

New Genus of the Family Issidae (Hemiptera: Fulgoroidea) from Japan

Vladimir M. GNEZDILOV¹⁾ and Masami HAYASHI^{2,3)}

¹⁾ Zoological Institute, Russian Academy of Sciences, Universitetskaya nab.1, 199034 Saint Petersburg, Russia

²⁾ Department of Biology, Faculty of Education, Saitama University, Saitama, 338-8570 Japan

³⁾ Laboratory of Entomology, Tokyo University of Agriculture, Atsugi, 243-0034 Japan

Abstract A new genus, *Rhombissus* is erected for *Issus harimensis* Matsumura, 1913 which is redescribed and illustrated for the first time.

Key words: Parahiraciini, *Issus harimensis*, new genus, new combination, Japan.

Introduction

Issus harimensis was described by Matsumura (1913), based on the material from Honshu and Kyushu in Japan. However recently Gnezdilov (2013) revising the family Issidae mentioned that this species does not belong to the genus *Issus* Spinola, 1839 which is a Mediterranean taxon (Gnezdilov *et al.*, 2014). In 1997, A.-P. Liang and M. Suwa designated the lectotype of *Issus harimensis* in the Matsumura Collection in Hokkaido University (Liang and Suwa, 1998).

Issus harimensis clearly differs from the species of the genus *Issus* Spinola by bilobed hind wings with well developed anal lobe (*Issus* s. str. has bilobed hind wings as well, but with rudimentary anal lobe; see fig. 17 in Gnezdilov, 2016), presence of 3 lateral spines on hind tibiae (*Issus* s. str. has two spines), by furcating ventral aedeagal hooks (*Issus* s. str. has simple ventral aedeagal hooks), and by the absence of peculiar inner process on dorso-lateral phallobase lobes (Gnezdilov, unpublished). Thus we suggest to erect a new genus for accommodating this species.

Taxonomy

Family Issidae Spinola, 1839
Tribe Parahiraciini Cheng *et* Yang, 1991

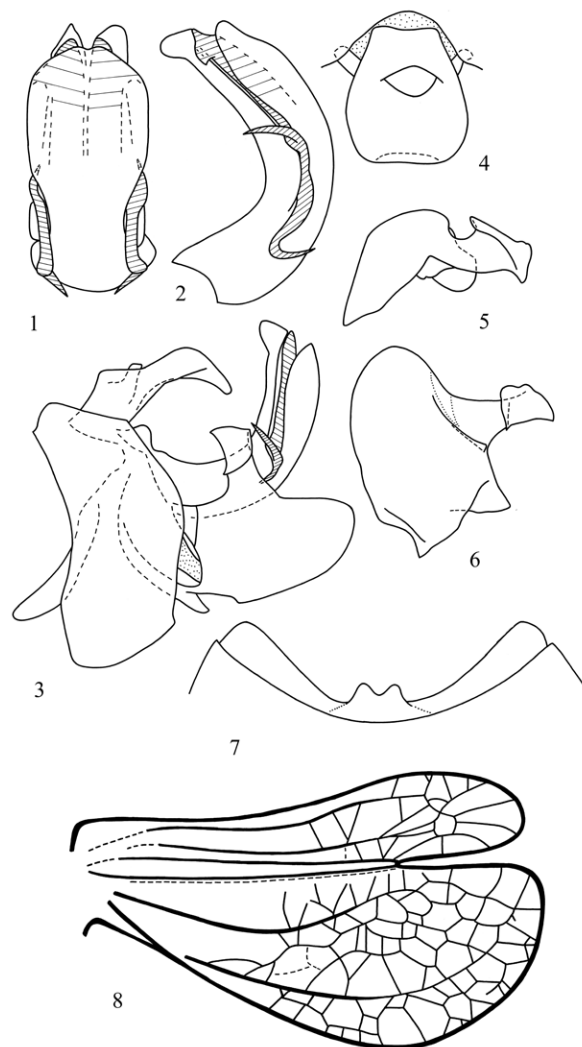
***Rhombissus* gen. n.**

Figs. 1–13

Type species: *Issus harimensis* Matsumura, 1913.

Description. Metope comparatively wide, lateral margins convex. Metopoclypeal suture groove-shaped (Fig. 12). Metope with two rows of sensory pit traces between lateral margins and sublateral carinae which joint far from upper margin of metope. Median carina of metope starting from transverse part of sublateral carinae and does not reach metopoclypeal suture. Coryphe transverse, anterior margin slightly convex, posterior margin slightly concave (Fig. 13). Pedicell elongately rounded. Ocelli absent. Rostrum reaching hind coxae. Third rostrum segment nearly 0.7 as long as second one, slightly narrowing apically. Pronotum with 3 rows of sensory pit traces, without carinae, shorter than mesonotum, anterior margin obtusely

angulate, paradiscal fields very narrow behind the eyes. Mesonotum with weak median carina. Fore wings narrowing distally from the middle (view above), without hypocostal plate. Basal cell narrowly oval. Radius and median with two



Figs. 1–8. *Rhombissus harimensis* (Matsumura), male (Honshu). 1 – Phallobase and aedeagus, ventral view; 2 – same, lateral view; 3 – genital block, lateral view; 4 – male anal tube, dorsal view; 5 – style, dorsal view; 6 – style, ventral view; 7 – female 7th sternum, ventral view; 8 – hind wing.



