

**CIXIIDAE OF TAIWAN PART II
BOTHRIOCERINI**

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Abstract

Two cixiids *Borysthenes maculatus* (Matsumura) and *B. lacteus* n. sp. collected from Taiwan are described. *Borysthenes* (sic) *guttatus* Kato is synonymized with *B. maculatus* (Matsumura).

Introduction

The Bothriocerini were erected by Muir (1923) and presently accommodate *Borysthenes* Stål and *Bothriocera* Burmeister. They are characterized within the Cixiidae by the presence of a subantennal process, peculiarly twisted head, and *R* forking close to the basal cell of the tegmina; these are rather broad, partly overlapped, usually mottled with dark spots. In many respects they recall small Derbidae (Van Stalle, 1984). However, by having a trapezoid vertex, they also resemble some Meenoplidae (*Eponisia* spp.) which also have such posterolateral areolets.

Up to the present, the only known genus of this tribe found in Taiwan is *Borysthenes*. Sixteen species have been described previously occurring in the Oriental region, and three species: *B. garambensis*, *B. mambilensis* and *B. mlanjensis* which are known from the Ethiopian region. *Borysthenes maculatus* (Matsumura) is the only species recorded in Taiwan.

Depositories

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Tribe Bothriocerini

Head twisted. Eyes with ventral sinus, directed more or less anteriorly. Antennae lie in distinct pits anterior to the sinus. Gena with a subantennal process. Tegmina broad and partly overlapped, usually, mottled with dark spots and stripes, first cubital sector deeply forked. In *Bothriocera*, post-tibia with 8 spines apically, chaetotaxy of hind tarsi 7-8/8-9. In *Borysthenes* 6, 7/5 respectively. Ovipositor complete.

Genus *Borysthenes* Stål

Bothrysthenes Stål, 1866, Hemip. Africana 4: 165.

Barma Distant, 1906, Fauna British India 3: 266.

Vademela Melichar, 1914, Notes Leyden Mus. 36: 100.

Type species: *Cixius finitus* Stål

Body small to medium, densely covered with powdery wax. Vertex transverse anteriorly, hind margin angularly emarginate, with straight lateral carinae converging apically, without median carina. Frons with elevated, sinuate lateral carinae, flattened slightly below level of eyes, nearly same width on two ends, median carina distinct above median ocellus, obsolete below it, forked near base. Antenna, lateral carina of frons, subantennal process together with eyes bordering a deep cavity. Postclypeus dilated, with lateral carinae and part of median carina. Rostrum slender, reaching midlength of hind femora. Pronotum each side with a submedian carina. Mesonotum tricarinate, outer ones sometimes obsolete. Tegmina not covered with setae. Wing with *R* branched, *Cu*₁ forked near middle. Hind tibia with 6 spines apically, chaetotaxy of hind tarsi 7/5. Male genitalia: pygofer asymmetrical. Genital styles oblique Y-shaped. Anal segment with one or two apical productions, usually deflexed. Aedeagus in total with 6 processes: 2 on right side, 2 on left, 1 dorsal and 1 ventral. Flagellum curving to left, ventrobasal margin with a production or several teeth.

Key to the species of *Borysthenes* in Taiwan

1. Coloration of tegmina milky white (fig. 2A); aedeagus with a ventroapical process, parallel with it. *lacteus* n. sp.
- Coloration of tegmina ochreous (fig. 1A); ventroapical process of aedeagus perpendicular to it *maculatus* (Matsumura)

Borysthenes maculatus (Matsumura)

(Fig. 1)

Barma maculata Matsumura, 1914: 430.

Borysthenes (sic) *guttatus* Kato, 1933: 468. n. syn.

General color ochreous. Eyes black. Ocelli yellow. Mesonotum ochraceous. Legs and abdomen dark brown. Tegmen subtranslucent, with a black marking along apical margin to midlength, others suffused as figured. Wing faintly suffused greyish, with a black spot on ramification of *A*, veins fuscous.

