



First record of the stink bug genus *Ochrophara* Stål, 1871 (Hemiptera, Heteroptera, Pentatomidae) from Japan

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Abstract

The stink bug genus *Ochrophara* Stål, 1871 (Hemiptera, Heteroptera, Pentatomidae, Pentatominae, Sphelini) is distributed in the Oriental Region, including southern China; however, no species has been recorded in Japan. To date, *O. chinensis* Zheng & Liu, 1987 has only been reported in China. In the present study, *Ochrophara* and *O. chinensis* were recorded in Japan for the first time based on materials from Okinawa and Ishigaki islands of the Ryukyu Islands. Okinawa Island is the northernmost locality for this genus. The species was attracted to artificial light on Okinawa Island.

Keywords

East Asia, Ishigaki Island, Okinawa Island, Pentatominae, Ryukyu Islands, Sphelini

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Introduction

The stink bug genus *Ochrophara* Stål, 1871 (Hemiptera, Heteroptera, Pentatomidae, Pentatominae, Sphelini) comprises three species from the Oriental Region, including southern China: *O. emarginata* Stål, 1871 from the Philippines; *O. chinensis* Zheng & Liu, 1987 from Yunnan Province, China; and *O. corinna* (Kirby, 1891) from Pundaloya, Sri Lanka (Stål 1871; Kirby 1891; Distant 1900; Zheng and Liu 1997; Rider 2006). In East Asia, only *O. chinensis* has been recorded in China to date (Zheng and Liu 1997; Rider et al. 2002; Rider 2006), and no species have been reported in Japan.

For the past 11 years, our colleagues have collected an unidentified species of *Ochrophara* from Okinawa and Ishigaki islands of the Ryukyu Islands, Japan. After

a careful morphological examination, we concluded that this corresponded to *O. chinensis*. In the present study, we report the genus *Ochrophara* from Japan for the first time, based on the finding of *O. chinensis*. Okinawa Island is the northernmost locality for this genus.

Methods

The dried specimens were examined under a stereoscopic microscope (SZ60; Olympus, Tokyo, Japan) equipped with an ocular grid. The measurements were obtained using a micrometer on an ocular grid. To examine the male genitalia, the genital capsule was removed from the body after softening the specimens in hot water.

The removed parts were immersed in a hot 15% KOH solution for 5 min and then soaked in 99% ethanol before further observation. The genital capsule was preserved in small polyethylene vials containing 50% glycerin and mounted on a pin with the individual specimens. The specimens were photographed using a digital microscope (Dino-Lite Premier M, Opto Science, Tokyo, Japan) and a compact digital camera (Tough TG-6, Olympus, Tokyo, Japan). The image stacks obtained with the digital microscope were processed using Adobe Photoshop 2021 v. 22.5.1. Morphological terms were assigned

according to the method of Tsai et al. (2011).

All specimens used in this study were deposited in the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan (ELKU), and the Laboratory of Entomology, Faculty of Agriculture, Tokyo University of Agriculture, Kanagawa, Japan (TUA).

Distribution records of the species were mapped using SimpleMappr (Shorthouse 2010). Geographical coordinates were obtained using the Google Maps software. The map was edited using Adobe Photoshop.

