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Collected Papers on Homoptera of Taiwan

臺灣同翅目論文集

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**Delphacidae of Taiwan (I)
Asiracinae and The Tribe Tropidocephalini
(Homoptera : Fulgoroidea)***

Jeng-Tze Yang and Chung-Tu Yang**

Received, May 27, 1986

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* Based on the thesis presented by the senior author in fulfillment of the requirements for the degree of Master of Agriculture.

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ABSTRACT

This work deals with 33 species of adults and 9 species of nymphs belonging to 1 genus of Asiracinae and 9 genera, 3 subgenera of Tropidocephalini, including 4 old species which are absent in our collection and reproduced from previous works. The subfamily Asiracinae consists of 2 known species, 1 nymph. Tribe Tropidocephalini consists of 2 new subgenera, 11 new species, 8 new record, 12 known species, 8 nymphs represented 7 genera. All of them are described, illustrated, and distinguished in Key. *Arcofacies fullawayi* Muir, *Belocera sinensis* Muir, *Epeurysa remanei* Asche, *E. abatana* Asche, *E. infumata* Huang et Ding, *Malaxa bakeri* Muir, *Purohita (Purohita) sinica* Huang et Ding, and *Purohita (Neopurohita) nigripes* Muir are newly record from Taiwan; *Bambusiphaga membranacea*, *Epeurysa maculata*, *E. sinobambusae*, *Malaxa aurunca*, *M. fusca*, *M. semifusca*, *Purohita (Neopurohita) picea*, *Specinervures liquida*, *Tropidocephala dimidia*, *T. grata* and *T. sinuosa* are new to science.

INTRODUCTION

The family Delphacidae is the largest one of the Fulgoroidea. It is easy to recognize from all other fulgoroids by the character of a movable spur on the end of hind tibia. The style of spur also used by previous workers to distinguish two subfamilies and even tribes. This family including two subfamilies, Asiracinae Fieber, (1872) and Delphacinae Jensen-Haarup, (1915). According to Muir, (1930) Delphacinae have been divided into three tribes, Tropidocephalini, Delphacini, and Alohini.

They are widely distributed all over the world, except the extreme Arctic and Antarctic regions. Part I of this work dealt with Asiracinae and Tropidocephalini of Taiwan. Only 14 species belonging to 8 genera of this two taxa have been recorded in Taiwan before.

Although the previous workers have been proposed or thought of the diversity in pattern of male genitalia for specific identification or the purpose of defining generic character. But it is still incompletely at all. Except those what is customary for the previous worker to use external features, it was undertaken in using male genitalia to improve the methods of identification in this paper, especially to reconstruct the generic definition as a valuable character of genus, in order to make that the confirmation of Taiwanese delphacids into possible.

This article attempt to compile more complete taxonomic information and to intensify our knowledge of delphacid-fauna of Taiwan,

so that nymphal stage of several species in representative to each genus was described and illustrated as detail as possible as well as of the adult.

HISTORICAL RESUME

Fabricius (1798), first describing the genus *Delphax*, at that time, this group was recognized but was not given family category. Seventeen years after, Leach (1815) recognized it as a family. F. X. Fieber was the first person to make remark on the value of the male genitalia for specific determination, and placed the Delphacidae of Europe in a condition that no other method could have done.

The last half of the nineteenth century and early of the twentieth century, Crawford (1914) dealt the North and South American Delphacidae and published in monograph. Muir (1915) working out many genera of this family and giving the general description of external features in general, and key to genera. Z. P. Metcalf (1943) compiled 137 genera and 1,114 species in the catalogue of Delphacidae. Other conspicuous workers such as Melichar in Germany; Walker and Distant in the British Museum. They laid us under their debat by their brilliant works.

In Oriental region, there are several works have accelerated the study of delphacid-fauna in right region. Matsumura (1900) published the monograph of "Uebersicht der Fulgoriden Japans." described this group as subfamily

Delphacida Stål, unfortunately he made no commend on the genital character in it. Muir (1913) pointed out that *Tropidocephala* are hard to identify with certainty unless the genitalia be described or figured; on which paper he added the genital characters such as the form of penis (phallus) and penis guide (phallobase) to the generic definition as the important characters. Esaki and Ishihara (1943) provided a catalogue of Japanese delphacids; and mentioned Taiwanese fauna. It described and illustrated the genus *Tropidocephala* in addition to noted the items which are the catalogue should be done. In this paper, they are still use the external features such as head, thorax, and tegmina only. Six years after Ishihara (1949) revised the Araeopidae (Delphacidae) of Japan, Ryukyu and Taiwan. It is notable that described and illustrated the genital character and refer to food-habits. Late of 1970s to early of 1980s C. L. Huang *et al.* worked on the delphacids-fauna of Mainland China. Asche (1983) illustrated the genitalia for specific determination. It is a great work, especially to a genus such as *Epeurysa* for their features are too similar to identify.

To the nymphal stage, it is almost still unknown. Muir (1916) have been took down several words to describe the nymph of *Purohita maculata*. Vilbaste (1968) first proper a preliminary key for the identification of the nymph of North European Delphacidae. Presently, R. H. Wu and C. T. Yang (1985) dealt the fifth instar nymph of nine species of delphacini from Taiwan.

MATERIAL AND METHOD

All the specimens of which have been examined in this work deposite in Department of Entomology, National Chung Hsing University.

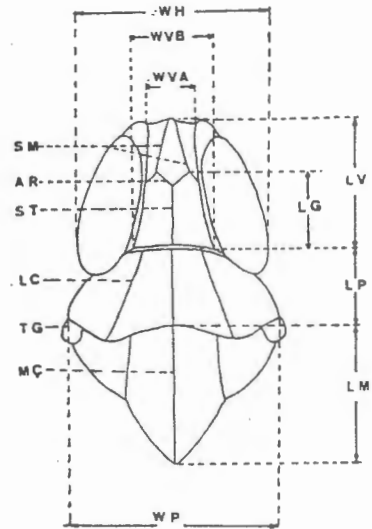
The method used in this work follow that of the publication of C. T. Yang (1984).

TERMINOLOGY

Adults

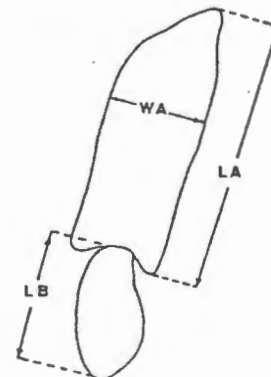
- I. Head, pronotum and mesonotum:
 - AR : Arm of Y-shaped carina.
 - LC : Lateral carina of pronotum.

- LG : Greatest length of basal compartment.
- LM : Length of mesonotum.
- LP : Length of pronotum.
- LV : Median length of vertex.
- MC : Median carina of pronotum.
- SM : Submedian carina.
- ST : Stem of Y-shaped carina.
- TG : Tegula.
- WH : Width of head including eyes.
- WP : Width of pronotum.
- WVA : Apical width of vertex.
- WVB : Basal width of vertex.



II. Antenna:

- LA : Length of first segment.
- LB : Length of second segment.
- WA : Width of antenna.



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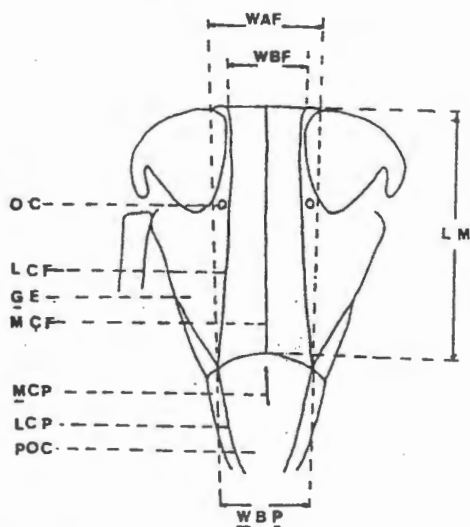
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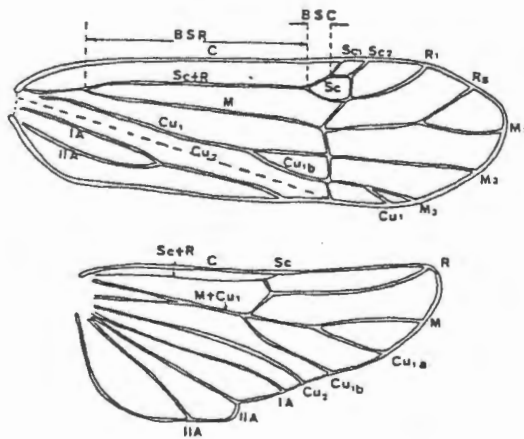
III. Frons:

- GE : Gena.
 LCF : Lateral carina of frons.
 SCP : Lateral carina of postclypeus.
 LM : Median length of frons.
 MCF : Median carina of frons.
 MCP : Median carina of postclypeus.
 OC : Ocelli.
 POC : Postclypeus.
 WAF : Apical width of frons.
 WBF : Basal width of frons.
 WBP : Basal width of postclypeus.



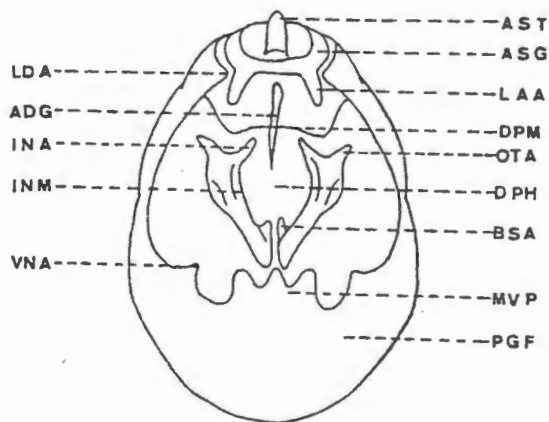
IV. Tegmen and Wing:

- BSC : Length before furcation of Sc.
 BSR : Length before furcation of Sc + R.



V. Genital segment of male:

- ADG : Aedeagus.
 ASG : Anal segment.
 AST : Anal style.
 BSA : Basal angle of genital styles.
 DPH : Diaphragm.
 DPM : Margin of diaphragm.
 INA : Inner angle of genital styles.
 INM : Inner margin of genital styles.
 LAA : Lateroapical angle.
 LDA : Laterodorsal angle.
 MVP : Medioventral processes.
 OTA : Outer angle of genital styles.
 PGF : Pygofer.
 VNA : Ventral angle of pygofer.



Nymphal stage:

The terminology for describing the nymphal stage follow Wu and Yang 1985.

Key to the genera of Asiracinae and Tropidocephalini of Taiwan

1. Post tibial spur subulate, circular or angulate in cross section, acute at apex, devoid of teeth laterally; (Asiracinae); antennae cylindrical; mesonotum with five carinae *Ugyops* Guérin-Ménéville
- Post tibial spur cultrate, solid, with inner side surface concave; no teeth along posterior margin (Delphacinae: Tropidocephalini) 2

臺灣稻虱科(一)錐距飛虱亞科及凹距單齒飛虱族

(同翅目：飛虱總科)

楊正澤·楊仲圖

摘 要

本文研究Asiracinae亞科之1屬及Delphacinae亞科中Tropidocephalini族之9屬，3亞屬，共計成蟲32種，若蟲8種，其中4種舊有種無標本，由前人報告中摘錄而來。(1)Asiracinae亞科，2舊有種，1若蟲。(2)Delphacinae亞科Tropidocephalini族，2新亞屬，11新種，8新記錄種，11舊記錄，8若蟲代表7個屬。所有種都詳加敘述，繪圖並編入檢索表。

新記錄種有：

Arcofacies fullawayi Muir, *Belocera sinensis* Muir *Epeurysa remanei* Asche, *E. abatana* Asche, *E. infumata* Huang et Ding, *Malaxa bakeri* Muir, *Purohita (Purohita) sinica* Huang et Ding, 及 *Purohita (Neopurohita) nigripes* Muir.

新種有：

Bambusiphaga membranacea, *E. maculata*, *E. sinobambusae*, *M. aurunca*, *M. fusca*, *M. semifusca*, *P. (Neop.) picea*, *Specinervures liquida*, *Tropidocephala dimidia*, *T. grata*, 及 *T. sinuosa*.

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- 2. Lateral carinae of vertex and frons foliately raised; antennae with first segment flattened, foliaceous, longer than second *Purohita* Distant
 - Lateral carinae of vertex and frons not foliate, antennae with first segment shorter than second. 3
- 3. Vertex subtriangular with lateral sides slightly convex, sometimes elongate *Tropidocephala* Stål
 - Vertex quadrate 4
- 4. Antennae with first segment sagittate; head including eyes distinctly wider than pronotum *Belocera* Muir
 - Antennae with first segment cylindrical; head including eyes narrower than pronotum 5
- 5. Clypeus in profile bent at right angle to frons 6
 - Clypeus in profile not bent at right angle to frons, only slightly curved 7
- 6. Frons at least twice as long as broad; clypeus with median carina *Arcofacies* Muir
 - Frons less than twice as long as broad; clypeus devoid of median carina *Arcofaciella* Fennah
- 7. Anal segment with lateroapical angles produced into distinct processes or spinose processes 8
 - Anal segment with lateroapical angles not produced 9
- 8. Tegmina with cross veins beset basally, posterior margin of apical half produced posteriorly . . *Specinervures* Kuoh et Ding
 - Tegmina with cross veins after middle, posterior margin of apical half not produced posteriorly *Bambusiphaga* Huang et Ding
- 9. Antennae much longer than frons *Malaxa* Melichar
 - Antennae shorter than frons *Epeurysa* Matsumura

Subfamily Asiracinae (Fieber, 1872)

Genus *Ugyops* Guerin-Meneville, 1834

Ugyops Guerin-Meneville, 1834, Voyage aux Indes Belanger 1:477.
 – Esaki et Ishihara, 1943, Cat. Araeopid. Imp Jap., 5.
 – Matsumura et Ishihara, 1945, Mushi, 16:59.
 – Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:8.
Bidis Walker, 1857, J. Proc. Linn. Soc., 1: 88.
Jugodina Schumacher, 1915. Suppl. Ent., 4: 141.

Head including eyes narrower than pronotum. Vertex longer than wide, submedian carinae arising nearly from base, uniting before apex. Frons long, lateral carinae convex at apical three-fourths, median carina various, from simple to widely separated. Postclypeus as wide at base as frons at apex. Rostrum reaching to metatrochanters. Ocelli obsolete. Antennae long, cylindrical. Pronotum with lateral carinae not attaining hind margin or lateral. Mesonotum five-carinate. Hind-tibiae with 2–3 spines laterally, spinal formula of hind leg 4–5–4.

Anal segment of male large. Pygofer with medioventral process. Aedeagus with phyllobase irrecognizable, phyllus coil. Supporting plate recognizable, elongate. Diaphragm very weakly sclerotized. Opening of genital styles complete. Genital styles simple.

Type species: *Ugyops percheronii* Guerin-Meneville, 1834. (original designation)

Key to the species of *Ugyops* (from Ishihara, 1949)

- 1. Body mostly uniformly stramineous; pronotum with a transverse row of three conspicuous small fuscous spots on each side; length 8 mm (includ. tegmen) *tripunctatus* (Kato)
- Body dirty light brown, scattered with black spots on vertex and on pronotum; a row of black spots in each side of pronotum indistinct; length 9–11 mm. (includ. tegmen) *vittatus* (Matsumura)

-AST
 -ASG
 -LAA
 -DPM
 -OTA
 -DPH
 -BSA
 MVP
 PGF

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Ugyops vittatus (Matsumura, 1905)

(Fig. 1)

Ugyops vittatus Esaki et Ishihara. Cat. Araeopid. Imp Jap., 5.

—: Matsumura et Ishihara, 1945, Mushi, 16:59.

—: Ishihara, 1949, Sci. Rep. Matsuyama, Agric. Coll., 2:9.

—: Fennah, 1956, Proc. Calif. Acad. Sci., 4(28):463.

—: Fennah, 1956, Insects of Micronesia, 6(3):95.

—: Kuoh, 1983, Econ. Ins. Fauna China, 27:29.

Bidis vittatus Matsumura, 1905, Trans. Sapporo Nat. Hist. Soc., 1:31.*Jugodina dictyophoroides* Schumacher, 1915, Suppl. Ent., 4:141.

The description and illustration are reproduced from Fennah (1956) Matsumura et Ishihara (1945), and Ishihara (1949).

"Body dirty light brown, scattered with black spots on vertex and on pronotum. A row of black spots in each side of pronotum indistinct." (Ishihara, 1949).

"Vertex along middle line 2.1 times as broad as base just anterior to middle of eyes, base slightly narrower than apex, frons longer than broad (3.0–3.1:1). Submedian carinae widest apart at base, second antennae segment 1.7 times as long as basal, antennae as long as frons and clypeus, genae not tumid, ocelli ob-

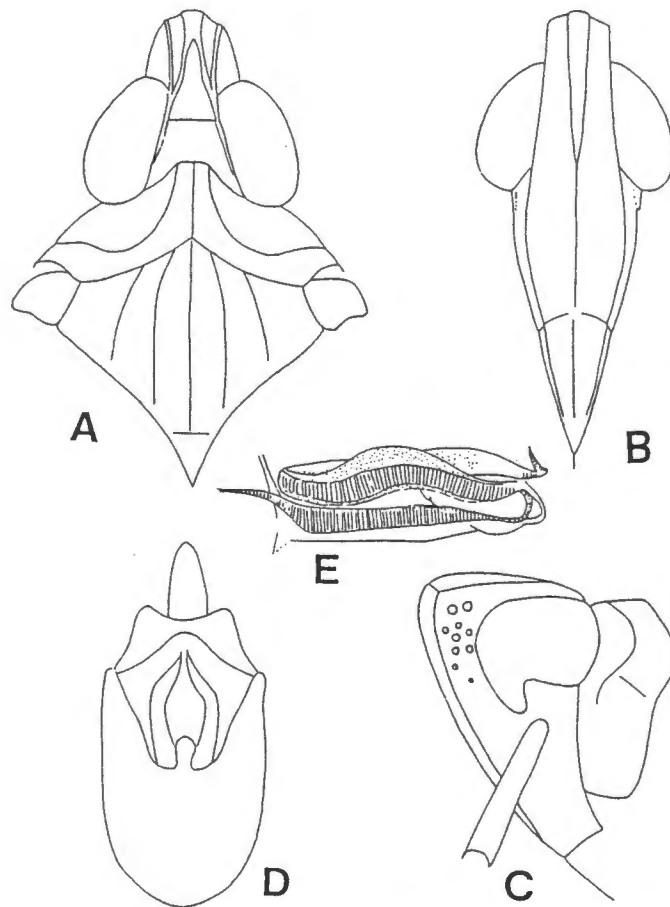


Fig. 1. *Ugyops vittatus* (Matsumura) A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, male genitalia, posterior view; E, aedeagus, lateral view.

solete. Tegmina not long, but exceeding abdomen, Sc + R fork, Cu₁ fork, and union of claval veins at same level." (Fennah, 1956).

"Length of body (includ. tegmen): 9–11 mm. (Ishihara, 1945).

Host plant: "Pteridophyta, (Matsumura)"

(Ishihara 1949).

Distribution: Taiwan (Orchid Island), Hachijo Is., Bonin Is., Ryukyu Is.

Ugyops tripunctatus (Kato, 1931)
(Fig. 2)

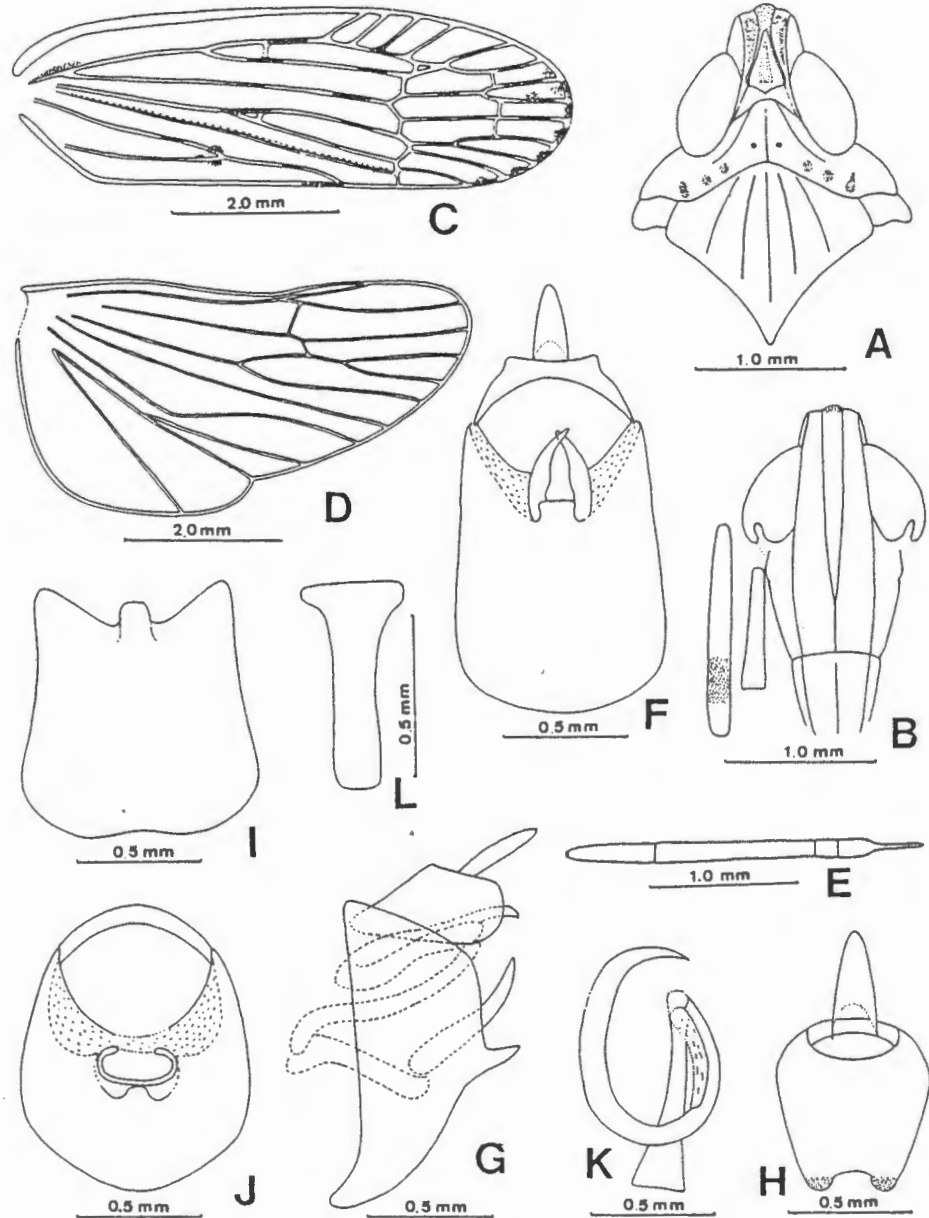


Fig. 2. *Ugyops tripunctatus* (Kato) A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, Rostrum, ventral view; F, male genitalia, posterior view; G, the same, left side; H, anal segment, ventral view; I, pygofer, ventral view; J, genital opening of pygofer, caudal view; K, aedeagus, caudal view; L, supporting plate of aedeagus, ventral view.

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Ugyops (!) *tripunctatus* Esaki et Ishihara, 1943,
Cat. Araeopid. Imp. Jap., 6.

—: Ishihara, 1949, Sci. Rep. Matsuyama
Agric. Coll., 2:10.

Bidis tripunctatus Kato, 1931, Bull. Biogr. Soc.
Jap., 2:165.

Vertex longer medially than wide at base about 2.2:1, broadly rounding subacutely into frons, distinctly wider at apex than at base, lateral margin concave medially, apical margin truncate with fused submedian carinae prominent, submedian carinae uniting far before apex, forming a common eminence, basal compartment of vertex shorter at base than median length about 1:1.9, hind margin distinctly angulate medially. Frons longer in middle line than wide at widest part about 3:1, widest at basal three-fourths, lateral margins shallowly convex, median carina simple in apical fifth, forked in basal four-fifths with two arms divergent widely. Rostrum reaching to hind coxae, apical segment distinctly shorter than subapical about 1:1.8, it seems 4-segmented. Antennae surpassing apex of clypeus, basal segment longer than wide about 5:1, shorter than second about 1:1.8. Ocelli present by a scar. Post-tibiae with three spines laterally. Spinal formula of hind leg 4-5-4. Tegmina with *Sc* 4-branched arteriad. Wings with *Sc* complete, *M* not fused with *Cu*₁ basally and apically, *r-m* basad *m-cu*, *cu*₁ forked before end of *m-cu*, *cu*_{1a} forked apically.

General color yellowish brown. Head marked on vertex and lateral areas before eyes. Pronotum with median carina and along posterior margin red and speckled with dark markings on each side. Antennae yellowish brown, second segment with subapical dark brown. Genae with red markings around base of antennae. Frons dark brown at extreme base. Postclypeus red at base. Tegmina hyaline, slightly speckled with dark at apical part. General color of female smoky dark brown, without any red markings as male do.

Anal segment of male large, lateroapical angles rounded at base. Pygofer in profile wider dorsally than ventrally. Posterior margin longer below medioventral process than upper,

in posterior view with opening wider than long, lateral margins not well defined, medioventral process relatively wide, single. Phallus in dorsal view circular, with a long petiole. Supporting plate elongate, slightly widening at dorsal margin. Diaphragm very weakly sclerotized. Genital styles simple, as figured.

Male (macropterous)

Length of body (includ. tegmen): 8.11
± 0.38 mm.

Length of tegmen: 6.45 ± 0.38 mm.

Female (macropterous)

Length of body (includ. tegmen): 7.95
± 0.07 mm.

Length of tegmen: 6.33 ± 0 mm.

First instar nymph (Fig. 3, 4)

General color brown, median part of dorsum light yellow, abdominal sternum light yellow, sternites IV to VI with sclerotized areas colorless, bearing 1 or 2 hairs. Head between eyes slightly shorter at narrowest part than long in middle line. Vertex strongly protruding beyond level of eyes, anterior margin strongly produced forward medially. Submedian carinae attaining hind margin of vertex submedially, basal compartment with hind margin longer than greatest length. Frons with two median carinae. Number and arrangement of sensory pits not typical, each side of frons with 17 pits arranged in 2 vertical lines, 9 pits along lateral carina, 8 along median carina; 2 extra pits on each lateral of vertex. Area between eye and lateral carina with 7 sensory pits, lies by lateral carina in front of eye, arranged in curved line, highest pit deposited at anterior half of transverse length of eye, lowest pit at lower level of eye.

Pronotum with lateral carinae strongly curved laterad, reaching at pit IV, and a supernumerary carinae, obliquely protruding between pits VI and VII, each side with 11 pits: 4 along inner side of lateral carina, 2 along inner side of supernumerary carina, 5 lateral. Mesonotum with 9 sensory pits on each side: 4 along inner side of lateral carina, 1 outer, 4 lateral, on both sides of lateral keel. Each side of metanotum with 2 pits along outer



Fig. 3. Five instars of nymph of *Ugyops tripunctatus* (Kato) A-E, head, dorsal view; F-J, head, lateral side; O, pro-, meso-, and metanotum, flated surface.

side of lateral carina; anterior wing pads ir-recognizable. Hind leg with 2 tarsal segments, spinal formula of hind leg 4-4, metatibia longer than 2 tarsal segments together about 1.4:1, spur longer than the widest part about 5:1.

Abdominal tergite each with median carina, each side of tergites IV-VIII with sensory pits in formula 2, 3, 4, 3, 4(2+2); each pleuron V with a pit; ninth abdominal segment each side with sensory pits 1 dorsal, 2 ventral.

Length of body: 2.43 mm.

Width of head including eyes: 0.47 mm.

Length of antenna: 0.33 mm.

Second instar nymph (Fig. 3, 4)

Differs from 1st instar nymph as follows: Pronotum with lateral carinae strongly curved laterad then deflected caudad between pits VIII and IX, not reaching hind margin, with two supernumerary carinae, first one obliquely protruding between pits IX and X, second one parallel with anterior margin then decurved caudad passing through pits XI and XII; each

lateral with 15 pits: 8 along inner side of lateral carina, 2 lies on both sides of first supernumerary carina, 1 inner side of second supernumerary carina, 4 lateral. Each side of mesonotum with 16 sensory pits: 5 along inner side of lateral carina; area between lateral carina and lateral keel with 7 pits, 1 on outer side of lateral carina, 4 medioanteriorly aggregate in group, 1 near inner side of lateral keel, 1 posteriorly; 4 laterally, 1 on outer side of lateral keel, and 3 along lateral margin anteriorly. Each side of metanotum with 2 pits near outer side of lateral carina; mesonotum

with laterocaudal angles slightly produced. Hind leg with 3 tarsal segments spinal formula of hind leg 5-5-3, metatibia longer than 3 tarsal segments together about 1.4:1, spur longer than the widest part about 5:1.

Abdominal tergites IV-VIII each side with sensory pits in formula 4, 6, 8, 7, 8; abdominal pleura V-VIII each side with sensory pits in formula 4, 2, 2, 2.

Length of body: 3.67 mm.

Width of head including eyes: 0.60 mm.

Length of antenna: 0.77 mm.

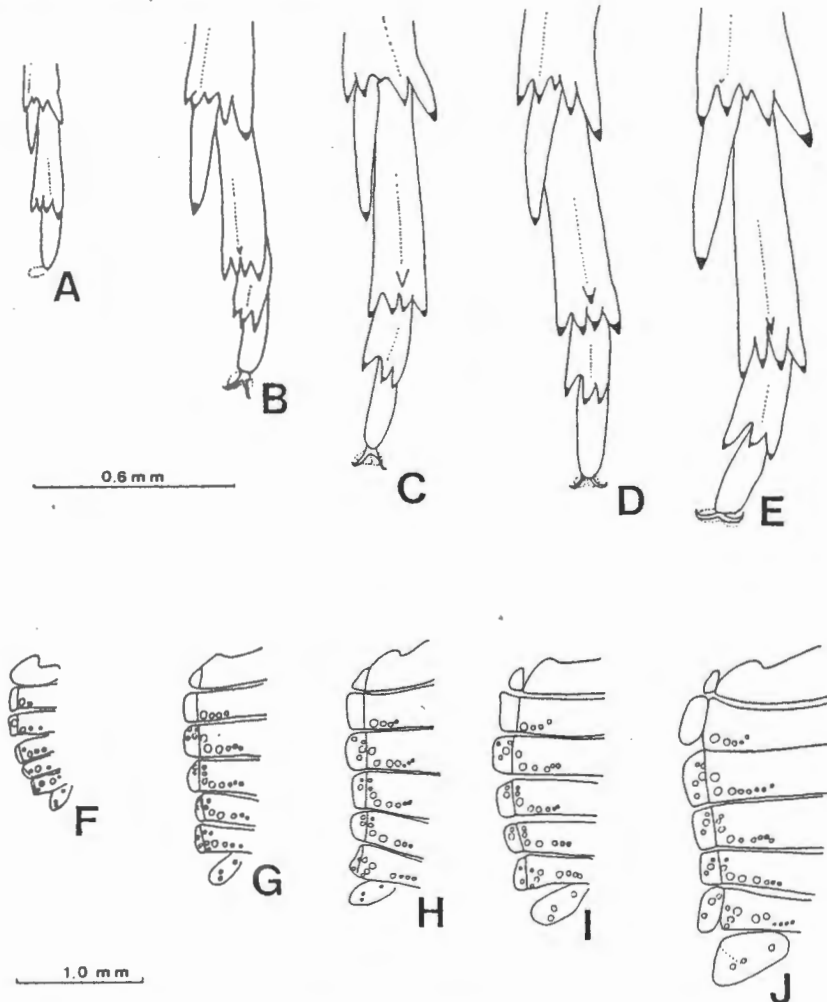


Fig. 4. Five instars of nymph of *Ugyops tripunctatus* (Kato) A-E, spinal formula and tibial spur of hind leg; F-J, abdominal sternum and pleura, flated surface.

narrowest part than median length about 1.1:1, vertex relatively protruding in front of eyes, anterior margin between submedian carinae concave shallowly, eyes in dorsal view kidney-like, slight divergent posteriorly, width between highest points of eyes narrower than width between lowest points of eyes about 1:1.6, length of eye longer than length between level of eyes and lateral point of frons about 2.3:1; head including eyes wider than width between lateral point of frons about 2.8:1, and wider than width of basal compartment at hind margin about 4.6:1; submedian carinae meeting hind margin of vertex medially; basal compartment with hind margin subequal to greatest length, hind margin angulate downward medially. Frons much longer in middle line than widest part about 2.6:1, widest below level of eyes, at level of widest part laterofrons wider than interfrons about 1.4:1. Number and arrangement of sensory pits not typical, each side of frons with 23 pits arranged in 2 vertical lines, 13 pits along lateral carina, 10 along median carina. 3 extra pits on each lateral of vertex. Area between eye and lateral carina with 23 sensory pits, 14 along lateral crina, 9 scattered, lowest pit below level of eye. Frontoclypeal suture straight, Clypeus longer in middle line than wide of frons at apex, about 1.4:1. Antennae very long, first segment with apex wider than base about 1.2:1, 2.8 times as long as wide at base, second segment elongate, 4.4 times as long as wide, much longer than first segment about 2:1. Rostrum relative long, 4-segmented, reaching beyond posterior margin of sternite V. relative length of each segment about 1.7:1: 5.9:3.6, first segment with basal pedicel short, apical segment long, in middle line longer than wide at widest part about 3.6:1.

Pronotum with lateral carinae strongly curved laterad, then deflected caudad between pits IX and X, not really attaining hind margin, each side with 2 supernumerary carinae, first one obliquely protruding between pits X and XI; second one somewhat parallel with anterior margin then decurved passing through pits XII and XIII; each side with 16 pits: 9 along inner side of lateral carina, 1 on inner side of first supernumerary carina; 1 on inner side of

second supernumerary carina; 5 lateral. Each side of mesonotum with 18 sensory pits: 5 along inner side of lateral carina, 8 distributed on area between lateral keel, 1 near to outer side of lateral carina, 1 near to inner side of lateral keel, 1 posteriorly, 5 aggregate in group; 5 lateral, 1 near to outer side of lateral keel, 4 along lateral margin. Each side of metanotum with 2 pits near to outer side of lateral carina; anterior wing pad not reaching level of hind one, posterior wing pad reaching level of anterior margin of abdominal tergites IV. Spinal formula of hind leg 5-5-3, meta-tibia longer than 3 tarsal segments together about 1.7:1, spur longer than the widest part about 6.7:1.

