

A new species of the genus *Closterotomus* Fieber from Crete (Hemiptera: Heteroptera: Miridae: Mirinae)

Новый вид рода *Closterotomus* Fieber с острова Крит (Hemiptera: Heteroptera: Miridae: Mirinae)

Armand Matocq¹ & Dominique Pluot-Sigwalt²
Арман Маток¹ и Доминик Плюо-Сигвальт²

1 Museum national d'Histoire naturelle, Departement Systematique & Evolution (Entomologie, CP 50), 45 rue Buffon, F-75231 Paris cedex 05. E-mail: matocq.armand@wanadoo.fr

1 Национальный музей естественной истории, отдел систематики и эволюции (энтомология, CP 50), 45 ул. Бюффона, F-75231 Париж 05.

2 Museum national d'Histoire naturelle et Ecole pratique des Hautes Etudes, Biologie et Evolution des Insectes, 45 rue Buffon, F-75231 Paris cedex 05. E-mail: dps@mnhn.fr

2 Национальный музей естественной истории и Ecole pratique des Hautes Etudes, биология и эволюция насекомых, 45 ул. Бюффона, F-75231 Париж 05.

KEY WORDS: Heteroptera, Miridae, Mirinae, *Closterotomus*, new species, male and female genitalia.

КЛЮЧЕВЫЕ СЛОВА: Heteroptera, Miridae, Mirinae, *Closterotomus*, новый вид, гениталии самца и самки.

ABSTRACT. *Closterotomus izyai* sp.n. is described from Crete. Illustrations of the adult male and female dorsal habitus and genitalia are provided. The new species can not be easily assigned to any of the 3 supergroups of species based on female genitalic characteristics by Rosenzweig.

РЕЗЮМЕ. Описан *Closterotomus izyai* sp.n. с острова Крит. Приведены рисунки внешнего вида и гениталий самца и самки. Новый вид, по-видимому, не может быть отнесен ни к одной из 3-х групп видов, выделенных Розенцвейгом на основе строения гениталий самок.

Introduction

The genus *Closterotomus* Fieber, which currently contains some 30 Palaearctic species [Kerzhner & Josifov, 1999], was revised by Rosenzweig [1997] together with two closely related genera, *Reuterista* and *Brachycoleus*, as part of a review of the *Calocoris* complex. This comprehensive study divided *Closterotomus* into several species groups which were united into three supergroups based on female genitalic structure. Since then four additional species and one subspecies have been described in the genus: *C. nigrostriatus* Carapezza, 1997 (Tunisia), *C. orientalis* Carapezza, 2002 (Jordan), *C. valcarceli* Ribes & Ribes, 2003 (Algeria), *C. ezoalpinus* Yasunaga, 2003 (Japan), *C. picturatus lesvou* Rieger & Grimm, 1999 (Lesbos island, Greece).

In this paper we describe a new species collected in Crete. It is a great pleasure to dedicate it to Dr. I.M. Kerzhner in honour of his prolific career, and in recognition of his outstanding contribution to the study of the

Heteroptera, and particularly the Miridae.

Abbreviations: MHNG — Museum d'histoire naturelle de Geneve; MNHN — Museum national d'Histoire naturelle, Paris; ZMAS — Zoological Institute, Russian Academy of Sciences, St.-Petersburg.

