of global significance: *Halyomorpha halys* (Stål) and *Bagrada hilaris* (Burmeister) (Pentatomidae). The research required to develop effective biological control programs against these pests is multifaceted and includes taxonomy, behavior, ecology, molecular diagnostics and assessments of host specificity for candidate biocontrol agents (Qiu et al. 2007, Yang et al. 2009, Matsuo et al. 2014, Talamas et al. 2017, Garipey et al. 2018, Tortorici et al. 2019, Konopka et al. 2016, Santacruz et al. 2017, Zhang et al. 2017, Boyle et al. 2019). Host range testing can be accelerated if information about parasitoid-host interactions in the native range of a pest is already available. For example, if a stink bug is known to be attacked by very few parasitoid species, this provides a shortlist for additional testing. Similarly, if a parasitoid is known to attack many species in its native range, it is unlikely to be considered sufficiently specific to be introduced in the invaded range of the pest as a biocontrol agent.

Zhejiang University in Hangzhou is a leading institution in building insect collections in China, with emphasis on parasitic Hymenoptera (Chen et al. 2014). Importantly, many parasitoid wasps in this collection were reared from a variety of hosts, dating back to the 1930s and thus it contains a wealth of historical and biological information on parasitoid-host associations. However, many of these specimens, especially in the family Scelionidae, have not been identified to the species level. The current study focuses on the genus *Trissolcus* reared from field-collected eggs and is the first effort to fully investigate the parasitoid-host data of these invaluable specimens.

Materials and methods

This work is based on specimens deposited in the Institute of Insect Sciences, Zhejiang University, Hangzhou, China (ZJU). The label data of all specimens have been georeferenced and recorded in the Hymenoptera Online database. Specimens were identified to species using the keys of Talamas et al. (2017) and Tortorici et al. (2019). Images and measurements were made using a Nikon SMZ25 microscope with a Nikon DS-Ri 2 digital camera system. Images were post-processed with Adobe Photoshop CS6 Extended.

Taxon treatments

Trissolcus cultratus (Mayr) 1879

Materials

- a. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Sichuan; county: Qionglai; locationRemarks: label transliteration: "Sichuan, Qionglai County, ex. from eggs of Pentatomidae, 10.vi.1986, Qian Tan"; [四川, 邛崃, 1986.vi.10, 谭茜; 寄主: 蝽卵]; samplingProtocol: none specified; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 878859-6; recordedBy: Qian Tan; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; language: en
- b. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 816258-1; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- c. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1980-09; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 816258-2; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- d. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1980-10; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 816258-3; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- e. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1980-11; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 816258-4; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- f. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蝽卵];

- samplingProtocol: none specified; eventDate: 1980-12; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 816258-5; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- g. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蟥螋卵]; samplingProtocol: none specified; eventDate: 1980-13; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-1; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- h. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蟥螋卵]; samplingProtocol: none specified; eventDate: 1980-14; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-2; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- i. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蟥螋卵]; samplingProtocol: none specified; eventDate: 1980-15; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-3; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- j. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蟥螋卵]; samplingProtocol: none specified; eventDate: 1980-16; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-4; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- k. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蟥螋卵]; samplingProtocol: none specified; eventDate: 1980-17; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-5; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- l. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蟥螋卵]; samplingProtocol: none specified; eventDate: 1980-18; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-6; recordedBy: Min Huang;

- associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- m. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蜡蛾卵]; samplingProtocol: none specified; eventDate: 1980-19; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-7; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- n. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Jiangsu; county: Rugao; locationRemarks: label transliteration: "Jiangsu, Rugao, ex. from eggs of Pentatomidae, viii.1980, Min Huang"; [江苏, 如皋, 1980.viii, 黄敏; 寄主: 蜡蛾卵]; samplingProtocol: none specified; eventDate: 1980-20; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816259-8; recordedBy: Min Huang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- o. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Guizhou; county: Guiyang; locationRemarks: label transliteration: "Guizhou, Guiyang, ex. from eggs of Pentatomidae, 14.v.1981, Junhua He"; [贵州, 贵阳, 1981.5.24, 何俊华; 寄主: 蜡象]; samplingProtocol: none specified; eventDate: 05/24/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 814227-1; recordedBy: Junhua He; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- p. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Guizhou; county: Guiyang; locationRemarks: label transliteration: "Guizhou, Guiyang, ex. from eggs of Pentatomidae, 14.v.1981, Junhua He"; [贵州, 贵阳, 1981.5.24, 何俊华; 寄主: 蜡象]; samplingProtocol: none specified; eventDate: 05/24/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 814227-2; recordedBy: Junhua He; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- q. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Qinghai; county: Minhe; locationRemarks: label transliteration: "Qinghai, Minhe, ex. from eggs of *Urochela luteovaria*, 25.v.1964, Tifang Feng"; [青海, 民和, 1964.v.25, 冯体芳; 寄主: 梨蜡象 *Urochela luteovaria*]; samplingProtocol: none specified; eventDate: 05/25/1964; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 800089-1; recordedBy: Tifang Feng; associatedOccurrences: *Urochela luteovaria*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- r. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Qinghai; county: Minhe; locationRemarks: label transliteration: "Qinghai, Minhe, ex. from eggs of *Urochela luteovaria*, 25.v.1964, Tifang Feng"; [青海, 民和, 1964.v.25, 冯体芳; 寄主: 梨蜡象 *Urochela luteovaria*]; samplingProtocol: none specified; eventDate: 05/25/1964; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 800089-2; recordedBy: Tifang Feng; associatedOccurrences: *Urochela luteovaria*; identifiedBy:

- Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- s. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Zhejiang; locality: Mount Mogan; locationRemarks: label transliteration: "Zhejiang, Mount Mogan, ex. from eggs of *Hippotiscus dorsalis*, 1985, Maozhi Wang"; [浙江, 莫干山, 1985, 王茂芝; 寄主: 竹圆蝽 *Hippotiscus dorsalis*]; samplingProtocol: none specified; eventDate: 1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853650-1; recordedBy: Maozhi Wang; associatedOccurrences: *Hippotiscus dorsalis*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- t. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Zhejiang; locality: Mount Mogan; locationRemarks: label transliteration: "Zhejiang, Mount Mogan, ex. from eggs of *Hippotiscus dorsalis*, 1985, Maozhi Wang"; [浙江, 莫干山, 1985, 王茂芝; 寄主: 竹圆蝽 *Hippotiscus dorsalis*]; samplingProtocol: none specified; eventDate: 1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853650-2; recordedBy: Maozhi Wang; associatedOccurrences: *Hippotiscus dorsalis*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- u. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Zhejiang; locality: Mount Mogan; locationRemarks: label transliteration: "Zhejiang, Mount Mogan, ex. from eggs of *Hippotiscus dorsalis*, 1985, Maozhi Wang"; [浙江, 莫干山, 1985, 王茂芝; 寄主: 竹圆蝽 *Hippotiscus dorsalis*]; samplingProtocol: none specified; eventDate: 1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853649; recordedBy: Maozhi Wang; associatedOccurrences: *Hippotiscus dorsalis*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- v. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Shaanxi; county: Hanzhong; locationRemarks: label transliteration: "Shaanxi, Hanzhong, ex. from eggs of Pentatomidae in paddy field, ix.1974"; [陕西, 汉中, 1974.ix; 寄主: 稻蝽象]; samplingProtocol: none specified; eventDate: 1974-11; individualCount: 1; sex: male, egg mass; lifeStage: adult; catalogNumber: ZJU 740720-1; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- w. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Shaanxi; county: Hanzhong; locationRemarks: label transliteration: "Shaanxi, Hanzhong, ex. from eggs of Pentatomidae in paddy field, ix.1974"; [陕西, 汉中, 1974.ix; 寄主: 稻蝽象]; samplingProtocol: none specified; eventDate: 1974-11; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740720-2; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- x. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Shaanxi; county: Hanzhong; locationRemarks: label transliteration: "Shaanxi, Hanzhong, ex. from eggs of Pentatomidae in paddy field, ix.1974"; [陕西, 汉中, 1974.ix; 寄主: 稻蝽象]; samplingProtocol: none specified; eventDate: 1974-11; individualCount: 1; sex: male;

lifeStage: adult; catalogNumber: ZJU 740720-3; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