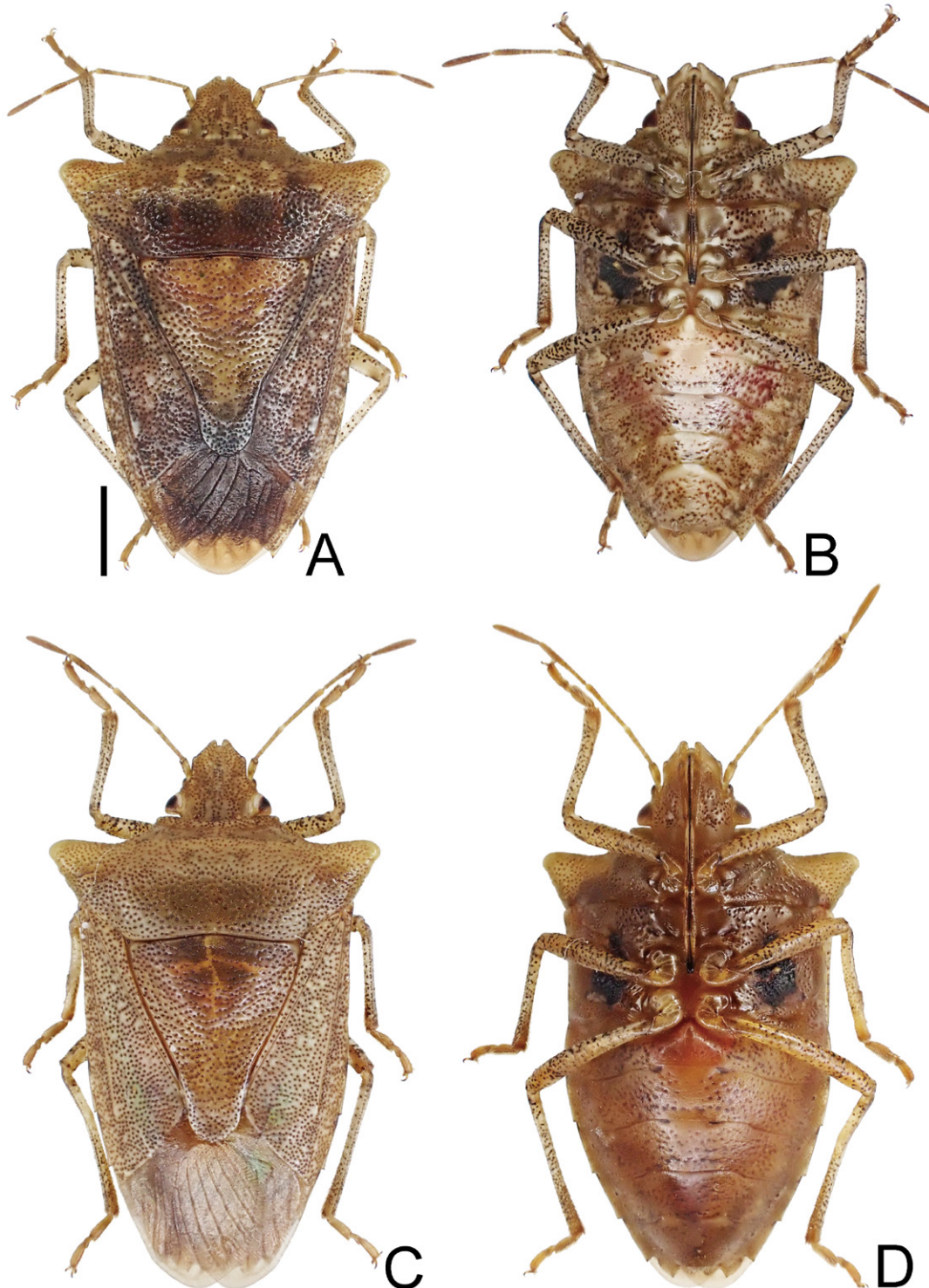


Figure 1. *Ochrophara chinensis* specimens from Okinawa Island, the Ryukyu Islands, Japan. **A.** Male, dorsal view. **B.** Male, ventral view. **C.** Female, dorsal view. **D.** Female, ventral view. Scale bar: 2.0 mm.