Systematic part

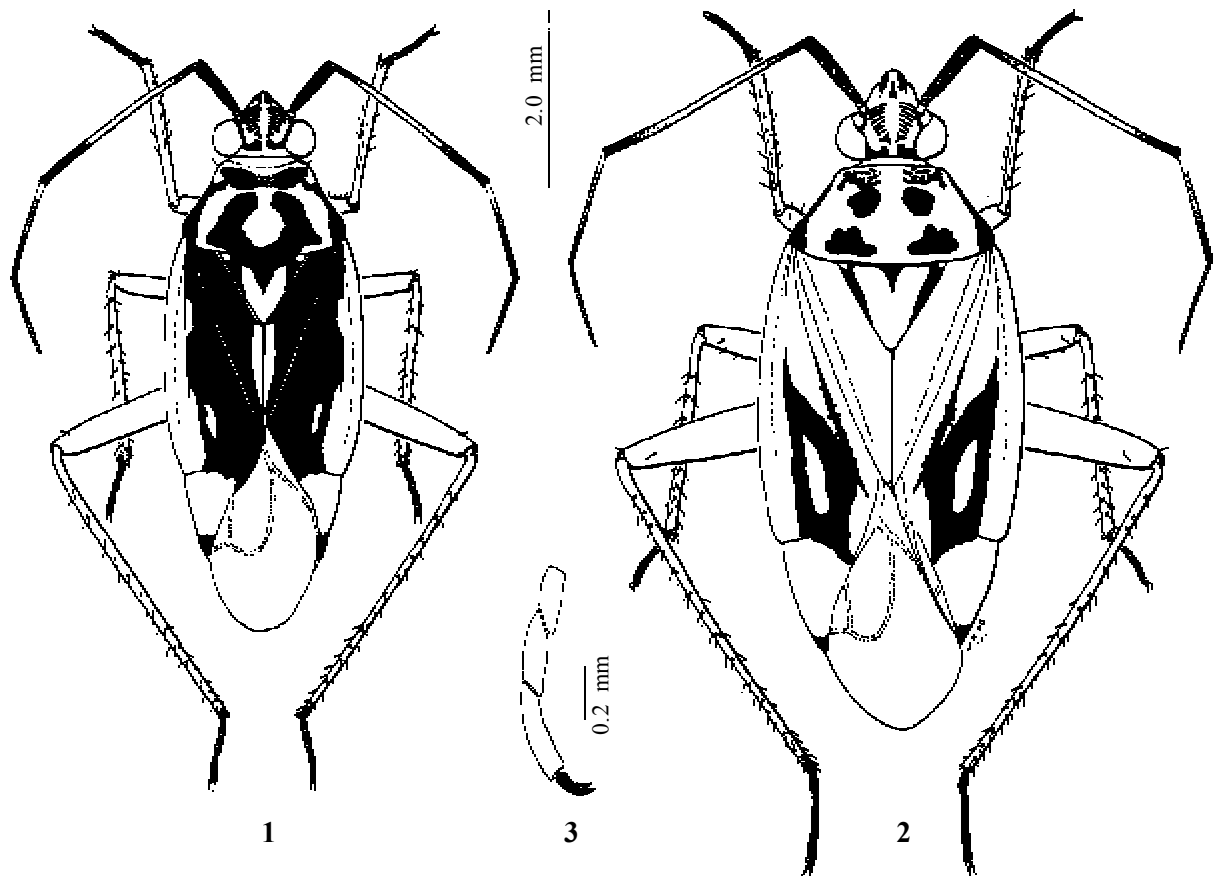
Closterotomus izyai Matocq & Pluot-Sigwalt sp.n. Figs 1–10.

MATERIAL. Holotype: ♂, Crete, Stravohori (Lasithi), 1-VI-1997 (A. Matocq leg.) (MNHN). Paratypes (1 ♂, 12 ♀): 1 ♀, same data as holotype (MNHN); 2 ♀, same data (ZMAS); 6 ♀, same data (coll. Matocq); 2 ♀, Crete, Mt. Thriptis Ag. Ioannis (Lasithi), 1-VI-1997 (A. Matocq leg.) (coll. Matocq); 1 ♂, 1 ♀, Crete, Koutsounari (Silia); 29-IV-1999 (A. Matocq leg.) (coll. Matocq).

DESCRIPTION. **Characters common to both sexes.** Body elongate oval (Figs 1, 2); basic coloration black and yellow; mixed pubescence consisting of black simple setae and golden scale-like setae.

Head shining; eyes large and prominent; vertex with a dark transverse stripe interrupted in middle; frons with 8 other interrupted stripes, posterior one thick and triangular, others thin; antenna brownish, 1st segment bearing some spines arising from black spots, 2nd with basal and apical part black, 3rd and 4th darkened, the 3rd with a pale ring at base; rostrum reaching or just surpassing metacoxae.

Thorax. Pronotum shining; lateral margins straight; collar yellow, as wide as thickness of first antennal segment; large black stripe along lateral margins, four black patches posterior of calli. Scutellum black and yellow; black strip on lateral margins interrupted before apex, triangular patch in middle, mesoscutum well-marked, black with yellow spot on basal angles. Hemelytra longer than abdomen, less shining than head and pronotum, with large dark patch in corium and



Figs 1–3, *Closterotomus izyai* sp.n., dorsal habitus. 1 — male, holotype; 2 — female, paratype; 3 — detail of the metatarsus.
Рис. 1–3, *Closterotomus izyai* sp.n., внешний вид. 1 — самец, голотип; 2 — самка, паратип; 3 — лапка.

mixed pubescence: black scattered suberect hairs and adpressed golden scale-like setae; embolium yellow; cuneus yellow, apex black; membrane infuscate with pale veins. Legs: all femora reddish brown with some black dots on dorsal surface and rows of black dots on ventral surface; tibia with black spines arising from small black spot; basal part of tibiae and all tarsal segments dark; 1st metatarsal segment not longer than the 2nd (Fig. 3).