- y. scientificName: *Trissolcus cultratus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *cultratus*; country: China; stateProvince: Shaanxi; county: Hanzhong; locationRemarks: label transliteration: "Shaanxi, Hanzhong, ex. from eggs of Pentatomidae in paddy field, ix.1974"; [陕西, 汉中, 1974.ix; 寄主: 稻蝽象]; samplingProtocol: none specified; eventDate: 1974-11; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740720-4; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

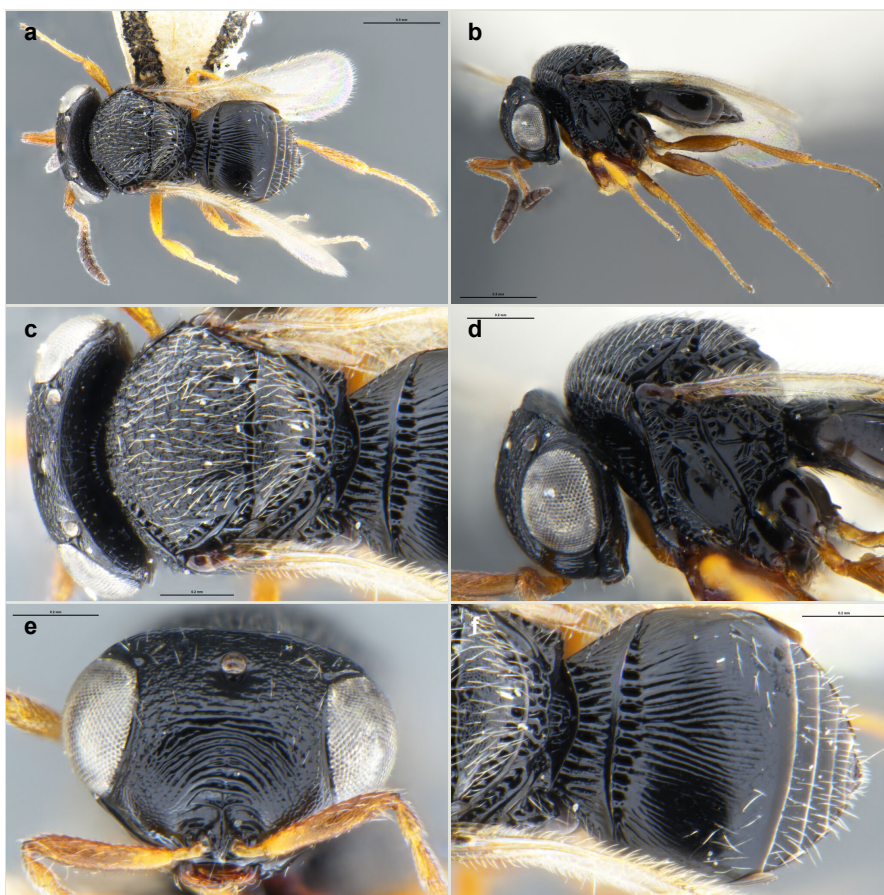


Figure 1.

Trissolcus cultratus (Mayr), female (ZJU 816259-2)

- a: dorsal habitus [doi](#)
 b: lateral habitus [doi](#)
 c: head and mesosoma, dorsal view [doi](#)
 d: head and mesosoma, lateral view [doi](#)
 e: head, anterior view [doi](#)
 f: metasoma, dorsal view [doi](#)

Distribution

China (Qinghai, Shaanxi, Sichuan, Guizhou, Jiangsu, Zhejiang, Taiwan); Austria, Belgium, Czech Republic, France, Germany, Hungary, Japan, Poland, Russia, South Korea, Sweden, Switzerland and United Kingdom (Talamas et al. 2017).

Biology

Host associations. This species was reared from the eggs of *Hippotiscus dorsalis* Stål (Pentatomidae), *Urochela luteovaria* Distant (Urostyliidae) and some unidentified species of Pentatomidae in China.

Images: *Trissolcus cultratus* Mayr 1879 (Fig. 1).

Trissolcus elasmuchae (Watanabe) 1954

Materials

- a. scientificName: *Trissolcus elasmuchae*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *elasmuchae*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of *Niphe elongata*, 18.vii.1957, Junhua He"; [浙江, 杭州, 1957.vii.18, 何俊华; 寄主: 褐蟬象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/18/1957; individualCount: 3; sex: 2 female, 1 male, egg mass; lifeStage: adult; catalogNumber: ZJU 5728.17-1; recordedBy: Junhua He; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- b. scientificName: *Trissolcus elasmuchae*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *elasmuchae*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of *Niphe elongata*, 18.vii.1957, Junhua He"; [浙江, 杭州, 1957.vii.18, 何俊华; 寄主: 褐蟬象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/18/1957; individualCount: 3; sex: 2 female, 1 male, egg mass; lifeStage: adult; catalogNumber: ZJU 5728.17-2; recordedBy: Junhua He; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- c. scientificName: *Trissolcus elasmuchae*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *elasmuchae*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of *Niphe elongata*, 18.vii.1957, Junhua He"; [浙江, 杭州, 1957.vii.18, 何俊华; 寄主: 褐蟬象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/18/1957; individualCount: 3; sex: 1 female, 2 males; lifeStage: adult; catalogNumber: ZJU 5728.17-3; recordedBy: Junhua He; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- d. scientificName: *Trissolcus elasmuchae*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *elasmuchae*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of *Niphe elongata*, 18.vii.1957, Junhua He"; [浙江, 杭州, 1957.vii.18, 何俊华; 寄主: 褐蟬

象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/18/1957; individualCount: 3; sex: 3 females , egg mass; lifeStage: adult; catalogNumber: ZJU 5728.17-4; recordedBy: Junhua He; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

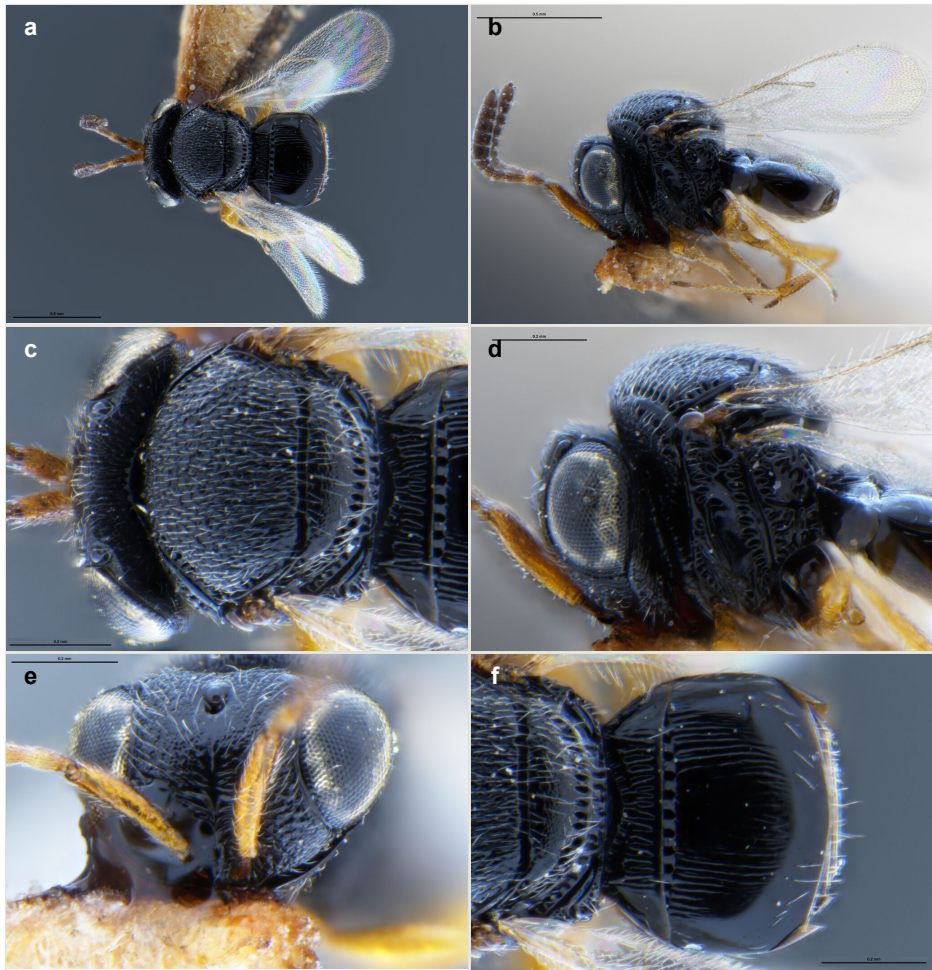


Figure 2.