Figs. 9–11. *Rhombissus harimensis* (Matsumura) (lectotype of *Issus harimensis*). 9 – Dorsal view; 10 – lateral view; 11 – labels. Length of hind wing, 4.5 mm.

branches, cubitus anterior simple (R 2 M 2 CuA 1). Radius furcates closely to basal cell, median – near to wing middle. All main veins reticulate in distal half of the wing (Figs. 9, 10). Clavus long, its apex reaching wing middle, opened (Pcu + A₁ running to its apex). Hind wings well developed, as long as fore wings, bilobed with deep marginal cleft (cubital cleft) and reticulate venation (Fig. 8). Hind tibia with 3 lateral spines and 8 spines on the apex. First metatarsomere slightly longer than second one, with two latero-apical and 6–7 intermediate spines in row. Arolium of pretarsus almost reaching claw apices (in dorsal view).

Male genitalia (Figs. 1–6). Pygofer with strongly convex hind margin (Fig. 3). Anal tube wide, truncate apically (in dorsal view) (Fig. 4), apical part turned down (in lateral view) (Fig. 3). Phallobase obtusely angulately curved (in lateral view) (Fig. 2), with wide ventral lobe (Fig. 1). Apical aedeagal processes each with subapical triangular lobe (Fig. 2). Each ventral aedeagal hook with two branches narrowing apically and turned in different directions. Style massive with caudo-dorsal angle widely rounded, capitulum on long neck, lateral tooth well developed (Fig. 6). Margin of the style under the capitulum with large angular projection well visible in lateral view. Capitulum wide and truncate apically (in dorsal view) (Fig. 5).

Female. Sternum VII with bilobed projection medially (Fig. 7). Gonoplacs convex, rounded. Anal tube elongate, at least 2–2.5 times as long as wide, rounded apically.

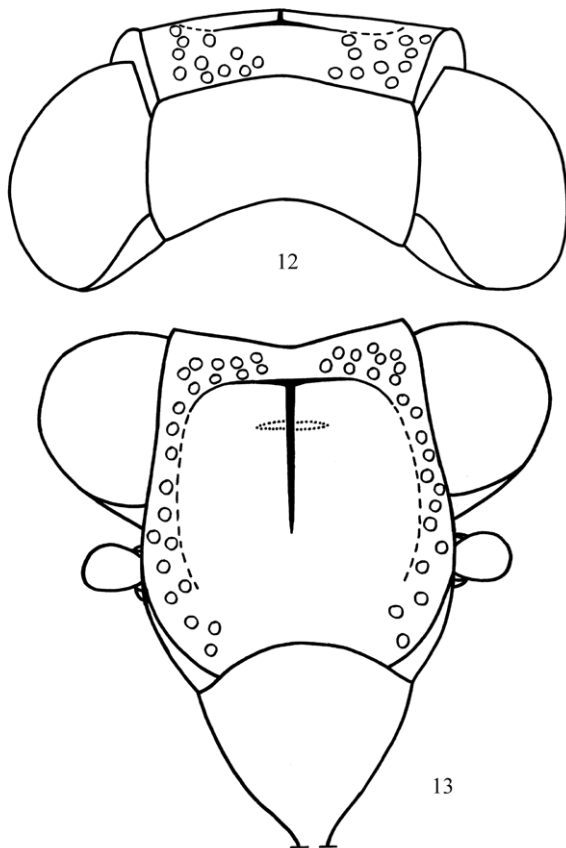
Etymology. Generic name is derived from combination of “rhomb” and “issus” to accent peculiar shape of fore wings (in dorsal view) of *Issus harimensis*.

Rhombissus harimensis (Matsumura, 1913), comb. n.

Issus harimensis Matsumura, 1913: 61.

Total length: Males 6.0–7.8 mm, females 7.1–7.9 mm. This planthopper (both adults and nymphs) is often found on trunks of some conifers, *Cryptomeria japonica* (L.f.) (mainly in central Honshu), *Juniperus rigida* Sieb. et Zucc. (in western Honshu) both of Cupressaceae, and *Pinus densiflora* Sieb. et Zucc. of Pinaceae (sometimes, in western Japan).