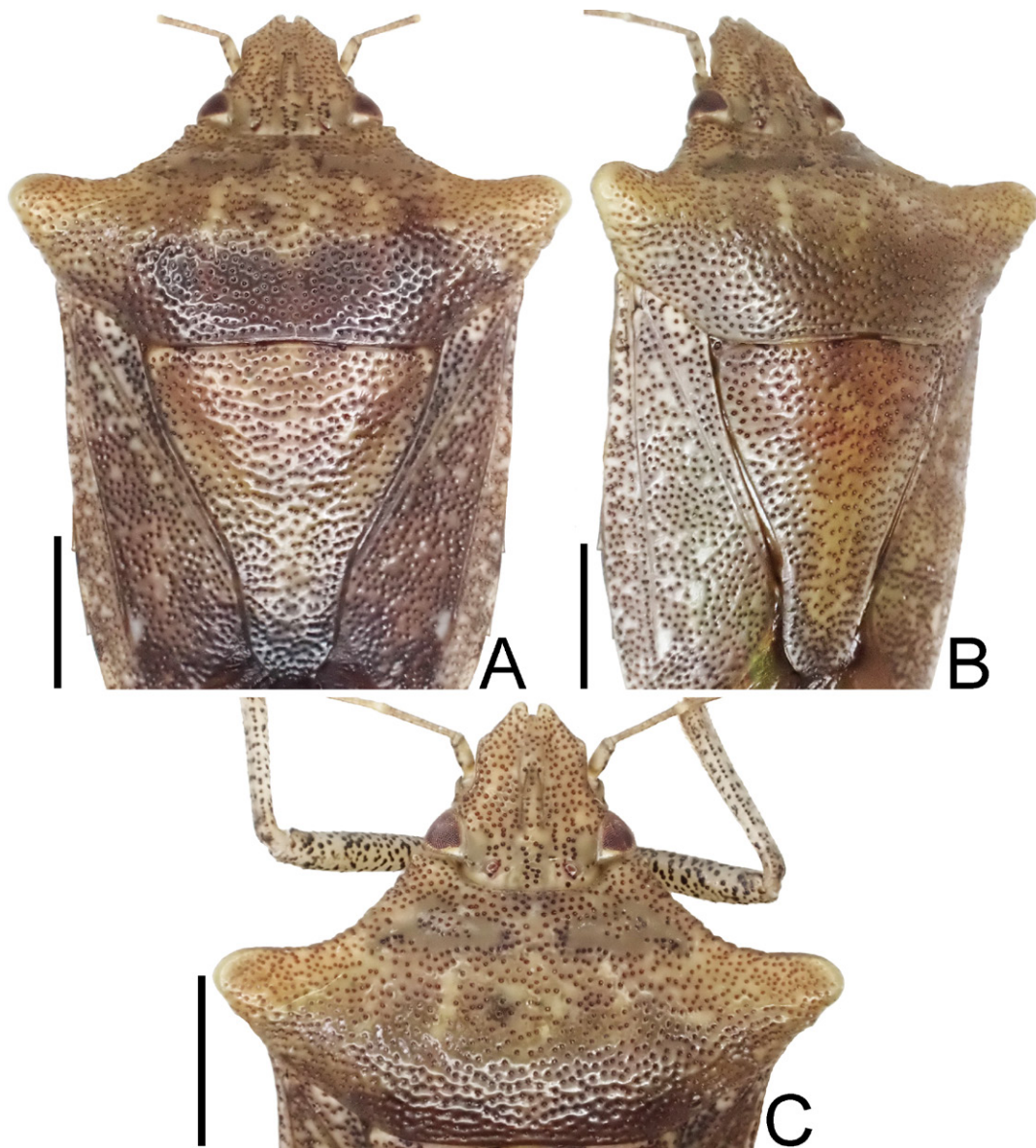


Figure 2. Diagnostic characters of *Ochrophara chinensis*. **A.** Pronotum and scutellum, dorsal view. **B.** Pronotum and scutellum, dorsolateral view. **C.** Head and pronotum, dorsocranial view. Scale bars: 2.0 mm.

Results

The genus *Ochrophara*, represented by *O. chinensis*, was recorded in Japan for the first time based on four specimens collected from Okinawa and Ishigaki islands in the Ryukyu Islands.

Ochrophara Stål, 1871

Identification. *Ochrophara* is distinguished from other genera of the tribe Sephelini Breddin, 1904 by the following characteristics: body robust; head as long as its maximum width across compound eyes; mandibular plates reaching beyond apex of clypeus, separated from each other at their apices; and humeral angle of pronotum strongly protruding outward (Stål 1871; Kirby 1891; Distant 1902; Zheng and Liu 1987; present study). The following recorded specimens match these diagnostic characteristics (Figs. 1, 2) and could be identified as *Ochrophara* without uncertainty.

Ochrophara chinensis Zheng & Liu, 1987

Figures 1–3

New record. JAPAN – **Ryukyu Islands** • Okinawa-ken, Ishigaki-jima Is., Banna-dake Hill; 24°22'20"N, 124°09'49"E; at lights of a convenience store; 5.VII.2011; Tatsuo Hanatani leg.; 1 ♂ TUA [PE01TUA] • Okinawa-honto Is., Ogimi-son, Tsunami; 26°39'39"N, 128°06'03"E; 11.V.2019; Mitsuru Moriguchi leg.; 1 ♀ TUA [PE02TUA] • Okinawa-jima, Okinawa-ken, Kunigami-gun, Ôgimi-son, Tsuha, 167-1; 26°39'38"N, 128°06'03"E; 20.VIII.2020; Yutaro Uehara leg.; 1 ♀ ELKU [PE01KU] • Okinawa-ken, Nago-shi, Gabusoka; 26°37'48"N, 127°59'33"E; Street light; 20.V.2021; Takeru Naka leg.; 1 ♂ ELKU [PE02KU].