Trissolcus elasmuchae (Watanabe), female (ZJU 572817-1)

- a: dorsal habitus [doi](#)
- b: lateral habitus [doi](#)
- c: head and mesosoma, dorsal view [doi](#)
- d: head and mesosoma, lateral view [doi](#)
- e: head, anterior view [doi](#)
- f: metasoma, dorsal view [doi](#)

Distribution

China (Zhejiang, Taiwan); France, India, Japan, South Korea, Sweden, United Kingdom and Vietnam (Talamas et al. 2017).

Biology

Host associations. This species was reared from the eggs of *Niphe elongata* (Dallas) (Pentatomidae) in China.

Images

Trissolcus elasmuchae Watanabe 1954 (Fig. 2).

Trissolcus japonicus (Ashmead) 1904

Materials

- a. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-1; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- b. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 853338-2; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- c. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-3; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- d. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified;

- eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-4; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- e. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-5; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- f. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-6; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- g. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-7; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- h. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of *Erthesina fullo*, 14.viii.1985, Hanlin Chen"; [浙江, 松阳, 1985.viii.14, 陈汉林; 寄主: 麻皮蝽卵]; samplingProtocol: none specified; eventDate: 08/14/1985; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 853338-8; recordedBy: Hanlin Chen; associatedOccurrences: *Erthesina fullo*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- i. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣蝽Rhaphigaster *nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-1; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen

- j. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-2; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- k. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740411-3; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- l. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-4; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- m. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740411-5; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- n. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-6; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen

- o. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740411-7; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- p. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-8; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- q. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-9; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- r. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Wuwei; locationRemarks: label transliteration: "Gansu, Wuwei, ex. from eggs of *Rhaphigaster nebulosa*, v.1974, Gansu Agricultural University"; [甘肃, 武威, 1974.5, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740411-10; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- s. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Linze; locationRemarks: label transliteration: "Gansu, Linze County, ex. from eggs of *Rhaphigaster nebulosa*, vi.1974, Gansu Agricultural University"; [甘肃, 临泽, 1974.6, 甘肃农大; 寄主: 沙枣螭*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-06; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740412-1; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen

- t. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Linze; locationRemarks: label transliteration: "Gansu, Linze County, ex.from eggs of *Rhaphigaster nebulosa*, vi.1974, Gansu Agricultural University"; [甘肃, 临泽, 1974.6, 甘肃农大; 寄主: 沙枣螳*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-06; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740412-2; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- u. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Linze; locationRemarks: label transliteration: "Gansu, Linze County, ex.from eggs of *Rhaphigaster nebulosa*, vi.1974, Gansu Agricultural University"; [甘肃, 临泽, 1974.6, 甘肃农大; 寄主: 沙枣螳*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-06; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740412-3; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- v. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Linze; locationRemarks: label transliteration: "Gansu, Linze County, ex.from eggs of *Rhaphigaster nebulosa*, vi.1974, Gansu Agricultural University"; [甘肃, 临泽, 1974.6, 甘肃农大; 寄主: 沙枣螳*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-06; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740412-4; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- w. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Linze; locationRemarks: label transliteration: "Gansu, Linze County, ex.from eggs of *Rhaphigaster nebulosa*, vi.1974, Gansu Agricultural University"; [甘肃, 临泽, 1974.6, 甘肃农大; 寄主: 沙枣螳*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-06; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 740412-5; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- x. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Gansu; county: Linze; locationRemarks: label transliteration: "Gansu, Linze County, ex.from eggs of *Rhaphigaster nebulosa*, vi.1974, Gansu Agricultural University"; [甘肃, 临泽, 1974.6, 甘肃农大; 寄主: 沙枣螳*Rhaphigaster nebulosa*]; samplingProtocol: none specified; eventDate: 1974-06; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740412-6; recordedBy: Gansu Agricultural University; associatedOccurrences: *Rhaphigaster nebulosa*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen

- y. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 24.v.1957, Xuedi Li"; [浙江, 杭州, 1957.v.24,李学迪; 寄主: 蝽象卵]; samplingProtocol: none specified; eventDate: 05/24/1957; individualCount: 3; sex: 2 female, 1 male, egg mass; lifeStage: adult; catalogNumber: ZJU 5727.1-1; recordedBy: Xuedi Li; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- z. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 24.v.1957, Xuedi Li"; [浙江, 杭州, 1957.v.24,李学迪; 寄主: 蝽象卵]; samplingProtocol: none specified; eventDate: 05/24/1957; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 5727.1-2; recordedBy: Xuedi Li; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- aa. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 24.v.1957, Xuedi Li"; [浙江, 杭州, 1957.v.24,李学迪; 寄主: 蝽象卵]; samplingProtocol: none specified; eventDate: 05/24/1957; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 5727.1-3; recordedBy: Xuedi Li; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ab. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 24.v.1957, Xuedi Li"; [浙江, 杭州, 1957.v.24,李学迪; 寄主: 蝽象卵]; samplingProtocol: none specified; eventDate: 05/24/1957; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 5727.1-4; recordedBy: Xuedi Li; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ac. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 24.v.1957, Xuedi Li"; [浙江, 杭州, 1957.v.24,李学迪; 寄主: 蝽象卵]; samplingProtocol: none specified; eventDate: 05/24/1957; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 5727.1-5; recordedBy: Xuedi Li; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ad. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Shandong; county: Qingdao; locationRemarks: label transliteration: "Hunan, Changsha, Wangcheng District, ex. from eggs of *Niphe elongata*, 22.vii.1954, Songyun Mai"; [湖南, 长沙望城, 1954.vii.22,麦松云; 寄主: 褐蝽象卵*Niphe elongata*];

- samplingProtocol: none specified; eventDate: 12/22/1950; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 760779; recordedBy: Yizhen Luo; associatedOccurrences: *Halyomorpha halys*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ae. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Deqing; locationRemarks: label transliteration: "Zhejiang, Deqing County, ex. from eggs of Pentatomidae, 27.v.1995, Junhua He"; [浙江, 德清, 1995.v.27,何俊华; 寄主: 蟥象卵]; samplingProtocol: none specified; eventDate: 05/27/1995; individualCount: 2; sex: 1 female, 1 male; lifeStage: adult; catalogNumber: ZJU 965035-1; recordedBy: Junhua He; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- af. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Deqing; locationRemarks: label transliteration: "Zhejiang, Deqing County, ex. from eggs of Pentatomidae, 27.v.1995, Junhua He"; [浙江, 德清, 1995.v.27,何俊华; 寄主: 蟥象卵]; samplingProtocol: none specified; eventDate: 05/27/1995; individualCount: 2; sex: female; lifeStage: adult; catalogNumber: ZJU 965035-2; recordedBy: Junhua He; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ag. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Deqing; locationRemarks: label transliteration: "Zhejiang, Deqing County, ex. from eggs of Pentatomidae, 27.v.1995, Junhua He"; [浙江, 德清, 1995.v.27,何俊华; 寄主: 蟥象卵]; samplingProtocol: none specified; eventDate: 05/27/1995; individualCount: 1; sex: female, egg mass; lifeStage: adult; catalogNumber: ZJU 965035-3; recordedBy: Junhua He; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ah. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; vernacularName: samurai wasp; genus: *Trissolcus*; specificEpithet: *japonicus*; country: China; stateProvince: Zhejiang; county: Deqing; locationRemarks: label transliteration: "Zhejiang, Deqing County, ex. from eggs of Pentatomidae, 27.v.1995, Junhua He"; [浙江, 德清, 1995.v.27,何俊华; 寄主: 蟥象卵]; samplingProtocol: none specified; eventDate: 05/27/1995; individualCount: 2; sex: female; lifeStage: adult; catalogNumber: ZJU 965035-4; recordedBy: Junhua He; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

Distribution

China (Gansu, Shandong, Zhejiang, Taiwan); Italy, Japan, Russia, South Korea, Switzerland and the United States (Talamas et al. 2017, Sabbatini Peverieri et al. 2018, Stahl et al. 2018).