Male (Fig. 1). Measurements (in mm). Body length: 6.0. Antennal segments: I: 0.8, II: 2.3, III: 1.2, IV: 0.9. Basal pronotal width: 1.9. General coloration relatively dark; black pigmentation at level of calli extends medially and joins, and laterally reaches stripes of lateral margins; two vertical stripes behind calli. Hemelytra: corium mostly black with a small elongated white spot posterior to medial fracture; clavus dark, pale along claval commissure.

Genitalia (Figs 4–8). Apex of pygophore and genital aperture asymmetrical; with a small tooth on left side of pygophore (Fig. 4). Right and left parameres (Figs 5–6) similar to several species of *Closterotomus* (*longitarsis*, *tunetanus*, etc.). Vesica mostly membranous, with three main lobes (Fig. 7: L1, L2, L3) and a single spiculum; two of the main lobes are divided into several lobules and bear comb-like sclerotized processes: L1 trilobulate (a, b, c) with a single row of strong teeth, L2 bilobulate (a, b) with double rows; L3 a long and narrow tubular pouch entirely membranous and minutely spinulate (like accessory lobes b and c of L1); spiculum elongate and straight, rather stout and forked at base (Fig. 8).

Female (Fig. 2). Measurements (in mm). Body length: 7.5. Antennal segments: I: 0.9, II: 2.7, III: 1.4, IV: 1.2. Basal pronotal width: 2.3. General coloration relatively pale, less dark than in male. Pronotum: calli distinct, black, vermiculate; two successive black patches behind each callus (patches joined in four specimens). Hemelytra: clavus slightly darkened; corium mostly yellow with poorly delimited large dark patch, with elongated yellow patch medially.

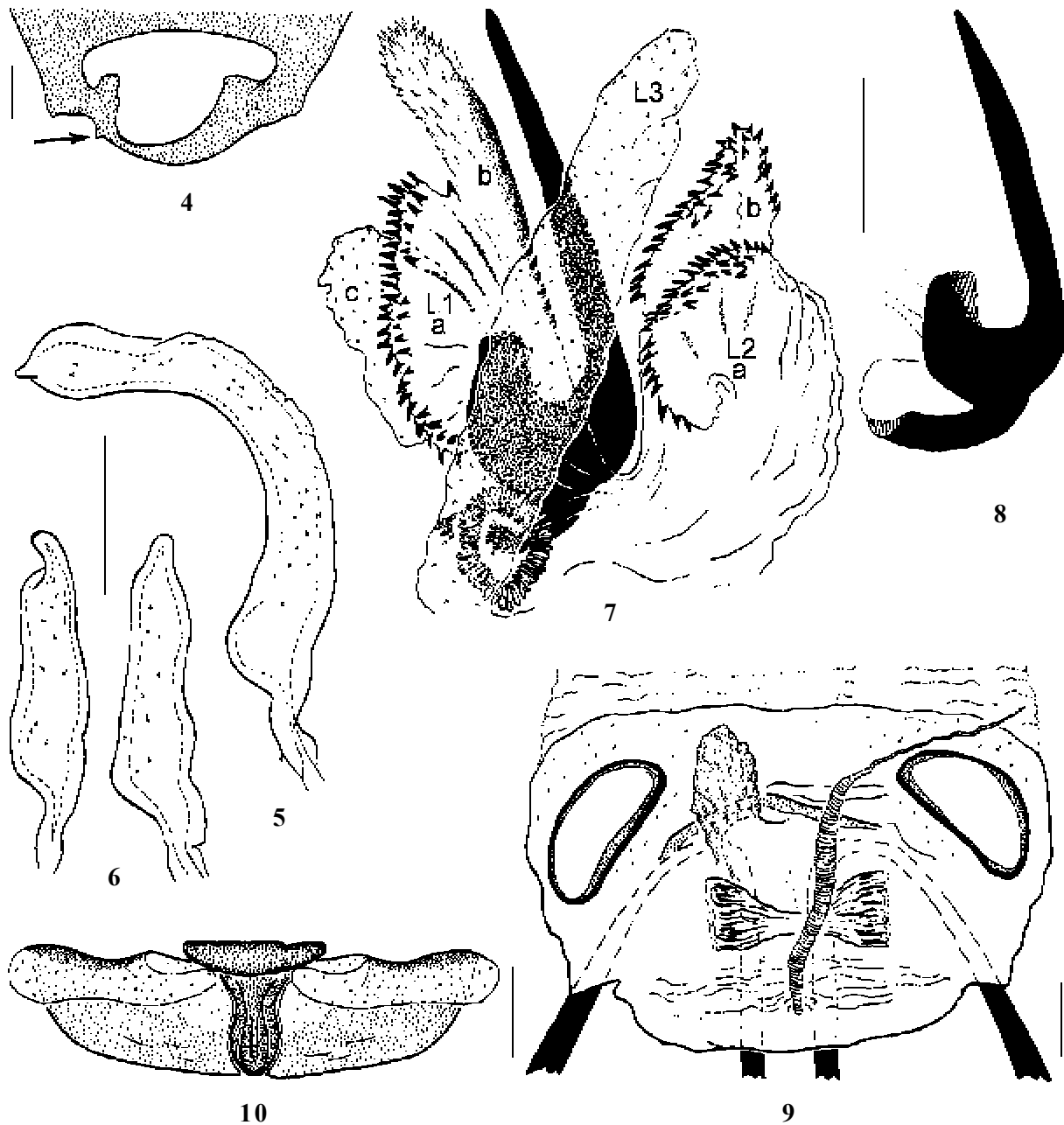
Genitalia (Figs 9–10). Vagina (genital chamber) subrectangular, ring sclerites oval; small vaginal pouch ("membranous projection of vagina" of Rosenzweig) well differentiated slightly leftwards (Fig. 9). Posterior wall narrow; interramal lobes narrow joining the median process, the "free uvulae" sensu Rosenzweig being apparently absent (Fig. 10).