Abdominal tergite each with median carina, each side of tergites IV-VIII with sensory pits in formula 5, 8, 9, 8, 10; each side of pleura V-VIII with sensory pits in formula 5, 3, 3, 3; ninth abdominal segment each side with sensory pits 1 dorsal, 2 ventral, in dorsal aspect, with anal ridge very shallow incised medially, lateral lobes short, broadened, slightly produced; in lateral view triangular, much wider ventrally than dorsally, with anal comb slender; in caudal view with opening widest near middle.

Length of body: 5.07 mm.

Width of head including eyes: 1.03 mm.

Length of anterior wing pad: 2.03 mm.

Length of antenna: 1.40 mm.

Specimens examined: 3 ♂♂, 2 ♀♀, Orchid Island (蘭嶼), Taitung Hsien, 14-VII-1985, L. Y. Huang, L. C. Tung, and J. T. Yang.

Nymphal specimens examined:

1st instar nymph: 1

2nd instar nymph: 1

3rd instar nymph: 3

4th instar nymph: 1

5th instar nymph: 1

Orchid Island (蘭嶼), Taitung Hsien, 14-V I-1985, J. T. Yang; 9-VII-1985, S. C. Tsaur; Ken-ting park (墾丁公園), Pingtung Hsien, 20-XII-1985, S. J. Fang.

Host plant: Pteridophyta.

Distribution: Taiwan (Orchid Island).

Key to nymphal stages of
Ugyops tripunctatus (Kato)

1. Tarsi of hind leg 2-segmented, 2 extra sensory pits on each lateral side of vertex; 7 pits on area between eyes and lateral carina; each side of frons with 17 pits; abdominal pleuron V each with 1 pit, tergites IV–VIII each with sensory pits in formula 2, 3, 4, 3, 4 First instar nymph
 - Tarsi of hind leg 3-segmented; 3 extra sensory pits on each lateral side of vertex; 16 pits on area between eye and lateral carina; each side of frons with 23 pits . . . 2
2. Abdominal pleura V–VIII with sensory pits in formula 4, 2, 2, 2; tergites IV–VIII with sensory pits in formula 4, 6, 8, 7, 8 or 4, 7, 8, 7, 8 3
 - Abdominal pleura V–VIII with sensory pits in formula 5, 3, 3, 3; tergites IV–VIII with sensory pit in formula 5, 8, 9, 8, 10 Fifth instar nymph
3. Abdominal pleuron V each with 7 sensory pits; width of head including eyes more than 0.8 mm 4
 - Abdominal pleuron V each with 6 sensory pits; width of head including eyes about 0.6 mm Second instar nymph
4. Body length 3.88–4.02 mm; width of head including eyes about 0.85 mm Third instar nymph
 - Body length about 4.37 mm; width of head including eyes about 0.93 mm Fourth instar nymph

Subfamily *Delphacinae* Jensen-Haarupt, 1915

Tribe *Tropidocephalini* Muir, 1915

Genus *Tropidocephala* Stål, 1853

Tropidocephala Stål, 1853, ofv. Ak. Forh., 10: 266.

–: Matsumura, 1907, Ann. Mus. Hung., 5:57.

–: Kuoh, 1983, Econ. Ins. Fauna China, 27:31.

Nephropsia Costa, 1862, Ann. Mus. Zool. Napoli, 1:76.

Conicoda Matsumura, 1900, Ent. Nachr., m 26: 258.

Orchesma Melichar, 1903, Hom. Faun. Ceylon, 94.

Ectopiopterygodelphax Kirkaldy, 1906, Haw. Sugar Pl. Ass. Bull., 412.

Smara Distant, 1906, Fauna Brit. Ind. Rhynch., 3:478.

Head including eyes narrower than pronotum. Vertex longer in middle line than wide at base, apex producing in front of eyes apparently or very much, tricarinate, median carina simple, from base to apex, lateral carinae converging apically, submedian carinae protruding from apex of lateral carinae, uniting at apex, forming anterior margin of vertex. Frons longer in middle line than wide at widest part about 1.9–3.0:1, in profile more or less reclined apically, lateral carinae convex medially not really connecting with lateral carinae of vertex, median carina forked at extreme base, forming a small cell. Postclypeus wider at base than frons at apex, or subequal, tricarinate distinctly or not. Rostrum reaching to mesocoxae, apical segment slightly longer than wide. Antennae short, cylindrical, second segment longer than first, in most species not reaching frontoclypeal suture. Ocelli present, small. Pronotum tricarinate, lateral carinae well developed, somewhat converging posteriorly, attaining hind margin. Spinal formula of hind leg 5–6–4 or 5–7–4. Tegmina with small hair-bearing granules beside veins.

Anal segment of male relative large. Pygofer in posterior view with opening longer than wide, lateral margin with or without production, ventral margin with distinct medioventral process. Aedeagus with distinct phallobase, phallus slender, curved ventrad, phallobase broad at base, concave submedially to receive phallus with very long process apically or basoventrally. Aedeagus fastened in anal segment, supporting plate irrecognizable. Diphragm membranous. Genital styles long, sometimes basal angles with long process. Seventh abdominal sternite of female absent.

Type species: *Tropidocephala flaviceps* Stål, 1853. (original designation)

Key to the species of *Tropidocephala*

1. Vertex longer in middle line than pronotum less than 1.4 times 2
 - Vertex longer in middle line than pronotum about 1.7 times or more 4
2. Vertex as long as pronotum; genital styles with basal angles each produced into a very long process; lateral margin of pygofer not produced *formosa* Matsumura
 - Vertex distinctly longer than pronotum; genital styles with basal angles each slightly produced into a short process or not; lateral margin of pygofer produced 3
3. Genital styles with basal angles and inner margin median portion produced into process respectively; vertex, pro- and mesonotum most part yellowish green
 - *brunnipennis* Signoret
 - Genital styles simple without process; general color fuscous *grata* sp. nov.
4. Vertex longer in middle line than pronotum more than 3 times 5
 - Vertex longer in middle line than pronotum less than 2.6 times 6
5. Tegmina with markings paler; apical ends of longitudinal veins *Sc + R*, *M* and *Cu₁* without any marking *Sinuosa* sp. nov.
 - Tegmina with markings darker, apical ends of longitudinal veins *Sc + R*, *M* and *Cu₁* with distinct black markings
 - *dimidia* sp. nov.
6. Vertex 2.5 times longer than pronotum; general color dirty yellow
 - *maculosa* Matsumura
 - Vertex less than 2 times longer than pronotum 7
7. Tegmina more than 3 times as long as wide; apical part of longitudinal veins *M₂*, *M₃* and *Cu₁* covered with dark brown markings; genital styles with basal angles each produced into a small process
 - *saccharivorella* Matsumura
 - Tegmina about 2.6 times as long as wide; markings not as above; genital styles with basal angles each produced into a long process or not 8
8. Genital styles with basal angles each produced into a long process; tegmina with

apical end of longitudinal veins *Sc + R* and *M* with distinct black markings

- *festiva* (Distant)
- Genital styles with basal angles not produced into process; tegmina with apical ends of longitudinal veins *Sc + R* and *M* without black markings
 - *flavovittata* Matsumura

Tropidocephala flavovittata Matsumura, 1907 (Fig. 6)

Tropidocephala flavovittata Matsumura, 1907, Ann. Hist. Nat. Mus. Hungar., 5:63.

- : Schumacher, 1915, Mitt. Zool. Mus. Berlin, 8:133.
- : Esaki et Ishihara, 1943, Cat. Araeopid. Imp. Jap., 9.
- : Esaki et Ishihara, 1943, Syst. Stud. Jap. Araeopid., 6.
- : Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:14.
- : Kuoh, 1983, Econ. Ins. Fauna China, 27:37.

The description and illustration are reproduced from Kuoh (1983) and Esaki et Ishihara (1943).

"Vertex longer in middle line than wide at base about 1.5:1, longer than pronotum about 1.8:1. Frons longer than wide at widest part about 3.3:1, widest between eyes, median carina forked at basal third. Postclypeus slightly wider than frons at base, antennae not reaching frontoclypeal suture, basal segment as wide as long, second segment longer than first about 1.8:1".

"Vertex, pro- and mesonotum yellowish red, median carina of vertex, and *calinae* of pro- and mesonotum dirty white, frons yellowish red, genae somewhat darker, postclypeus paler, median carina of frons dirty pale yellow. Antennae milk white, apical margin of basal segment, subapical margin and median line of upper surface dark brown, ventral surface of thorax and legs yellowish red, hind legs somewhat paler. Abdomen whole reddish yellow."

"Pygofer in posterior view with opening longer than wide, lateral margin not produced,

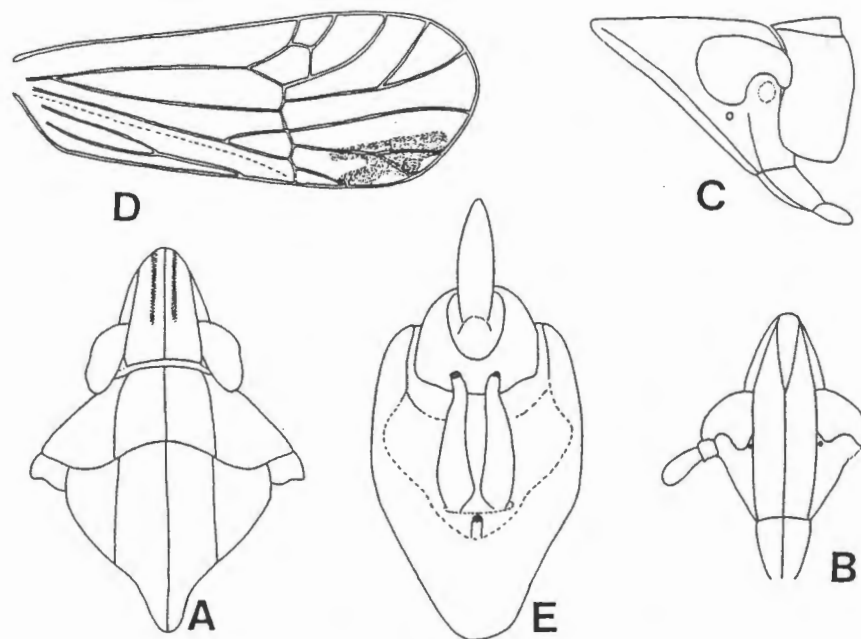


Fig. 6. *Tropidocephala flavovittata* Matsumura A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, genitalia, posterior view.

medioventral process small, widening apically. Phyllus slender. Genital styles long, narrowed apically."

"Male

Length of body: 2.2 mm.

Length of body (includ. tegmen): 3.6 mm."

Specimen examined: authors have no chance to examine this species yet.

Host plant: unknown.

Distribution: Taiwan, Mainland China.

Tropidocephala maculosa Matsumura, 1907

Tropidocephala maculosa Matsumura, 1907, Ann. Hist. Nat. Mus. Hungar., 5:63.

—: Schumacher, 1915, Mitt. Zool. Mus. Berlin, 8:133.

—: Esaki et Ishihara, 1943, Cat. Areopid. Imp. Jap., 9.

—: Esaki et Ishihara, 1943, Syst. Stud. Jap. Araeopid., 67.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:14.

The description is reproduced from Esaki and Ishihara (1943).

"Body dirty pale yellow dorsally, pale yellow ventrally. Vertex longer than pronotum about 2.5:1, with two longitudinal black lines at apex. Vertex longer than wide between eyes about 3:1, lateral view slightly downward apically. Antennae short, obscurely with three black stripes. Pro- and mesonotum combined slightly longer than vertex. Tegmina dirty yellow, anterior margin of apical half with four hyaline areas and four black lines, apical margin with two hyaline areas, three black and globular markings apiculate to longitudinal veins (Sc + R, M, and Cu₁), a large black marking at apical half. Legs pale yellow except apical points of tarsi somewhat brown."

"Male

Length of body (includ. tegmen): 3.8 mm.

Female

Length of body (includ. tegmen): 4 mm."

Specimen examined: authors have no chance to examine this species.

Host plant: Unknown.

Distribution: Taiwan.

Tropidocephala brunnipennis Signoret, 1860
(Fig. 7)

Tropidocephala brunnipennis Signoret, 1860.

Ann. Soc. Ent. France, 8:185.

—: Matsumura, 1907. Ann. Hist. Mus. Hungar., 5:59.

—: Esaki et Ishihara, 1943, Cat. Araeopid. Imp. Jap., 7.

—: Esaki et Ishihara, 1943, Syst. Stud. Jap. Araeopid., 60.

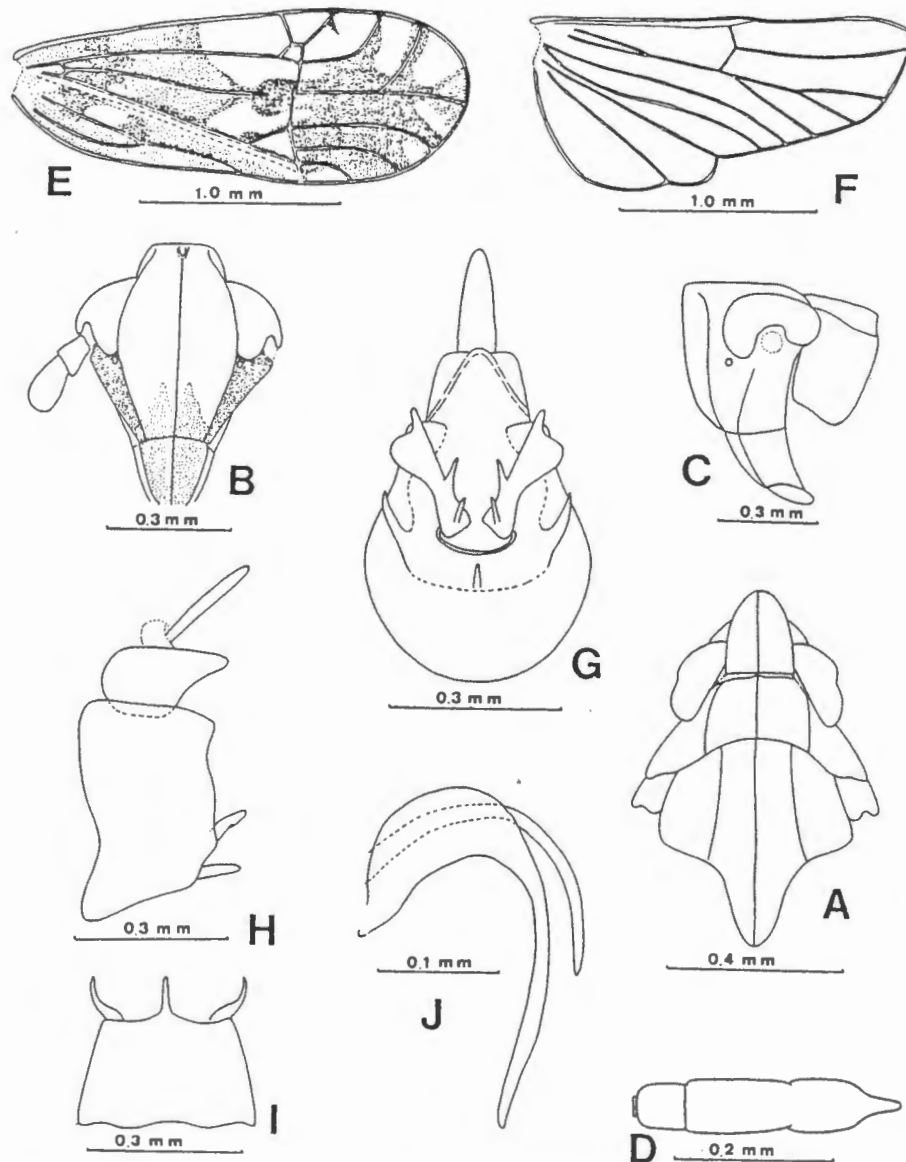


Fig. 7. *Tropidocephala brunnipennis* Signoret A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, rostrum, ventral view; E, tegmen; F, wing; G, male genitalia, posterior view; H, the same, left side; I, pygofer, ventral view; J, aedeagus, left side.

1860.
Mus.
Araeopid.
l. Jap.

- : Matsumura et Ishihara, 1945, Mushi, 16:60.
—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:12.
—: Kuoh, 1983, Econ. Ins. Fauna China, 27:32.

Conicoda graminea Matsumura, 1900, Ent. Nachr., 26:259.

Ectopiopterygodelphax eximius Kirkaldy, 1906. Haw. Sugar Pl. Ass., Bull. 3:142.

Vertex longer in middle line than wide at base about 1.2:1, produced in front of eyes, conic at apex, longer than pronotum about 1.3:1. Frons longer in middle line than wide at widest part about 1.6:1, widest at level above ocelli. Postclypeus tricarinate. Antennae not reaching to frontoclypeal suture. Spinal formula of hind leg 5-6-4.

General color greenish brown to dark brown; thorax greenish brown. Vertex, pronotum, mesonotum, and extreme base of tegmina greenish yellow, apical part and some times both sides of median carina of frons, gena, metacoxae, abdominal stenite and genitalia black, the rest part of body brown. Tegmina with costal area transparent, basal two-thirds dark brown, other markings as figured.

Anal style of male long, surpassing anterior margin of anal segment. Anal segment long. Pygofer oval in posterior view with opening longer than wide, lateral margins produced slenderly near base, in ventral view with medioventral process narrow and slender, ventral margin slightly concave at both sides with lateral productions as winged portion. Aedeagus with phallus slender, phallobasal process arising from apical portion. Diaphragm membranous. Genital styles flattened, apical third about twice as wide at base, inner margin nearly straight, outer margin strongly produced laterad submedially, then concave at basal third. Each style with 2 short processes, one at base, another at basal third of inner margin, directed mesodorsad.

Male (macropterous)

Length of body (includ. tegmen): 3.11 ± 0.14 mm.

Length of tegmen: 2.43 ± 0.11 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.61 ± 0.15 mm.

Length of tegmen: 2.73 ± 0.12 mm.

Specimen examined: 6 ♂♂, 5 ♀♀, campus of NCHU (中興大學), Taichung city, 17-IX-1983, C. T. Yang.

Host plant: *Miscanthus* spp. (Gramineae)

Distribution: Japan, Taiwan, Mainland China, Malaya, India, New Guinea, Australia, Madagasca, N. Africa, S. Europe.

Tropidocephala festiva (Distant, 1906)

(Fig. 8)

Tropidocephala festiva Matsumura, 1907, Ann. Hist. Nat. Mus. Hungar., 5:62.

—: Muir, 1913, Proc. Haw. Ent. Soc., 2: 244.

—: Esaki et Ishihara, 1943, Cat. Araeopid. Imp. Jap., 8.

—: Esaki et Ishihara, 1943, Syst. Stud. Jap. Araeopid., 64.

Smara festiva Distant, 1906. Fauna Brit. Ind. Rhynch., 3:478. f. 64.

—: Matsumura et Ishihara, 1945, Mushi, 16:60.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:13.

Vertex longer in middle line than wide at base about 1.9:1, longer than pronotum about 1.8:1, acutely rounded at apex, produced in front of eyes. Frons longer in middle line than wide at widest part about 2.4:1, widest at level between eyes. Postclypeus tricarinate. Antennae short, reaching to frontoclypeal suture. Rostrum surpassing procoxae. Spinal formula of hind leg 5-6-4.

Vertex and thorax yellowish green, both of them with median carina bordered with brown, and outside of lateral carinae company with brown, a pair of short brown longitudinal markers inside the posterior part of lateral carinae of pronotum just in front of lateral carinae of mesonotum, and on lateral area; anterior part of each lateral of pronotum marked with dark brown. Antennae rounded with brown at apex of first segment and base of second. Frons with

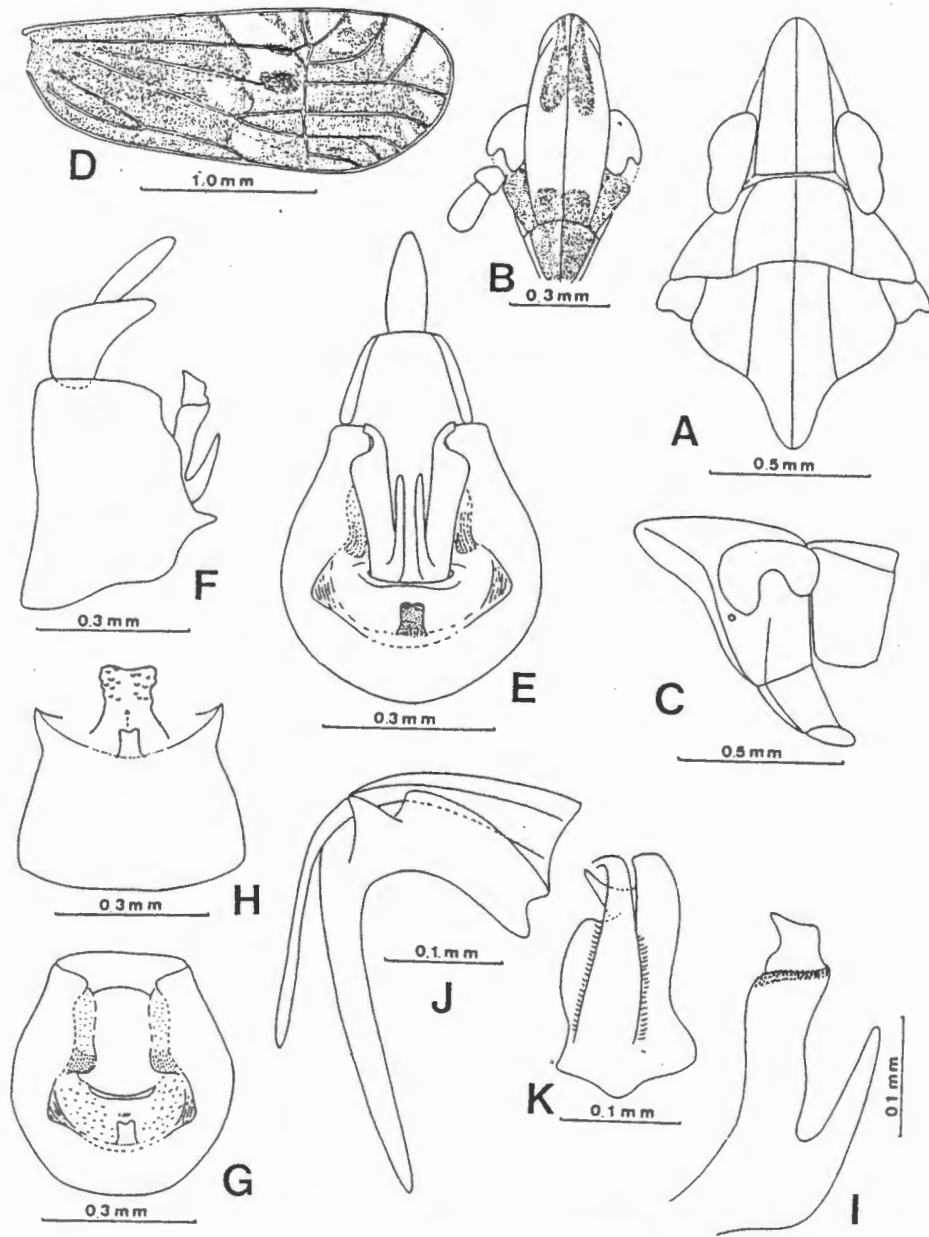


Fig. 8. *Tropidocephala festiva* (Distant) A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, male genitalia, posterior view; F, the same, left side; G, genital opening of pygofer, posterior view; H, pygofer, ventral view; I, genital style, laterocaudal; J, aedeagus, right side; K, the same, dorsal view.

black markings on basal part, apical part, and on genae below eyes; postclypeus, sternum of metathorax, femora of legs, partial of post tibiae and abdomen (including genitalia) black, rest brown. Tegmina dark brown, nearest base

yellowish green, hyaline areas distributed three on costal area, five on apical part, and one next to end of claval line, three black and glabular markings apiculate to longitudinal veins (*Sc* + *R*, *M*, and *Cu*₁).

Anal style moderately long, surpassing anterior margin of anal segment. Anal segment relative long. Pygofer in posterior view with opening longer than wide, lateral margins strongly produced, most part of opening somewhat weakly sclerotized except above opening of genital styles, in ventral view with medioventral process flattened, widened apically, slightly emarginate at apex, granulate. Aedeagus with phallus slender, basal portion of phallobase in dorsal view with triangular production at apex, and widely lobed at base at right side, process of phallobase arising from apex. Genital styles in caudal view, slightly parallel, main body subequally in wide, elongate, apical sixth narrowed and curved, basal angle produced into a long process, in profile with subapical portion granulate, apex truncated and pointed at basal angle.

Male (macropterous)

Length of body (includ. tegmen): 3.44 ± 0.09 mm.

Length of tegmen: 2.56 ± 0.08 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.82 ± 0.12 mm.

Length of tegmen: 2.82 ± 0.09 mm.

Specimens examined: 1 ♂, 3 ♀♀, Chung Hsing Village (中興新村), Nantou Hsien, 22-V-1984, J. T. Yang; 6 ♂♂, 5 ♀♀, Tapu (大埔), Chiayi Hsien, 23-I-1985, C. T. Yang; 3 ♂♂, 1 ♀, Orchid Island (蘭嶼), Taitung Hsien, 14-VII-1985, J. T. Yang; 1 ♂, Songho (松鶴), Taichung Hsien, 1-VII-1985, S. C. Tsaur.

Host plant: *Imperata cylindrica* (L.) P. Beauv. Var. *major* (Nees) C. E. Hubbard (Gramineae).

Distribution: Japan, Mainland China, Taiwan, Philippines, Indonesia, Malaya, Sri Lanka, Pundaluoya.

Tropidocephala formosana Matsumura, 1910
(Fig. 9)

Tropidocephala formosana Matsumura, 1910, Schad. n. nutz. Ins. Zucherrohr Formosas, 16.

—: Esaki et Ishihara, 1943, Cat. Araeopid Imp. Jap., 10.

—: Esaki et Ishihara, 1943, Syst. Stud. Jap. Araeopid., 69.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:13.

—: Kuoh, 1983, Econ. Ins. Fauna China, 27:38.

Vertex slightly longer in middle line than wide at base, as long as pronotum, conicle at apex, protruding in front of eyes. Frons in middle line longer than wide at widest part about 2.1:1, widest at level of ocelli. Postclypeus without distinct carina. Antennae short, not reaching to frontoclypeal suture. Spinal formula of hind leg 5-6-4.

General color reddish brown to dark brown. Vertex greenish brown, genae, postclypeus and lateral sides of anterior margin of pronotum black. Frons reddish brown, median carina white and bordered with dark brown from apex of vertex to end of mesonotum straight. Antennae at apex of first segment, and middle of second segment ring with brown. Tegmina brown, with hyaline area distributed.

Anal style of male long, surpassing anterior margin of anal segment. Anal segment large. Pygofer in posterior view with opening longer than wide, in ventral view with medioventral process simple, ventral margin slightly incised near both sides of process. Aedeagus with phallus slender, phallobase in dorsal view with right side obtusely produced without another process. Genital styles divergent, narrow and flattened at base, then deflected outside, reflected inside, reflection much wider and thicker than at base, from which inner angle produced as a bent production, basal angle with large production digitate, directed inside. Styles cover with granulate.

Male (macropterous)

Length of body (includ. tegmen): 3.67 ± 0.14 mm.

Length of tegmen: 2.91 ± 0.18 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.98 ± 0.15 mm.

Length of tegmen: 3.22 ± 0.11 mm.

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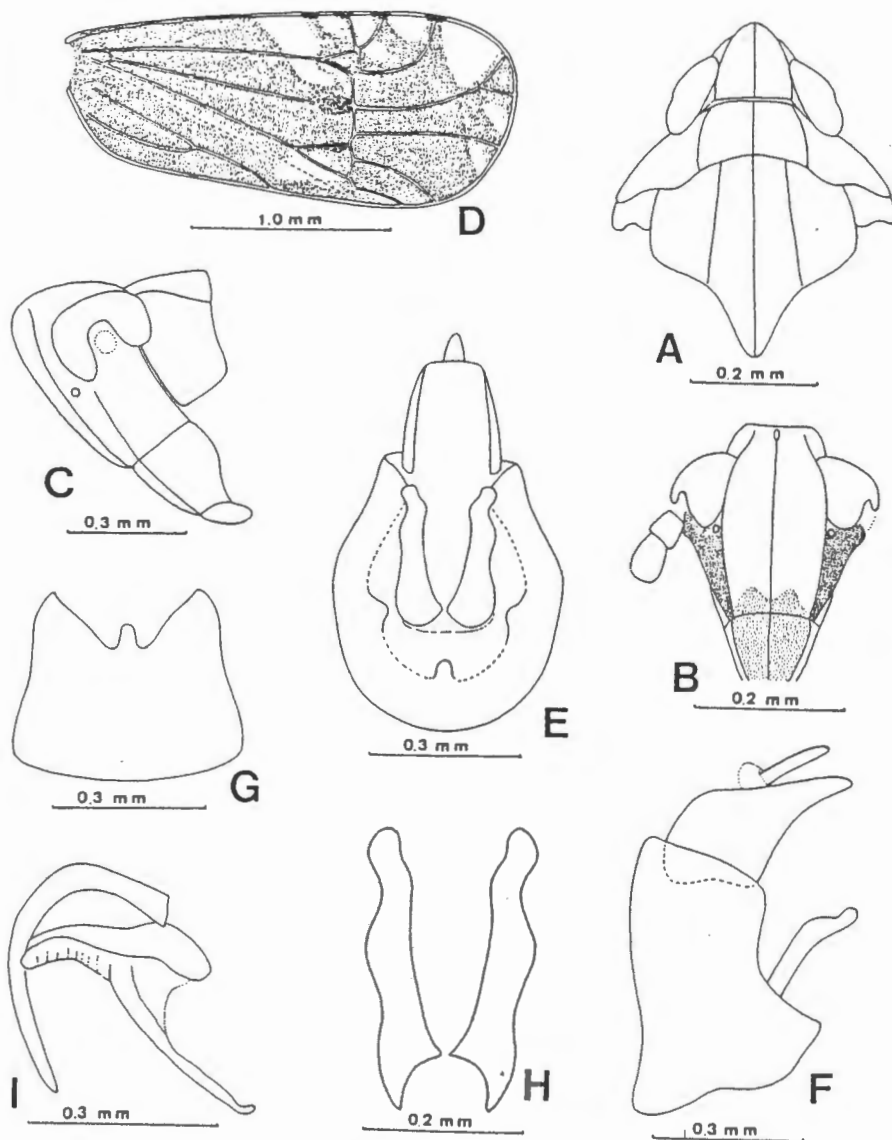


Fig. 9. *Tropidocephala formosana* Matsumura A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, male genitalia, posterior view; F, the same, left side; G, pygofer, ventral view; H, genital style, caudal view; I, the same, laterocaudal; J, aedeagus, right side; K, the same, dorsal view.

Specimens examined: 2 ♂♂, 2 ♀♀, Shan-Ping (扇平), Kaohsiung Hsien, 11-VII-1984, J. T. Yang.

Host plant: *Miscanthus* spp. (Gramineae)

Distribution: Taiwan, Mainland China.

Tropidocephala saccharivorella

Matsumura, 1907

(Fig. 10)

Tropidocephala saccharivorella Matsumura, 1970. Ann. Hist. Nat. Mus. Hungar. 5:65, pl. 2, fs. 6, 12.

—: Esaki et Ishihara, 1943, Cat. Araeopid. Imp. Jap., 9.

—: Esaki et Ishihara, 1943, Syst. Stud. Jap. Araeopid., 68.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:14.

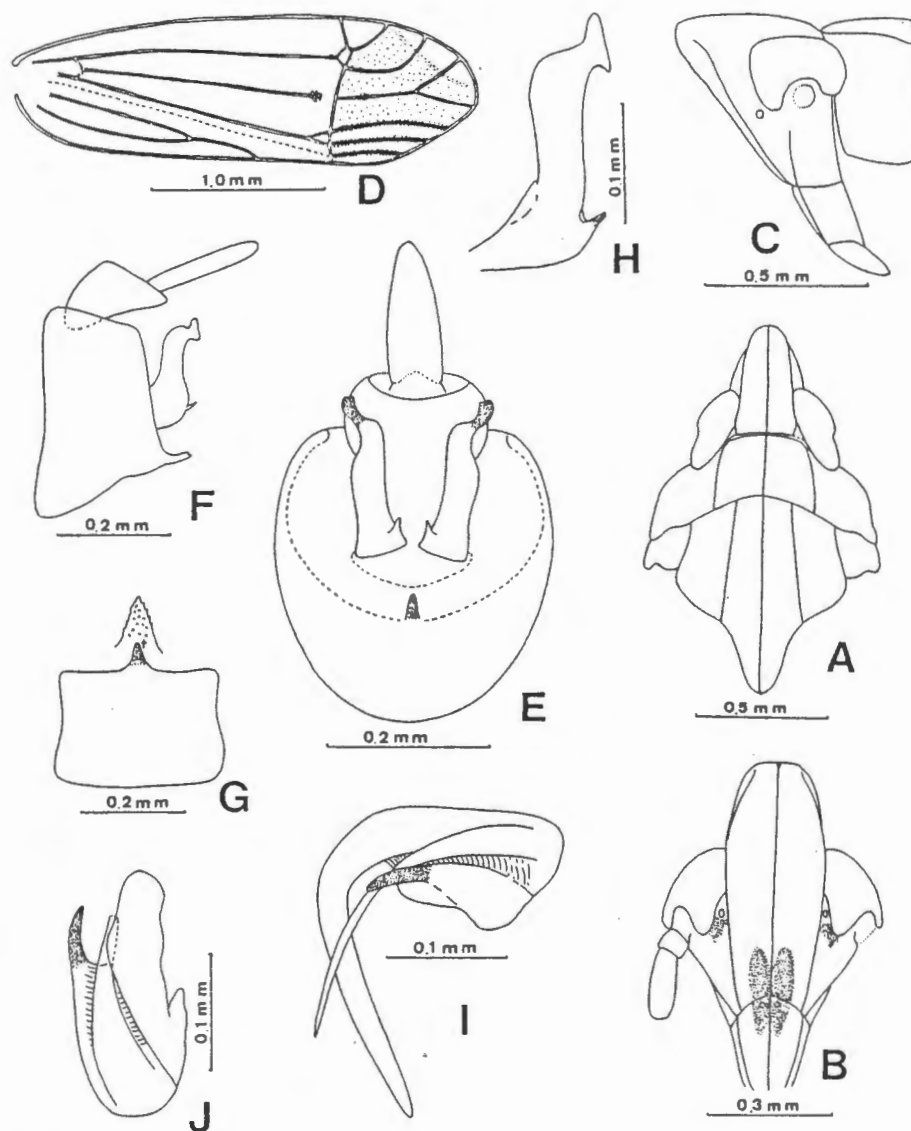


Fig. 10. *Tropidocephala saccharivorella* Matsumura A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, male genitalia, posterior view; F, the same, left side; G, pygofer, ventral view; H, genital style, laterocaudal; I, aedeagus, right side; J, the same, dorsal view.

