New synonyms and combinations for the planthopper genus *Eusarima* (Hemiptera: Fulgoroidea: Issidae)

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Introduction

In their revision of the issid fauna of Taiwan, CHAN & YANG (1994) erected four new genera resembling externally the genus *Sarima* Melichar, 1903: *Parasarima* Yang, 1994, *Sinesarima* Yang, 1994, *Neosarima* Yang, 1994, and *Eusarima* Yang, 1994. The genus *Sarima*, erected by MELICHAR (1903) for two species from Sri Lanka (Ceylon), currently includes 29 species from the Eastern Palaearctic, Oriental, and Australasian Regions (BOURGOIN 2013; HORI 1970, 1971) and is in need of revision (GNEZDILOV 2013). Six Taiwanese species, described by SCHUMACHER (1915), MATSUMURA (1916), and KATO (1933) in the genus *Sarima* were not assigned by CHAN & YANG (1994) to any newly erected genera mentioned above, because the type material was not available to the authors for study. LIANG & SUWA (1998) designated lectotypes in the Matsumura Collection, and recently I have examined a lectotype and paralectotypes of four Matsumura’s species described from Taiwan and Japan, syntypes of one
Schumacher’s species, and a holotype of one Kato’s species, both from Taiwan, all described in the genus Sarima. In my opinion, these six species belong to the genus Eusarima Yang, 1994 (in Chan & Yang 1994). The examination of the type material also revealed two new synonymies in the group.

Material and methods

The terminology of the head follows Anufriev & Emelianov (1988); the terminology of the male genitalia is adopted from Gnezdilov (2002). The photographs were taken using a Leica Z16 APOA macroscope with a Leica DFC490 video camera. Images were produced using the software Leica Application Suite ver. 3.7, Auto-Montage Essentials, and Adobe Photoshop.

The material examined is deposited in the Matsumura Collection of the Hokkaido University, Sapporo, Japan (MCHU), the University Museum, University of Tokyo (UMUT), and the Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (SDEI).

Taxonomy

Family Issidae Spinola, 1839
Subfamily Issinae Spinola, 1839
Tribe Issini Spinola, 1839

Genus Eusarima Yang, 1994


Subgenus Eusarima Yang, 1994

Diagnosis. Metope with distinct and complete median and sublateral carinae, joining below its upper margin. Coryphe transverse. Fore wings quite elongate, with no hypocostal plate, radius and cubitus anterior with 2 branches each, median with 2–4 branches. Hind wings well-developed, three-lobed. Hind tibia with two lateral spines. Phallobase with pair of subapical processes. Aedeagus with pair of ventral hooks arising from its apical half.

Eusarima koshunensis (Matsumura, 1916) comb. nov.
(Figs 1–2)


Type locality. Southern Taiwan (Koshun).


Note. In the pattern of face coloration E. koshunensis is very similar to Eusarima contorta Yang, 1994 (Chan & Yang 1994, Fig. 45).
Eusarima kuyaniana (Matsumura, 1916) comb. nov.


Type locality. Taiwan (Kuyania).


Figs 7–10. *Eusarima versicolor* (Kato, 1933), holotype. 7 – dorsal view; 8 – lateral view; 9 – face; 10 – labels.
Note. The pattern of face coloration as well as the structure of male genitalia of the dissected paralectotype of *S. kuyanianum* were compared with the drawings of the face and the male genitalia of *E. casca* in Chan & Yang (1994, Fig. 46). Both taxa were found conspecific.

*Eusarima rinkihonis* (Matsumura, 1916) comb. nov.


Type locality. Taiwan (Rinkiho).


Note. The pattern of face coloration as well as the structure of male genitalia of the dissected paralectotype of *S. rinkihonis* were compared with the drawings of the face and the male genitalia of *E. delira* in Chan & Yang (1994, Fig. 47). Both taxa were found conspecific.

*Eusarima satsumana* (Matsumura, 1916) comb. nov.

(Figs 3–4)


Type locality. Japan, southern Kyushu (Kiushiu).


*Eusarima formosana* (Schumacher, 1915) comb. nov.