Biology

Host associations. This species has previously been recorded emerging from the eggs of *Halyomorpha halys* (Stål) in China (Yang et al. 2009). In this study, we found that this species has also been reared from the eggs of *Erthesina fullo* (Thunberg) (Pentatomidae), *Rhaphigaster nebulosa* (Poda) (Pentatomidae) and some other unidentified species of Pentatomidae.

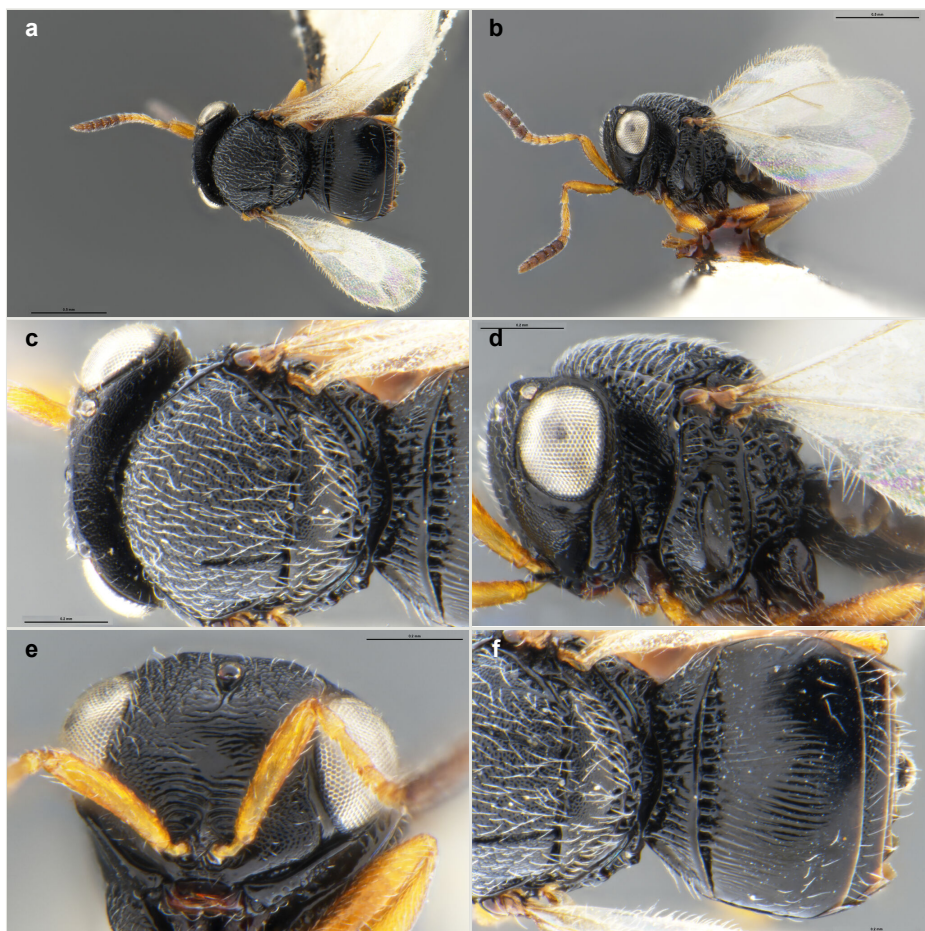


Figure 3.

Trissolcus japonicus (Ashmead), female (ZJU 853338-2)

- a: dorsal habitus [doi](#)
- b: lateral habitus [doi](#)
- c: head and mesosoma, dorsal view [doi](#)
- d: head and mesosoma, lateral view [doi](#)
- e: head, anterior view [doi](#)
- f: metasoma, dorsal view [doi](#)

Images

Trissolcus japonicus Ashmead 1904 (Fig. 3).

Trissolcus latisulcus (Crawford) 1913

Materials

- a. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 835240-1; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- b. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-2; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- c. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-3; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- d. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-4; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- e. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-5;

- recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- f. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangan; locationRemarks: label transliteration: "Yunnan, Guangan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-6; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- g. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangan; locationRemarks: label transliteration: "Yunnan, Guangan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 835240-7; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- h. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangan; locationRemarks: label transliteration: "Yunnan, Guangan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-8; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- i. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangan; locationRemarks: label transliteration: "Yunnan, Guangan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-9; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- j. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangan; locationRemarks: label transliteration: "Yunnan, Guangan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 835240-10; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- k. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county:

Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蝽卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-11; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

- i. scientificName: *Trissolcus latusulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latusulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蝽卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-12; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- m. scientificName: *Trissolcus latusulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latusulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蝽卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-13; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- n. scientificName: *Trissolcus latusulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latusulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蝽卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-14; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- o. scientificName: *Trissolcus latusulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latusulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蝽卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-15; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- p. scientificName: *Trissolcus latusulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latusulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蝽卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 835240-16; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy:

- Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- q. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 835240-17; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- r. scientificName: *Trissolcus latisulcus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *latisulcus*; country: China; stateProvince: Yunnan; county: Guangnan; locationRemarks: label transliteration: "Yunnan, Guangnan County, ex. from eggs of *Poecilocoris latus*, viii.1980, Jiasheng Gan"; [云南, 广南, 1980.viii, 甘家生; 寄主: 油茶蜻卵 *Poecilocoris latus*]; samplingProtocol: none specified; eventDate: 1980-08; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 835240-18; recordedBy: Jiasheng Gan; associatedOccurrences: *Poecilocoris latus*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

Distribution

China (Yunnan, Taiwan); India, Laos, Malaysia, Philippines, Thailand and Vietnam (Talamas et al. 2017).

Biology

Host associations. This species was reared from the eggs of *Poecilocoris latus* Dallas (Scutelleridae) in China.

Notes

Gan 1982 reported an unidentified species of Scelionidae attacking the eggs of *P. latus* feeding on *Camellia* trees from Yunnan Province. We examined the specimens that formed the basis of his report and we now know the species is *T. latisulcus*. According to Gan 1982, *T. latisulcus* could lay up to 700 eggs under laboratory conditions. There are 6–7 generations of *T. latisulcus* per year in Guangnan County of Yunnan, with a generation time of 20–30 days and they overwinter as adults.

Images

Trissolcus latisulcus Crawford 1913 (Fig. 4).

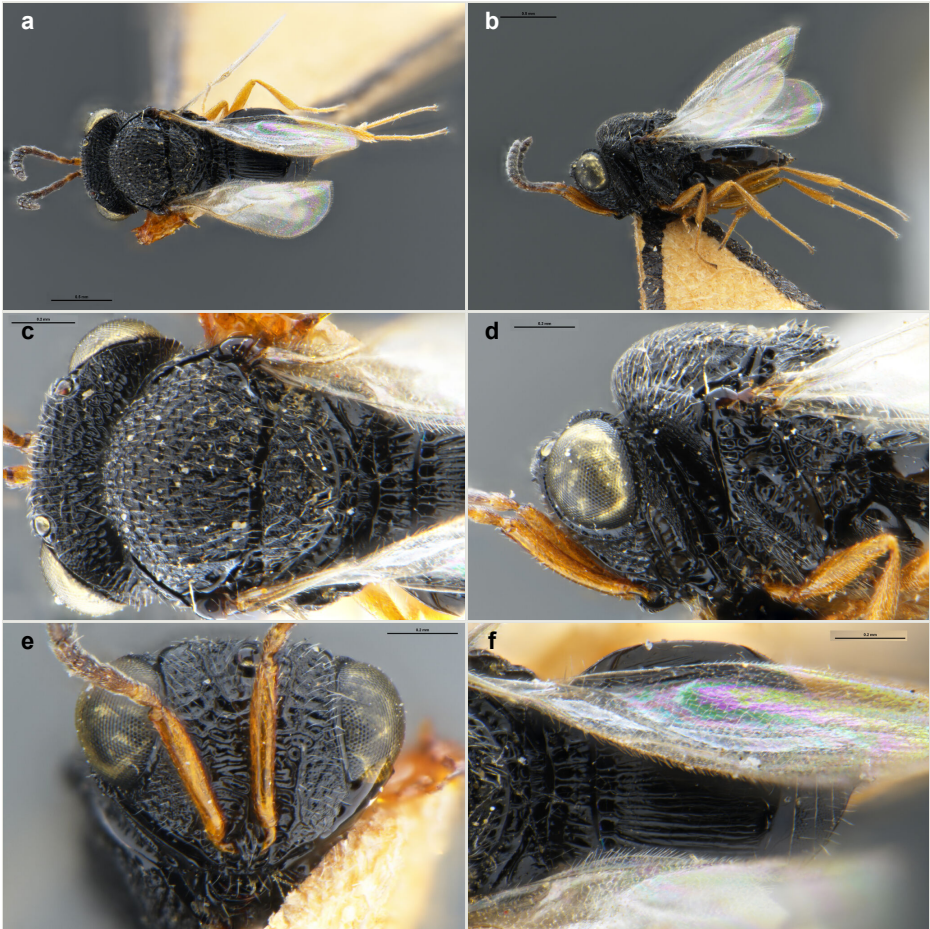


Figure 4.