Vertex long, longer in middle line than wide at base about 2:1, longer than pronotum about 1.7:1, rounded at apex, much produced in front of eyes. Frons longer in middle line than wide at widest part about 2.4:1, widest at level of anterior margin of eyes. Antennae short, reaching to postclypeal suture. Postclypeus tricarinate. Spinal formula of hind leg 5-6-4. Tegmina narrow, acutely rounded at apex.

General color greenish yellow to reddish brown, with black markings on apex of frons, around ocelli, base of postclypeus and upper part of meso-pleurum. Tegmina hyaline, apical fourth (excluding costal area) yellowish gray, apical part of longitudinal veins M_2 , M_3 , Cu_1 covered with dark brown, apiculate brown of M vein indistinct, and small round brown marking on middle of $Rs + M_1$.

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Anal style of male very long, surpassing anterior margin of anal segment. Anal segment relative small. Pygofer in posterior view with opening wider than long, lateral margin without process, in ventral view with ventral margin nearly straight, medioventral process granulate, pointed at apex. Aedeagus with phallus slender, phallobase with process arising from apex, in dorsal view, produced a small production, digitate, at right side in direction same as phallus. Genital styles parallel, slightly wide at base, apical third narrowed and sinuate, basal angles each produced into a pointed process, in lateral view with apex truncated, distinctly constricted subapically.

Male (macropterous)

Length of body (includ. tegmen): 3.52 ± 0.06 mm.

Length of tegmen: 2.63 ± 0.12 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.73 ± 0.13 mm.

Length of tegmen: 2.88 ± 0.11 mm.

Fifth instar nymph (Fig. 11)

General color pale greenish yellow to pale yellow. Head between eyes narrower at narrowest part than long in middle line about 1:2.7, strongly protruding in front of eyes, triangular. Vertex with lateral carinae obscure, submedian carinae distinct, attaining nearly to apex, not really uniting near apex, Y-shaped carina feeble, basal compartment narrower at hind margin than greatest length. Eyes straight, parallel. Frons longer in middle line than wide at widest part about 1.3:1, widest above base of antennae. Interfrons narrower than laterofrons, interfrons rounded and expanded at base. Number of sensory pits typical, each side with six pits, arrangement in 2 lines, one along median carina and another along lateral carina, three extra pits near apex on dorsal aspect. Between eye and lateral carina with four pits, lowest one lies slightly above upper margin of eye. Frontoclypeal suture arched upward medially. Antennae short. Rostrum reaching to mesocoxae, relative length of each segment

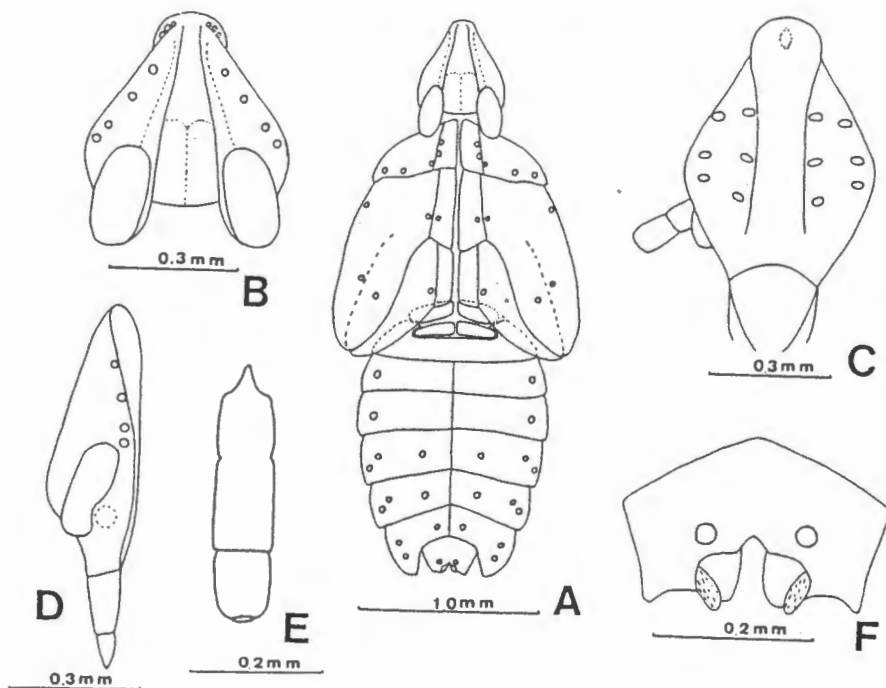


Fig. 11. Nymph of *Tropidocephala saccharivorella* Matsumura A, Fifth instar nymph, dorsal view; B, head, dorsal view; C, head, ventral view; D, head, lateral view; E, rostrum, ventral view.

about 1.25:1.25:1, apical segment longer than wide about 1.7:1.

Pronotum each side with five pits: 2 medial, 3 lateral. Number and arrangement of pits on meso-, metathorax and wing pads typical, relative distance of W1 to W2 and W2 to W3 about 3.7:1. Anterior wing pad protruding to level of hind one, latter reaching anterior margin of tergite IV. Spinal formula of hind leg 5-6-4. Metatibia subequals to three tarsi together, spur longer than widest part about 2.6:1.

Abdominal tergites IV-VIII each side with sensory pits in formula, 0 + 1, 0 + 1, 1 + 2, 1 + 2, 1 + 2, median ones more close to median carina than to lateral margin, especially one on tergite VIII, lateral two on tergites VI and VII arrangement obliquely; tergite VIII with latero-caudal angles strongly produced caudad, reaching slightly over hind margin of tergite IX. Ninth abdominal tergite bears 1 pit dorsal, 2 ventral on each side, in dorsal aspect with anal ridge shallowly incised medially, lateral lobes small, concave at apex, with very large anal comb.

Length of body: 3.07 mm.

Width of head including eyes: 0.43 mm.

Length of anterior wing pad: 1.0 mm.

Length of antenna: 0.20 mm.

Specimens examined: 1 ♂, 3 ♀♀, Tadu-Shan (大度山), Taichung Hsien, 3-IX-1983, C. T. Yang; 1 ♂, Chiasen (甲仙), Kaohsiung Hsien, 25-XII-1981, C. T. Yang; 1 ♂, 1 ♀, Shan-Ping (扇平), Kaohsiung Hsien, 11-VII-1984, J. T. Yang; 1 ♂, 3 ♀♀ Orchid Island (蘭嶼), Taitung Hsien, 14-VII-1985, J. T. Yang.

Nymphal specimens examined: 5th instar nymph: 1, Kuantyling (關子嶺), Tainan Hsien, 20-IV-1985, C. T. Yang.

Host plant: *Miscanthus* spp.; *Saccharum* spp. (Gramineae)

Distribution: Taiwan, Mainland China, Philippines.

*Tropidocephala dimidia** sp. nov.

(Fig. 12)

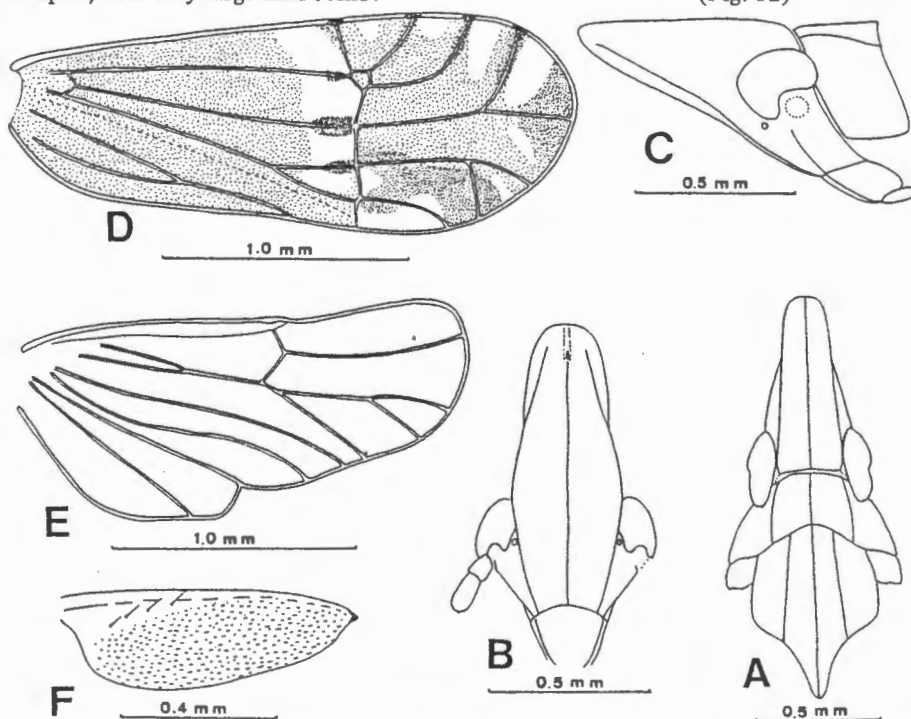


Fig. 12. *Tropidocephala dimidia* sp. nov. A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, wing; F, spur of hind legs.

* *dimidius*, -a, -um, L. adj. --- half.

Vertex longer in middle line than wide at base 2.9:1, longer than pronotum about 3.3:1, strongly protruding in front of eyes. Frons longer in middle line than wide at widest part about 2.6:1, widest at level of anterior margin of eyes. Postclypeus with lateral carinae distinct, median carina very faint. Antennae not reaching frontoclypeal suture, spinal formula of hind leg 5-6-4.

General color pale yellow. Antennae with base of first segment and second segment ring with brown, Tegmina with dark apices at longitudinal veins similar as *T. brunnipennis* do.

Male (macropterous)

Length of body (includ. tegmen): 3.53 mm.

Length of tegmen: 2.50 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.25 ± 0.07 mm.

Length of tegmen: 2.75 ± 0.11 mm.

Holotype: Female, Nanhua (南化), Tainan Hsien 3-VI-1985, J. T. Yang.

Paratypes: 2 ♀♀, same as for holotype. 1 ♂ (abdomen lost), Nanhua (南化), Tainan Hsien, 23-I-1985, C. T. Yang.

Host plant: *Imperata cylindrica* (L.) P. Beauv. var. *major* (Nees) Hubbard (Gramineae)

Distribution: Taiwan.

This new species very resembles *Tropidocephala sinuosa* but can easily distinguish them by whole appearance, especially by the character of tegmina with cross vein sc_2-r very feeble, (*T. sinuosa* distinct). Unfortunately losing the genital segment of male, hoping in near future we can redescribe it.

*Tropidocephala grata** sp. nov.

(Fig. 13)

Vertex triangular, as long in middle line as wide at base, longer than pronotum about 1.3:1, conicle at apex, slightly protruded in front of eyes. Frons longer in middle line than wide

at widest part about 1.9:1, widest at level of ocelli. Antennae short, not reaching frontoclypeal suture. Spinal formula of hind leg 5-6-4.

General color fuscous. Frons with area above frontoclypeal suture, postclypeus, genae, lateral parts of pronotum and legs (except meta-coxae black) light brown; antennae light brown, ring with dark brown at apex of first segment, and at base of second obliquely. Abdomen including genitalia fuscous. Tegmina quite similar to *T. festiva*, apices at longitudinal veins of Sc + R, M and Cu_1 , basal two-thirds dark brown, with several transparent areas distributed on costal area and apical area, the rest part of apical third (after cross vein) brown.

Anal style very small, slender, not reaching anterior margin of anal segment. Anal segment large. Pygofer in posterior view with opening longer than wide, lateral margins obtusely produced into triangular plates, in ventral view with medioventral process small, ventral margin strongly concave. Genital styles parallel, basal part slightly wider than apical part, curved outward at middle, blunt at apex, restriction near apex.

Aedeagus with phallus slender, phallobase with process arising from subbasal portion ventrad.

Male (macropterous)

Length of body (includ. tegmen): 3.21 ± 0.06 mm.

Length of tegmen: 2.52 ± 0.08 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.40 ± 0.10 mm.

Length of tegmen: 2.70 ± 0.04 mm.

Holotype: Male, Chung Hsing Village (中興新村), Nantou Hsien, 22-V-1984, J. T. Yang.

Paratypes: 5 ♀♀, Tapu (大埔), Chiayi Hsien, 23-I-1985, C. T. Yang.

Host plant: *Miscanthus* spp.; *Imperata cylindrica* (L.) P. Beauv. var. *major* (Nees) (Gramineae)

Distribution: Taiwan.

* *gratus*. -a, -um, L. adj. --- pleasing.

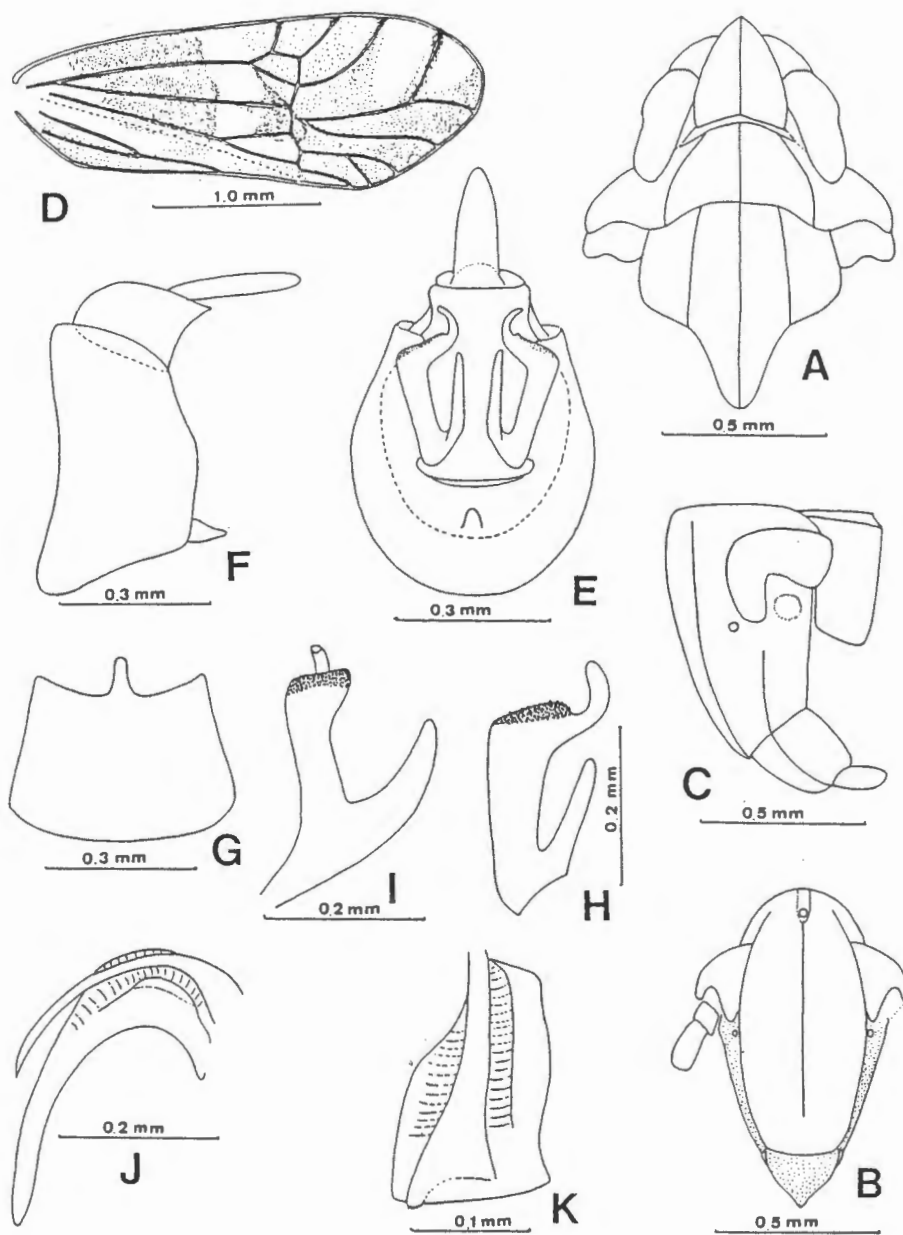


Fig. 13. *Tropidocephala grata* sp. nov. A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, male genitalia, posterior view; F, the same, left side; G, pygofer, ventral view; H, genital styles, caudal view; I, aedeagus, right side.

This new species resembles *Tropidocephala nigra* Matsumura from Japan in having same shape of genital styles; markings of tegmina, but differs from latter in vertex longer in middle line than pronotum about 1.3:1 (more

than twice in *T. nigra*); shape and markings of frons; shape of produced portion of lateral margin of pygofer; genital styles with inner margin nearly straight (strongly sinuate in *T. nigra*).

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*Tropidocephala sinuosa** sp. nov.
(Fig. 14)

Vertex very long, longer in middle line than wide at base about 2.9:1, longer than pronotum about 3.2:1. Strongly protruding in

front of eyes, rounded at apex. Frons elongate, longer in middle line than wide at widest part, about 2.7:1, widest above level of anterior margin of eyes. Postclypeus at base wider than frons at apex, carinae very faint. Antennae not reaching frontoclypeal suture. Spinal formula

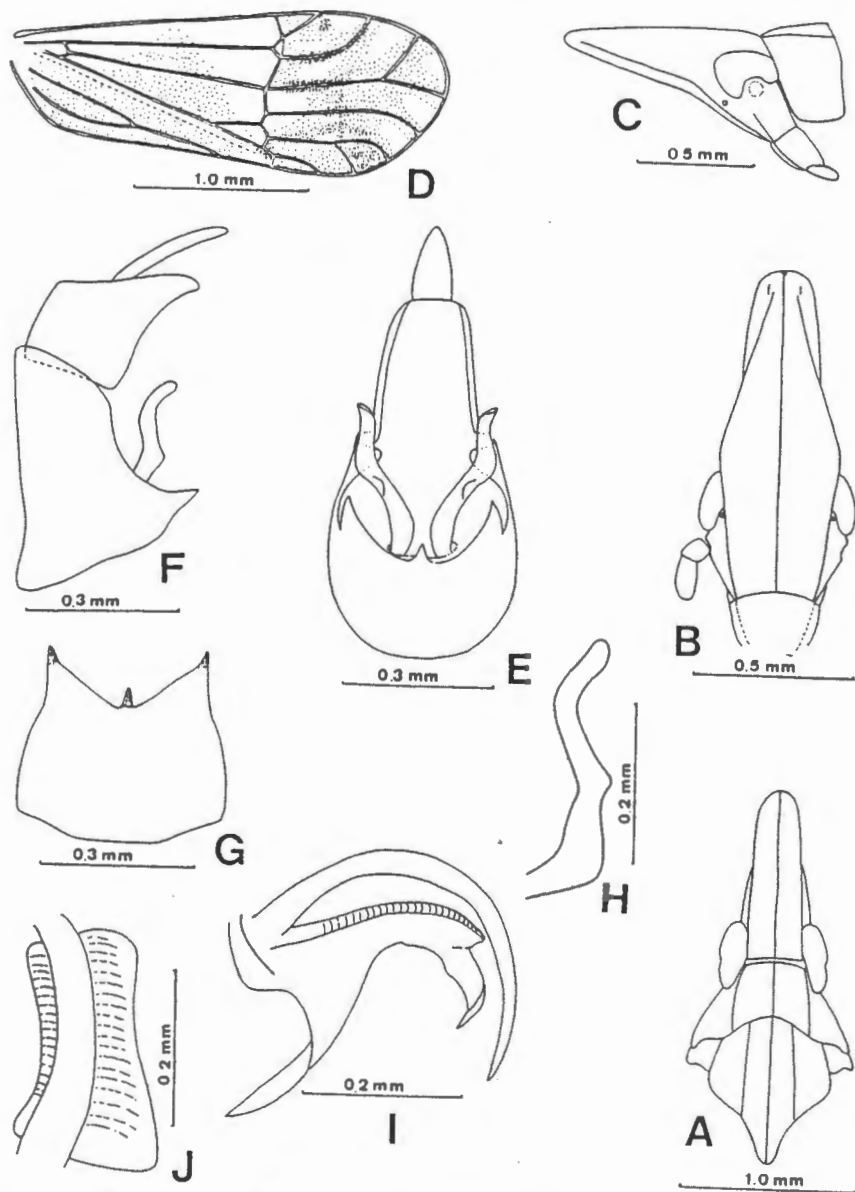


Fig. 14. *Tropidocephala sinuosa* sp. nov. A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, male genitalia, posterior view; F, the same, left side; G, pygofer, ventral view; H, genital style, laterocaudad; I, aedeagus, left side; J, the same, dorsal view.

* sinuos, -a, -um, L. adj. --- sinuate.

of hind leg 5-6-4.

General color pale yellow to yellowish brown. Tegmina with markings more paler, apical ends of longitudinal veins Sc + R, M and Cu₁ without any markings.

Anal style long, distinctly surpassing anterior margin of anal segment. Anal segment large. Pygofer in posterior view with opening wider than long, lateral margins acutely produced, in ventral view with medioventral process small, acute at apex, anterior margin strongly concave medially. Aedeagus with phallus slender, phallobse in dorsal view with right side evenly produced, in left view right side produced into a lobe-like process apically, directed ventrally, another longer process arising subbasally. Genital styles, slender, sinuate with small triangular process at middle.

Male (macropterous)

Length of body (includ. tegmen): 3.89 ± 0.07 mm.

Length of tegmen: 2.57 ± 0.03 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.59 ± 0.09 mm.

Length of tegmen: 3.03 ± 0.06 mm.

Fifth instar nymph: (Fig. 15)

General color pale yellow.

Head between eyes narrower than long in middle line about 1:2.6, protruding in front of eyes strongly, rounded at apex, length of eye shorter than length between level of eye and lateral point of frons about 1:2.3. Submedian carinae absent, Y-shaped carina with only stalk present obscurely at basal half, lateral carinae strong ridged from vertex to mesonotum. Eyes straight, parallel. Frons longer in middle line than wide at widest part about 1.6:1, widest at apical third, lateral carinae strongly convex roundly at apical third, with two median carinae separated, nearly parallel. Interfrons narrower than laterofrons at widest part. Number of sensory pits typical, each side with six pits, arrangement in 2 lines, one along median carina, another along lateral carina, two extra pits on above. Frontoclypeal suture arched upward medially, not well defined. Rostrum

short, reaching to pro-coxae, relative length of each segment about 1.5:1.4:1. Antennae short.

Pronotum each side with 5 pits, 2 medial, 3 lateral, with distinct lateral keel along lateral margin. Number and arrangement of pits on meso-, metanotum and wing pads typical, relative distance between W1 to W2 and W2 to W3 about 3:1. Anterior wing pad protruding not reaching to level of hind one, latter reaching to middle of abdominal tergite III. Spinal formula of hind leg 5-6-4, spur shorter than first tarsal segment.

Abdominal tergites III-VIII with distinct median carina, each lateral side with another two which not reaching anterior margin; tergites IV-VIII, each side with sensory pits in formula, 0 + 1, 0 + 1, 0 + 1, 1 + 2, 1 + 2. Ninth abdominal segment in dorsal view with distinct anal ridge, lateral lobes short, pits lies near apex, with anal comb slender, in profile nearly as long dorsally as ventrally, posterior margin moderately produced caudad subventrally, in caudal view opening widest near middle.

Length of body: 3.00 mm.

Width of head including eyes: 0.40 mm.

Length of anterior wing pad: 0.86 mm.

Length of antenna: 0.14 mm.

Holotype: Male, Nanhua (南化), Tainan Hsien, 23-I-1985, C. T. Yang.

Paratypes: 7 ♂♂, 2 ♀♀, same as for holotype.

Nymphal specimen examined: Fifth instar nymph: 1. Chiasien (甲仙), Kaohsiung Hsien, 5-IV-1986, C. T. Yang.

Host plant: *Imperata cylindrica* (L.) P. Beauv. var. *major* (Nees) (Gramineae)

Distribution: Taiwan.

Genus *Arcofaciella* Fennah, 1956

Arcofaciella Fennah, 1956, Proc. Calif. Acad. Sci., 4th ser. 28(13): 466.

The distinctive characters outlined by Fennah (1956) modified as follow.

Head including eyes as wide as pronotum. Vertex distinctly wider at base than long medially about 3:1, median carina simple, feeble, submedian carinae transversely protruding, parallel with base. Frons in profile reclined anter-

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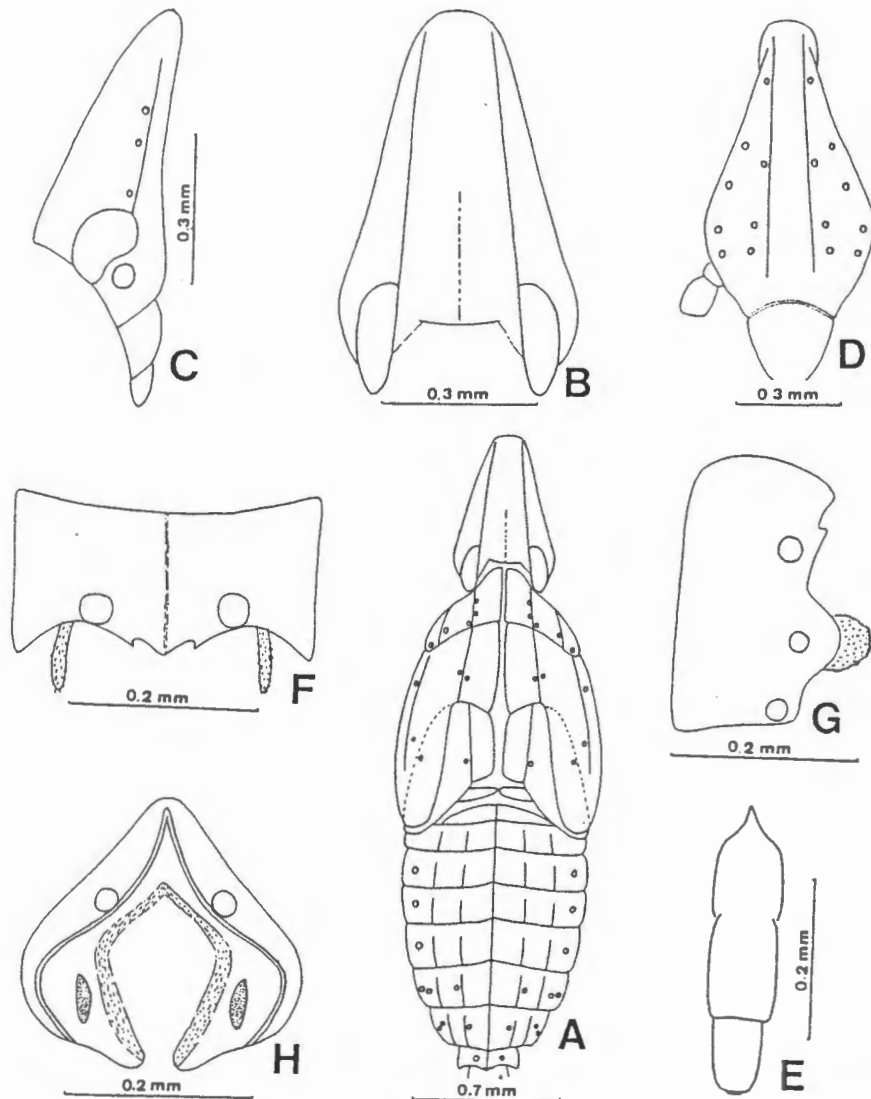


Fig. 15. Nymph of *Tropidocephala sinuosa* sp. nov. A, Fifth instar nymph; B, head, dorsal view; C, head, lateral view; D, head, ventral view; E, rostrum, ventral view; F, ninth abdominal segment, dorsal view; G, the same, lateral view; H, the same, caudal view.

iorly, longer than wide at widest part about 1.4:1, widest at level of ocelli, median carina distinct, forked at base. Postclypeus in profile more or less at right angle to apex of frons, lateral carinae distinct, median carina obsolete. Rostrum reaching to mesotrochanters. Antennae short, basal segment longer than wide, shorter than second, not reaching frontoclypeal suture. Ocelli present. Pronotum with median carina distinct, lateral carinae developed

only in anterior portion, converging posteriorly, not reaching hind margin. Mesonotum strongly convex, almost gibbose, mesoscutellum horizontal. Legs relatively short and stout, metatibia with small spine laterally at base, another about a third from apex. Spinal formula of hind leg 5-8-5, or 5-9-5.

Anal segment of male ring-like, not produced into a spinose process. Pygofer short, without medioventral process. Aedeagus with

distinct phallobase, phallus tubular, simple, with apical part recurved downward, phallobase quadrate at basal two-thirds, with several processes, supporting plate of aedeagus indistinct. Genital styles moderate long, slender, simple.

Type species: *Arcofaciella verrucosa* Fennah, 1956. (original designation)

Arcofaciella verrucosa Fennah, 1956
(Fig. 16)

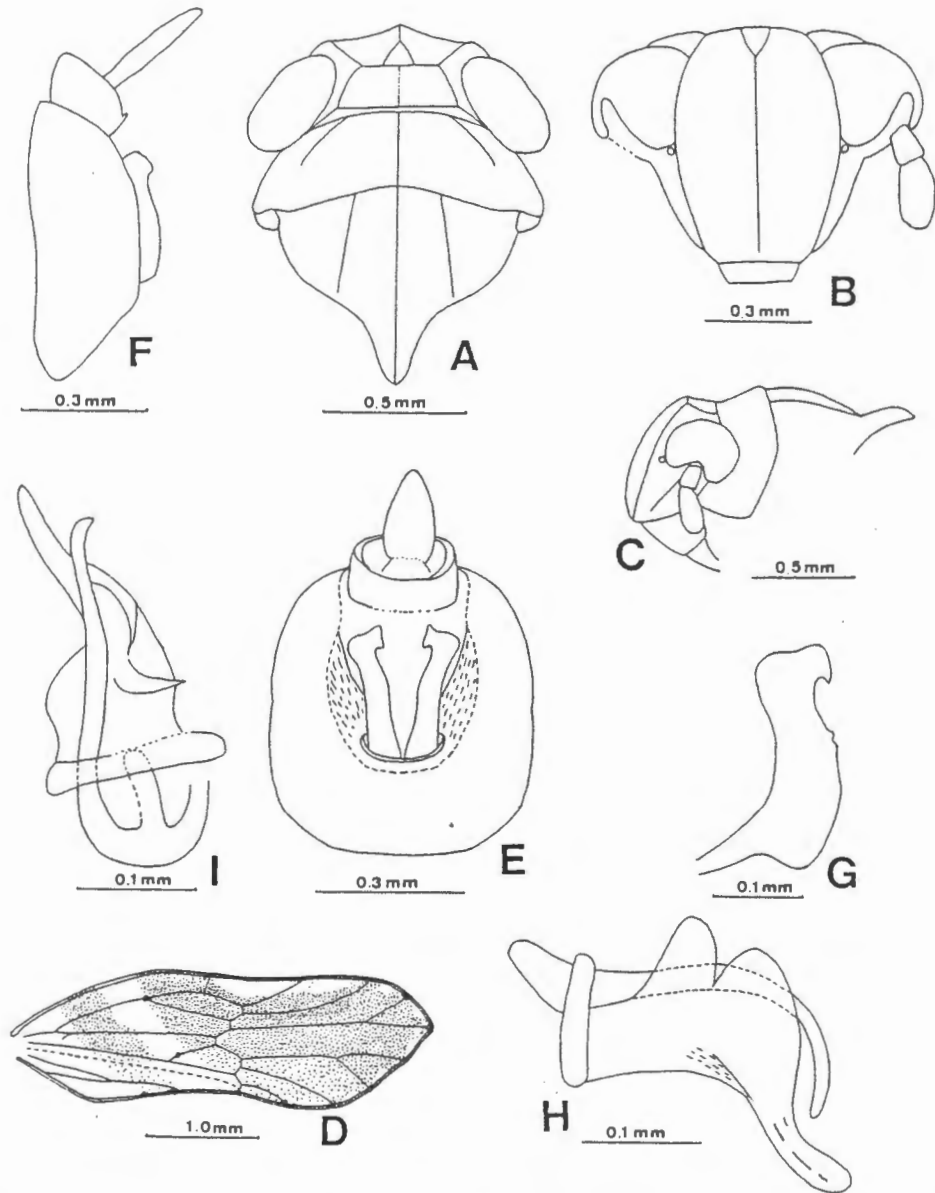


Fig. 16. *Arcofaciella verrucosa* Fennah A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, head, left side; D, tegmen; E, male genitalia, posterior view; F, the same, left side; G, genital style, laterocaudal; H, aedeagus, left side; I, the same, dorsal view.

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Arcofaciella verrucosa Fennah, 1956, Proc. Califo. Acad. Sci. 4th ser., 28(13): 466.

Vertex very short, apex narrower than base, lateral margins slightly convex. Frons ovate, truncated at base and apex, lateral margins convexed outward, median carina forked near base. Postclypeus wide at base as wide as frons at apex. Antennae short, first segment cylindrical, second segment longer than first about 2:1. Pronotum very broad, with lateral carinae strong converged posteriorly, apical part of lateral carinae very faint, median carina distinct. Mesonotum longer than vertex and pronotum together. Tegmina acute at apex, constricted in the middle part, sinuate on apical margin; at rest, it rising inclined posteriorly.

General color greenish yellow to pale brown. Eyes black, ocelli reddish, carinae green. Tegmina subhyaline with gray, two colorless bands inclined at base and basal third completely; two small round callus on furcation of Sc-R and of Cu₁, piceous, several less piceous spots on apical margin at end of longitudinal veins. Legs all speckled with dark markings. Abdominal sternites with reddish borders, and black spots. Pygofer dark brown to black; anal style black at apex.