(Figs 5–6, 11–16)

*Sarima formosana* Schumacher, 1915: 137.

Type locality. Taiwan (Taihorin).


Supplementary description. Male genitalia (Figs 11–16). Hind margin of pygofer slightly convex (Fig. 14). Anal tube long and narrow, rounded apically (Fig. 13). Anal column short, as long as one quarter of anal tube length. Phallobase slightly curved (in lateral view), with a hook-shaped process on each side below the base of ventral aedeagal hooks (Fig. 11). Ventral phallobase surface concave below ventral aedeagal hooks (from above). Ventral phallobase lobe widening apically (Fig. 12). Apical aedeagal processes wide, as long as dorsal phallobase lobe. Ventral aedeagal hooks long, arising in apical half of aedeagus, narrowing apically. Style with slightly concave hind margin (Fig. 15). Capitulum of style long, truncate apically (in
dorsal view, Fig. 16), on short neck; apical tooth small, lateral tooth well developed. Margin of style under the capitulum convex (in lateral view).

**Total length.** Male – 5.5 mm.

**Note.** The species was described based on two specimens from Taiwan (Taihorin) (Schumacher 1915). Two examined syntypes (male and female) apparently belong to different species as they are very different in the pattern of face coloration (female has a crescent light band in the middle of the metope) and the shape of fore wings (the female has shorter wings).
I designate here the male as the lectotype according to the ICZN (1999: Art. 74) to stabilize the nomenclature in the group.

Based on the structure of male genitalia *E. formosana* is closely related to (or even con-specific with) *Eusarima arva* Yang, 1994 in CHAN & YANG (1994, fig. 59). However, the lectotype of *S. formosana* differs in its face coloration – a light brown to yellowish postclypeus with two dark brown longitudinal stripes compared to an almost totally dark postclypeus, except near to metopoclypeal suture, in *E. arva*. The latter species was described based on two specimens (male and female), thus this difference in the face coloration between both species can be due to interspecific variability. Pending more material available and a further study, I prefer to treat *E. formosana* and *E. arva* as valid names.

**Eusarima versicolor** (Kato, 1933) comb. nov.
(Figs 7–10)

*Sarima versicolor* Kato, 1933: 462, Pl. 14: Fig. 9.

**Type locality.** Taiwan (Kôshun).

**Type material examined.** HOLOTYPE (UMUT): ♂, “Kôshun, Formosa, (IV. 1918) (handwritten), Col. M-Kato (printed), "TYPE No 246, M-Kato Coll." (red, printed with the number handwritten).

**Note.** The specimen was examined only based on photos (Figs 7–10).

**Discussion**

The type species of the genus *Sarima, Sarima illibata* Melichar, 1903, from Sri Lanka (MELICHAR 1903), is characterized by the unique loop of the radius vein of the fore wing which is formed by its short anterior branch (R.), by the presence of a hypocostal plate on the fore wing, and by a characteristic carination of the metope with sublateral carinae distinct only in its upper part (MELICHAR 1906: Fig. 73; GNEZDILOV 2013). Apparently the genus *Sarima* Melichar sensu stricto is endemic to Sri Lanka. Six species treated in this paper have neither radial loop nor hypocostal plate on the fore wings and have complete sublateral carinae of the metope, which are the characters of the genus *Eusarima*.

Currently, *Eusarima* is the largest Oriental issid genus with 34 described species, including the new synonyms and combinations in this paper. The genus comprises two subgenera – *Eusarima* Yang, 1994 with 32 species distributed in Taiwan and (based on a new combination in this paper) also in Japan, and *Nepalius* Dlabola, 1997 with two species known from Iran and Nepal (GNEZDILOV 2009, GNEZDILOV & MOZAFFARIAN 2011).

Some other species originally described and still formally contained in the genus *Sarima*, e.g. *Sarima amagisana* Melichar, 1906 and *S. ryukyuana* Hori, 1970 known from Japan, and *S. tappana* Matsumura, 1916 from Taiwan need a further study. The published descriptions and illustrations for these species are not sufficient to decide on their correct generic placement.

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References


