

## A new species of the genus *Eusarima* (Hemiptera: Fulgoroidea: Issidae) from Iran

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**Abstract.** *Nepalius* Dlabola, 1997 is revalidated as a subgenus of the genus *Eusarima* Yang, 1994 in CHAN & YANG (1994). A new species, *Eusarima* (*Nepalius*) *iranica* sp. nov., is described from Iran. A diagnosis of the genus *Eusarima* is provided with keys to the subgenera and to the species of the subgenus *Nepalius*.

**Key words.** Hemiptera, Fulgoroidea, Issini, *Nepalius*, new species, Iran, Palaearctic Region

### Introduction

The Issidae is a family of planthoppers (Hemiptera: Fulgoroidea) with some 980 species described worldwide. The family is particularly species-rich in arid and semi-arid regions including the Middle East but its real diversity has probably been only partly documented by taxonomists. However, records of additional new Issidae species can be expected even in relatively well-documented areas such as in Iran. The earliest records of Iranian issids were published by MELICHAR (1902) who described two species (*Phasmena telifera* Melichar, 1902 and *Ph. nasuta* Melichar, 1902) from south-eastern Iran. Later J. Dlabola documented the Iranian fauna of the family in the series of publications (DLABOLA 1971, 1980a,b, 1981, 1982, 1997). Some new combinations, synonyms and records dealing also with Iranian Issidae were published recently (MIRZAYANS 1995; GNEZDILOV 2002, 2010; GNEZDILOV et al 2004; MOZAFFARIAN & GNEZDILOV 2011). Currently the Iranian issid fauna is known to comprise 12 genera with 44 species including the species described below (MOZAFFARIAN & WILSON, in prep.). Three genera (*Cavatorium* Dlabola, 1980, *Iranodus* Dlabola, 1980, and *Pentissus* Dlabola, 1980) and 39 species appear to be endemics in Iran. At least five species of the Iranian Issidae were recorded from agricultural crops (BEHDAD 1988, ABALI 2000).

The issid genus *Eusarima* Yang, 1994 was originally erected for 29 species from Taiwan (CHAN & YANG 1994). Later GNEZDILOV (2009) placed the monotypic genus *Nepalius* Dlabola, 1997, erected for *Nepalius hellerianus* Dlabola, 1997 from Nepal (DLABOLA 1997), in synonymy under *Eusarima*. This was based on similarities in the carination of metope,

the venation of fore wings, the structure and venation of hind wings, and the structure of male genitalia (each dorso-lateral phallobase lobe with a large subapical horn-shaped process directed apically and aedeagus with pair of long ventral hooks directed basally). During recent field work in Iran we found a new species which is closely related to *Eusarima helleriana* (Dlabola, 1997) and is described below. This is the first representative of the tribe Issini with tri-lobed hind wings in the Western Palaearctic fauna. All other Western Palaearctic issid species are characterized by rudimentary hind wings or reduced anal lobe of hind wings. As *E. helleriana* and the new species are probably closely related to each other and differ from the Taiwanese species of the genus by the presence of a hypocostal plate on the fore wings and the intermediate carinae of the metope joined at its upper margin, we suggest that *Nepalius* is treated as a subgenus of *Eusarima*.

### Material and methods

The morphological terminology follows EMELJANOV (1995) and GNEZDILOV (2003). The genital segments of examined specimens were macerated in 10% KOH and figured in glycerine jelly using a compound light microscope Leica M165C. The images of specimens were made using Olympus SZH and Dinolite digital camera version 2.7.0.0.

The material examined is deposited in the following collections:

HMIM	Hayk Mirzayans Insect Museum, Iranian Research Institute of Plant Protection, Tehran, Iran;
MNHN	Muséum national d'Histoire naturelle, Paris, France;
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany;
ZIN	Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

### Taxonomy

#### Genus *Eusarima* Yang, 1994

*Eusarima* Yang, 1994 in CHAN & YANG (1994): 108. Type species: *Eusarima contorta* Yang, 1994 in CHAN & YANG (1994), by original designation.