Trissolcus latisulcus (Crawford), female (ZJU 835240-4)

- a: dorsal habitus [doi](#)
- b: lateral habitus [doi](#)
- c: head and mesosoma, dorsal view [doi](#)
- d: head and mesosoma, lateral view [doi](#)
- e: head, anterior view [doi](#)
- f: metasoma, dorsal view [doi](#)

Trissolcus mitsukurii (Ashmead) 1904

Materials

- a. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Jiangxi; county: Nanchang; locationRemarks: label transliteration: "Jiangxi, Nanchang, ex. from eggs of Pentatomidae, 19, Zhengxiang Ye"; [江西, 南昌, 19, 叶正襄; 寄主: 蝽蟊卵]; samplingProtocol: none specified; individualCount: 1; sex: female; lifeStage: adult;

- catalogNumber: ZJU 740644-1; recordedBy: Zhengxiang Ye; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- b. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Jiangxi; county: Nanchang; locationRemarks: label transliteration: "Jiangxi, Nanchang, ex. from eggs of Pentatomidae , 19 , Zhengxiang Ye"; [江西, 南昌, 19, 叶正襄; 寄主: 蝽蟥卵]; samplingProtocol: none specified; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740644-2; recordedBy: Zhengxiang Ye; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- c. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Jiangxi; county: Nanchang; locationRemarks: label transliteration: "Jiangxi, Nanchang, ex. from eggs of Pentatomidae , 19 , Zhengxiang Ye"; [江西, 南昌, 19, 叶正襄; 寄主: 蝽蟥卵]; samplingProtocol: none specified; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740644-3; recordedBy: Zhengxiang Ye; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- d. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Jiangxi; county: Nanchang; locationRemarks: label transliteration: "Jiangxi, Nanchang, ex. from eggs of Pentatomidae , 19 , Zhengxiang Ye"; [江西, 南昌, 19, 叶正襄; 寄主: 蝽蟥卵]; samplingProtocol: none specified; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740644-4; recordedBy: Zhengxiang Ye; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- e. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Jiangxi; county: Nanchang; locationRemarks: label transliteration: "Jiangxi, Nanchang, ex. from eggs of Pentatomidae , 19 , Zhengxiang Ye"; [江西, 南昌, 19, 叶正襄; 寄主: 蝽蟥卵]; samplingProtocol: none specified; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 740644-5; recordedBy: Zhengxiang Ye; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- f. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of Pentatomidae, ix.1985, Hanlin Chen"; [浙江, 松阳, 1985.ix, 陈汉林; 寄主: 蝽蟥卵]; samplingProtocol: none specified; eventDate: 1985-11; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 870488-1; recordedBy: Hanlin Chen; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen

- g. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of Pentatomidae, ix.1985, Hanlin Chen"; [浙江, 松阳, 1985.ix, 陈汉林; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1985-11; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 870488-2; recordedBy: Hanlin Chen; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- h. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of Pentatomidae, ix.1985, Hanlin Chen"; [浙江, 松阳, 1985.ix, 陈汉林; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1985-11; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 870488-3; recordedBy: Hanlin Chen; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- i. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of Pentatomidae, ix.1985, Hanlin Chen"; [浙江, 松阳, 1985.ix, 陈汉林; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1985-11; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 870488-4; recordedBy: Hanlin Chen; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- j. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Songyang; locationRemarks: label transliteration: "Zhejiang, Songyang County, ex. from eggs of Pentatomidae, ix.1985, Hanlin Chen"; [浙江, 松阳, 1985.ix, 陈汉林; 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1985-11; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 870488-5; recordedBy: Hanlin Chen; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen
- k. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Sandu; locationRemarks: label transliteration: "Guizhou, Sandu Shui Autonomous County, ex. from eggs of Pentatomidae, v.1981, Dongxiang Xie"; [贵州, 三都, 1981.v, 谢冬香, 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1981-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816020-1; recordedBy: Dongxiang Xie; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- l. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Sandu; locationRemarks: label transliteration: "Guizhou, Sandu Shui Autonomous County, ex. from eggs of Pentatomidae, v.1981, Dongxiang Xie"; [贵州, 三都, 1981.v, 谢冬香, 寄主: 蝽卵]; samplingProtocol: none specified; eventDate: 1981-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816020-2; recordedBy: Dongxiang Xie;

- associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- m. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Sandu; locationRemarks: label transliteration: "Guizhou, Sandu Shui Autonomous County, ex. from eggs of Pentatomidae, v.1981, Dongxiang Xie"; [贵州, 三都, 1981.v, 谢冬香, 寄主: 蝽蟊卵]; samplingProtocol: none specified; eventDate: 1981-05; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 816020-3; recordedBy: Dongxiang Xie; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- n. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Sandu; locationRemarks: label transliteration: "Guizhou, Sandu Shui Autonomous County, ex. from eggs of Pentatomidae, v.1981, Dongxiang Xie"; [贵州, 三都, 1981.v, 谢冬香, 寄主: 蝽蟊卵]; samplingProtocol: none specified; eventDate: 1981-05; individualCount: 1; sex: male; lifeStage: adult; catalogNumber: ZJU 816020-4; recordedBy: Dongxiang Xie; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- o. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 25.vi.1964, Dengdi Jin"; [浙江, 杭州, 1964.6.25, 金登迪; 寄主: 蝽蟊]; samplingProtocol: none specified; eventDate: 06/25/1964; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 64032.1-1; recordedBy: Dengdi Jin; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- p. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 25.vi.1964, Dengdi Jin"; [浙江, 杭州, 1964.6.25, 金登迪; 寄主: 蝽蟊]; samplingProtocol: none specified; eventDate: 06/25/1964; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 64032.1-2; recordedBy: Dengdi Jin; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- q. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 25.vi.1964, Dengdi Jin"; [浙江, 杭州, 1964.6.25, 金登迪; 寄主: 蝽蟊]; samplingProtocol: none specified; eventDate: 06/25/1964; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 64032.1-3; recordedBy: Dengdi Jin; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- r. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 25.vi.1964, Dengdi Jin"; [浙江, 杭州, 1964.6.25, 金登迪; 寄主: 蝽蟊]; samplingProtocol: none specified; eventDate: 06/25/1964; individualCount: 3; sex: 2 female, 1 male; lifeStage: adult; catalogNumber: ZJU 64032.1-4; recordedBy: Dengdi Jin; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

- s. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Luodian; locationRemarks: label transliteration: "Guizhou, Luodian County, ex. from eggs of Pentatomidae on rice, 1974, Zhibang Liu"; [贵州, 罗甸, 1974, 刘治邦; 寄主: 水稻上蝽卵]; samplingProtocol: none specified; eventDate: 1974; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 7501231-1; recordedBy: Zhibang Liu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- t. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Luodian; locationRemarks: label transliteration: "Guizhou, Luodian County, ex. from eggs of Pentatomidae on rice, 1974, Zhibang Liu"; [贵州, 罗甸, 1974, 刘治邦; 寄主: 水稻上蝽卵]; samplingProtocol: none specified; eventDate: 1974; individualCount: 2; sex: male; lifeStage: adult; catalogNumber: ZJU 7501231-2; recordedBy: Zhibang Liu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- u. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Guizhou; county: Luodian; locationRemarks: label transliteration: "Guizhou, Luodian County, ex. from eggs of Pentatomidae on rice, 1974, Zhibang Liu"; [贵州, 罗甸, 1974, 刘治邦; 寄主: 水稻上蝽卵]; samplingProtocol: none specified; eventDate: 1974; individualCount: 2; sex: female; lifeStage: adult; catalogNumber: ZJU 7501231-3; recordedBy: Zhibang Liu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- v. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Zhejiang; county: Hangzhou; locationRemarks: label transliteration: "Zhejiang, Hangzhou, ex. from eggs of Pentatomidae, 16-21.vii.1957, Fahong Yang"; [浙江, 杭州, 1957.vii.16-21, 杨法宏; 寄主: 蝽象卵]; samplingProtocol: none specified; eventDate: 1957-07-16/21; individualCount: 2; sex: female; lifeStage: adult; catalogNumber: ZJU 5737.5; recordedBy: Fahong Yang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- w. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 790539-1; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- x. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 3; sex: 1 female, 2 males; lifeStage: adult; catalogNumber: ZJU 790539-2; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- y. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county:

- Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 2; sex: female; lifeStage: adult; catalogNumber: ZJU 790539-3; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- z. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 3; sex: female; lifeStage: adult; catalogNumber: ZJU 790539-4; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- aa. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 3; sex: 1 female, 2 males; lifeStage: adult; catalogNumber: ZJU 790539-5; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ab. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 4; sex: 3 females, 1 male; lifeStage: adult; catalogNumber: ZJU 790539-6; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ac. scientificName: *Trissolcus mitsukurii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 2; sex: female; lifeStage: adult; catalogNumber: ZJU 790539-7; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- ad. scientificName: *Trissolcus japonicus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *mitsukurii*; country: China; stateProvince: Hunan; county: Changsha; locationRemarks: label transliteration: "Hunan, Changsha, ex. from eggs of Pentatomidae in paddy field, 19, Huifen Wu"; [湖南, 长沙, 19, 吴惠芬; 寄主: 稻田蝽象]; samplingProtocol: none specified; eventDate: 19; individualCount: 3; sex: 2 females, 1 male; lifeStage: adult; catalogNumber: ZJU 790539-8; recordedBy: Huifen Wu; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

Distribution

China (Guizhou, Zhejiang, Jiangxi, Hunan); Italy, Japan, South Korea, Thailand and the United States (quarantine) (Talamas et al. 2017; Sabbatini Peverieri et al. 2018)

Biology

Host associations. This species was reared from the eggs of some unidentified species of Pentatomidae in China.

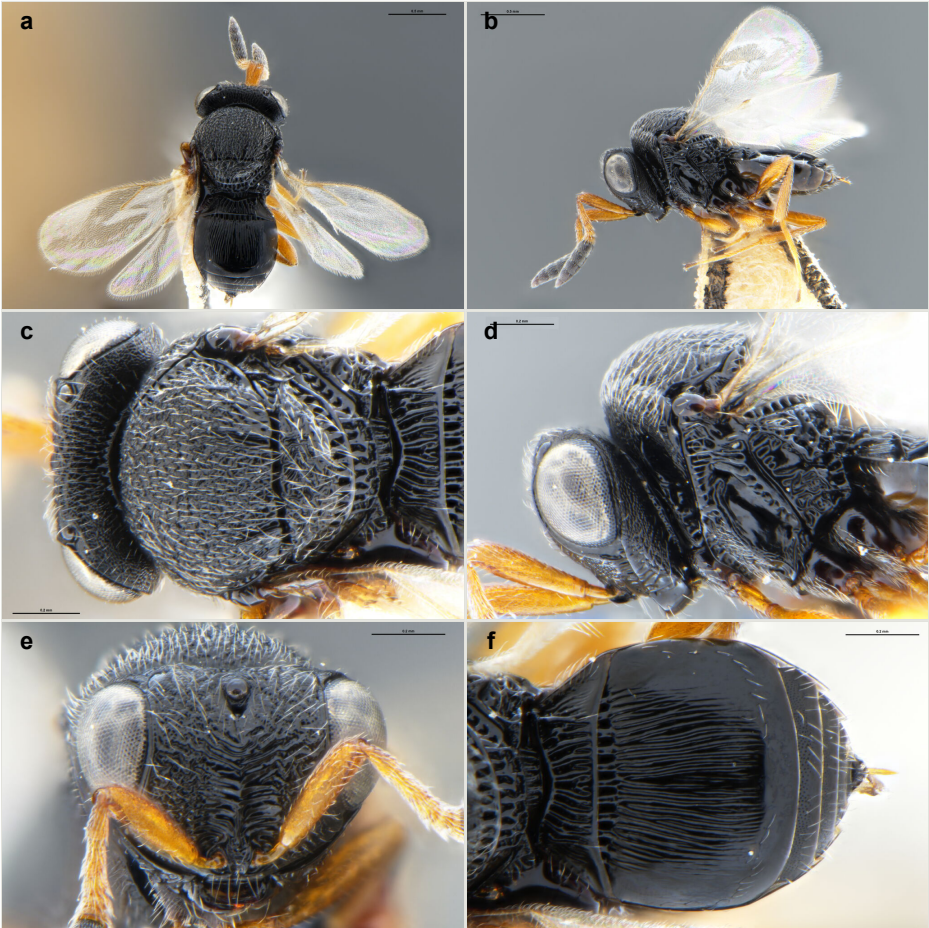


Figure 5.

Trissolcus mitsukurii (Ashmead), female (ZJU 816020-1)

- a: dorsal habitus [doi](#)
- b: lateral habitus [doi](#)
- c: head and mesosoma, dorsal view [doi](#)
- d: head and mesosoma, lateral view [doi](#)
- e: head, anterior view [doi](#)
- f: metasoma, dorsal view [doi](#)

Images

Trissolcus mitsukurii Ashmead 1904 (Figs 5, 6).



Figure 6. [doi](#)

Host egg mass of *Trissolcus mitsukurii* (ZJU 816020-1)

Trissolcus semistriatus (Nees von Esenbeck) 1834

Materials

- a. scientificName: *Trissolcus semistriatus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *semistriatus*; country: China; stateProvince: Xinjiang; locationRemarks: label transliteration: "Xinjiang, ex. from eggs of *Eurydema* sp., 1956-1957, Bayi Agricultural College (Xinjiang Agricultural University)"; [新疆, 1956-1957, 八一农院昆虫组, 寄主: 红花菜蚜象卵 *Eurydema* sp.]; samplingProtocol: none specified; eventDate: 1956-1957; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5757.9-1; associatedOccurrences: *Eurydema* sp.; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- b. scientificName: *Trissolcus semistriatus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *semistriatus*; country: China; stateProvince: Xinjiang; locationRemarks: label transliteration: "Xinjiang, ex. from eggs of *Eurydema* sp., 1956-1957, Bayi Agricultural College (Xinjiang Agricultural University)"; [新疆, 1956-1957, 八一农院昆虫组, 寄主: 红花菜蚜象卵 *Eurydema* sp.]; samplingProtocol: none specified; eventDate: 1956-1957; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5757.9-2; associatedOccurrences: *Eurydema* sp.; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- c. scientificName: *Trissolcus semistriatus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *semistriatus*; country: China; stateProvince: Xinjiang; locationRemarks: label transliteration: "Xinjiang, ex. from eggs of *Eurydema* sp., 1956-1957, Bayi Agricultural College (Xinjiang Agricultural University)"; [新疆, 1956-1957, 八一农院昆虫组, 寄主: 红花菜蚜象卵 *Eurydema* sp.]; samplingProtocol:

- none specified; eventDate: 1956-1957; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5757.8; associatedOccurrences: *Eurydema* sp.; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- d. scientificName: *Trissolcus semistriatus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *semistriatus*; country: China; stateProvince: Shaanxi; county: Xianyang; locationRemarks: label transliteration: "Shaanxi, Xianyang, ex. from eggs of Pentatomidae, viii.1975, Institute of Agricultural Sciences of Xianyang"; [陕西, 咸阳, 1975.viii, 咸阳地区农科所; 寄主: 蝽象]; samplingProtocol: none specified; eventDate: 1975-08; individualCount: 5; sex: female; lifeStage: adult; catalogNumber: ZJU 76086-1; recordedBy: Institute of Agricultural Sciences of Xianyang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- e. scientificName: *Trissolcus semistriatus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *semistriatus*; country: China; stateProvince: Shaanxi; county: Xianyang; locationRemarks: label transliteration: "Shaanxi, Xianyang, ex. from eggs of Pentatomidae, viii.1975, Institute of Agricultural Sciences of Xianyang"; [陕西, 咸阳, 1975.viii, 咸阳地区农科所; 寄主: 蝽象]; samplingProtocol: none specified; eventDate: 1975-08; individualCount: 10; sex: female, egg mass; lifeStage: adult; catalogNumber: ZJU 76086-2; recordedBy: Institute of Agricultural Sciences of Xianyang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- f. scientificName: *Trissolcus semistriatus*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *semistriatus*; country: China; stateProvince: Shaanxi; county: Xianyang; locationRemarks: label transliteration: "Shaanxi, Xianyang, ex. from eggs of Pentatomidae, viii.1975, Institute of Agricultural Sciences of Xianyang"; [陕西, 咸阳, 1975.viii, 咸阳地区农科所; 寄主: 蝽象]; samplingProtocol: none specified; eventDate: 1975-08; individualCount: 5; sex: 4 females, 1 male; lifeStage: adult; catalogNumber: ZJU 76086-3; recordedBy: Institute of Agricultural Sciences of Xianyang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- g. scientificName: *Trissolcus semistriatus*; country: China; stateProvince: Shaanxi; county: Xianyang; locationRemarks: label transliteration: "Shaanxi, Xianyang, ex. from eggs of Pentatomidae, viii.1975, Institute of Agricultural Sciences of Xianyang"; [陕西, 咸阳, 1975.viii, 咸阳地区农科所; 寄主: 蝽象]; samplingProtocol: none specified; eventDate: 1975-08; individualCount: 5; sex: female; lifeStage: adult; catalogNumber: ZJU 76086-4; recordedBy: Institute of Agricultural Sciences of Xianyang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- h. scientificName: *Trissolcus semistriatus*; country: China; stateProvince: Shaanxi; county: Xianyang; locationRemarks: label transliteration: "Shaanxi, Xianyang, ex. from eggs of Pentatomidae, viii.1975, Institute of Agricultural Sciences of Xianyang"; [陕西, 咸阳, 1975.viii, 咸阳地区农科所; 寄主: 蝽象]; samplingProtocol: none specified; eventDate: 1975-08; individualCount: 2; sex: 1 female, 1 male; lifeStage: adult; catalogNumber: ZJU 76086-5; recordedBy: Institute of Agricultural Sciences of Xianyang; associatedOccurrences: Pentatomidae; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

Distribution

China (Xinjiang, Shaanxi); Italy, Morocco, Portugal, Sweden and Switzerland (Tortorici et al. 2019).

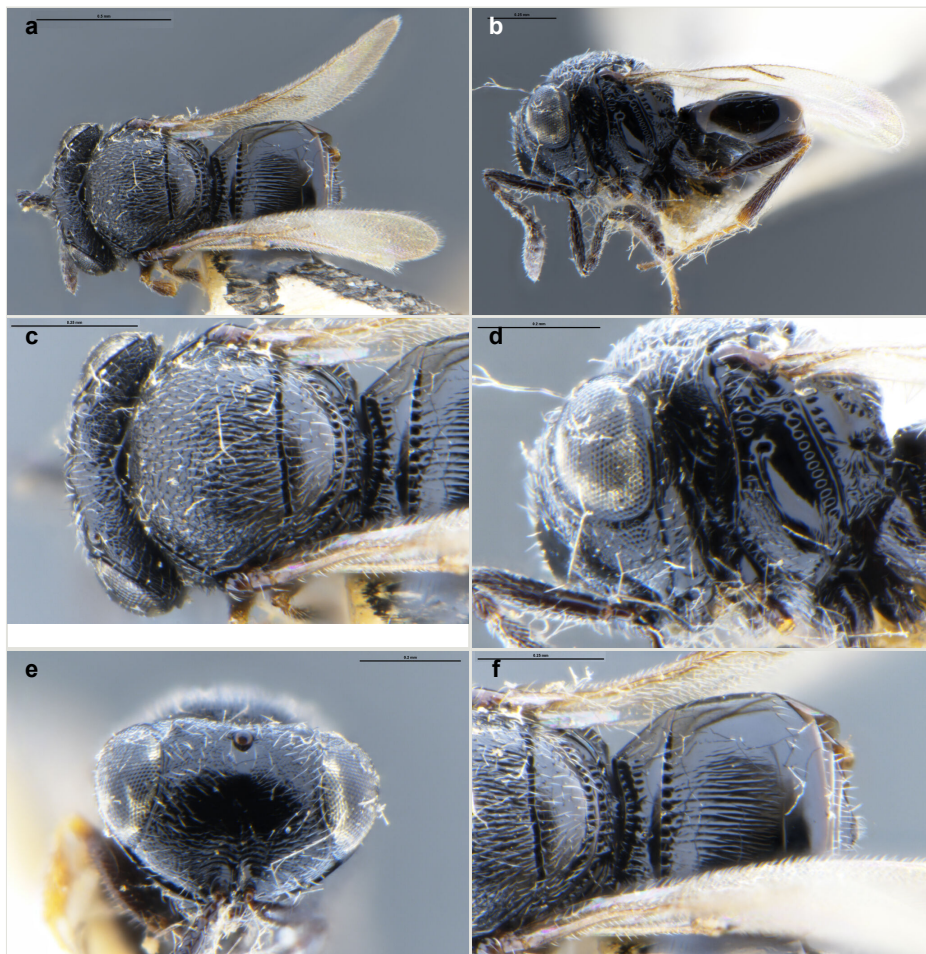


Figure 7.

Trissolcus semistriatus (Nees von Esenbeck), female (ZJU 76086-2)

- a: dorsal habitus [doi](#)
- b: lateral habitus [doi](#)
- c: head and mesosoma, dorsal view [doi](#)
- d: head and mesosoma, lateral view [doi](#)
- e: head, anterior view [doi](#)
- f: metasoma, dorsal view [doi](#)

Biology

Host associations. This species was reared from the eggs of *Eurydema* sp. (Pentatomidae) and an unidentified species of Pentatomidae in China.

Images

Trissolcus semistriatus Nees von Esenbeck 1834 (Fig. 7).

Trissolcus yamagishii Ryu 1984

Materials

- a. scientificName: *Trissolcus yamagishii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *yamagishii*; country: China; stateProvince: Hunan; county: Changsha; locality: Wangcheng; locationRemarks: label transliteration: "Hunan, Changsha, Wangcheng District, ex. from eggs of *Niphe elongata* , 22.vii.1954, Songyun Mai"; [湖南, 长沙望城, 1954.vii.22, 麦松云; 寄主: 褐蝽象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/22/1954; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5414.8-1; recordedBy: Songyun Mai; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- b. scientificName: *Trissolcus yamagishii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *yamagishii*; country: China; stateProvince: Hunan; county: Changsha; locality: Wangcheng; locationRemarks: label transliteration: "Hunan, Changsha, Wangcheng District, ex. from eggs of *Niphe elongata* , 22.vii.1954, Songyun Mai"; [湖南, 长沙望城, 1954.vii.22, 麦松云; 寄主: 褐蝽象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/22/1954; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5414.8-2; recordedBy: Songyun Mai; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- c. scientificName: *Trissolcus yamagishii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *yamagishii*; country: China; stateProvince: Hunan; county: Changsha; locality: Wangcheng; locationRemarks: label transliteration: "Hunan, Changsha, Wangcheng District, ex. from eggs of *Niphe elongata* , 22.vii.1954, Songyun Mai"; [湖南, 长沙望城, 1954.vii.22, 麦松云; 寄主: 褐蝽象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/22/1954; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5414.8-3; recordedBy: Songyun Mai; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en
- d. scientificName: *Trissolcus yamagishii*; order: Hymenoptera; family: Scelionidae; genus: *Trissolcus*; specificEpithet: *yamagishii*; country: China; stateProvince: Hunan; county: Changsha; locality: Wangcheng; locationRemarks: label transliteration: "Hunan, Changsha, Wangcheng District, ex. from eggs of *Niphe elongata* , 22.vii.1954, Songyun Mai"; [湖南, 长沙望城, 1954.vii.22, 麦松云; 寄主: 褐蝽象卵 *Niphe elongata*]; samplingProtocol: none specified; eventDate: 07/22/1954; individualCount: 1; sex: female; lifeStage: adult; catalogNumber: ZJU 5414.8-4; recordedBy: Songyun Mai; associatedOccurrences: *Niphe elongata*; identifiedBy: Elijah J. Talamas, Huayan Chen; dateIdentified: 2019; modified: 04/29/2020; language: en

Distribution

China (Hunan); India, Laos, South Korea, United Arab Emirates and Vietnam (Talamas et al. 2017).