Identification. *Ochrophara chinensis* strongly resembles *O. corinna* but can be easily distinguished by the anterolaterally protruding humeral angles of the pronotum in *O. chinensis* (Fig. 2) (Zheng and Liu 1987). The four specimens from Japan recorded in this study (Figs. 1–3)

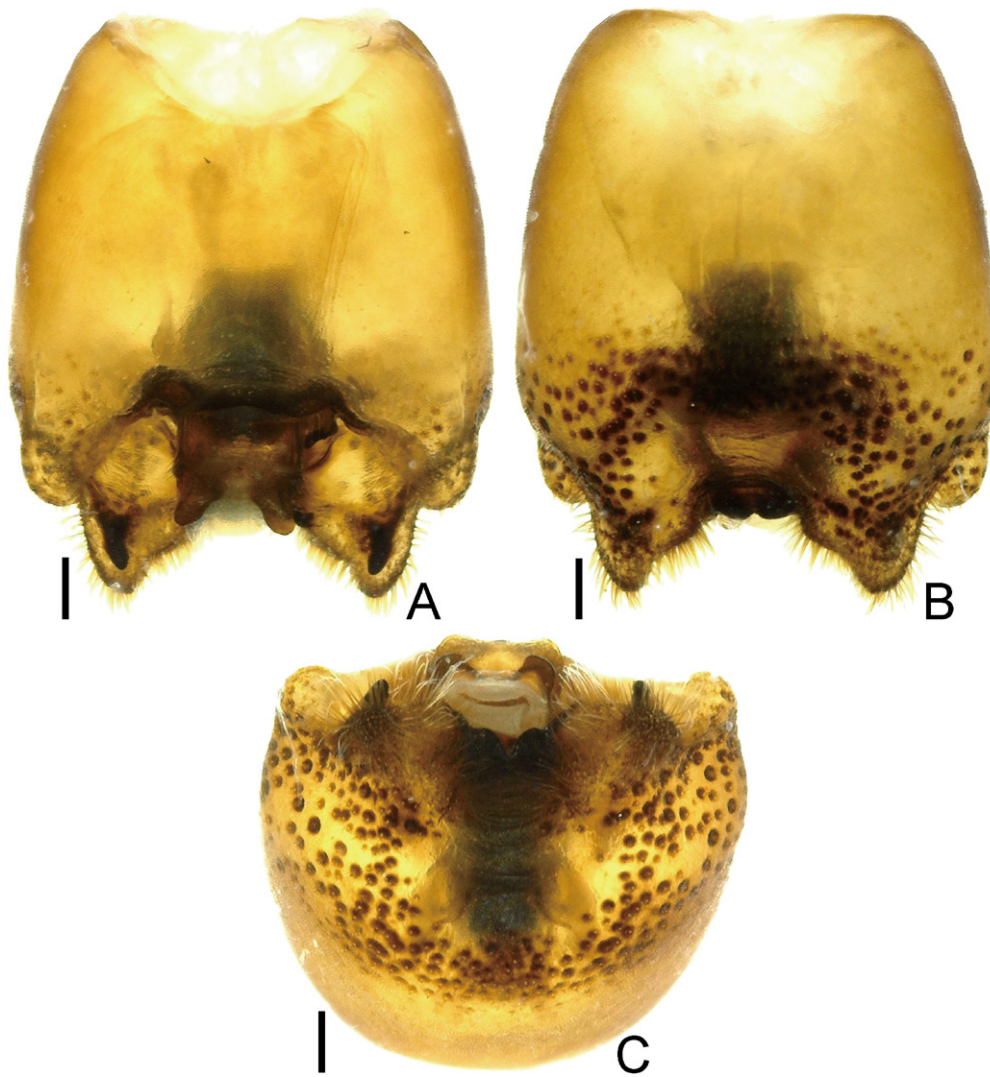


Figure 3. Genital capsule of *Ochrophara chinensis*. **A.** Dorsal view. **B.** Ventral view. **C.** Caudal view. Scale bars: 0.2 mm.

matched well with the description of *O. chinensis* (Zheng and Liu 1987) in terms of morphological characteristics, including the genital capsule. Therefore, we identified the specimen from Japan as *O. chinensis*.

Distribution. Japan (Ryukyu Islands: Okinawa Island, Ishigaki Island); China (Yunnan Province) (Fig. 4). Although the information is not based on specimens deposited at research institutions, some living individuals similar to *O. chinensis* have been photographed at Lantau Island, Hong Kong, China and Taiwan (https://www.inaturalist.org/observations?taxon_id=874715).

Biology. In Japan, *O. chinensis* was attracted to artificial light on Okinawa Island. Adults were collected in May and from July to September (Zheng and Liu 1987; present study).