Material examined. Japan: Lectotype ♀, “Taisanji, 6/29” (in Chinese letters), “Japan, Taisanji (in Japanese letters) 6/29, DR. MATSUMURA”, “*Issus harimensis* n.sp. ♀ (handwriting), det. Matsumura”, “Type Matsumura” (printed on red label), “LECTOTYPE, *Issus harimensis* Mats., desig. A.P. Liang & M. Suwa 1997”; 1♀, Honshu, Saitama Pref., Irikawa Valley, 700–750 m, Oku-Chichibu Mts., 2.VII.1982, M. Hayashi leg.; 1♂, same locality, 12.IX.1996, M. Hayashi *et al.*; 1♂, same locality (Koaka-zawa, 1,200 m), 31.VII.1995, K. Sasaki leg.; 1♂, Honshu, Saitama Pref., Mt. Jômine (930–1,030 m), 14.VIII.1998, M. Hayashi *et al.*; 1♀, Honshu, Tokyo Met., Hachioji City, Minamiasakawamachi, 28.V.1987, M. Nishimura leg.; 1♀, Honshu, Kanagawa Pref., Kiyokawa-mura, Shiomizu For. Rd. (Tanzawa Mts.), 20.VII.1993 (collector unknown); 1♂ 2♀, Honshu, Wakayama Pref., Kainan, Kurosawayama, 1.VI.1988, M. Hayashi leg.; 1♂ 3♀, Honshu, Wakayama Pref., Shirahama, Tsubaki-onsen (hot springs), 5.IV.1999, S. Gotoh leg.; 1♂, Kyushu, Fukuoka Pref., Mt. Hikosan, 5.VII.1979, K. Maeto leg. The lectotype is preserved in Hokkaido University, and other specimens are from the collection of Tokyo University of Agriculture.



Figs. 12–13. *Rhombissus harimensis* (Matsumura), male (Honshu). 12 – Head, dorsal view; 13 – head, frontal view. Length of metope + clypeus, 2 mm.

Discussion

New genus described above is related to the Oriental genus *Thabena* Stål, 1866 (= *Gelastyra* Kirkaldy, 1906 and *Gelastyrella* Yang, 1994) *sensu* Gnezdilov (2009) according to well developed bilobed hind wings with deep cubital cleft and reticulate venation and also according to carination of metope which has transverse carina below its upper margin with median carina under it (Chan & Yang, 1994, fig. 36D; Chan *et al.*, 2013, figs. 12–15, 17, 19).

According to bilobed hind wings and style with strongly convex margin under the capitulum this new genus may be placed in the tribe Parahiraciini Cheng *et* Yang. *Thabena* which is closest taxon to the new genus may be placed in the Parahiraciini as well according to recently published molecular phylogeny of the family Issidae (Sun *et al.*, 2015)

where *Thabena* is in one cluster with “typical” Parahiraciini. Morphological characters of *Thabena* and its close position to Parahiraciini were recently discussed by Gnezdilov (2015).

Acknowledgements

We are indebted to Dr Masahiro Ohara and Dr Kazunori Yoshizawa (Hokkaido University, Sapporo) for permission to use the digital images of the lectotype in the Matsumura Collection. First author (VMG) research is performed in the frames of the Russian state research project no. 01201351189.

References

- Chan, M.-L. and Yang, C.-T., 1994. Issidae of Taiwan (Homoptera: Fulgoroidea). 188 pp. Chen Chung Book, Taichung, Taiwan.
- Chan, M.-L., Yeh, H.-T. and Gnezdilov, V.M., 2013. *Thabena brunneifrons* (Hemiptera: Issidae), new alien species in Taiwan, with notes on its biology and nymphal morphology. *Formosan Entomologist*, **33**: 149–159.
- Gnezdilov, V.M., 2009. Revisionary notes on some tropical Issidae and Nogodinidae (Hemiptera: Fulgoroidea). *Acta Entomologica Musei Nationalis Pragae*, **49**: 75–92.
- Gnezdilov, V.M., 2013. Modern classification and the distribution of the family Issidae Spinola (Homoptera, Auchenorrhyncha, Fulgoroidea). *Entomologicheskoe Obozrenie*, **92**: 724–738. (In Russian.) [English translation published in *Entomological Review*, **94**: 687–697 (2014).]
- Gnezdilov, V.M., 2015. First coloured species of the genus *Thabena* Stål (Hemiptera, Fulgoroidea, Issidae) from Vietnam with general notes on the genus. *Acta Zoologica Academiae Scientiarum Hungaricae*, **61**: 329–339.
- Gnezdilov, V.M., 2016. Review of the genus *Ikonza* Hesse with notes on evolution of the family Issidae (Hemiptera, Auchenorrhyncha: Fulgoroidea). *Entomologicheskoe Obozrenie*, **95** (in press).
- Gnezdilov, V.M., Holzinger, W.E. and Wilson, M.R., 2014. The Western Palaearctic Issidae (Hemiptera, Fulgoroidea): an illustrated checklist and key to genera and subgenera. *Proceedings of the Zoological Institute RAS*, **318** (Supplement 1): 1–124.
- Liang, A.-P. and Suwa, M., 1998. Type specimens of Matsumura's species of Fulgoroidea (excluding Delphacidae) in the Hokkaido University Insect Collection, Japan (Hemiptera: Fulgoromorpha). *Insecta Matsumurana* (N. S.), **54**: 133–166.
- Matsumura, S., 1913. Thousand insects of Japan, Additamenta. Vol. 1. 184 pp., 15 pls. Keiseisha, Tokyo. (In Japanese.)
- Sun, Y., Meng, R. and Wang, Y., 2015. Molecular systematics of the Issidae (Hemiptera: Fulgoroidea) from China based on wingless and 18S rDNA sequence data. *Entomotaxonomia*, **37**: 15–26.

[Received: March 23, 2016; accepted: April 24, 2016]