



Taxonomic study of the *protecta*-group in the genus *Pagaronia* Ball (Hemiptera, Cicadellidae, Evacanthinae) from Japan

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Abstract

Seven species, including three new species, of the *protecta*-group in the genus *Pagaronia* Ball are recognized from Honshu, Japan. *Pagaronia totoumiensis* **sp. nov.**, *P. dichotoma* **sp. nov.** and *P. lanceolata* **sp. nov.** are described from central Honshu. Some intraspecific morphological variations of *P. protecta* Okada, *P. tridens* M.Hayashi & Arai and *P. spinosa* Y.Hori are analyzed. Additional localities for all the described species of this species-group are also given.

Key words: Auchenorrhyncha, Pagaroniini, new species, taxonomy, morphology, intraspecific variation

Introduction

The evacanthine genus *Pagaronia* Ball was established for *P. tredecimpunctata* Ball from California, USA, and four species from North America and 96 species from East Asia have been described: 74 species from Japan, 23 from Korea, two from the Russian Far East, and one from Northeast China. Furthermore, a great many undescribed species from Japan have been recognized (Metcalf 1963; Huh & Kwon 1994; Anufriev & Emeljanov 1988; Hayashi & Okudera 2007, 2009; Imai 2010; Hayashi *et al.* 2010). Most *Pagaronia* species occurring in East Asia are similar to each other in body hue (yellow to ochraceous) and maculation (four black spots on the head). In contrast, the male genitalia, especially aedeagus and pygofer, are highly diversified. Hayashi *et al.* (2005, 2010) classified these East Asian species into 22 groups. Morphological features used for the species groupings include swelling of the head, black maculation on the head, configuration of the female 7th abdominal sternum, and structure of the male genitalia.

Among the 22 species-groups, the *protecta*-group comprises four species: *P. protecta* Okada, *P. conformata* M.Hayashi & Yoshida, *P. spinosa* Y.Hori and *P. tridens* M.Hayashi & Arai. *Pagaronia protecta* is distributed in western Honshu and the latter three species occur in central Honshu, Japan. Here we describe three new species of the *protecta*-group from central Honshu (Figs. 1–3). Additionally, we describe some morphological intraspecific variations in *P. protecta*, *P. tridens* and *P. spinosa* and report additional new localities for the four described species (Fig. 4).

Material and methods

Specimens used in this study are deposited in Kyushu University, Fukuoka, Japan (ELKU) and Saitama University, Saitama, Japan (SUU).