Anal style long, lanceolate. Anal segment moderately large. Pygofer in profile narrow, nearly as wide ventrally as dorsally, in posterior view with opening longer than wide, lateral margins well defined. Ventral margin concave, genital opening concaved apparently. Genital styles flattened, parallel, basal angle convexed roundly, apical third suddenly curved inward, apex truncated, in lateral view, ventral margin curved, dorsal margin with short hair. Aedeagus with phallobase, phallus simple, slender, acute at apex, pointed to ventral aspect; phallobase very large, with dorsal margin lobe-like produced, in left side with two lobes beset obliquely, transverse in dorsal view, in right with only one near base, caudoventral angle produced into a curved process, rounded at apex, directed caudoventrad.

Male (macropterous)

Length of body (includ. tegmen): 4.25 ± 0.15 mm.

Length of tegmen: 3.52 ± 0.28 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.97 ± 0.13 mm.

Length of tegmen: 4.10 ± 0.65 mm.

Fifth instar nymph (Fig. 17)

General color dark greenish brown, speckled with yellowish brown markings. Frons pale yellowish green, eyes dark brown, ocelli reddish, thorax and abdomen in dorsal view somewhat partially reddish, seventh tergite green, eighth tergite with tips of median and lateral carinae black.

Head between eyes wider at narrowest part than median length about 1.6:1, relative protruding in front of eyes, anterior margin between submedian carinae concave, eyes divergent posteriorly, width between highest points of eyes narrower than width between lowest points of eyes about 1:1.5, length of eye longer than length between level of eyes and lateral point of frons about 3:1, head including eyes wider than width between lateral point of frons about 2:1, wider than width of basal compartment at hind margin about 2:1; submedian carinae meeting hind margin of vertex laterally; basal compartment wider at hind margin than greatest length about 2:1. Frons longer in middle line than widest part, widest at lower margin of eyes, at same level laterofrons wider than interfrons about 1.3:1. Number and arrangement of sensory pits typical, each side of frons with 3 extra pits, lower of lower pits lies near to frontoclypeal suture for about one diameter of pit, distance between upper of lower pits and lower of median pits less than one diameter of pit, distance of neighboring margins of median pits very long, about three diameter of pit. Lower of upper pits lower than upper of median pits, upper of upper pits move far away, distance of neighboring margins about five diameter of pit, between eye and lateral carina with four sensory pits, lowest pit below middle of eye. Frontoclypeal suture straight, Antennae very short, first segment 1.8 times as wide as long, second segment subelliptical, 1.5 times as long as wide, second segment much longer than first about 3:1. Rostrum moderate-

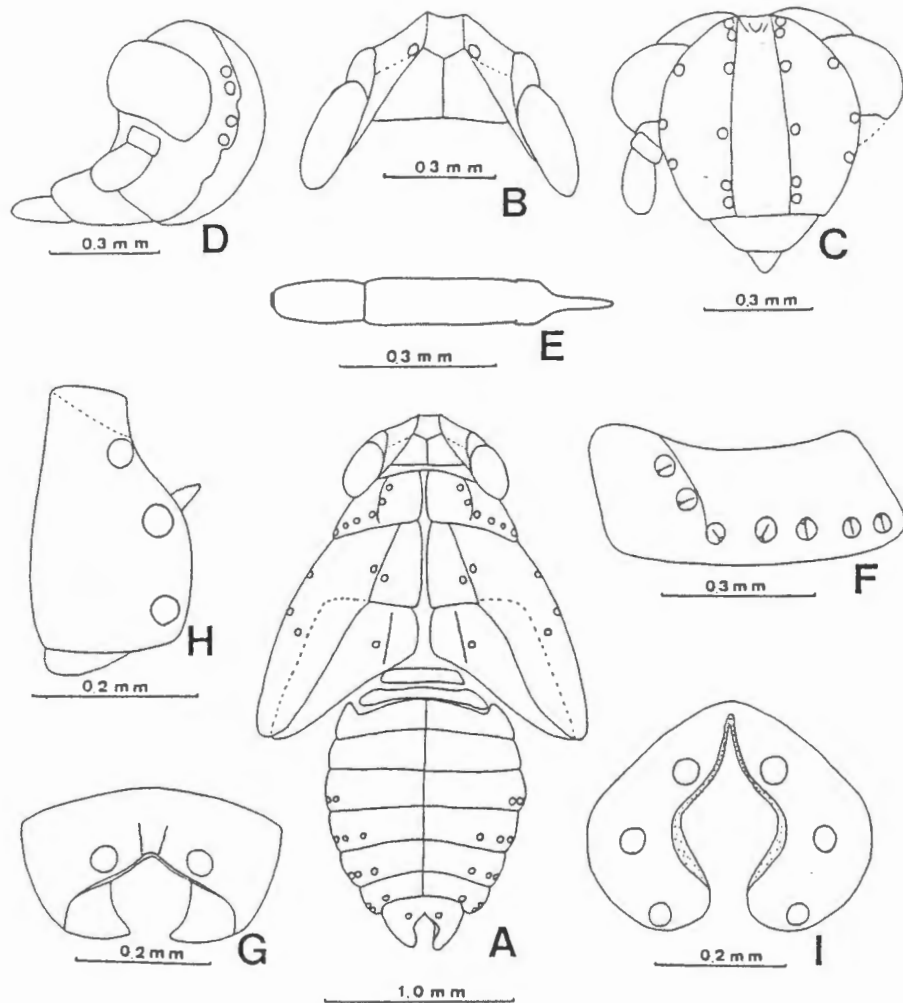


Fig. 17. Nymph of *Arcofaciella verrucosa* Fennah A, Fifth instar nymph, dorsal view; B, head, dorsal view; C, head, ventral view; D, head, lateral view; E, rostrum, ventral view; F, pronotum, flat surface; G, ninth abdominal segment, dorsal view; H, the same, lateral view; I, the same, caudal view.

ly long, reaching beyond mesotrochanters, relative length of each segment about 1:1.5:1, third segment longer than wide about 2:1.

Pronotum each side with 7 sensory pits: 2 medial, 5 lateral. Number and arrangement of pits on meso-, metanotum and wing pads typical, distance between W1 to W2 and W2 to W3 about 1.6:1, W1 and W2 on vertical line laterally, W3 medial, anterior wing pad protruding not over hind one, latter reaching to anterior margin of tergite IV. Spinal formula of hind leg 5-6-4, metatibia longer than three tarsi

together about 1.4:1, spur longer than the widest part about 2:1.

Abdominal tergite with median carina distinct, each side of tergites V-VIII with sensory pits in formula 0+1, 1+2, 1+2, 1+2. Ninth abdominal segment each side with sensory pits 1 dorsal, 2 ventral, dorsal aspect with anal ridge shallowly incised medially, lateral lobes small, slightly produced; in lateral view wider ventrally than dorsally, with anal comb moderately large; in caudal view, with opening widest near middle.

Length of body: 2.86 mm.
 Width of head including eyes: 0.98 mm.
 Length of anterior wing pad: 1.42 mm.
 Length of antenna: 0.28 mm.

Specimens examined: 1 ♂, 1 ♀, Peilen (白冷), Taichung Hsien, 6-V-1984, J. T. Yang; 1 ♂, 2 ♀♀, Shan-Ping (扇平), Kaohsiung Hsien, 14-VII-1984, J. T. Yang; 1 ♂, 1 ♀, Tungshih (東勢), Taichung Hsien, 2-XII-1984, J. T. Yang; 6 ♂♂, 6 ♀♀, Yangmingshan (陽明山), Taipei, 21-VIII-1984, J. T. Yang.

Nymphal specimens examined: 5th instar nymph; 1, Yangmingshan (陽明山), Taipei, 6-VIII-1985, J. T. Yang.

Host plants: *Bambusa dolichoclada* (Hayata), *B. oldhamii* (Munro), *B. multiplex* (Lour.) Raeuschel, *B. multiplex* cv. "fernleaf" Young, *B. multiplex* cv. "Alphonse Karr" (satow) Young. (Bambusoideae)

Distribution: Hong Kong; Taiwan (new record).

This is one of the most common species in Taiwan, especially on hedge bamboo (*Bambusa multiplex* (Lour.) Raeuschel), and fernleaf hedge bamboo (*B. multiplex* Raeuschel cv. "fernleaf" Young), which are planting around the house, paddy field, and garden as fence.

Genus *Arcofacies* Muir, 1915

Arcofacies Muir, 1915, Can. Ent., 47: 319.

—: Kuoh, 1983, Econ. Ins. Fauna China, 27: 45.

Distinctive characters outlined by Muir (1915). modified as follow.

Head including eyes narrower than pronotum. Vertex with margins more or less well defined, wider at base than long submedially, apical margin distinctly emarginate at both sides of median point, lateral carinae concave, submedian carinae transverse. Y-shaped carina without stalk, with arms very small, connecting submedian carinae formed a small cell, in profile vertex and frons at right angle. Frons in middle line longer than wide at widest part more than 2:1. Widest at level of ocelli, lateral

carinae convex at base, nearly straight below level of ocelli, median carina not well developed throughout, forked at extreme base. Postclypeus slightly wider at base than frons at apex, at right angle to frons, tricarinate. Rostrum reaching not over mesotrochanters. Eyes in dorsal view with lateral margin emarginate medially. Ocelli present. Antennae cylindrical, basal segment distinctly longer than wide, shorter than second. Pronotum with lateral carinae attaining hind margin, converging apically, median carina very fine. Tegmina at rest tectiform. *M* and *Sc*₁ of wing with more than half length common petiole. *Cu*₂ arising from end of cross vein or basad. Spinal formula of hind leg 5-6-4.

Anal segment of male collar-shaped. lateroapical angles not produced. Pygofer in posterior view with opening longer than wide, lateral margins strongly produced caudad medially, without medioventral process. Aedeagus without phallobase, phallus tubular, simple, acute at apex, orifice dorsal subapically. Supporting plate sclerotized and pigmented, V-shaped. Diaphragm wide, membranous. Genital styles long, simple.

Type species: *Arcofacies fullawayi* Muir, 1915. (original designation)

Arcofacies fullawayi Muir, 1915

(Fig. 18)

Arcofacies fullawayi Muir, 1915, Can. Ent., 47: 320.

—: Muir, 1919, Philip. Jour. Sci., 15: 526.

—: Fennah, 1956, Proc. Calif. Acad. Sci., 28(4): 465.

—: Kuoh, 1983, Econ. Ins. Fauna China, 27: 45.

Vertex quadrate, wider at base than long submedially about 1.4:1. Submedian carinae present subapically. Frons longer in middle line than wide at widest part about 1.9:1. Antennae surpassing frontoclypeal suture, basal segment longer than wide about 2:1, shorter than second about 1:1.5. Tegmina sinuate below apex.

General color green to yellowish green. A white median line from apex of frons to end of

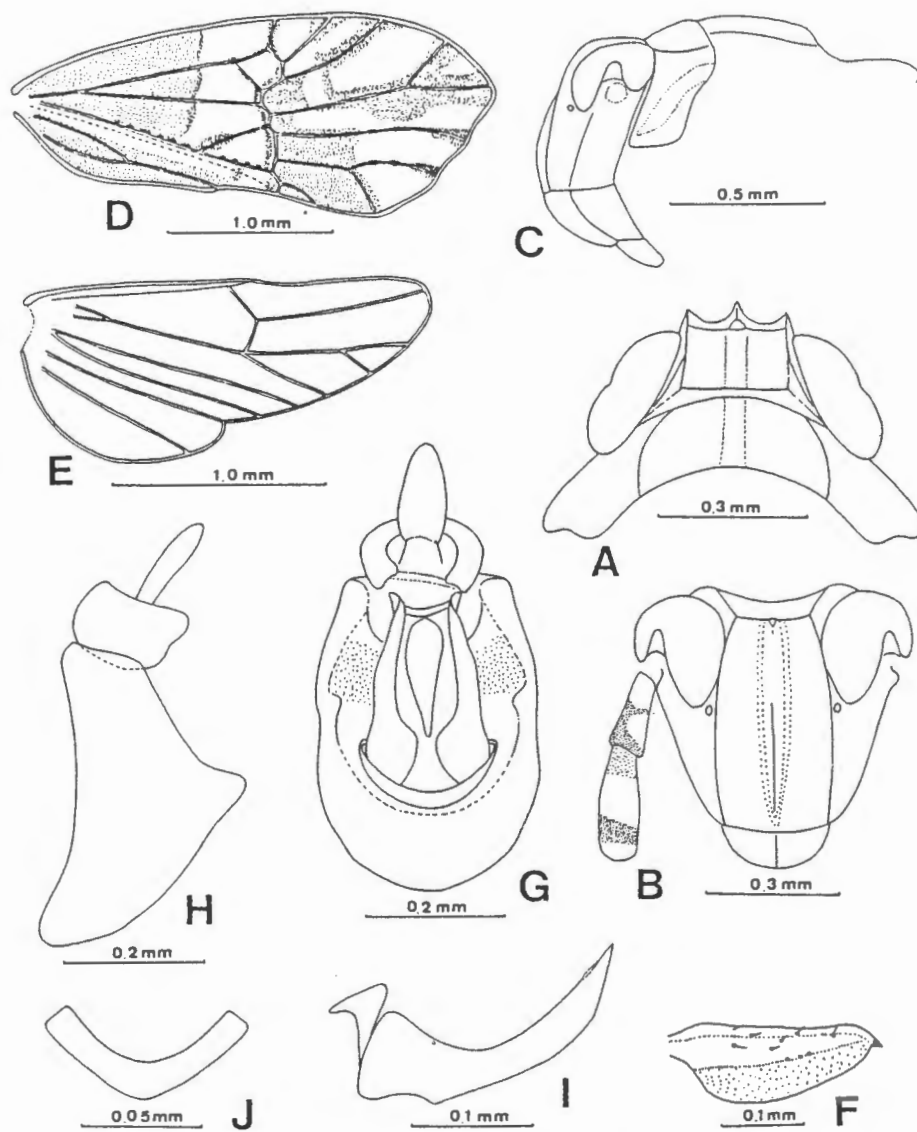


Fig. 18. *Arcofacies fullawayi* Muir A, head and pronotum, dorsal view; B, frons and postclypeus; C, head and prothorax, left side; D, tegmen; E, wing; F, spure of hind legs; G, male genitalia, posterior view; H, the same, left side; I, phallus, left side; J, supporting plate of aedeagus.

mesonotum bordered with black. Antennae with apical half of basal segment and base and apex of second ring with dark brown. Lateral parts of pronotum each with oblique white band bordered with brown. Pygofer brown to black. Tegmina with light brown over basal third, rest area hyaline, speckled with dark brown markings as figured, in dark portion

veins bear white spots. Wings hyaline with brown veins.

Pygofer in profile strongly produced caudad medially. Phallus simple, strongly concave on dorsal margin, acute at apex, directed ventrad. Genital styles long, slender, rounded at base, suddenly narrowing to apex, slightly twisted near apex.

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Male (macropterous)

Length of body (includ. tegmen): 3.15 ± 0.22 mm.

Length of tegmen: 2.63 ± 0.12 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.58 ± 0.09 mm.

Length of tegmen: 3.06 ± 0.11 mm.

Fifth instar nymph (Fig. 19)

General color greenish brown to reddish brown, laterofrons, basal half of genae, mesopleura, basal half of each coxae, apical half of hind femora and middle of fore- and meso-

legs, middle and apex of tibia and third tarsal segment of hind-legs fuscous, with black markings distributed on lateral carinae of vertex, and each thoracic tergite submedially, on wing pads 1 basal 2 apical, and on median carina of tergites V and IX, sternites IV to VIII, each with a kidney-marking.

Head between eyes distinctly longer in middle line than wide about 1.5:1, strongly protruding in front of eyes, anterior margin between submedian carinae convex distinctly, eyes slightly divergent posteriorly, width between highest points of eyes narrower than width between lowest points of eyes about 1:

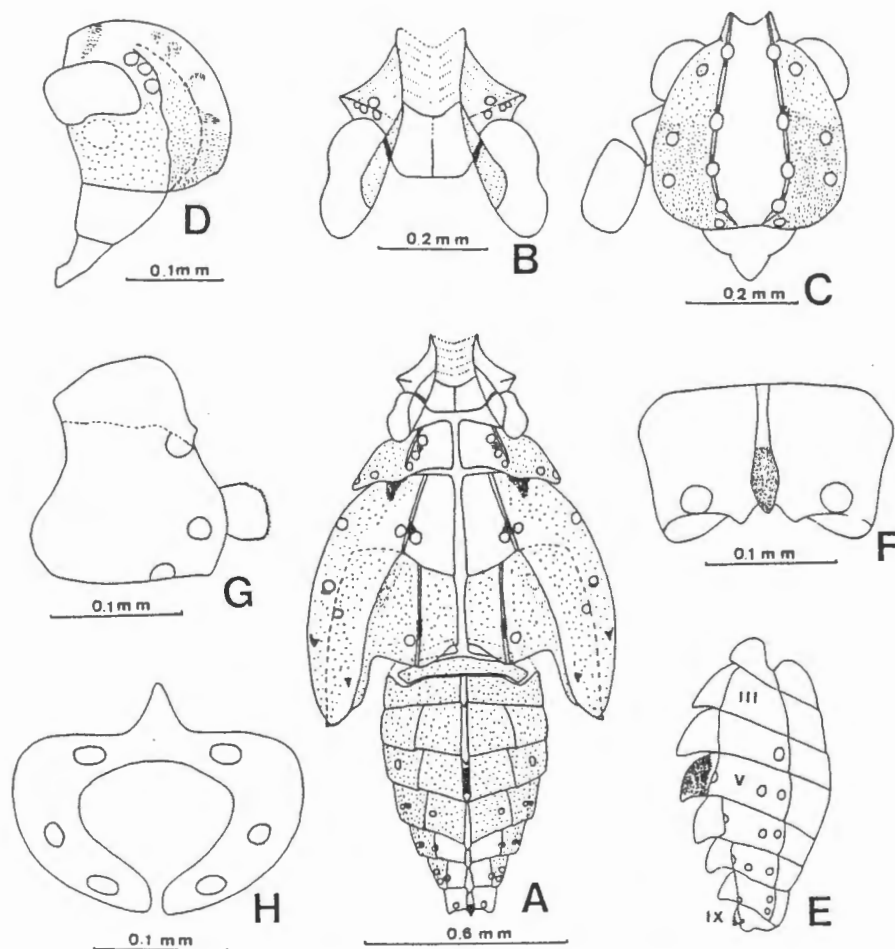


Fig. 19. Nymph of *Arcofacies fullawayi* Muir A, Fifth instar nymph, dorsal view; B, head, dorsal view; C, head, ventral view; D, head, lateral view; E, abdomen, lateral view; F, ninth abdominal segment, dorsal view; G, the same, lateral view; H, the same, caudal view.

1.3, length of eye longer than length between level of eyes and lateral point of frons about 5.5:1; head including eyes wider than width between lateral point of frons about 1.2:1, wider than width of basal compartment at hind margin about 2.7:1; submedian carinae meeting hind margin of vertex laterally, lateral carinae of vertex strongly foliate; length of basal compartment at hind margin subequals to greatest length, both sides of hind margin curved anteriorly. Frons almost oval-rounded, two median carinae strongly foliated laterally, length in middle line subequals to widest part on apical fourth, at same level laterofrons narrower than interfrons about 1.25:1. Number and arrangement of sensory pits typical, each side with 3 extra pits, lowest pit lies near frontoclypeal suture, distance shorter than a diameter, higher of lower pits raised, median pits remove each other, distance of neighboring margins about 2.6 diameters, upper pits raised along carinae, lower pit far below higher of media pits. Interfrons raised, concave basally, slightly parallel, gradually widened subapically, then narrowed downward apically. Area between eye and lateral carina with 3 sensory pits, side by lateral carina in front of eye, arranged in line, highest pit deposite at upper level of eye, lowest pit at middle. Frontoclypeal suture slightly arched upward medially. Antennae moderately long, first segment about as wide as long, second segment cylindrical about 1.7 times as long as wide, second segment twice as long as first. Rostrum moderately long, reaching beyond mesotrochanters, relative length of each segment about 1:1.6:1, first segment with basal pedicel moderately long, triangular, third segment short, in middle line longer than wide at widest part about 1.25:1.

Pronotum with 5 sensory pits on each side: 3 medial, 2 lateral, along posterior margin. Number and arrangement of pits on meso-, metanotum and wing pads typical, relative distance between W1 to W2 and W2 to W3 about 3.3:1, W1 and W3 on vertical line medially, W2 laterally. Anterior wing pad just protruding to level of hind one, latter surpassing to middle of tergite IV. Spinal formula of hind leg 5-6-4, meta-tibia longer than three tarsi together

about 1.38:1, spur longer than widest part about 2:1.

Abdominal tergite each with median carina foliate strongly, in lateral view flag-like, sub-lateral carinae raised, each side of tergites from V-VIII with sensory pits in formula 0+1, 1+2, 1+2, 1+2; ninth abdominal segment bears 1 dorsal, 2 ventral pits on each side, in dorsal aspect, with anal ridge foliated, triangular, on each side with one pit, lateral lobes very small; in lateral view slightly wider at ventrad than dorsad, with anal comb moderately large; in caudal view, with opening widest near middle.

Length of body: 2.44 mm.
Width of head including eyes: 0.52 mm.
Length of anterior wing pad: 1.11 mm.
Length of antenna: 0.35 mm.

Specimens examined: 1 ♂, 1 ♀, Peilen (白冷), Taichung Hsien, 6-V-1984, J. T. Yang; 7 ♂♂, 6 ♀♀, Yangmingshan (陽明山), Taipei, 21-VIII-1984, J. T. Yang; 1 ♂, 1 ♀, Shan-Ping (扇平), Kaohsiung Hsien, 14-VII-1984 J. T. Yang.

Nymphal specimens examined: 5th instar nymph; 1, Toubenkeng (頭汴坑), Taichung Hsien, 28-VIII-1984, J. T. Yang.

Host plant: *Bambusa multiplex* (Lour.) Raeuschel; *B. oldhamii* Munro; *B. multiplex* Raeuschel cv. "Fernleaf" Young (Bambusoideae).

Distribution: Taiwan, Mainland China, Philippines, Indonesia.

Genus *Bambusiphaga* Huang et Ding, 1979

Bambusiphaga Huang et Ding, 1979, Acta Zootaxonom. Sinica, 4(2): 170.

—: Asche, 1983, Marbuger Ent. publ., 1(8): 211.

The distinctive characters outlined by (Huang et Ding, 1979), modified as follow.

Head including eyes narrower than pronotum. Vertex quadrate, slightly longer submedially than wide at base, apical part slightly project in front of eyes, apical margin evenly rounding into frons, submedian carinae uniting at apex, lateral carinae curved inward, Y-shaped

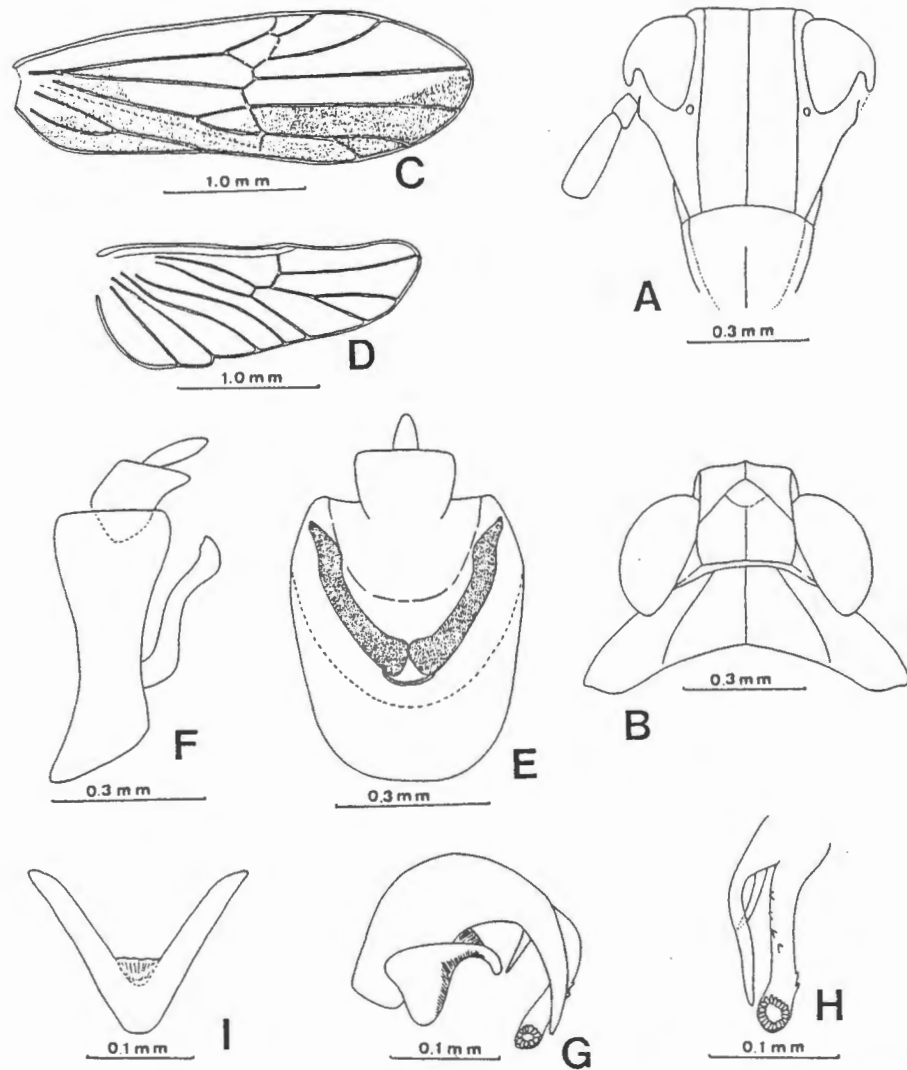


Fig. 20. *Bambusiphaga taiwanensis* (Muir) A, frons and postclypeus; B, head and pronotum, dorsal view; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, aedeagus, left side; H, the same, posterior view; I, supporting plate of aedeagus.

Female (macropterous)

Length of body (includ. teg.): 4.95 ± 0.14 mm.

Length of tegmen: 4.07 ± 0.10 mm.

Fifth instar nymph (Fig. 21)

General color pale greenish yellow to pale yellow. Head between eyes narrower at narrowest part than median length about 1:1.4, relatively protruding in front of eyes, anterior margin between submedian carinae concave

shallowly, eyes straight, parallel, width between highest points of eyes narrower than width between lowest points of eyes about 1:1.2, length of eye longer than length between level of eyes and lateral point of frons about 3.4:1; head including eyes wider than width between lateral point of frons about 2.2:1, wider than width of basal compartment at hind margin about 2.5:1; submedian carinae meeting hind margin of vertex laterally; basal compartment wider at hind margin than greatest length about

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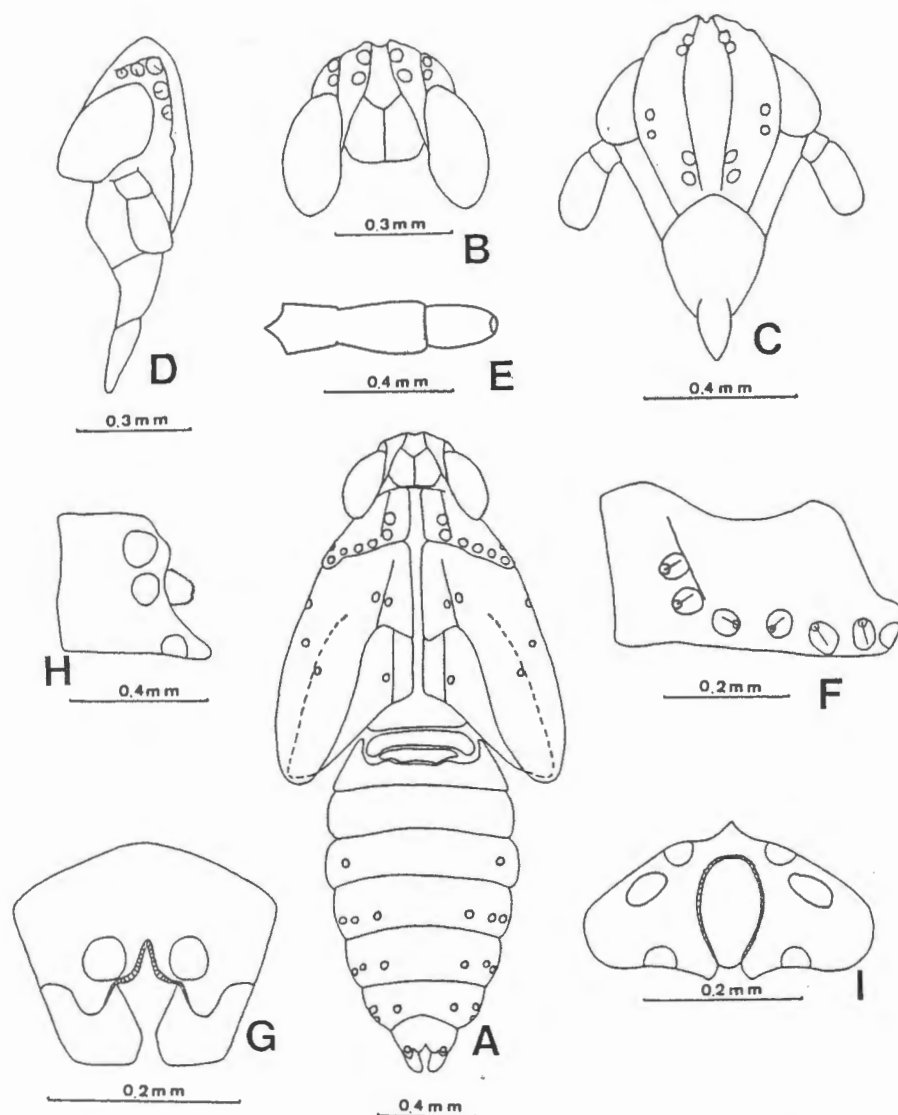


Fig. 21. Nymph of *Bambusiphaga taiwanensis* (Muir) A, Fifth instar nymph, dorsal view; B, head, dorsal view; C, head, ventral view; D, head, lateral view; E, rostrum, ventral view; F, pronotum, flat surface; G, ninth abdominal segment, dorsal view; H, the same, lateral view; I, the same, caudal view.

1.2:1, hind margin curved, upward. Frons longer in middle line than the widest part about 1.2:1, widest at middle of eye, wider than apex of frons about 2.1:1, at same level laterofrons wider than interfrons about 1.3:1. Number and arrangement of sensory pits typical, each side with 3 extra pits, distance of upper and lower of lower pits about half diameter of pit, lower of lower pits lies near frontoclypeal suture about one diameter of pit;

distance of upper of lower pits and lower of median pits about one diameter of pit, shorter than distance of upper of lower pits and frontoclypeal suture about 1:2.2; upper of median pits far away from lower of upper pits, base of interfrons concave. Area between eye and lateral carina with 5 sensory pits, side by lateral carina in front of eye, arranged angularly, highest pit deposited at anterior one fifth of transverse length of eye, lowest pit at middle of eye.

Frontoclypeal suture strongly arched upward. Antennae very short, first segment 1.3 times as wide as long, second segment subelliptical, 2.1 times as long as wide, second segment much longer than first segment about 2.8:1. Rostrum moderately long, reaching beyond mesotrochanters, relative length of each segment about 1:1.3:1, first segment with basal pedicel very short, triangular, third segment short, in middle line longer than wide at widest part about 1.5:1.

Pronotum with 7 sensory pits on each side: 2 medial, inside by lateral carina, 5 on posterior margin. Number and arrangement of pits on meso-, metanotum and wing pads typical, relative distance between W1 to W2 and W2 to W3 about 1.6:1, W1 and W2 on vertical line laterally, W3 medial, anterior wing pad not protruding to level of hind one, latter reaching anterior margin of tergite IV. Spinal formula of hind leg 5-6-4, meta-tibia longer than 3 tarsal segments together about 1.4:1, spur longer than the widest part about 2:1.

Abdominal tergite each with median carina indistinct, each side of tergite from V-VIII with sensory pits in formula 0 + 1, 1 + 2, 1 + 2, 1 + 2; ninth abdominal segment in dorsal aspect, with anal ridge shallow medially, each side with sensory pit, 1 dorsal, 2 ventral, lateral lobes small, slightly produced; in lateral view slightly wider ventrally than dorsally, with anal comb moderately large; in caudal view, strongly compressed with opening widest near middle.

Length of body: 2.71 ± 0.08 mm.

Width of head including eyes: 0.55 ± 0.01 mm.

Length of anterior wing pad: 0.92 ± 0.03 mm.

Length of antenna: 0.24 ± 0.01 mm.

Specimens examined: 10 ♂♂, 10 ♀♀, Chung Hsing village (中興新村), Nantou Hsien, 22-IV-1984, J. T. Yang.

Nymphal specimens examined: 5th instar nymph: 4, Ta-keng (大坑), Taichung, 11-VI-1985, J. T. Yang.

Host plant: *Dendrocalamus latiflorus* Munro (Bambusoideae).

Distribution: Taiwan, Mainland China.

*Bambusiphaga membranacea** sp. nov.
(Fig. 22)

Vertex quadrate, nearly as long submedially as wide at base, apex projected in front of eyes, evenly rounding into frons, submedian carinae uniting at apex, basal compartment wider at base than greatest length about 1.3:1, median carina distinct. Frons longer in middle line than wide about 2:1, lateral carinae straight, median carina simple. Postclypeus with median carina distinct incomplete. Antennae cylindrical, surpassing frontoclypeal suture, basal segment as long as wide, shorter than second about 1:3.7. Pronotum with lateral carinae attaining hind margin.

General color reddish orange, except legs yellow. Tegmina and wings hyaline, veins concolor.

Anal style small. Anal segment cylindrical, ring alike, sunk in emargination of pygofer. Pygofer in profile strongly produced caudad medially at posterior margin, wider ventrally than dorsally. Aedeagus without phyllobase. Phallus stout, tubular, broad at base strongly arched medially, apical third ventral margin armed with a stout process, after middle at right side protruding a large membranous lobe which weakly sclerotized along lateral margin. Supporting plate slightly arched downward medially. Genital styles long, slender, pointed at apex, each inner margin produced subapically into a stout process, directed laterodorsad, in profile basocaudal portion produced into a right angle, granulate.

Male (macropterous)

Length of body (includ. tegmen): 3.47 mm.

Length of tegmen: 2.83 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.00 mm.

Length of tegmen: 3.33 mm.