Vertex 5.5 times as wide as long. Frons longer in middle line than wide at widest portion, median carina forked at basal tenth. Clypeus partly carinate. Rostrum slender, reaching midlength of hind femora.

Male genitalia: Pygofer in lateral view with a broad lobe laterodorsally which covered genital styles, lower margin bearing a small production; in ventral view asymmetrical, with finger-shaped left angle and obtusely rounded right angle. Medioventral process in lateral view finger-shaped; in ventral view triangular, as long as wide. Anal segment in dorsal view oblique quadrate, very slightly declining to left side; in lateral view deflexed inward distally forming a slender production:

in ventral view right angle bearing a long, finger-shaped process, touching right genital style. Genital styles in ventral view, slightly asymmetrical, nearly same width, outer angle abruptly produced into a stout lobe subapically, apical margin concave medially; in lateral view slender, apically curved dorsad over about 90 degrees. Aedeagus in lateral view flattened, in total with 6 spinose processes, all visible in dorsal orientation: right side with one slender spine, originating apically, curving upward 45 degrees on basal half then downward, slightly directed laterad, reaching midlength of aedeagus; acuminate one originating below former, slightly curving upward, also directed laterad, left side with three slender processes; one originating on the opposite side of two, right perpendicular to aedeagus, gently curving downward, reflexed apically, one straight implanted on base of flagellum, directed laterocephalad; one stout, implanted subapically, curving inward, along outer margin of flagellum, acuminate one implanted on apical margin of flagellum, directed to right side. Aedeagus in dorsal view with three teeth: two arising from broad base of left side, small one on right ventral side.

Female genitalia: Anal segment in dorsal view quadrate, with rounded posterior margin.

	male	female
Length of body (includ. teg.)	: 7.97 – 8.54mm;	7.88 – 9.19mm
Length of tegmen	: 7.03 – 7.57mm;	7.03 – 8.24mm
Width of mesonotum	: 1.89 – 2.16mm;	2.00 – 2.30mm

Specimens examined: 1 ♂ Fenchihu, Chiayi Hsien 5-VII-1985; M. L. Chan; 1 ♀ Chihsingshan, Taipei Hsien 7-IX-1985 J. T. Yang; 2 ♀♀ S. C. Tsaur; 1 ♀ Chihtuan, Ilan Hsien 1-VIII-1986 S. J. Fang; 1 ♀ Hapen, Taipei Hsien 28-IX-1986 C. J. Chian; 1 ♂ Yangminshan, Taipei 6-V-1987 R. T. Lee; 3 ♂♂ 3 ♀♀ Shunglienpei, Ilan Hsien 10-V-1987 C. C. Chiang; 1 ♀ Fenchihu, Chiayi Hsien 15-VI-1987 S. C. Tsaur; 1 ♀ 12-VIII-1987 C.T. Yang.

Host plant: Unknown.

Distribution: Taiwan, Japan (Ryukyu, Amami Is.), Mainland China.

Notes: *B. maculatus* can be easily recognized by having the special suffusion on tegmen. Female is identical with male in appearance. The authors are unable to see the type material but get information from photograph and description of Asahina et al. 1965 and kato 1933.

*Borysthenes lacteus** n. sp.

(Fig. 2)

General color ochreous. Eyes black. Ocelli yellow. Mesonotum, abdomen, pro- and midlegs dark brown. Hind legs yellowish brown. Tegmen milky white, mottled with black spots at midregion and apical half, veins yellow. Wing hyaline, *Sc+R* with a black spot, another grayish stripe dorsoapically.

Vertex 5.5 times as wide as long. Frons longer in middle line than wide at widest portion, median carina forked at basal tenth. Clypeus partly carinate. Rostrum slender, reaching mid-length of hind femora.

* *L. lacteus* - - milk-colored, milk-white, indicated the coloration of tegmina.