Discussion

To date, *Ochrophara chinensis* has been recorded in only one locality, the type locality of the species in Yunnan Province, China (Zheng and Liu 1987; Rider et al. 2002). To the best of our knowledge, no species of *Ochrophara*

have been recorded north of the type locality of *O. chinensis* (Stål 1871; Kirby 1891; Rider 2006). Therefore, Okinawa Island of the Ryukyu Islands, Japan, is the northernmost locality of the genus (Fig. 4). Additionally, the Okinawa and Yunnan localities, both located in the Oriental Region, are over 3,000 km apart. Therefore, this stink bug species seems to be widely distributed in the Oriental Region of East Asia, and more localities will probably be discovered in future field surveys.

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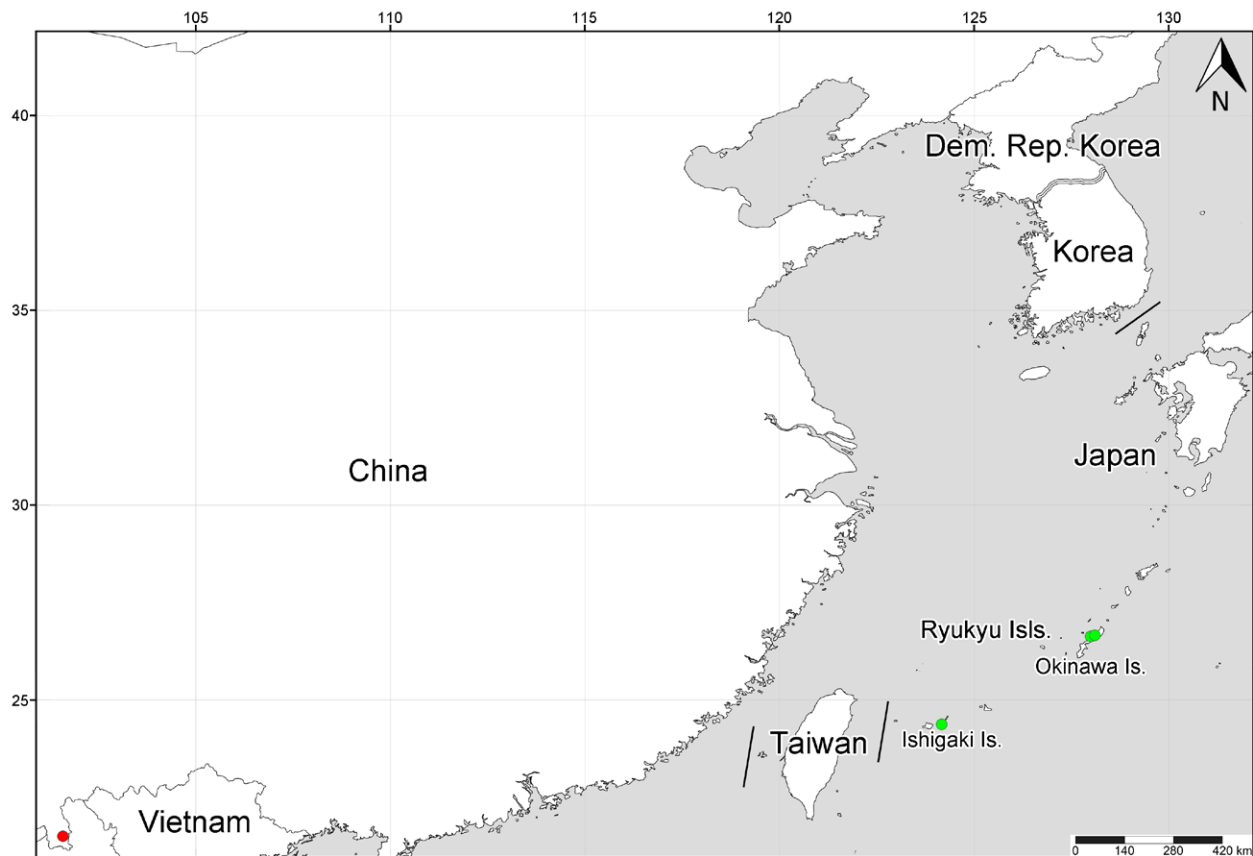


Figure 4. Collection sites of *Ochrophara chinensis*. Red dot = previously known record, the type locality; green dots = new records.

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Authors' Contributions

Conceptualization: JS. Data curation: JS. Funding acquisition: JS. Investigation: JS. Methodology: JS. Project administration: TI, JS. Resources: JS. Software: JS. Supervision: TI, JS. Validation: JS. Visualization: JS. Writing – original draft: JS. Writing – review and editing: TI, JS.

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