* membranaceus, -a, -um, L. adj. -membraneous

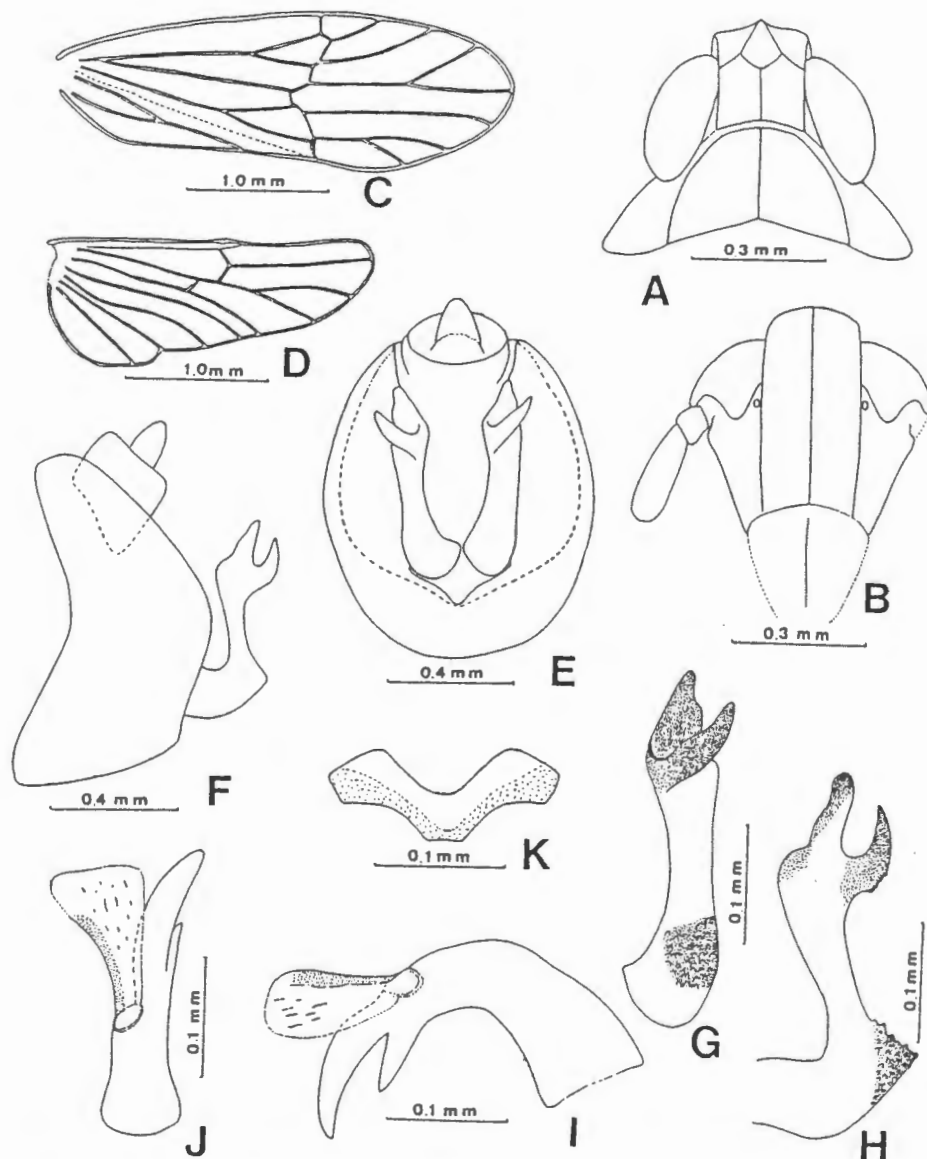


Fig. 22. *Bambusiphaga membranacea* sp. nov. A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, genital style posterior view; H, the same, lateral view; I, aedeagus, right side; J, the same, dorsal view; K, supporting plate of aedeagus.

Holotype: Male, Wushe (霧社), Nantou Hsien, 23-IX-1984, J. T. Yang. (dissected)

Host plant: *Dendrocalamus latiflorus* Munro. (Bambusaceae)

Distribution: Taiwan.

This new species is a close relative of *Bambusiphaga lynchi* Asche of Himalaya but dif-

fers from latter in shape of genital styles; frons longer in middle line than wide at widest part about 2:1 (2.5:1 in *B. lynchi*).

Genus *Belocera* Muir, 1913

Belocera Muir, 1913, Proc. Hawaii Ent. Soc., 2(5):239.

—: Tian, 1983, Econ. Ins. Fauna China, 27:43.

Distinct characters outlined by Muir (1913), modified as follow.

Head including eyes much wider than pronotum. Vertex wider at base than long submedially about 1.7:1. Y-shaped carina distinct, submedian carinae uniting at apex, apical margin evenly rounding into frons. Frons in middle line longer than wide at widest part about 1.4:1, widest above level of ocelli, lateral carinae roundly angulated above level of ocelli, then converging apically, median carina simple. Eyes strongly emarginate on lower margin. Postclypeus wider at base than frons at apex. Rostrum surpassing mesotrochanters. Antennae surpassing frontoclypeal suture with basal segment sagitate, in middle line shorter than second. Pronotum longer than vertex, with lateral carinae arising from level of ends of lateral carinae of vertex, running as anterolateral margin, area before them sharply angulate inward, not protruding below eyes then curving inward and reaching hind margin, lateral discs concave. Spinal formula of hind leg 5-6-4. Tegmina with apex acute.

Anal segment of male small, ring-like. Pygofer in profile with dorsal margin emarginate medially, without medioventral process. Aedeagus with phallobase, phallobase tile-shaped covered on dorsal aspect of phallus. Phallus tubular, moderately long, protruding processes of various length from apex. Supporting plate irrecoznizable. Diaphragm membranous. Genital styles parallel, flattened, apical portion angulate cephalad.

Seventh abdominal sternites of female absent.

Type species: *Belocera sinensis* Muir, 1913. (original designation)

Belocera sinensis Muir, 1913
(Fig. 23)

Belocera sinensis Muir, 1913, Proc. Hawaii Ent. Soc. 2(5):239-240.

Vertex wider at base than long submedially about 1.7:1, apical margin broadened transversely

only slightly produced medially, lateral carinae nearly straight, basal compartment wider at base than greatest length about 2.2:1. Frons longer than wide at widest part about 1.4:1, widest above level of ocelli. Postclypeus nearly as long in middle line as wide at base. Rostrum with apical segment distinctly longer than wide about 2.3:1. Wings with *M* and *Cu*₁ fused about half length, *M* + *Cu*_{1a} and *Cu*_{1b} with common stalk.

General color brown to dark brown at dorsal aspect, and yellowish white in ventral view. Frons with apex and basal part including eyes and antennae except base of first segment white, are dark brown. Legs light gray. Tegmina transparent, with white band along anterior margin, behind this with a parallel longitudinal marking along the anterior margin then curved into the *Rs* vein, a dark spot on furcation of *Cu* vein, at the end of each longitudinal vein with a small dark brown spot.

Anal segment of male small. Pygofer in posterior view with opening as wide as long, lateral margins not well defined. Phallus tubular, slender, constricted subapically, in caudodorsal view, end complex, with long and twisted process arising from left dorsal aspect, curved basad then left, another small and narrow process arising from base of long one, directed opposite, third one arising from right ventrad, directed dorsad. Genital styles parallel, flattened, inner margin slightly concave at basal two-thirds, apical third right angulated cephalad, apex slightly incised, inner angle sharp, outer angle strongly produced.

Male (macropterous)

Length of body (includ. tegmen): 3.40 mm.

Length of tegmen: 2.80 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.26 ± 0.16 mm.

Length of tegmen: 3.52 ± 0.12 mm.

Specimens examined: 1♂ (dissected), 7 ♂♂, Yangmingshan (陽明山), Taipei, 19-VI-1985, J. T. Yang.

Host plant: *Bambusa multiplex* (Lour.) Raeschel (Bambusoideae).

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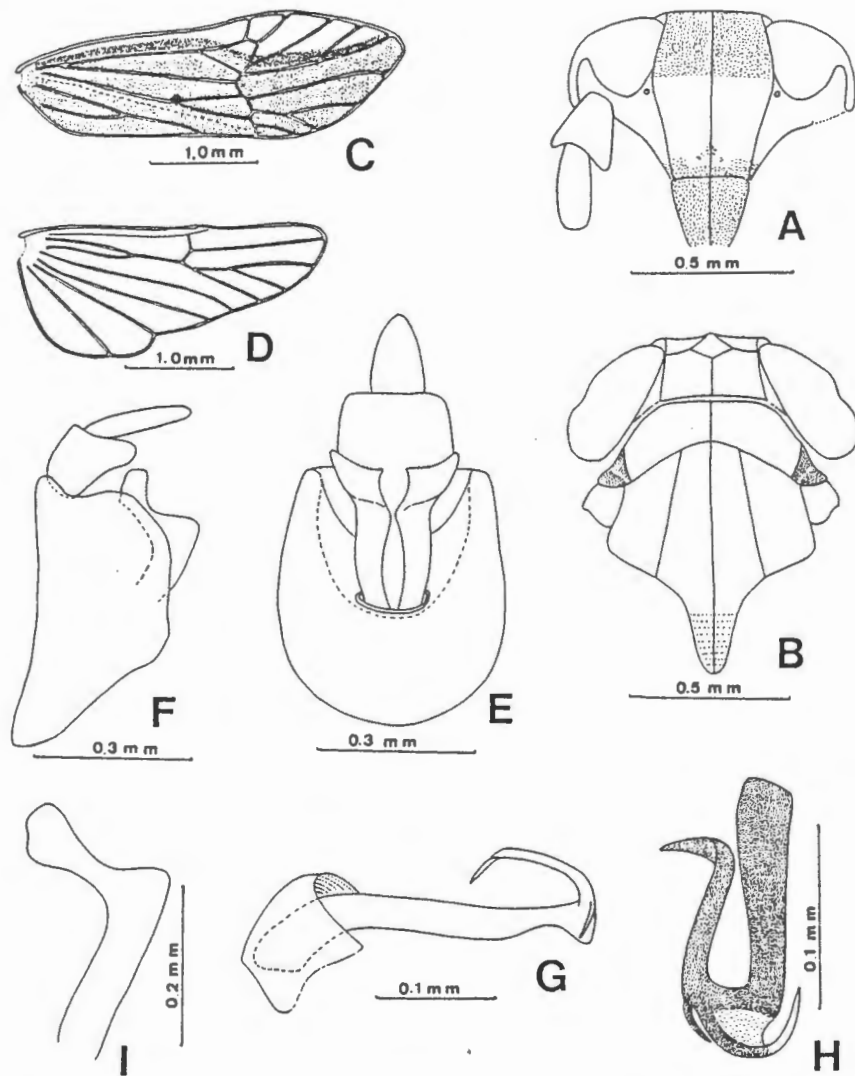


Fig. 23. *Belocera sinensis* Muir A, frons and post-postclypeus; B, head, pro- and mesonotum, dorsal view; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, aedeagus, left side; H, the same, caudolateral view; I, genital style, laterocaudal.

Distribution: Mainland China, Taiwan (new record).

Eurysa Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:86.

Genus *Epeurysa* Matsumura, 1900

Epeurysa Matsumura, 1900, Ent. Nachr., 26: 261.

—: Esaki and Ishihara, 1943, Cat. Araeopid. Imp. Jap., 41.

—: Asche, 1983, Marbuger, Ent. Publ., 1(8):211–226.

Generic characters outlined by Matsumura (1900) redefined as follow.

Head including eyes as wide as pronotum. Vertex shorter submedially than wide at base about 1:1.6–3.0, obtusely rounding into frons, apical margin rounded, lateral carinae concave, submedian carinae uniting at apex or not, Y-shaped carina distinct, fine. Frons longer in

middle line than widest part about 1-1.4:1, widest at level of ocelli, lateral carinae convex medially, median carina simple or forked at extreme base. Postclypeal tricarinate, fine. Antennae terrate, surpassing frontoclypeal suture. Rostrum reaching to mesocoxae. Pronotum and mesonotum moderately arched. Pronotum longer than vertex medially, tricarinate, lateral carinae straight, diverging posteriorly, not reaching hind margin. Spinal formula of hind leg 5-6-4. General color, brown.

Anal segment of male ring-like, lateroapical angles moderately separated, each produced into a short and stout process. Pygofer with 3 medioventral processes. Aedeagus with phallobase, phallobasal process with a distinct node near apex, then produced a distal limb. Phallus tubular, simple, apical part recurved downward. Diaphragm membranous, genital styles with strong process at basal angle.

Seventh abdominal sternite of female absent.

Type species: *Epeuryrsa nawaii* Matsumura, 1900 (original designation)

This genus originally established for a Japanese species, up till now, 8 species have been recorded in world. Only one species, *E. nawaii* recorded from Taiwan before, it is so surprising that we can distinguish six species in Taiwan this time. In old species, Asche (1983) suggested 2 groups, our 2 new species distinctly forming third one by very short distal limb of phallobasal process and shape of medioventral processes of pygofer.

Members are collected on leaves of bamboos in several genera, *Arundinaria*, *Phyllostachys*, *Chimonobambusa*, *Sinobambusa* and *Bambusa*.

Key to the species of *Epeuryrsa*

1. Distal limb of phallobasal process slender and moderately long 2
 - Distal limb of phallobasal process short and scale-like 5
2. Phallobasal process with circular node *remanei* Asche
 - Phallobasal process with open circular or arcuate node 3

3. Medioventral processes with median one higher than lateral ones 4
 - Medioventral processes with median one subequals to lateral ones in high *abatana* Asche
4. The widest part of phallobasal process near node shorter than length of distal limb (about 1:1.4), in dorsal view *nawaii* Matsumura
 - The widest part of phallobasal process near node much shorter than length of distal limb (about 1:3), in dorsal view; distal limb protrude in right angle *infumata* Huang et Ding
5. Tegmina with dark marking *maculata* sp. nov.
 - Tegmina without any marking *sinobambusae* sp. nov.

Epeuryrsa nawaii Matsumura, 1900
(Fig. 24)

Epeuryrsa nawaii Matsumura, 1900, Ent. Nachr., 26:261.
 - Oshanin, 1908, Verz. Palaark. Hem., 2:311.
 - Esaki & Ishihara, 1943, Cat. Araeopid. Imp. Jap., 41.
 - Fennah, 1975, Ent. Scand. Suppl., 4: 83.
 - Asche, 1983, marburger Ent. Publ., 1(8):211-226.
Euryrsa nawae Matsumura, 1917, applied Ent., from ser., 381, pl. 14, f. 11.
 - Cheo, 1935, Peking Nat. Hist. Bull. 10: 106.
 - Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:86.
Euryrsa (Epeuryrsa) nawae Matsumura, 1920, Daippon Gaichu Zensho, rev. and addit. ed. from Ser., 260, pl. 8, f. 10.

Vertex relative short, wider at base than median length submedially about 3:1, obtusely rounding into frons, apical margin evenly convex. The greatest length of basal compartment longer than median length of basal compartment about 1.2:1. Frons in middle line longer than wide of widest part about 1.3:1 widest at level of eyes, median carina forked almost

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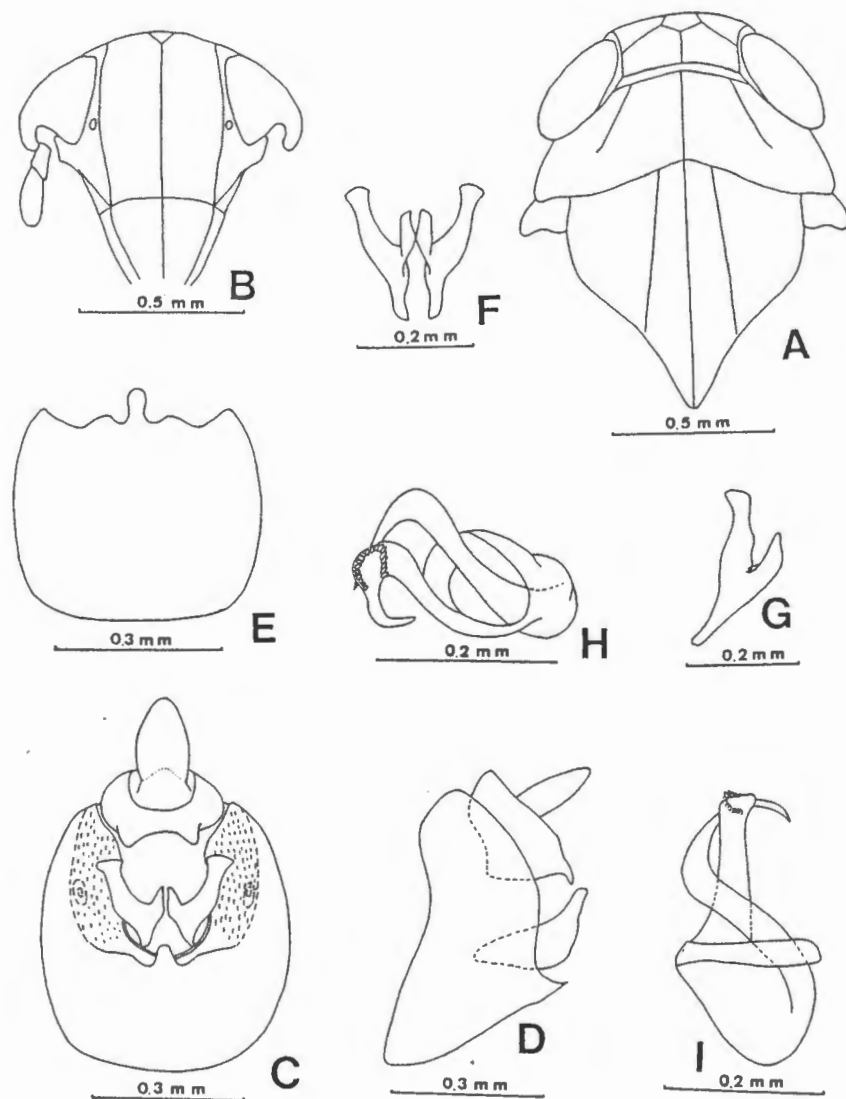


Fig. 24. *Epeurysa nawaii* Matsumura A, head, pro- and mesonotum, dorsal view; B, frons and postclypeus; C, male genitalia, posterior view; D, the same, left side; E, pygofer, ventral aspect; F, genital styles, caudal view; G, the same, laterocaudal view, H, aedeagus, laterocaudal view; I, the same, dorsal view.

near basal margin. Postclypeus at base wider than middle length about 1.4:1. Antennae with first segment longer than wide, shorter than second about 1:1.3.

General color brown, in dark form, tegmina darker at apical half, genitalia darker than other parts. Female yellow at head and thorax, abdomen dark brown.

Anal segment of male with spinal processes each developed as a convex lobe triangular,

ventrad. Pygofer in profile much longer ventrally than dorsally, laterodorsal angles not produced in ventral view, medioventral processes with median one longer than lateral ones about three times, oval at apex, widest part one-third as distance between the highest points of lateral ones. Phallus directed to left caudad and decurved to ventrad in apical quarter, blunt at apex; phallobasal process rather more slender than phallus, passing me-

diocaudad to left caudad and forming a node at tip, extending a more slender distal limb, in caudal view directed ventrad then left, in dorsal aspect, the widest part of the phallobasal process near node narrower than length of distal limb about 1:1.4. Genital styles moderately long, with basal angles very strongly produced to mediocaudad, in caudal view about half as high of inner angle; in laterocaudal view, with a small production on inner margin at about half way of genital styles. The whole of genital styles dark brown. According to Fennah (1975), the population of this species in Ceylon, basal angle of genital styles darker than main body (outer branch), outer branch unpigmented, whereas the inner black. In Taiwanese population both branches deeply pigmented.

Male (macropterous)

Length of body (includ. tegmen): 3.53 ± 0.17 mm.

Length of tegmen: 2.89 ± 0.26 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.93 ± 0.26 mm.

Length of tegmen: 3.33 ± 0.24 mm.

Specimens examined: 1♂, 1♀, Touben-Keng (頭汴坑), Taichung Hsien, 19-XII-1981, C. T. Yang; 4♂♂, 3♀♀, Shanping (扇平), Kaohsiung Hsien, 11-VII-1984, J. T. Yang; 4♂♂, 7♀♀, Chubing (曲冰), Nantou Hsien, 25-VIII-1984, C. T. Yang; 3♂♂, 6♀♀, Chitou (溪頭), Nantou Hsien, 8-XII-1984, C. T. Yang; 5♂♂, 9♀♀, Chishan (旗山), Kaohsiung Hsien, 15-II-1985, J. T. Yang (on *Phyllostachys makinoi*).

Host plant: *Phyllostachys makinoi* Hayata, and *Chimonabambusa quadrangularis* (Fenzi) Makino. (Bambusoideae)

Distribution: Japan, Ceylon, Mainland China, Taiwan.

This is a fairly common species with dark form in Taiwan, always collected on leaves of various kinds of bamboos, especially on genus *Phyllostachys*.

Epeurysa infumata Huang & Ding, 1979

(Fig. 25)

Epeurysa infumata Huang and Ding, 1979, Acta Zootaxonomica Sinica 4(2):170-181.

—: Asche, 1983, Marburger Ent. Publ., 1(8):211-226.

Vertex wider at base than long submedially about 2.1:1, apical margin evenly convex. Frons in middle line as long as the widest part, base narrower than apex (about 1:1.1), lateral margin slightly convex, median carina forked at one-tenth distinct. Postclypeus at base as wide as frons at apex, wider than long (about 1.2:1). Rostrum surpassing meso-coxae. Antennae reaching to level of middle of postclypeus, first segment twice as long as wide, second segment longer than first (about 1.8:1), with 5-8 sensellia.

General color light brown, tegmina hyaline at base, brown at apex, a V-shaped brown marking at the end of claval vein and a very distinct brown, more or less rounded marking at area behind Sc₁ near by the end. Male genital segment dark brown to black.

Anal segment of male relative long, apical margin narrow medially, spinose process each producing into convex lobe, from caudal view line between them straight, in lateral view hook-like, directed cephaloventrad. Pygofer much longer ventrally than dorsally (about 3.8:1) in lateral view medioventral processes with lateral ones rounded at top and slow-sloped at outer margin, speedy-sloped at inner margin, median one lobe-like, rounded at top, almost parallel both margins, the widest of median one about one-third as wide as distance between highest points of lateral ones.

Aedeagus moderately long, phallus directed to left caudad then deflex mid-ventrad, and more or less dorsad at apical third, acute at tip; phallobasal process slender than phallus, arising basally, slightly directed left, then protruding mesocaudad, with a node at apex, then producing a distal limb, which directed ventrad for relative distance in right angle, in dorsal view, turned to right in right angle, about

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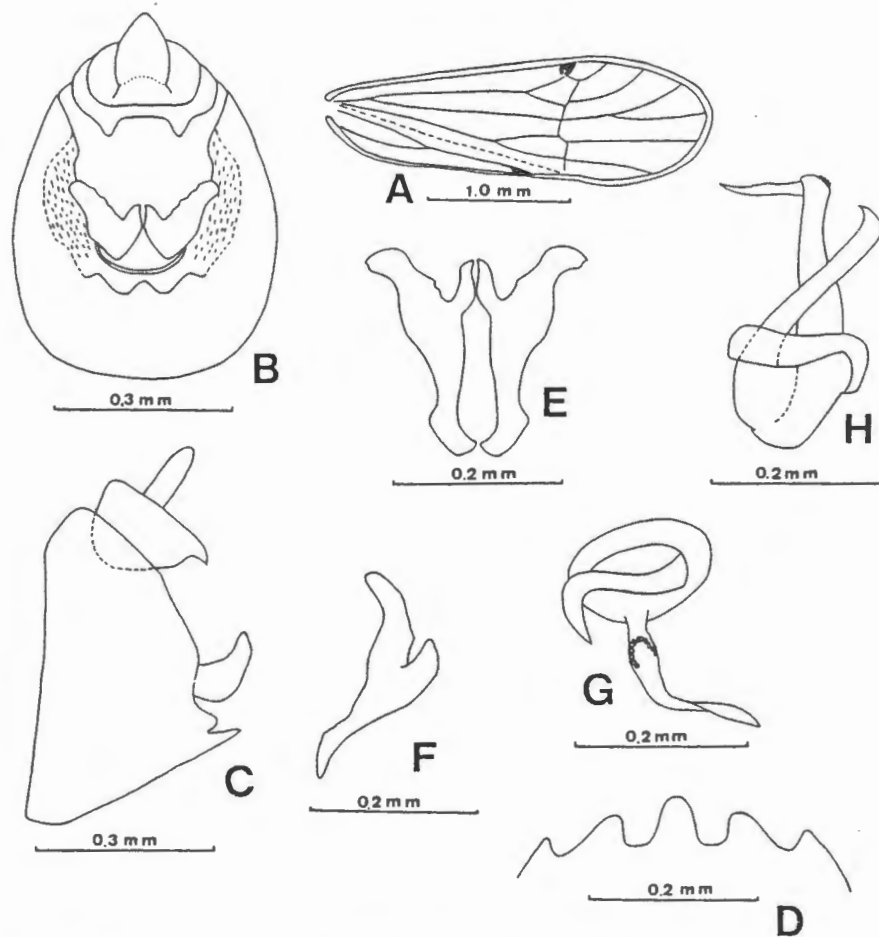


Fig. 25. *Epeurysa infumata* Huang & Ding, A, tegmen; B, male genitalia, posterior view; C, the same, lateral view; D, pygofer, ventral view; E, genital styles, caudal view; F, the same, laterocaudal view; G, aedeagus, laterocaudal view; H, the same, dorsal view.

3 times as long as wide of phallobasal process at widest part near node, acute at apex, in caudal view, distal limb broad at base, gradually narrowing, then slightly dilated, blunt at apex, slightly twisted. Genital styles moderately long, similar as in *E. abatana*.

Male (macropterous)

Length of body (includ. tegmen): 3.55 ± 0.15 mm.

Length of tegmen: 2.92 ± 0.09 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.55 ± 0.14 mm.

Length of tegmen: 2.93 ± 0.10 mm.

Specimen examined: 16 ♂♂, 15 ♀♀, Shanping (扇平), Kaohsiung Hsien, 11-VII-1984, C. T. Yang; 4 ♂♂, 5 ♀♀, Shanping, 11-VII-1984, J. T. Yang.

Host plant: *Phyllostachys* sp. (Huang & Ding, 1979), *Chimonobambusa naibunensis* (Bambusoideae).

Distribution: Mainland China (Yunnan), Taiwan (new record).

Tegmina with dark marking resemble the dark form of *E. nawaii*, but the characters such as any parts of genitalia are quite different from the other species, of which group with slender, curved and longer distal limb of the phallobasal

process after the node. According to Asche (1983), this is one of the Chinese groups of *Epeurysa*, and closed relative to *E. nawaii*.

Epeurysa abatana Asche, 1983

(Fig. 26)

Epeurysa abatana Asche, 1983, Marburger Ent. Publ., 1(8):211–226.

Vertex wide at base than long submedially about 2.3:1, obtusely rounding into frons, apical margin evenly convex. Frons in middle line longer than wide at widest part about 1.1:1, base wide than apex, lateral margin slightly convex, median carina distinct. Postclypeus at base as wide as frons at apex, wider at base than long. Rostrum reaching to mesocoxae. Antennae reaching to level of base third of postclypeus, first segment cylindrical, slightly longer than wide, shorter than second about 1:1.5.

General color pale yellow to reddish brown, tegmina hyaline, without any marking.

Anal segment of male relative long, lateroapical angles each produced into convex lobe, line between them arched, in profile spinose-shaped, directed ventrad. Pygofer much longer ventrally than dorsally, in ventral view, with medioventral processes laterally triangular, median one lobe-like, rounded at apex, widest of median process about one-fifth as wide as distance between highest points of lateral ones. Aedeagus moderately long, phallus directed to left and curved ventrad in apical quarter, acute at apex, phallobasal process arising basally and protruding mediocaudad, forming a hemicircular node at apex, after node, producing a long distal limb; in dorsal view turned right in right angle, 3 times as long as wide of widest part near node, very narrow, slightly dilated near apex and twisted, in posterior view, distal limb broad at base, gradually narrowing to apex, dorsal margin evenly arched downward. Genital styles moderately long, similar as in *E. nawaii*, but differ from latter in several details.

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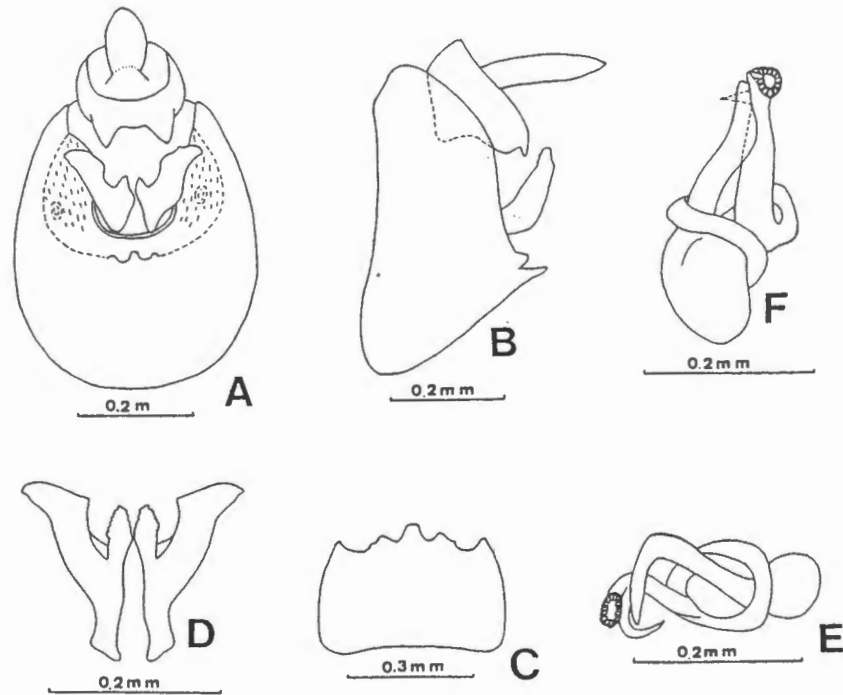


Fig. 26. *Epeurysa abatana* Asche, A, male genitalia, posterior view; B, the same, lateral view; C, pygofer, ventral view; D, genital styles, caudal view; E, aedeagus, laterocaudal view; F, the same, dorsal view.

Male (macropterous)

Length of body (includ. tegmen): 3.03 ± 0.18 mm.

Length of tegmen: 2.55 ± 0.17 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.13 ± 0.13 mm.

Length of tegmen: 2.94 ± 0.49 mm.

Specimen examined: 10 ♂♂, 10 ♀♀, Tou-ben-Keng (頭汴坑), Taichung Hsien, 28-VIII-1984, J. T. Yang; 6 ♂♂, 3 ♀♀, Chung Hsing village (中興新村), Nantou Hsien, 22-IV-1984, J. T. Yang; 1 ♂, 1 ♀, Paileng (白冷), Taichung Hsien, 6-V-1984, J. T. Yang; 5 ♂♂, 2 ♀♀, Tou-ben-Keng (頭汴坑), Taichung Hsien, 19-XII-1981, C. T. Yang; 1 ♂, (dissect-

ed), 3 ♀♀, Hsen-Ping (扇平), Kaohsiung Hsien, 11-VII-1984, J. T. Yang; 2 ♂♂, Tungshang road (東山路), Taichung city, 6-V-1984, J. T. Yang.

Host plant: Unknown.

Distribution: Philippine Islands: Leuzon, Taiwan (new record).

This species always collected on the leaves of *Bambusa dolichoclada* and *B. oldhamii*, which are the fairly common species of bamboos in Taiwan.

Epeurysa remanei Asche, 1983

(Fig. 27)

Epeurysa remanei Asche, 1983, Marburger Ent. Publ., 1(8):211-226.

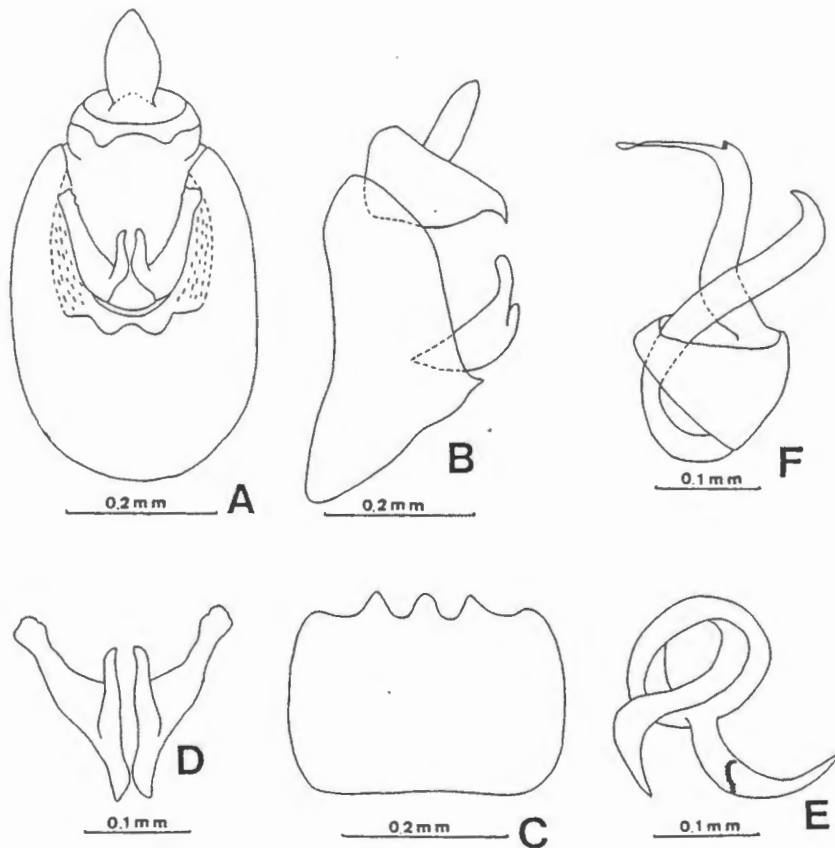


Fig. 27. *Epeurysa remanei* Asche, A, male genitalia, posterior view; B, the same, lateral view; C, pygofer, ventral view; D, genital styles, caudal view; E, aedeagus, latero-caudal view; F, the same, dorsal view.

Vertex at base wider than long submedially about 1.6:1, apical margin evenly convex. Frons in middle line longer than wide at widest part about 1.2:1, base slightly wider than apex, lateral margin slightly convex, median carina distinct, and forked near base. Postclypeus at base wider than frons at apex. Rostrum surpassing mesotrochanters, almost reaching to metacoxae. Antennae reaching to basal third of postclypeus, first segment cylindrical, almost as wide as long, shorter than second about 1:2.