*Nepalius* Dlabola, 1997: 309. Type species: *Nepalius hellerianus* Dlabola, 1997, by original designation. Synonymised under *Eusarima* Yang, 1994 by GNEZDILOV (2009): 84.

**Diagnosis.** Metope with complete median and sublateral carinae joining below or at its upper margin. Fore wing with or without hypocostal plate; radius and cubitus anterior bifurcate, media tri- or tetrafurcate (R 2 M 3–4 CuA 2). Hind wing with two clefts; radius and first anal vein bifurcate, media, cubitus posterior, postcubitus, and second anal vein simple, cubitus anterior bi- or trifurcate (R 2, M 1, CuA 2–3, CuP 1, Pcu 1, A<sub>1</sub> 2 and A<sub>2</sub> 1); cubitus anterior and posterior fused apically. Each dorso-lateral lobe of phallobase with elongate subapical process directed apically. Style with small capitulum.

#### Key to the subgenera of *Eusarima*

- 1 Intermediate carinae of metope joined below its upper margin. Fore wings without hypocostal plate. Taiwan. .... *Eusarima* Yang, 1994
- Intermediate carinae of metope joined at its upper margin (Fig. 3). Fore wings with narrow hypocostal plate. Nepal and Iran. .... *Nepalius* Dlabola, 1997, **stat. nov.**

**Subgenus *Nepalius* Dlabola, 1997, stat. nov.**

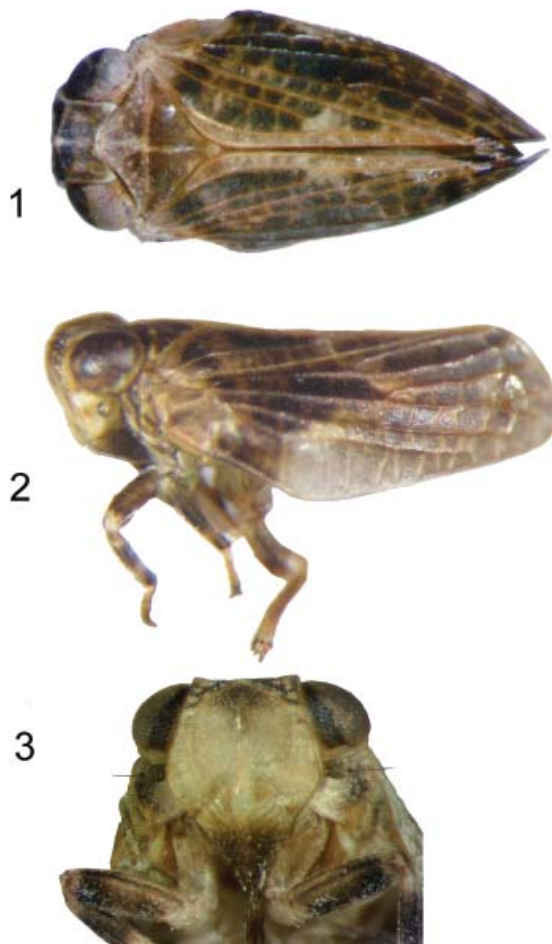
*Nepalius* Dlabola, 1997: 309. Type species: *Nepalius hellerianus* Dlabola, 1997, by original designation.

***Eusarima (Nepalius) iranica* sp. nov.**

(Figs. 1–9)

**Type material.** HOLOTYPE: ♂, 'IRAN: Tehran / Darabad / 35°48'N 51°26'E / 10.VIII.2010 / on *Hedera helix* L. and *Evonymus* sp. / F. Mozaffarian and R. Kharrazi leg.' (HMIM). PARATYPES: **IRAN:** 5 ♂♂ 14 ♀♀, same data as holotype (HMIM and ZIN); 1 ♀, same locality as holotype, 10.X.2008 / F. Mozaffarian leg. (HMIM); 1 ♂, Tehran, 28.VII.2009, M. Lashkari leg. (HMIM).