HOSTPLANT: unknown. The specimens were collected by sweeping.

ETYMOLOGY. From Izya, diminutive of Izyaslav, first name of Prof. Dr. I.M. Kerzhner.

Discussion

The new species possesses all the characteristics of the genus *Closterotomus* as defined by Rosenzweig [2001]: upper surface without punctation, mixed black and gold pubescence, 2nd antennal segment apically black, 1st metatarsal segment not longer than 2nd, tibial spine black, vesica with a single spiculum.



Figs 4–10. Male and female genitalia of *Closterotomus izyai* sp.n.: 4 — apex of the pygophore in dorsal view showing asymmetrical genital opening and a small tooth (arrow) on the left side; 5 — left paramere; 6 — right paramere; 7 — partially inflated vesica, anterior view showing the three main lobes (L1, L2, L3) variously lobulate, the prominent combs and the spiculum; 8 — detail of the spiculum; 9 — vagina, dorsal view; 10 — posterior wall of the vagina. Scale bars — 0.2 mm.

Рис. 4–10. *Closterotomus izyai* sp.n., гениталии самца и самки: 4 — вершина пигофора, сверху, видны асимметричное генитальное отверстие и небольшой зубец с левой стороны (указан стрелкой); 5 — левый парамер; 6 — правый парамер; 7 — частично расправленная везика, спереди, видны три главные лопасти (L1, L2, L3) с разными мелкими дольками, выраженные гребни и спикула; 8 — детали строения спикулы; 9 — вагина, сверху; 10 — задняя стенка вагины. Масштаб — 0,2 мм.

As noted by Rosenzweig [1997] the species of the *Calocoris* complex can be distinguished by external characters. Based on Wagner's key [1974], which summarizes the present knowledge of *Closterotomus*, *C. izyai* sp.n. shares the following characters with only three other species (*longitarsis*, *nigronasutus*, *tuneta-*

nus): 2nd antennal segment not incrassate and 2nd metatarsal segment slightly longer than the 1st segment.

C. izyai sp.n. can be distinguished from these species and three recently described species (*nigrostriatus*, *orientalis*, *valcarceli*) by the following characters:

rostrum extending to metacoxae or beyond; metatarsi relatively small; general coloration, distribution, and dimensions of the various black pigmented spots and marks (e.g., collar entirely yellow, black strip along the lateral margins of pronotum).