General color pale yellow to reddish brown, head, vertex and central area of pronotum and mesonotum pale yellow. Tegmina hyaline, with a V-shaped brown marking, formed by meeting end of claval vein and posterior margin.

Anal segment of male relative long, in caudal view, lateroapical angles each produced into convex lobe triangular, line between them arched downward medially, in lateral view, little triangularly produced, directed ventrad. Pygofer much longer ventrally than dorsally, in ventral view, medioventral processes with lateral ones triangular, with minute production at outer slope, median one quadrate, widest of median one narrower than distance between highest points of lateral ones about 1:3.6. Aedeagus moderately long, in caudolateral view, phallus directed laterocaudad then curved ventrad in apical half, acute at apex. Phallobasal process parallel with phallus, then turned to ventrad, with a entire node at apex, after node, distal limb evenly curved downward then laterobasad, acute at apex. In dorsal view, distal limb turned at right angle to right, as long as diameter of node. Genital styles moderately long, basal angle almost as high as inner angle, outer angle with a minute acute tip similar as *E. infumata*.

Male (macropterous)

Length of body (includ. tegmen): 3.25 ± 0.08 mm.

Length of tegmen: 2.60 ± 0.05 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.56

± 0.22 mm.

Length of tegmen: 2.88 ± 0.21 mm.

Specimen examined: 6 ♂♂, 2 ♀♀, Tienchi (天池), Kaohsiung Hsien, 27-XII-1981, C. T. Yang.

Host plant: Unknown.

Distribution: Nepal, Taiwan (new record).

*Epeurysa maculata** sp. nov.

(Fig. 28)

Vertex at base wider than long submedially about 2.2:1, apical margin rather convex suddenly. Frons in middle line longer than wide at widest part about 1.4:1, base wider than apex, lateral margin slightly convex, median carina distinct, and forked at base. Postclypeus wider at base than frons at apex. Rostrum reaching to mesocoxae. Antennae not reaching to frontoclypeal suture, first segment cylindrical, apex wider than base, as wide as long, shorter than second about 1:2.3.

General color pale yellow to brown, head and thorax pale yellow, abdomen dark black, tegmina hyaline, maculate with brown in apical half, and with 2 darker markings similar as in tegmina of *E. infumata*.

Anal segment of male long, ring-like, apical margin slightly narrower than base, lateroapical angles produced relative long, with lateral margins parallel with each other, rounded at tip, the line between them straight. In lateral view, processes direct ventrad and the tip acute. Pygofer in lateral view, much longer ventrally than dorsally about 5:1; in ventral view, with medioventral processes, median one half-moon like, 2 minute triangular processes laterally, widest part of median one about one-third as the distance between the highest points of lateral ones.

Aedeagus moderately long, in caudal view, consist of phallus and phallobase; phallus directed laterocaudad then deflex ventrad in apical half, immediately upward in right angle with fore section, acute at tip. Phallobasal process arising basally, much slender than phallus, directed dorsad, then a node at apex,

* maculatus, -a, -um, L. adj. --- markings.

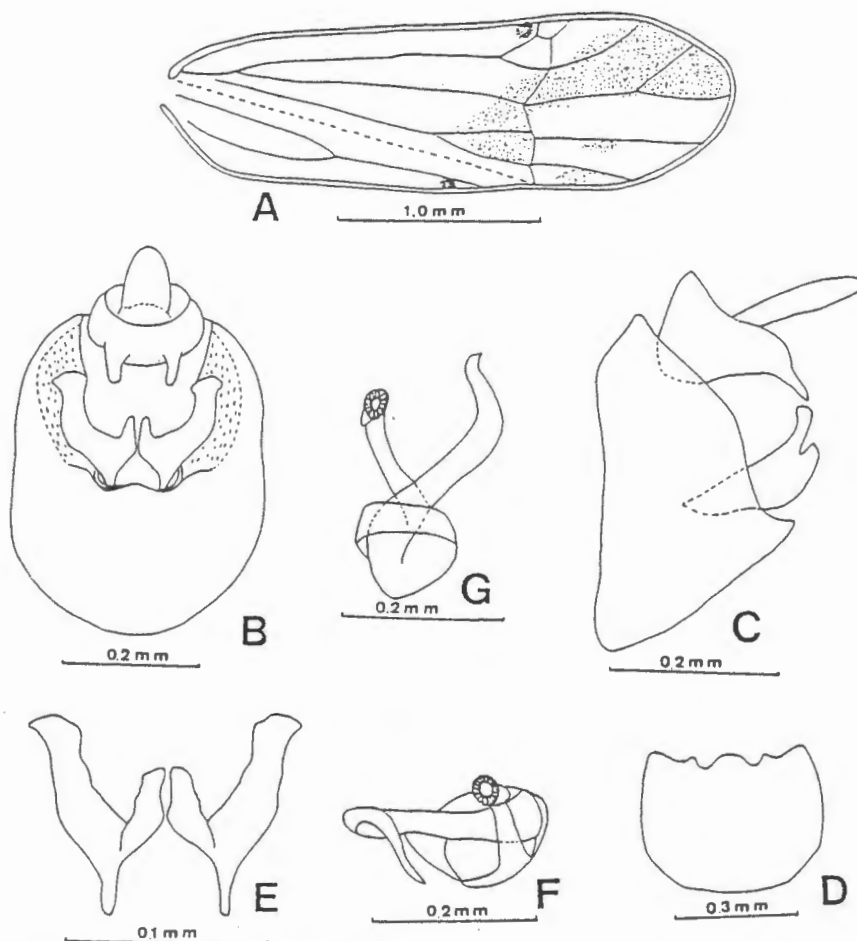


Fig. 28. *Epeurysa maculata* sp. nov. A, tegmen; B, male genitalia, posterior view; C, the same, lateral view; D, pygofer, ventral view; E, genital styles, caudal view; F, aedeagus, laterocaudal view; G, the same, dorsal view.

ring-like. After node, distal limb as a minute lobe-like. In dorsal view, phallus direct to left then deflected medioventrad; phallobasal process directed caudad, widest part of distal limb wider than long about 3:2, in right lateral view, distal limb like a minute scale. Genital styles moderately long, basal angle very large, outer angle with acuted tip direct to lateral aspect; inner angle with one or more minute productions.

Male (macropterous)

Length of body (includ. tegmen): 3.47 ± 0.04 mm.

Length of tegmen: 2.81 ± 0 mm.

Holotype: Male, Kuanwu (觀霧), Hsin-chu Hsien, 10-XI-1984, J. T. Yang.

Paratypes: 3 ♂, same as for holotype.

Host plant: *Yushania niitakayamensis* (Hayata) Keng (Bambusoideae).

Distribution: Taiwan.

This new species and *E. sinobambusae* quite differ from other members of this genus, forming third species group by minute scale-like distal limb and pygofer in ventral view with lateral margin as high as or higher than level of medioventral processes, median one evenly rounded and broad. (in other species lower and narrow). This species differs from *E. sinobambusae* by tegmina with dark markings; me-

dioventral processes with median one wide at base about two lateral ones together (in *E. sinobambusae* about 1.7:1).

*Epeurysa sinobambusae** sp. nov.
(Fig. 29)

Vertex shorter submedially than wide at base about 1:2.7, apical margin strongly convex, obtusely rounding into frons, lateral margin rather arched outward. Frons in middle line longer than wide of middle part about 1.3:1, base wider than apex, lateral margin slightly convex, median carina distinct, and forked at

base. Postclypeus at base wider than frons at apex. Rostrum reaching to mesocoxae. Antennae not reaching to frontoclypeal suture, first segment cylindrical, apex slightly wider than base, shorter than second.

General color brown, genitalia dark brown to black, tegmina without any marking.

Anal segment of male short, lateroapical angles each produced into slender production, relative long and rounded at apex, line between them slightly curved. In lateral view, production plate-like, directed ventrad. Pygofer in profile much longer ventrally than dorsally, in ventral view with medioventral processes

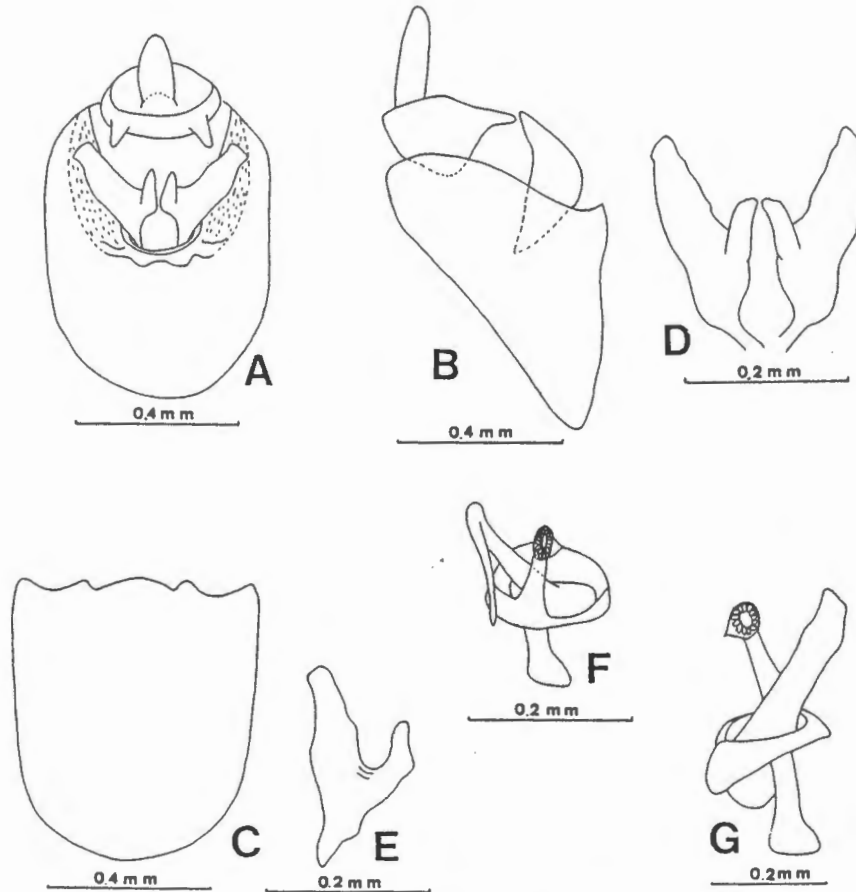


Fig. 29. *Epeurysa sinobambusae* sp. nov. A, male genitalia, posterior view; B, the same, lateral view; C, pygofer, ventral view; D, genital styles, caudal view; E, the same, laterocaudal view; F, aedeagus, laterocaudal view; G, the same, dorsal view.

* genitive of *Sinobambusa*, --- generic name of its host plant.

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developed, median one very evenly convex, rather smooth, lateral ones small, triangular, wide at base of median one wider than two lateral together about 1.7:1.

Aedeagus moderately long, in caudal view, phallus directed laterocaudad, then deflected medioventrad at apical half, and slightly curved, acute at apex. Phallobasal process arising basally, much slender than phallus, directed dorsad, then formed a node at apex, ring-like, after node with a distal limb very small, scale like, in dorsal view, distal limb directed right. Genital styles moderately long, inner margin smoothly and hairy.

Male (macropterous)

Length of body (includ. tegmen): 3.31 ± 0 mm.

Length of tegmen: 2.75 ± 0 mm.

Female (macropterous)

Length of body (includ. tegmen): 3.48 ± 0.13 mm.

Length of tegmen: 2.90 ± 0.08 mm.

Fifth instar nymph: (Fig. 30)

General color brown. Abdominal sternites IV to VIII with kindy-like dark brown marking on each lateral side gradually small in size from IV to VIII segments, each marking company with 4-5 hairs medially.

Head between eyes wider at narrowest part than median length about 1.4:1, vertex moderately protruding in front of eyes, anterior margin between submedian carinae concave shallowly, eyes divergent posteriorly, width between highest points of eyes narrower than width between lowest points about 1:1.4, length of eye longer than length between level of eyes and lateral point of frons about 5.4:1; head including eyes wider than width between lateral point of frons about 1.8:1, wider than width of basal compartment at hind margin about 2:1; submedian carinae meeting hind margin of vertex laterally; basal compartment wider at hind margin than greatest length, about 2:1, hind margin straight. Frons shorter in middle line than widest about 1:1.3, the widest part at middle of eyes wider than apex

of frons about 1.9:1, at level of widest part, laterofrons wider than interfrons about 1.8:1. Number of sensory pits typical, but arrangement not typical, each side with 3 extra pits basally, except lower of lower pits deposite laterally, interval of upper and lower of lower pits about half diameter of pit, neighboring margins of each pits on same level, lower of lower pits lies far away from frontoclypeal suture for about 1.5 diameter of pit; distance of upper of lower pits and lower of median pits about one diameter of pit, shorter than distance of upper of lower pits and frontoclypeal suture about 1:1.8, interval of both pits about 2 diameters of pit; upper of median pits and lower of upper pits overlapping or in same level, interval of which more than 2 diameters of pit; base of interfrons concave. Area between eye and lateral carina with 4 sensory pits, side by lateral carina in front of eye, arranged arcuate, highest pit deposite at anterior one fifth of transverse length of eye, lowest pit at middle of eye. Frontoclypeal suture arched upward. Antennae very short, first segment 1.5 times as wide as long, second segment subelliptical, 1.4 times as long as wide, second segment much longer than first segment about 2:1. Rostrum moderately long, reaching beyond mesotrochanters, relative length of each segment about 1.35:1.45:1, first segment with basal pedicel slender, long, third segment short, in middle line longer than wide at widest part about 1.4:1.

Pronotum with 7 sensory pits on each lateral, 2 medial, inside by lateral carina, 1 at end of lateral carina 4 along posterior margin. Number and arrangement of pits on mesometanotum and wing pads typical, relative distance between W1 to W2 and W2 to W3 about 4.3:1, W1 and W2 on vertical line laterally, W3 medial, anterior wing pad not protruding to level of hind one, latter reaching anterior margin of tergite IV. Spinal formula of hind leg 5-6-4, metatibia longer than 3 tarsal segments together about 1.2:1, spur longer than the widest part about 2:1.

Abdominal tergite each with median carina distinct, each side of tergites IV-VIII with

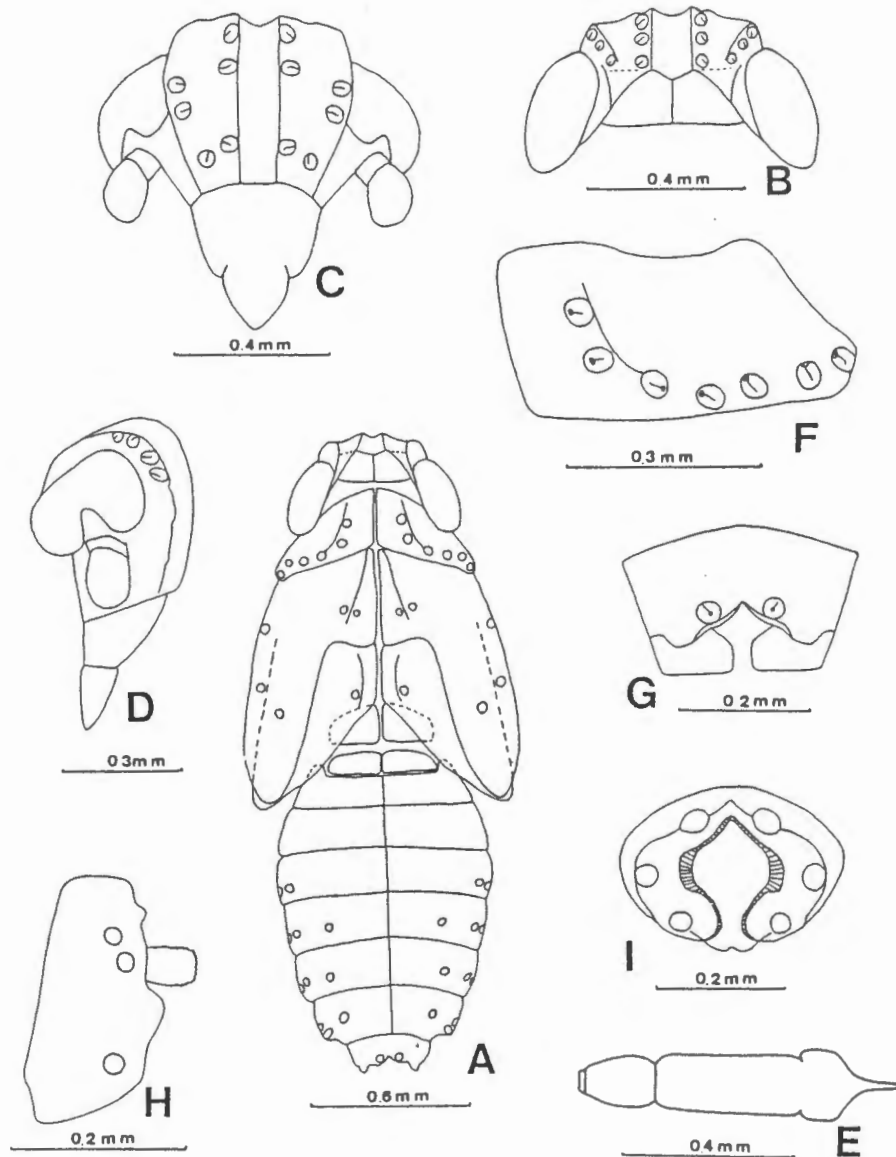


Fig. 30. Nymph of *Epeurysa sinobambusae* sp. nov. A, Fifth instar nymph, dorsal view; B, head, dorsal view; C, head, ventral view; D, head, lateral view; E, rostrum, ventral view; F, pronotum, flate surface; G, ninth abdominal segment, dorsal view; H, the same, lateral view; I, the same, caudal view.

sensory pits in formula 0 + 2, 1 + 2, 1 + 2, 1 + 2; ninth abdominal segment in dorsal aspect, with anal ridge very shallowly incised medially, on each side with 1 dorsal, 2 ventral, lateral lobes very short, slightly produced; in lateral view slightly wider ventrally than dorsally, with anal comb moderately large; in caudal view, with opening widest near middle.

Length of body: 2.57 mm.

Width of head including eyes: 0.71 mm.

Length of anterior wing pad: 0.46 mm.

Length of antenna: 0.19 mm.

Holotype: Male, Yangmingshan (陽明山), Taipei, 8-XII-1984, J. T. Yang.

Paratypes: 1 ♂, (dissected) 3 ♀♀ same as

for holotype.

Nymphal specimens examined: 5th instar nymph: 3, Yangmingshan (陽明山), Taipei, 18-V-1985, J. T. Yang.

Host plant: *Sinobambusa kunishii* (Hayata) Nakai. (Bambusoideae).

Distribution: Taiwan.

This new species different from *E. maculata*, not only morphological features and genital characters in detail, but also the host plant.

Genus *Malaxa* Melichar, 1914

Malaxa Melichar, 1914, Philip. Jour. Sci., 9D: 275.

—: Muir, 1926, Bull. Hawaii Sug. Pl. Assoc. Div. Ent., 18:7.

—: Fennah, 1945, Proc. U. S. Nat. Mus., 95(3148):429–430.

Head including eyes narrower than pronotum. Vertex narrower or longer submedially than wide at base, apical part projected in front of eyes. Submedian carinae uniting at apex or near middle. Frons relatively long, longer in middle line than wide at widest part about 2–3.2:1. Rostrum reaching about mesotrochanters. Antennae cylindrical, very long, sometime second segment longer than frons in middle line. Pronotum with lateral carinae attaining hind margin or not. Spinal formula of hind leg 5–6–4.

Anal segment of male short, ring-like, left lateroapical angle produced into process. Pygofer with opening shallow, with or without medioventral process. Aedeagus with or without phallobase, phallus tubular, simple, phallobase with process larger than phallus, always with node, supporting plate membranous. Diaphragm membranous. Genital styles moderately long, always produced subapically.

Type species: *Malaxa acutipennis* Melichar, 1914. (original designation)

Key to the species of *Malaxa*

1. Tegmina with apical half marked; vertex with submedian carinae uniting near middle 2

- Tegmina with apical half not marked; vertex with submedian carinae uniting at apex; second antennal segment distinctly longer than frons *fusca* sp. nov.
- 2. Tegmina with apical half marked at upper half; frons pale black except small area near apex 3
- Tegmina with apical half marked at lower half; frons black at basal half; second antennal segment as long as frons *semifusca* sp. nov.
- 3. Tegmina with brownish line along cross veins; vertex longer submedially than wide at base about 1.7:1; second antennal segment about half length of frons *bakeri* Muir.
- Tegmina without any marking; vertex as long submedially as wide at base; second antennal segment as long as frons *aurunca* sp. nov.

Malaxa bakeri Muir, 1919

(Fig. 31)

Malaxa bakeri Muir, 1919, Philip. J. Sci., 15: 521–531.

Vertex longer submedially than wide at base about 1.7:1 apical margin produced medially, lateral carinae distinctly convergent basally. Submedian carinae uniting at apex, Y-shaped carina recognizable, basal compartment shorter at base than greatest length about 1:1.3. Frons longer in middle line than wide at widest part about 2.4:1, widest at apex, lateral carinae nearly straight, distinctly divergent apically, median carina simple. Postclypeus slightly wider at base than frons at apex. Rostrum reaching to mesotrochanters, apical segment slightly shorter than subapical, slightly longer than wide about 1.4:1. Antennae slightly surpassing frontoclypeal suture, first segment longer than wide, shorter than second about 1:3.2. Pronotum with lateral carinae attaining hind margin. Tegmina narrowly rounded at apex. Wings with *M* and *Cu*₁ widely separated throughout, *m-cu* and *r-m* nearly at same line.

Seventh abdominal sternite of female absent.

Anal segment of male ring-like, left lateroa-

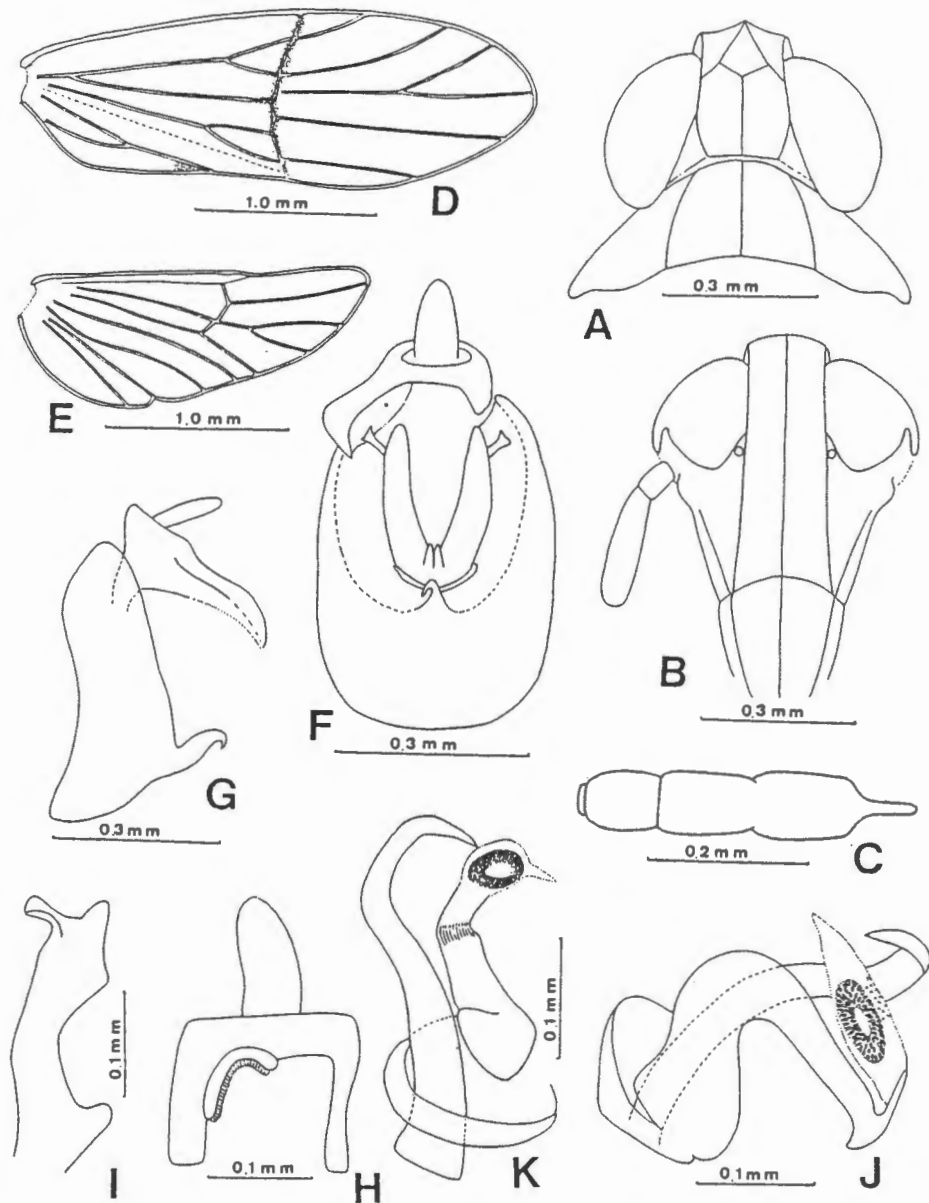


Fig. 31. *Malaxa bakeri* Muir A, head and pronotum, dorsal view; B, frons and postclypeus; C, rostrum, ventral view; D, tegmen; E, wing; F, male genitalia, posterior view; G, the same, left side; H, cross section of spinal process and anal segment I, genital style, caudolateral view; J, aedeagus, left side; K, the same, dorsal view.

pical angle strongly produced into a long process, cross section not circular but blade-shaped, strongly angulate above middle, distinctly divided into two layers, upper one strongly sclerotized, lower somewhat membraneous. Pygofer with opening longer than wide, lateral

margins not well defined, medioventral process single, apex turned downward, slightly left hook-like. Aedeagus with phallus tubular, simple, at right side, in dorsal view strongly curved left, phallobase incomplete, with process in profile strongly arched upward medially,

reflected cephalad at apex and into a large membranous lobe, with a elliptical node at middle and several small spine at caudal area. Genital styles moderately long, parallel, apex roundly pointed, basal angle produced, in profile basolateral surface produced, spoon-shaped.

Male (macropterous)

Length of body (includ. tegmen): 3.53 ± 0.08 mm.

Length of tegmen: 2.85 ± 0.05 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.01 ± 0.08 mm.

Length of tegmen: 3.28 ± 0.08 mm.

Fifth instar nymph: (Fig. 32)

General color pale yellow to yellow.

Head between eyes longer in middle line than wide at narrowest part about 1.3:1, vertex moderately protruding in front of eyes, anterior

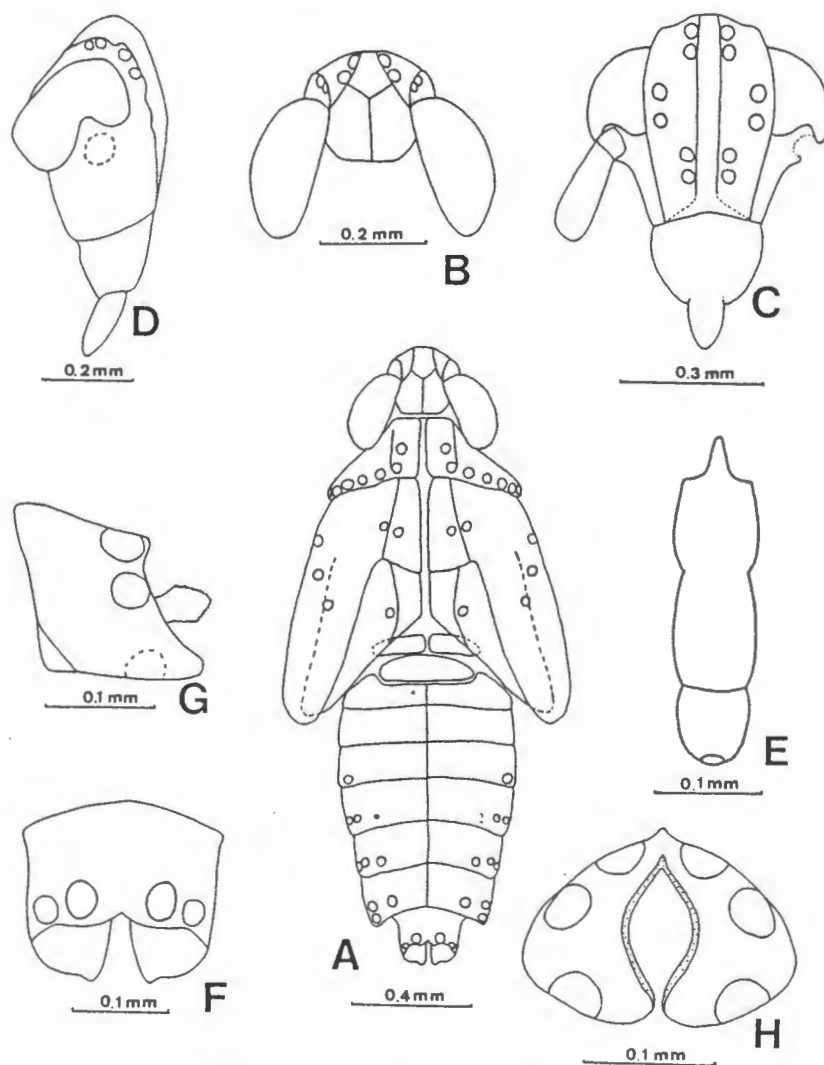


Fig. 32. Nymph of *Malaxa bakeri* Muir A, Fifth instar nymph, dorsal view; B, head, dorsal view; C, head, ventral view; D, head, lateral view; E, rostrum, ventral view; F, ninth abdominal segment, dorsal view; G, the same, lateral view; H, the same, caudal view.

margin between submedian carinae straight, eyes slight divergent posteriorly, width between highest points of eyes narrower than width between lowest points about 1:1.6, length of eye longer than length between level of eyes and lateral point of frons about 5.6:1; head including eyes wider than width between lateral point of frons about 2.3:1, wider than width of basal compartment at hind margin about 2.5:1; submedian carinae meeting lateral carinae of vertex apically; basal compartment wider at hind margin than greatest length about 1.2:1, hind margin curved upward laterally. Frons longer in middle line than wide at widest part about 1.5:1, the widest part at middle of eye, wider than apex of frons about 1.45:1, at level of widest part laterofrons wider than interfrons about 2.3:1, with two median carinae separated, parallel. Number and arrangement of sensory pits typical, each side with 3 extra pits basally, lower of lower pits lies far away from frontoclypeal suture about 2 diameters of pit; distance of upper of lower pits and lower of median pits about 1.5 diameters of pit, shorter than distance of upper of lower pits and frontoclypeal suture about 1:1.3, interval of both pits about one diameter of pit; distance of upper of median pits and lower of upper pits, about 1.5 diameters of pit; base of interfrons straight. Area between eye and lateral carina with 4 sensory pits, side by lateral carina in front of eye, lowest pit lies at middle of eye. Frontoclypeal suture slightly arched upward submedially. Antennae moderately long, first segment almost as wide as long, second segment club-like, 2.6 times as long as wide, much longer than first about 4.3:1. Rostrum moderately long, reaching beyond meso-trochanters, relative length of each segment about 1.8:1.6:1, third segment short, in middle line subequals to wide at widest part.

Pronotum with 7 sensory pits on each side: 2 medial, 5 lateral along posterior margin. Number and arrangement of pits on meso-, metanotum and wing pads typical, relative distance between W1 to W2 and W2 to W3 about

1.1:1, all three on oblique line, anterior wing pad not protruding to level of hind one, latter reaching to anterior margin of tergite IV. Spinal formula of hind leg 5-6-4, meta-tibia subequals to 3 tarsal segments together, spur longer than widest part about 3.5:1.

Abdominal tergite each with median carina distinct, each side of tergites V-VIII with sensory pits in formula 0+1, 1+2, 1+2, 1+2, medial pit of tergite VI very small; ninth abdominal segment bears 2 dosal, 1 ventral pits on each side, in dorsal aspect, with anal ridge shallowly incised medially, lateral lobes relative large, in lateral view slightly wider ventrally than dorsally, with anal comb large; in caudal view, with opening widest near middle.

Length of body: 2.14 ± 0.02 mm.

Width of head including eyes: 0.43 ± 0 mm.

Length of anterior wing pad: 0.87 ± 0.04 mm.

Length of antenna: 0.22 ± 0.04 mm.

Specimens examined: 5 ♂♂, 5 ♀♀, Paolai (寶來), Kaohsiung Hsien, 26-XII-1981, C. T. Yang; 5 ♂♂, 5 ♀♀, Chishan (旗山), Kaohsiung Hsien, 2-II-1985, 2 ♂♂, 2 ♀♀, Peitun (北屯), Taichung city, 6-V-1984, J. T. Yang.

Nymphal specimens examined: 5th instar nymph: 4, Hutoupi (虎頭埤), Tainan Hsien, 10-X-1984, J. T. Yang.

Host plant: *Bambusa stenostachya* Hackel; *B. oldhamii* Munro; *B. dolichoclada* Hayata (Bambusoideae).

Distribution: Malay Peninsula, Penang; Taiwan (new record).

*Malaxa aurunca** sp. nov.

(Fig. 33)

Vertex as long submedially as wide at base, lateral carinae nearly straight, submedian carinae uniting at apex, Y-shaped carina with stalk feeble, arms distinct, basal compartment wider at base than greatest length about 1.4:1.

* auruncus, -a, -um, L. adj. --- golden.