Male genitalia: Pygofer asymmetrical, in lateral view dorsolateral angle with a broad lobe, lower margin with a sharp process, not covered genital styles, in ventral view, right angle elongate, left angle tapering distally. Medioventral process in lateral view thumb-shaped, in ventral view triangular, as long as wide. Anal segment in dorsal view oblique quadrate, declining to left, left angle with a small production; in lateral view right side deflexed inward distally forming a pointed, stout process. Genital styles slightly asymmetrical, outer angle abruptly produced into a stout lobe subapically, apical margin concave medially, in lateral view slender, apically curved dorsad over about 90 degrees. Aedeagus flattened, in total with 6 processes, 5 visible from dorsal aspect, 1 from ventral; ventral one implanted on base of flagellum, along margin of aedeagus, exceeding half length of aedeagus, directed ventrocephalad; right side with one slender, straight process, originating apically, slightly shorter than ventral one, very slightly curving outward apically, one acuminate spine implanted below former, slightly curving downward, reaching to its midlength; furthermore, in dorsal view with a short, hook-shaped process implanted on lateral side of flagellum and curving along its outer margin, directed cephalad, and one tapering process arising from end of flagellum and directed dorsocephalad. Finally, a thumb-shaped production on basoventral margin of aedeagus, with sinuate inner margin.

	male	female
Length of body (includ. teg.)	: 6.49 – 7.57mm;	8.11 – 8.38mm
Length of tegmen	: 5.81 – 6.69mm;	7.16 – 7.28mm
Width of mesonotum	: 1.62 – 1.82mm;	1.89 – 2.07mm

Holotype: Male, Chiabaotai, Taichung Hsien 11-VII-1987 S. C. Tsaur. (deposited in NTU).

Paratypes: 1♀ Bahsienshan, Taichung Hsien 8-VI-1941 J. Sonan; 3♀♀ Hueisun, Nantou Hsien 9-VIII-1972 C. T. Yang; 1♀ Kuantzuling, Tainan Hsien 31-VII-1984 S. C. Tsaur; 1♂ North Tung-yaenshan, Nantou Hsien 20-VII-1985 C. L. Chen; 1♀ 22-VII-1985 C. L. Chen; 1♀ 17-VII-1986 L. Y. Huang; 43♂♂ 31♀♀ Chiabaotai, Taichung Hsien 10-12-VII-1987 S. C. Tsaur; 1♂ 2♀♀ 11-VII-1987 C. T. Yang; 1♂ Kukuan, Taichung Hsien 4-VIII-1987 C. T. Yang; 1♂ 1♀ 7-VIII-1987 M. M. Yang.

Host plant: Unknown.

Distribution: Taiwan.

Notes: This new species is very closely related to *B. maculatus* in the aedeagal complex, female genitalia and appearance, but differs from the latter in coloration of the tegmina which are milky white in *lacteus*, and ochraceous in *maculatus*; the basoventral production of aedeagus is thumb-shaped in *lacteus*, and bears three teeth in *maculatus*; the ventral process of aedeagus is straight and parallel with aedeagus in the former, while curving and perpendicular to aedeagus in the latter.