**Description.** Metope wide, enlarged above clypeus, with median and sublateral carinae joined at upper margin of metope (Fig. 3). Median carina running through postclypeus. Rostrum reaching hind coxae. Pedicel cylindrical. Lateral ocelli present. Coryphe transverse, anterior

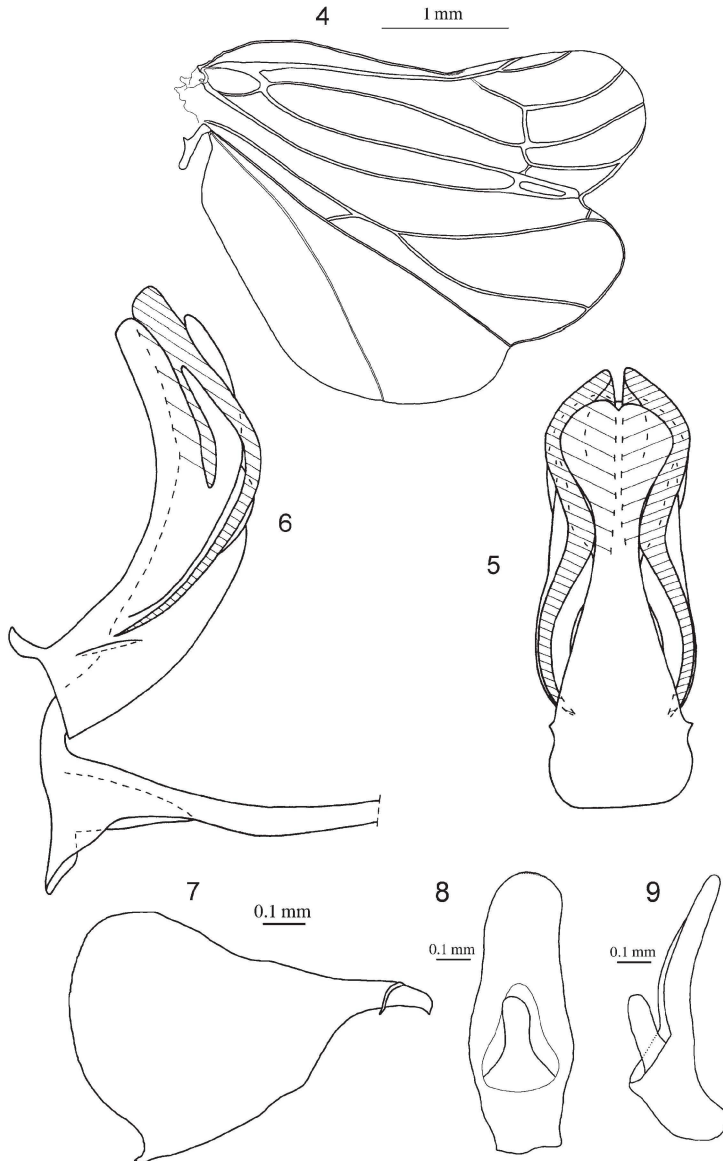


Figs. 1–3. *Eusarima iranica* sp. nov. 1 – dorsal view (holotype); 2 – lateral view (holotype); 3 – frontal view (paratype).

margin obtusely angulate, posterior margin concave (Fig. 1). Pronotum and mesonotum with median carina. Paradiscal fields very narrow. Fore wings elongate, widely rounded apically, with narrow hypocostal plate (Fig. 2); basal cell long, radius bifurcate (R 2; R<sub>1</sub> with winding, R<sub>2</sub> straight), media trifurcate (M 3), cubitus anterior bifurcate (CuA 2), many relief transverse veins present in all cells; clavus as long as 4/5 of fore wing length. Hind wings tri-lobed, anterior margin concave, with coupling lobe; vein formula: R 2, rm 1, M 1, CuA 2, CuP 1 (CuA and CuP fused apically), Pcu 1, A<sub>1</sub> 2 (A<sub>11</sub> medially fused with Pcu), A<sub>2</sub> 1 (Fig. 4). Hind tibia with two lateral spines. First metatarsomere with 8–10 intermediate spines bearing subapical setae.