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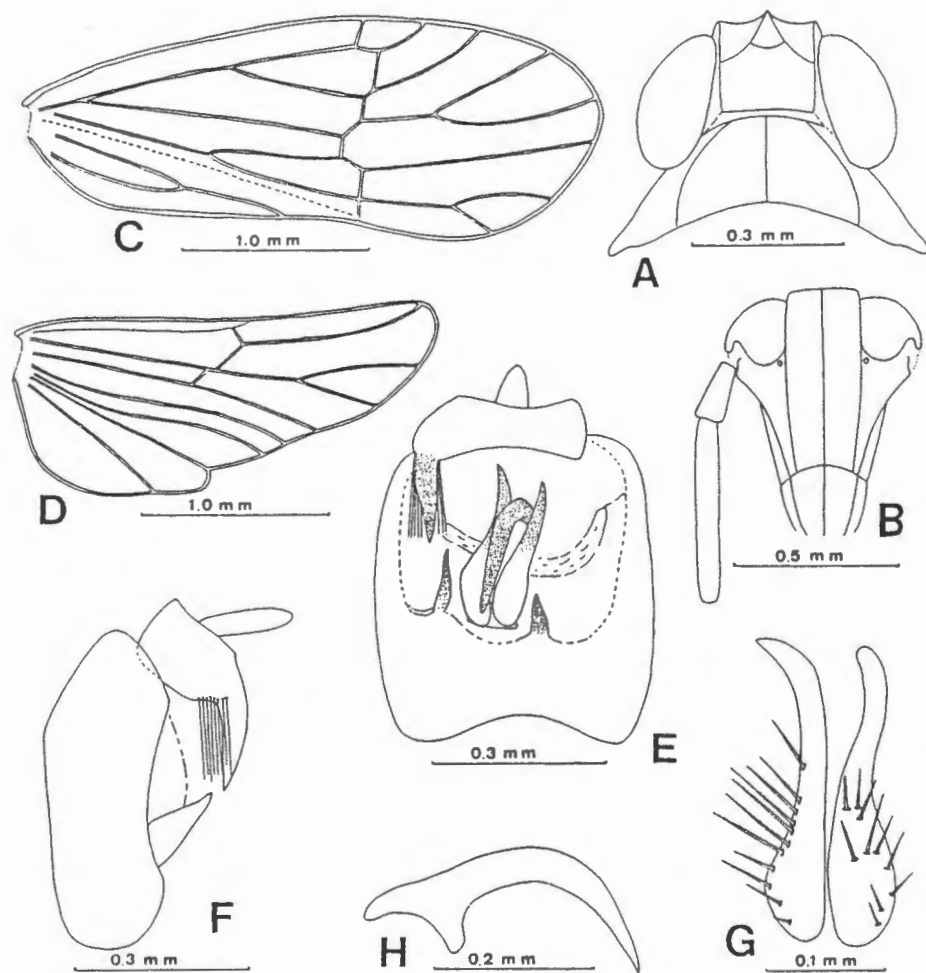


Fig. 33. *Malaxa aurunca* sp. nov. A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, genital styles, postolateral view; H, phallus, left side.

Frons longer in middle line than wide at widest part about 2.4:1, widest at level of ocelli, lateral carinae nearly parallel, slightly narrower at apex than at base, median carina simple. Postclypeus distinctly wider at base than frons at apex. Rostrum slightly surpassing mesotrochanters, apical segment slightly shorter than subapical, longer than wide about 2.8:1. Antennae moderately long, first segment longer than wide about 2:1, shorter than second about 1:3.1, second segment slightly longer than frons in middle line. Pronotum with lateral carinae attaining hind margin.

General color yellow to orange, eyes black,

antennae and abdomen more reddish than other part, genitalia yellow. Tegmina gray yellow, hyaline, veins concolor.

Anal segment of male relatively large, left lateroapical angle produced into a stout process, beneath base with a row of long setae, as long as process. Pygofer in profile nearly parallel, slightly curved at middle, in posterior view with opening distinctly asymmetrical, with two medioventral processes, left one upper, slender, right one lower, stout. Aedeagus without phallobase, phallus tubular, simple, strongly arched upward at middle, pointed at apex. Genital styles somewhat asymmetrical

broad at base, tapering to apex, left one longer than right, beset several long setae.

Male (macropterous)

Length of body (includ. tegmen): 3.87 ± 0.16 mm.

Length of tegmina: 3.29 ± 0.11 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.02 ± 0.19 mm.

Length of tegmina: 3.35 ± 0.11 mm.

Holotype: Male, Yangmingshan (陽明山), Taipei, 21-VIII-1984, J. T. Yang.

Paratypes: 5 ♂♂, 5 ♀♀, same as for holotype.

Host plant: *Bambusa multiplex* (Lour.) Rauschel (Bambusoideae)

Distribution: Taiwan.

This species same as *M. occidentalis* by the character of phallus hang on the base of anal

segment (supporting plate), but differs from it by the apical part of phallus, the former with apex acuminate, the latter with a irregular flatted portion. This species with color similar to *M. jauanensis* and without any dark marking differ from the latter.

*Malaxa fusca** sp. nov.

(Fig. 34)

Female:

Vertex longer submedially than wide at base about 1.5:1, apex slightly projecting in front of eyes, apical margin slightly rounded, lateral carinae nearly straight. Submedian carinae uniting far away from apex, forming rounded cell near middle, Y-shaped carina distinct. Frons in middle line longer than wide at widest part about 2.8:1, widest at apex, lateral carinae slightly concave medially, me-

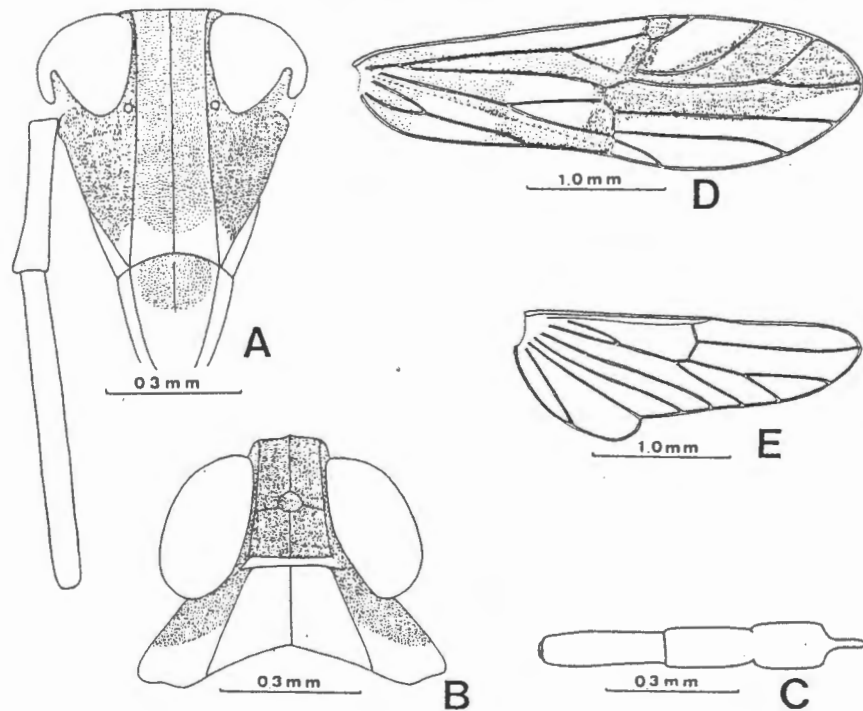


Fig. 34. *Malaxa fusca* sp. nov. female, A, frons and postclypeus; B, head, and pronotum, dorsal view; C, rostrum; D, tegmen; E, wing.

* fuscus, -a, -um, adj. L. --- black.

dian carina simple. Postclypeus as wide at base as frons at apex, median carina present at base only. Antennae very long, basal segment longer than wide about 4.4:1, shorter than second about 1:2.2, second segment longer than frons about 1.3:1. Rostrum reaching meta-trochanters, apical segment longer than subapical about 1.4:1, longer than wide about 3.6:1. Pronotum with lateral carinae attaining hind margin. Tegmina narrow, long, roundly acute at apex. Wings with M and Cu_1 apical half fused.

General color dark brown, vertex, genae, pronotum behind eye black, frons except small area at apex, base of postclypeus pale black. Mesopleura and mesocoxae with black markings. Tegmina hyaline at basal half below $Sc + R$ before cross veins pale yellowish brown except after bifurcation of Cu_1 and middle of clauvs hyaline, at apical half, along Sc_1 , $sc-r$ and area between R_1 and M_2 brown.

Female (macropterous)

Length of body (includ. tegmen): 4.6 mm.

Length of tegmen: 4.0 mm.

Holotype: Female, (dissected) Chung Hsing village (中興新村), Nantou Hsien, 25-VII-1984, J. T. Yang.

Host plant: *Bambusa multiplex* Raeuschel cv. "Fernleaf" Young (Bambusoideae).

Distribution: Taiwan.

Though the new species without any compatible male genital character, but it can be distinguished from the other new species *M. semifusca* by characters such as distinct pattern of markings of head, thorax and tegmina; submedian carinae of vertex uniting more basally than latter, and wings with M and Cu_1 fused in apical half (the latter separated completely).

*Malaxa semifusca** sp. nov.

(Fig. 35)

Vertex longer submedially than wide at base about 1.5:1, at base narrower than at apex, submedian carinae uniting slightly be-

yond middle, forming a circular cell, apex produced in front of eyes, apical margin straight, basal compartment at base as wide as greatest length. Frons longer in middle line than wide at widest part about 2.8:1, widest at apex. Antennae very long, cylindrical, first segment longer than wide about 4.3:1, shorter than frons in middle line about 1:1.9, second segment longer than first one about 1.9:1. Postclypeus slightly wider at base than frons at apex, longer than wide at base. Rostrum surpassing mesocoxae, with apical segment shorter than subapical. Pronotum with lateral carinae not attaining hind margin. Tegmina narrow. Wings long, acute at apex; with M and Cu_1 separated completely.

General color black, shiny, with apical third of frons, ventral half of genae, clypeus, rostrum except dark at tip, sternum of thorax, and pronotum with each lateral side and posterior margin yellow, legs yellow, longitudinal stripe markings on base of femora, tibiae and mesocoxae brown. Abdomen dark brown to black, sternite with small yellowish markings on each side. Genitalia black. Tegmina with areas between $Sc + R$ and M_1 below first claval vein and its common petiole yellowish brown, apical half below middle of $R_s + M_1$ and M_2 dark brown. Wings hyaline. Seventh abdominal sternite of female Present, nearly as long as wide, apical margin rounded, triangularly produced medially, ventral margin concave.

Anal segment of male small, left lateroapical process in dorsal view recognizable, small, obtuse. Pygofer in profile tapering to dorsad, ventral angles strongly produced, in posterior view with opening twice as long as wide, lateral margins not well defined, in ventral view with medioventral process very wide, apex evenly concave medially. Aedeagus with phallus tubular, broad subbasally then tapering to apex, with 2 small processes, phallobase incomplete, small, process long, at left side, apical portion of process in caudal view with right half still sclerotized and pigmented, left half and apex membranous and colorless, in middle with a large elongate, incomplete node. Genital

* semi-, L. semis, --- a half; fuscus, -a, -um, L. adj. --- black.

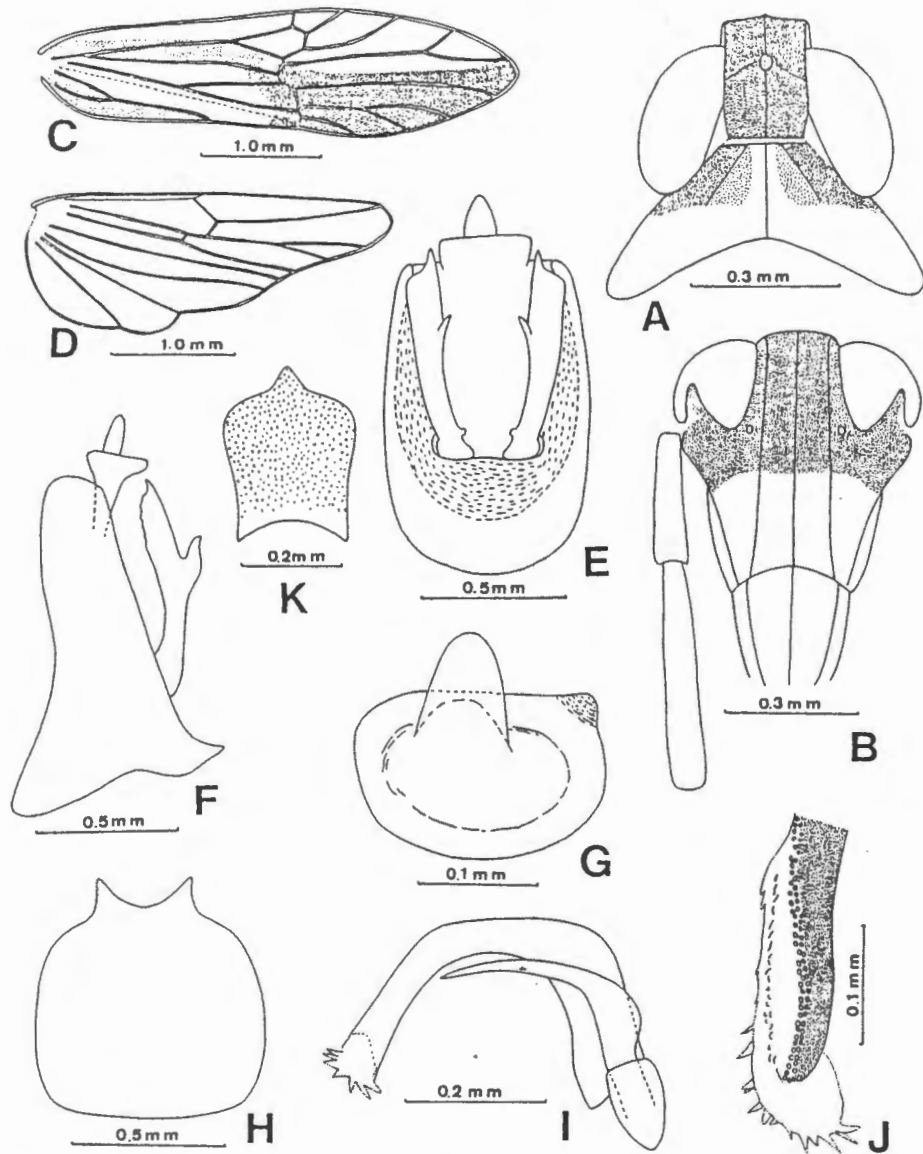


Fig. 35. *Malaxa semifusca* sp. nov. A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, anal segment, dorsocaudad; H, pygofer, ventral view; I, aedeagus, right side; J, apical part of aedeagus, lateral caudoventrad; K, seventh abdominal sternite.

styles long and slender, inner angle acute at tip, outer angle obtuse, inner margin with small process above middle.

Male (macropterous)

Length of body (includ. tegmen): 4.60 ± 0.10 mm.
Length of tegmen: 3.87 ± 0.16 mm.

Female (macropterous)

Length of body (includ. tegmen): 4.78 ± 0.06 mm.
Length of tegmen: 3.95 ± 0.06 mm.

Holotype: Male, North Tungyan shan (北東眼山), Nantou Hsien, 21-VII-1985, C. T. Yang.

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Paratypes: 6 ♂♂, 7 ♀♀, same as for holotype; 3 ♂♂, 5 ♀♀, Mukwa (木瓜), Hualien Hsien, 7-VIII-1985, C. T. Yang.

Host plant: Unknown.

Distribution: Taiwan.

Genus *Purohita* Distant, 1906

Purohita Distant, 1906, Faun. Brit. Ind., Rhynch., 3:470.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:86.

—: Tian, 1983, Econ. Ins. Fauna China, 27:43.

Generic characters outlined by Distant (1906) and Ishihara (1949), redefined as follows.

Head including eyes narrower than pronotum. Vertex very narrow, quadrate, slightly extending in front of eyes; lateral carinae strongly ridged, foliate, prominent anteriorly, submedian carinae transverse, median carina obsolete. Frons in middle line longer than wide at widest part about 1.5–2.3:1, lateral margins divergent apically, median carina forked near base. Postclypeus tricarinate. Antennae very large, first segment, flattened, rectangle, longer in middle line than widest part about 2.9–3.3:1, with central ridge distinct, the surface on each side of central ridge, obliquely reclined, second segment much shorter than first about 1:1.4–2.5. Eyes in dorsal view lateral side emarginate medially distinctly. Ocelli distinct. Pronotum short, scarcely longer than vertex, tricarinate, lateral carinae converging posteriorly and attaining hind margin, mesonotum longer than vertex and pronotum together, tricarinate. Spinal formula of hind leg 5–6–4, or 5–7–4. Wing with *M* and *Cu*₁ fused except very short portion at base.

Anal segment large, broad, dorsum flattened, apex truncate. Lateroapical angles without process. Pygofer slightly compressed laterally, medioventral processes present or absent. Aedeagus with phallus relative long, strongly decurved medioventrad at about apical half, phallobasal process arising from base, directed ventrad, constricted near apex, blunt oval at apex. Diaphragm and lateral areas

membraneous. Without sclerotized margin of opening of genital styles. Seventh abdominal sternite of female present or absent, genital styles narrow and slender, simple.

Type species: *Purohita cervina* Distant, 1906. (original designation)

All 5 species of this genus in Taiwan were collected on the shoot or younger culm of bamboos. These members always collected on 2 genus of bamboos such as *Bambusa* and *Dendrocalamus* in Taiwan.

When the shoot is young, the sheath of shoot hug fast, the female will laying her eggs in the sheath then secreting wax mass cover on it, and adults stay outside the sheath, under the sheath blade. Once the nymph hatched, the younger shoot grown up, the sheath becoming loosen, nymphs and adults stay on culm inside the sheath, till the sheath falling down, they leave to the higher part of the younger culms.

Key to the subgenus of *Purohita*

1. Tegmina with veins bordered with brown margins; antennae with basal segment longer than second more than 2:1; pygofer with distinct medioventral processes . . . 2
 - Tegmina with veins beset with many brown markings but not bordered; antennae with basal segment longer than second about 1.5:1; pygofer without medioventral process *Parapurohita* subgen. nov.
2. Pygofer with medioventral processes protruding in front of margin deeply incised at apex, outer ones indistinctly lower than median one; in caudal view genital styles with inner margin basal half extending quadrate *Purohita* Distant
 - Pygofer with medioventral processes not protruding in front of margin, outer pair distinctly higher than median ones, median portion deeply cleft; in caudal view genital styles slender *Neopurohita* subgen. nov.

Subgenus *Purohita* Distant, 1906

Antennae with basal segment longer than second about 2:1. Tegmina acute at apex

with veins margin with black markings. $M + Cu_{1a}$ and Cu_{1b} of wing with common petiole. Anal segment of male in dorsal view with lateral margins sinuate, narrowed and slightly rounded at apex. Pygofer with medioventral process protruding in front of margin, deeply incised at apex, outer ones indistinct, lower than median one. Aedeagus with process of phallobase evenly curved. Genital styles slender, inner margin basal half extending quadrate.

Type species: *Purohita cervina* Distant, 1906 (original designation)

In addition to type species, subgenus *Purohita* includes *P. taiwanensis*; *P. sinica*.

Key to the Species of subgenus *Purohita*

1. Tegmina with Sc_2 and R_1 with common petiole; medioventral process of male pygofer bifurcating into hook-like, outer margin smoothly curved *taiwanensis* Muir
- Tegmina with Sc_2 and R_1 without common petiole; medioventral process of male pygofer bifurcated, with minute production on outer side, outer margin sinuate *sinica* Huang et Ding (Excluding *P. cervina*)

Purohita (Purohita) cervina Distant, 1906

Purohita cervin Distant, 1906, Faun. Brit. Ind., Rhynch., 3:470.

—: Schumacher, 1915, Suppl. Ent., 4:142.

—: Esaki et Ishihara, 1943, Cat. Araeopid. Imp. Jap., 10.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:16.

Purohita maculata Matsumura et Ishihara (nec Muir), 1945, Mushi, 16:60.

Ishihara, 1949, notes "This is the commonest species of the genus". Curiously we have no single specimen which agrees Ishihara's figure. Up till now we do not know any thing about it in Taiwan and we have some doubt in recording this species in our Country.

Host plant: *Phyllostachys* sp. (Bambusoideae)

Distribution: Taiwan, Mainland China, Sri Lanka.

Purohita (Purohita) taiwanensis Muir, 1914 (Fig. 36)

Purohita taiwanensis Muir, 1914, Proc. Hawaii Ent. Soc., 3(1):53.

—: Ishihara, 1949, Sci. Rep. Matsuyama Agric. Coll., 2:16.

Frons long, narrow, longer in middle line than wide at widest part about 2.3:1, median carina forked at base. Postclypeus distinctly wider at base than frons at apex. Rostrum reaching to metacoxa. Antennae with first segment rectangle, longer in middle line than widest part about 2.9:1. Tegmina longer than widest portion about 3.4:1. Spinal formula of hind leg 5-6-4, a few 5-5-4.

General color light brown to reddish brown, abdomen with lateral area pale green, antennae, lateral carinae of frons and vertex and the basal half of frons speckled with dark brown. Tegmina hyaline, veins white with small hair-bearing dark granules, apical half bordered with dark brown markings. Wings hyaline, veins brown. Legs with longitudinal stripes, dark brown.

Anal segment at widest part narrower than pygofer, large, broad, and flattened dorsoventrally, apex slightly rounded. Anal style moderately long. Pygofer slightly compressed laterally, medioventral processes formed a bifurcate hook, each points outside, and outer margin slightly curved smoothly. In lateral view, ventral margin much longer than dorsal. Aedeagus with phallus slender, long, in caudal view protruding left laterodorsad, then decurved to medioventrad suddenly at apical half and acute at apex, almost attached to ventral margin of pygofer, in lateral view, phallus turned in right angle at apical half. Phallobasal process rising from the base, apical half narrow, evenly curved, slightly constricted near apex, rounded at apex.

Male (macropterous):

Length of body (includ. tegmen): 4.34 ± 0.22 mm.

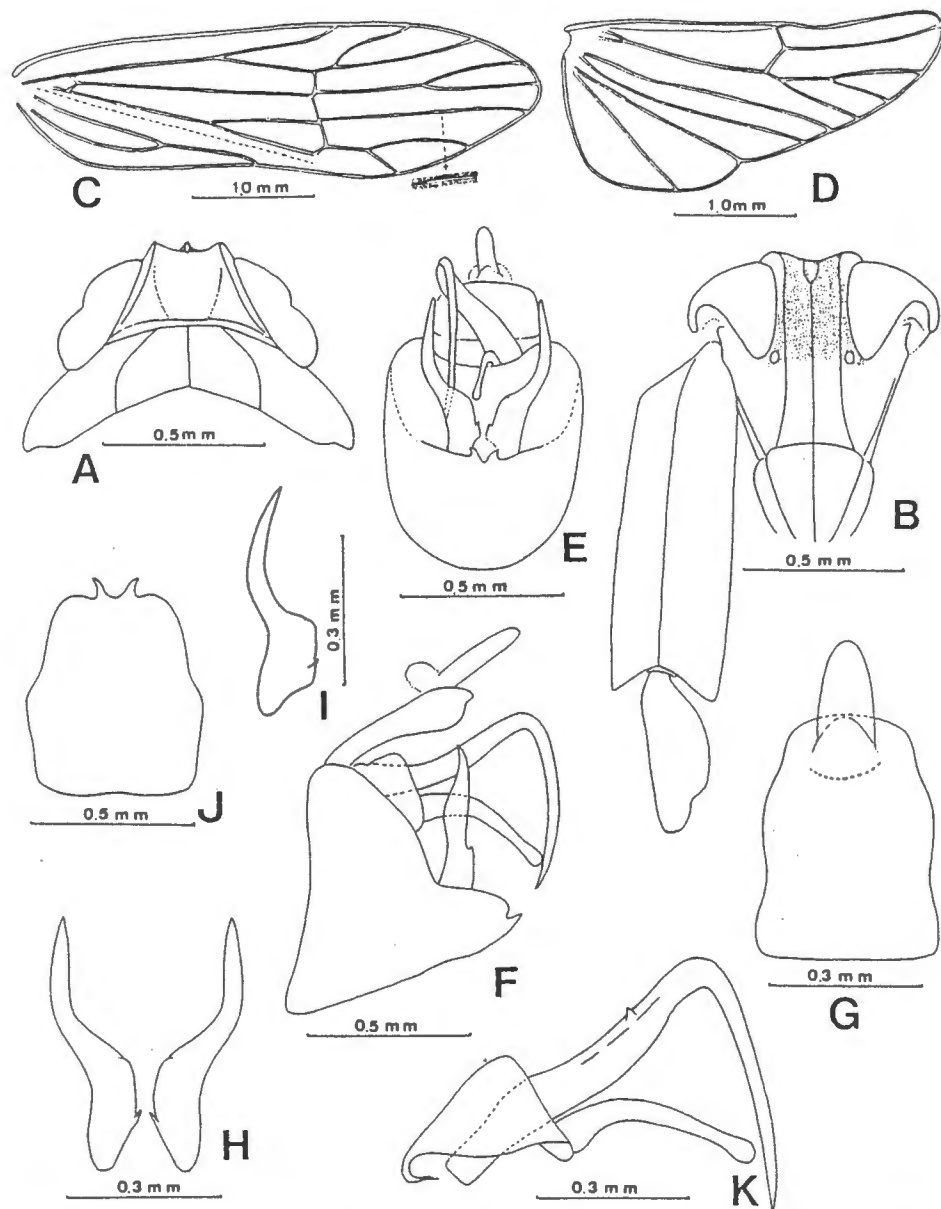


Fig. 36. *Purohita (Purohita) taiwanensis* Muir, A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, anal segment, ventral view; H, genital styles, caudal view; I, the same, lateral view; J, pygofer, ventral view; K, aedeagus, left side.

Length of tegmen: 3.64 ± 0.22 mm.

Female (macropterous):

Length of body (includ. tegmen): 5.13 ± 0.22 mm.

Length of tegmen: 4.22 ± 0.18 mm.

First instar nymph (Fig. 37)

General color yellowish brown to brown.

Vertex without median carina. Antennae cylindrical, with first segment subequal to second. Each side of pronotum with 4 sensory pits: 1 medial, 3 lateral, along posterior margin; mesonotum and metanotum same size, mesonotum with lateral carinae present but me-

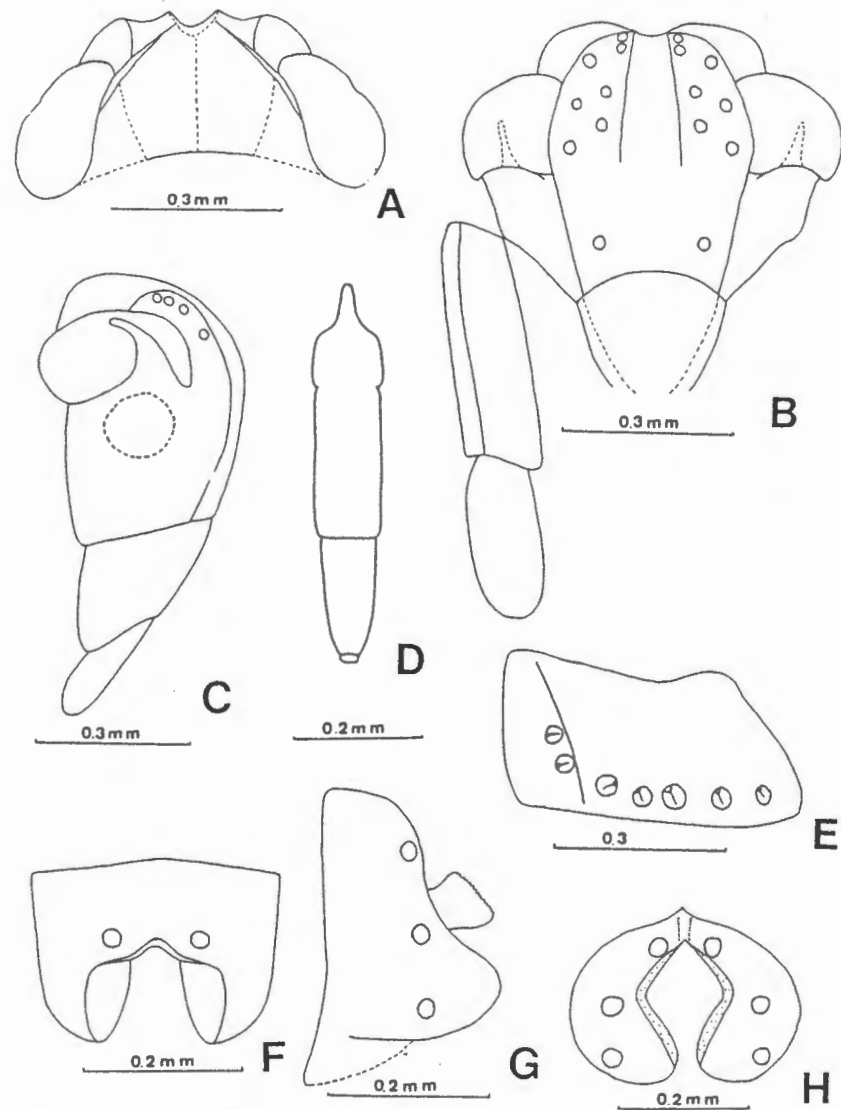


Fig. 37. Nymph of *Purohita (Purohita) taiwanensis* Muir, Fifth instar nymph, A, head, dorsal view; B, head, ventral view; C, head, lateral view; D, rostrum, ventral view; E, pronotum, flat surface; F, ninth abdominal segment, dorsal view; G, the same, lateral view; H, the same, caudal view.

tanotum absent, each side of mesonotum with 4 pits, metanotum with one. Hind legs with 2 tarsi, spur very small, almost as large as the largest one of tibial spines, spinal formula of hind leg 4-3. Each side of abdominal tergites IV to VIII with sensory pit in formula 0+1, 0+1, 0+1, 1+1, 1+1, 1+1.

Length of body: 1.10 mm.
Width of head including eyes: 0.23 mm.

Length of antennae: 0.12 mm.

Second instar nymph (Fig. 37)

Differs from 1st instar nymph as follows: Vertex with median carina. Each side of pronotum with 7 sensory pits: 2 medial, 5 lateral, along posterior margin; mesonotum with caudolateral angle slightly protruded, each side with 5 pits, lateral carinae of metanotum distinct. Spinal formula of hind leg 5-5. Spur

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moderately large about two-thirds of first tarsus. Abdominal tergites I and II distinct. Each side of abdominal tergites IV to VIII with sensory pits in formula 0 + 3, 0 + 3, 1 + 2, 1 + 2, 1 + 2.

Length of body: 1.84 ± 0.11 mm.

Width of head including eyes: 0.36 ± 0.02 mm.

Length of anterior wing pad: 0.30 ± 0 mm.

Length of antenna: 0.24 ± 0.01 mm.

Third instar nymph (Fig. 37)

Differs from 2nd instar nymph as follows: Antennae with first segment distinctly longer than second. Hind legs with 3 tarsi, but segmentation between second and third segments irrecognizable. Spinal formula of hind leg 5-6-3. Each side of abdominal tergites IV to VIII with sensory pits in formula 0 + 3, 0 + 4, 1 + 3, 1 + 3, 1 + 2.

Length of body: 2.36 ± 0.02 mm.

Width of head including eyes: 0.46 ± 0.03 mm.

Length of anterior wing pad: 0.63 ± 0.05 mm.

Length of antenna: 0.40 ± 0.03 mm.

Fourth instar nymph (Fig. 37)

Differs from 3rd instar nymph in the character of formula of sensory pits on each side of abdominal tergites 0 + 3, 0 + 4, 1 + 4, 1 + 3, 1 + 2.

Length of body: 2.80 mm.

Width of head including eyes: 0.47 mm.

Length of anterior wing pad: 0.67 mm.

Length of antenna: 0.43 mm.

Fifth instar nymph (Fig. 37, 38)

General color reddish brown to dark brown, in live individuals somewhat covered with a thin layer of wax powder.

Head between eyes wider at narrowest part than long in middle line about 1.3:1, vertex moderately protruding in front of eyes, lateral carinae foliate, anterior margin between submedian carinae concave, eyes divergent posteri-

orly, Y-shaped carina with stalk indistinct, arms feeble, length of eye longer than length between level of eyes and lateral point of frons about 3.5:1; head including eyes wider than width of basal compartment at hind margin about 3.3:1; submedian carinae meeting hind margin of vertex medially; basal compartment at hind margin subequals to greatest length. Frons in middle line longer than wide at widest part about 1.1:1, widest slight above lower margin of eyes, two median carinae slightly divergent apically, present only at basal half, lateral carinae foliate basally. Number and arrangement of sensory pits not typical, each side with 3 extra pits basally, lower pits single, away from frontoclypeal suture about two diameters of pit, lower of upper pits lies between level of median pits, lower of median pits far away from single of lower pits. Area between eye and lateral carina with 4 sensory pits, side by side by lateral carina in front of eye, arranged in line obliquely, lowest one at middle of eye. Eyes deeply emarginate at lower margin. Frontoclypeal suture strongly arched upward. Antennae very large, long, first segment 3.1 times as long as wide, with distinct ridge laterally, longer than second segment about 1.5:1. Rostrum moderately long, slightly surpassing mesotrochanters, relative length of each segment about 1:1.14:1.2, third segment very long, in middle line longer than wide at widest part about 2.4:1.

Pronotum with 7 sensory pits on each lateral side :2 medial, 5 lateral, along posterior margin. Number and arrangement of pits on meso-, metanotum and wing pads typical, relative distance between W1 to W2 and W2 to W3 about 3:1, anterior wing pad slightly protruding to level of hind one, latter reaching anterior third of tergite IV. Spinal formula of hind leg 5-6-4, meta-tibia subequals to three tarsi together, spur longer than the widest part about 3.5:1.