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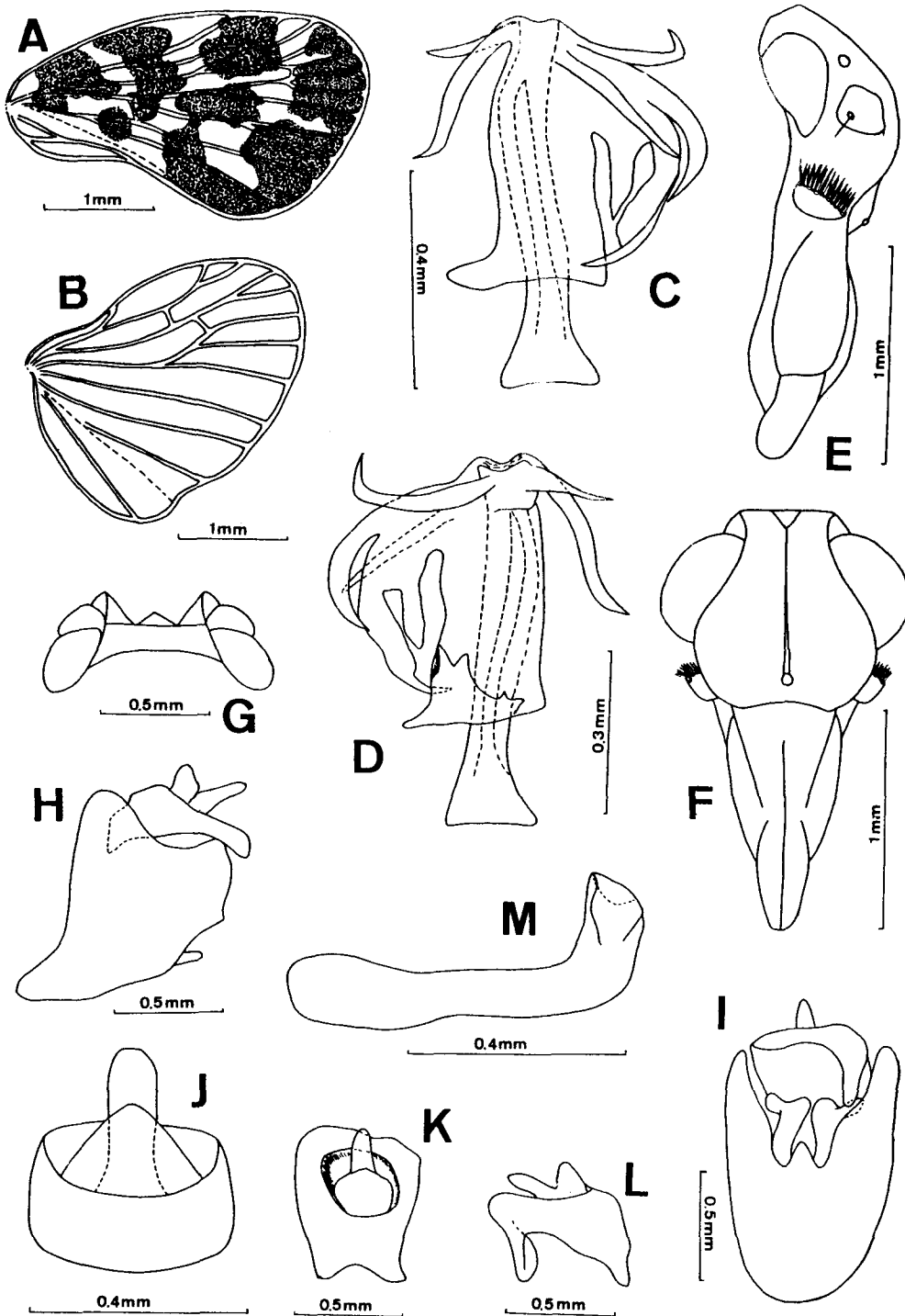


Fig. 1. *Borysthenes maculatus* (Matsumura). A. Tegmen; B. Wing; C-D. Aedeagus. C. Dorsal view, D. Ventral view; E-G. Head. E. Lateral view; F. Ventral view; G. Dorsal view; H-I. Male genitalia. H. Lateral view; I. Ventral view; J. Female anal segment; K-L. Male anal segment. K. Dorsal view; L. Lateral view; M. Left genital style, lateral view.