**Coloration.** In male, metope dark brown below upper margin and light yellow in lower part, sublateral carinae of metope light brown, median carina light yellow in lower part and brown in upper part, postclypeus light yellow basally and dark brown apically, anteclypeus dark brown (Fig. 3). In female, upper part of metope dark brown, lower part brown yellowish, postclypeus dark

brown. Scapus light yellow. Pedicel dark brown. Genae light yellow or light brown (Fig. 2). Coryphe dark brown, with light yellow median line (Fig. 1). Pro- and mesonotum dark brown, with light yellow median carina. Fore wings dark brown, with light yellow transverse veins, each wing with two large light yellow areas – one basally and another one medially, near to



Figs. 4–9. *Eusarima iranica* sp. nov. (paratype). 4 – hind wing; 5 – aedeagus and phallobase, ventral view; 6 – aedeagus and phallobase, lateral view; 7 – style, lateral view; 8 – anal tube, dorsal view; 9 – anal tube, lateral view.

costal margin (Fig. 2). Femora and fore and middle tibiae light brown, with dark brown spots. Hind tibiae light brown. Apices of spines on tibiae and tarsomeres black.

Male genitalia (Figs. 5–9). Hind margin of pygofer almost straight. Anal tube long and narrow, rounded apically (Figs. 8, 9). Anal column 0.3 times as long as anal tube. Phallobase slightly curved (in lateral view), with narrow supporting lobe below every ventral aedeagal hook (Fig. 6). Each dorso-lateral phallobase lobe with narrow, acuminate subapical process. Ventral phallobase lobe long, wide, enlarged apically, with median concavity (Fig. 5). Apical aedeagal processes long, surpassing apical margin of phallobase. Ventral aedeagal hooks long, acuminate. Style with slightly convex hind margin, caudo-dorsal angle rounded (Fig. 7). Capitulum of style small, with neck, lateral and apical teeth well-developed.

Female genitalia. Hind margin of female sternum VII with large median semicircular process. Anal tube elongate, narrow.

Total length. Males: 4.7–5.0 mm. Females: 5.1–5.3 mm.

**Differential diagnosis.** The species differs from closely related *E. helleriana* by the coloration of the metope, the shape of the costal margin and the coloration of fore wings, and the absence of processes on ventral aedeagal hooks (see also the key below). In the original description of *E. helleriana* DLABOLA (1997) mentioned that the fore wing of *E. helleriana* has large light and dark maculae in its proximal half ('grössere helle und dunkle Makel besonders in der Basalhälfte der Vorderflügel') (DLABOLA 1997: Fig. 11). *Eusarima iranica* sp. nov., in contrast to *E. helleriana*, is characterized by the presence of two large light yellow areas (not maculae!) basally and medially on fore wings (Fig. 2).

**Etymology.** Named after the area of occurrence; adjective.

### *Eusarima (Nepalius) helleriana* (Dlabola, 1997)

*Nepalius hellerianus* Dlabola, 1997: 310.

*Eusarima helleriana*: GNEZDILOV (2009): 84.

**Type material examined.** PARATYPES: 2 ♀♀, 'W. NEPAL / Marsyandi-Tal zw. / Chamche u. Shangy / E[nde].11.1977 / J. Frank leg.' (SMNS, MNHN).

**Distribution.** Nepal (DLABOLA 1997, GNEZDILOV 2009).

### Key to the species of *Nepalius*

- 1 Metope dark brown, with yellow dots (DLABOLA 1997: Fig. 2). Costal margin of fore wing only slightly curved medially. Fore wings dark brown, with light maculae, but without large light yellow areas near to costal margin (DLABOLA 1997: Fig. 11). Each ventral aedeagal hook with short process proximally (DLABOLA 1997: Figs. 6, 9, 10). ..... *E. helleriana* Dlabola, 1997
- Metope with middle and lower parts light yellow-brownish or greenish (Fig. 3). Costal margin of fore wing distinctly curved medially (Fig. 2). Fore wings dark brown, each with two large light yellow areas basally and medially, near to costal margin (Fig. 2). Ventral aedeagal hooks without processes (Figs. 5, 6). ..... *E. iranica* sp. nov.

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