On the other hand, *C. izyai* **sp.n.** cannot be placed easily into any of the three supergroups defined by Rosenzweig [1997]. *C. izyai* **sp.n.**, based on female genitalic structure, belongs to his supergroup B, which is defined by the presence of a vaginal pouch located left of midline and the interramal lobe reaching the middle of the posterior wall. However, based on male genitalic structure, our new species does not fit within any of the subgroups (*costae*-, *picturatus*-, *histrion*-, *cinctipes*- or *ventralis*-group) of supergroup B. Based on vesical structure, *C. izyai* **sp.n.** seems to belong to supergroup C, in which all species (*norwegicus*-group) apparently possess a double comb on the left lobe of the vesica. The three species already cited as being "close" to *C. izyai* **sp.n.** (*longitarsis*, *nigronasutus*, *tunetanus*) belong to supergroup C according to Rosenzweig [1997] as do two other species of *Closterotomus* described since Rosenzweig [1997], *C. orientalis* and *C. valcarceli*, because both species possess a double comb on the vesica. These species were placed in supergroup C of Rosenzweig by their respective authors even though the female of *orientalis* [Carapezza, 2002] was not known, and the characteristics of the posterior wall of the female of *valcarceli* [Ribes & Ribes, 2003] (as figured) does not agree with those of supergroup C, but rather with supergroup B, as does *C. izyai* **sp.n.** It seems that Carapezza [2002] and Ribes & Ribes [2003] attached more value to male genital characters than to those of the female. They are probably right. We think that the characters of the vesica (in particular number and shape of main lobes and accessory lobules, and the various armament) should be added to the definition of the supergroups. The male genitalia, along with the posterior wall of the female, are more predictive and diagnostic than the presence and localization of the dorsal vaginal pouch. This small vaginal pouch ("membranous projection of vagina" of Rosenzweig) although unsclerotized, is not exactly membranous but rather thick walled and unpigmented. Obviously it houses the apical part of the spiculum during mating, functioning to anchor it in place. The vaginal pouch is probably correlated (size, localization) with the presence of a long and strong spiculum. In the *Calocoris*

complex studied by Rosenzweig [1997], only the species having a spiculum (all the species of the genera *Closterotomus*, *Reusterista*, and *Brachycoleus*) possess either a small dorsal pouch located medially or slightly left of the midline. The species with vesicae lacking a spiculum are also the species devoid of a dorsal vaginal pouch (*Calocoris*, *Polymerias*, *Thiomiris*).

Rosenzweig [1997, 2001] observed that further study is required before a phylogenetic hypothesis for the *Closterotomus* complex (*Closterotomus* + *Reusterista* + *Brachycoleus*) can be elucidated. We agree and would direct further research toward other morphological characters, in particular the male and female genitalia, to clarify the systematics of this problem group.

ACKNOWLEDGMENTS. We thank Claude Pierre (MNHN) for technical assistance with the digital treatment of the figure, Gilbert Hodebert (MNHN) for the dorsal habitus drawings, and John Hollier (MHNG) for the corrections of the English language.

References

- Carapezza A. 1997. Heteroptera of Tunisia // *Naturalista sicil.* Vol.21. Suppl.A. P.1–331.
- Carapezza A. 2002. Heteroptera of Jordan: New taxa and new records (Hemiptera, Heteroptera) // *Naturalista sicil.* Vol.26. No.1–2. P.35–76.
- Kerzhner I.M. & Josifov M. 1999. Miridae Hahn, 1933. In: Aukema B. & Rieger C. (eds), *Catalogue of the Heteroptera of the Palaearctic Region, Volume 3: Cimicomorpha II.* Amsterdam: The Netherlands Entomological Society. 577 pp.
- Rieger C. & Grimm D. 1999. Ein neuer *Closterotomus* aus Griechenland (Hemiptera: Heteroptera: Miridae) // *Reichenbachia* Vol.33. No.29. P.227–230.
- Ribes J. & Ribes E. 2003. Sobre algunos Mirinae de Argelia (Hemiptera, Heteroptera, Miridae) // *Bull. Soc. Entomol. Fr.* Vol.108. No.4. P.361–370.
- Rosenzweig V.Ye. 1997. Revised classification of the *Calocoris* complex and related genera (Heteroptera: Miridae) // *Zoosyst. Rossica* Vol.6. No.1–2. P.139–169.
- Rosenzweig V.Ye. 2001. Synopsis of the Palaearctic genera of Mirina (Heteroptera: Miridae) // *Zoosyst. Rossica* Vol.9. No.2. P.367–383.
- Wagner E., 1974. Die Miridae Hahn, 1831 des Mittelmeerraumes und der Makaronesischen Inseln (Hemiptera, Heteroptera). Teil 1 // *Entomol. Abhandl. Bd.37.* (Suppl. 1970–1971). S.1–484.
- Yasunaga T. 2003. A new species of the Mirine plant bug genus *Closterotomus* Fieber (Heteroptera, Miridae) from Japan // *Biogeography* Vol.5. P.39–43.