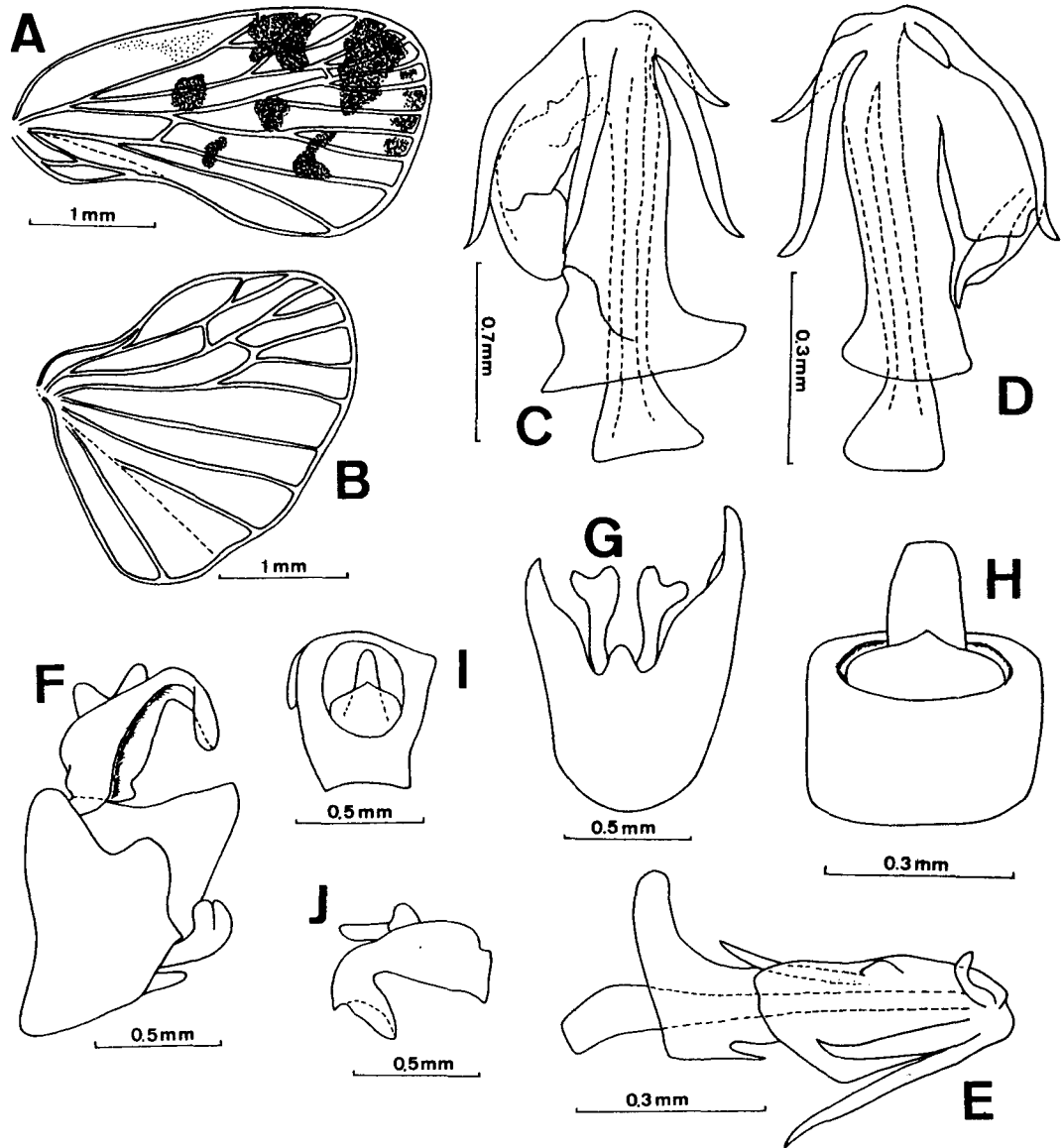


Fig. 2. *Borysthenes lacteus* n. sp. A. Tegmen; B. Wing; C-E. Aedeagus. C. Ventral view; D. Dorsal view; E. Lateral view; F. Male genitalia; G. Pygofer and genital styles. H. Female anal segment. I-J. Male anal segment. I. Dorsal view; J. Lateral view.

臺灣菱飛蝨科昆蟲：(二) Bothriocerini 族

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臺灣菱飛蝨科 Bothriocerini 族昆蟲之舊記錄僅一屬一種，即 *Borysthenes maculatus* (Matsumura)，本文除將其重新繪圖、描述外，並增加一新種 *B. lacteus*。 *Borysthenes* (sic) *guttatus* Kato 貶為 *B. maculatus* (Matsumura) 之異名。