Abdominal tergites each with median carina distinct, each side of tergites IV-VIII with sensory pits in formula 0 + 3, 0 + 4, 1 + 4, 1 + 3, 1 + 2; ninth abdominal segment with sensory pits 1 dorsad, 2 ventrad, in dorsal aspect, with anal ridge very shallowly incised medially,

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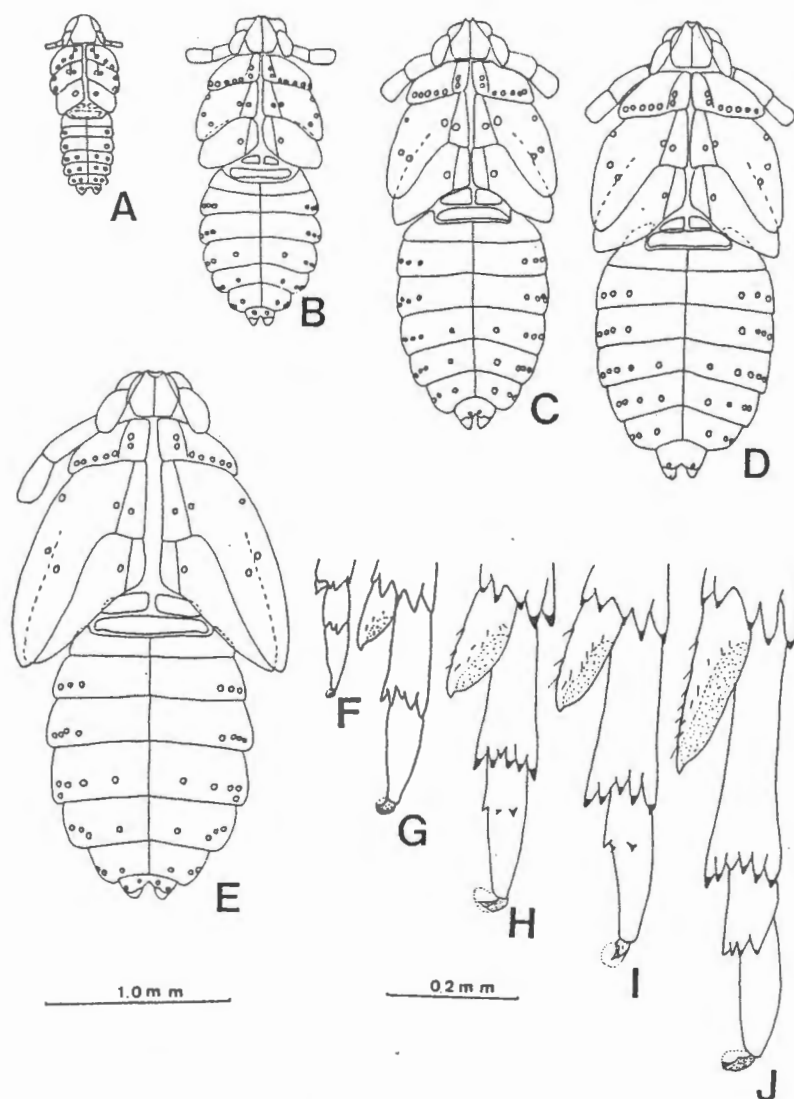


Fig. 38. Five instars of nymph of *Purohita (Purohita) taiwanensis* Muir, A-E, 1st to 5th instar nymphs, dorsal view; F-J 1st to 5th instar nymphs, spinal formula and tibial spur of hind leg.

lateral lobes short, in lateral view much wider ventrally than dorsally, with anal comb moderately large; in caudal view, with opening widest near middle.

Length of body: 3.25 ± 0.18 mm.
 Width of head including eyes: 0.59 ± 0.02 mm.
 Length of anterior wing pad: 1.22 ± 0.02 mm.
 Length of antenna: 0.69 ± 0.02 mm.

Specimens examined: 14 ♂♂, 14 ♀♀, Heisoon forest (惠蓀林場), Nantou Hsien, 4-IX-1984, J. T. Yang; 5 ♂♂, 2 ♀♀, Tachia (大甲), Taichung Hsien, 1-I-1985, J. T. Yang.

Nymphal specimens examined:
 1st instar nymph: 1
 2nd instar nymph: 3
 3rd instar nymph: 2
 4th instar nymph: 1
 5th instar nymph: 2

Taichung suburb (台中郊區), Taichung city, 1-XII-1984, J. T. Yang.

Host plant: *Phyllostachys pubescens* Mazel; *Bambusa arundinacea* (Retz.) Willd, *B. beechyana* Munro var. *pubescens* (Lin) Lin in Co-operative, *B. multiplex* (Lour.) Raeschel cv. "Alphonse Karr" (Satow) Young, *B. oldhamii* Munro, *B. stenostachya* Hackel, *B. vulgaris* Schrader, *B. vulgaris* var. *striata* (Lodd) Gamble; *Dendrocalamus giganteus* (Wall.) Munro, and *D. latiflorus* Munro. (Bambusoideae)

Distribution: Mainland China (southwest region), Taiwan.

It is the commonest species of Taiwan, on the shoot and young culms of many kinds of bamboos, especially on *D. latiflorus* which is an important economic bamboo, and widely cultivated, here and there.

Key to nymphal stages of
Purohita (Purohita) taiwanensis (Muir)

1. Tarsi of hind leg 2-segmented 2
— Tarsi of hind leg 3-segmented 3
2. Vertex without median carina; spinal formula of hind leg 4-3; lateral carinae of metanotum indistinct; abdominal sensory pits in formula 0+1, 0+1, 1+2, 1+2, 1+2 First instar nymph
— Vertex with median carina; spinal formula of hind leg 5-3; lateral carinae of metanotum distinct; abdominal sensory pits in formula 0+3, 0+3, 1+2, 1+2, 1+2 Second instar nymph
3. Anterior wing pads produced not reaching the level of hind one; spinal formula of hind leg 5-6-3 4
— Anterior wing pads produced at least reaching the level of hind one; spinal formula of hind leg 5-6-4 Fifth instar nymph
4. Antennae with first segment shorter than second one about 0.75-0.83:1; abdominal tergites VI with sensory pits 1+3 Third instar nymph
— Antennae with first segment longer than second one about 1.09-1.18:1; abdominal

tergites VI with sensory pits 1+4
. Fourth instar nymph

Purohita (Purohita) sinica Huang et Ding, 1979
(Fig. 39)

Purohita sinica Huang and Ding, 1979, Acta Zootaxonomica Sinica, 4(2):170-181.

Frons long, longer than wide at widest part about 2.2:1; basal line rather arched downward, medial carina forked near base. Postclypeus at base as wide as frons at apex (1.2:1), tricarinate, rather strongly ridged. Rostrum reaching mesotrochanters. Antennae with first segment rectangle, with central ridge, longer in middle line than widest part about 3.3:1, longer than second about 2.1:1. Tegmina longer than widest portion about 3.4:1. Spinal formula of hind leg 5-7-4.

General color reddish brown with yellowish green portion. Antennae, frons and carinae of frons and vertex speckled with dark markings. Tegmina hyaline, veins white with small hair-bearing granules, the apical half bordered with brown markings. Legs with longitudinal brown stripes laterally.

Anal segment widest part at half way, almost equals to the narrowest part of pygofer. Pygofer compressed inconspicuously, medioventral process flattened, bifucate at apex, each with a smaller tooth on outer margin. In lateral view, ventral margin of pygofer much longer than dorsal. Aedeagus including phallus and phallobasal process, phallus slender, long, in caudal view, directed to left dorsad, then decurved left ventrad about at apical third, in lateral view, phallus curved in rather acute angle at apical third; phallobasal process slender than phallus, curved downward, smoothly, rounded at apex, with basal half quadrate, in Profile extending portion somewhat lowered.

Male (macropterous):

Length of body (includ. tegmen): 4.91 ± 0.04 mm.

Length of tegmen: 4.13 ± 0 mm.

Female (macropterous):

Length of body (includ. tegmen): 5.13 ± 0.25 mm.

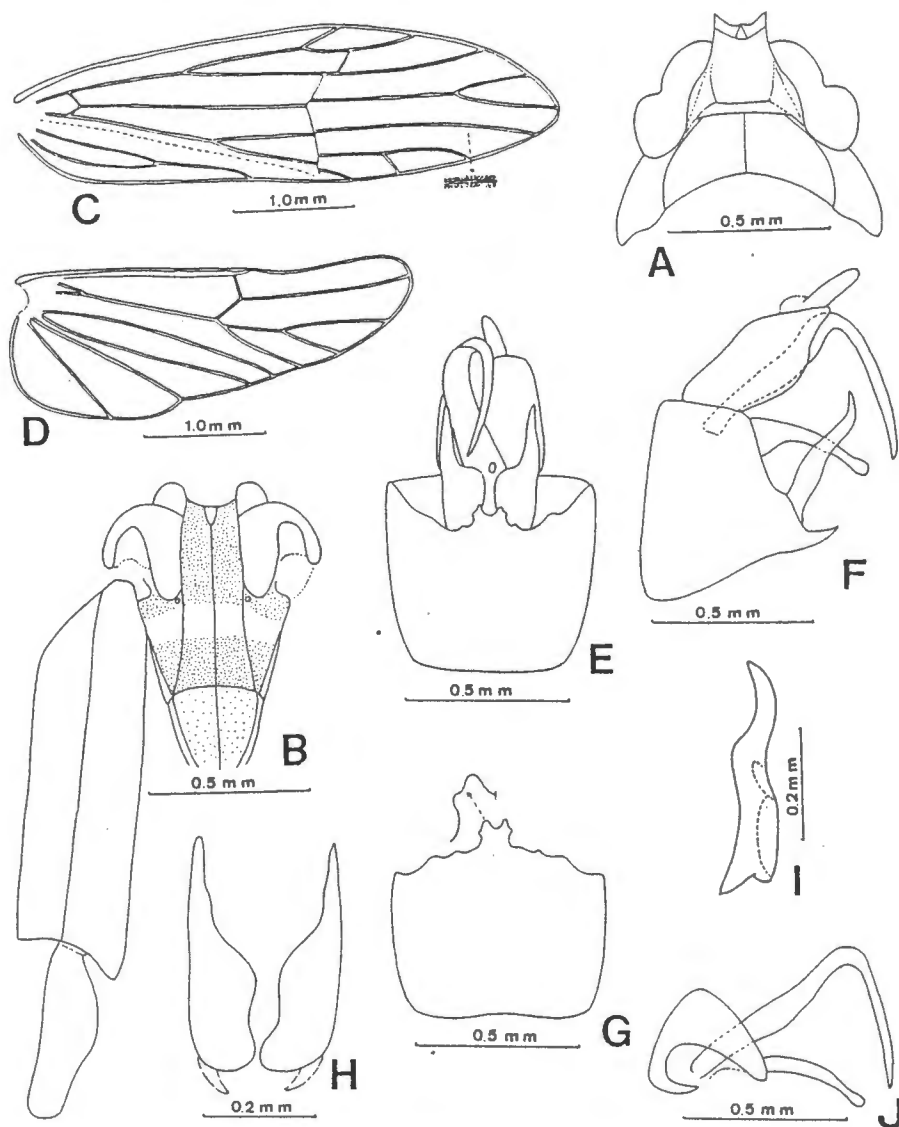


Fig. 39. *Purohita (Purohita) sinica* Huang & Ding, A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, pygofer, ventral view; H, genital styles, caudal view; I, the same, lateral view; J, aedeagus, left side.

Length of tegmen: 4.22 ± 0.18 mm.

Specimens examined: 1 ♂, 2 ♀♀, Jihyuetan (日月潭), Nantou Hsien, 8-XII-1983, C. T. Yang; 5 ♂♂, Heisoon, Nantou Hsien, 4-IX-1984, J. T. Yang; 3 ♂♂, 15 ♀♀, Chingshan (青山), Taichung Hsien, 10-XI-1984, J. T. Yang.

Host plant: *Dendrocalamus latiflorus*

Munro (Bambusoideae)

Distribution: Mainland China (Yunnan), Taiwan (new record).

Parapurohita Subgen. nov.

Antennae with first segment longer than second about 1.5:1. Tegmina rounded at apex, with veins not margin with brown markings but

with many black spots on veins. M_3 and Cu_1 not fused at base, wings with Cu_{1b} arising from end of cross vein or basad, Pygofer without medioventral process. Genital styles broad at basal half, attaining to apex.

Seventh abdominal sternite of female present.

Type species: *Purohita maculata* Muri, 1916 (here designated)

In addition to type species subgenus *Parapurohita* may include *P. muii* Metcalf, 1919; *P. arundiancea* Distant, 1907; and *P. Theognis* Fennah, 1978.

Purohita (Parapurohita) maculata Muir, 1916
(Fig. 40)

Purohita maculata Muir, 1916, Philp. Jour. Sci.,
D. 11:311.

—: Ishihara, 1949, Sci. Rep. Matsuyama
Agric. Coll., 2:17.

Frons longer in middle line than wide at widest part about 1.5:1, median carina forked near base. Postclypeus wider at base than frons at apex. Rostrum reaching mesotrochanters. Antennae with first segment slightly flattened with central ridge, longer in middle line than wide about 3.3:1, longer than second about 1.4:1. Spinal formula of hind leg 5-6-4.

General color yellowish brown and brownish green. Antennae speckled, darker than thorax, with broad stripe obliquely at basal half, and with pale area at apex. Lateral carinae of vertex and pronotum dark brown, speckled with green, pronotum green, mesonotum yellowish brown, two black spots at the end of lateral carinae, between pronotum and mesonotum, tegulae green, lateral carinae of me-

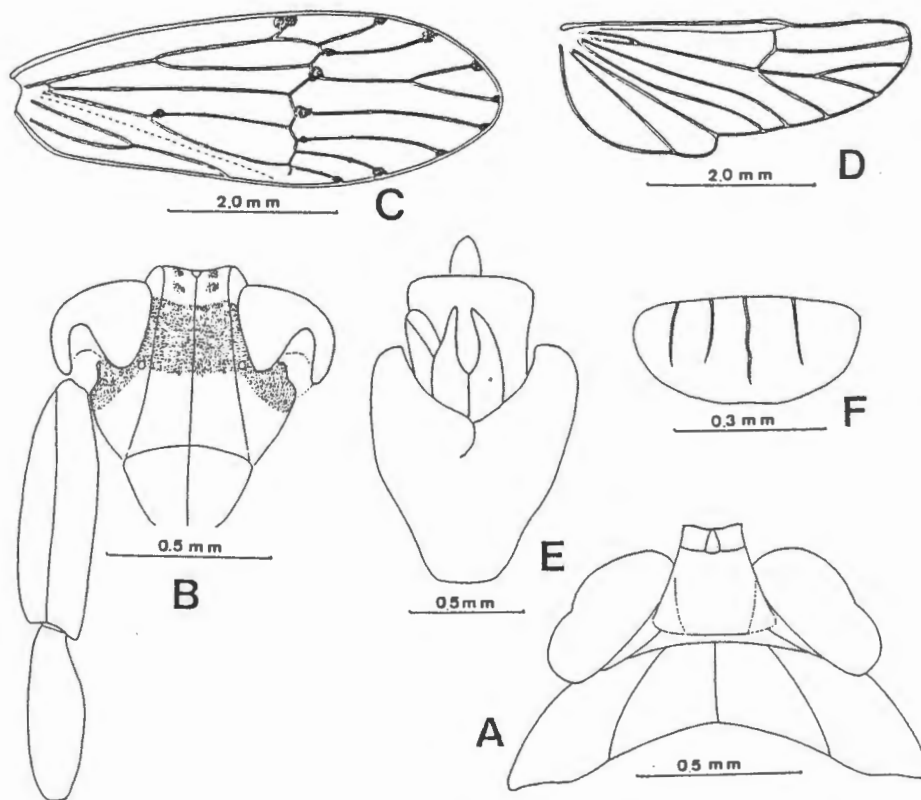


Fig. 40. *Purohita (Parapurohita) maculata* Muir, female, A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, seventh abdominal sternite of female.

sonotum green, mesoscutellum light green, and black at apex. Pro- and meso-legs with coxae light yellow, speckled with green, femora with longitudinal black stripes, tibiae red; hind legs with femora and tibiae yellowish green, tarsi brown. Frons speckled with green markings in basal half, and light green in apical half; postclypeus reddish brown, apical half tinged green. Tegmina hyaline, veins with black hair-bearing granules and without any bordered, many dark markings on veins. Female with seventh abdominal sternite elongate oval-like with four longitudinal carinae.

Male (macropterous)
 Length of body (includ. tegmen): —
 Length of tegmen: 2.48 mm.
 Female (macropterous):
 Length of body (includ. tegmen): 6.38
 ± 0.07 mm.
 Length of tegmen: 5.38 ± 0.07 mm.

Specimens examined: 1 ♂ (damaged), 3 ♀♀, Shan-Ping (扇平) Kaohsiung Hsien, 11-VII-1984, J. T. Yang.

Host plant: *Dendrocalamus* sp. (Muir, 1916), *Bambusa multiplex* cv. "Alphonse Karr" Young. (Bambusoideae)
 Distribution: Taiwan.

Neopurohita Subgen. nov.

Antennae with basal segment longer than second about 2.4:1. Tegmina acutely rounded at apex, with veins margin with black markings, $M + Cu_{1a}$ and Cu_{1b} of wing with common petiole. Anal segment of male in dorsal view widening to apex, truncate apically. Aedeagus with process of phallobase sinuate. Pygofer with medioventral process not protruding in front of margin, outer pair distinctly higher than median ones, median portion deeply cleft. Genital styles slender, simple.

Type species: *Purohita* (*Neopurohita*) *picea* sp. nov. (here designated)

In addition to type species, subgenus *Neopurohita* includes *P. nigripes* Muir, 1916.

Key to the species of subgenus *Neopurohita*

1. Medioventral processes with median ones each with two processes at apex; antennae with basal segment longer than second about 2.5:1 *picea* sp. nov.
- Medioventral processes with median ones each with single process at apex; antennae with basal segment longer than second about 2.3:1 *nigripes* Muir.

Purohita (*Neopurohita*) *nigripes* Muir, 1916 (Fig. 41)

Purohita nigripes Muir, 1916, Philp. Jour. Sci., 11, D, 6:367–377.

Frons long, narrow, longer in middle line than wide at widest part about 1.9:1, median carina forked at extreme base. Postclypeus slightly wider at base than frons at apex. Rostrum reaching to metacoxae. Antennae with first segment flattened, rectangle, longer in middle line than widest part about 2.9:1, longer than second about 2.3:1. Spinal formula of hind leg 5–6–4.

General color brown to dark brown. Antennae and lateral carinae of frons and vertex speckled with darker brown markings. Frons at basal half dark brown, apical half pale. Tegmina hyaline, veins white, the most part bordered with dark brown markings, and with small hair-bearing dark granules. Tarsi of pro- and mesolegs black.

Anal segment about a half as wide as the widest part of pygofer, moderately long, flattened dorsoventrally, truncated at apex. Aedeagus with phallus slender, and moderately long, in caudal view, directed left dorsad, then decurved medioventrad at apical half suddenly. In lateral view, phallus evenly arched. Phallobasal process rounded at apex, constricted near apex. Genital styles slender.

Male (macropterous)
 Length of body (includ. tegmen): 5.22
 ± 0.23 mm.
 Length of tegmen: 4.51 ± 0.13 mm.
 Female (macropterous)

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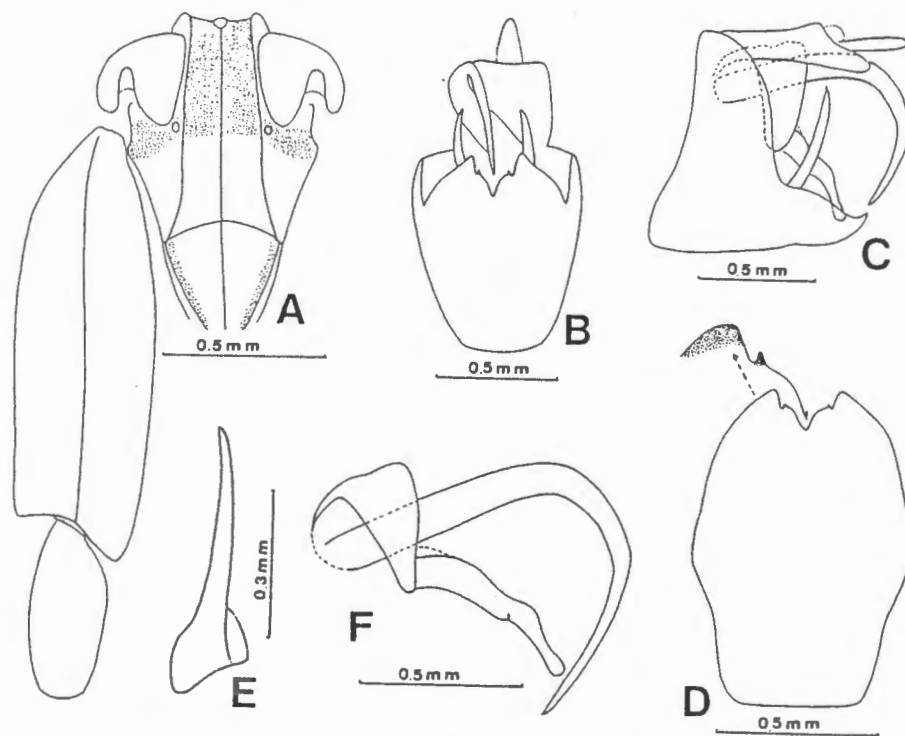


Fig. 41. *Purohita (Neopurohita) nigripes* Muir, A, frons and postclypeus; B, male genitalia, posterior view; C, the same, left side; D, pygofer, ventral view; E, genital style, lateral view; F, aedeagus, left side.

Length of body (includ. tegmen): 6.22 ± 0.23 mm.

Length of tegmen: 5.44 ± 0.21 mm.

Specimen examined: 2 ♂♂, 2 ♀♀, Chishan (旗山), Kaohsiung Hsien, 2-I-1985, C. T. Yang; 1 ♂, 2 ♀♀, Chishan, Kaohsiung Hsien, 15-II-1985, J. T. Yang.

Host plant: *Bambusa vulgaris* var. *striata* (Lodd.) Gamble. (Bambusoideae)

Distribution: Philippine Islands, Taiwan (new record)

*Purohita (Neopurohita) picea** sp. nov.
(Fig. 42)

Frons long and narrow, longer in middle line than wide at widest part about 1.5:1. Postclypeus distinctly wider at base than frons at apex. Rostrum reaching to metacoxa. Antennae with first segment flattened, rectangle,

longer in middle line than widest part about 3.1:1, longer than second about 2.5:1. Spinal formula of hind leg 5-6-4.

General color light brown to reddish brown. Abdomen with lateral area tinge green, antennae and lateral carinae of vertex and frons speckled with dark marking. Tegmina hyaline, veins white with small hair-bearing dark granules, and bordered with dark brown markings. Tarsi of pro- and mesolegs black, meta-tarsi light green.

Anal segment about half as wide as the widest part of pygofer, flattened dorsoventrally, moderately long. Genital styles thin, slightly curved inward at apex, and blunt at apex, the widest part at base then become of slender gradually. Pygofer slightly compressed laterally, medioventral process with median ones protruding two processes at apex. Aedeagus with phallus slender, long, in caudal view,

* piceus, -a, -um, L. adj. --- black.

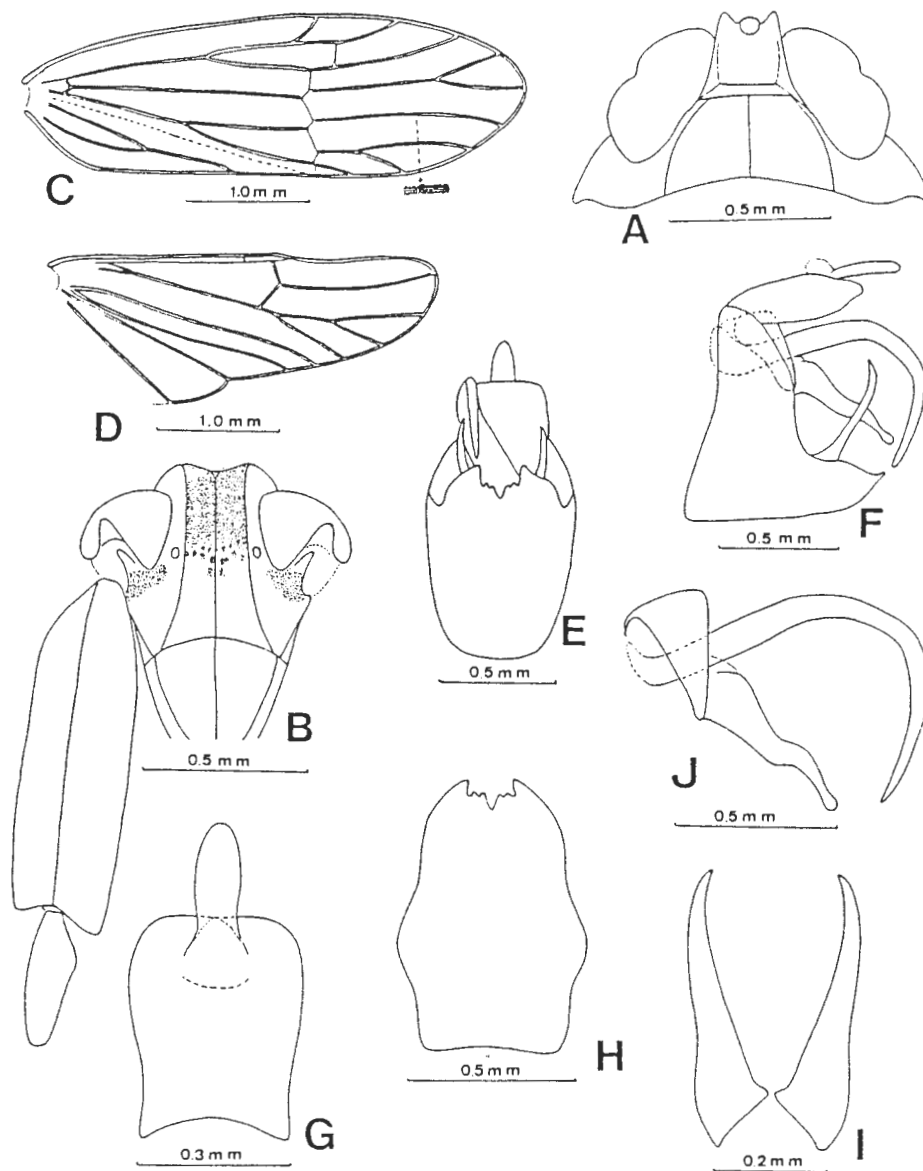


Fig. 42. *Purohita (Neopurohita) picea* sp. nov. A, head and pronotum, dorsal view; B, frons and postclypeus; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, anal segment, ventral view; H, pygofer, ventral view; I, genital styles, caudal view; J, aedeagus, left side.

directed left dorsad, then decurved medio-ventrad at apical half suddenly. In lateral view, phallus evenly arched. Phallobasal process strongly constricted near apex, rounded at apex.

Male (macropterous)

Length of body (includ. tegmen): 4.94 ± 0.23 mm.

Length of tegmen: 4.18 ± 0.21 mm.

Female (macropterous):

Length of body (includ. tegmen): 6.19 ± 0.43 mm.

Length of tegmen: 5.24 ± 0.36 mm.

Holotype: Male, Hsinhua forest (新化林場), Tainan Hsien, 11-X-1984, J. T. Yang.

Paratypes: 1 ♂♂, 2 ♀♀, same as for holotype; 5 ♂♂, 2 ♀♀, Tungshan (), Tainan Hsien, 30-I-1985, J. T. Yang.

Host plant: *Dendrocalamus giganteus* (Wall.) Munro, and *D. latiflorus* Munro. (Bambusoideae)

Distribution: Taiwan.

Genus *Specinervures* Kuoh et Ding, 1980

Specinervures Kuoh et Ding, 1980, Acta Ent. Sinica, 23(4):420.

—: Tian, 1983, Econ. Ins. Fauna China, 27:56.

Head including eyes narrower than pronotum. Vertex longer submedially than wide at base about 1.2:1, submedian carinae uniting at apex, Y-shaped carian distinct or feeble. Frons longer, in middle line than wide at widest part about 2:1, widest at apex, lateral carinae strongly divergent near apex, median carina forked near base. Postclypeus at base as wide as frons at apex, median carina distinct or feeble. Rostrum surpassing metatrochanters. Antennae cylindrical, two segment together not reaching frontoclypeal suture. Pronotum with lateral carinae reaching hind margin. Spinal formula of hind leg 5—6—4. Tegmina with cross vein basad, posterior margin of apical half protruding in front of claval area.

Anal style of male small, relative short. Anal segment ring-like, very short. Pygofer with lateral margin sinuate, medioventral process present or absent, oval like. Aedeagus with phallobase weakly sclerotized, phallus and process of phallobase extremely long and slender. Supporting plate irrecoznizable. Diaphragm weakly sclerotized. Opening of genital styles defineted. Genital styles short, inner angles reflected mesoventral apically.

Seventh abdominal sternite of female present, quadrate, bifurcate at apex.

Type species: *Specinervures nigrocarinata* Kuoh et Ding 1980. (original designation)

*Specinervures liquida** sp. nov. (Fig. 43)

Vertex longer submedially than wide at base about 1.2:1, apical margin transverse, slightly produced medially, lateral carinae slightly convergent basally; basal compartment wider than greatest length about 1.4:1. Antennae cylindrical, not reaching to frontoclypeal suture; first segment longer than wide, much shorter than second segment about 1:3. Frons longer in middle line than wide at widest part about 2:1. Ocelli very closed by lateral carinae of frons. Postclypeus slightly wider at base than frons at apex. 東山鄉

General color dark brown. Vertex, frons, antennae, legs (except femora and base of tibiae of hind legs), lower part of genae, carinae and posterior margin of pronotum and tip of mesoscutellum yellow; Ventral aspect of thorax yellowish brown, genital segments yellowish brown, ventral angles darker than the rest. Tegmina hyaline, with a brownish band discontinuous across the tegmina, in front of cross vein.

Anal segment of male very short, sunk into the anal emargination of pygofer. Pygofer with opening wider than long, lateral margins not well defined, medioventral processes present, paired massive, foliaceous, in profile area above end of lateral margins not well defined, strongly incised. Aedeagus with phallus and phallobasal process extremely long, phallus in profile tubular, strongly arched medially, membranous at apex, with several spines subapically, in dorsal view strongly sinuate, longer than phallus at right side of phallus. Genital styles slightly divergent, widening to apex, inner angles strongly produced mesoventrad.

Seventh abdominal sternite of female cover with many fine spines, somewhat asymmetrical, longest part longer than wide at base.

Male (macropterous)

Length of body (includ. tegmen): 2.92 ± 0.02 mm.

Length of tegmen: 2.44 ± 0.03 mm.

Female (macropterous)

* liquidus, -a, -um, L. adj. --- clear.

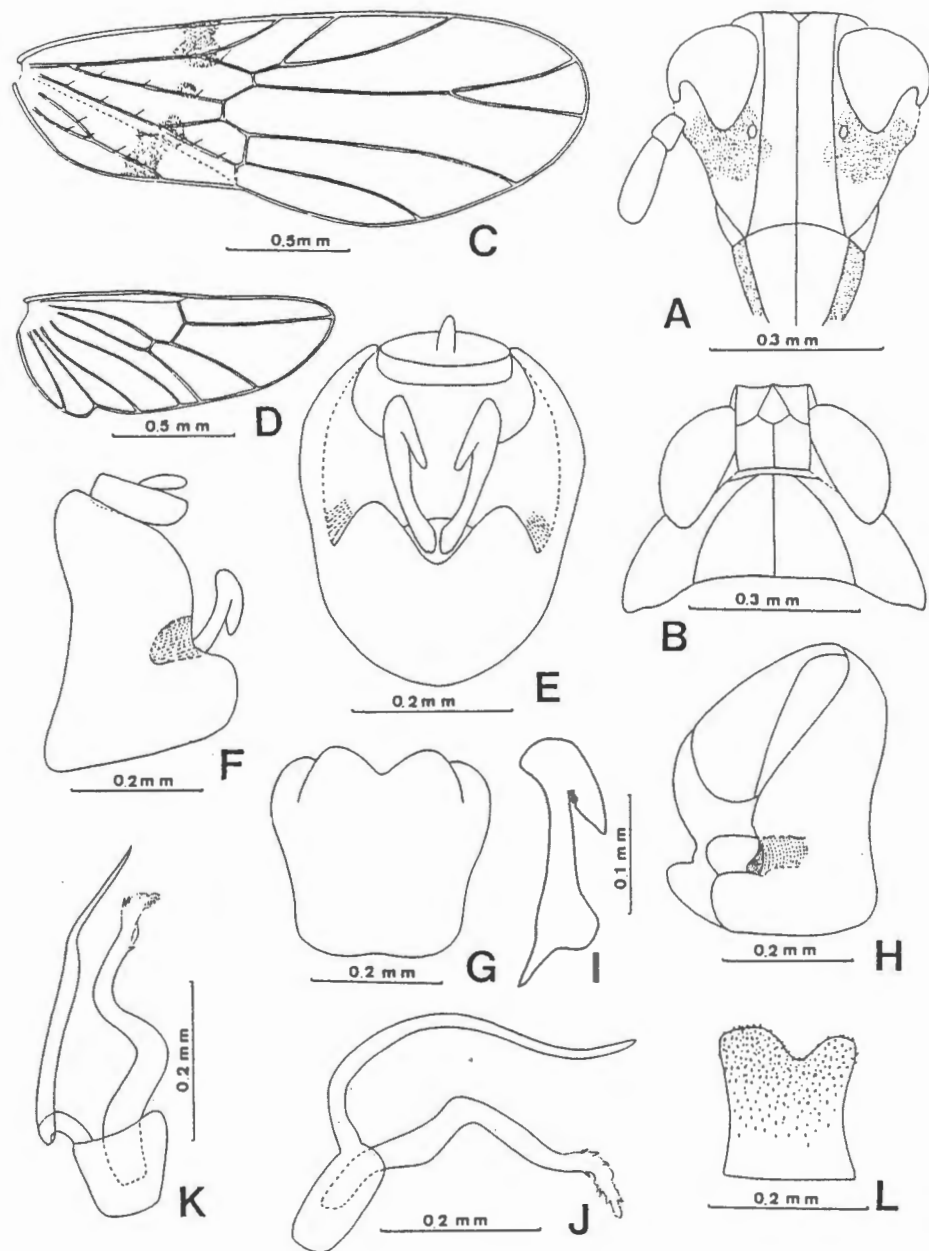


Fig. 43. *Specinervures liquida* sp. nov. A, frons and postclypeus; B, head and pronotum, dorsal view; C, tegmen; D, wing; E, male genitalia, posterior view; F, the same, left side; G, pygofer, ventral view; H, pygofer, postolateral view; I, genital style, ventrolateral view; J, aedeagus, right side; K, the same dorsal view; L, seventh abdominal sternite of female.

Length of body (includ. tegmen): 2.97 ± 0.23 mm.

Length of tegmen: 2.49 ± 0.17 mm.

Holotype: Male, Shibikeng (石壁坑),

Taipei Hsien, 22-VII-1984, J. T. Yang.
Paratypes: 3 ♂♂, 3 ♀♀, same as for holotype.
Host plant: *Bambusa edulis* Odashima
(Bambusoideae)

Distribution: Taiwan.

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This new species is a closed relative of *S. nigrocarinata* from Mainland China, but differs from latter in having shape of male genitalia; Sc_2 and R_1 of wings with common petiole.

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