Biology

Host associations. This species was reared from the eggs of *Niphe elongata* (Dallas) (Pentatomidae) in China.



Figure 8.

Trissolcus yamagishii Ryu, female (ZJU 5414.8-4)

a: dorsal habitus [doi](#)

b: lateral habitus [doi](#)

c: head and mesosoma, dorsal view [doi](#)

d: head and mesosoma, lateral view [doi](#)

e: head, anterior view [doi](#)

f: metasoma, dorsal view [doi](#)

Notes

This species is newly recorded from China.

Images

Trissolcus yamagishii Ryu and Hirashima 1984 (Fig. 8).

Analysis

Summary of host associations

A total of 123 specimens were examined and seven species are recognized. The hosts recorded on specimen label data are summarized below:

Pentatomidae

Erthesina fullo (Thunberg): *T. japonicus*

Eurydema sp.: *T. semistriatus*

Hippotiscus dorsalis Stål: *T. cultratus*

Niphe elongata (Dallas): *T. elasmuchae*, *T. yamagishii*

Rhaphigaster nebulosa (Poda): *T. japonicus*

Scutelleridae

Poecilocoris latus Dallas: *T. latisulcus*

Urostylididae

Urochela luteovaria Distant: *T. cultratus*

Discussion

Specimens housed in museum and university collections are an immense and often irreplaceable source of biological information. This study produced immediately-applicable data that was gleaned from a historic collection simply by identifying specimens and recording label data. It is difficult and, sometimes, impossible to identify host eggs to species, based on morphology alone and several *Trissolcus* species in our study were reared from eggs identified only as Pentatomidae. New methods in molecular diagnostics that can identify trophic interactions from parasitized eggs have been used to overcome this challenge and identify associations between scelionid parasitoids and stink bugs (Gariepy et al. 2018, Lomeli-Flores et al. 2019). Implementation of this approach on

specimens in insect collections can further expand the data that can be harvested from these institutional resources.

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References

- Ashmead WH (1904) Descriptions of new Hymenoptera from Japan -- I. Journal of the New York Entomological Society 12: 65-84.
- Boyle SM, Weber DC, Hough-Goldstein J, Hoelmer KA (2019) Host kairomones influence searching behavior of *Trissolcus japonicus* (Hymenoptera: Scelionidae), a parasitoid of *Halyomorpha halys* (Heteroptera: Pentatomidae). Environmental Entomology 49 (1): 15-20. <https://doi.org/10.1093/ee/nvz155>
- Chen X, Tang P, Zeng J, van Achterberg C, He J (2014) Taxonomy of parasitoid wasps in China: An overview. Biological Control 68: 57-72. <https://doi.org/10.1016/j.biocontrol.2013.06.007>
- Crawford JC (1913) Descriptions of new Hymenoptera, No. 6. Proceedings of the United States National Museum 45 (1913): 241-260. <https://doi.org/10.5479/si.00963801.45-1913.241>
- Gan JS (1982) Preliminary observation of *Poecilocoris latus* Dallas and its egg parasitoid. Journal of Yunnan Forestry Science 1: 61-63. [In Chinese].
- Garipey T, Bruin A, Konopka J, Scott-Dupree C, Fraser H, Bon M, Talamas E (2018) A modified DNA barcode approach to define trophic interactions between native and exotic pentatomids and their parasitoids. Molecular Ecology 28 (2): 456-470. <https://doi.org/10.1111/mec.14868>
- Konopka J, Haye T, Garipey T, Mason P, Gillespie D, McNeil J (2016) An exotic parasitoid provides an invasional lifeline for native parasitoids. Ecology and Evolution 7 (1): 277-284. <https://doi.org/10.1002/ece3.2577>
- Lomeli-Flores JR, Rodríguez-Rodríguez SE, Rodríguez-Levya E, González-Hernández H, Garipey T, Talamas E (2019) Field studies and molecular forensics identify a new association: *Idris elba* Talamas, sp. nov. parasitizes the eggs of *Bagrada hilaris* (Burmeister). Journal of Hymenoptera Research 73: 125-141. <https://doi.org/10.3897/jhr.73.38025>
- Matsuo K, Hirose Y, Johnson N (2014) A taxonomic issue of two species of *Trissolcus* (Hymenoptera: Platygastridae) parasitic on eggs of the brown-winged green bug, *Plautia stali* (Hemiptera: Pentatomidae): resurrection of *T. plautiae*, a cryptic species of *T. japonicus* revealed by morphology, reproductive isolation and molecular evidence. Applied Entomology and Zoology 49 (3): 385-394. <https://doi.org/10.1007/s13355-014-0260-4>

- Mayr GL (1879) Ueber die Schlupfespengattung Telenomus. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien 29: 697-714.
- Nees von Esenbeck C (1834) Hymenopterorum ichneumonibus affinium monographiae, genera europaea et species illustrantes. 2. J. G. Cotta, Stuttgart, 448 pp.
- Qiu LF, Yang ZQ, Tao WQ (2007) Biology and population dynamics of *Trissolcus halyomorphae*. Scientia Silvae Sinicae 43 (11): 62-65. [In Chinese].
- Ryu J, Hirashima Y (1984) Taxonomic studies on the genus *Trissolcus* Ashmead of Japan and Korea (Hymenoptera, Scelionidae). Journal of the Faculty of Agriculture, Kyushu University 29: 35-58.
- Sabbatini Peverieri G, Talamas E, Bon MC, Marianelli L, Bernardinelli I, Malossini G, Benvenuto L, Roversi P, Hoelmer K (2018) Two Asian egg parasitoids of *Halyomorpha halys* (Stål) (Hemiptera, Pentatomidae) emerge in northern Italy: *Trissolcus mitsukurii* (Ashmead) and *Trissolcus japonicus* (Ashmead) (Hymenoptera, Scelionidae). Journal of Hymenoptera Research 67: 37-53. <https://doi.org/10.3897/jhr.67.30883>
- Santacruz EN, Venette R, Dieckhoff C, Hoelmer K, Koch R (2017) Cold tolerance of *Trissolcus japonicus* and *T. cultratus*, potential biological control agents of *Halyomorpha halys*, the brown marmorated stink bug. Biological Control 107: 11-20. <https://doi.org/10.1016/j.biocontrol.2017.01.004>
- Stahl J, Tortorici F, Pontini M, Bon M, Hoelmer K, Marazzi C, Tavella L, Haye T (2018) First discovery of adventive populations of *Trissolcus japonicus* in Europe. Journal of Pest Science 92 (2): 371-379. <https://doi.org/10.1007/s10340-018-1061-2>
- Talamas E, Buffington M, Hoelmer K (2017) Revision of Palearctic *Trissolcus* Ashmead (Hymenoptera, Scelionidae). Journal of Hymenoptera Research 56: 79-261. <https://doi.org/10.3897/jhr.56.10158>
- Tortorici F, Talamas E, Moraglio S, Pansa M, Asadi-Farfara M, Tavella L, Caleca V (2019) A morphological, biological and molecular approach reveals four cryptic species of *Trissolcus* Ashmead (Hymenoptera, Scelionidae), egg parasitoids of Pentatomidae (Hemiptera). Journal of Hymenoptera Research 73: 153-200. <https://doi.org/10.3897/jhr.73.39052>
- Watanabe C (1954) Discovery of four new species of Telenominae, egg-parasites of pentatomid and plataspid bugs, in Shikoku, Japan. Trans Shikoku Ent Soc, (Trans. Shikoku. Ent. Soc) 4 (2): 17-22. URL: <http://zoobank.org/e3e72340-6438-49b0-8cee-935abcd5e60a>
- Yang Z, Yao Y, Qiu L, Li Z (2009) A new species of *Trissolcus* (Hymenoptera: Scelionidae) parasitizing eggs of *Halyomorpha halys* (Heteroptera: Pentatomidae) in China with comments on its biology. Annals of the Entomological Society of America 102 (1): 39-47. <https://doi.org/10.1603/008.102.0104>
- Zhang J, Zhang F, Garipey T, Mason P, Gillespie D, Talamas E, Haye T (2017) Seasonal parasitism and host specificity of *Trissolcus japonicus* in northern China. Journal of Pest Science 90 (4): 1127-1141. <https://doi.org/10.1007/s10340-017-0863-y>